Blast Furnace No. 6 Reline Project

Response to Submissions

BlueScope Steel Ltd

6 July 2022

→ The Power of Commitment

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Executive Summary

Introduction

The project

BlueScope Steel (AIS) Pty Ltd (BlueScope) is proposing to move iron production from No. 5 Blast Furnace (5BF) to No. 6 Blast Furnace (6BF) at the Port Kembla Steelworks (PKSW). 6BF last produced iron in 2011 and has since been placed into care and maintenance. To prepare 6BF to become operational again, major upgrade and maintenance works are required (the project). The project aims to return 6BF to service through a reline process that will be carried out while 5BF continues to operate.

The project has been declared Critical State Significant Infrastructure (CSSI) in accordance with section 5.13 of the *Environmental Planning and Assessment Act 1979 (EP&A Act)* and clause 26 of Schedule 5 of the *State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP).*

The key objectives of the project are to:

– Maintain the domestic supply of steel to other Australian manufacturing plants and operations operated by BlueScope's parent company, BlueScope Steel Limited (BSL), through the continuation of Blast Furnace – Basic Oxygen Furnace (BF-BOF) iron and steelmaking at Port Kembla.
– Help to maintain the approximately 4,500 jobs at PKSW and more than 2,000 jobs at the other facilities owned by BSL around Australia.
– Minimise disruption to production at PKSW following the end of the current 5BF campaign by ensuring that 6BF is available for operation prior to 5BF ceasing operation.
– Continue to provide economic benefit to the region by maintaining the provision of steel to the domestic and export market.
– Improve the environmental performance of 6BF through the implementation of the latest feasible and viable technologies.
– Incorporate technologies or build the foundations for the subsequent installation of emerging technologies, to support delivery of BSL's decarbonisation pathway, including the target of 12% reduction in steelmaking GHG emissions intensity by 2030 and corporate goal of net zero emissions across BSL's operations by 2050[1].

This Response to Submissions (RTS) report provides a summary of the submissions received during the exhibition of the environmental impact statement (EIS) and responses to the issues raised in those submissions to allow for a determination of the project by the NSW Minister for Planning.

Public exhibition and submissions

An EIS was prepared for the project and was placed on public exhibition between 24 March 2022 and 20 April 2022. The Department of Planning and Environment (DPE) received a total of 457 submissions during the exhibition of the EIS. Table E.1 groups the submissions received by submitter and whether they are in support, for comment or objections. The majority (91%) of submissions received were in support of the project.

[1] BSL's 2050 net zero goal covers Scope 1 and 2 GHG emissions. Achieving the 2050 net zero goal is highly dependent on several enablers, including commerciality of emerging and breakthrough technologies, the availability of affordable and reliable renewable energy and hydrogen, availability of quality raw materials, and appropriate policy settings.

Table E.1 Summary of submissions received

Source	Support	Comment	Objection	Total
State agencies	-	8	-	**8**
Local council	1	-	-	**1**
Organisations and interest groups	33	2	1	**36**
Individuals	385	7	20	**412**
Total	**419**	**17**	**21**	**457**

Summary of key themes

A total of 579 issues were raised in the 457 submissions received. Of these, most issues raised were in relation to the positive economic impacts of the project. Figure E.1 provides a summary of the main issues raised in support of and objection to the project, and the proportion of each of these matters raised relative to the total amount of matters raised.

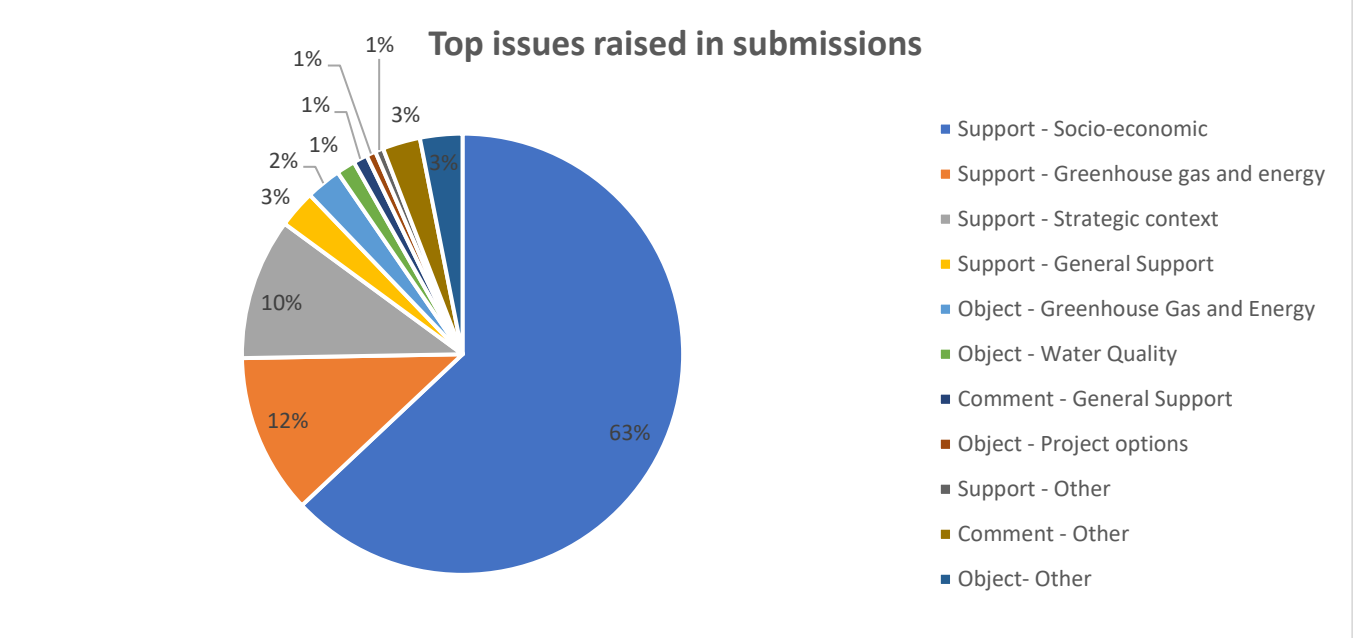

Figure E.1 Categories of issues raised

Issues raised in support of the project made up 88% of all issues raised. Support was primarily based on socio-economic factors; emissions reduction measures proposed to be implemented as part of project; and the maintenance of Australia's sovereignty in steelmaking. 8% of all issues raised were in objection to the project, primarily based on greenhouse gas impacts. Other issues raised in objection to the project were surface water impacts (primarily referring to water impacts associated with coal sourcing rather than the project impacts) and the lack of assessment for other options which utilise higher rates of recycled scrap steel. 4% of all issues raised were comments on the project.

Key issues raised, and BlueScope responses, are presented in Table E.2.

Table E.2 Key themes raised in submissions and BlueScope's response

Theme	Issue	Response
Water quality	Impact assessment criteria	BlueScope recognises and has been involved in the work to improve the water quality in Port Kembla Harbour. As noted in the EIS, BlueScope has completed 77 water related Pollution Reduction Programs since 1976, six of which were specifically relevant to the project. Additionally, three water related PRPs associated with blast furnace operation are currently underway. Additional review of water quality impact has been undertaken as part of this report and commitments made regarding future implementation of Pollution Reduction Program findings in consultation with the NSW EPA. Treatment options to reduce the environmental impact of the project have been explored.
	Blast furnace discharge	BlueScope will implement Best Available Techniques (BAT), where feasible, to reduce the impact of blast furnace discharge. Blowdown water treatment options are discussed in this report.
	Temperature of discharge	Cooling water temperature mitigation treatment options are discussed in this report. It is demonstrated that the proposed cooling water approach results in the best overall environmental outcome.
	Stormwater	BlueScope commits to achieving containment of first flush (10mm/day) from 6BF process areas.
	Groundwater interception	Only small volumes less than 3 megalitres are anticipated to be dewatered from the excavations required during construction works, such that a Water Access Licence is not required. If changes during detailed design or construction result in the potential for greater volumes to be dewatered, BlueScope will consult with DPE Water regarding licencing requirements.
	Water quality impacts in the Sydney Drinking Water Catchment	Historically BlueScope has used coking coal from the Dendrobium mine but is also continuously exploring sourcing materials from other suppliers to optimise operations and supply chain, subject to contractual commitments. As with all suppliers, BlueScope only sources materials and services from operations which are approved and operated in accordance with the relevant statutory approvals and licences. BlueScope supports the protection of the Sydney Drinking Water Catchment through the appropriate regulation and management of all activities that occur within it. BlueScope has also been recently awarded Responsible Steel Certification for the PKSW site, which is global certification ensuring steel is responsibly sourced and produced.
Air quality	New equipment and controls	This report clarifies which of the proposed equipment and controls were operational last campaign, and which are new. The EPA also requested further information regarding some of the equipment proposed. This information is provided in this report.
	Further identification of best practice measures	This report provides further information on BAT that will be implemented during the operation of 6BF.
	Fuel types	BlueScope is not seeking approval to use an alternate fuel at this time. The impacts of COG and hydrogen gas injection into the blast furnace will be assessed in conjunction with the High Pressure COG facility and hydrogen electrolyser projects.
	Measures to minimise air emissions	It has been demonstrated that where practical, the BAT have been implemented to minimise air emissions during commissioning. BlueScope has a legislative obligation to monitor for pollution in accordance with EPL 6092 and has a demonstrated history of high levels of compliance.
	Dust impacts during construction	Dust generated from demolition is expected to be minor and controlled within the PKSW. The potential for construction and demolition dust production will be dependent on the activity being undertaken. BlueScope commits to implementing additional controls during activities that will generate excessive dust.

Theme	Issue	Response
Noise	Sound power levels	The modelled sound power levels for 6BF are based on measurements undertaken from the original 5BF noise assessment for similar or identical equipment. In addition to the above, BlueScope operates a complaint receiving and recording system. Since 2012 (as far back as the current complaints system records are held), there have been no noise-related complaints relating to 5BF activities.
Greenhouse Gas and Climate Change	Greenhouse Emissions	Low GHG iron- and steelmaking have been considered and assessed by BlueScope but suitable technologies for the PKSW are unlikely to be available and commercially viable at scale until a time well after that required to replace 5BF. The only technically feasible and commercially viable option for BlueScope to continue steelmaking at Port Kembla in the short to medium term is to progress with the existing configuration and reline 6BF. The reline of 6BF provides a 'bridge' to transition from the current blast furnace technology to new and emerging low emissions technologies when they are commercially available and economically viable. A number of GHG reduction measures have been incorporated in the project design as set out in the EIS. In addition to these measures and outside of the scope of the project, BlueScope and BSL, are currently investigating emerging technologies to reduce the impact of the project and align with corporate and government policy. The project will be operated in accordance with BSL's climate strategy and decarbonisation pathway with the goal to achieve net zero greenhouse gas emissions by 2050.
Traffic and transport	Access design and public road impacts	The project does not propose to alter any access points to the public road network or impact road transport infrastructure owned by independent third parties. BlueScope is committed to only using haulage contractors who have obtained the necessary oversize, over mass (OSOM) permits.
Biodiversity	Fauna	There have been no recorded sightings of Green and Golden Bell Frogs within the project site. The project will be constructed and operated in accordance with the BlueScope procedure, *Management of Threatened Species, The Green and Golden Bell Frog, Litoria Aurea* (BlueScope, 2020).
Heritage	Aboriginal heritage	During and following the exhibition of the EIS, BlueScope undertook consultation with members of the Illawarra Local Aboriginal Land Council (LALC). No issues were raised in relation to the project itself or potential impact to Aboriginal places, artefacts or cultural heritage.
Hazard and risk	Emergency response plan	As requested by Fire and Rescue NSW, BlueScope will prepare a project specific Emergency Response Plan and store it in designated areas near the main entry points to the project area.
Socio-economic	Socio-economic impacts	The project will generate employment during both construction and operational phases. The PKSW produces almost a quarter (24%) of the Illawarra region's output per annum; the region is likely to see significant adverse economic impacts if the project does not proceed. The project is fully funded by BlueScope.
General environmental impact	General impacts	Environmental impacts will be managed in accordance with the measures outlined in Appendix D of the EIS, Appendix B of this RTS and the PKSW Environmental Management System, which is ISO 14001:2015 certified. The project will comply with all statutory requirements imposed during construction and operation.
Strategic context	Options assessment	Several options for steelmaking have been explored during the concept and pre-feasibility phases of the project and determined to be not feasible at this time. While lower emission steelmaking technologies remain under investigation and development, BlueScope has incorporated enhancements and upgrades to improve emissions intensity of blast furnace ironmaking and is actively seeking to increase the use of scrap steel recycled in the steelmaking process at PKSW.
	Project need	The project is identified as being a critical piece of infrastructure in the state, national and global context. The project is required to preserve the economic benefits resulting from iron and steel production in NSW and to enable Australia to retain its sovereignty in manufacturing. BlueScope is committed to the project to secure ongoing iron making and therefore steel production in Australia.

Theme	Issue	Response
Consultation	Stakeholder and community engagement	BlueScope undertook extensive consultation during the development and exhibition of the EIS. Due to the nature of the operation of a blast furnace, some aspects of the EIS are necessarily technical. These aspects have been closely scrutinised by regulators who have reviewed the detailed technical assessments prepared for the project as included in the EIS; these technical assessments identify potential project impacts and corresponding management and mitigation strategies that can be practically applied to the project. The EIS was prepared by an independent environmental consultant engaged by BlueScope. Data and information regarding the project was supplied by BlueScope and supported by reviews of best available technology from independent, international sources.

Project amendments

No amendments to the project as described in the exhibited EIS have been deemed necessary based on the submissions received. Additional or amended management measures (Refer Appendix B) have been recommended for the construction and operational phase.

Stakeholder engagement

Additional consultation undertaken following the exhibition of the EIS included community briefings, open days and publishing information throughout news sources. No additional issues were raised during these activities.

BlueScope will continue to consult with the community during construction and operation of the project.

Conclusion

The project will secure the ongoing production of steel at PKSW, which is an important domestic source of steel for a range of construction and infrastructure projects that are of key importance to the NSW economy. PKSW also provides a significant contribution to the local economy, with the project facilitating the retention of approximately 4,500 jobs at the PKSW site itself and supporting approximately 10,000 jobs in total including indirectly in supplier and customer businesses.

The EIS and RTS have documented the potential environmental impacts of the project, considering both negative and positive impacts. The project has been designed and assessed with regard to the matters for consideration under the EP&A Act and is consistent with the principles of ecologically sustainable development.

The design of the project, in conjunction with the detailed assessment of potential environmental impacts, has sought to minimise impacts on the environment while maintaining feasibility. The EIS has demonstrated that the project will not have a significant environmental impact, and in some respects, is expected to result in an improved environmental performance, when compared to the existing 5BF operations.

The project will also make provision for the use of low emission fuel such as renewable hydrogen during the 6BF campaign. The project will 'build a bridge' to transition to low emissions steelmaking as BSL works towards its goal of net zero GHG emissions by 2050[2], while securing significant employment and economic benefits for the Illawarra region and NSW for the duration of the 6BF campaign. With the implementation of the proposed management and mitigation measures, the beneficial effects of the project are considered to significantly outweigh any potential negative impacts.

[2] BlueScope's 2050 net zero goal covers its Scope 1 and 2 GHG emissions. Achieving the 2050 net zero goal is highly dependent on several enablers, including commerciality of emerging and breakthrough technologies, the availability of affordable and reliable renewable energy and hydrogen, availability of quality raw materials, and appropriate policy settings.

Glossary and abbreviations

Term/ acronym	Definition
ANZG	Australia and New Zealand Guidelines for Fresh and Marine Water Quality 2018
ANZECC	Australian and New Zealand Environment and Conservation Council
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
AQIA	Air Quality Impact Assessment
BAT	Best available technology
BC Act	*Biodiversity Conservation Act 2016*
BCD	Department of Planning and Environment - Biodiversity and Conservation Division
BDAR	Biodiversity Development Assessment Report
BFG	Blast Furnace Gas
BF-BOF operating model	Blast Furnace ironmaking and Basic Oxygen Furnace steelmaking
BlueScope	BlueScope Steel (AIS) Pty Ltd
BOS	Basic oxygen steelmaking
BSL	BlueScope Steel Limited
^{o}C	Degrees Celsius
CCC	Community Consultative Committee
CEMP	Construction Environmental Management Plan
CO	Carbon monoxide
CO_2	Carbon dioxide
Coastal Management SEPP	*State Environmental Planning Policy (Coastal Management) 2018*
COG	Coke Oven Gas
Council	Wollongong City Council
CSSI	Critical State Significant Infrastructure
CTMP	Construction Traffic Management Plan
DAWE	Department of Agriculture, Water and Environment
DCP	Development Control Plan
DECCW	Department of Environment, Climate Change
DPE	Department of Planning and Environment
DGV	Default Guideline Values
ESCP	Erosion and sediment control plan
EIS	Environmental Impact Statement
EMS	Environmental Management System
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999 (Cth)*
EPI	Environmental planning instrument
EPL	Environment Protection Licence

Term/ acronym	Definition
ERP	Emergency Response Plan
ESD	Ecologically Sustainable Development
Fe	Iron
FRNSW	Fire and Rescue NSW
GGBF	Green and Golden Bell Frog
GHD	GHD Pty Ltd
GHG	Greenhouse Gas
HAZOP	Hazard and Operability Analysis
HIPAP	Hazard Industry Planning Assessment Paper
H_2S	Hydrogen Sulphide
ha	Hectares
HNSW	Heritage NSW
i3net	Illawarra Innovative Industry Network
IMED	Ironmaking East Drain
IPC	Independent Planning Commission
IPCC	Intergovernmental Panel on Climate Change
km	Kilometres
km/h	Kilometres per hour
LDP	Licenced discharge point
LNG	Liquified Natural Gas
LOR	Limit of Reporting
LOSP	Level of Species Protection
m	Metres
m^2	Square metres
m^3	Cubic metres
mg/L	Milligrams per litre
ML	Megalitres
MNES	Matters of National Environmental Significance
mm	Millimetres
NIA	Noise impact assessment
NGER	National Greenhouse and Energy Reporting
NO_2	Nitrogen dioxide
NPfI	Noise Policy for Industry
NSW	New South Wales
NHVR	National Heavy Vehicle Regulator
OEM	Original Equipment Manufacturer
OEMP	Operational Environmental Management Plan
OSOM	Oversize Overmass
PFD	Process Flow Diagram
PHA	Preliminary Hazard Assessment
PKG	Port Kembla Gateway Pty Limited

Term/ acronym	Definition
PKSW	Port Kembla Steel Works
Planning Systems SEPP	*State Environmental Planning Policy (Planning Systems) 2021*
POWA	Protect Our Water Alliance
POWC	Protect Our Water Catchment
PKG	Port Kembla Gateway
PRP	Pollution Reduction Program
R&H SEPP	*State Environmental Planning Policy (Resilience and Hazards) 2021*
RDA	Regional Development Australia
RWS	Recirculated Water System
SBC	Stave Body Cooling System
SDS	Safety Data Sheet
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SEPP 33	State Environmental Planning Policy No.33 – Hazardous and Offensive Development
SEPP 55	State Environmental Planning Policy No.55 – Remediation of Land
SHR	State Heritage Register
SSD	State Significant Development
SSI	State Significant Infrastructure
SRD SEPP	*State Environmental Planning Policy (State and Regional Development) 2021*
SWMP	Soil and Water Management Plan
t	Tonnes
T&I SEPP	*State Environmental Planning Policy (Transport and Infrastructure) 2021*
TAG	Transport Access Guideline
TAHE	Transport Asset Holding Entity
TfNSW	Transport for NSW
Three Ports SEPP	State Environmental Planning Policy (Three Ports) 2013
TRT	Top Gas Recovery Turbine
TSP	Total Suspended Particles
TSS	Total Suspended Solids
WAL	Water Access Licence
WQIA	Water Quality Impact Assessment
WGHR	Waste Gas Heat Recovery
WQMP	Water Quality Management Plan
2BS	No. 2 Blower Station
5BF	No.5 Blast Furnace
6BF	No.6 Blast Furnace
µg/L	Micrograms per litre

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1. Introduction

1.1 Background

BlueScope Steel (AIS) Pty Ltd (BlueScope) is one of Australia's leading manufacturers and with its parent company, BlueScope Steel Limited (BSL), is a global leader in finished and semi-finished steel products. BlueScope's Port Kembla Steelworks (PKSW) operation in NSW includes two blast furnaces. No.5 Blast Furnace (5BF) is currently operating, while No.6 Blast Furnace (6BF) is currently in care and maintenance.

5BF is expected to continue to produce (molten) iron on a continuous basis until it reaches the end of its operational life at some stage between 2026 and 2030. BlueScope is proposing a move of iron production from 5BF to 6BF, after 5BF ceases operation.

6BF last produced iron in 2011, at which point it was taken out of service and placed into care and maintenance. To prepare 6BF to become operational again, major upgrade and maintenance works are required (the project). The project aims to return 6BF to service through a reline process that will be carried out while 5BF continues to operate.

The project has been declared Critical State Significant Infrastructure (CSSI) in accordance with section 5.13 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and clause 26 of Schedule 5 of the *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP). An environmental impact statement (EIS) has been prepared for the project and was placed on public exhibition between 24 March 2022 and 20 April 2022.

This Response to Submissions (RTS) report provides a summary of the submissions received during the exhibition of the EIS and responses to the issues raised in those submissions to allow for a determination of the project by the NSW Minister for Planning.

1.2 Project objectives

The key objectives of the project are to:

- Maintain the domestic supply of steel to other Australian manufacturing plants and operations operated by BlueScope's parent company, BlueScope Steel Limited (BSL), through the continuation of Blast Furnace – Basic Oxygen Furnace (BF-BOF) iron and steelmaking at Port Kembla.
- Help to maintain the approximately 4,500 jobs at PKSW and more than 2,000 jobs at the other facilities owned by BSL around Australia.
- Minimise disruption to production at PKSW following the end of the current 5BF campaign by ensuring that 6BF is available for operation prior to 5BF ceasing operation.
- Continue to provide economic benefit to the region by maintaining the provision of steel to the domestic and export market.
- Improve the environmental performance of 6BF through the implementation of the latest feasible and viable technologies.
- Incorporate technologies or build the foundations for the subsequent installation of emerging technologies, to support delivery of BSL's decarbonisation pathway, including the target of 12% reduction in steelmaking GHG emissions intensity by 2030 and corporate goal of net zero emissions across BSL's operations by 2050[3].

[3] BSL's 2050 net zero goal covers Scope 1 and 2 GHG emissions. Achieving the 2050 net zero goal is highly dependent on several enablers, including commerciality of emerging and breakthrough technologies, the availability of affordable and reliable renewable energy and hydrogen, availability of quality raw materials, and appropriate policy settings.

1.3 Purpose and structure of this report

This RTS has been prepared by GHD Pty Ltd (GHD) on behalf of BlueScope to support the application for approval of the project. The purpose of this document is to respond to submissions received for the project, as well as clarify the extent of potential impacts related to the project. This report also clarifies the measures that would be implemented to manage, mitigate and offset issues brought up in submissions.

DPE received 457 submissions, comprised of 412 public submissions, 36 organisation and interest group submissions, eight letters of agency advice, and one submission from a local government during exhibition of the EIS. DPE has provided copies of these submissions to BlueScope. In accordance with section 5.17(6) of the EP&A Act, the Secretary requires the proponent to provide responses to the issues raised in the submissions.

This report has been prepared in accordance with the DPE guideline *'State significant infrastructure guidelines – preparing a submissions report'* (DPIE, 2021). The report is structured as follows:

- Chapter 1 introduction and background.
- Chapter 2 analyses submissions, including a breakdown of the agencies, organisations and individuals who made submissions, locations of submitters and a summary of the issues raised.
- Chapter 3 summarises actions taken since exhibition, including any project changes, community and stakeholder engagement, and further assessment.
- Chapter 4 provides an update of statutory changes since the exhibition of the project.
- Chapter 5 responds to issues raised by State agencies and local government.
- Chapter 6 responds to issues raised by organisations.
- Chapter 7 responds to issues raised by individuals.
- Chapter 8 provides environmental management measures.
- Chapter 9 provides an updated project justification.
- Chapter 10 provides a list of references.
- Appendix A includes a register of all submissions received, grouped by agencies, local councils, organisations, and individuals.
- Appendix B provides a list of management measures updated in response to issues raised in the submissions.
- Appendix C provides a summary of stakeholder engagement activities that have occurred during and since the exhibition of the EIS.

2. Analysis of submissions

2.1 Overview

The Department of Planning and Environment (DPE) received a total of 457 submissions during the exhibition of the EIS. Table 2.1 groups the submissions received by submitter and whether they are in support, for comment or objections.

Table 2.1 Summary of submissions received

Source	Support	Comment	Objection	Total
State agencies	-	8	-	**8**
Local council	1	-	-	**1**
Organisations and interest groups	33	2	1	**36**
Individuals	385	7	20	**412**
Total	**419**	**17**	**21**	**457**

The designation of submissions as being in support, comment or objection shown in Table 2.1 is based on the designation made by DPE on the Major Projects Website. However, several public submissions classified as a comment by DPE also expressed support for the project. These are detailed in Section 7.37.

2.2 Submitters

The submissions received consist of:

– Government agencies:
  - DPE – Biodiversity and Conservation Division
  - NSW Environment Protection Authority (EPA)
  - DPE – NSW Heritage
  - Department of Premier and Cabinet – Heritage
  - Fire and Rescue NSW (FRNSW)
  - DPE – Water
  - DPE – Hazards Branch
  - Transport for NSW (TfNSW)
– Local councils:
  - Wollongong City Council
– Organisations and interest groups:
  - Australian Workers Union, NSW Branch
  - Protect our Water Alliance
  - Peabody Energy Inc.
  - Fenner Conveyors
  - Aurizon Ltd.
  - Fredon
  - Protect our Water Catchment Inc.
  - The Flagstaff Group Ltd.
  - SCE Group Pty Ltd.
  - Illawarra Innovative Industry Network (i3net)

- Pipe and Amp Engineering Supply Pty Ltd
- Bridge Project Solutions Pty Ltd
- Regional Development Australia (RDA) Illawarra
- DBC Group Australia
- IXOM Operational Pty Ltd
- Community Industry Group
- Arrow Electrical
- Qube Holdings Limited
- 360HR Solutions Pty Ltd
- Triple I
- Illawarra Industrial Supplies Pty Ltd
- Alsco Pty Ltd
- K and R Fabrications Pty Ltd.
- Nathan Thompson Engineering Pty Ltd
- QCM Pty Ltd
- Allmen Industrial Services Pty Ltd
- CorrWear Pty Ltd
- Port Kembla Gateway Pty Ltd.
- Hirono Pty Ltd
- Heymans and Associates Pty Ltd
- Galway Refectories Pty Ltd
- Klondu. Pty Ltd

– Submissions from individual community members.

2.3 Categorisation of issues

In accordance with the guideline *Appendix C to the state significant infrastructure guidelines – preparing a submissions report* (DPIE, 2021), GHD has grouped issues raised in submissions into one of five broad categories:

– Project (e.g., the site / corridor, the physical layout and design, uses and activities, timing).
– Procedural matters (e.g., level or quality of engagement, compliance with the Secretary's Environmental Assessment Requirements (SEARs), identification of relevant statutory requirements).
– Economic, environmental and social impacts of the project (e.g., amenity, air, biodiversity, heritage).
– Justification and evaluation of the project (e.g., consistency of project with Government plans, policies or guidelines, support for the project).
– Issues that are beyond the scope of the project (e.g., broader policy issues) or not relevant to the project.

Table 2.2 sets out the subcategories of issues raised by the submissions received and to which of DPEs five broad categories they relate, except for issues which are beyond the scope of the project.

Table 2.2 Issues sub-categories

Project	Procedural matters	Economic, environmental and social impacts of the project	Justification and evaluation of the project as a whole
Strategic context	Legislative compliance	Social and economic	General support
Project options	Stakeholder engagement	Greenhouse gas and energy	General objection
Project need	-	Water quality	Comments
Project operation	-	Air quality	Agency acknowledgement
-	-	Traffic and transport	-
-	-	Noise and vibration	-
-	-	General environmental impacts	-

Appendix A provides a register of the submissions received and where in this report each submission has been addressed.

2.4 Summary of issues raised

A total of 579 issues were raised in the 457 submissions received. Of these, most issues raised were in relation to the positive economic impacts of the project. Figure 2.1 provides a summary of the main issues raised in support of and objection to the project, and the proportion of each of these matters raised relative to the total amount of matters raised.

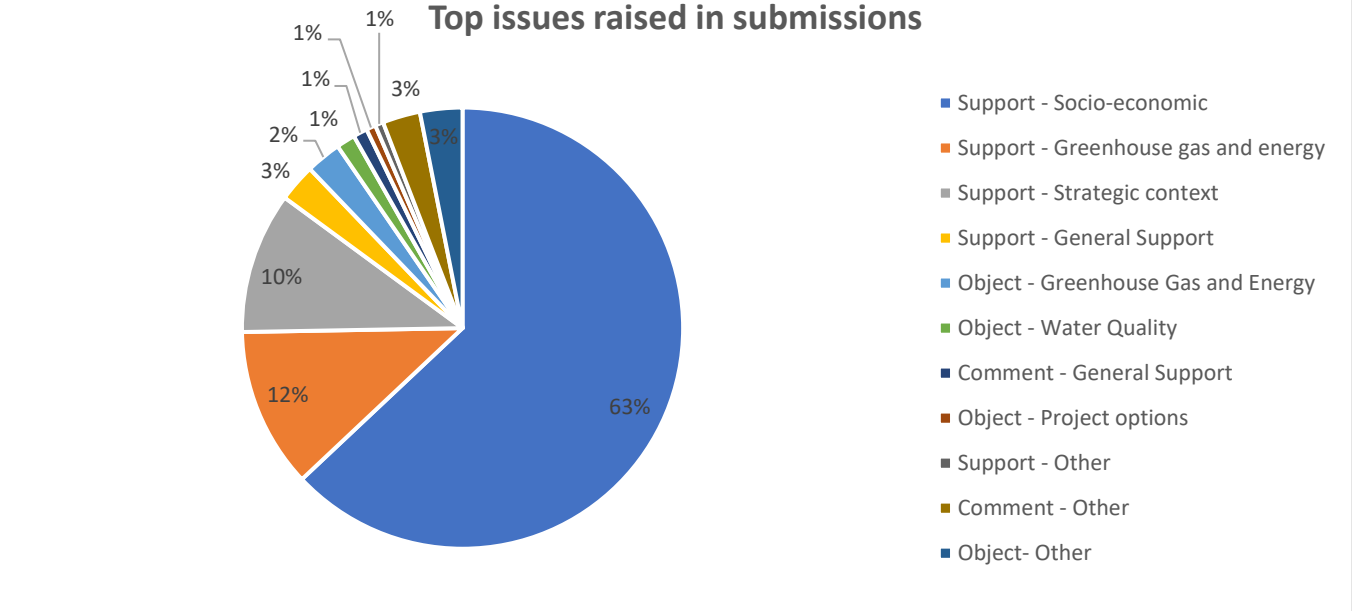

Figure 2.1 Categories of issues raised

Issues raised in support of the project made up 88% of all issues raised. Support was primarily based on socio-economic factors; emissions reduction measures proposed to be implemented as part of project; and the maintenance of Australia's sovereignty in steelmaking. 8% of all issues raised were in objection to the project, primarily based on greenhouse gas impacts. Other issues raised in objection to the project were surface water impacts (primarily referring to surface water impacts of coal sourcing, rather than surface water impacts of the project), and the lack of assessment for other options which utilise higher rates of recycled scrap steel. 4% of all issues raised were comments on the project.

Further analysis of the issues raised by organisations and individuals is included in Sections 6 and 7 respectively.

2.5 Location of submitters

Submissions received have been categorised based on the location of the submitter. Location categories used were:

– Local (within 5 km of the project)
– Regional (between 5 – 100 km project)
– Broader (further than 100 km from the project).

Location of submitters is presented in Figure 2.2.

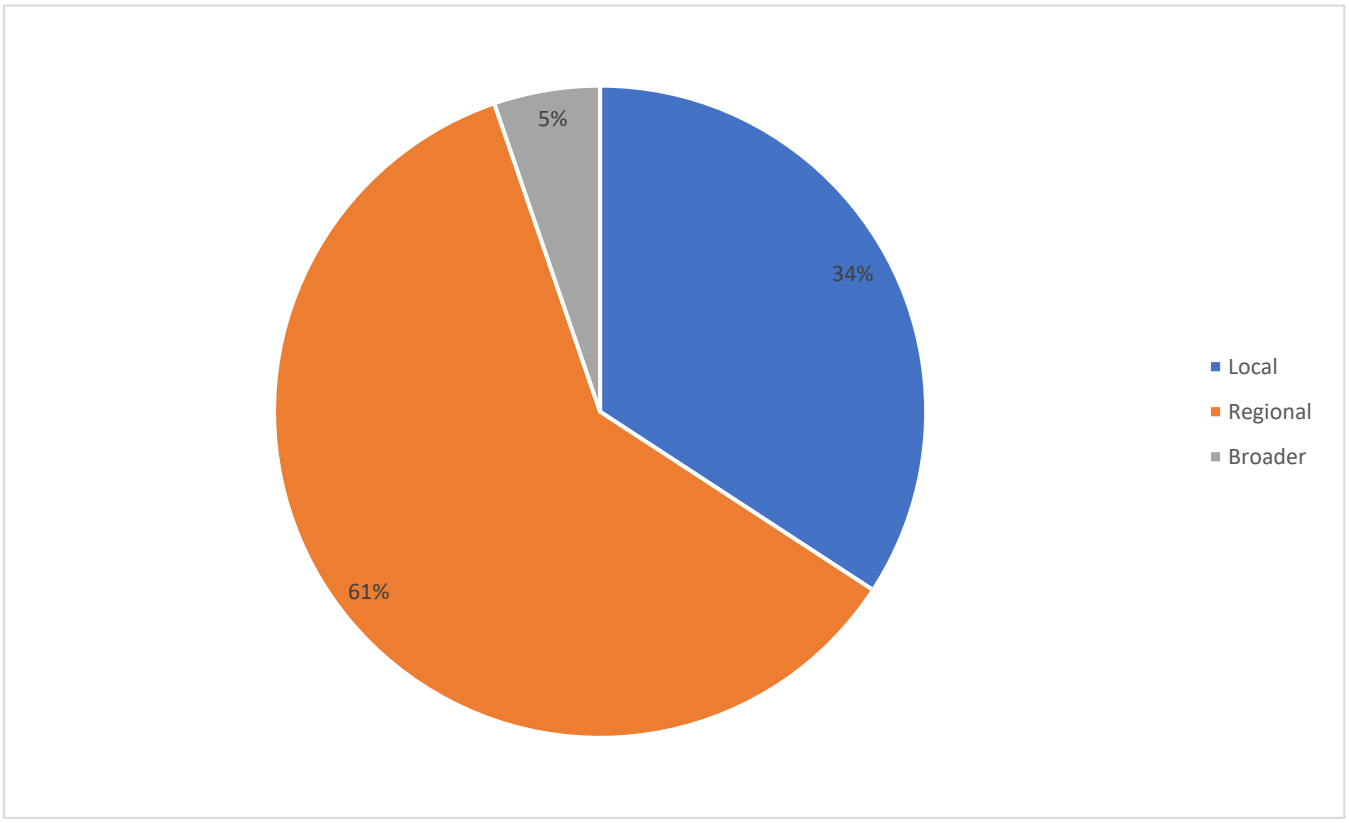

Figure 2.2 Location of submitters

3. Actions taken since EIS exhibition

3.1 Changes to the project

3.1.1 Preferred Project

There are no changes to the project forming the basis of the impact assessment described in detail in chapter 5 of the EIS. Additional or amended mitigation measures proposed as a response to submissions are detailed in Section 5 to 7, and Appendix B.

An overview of the project to provide context is described in Section 3.1.2.

3.1.2 Project Overview

The project involves the reline of 6BF over a period of approximately 3 years to return it to service and commence ironmaking after 5BF ceases operation. Ironmaking at 5BF will conclude prior to ironmaking commencing at 6BF. The project will incorporate advances in technology being used including several improvements in 6BF compared to the currently operating 5BF, resulting in lower overall emissions from the site.

Major construction work will be required within the blast furnace and surrounding facilities, and activities will involve the following tasks:

- Preparatory works.
- Removal of the remaining burden materials.
- Removal of the iron skull.
- Removal of worn carbon block refractories in the hearth.
- Removal of worn refractories in the remainder of the vessel.
- Demolition of other equipment including:
  - Cooling staves which protect the blast furnace shell.
  - Hot blast main refractory lining where required, including the expansion joints.
  - Clarifier tank and associated equipment where required.
- Repairs to the blast furnace shell where required.
- Installation of a new clarifier tank and associated equipment.
- Installation of the new hearth, sidewall refractories and staves.
- Repair/replacement of tuyeres, tapholes and instrumentation.
- Repair, maintenance and/or upgrade of ancillary equipment including:
  - Furnace cooling systems.
  - Hot blast system including the stoves, with the addition of a stove Waste Gas Heat Recovery (WGHR) system.
  - Gas system, with addition of a Top Gas Recovery Turbine (TRT).
  - Furnace top, including the charging equipment, bleeder valves and outrigger crane.
  - Casthouse floors and associated equipment.
  - Stockhouse (raw materials feed system).
  - Automation and power systems.
  - Services.
- Installation of a new slag granulation system.
- Installation of the primary ferrous feed system.

Construction is anticipated to be completed by mid-2026. Following completion of these works, 6BF will be commissioned. Once 6BF is ready for operation 5BF will be shut down and 6BF ramped up. During the commissioning and ramp-up phase all services will be brought back into live condition and the integrity of the control, monitoring and safety systems verified. Various parts of the plant will be reheated, and pressure and leak tests conducted. The cooling systems will also be filled and flushed. Ramp-up is expected to take several days, with a general increase in production reaching full production capacity within one or two months.

Operation of 6BF will generally be the same as the existing operations at 5BF. Specific locations of certain activities within the PKSW site will change due to the transfer of operations to 6BF, however, any changes to operating hours, staffing numbers or changes to the quantity or characteristics of inputs to or outputs from the blast furnace will be minimal.

3.2 Additional community and stakeholder engagement since EIS exhibition

A summary of consultation activities undertaken since the exhibition of the EIS is provided in Appendix C. Consultation activities did not raise issues outside of the scope of the issues raised in submissions.

4. Statutory context

Following the preparation of the EIS, the NSW State government amended certain planning legislation and repealed some environmental planning instruments, with provisions from the repealed instruments transferred to amended or new environmental planning instruments. This section details the relevant environmental planning instruments which have been subject to change since the exhibition of the EIS.

4.1 State Environmental Planning Policy (Planning Systems) 2021

State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP) replaces *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP) which is discussed in Section 6.1.2.1 of the EIS.

Projects that are identified as CSSI are now contained in Schedule 5 of the Planning Systems SEPP. Clause 26, Schedule 5 of the Planning Systems SEPP identified the Port Kembla Steelworks Blast Furnace No. 6 Reline as a CSSI project. The project therefore remains a CSSI project for the purposes of assessment and determination by the Minister as detailed in the EIS.

4.2 State Environmental Planning Policy (Transport and Infrastructure) 2021

State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) replaces *State Environmental Planning Policy (Three Ports) 2013* (Three Ports SEPP) which is discussed in Section 6.1.2.2 of the EIS.

Under the Three Ports SEPP, the PKSW site fell within land zoned IN3 Heavy Industrial and the project met the definition of a heavy industry. This land use zoning remains unchanged under the T&I SEPP. While the project is permissible with consent under the provisions of the T&I SEPP, it has also been declared CSSI and will therefore be assessed and determined under Division 5.2 of the EP&A Act and, subject to the Minister's approval, can be undertaken without consent under Part 4 of the EP&A Act.

4.3 State Environmental Planning Policy (Resilience and Hazards) 2021

State Environmental Planning Policy (Resilience and Hazards) 2021 (R&H SEPP) replaces:

– *State Environmental Planning Policy No. 33 - Hazardous and Offensive Development (SEPP 33)* which is discussed in Section 6.1.2.3 of the EIS.
– *State Environmental Planning Policy (Coastal Management) 2018 (Coastal Management SEPP*) which is discussed in Section 6.1.2.4 of the EIS.
– *State Environmental Planning Policy No.55 – Remediation of Land (SEPP 55)* which is discussed in Section 6.1.2.5 of the EIS.

The project remains consistent with the provisions of the R&H SEPP as follows:

– SEPP 33: Section 3.7 of the R&H SEPP requires assessment of potentially hazardous and offensive development in accordance with the relevant DPE circulars and guidelines. The guidelines used in the assessment of the project in the project specific Hazard and Risk report (Appendix G to the EIS) remain the same as are currently in force. The project as assessed in the EIS is consistent with the provisions of the R&H SEPP in relation to hazards and risk.

– Coastal Management SEPP: Table 6.1 of the EIS outlines impacts to be considered for projects in the coastal zone. These considerations are consistent with those that require consideration in section 2.10(1) of the R&H SEPP with the exception of impact due to use of the surf zone. The project is not in the surf zone. The project as assessed in the EIS is consistent with the provisions of the R&H SEPP in relation to coastal impacts.
– SEPP 55: The project represents a continuation of the existing industrial land use and the site and proposed land used is considered suitable for the project under the R&H SEPP as it was under SEPP 55. No remediation works were required under SEPP 55 nor are they required under the R&H SEPP. The project as assessed in the EIS is consistent with the provisions of the R&H SEPP in relation to contamination.

5. Response to State agency and local government submissions

This chapter provides a summary of issues raised by state and local government authorities and initial response to issues raised.

5.1 DPE – Biodiversity and Conservation Division

Comment

No further comment as DPE – Biodiversity and Conservation Division (BCD) has already issued a Biodiversity Development Assessment Report (BDAR) Waiver for the project.

Response

Comment noted. A copy of the BDAR Waiver issued by BCD was submitted with the EIS.

5.2 Environment Protection Authority

5.2.1 Water quality

5.2.1.1 Appropriate level of Protection for Port Kembla Harbour

Comment

The WQIA (p65) proposes to consider criteria and data other than those presented in the ANZG 2018 slightly to moderately disturbed ecosystems. The assessment proposes to rely on site-specific scientific studies, together with professional judgement and other relevant information, to derive site specific trigger values.

The work of the community, government and industry since the 1970s has led to a significant reduction in pollution across Port Kembla Harbour and the quality of the marine environment has markedly improved. In many cases, currently degraded waterways can be eventually restored to the status of a 'slightly to moderately disturbed' ecosystem and this is the appropriate level of protection where there is a community expectation for this level of waterway health and action can be taken over time to reduce the impacts on a degraded waterway.

While a reduced level of protection may be accepted as a pragmatic short-term goal (e.g. a construction stage of a project) for a highly disturbed waterway, the aim is to eventually restore it to the status of 'slightly to moderately disturbed'. Contemporary environmental management and improved pollutant discharges must be considered even if a waterway is currently degraded.

Recommendation

The proponent ensure the water quality impact assessment includes targeting the ANZG 95% species protection criteria (99% species protection for contaminants that can bioaccumulate). This is consistent with recent development proposals within Port Kembla. Other considerations include the practicable measures that can be taken to mitigate the impacts of the pollution and maintain or restore the environmental values of the waterway.

Response

BlueScope recognises and has been involved in the work to improve the water quality in Port Kembla Harbour. As noted in the EIS, BlueScope has completed 77 water related Pollution Reduction Programs (PRP) since 1976, six of which were specifically relevant to the project. Additionally, three water related PRPs associated with blast furnace operation are currently underway.

It is acknowledged that the original Table 2.2 of the WQIA – *Relevant water quality criteria* did not include an assessment against the ANZG (2018) Default Value Guidelines (DGVs) for marine waters at the 99% LOSP for contaminants that can bioaccumulate. The Table has been revised to include the 99% LOSP for contaminants that can bioaccumulate as shown below in Table 5.1.

Table 5.1 Revised version of relevant water quality criteria

Water quality parameter	DGVs (ANZG 2018)[4], [5]				NSW water quality objective
Aquatic ecosystems					
Biological					
Frequency of algal blooms	Not listed				No change from natural conditions
Bioaccumulation of contaminants	Not listed				No change from natural conditions
Physico-chemical and Nutrients					
Dissolved oxygen (DO)	90-110 % saturation				Not listed
pH	8.0-8.4				Not listed
Temperature	80th %ile of reference system				Not listed
Turbidity (TSS proxy)	0.5-10 NTU				0.5-10 NTU
Ammonia as nutrient stressor	20 µg/L[6]				Not listed
Total Nitrogen	120 µgN/L				<120 µg/L
Total Phosphorous	25 µgP/L				<25 µg/L
Biochemical Oxygen Demand (BOD)	80th %ile of reference system*				Not listed
Chemical Oxygen Demand (COD)	80th %ile of reference system*				Not listed
Chlorophyll-a	1 µg/L				Not listed
Toxicants					
LOSP	80% LOSP	90% LOSP	95% LOSP	99% LOSP[7]	N/A
Ammonia (NH_3)	1700 µg/L	1200 µg/L	910 µg/L		Not listed
Cyanide (CN)	14 µg/L	7 µg/L	4 µg/L		Not listed
Cadmium (Cd)	36 µg/L	14 µg/L	5.5 µg/L	0.7 µg/L	Not listed
Chromium (VI) ($Cr6^+$)	85 µg/L	20 µg/L	4.4 µg/L		Not listed
Copper (Cu)	8 µg/L	3 µg/L	1.3 µg/L		<1.3 µg/L
Lead (Pb)	12 µg/L	6.6 µg/L	4.4 µg/L		<4.4 µg/L
Zinc (Zn)	43 µg/L	23 µg/L	8 µg/L		<15 µg/L
Mercury (Hg) (inorganic)	1.4 µg/L	0.7 µg/L	0.4 µg/L	0.1 µg/L	Not listed

[4] Values, targets and actions in these guidelines are not mandatory, but support a nationally-agreed framework for water quality planning and management.
[5] DGVs for groundwater ecosystems have not been developed as part of the 2018 ANZG. It is noted that generally, the Water Quality Guidelines should apply to the quality of both surface water and of groundwater, since the community values which they protect relate to above-ground uses (e.g. irrigation, drinking water, farm animal or fish production and maintenance of aquatic ecosystems). The 2013 Australian Government groundwater guidelines do not provide guideline values for toxicants in groundwaters, but rather provide guidance on how existing DGVs for other community values might be applied, or where new guideline values might need to be derived, in order to inform the setting of appropriate water quality objectives (ANZG, 2018).
[6] Default trigger value for physical and chemical stressors for south-east Australia for slightly disturbed ecosystems ANZECC 2000
[7] DGVs presented for toxicants that can bioaccumulate only

Similarly, original Tables 5.5 and 5.6 of the WQIA have been updated to incorporate a comparison of the No. 2 Blower Station (2BS) Drain monitoring data against the ANZG (2018) Default Value Guidelines (DGVs) for marine waters at the 99% level of species protection (LOSP) for contaminants that can bioaccumulate.

This data was acquired from licence monitoring and load based licencing requirements at the 2BS Drain at the point of discharge to Allans Creek (EPL 6092 Point 79) and was used to inform the assessment on the basis that the 6BF discharge contribution to the 2BS Drain will be similar to that associated with 5BF. The revised tables including the 99% LOSP are provided as Table 5.2 and Table 5.3.

Table 5.2 Revised version of No. 2 Blower Station Drain data assessment summary (2016 – 2021)

Parameter	80% LOSP	90% LOSP	95% LOSP	99% LOSP[8]
Ammonia	✓	✓	✓	--
Anthracene	✓	✓	✓	⊙
Arsenic (AsIII)*	✓	✓	✓	--
Arsenic (AsV)*	✓	✓	✓	--
Benzo(a)pyrene	✓	✓	✓	✓
Cadmium	✓	✓	✓	⊙
Chromium (CrVI)	✓	✓	✓	--
Copper	⊙	⊙	⊙	--
Cyanide	✓	✓	⊙	--
Fluoranthene	✓	✓	✓	✓
Lead	⊙	⊙	⊙	--
Mercury (inorganic)	✓	✓	✓	✓
Naphthalene	✓	✓	✓	✓
Phenanthrene	✓	✓	✓	✓
Selenium (total)*	✓	✓	✓	⊙
Zinc	⊙	⊙	⊙	--

– Notes:
  – ✓ - *Average results comply with assessment criteria*
  – × - *Average results do not comply with the assessment criteria*
  – ⊙ - *Limit of Reporting is not sufficiently low to assess compliance*

  **Freshwater value has been used in absence of a marine water value*

[8] DGVs presented for toxicants that can bioaccumulate only

Table 5.3 Revised version of No. 2 Blower Station Drain data assessment against DGV (2016 – 2021)

Parameter / units	No. samples	Min value	Av. value	Max. value	100% EPL	80% LOSP	90% LOSP	95% LOSP	99% LOSP [9]
Ammonia (µg/L)	253	<60	<60	310	5000	1700	1200	910	--
Anthracene (µg/L)	4	<0.05	<0.05	<0.05	--	7	1.5	0.4	0.01
Arsenic* (µg/L)	23	<10	<10	<10	--	140	42	13	--
Benzo(a)pyrene (µg/L)	4	<0.05	<0.05	<0.05	--	0.7	0.4	0.2	0.1
BOD (mg/L)	1	<2	<2	<2	20	--	--	--	--
Cadmium (µg/L)	24	<5	<5	<5	60	36	14	5.5	0.7
Chromium (Total) (µg/L)	24	<10	<10	<10	--	--	--	--	--
Copper (µg/L)	24	<10	<10	<10	--	8	3	1.3	--
Cyanide (Total) (µg/L)	253	<5	<5	11.3	300	14	7	4	--
Fluoranthene (µg/L)	4	<0.05	<0.05	0.06	--	2	1.7	1.4	1
Filterable Iron (mg/L)	253	<0.01	<0.01	0.16	0.3	--	--	--	--
Fluoride (mg/L)	5	<0.1	0.68	1.40	--	--	--	--	--
Hexavalent Chromium (mg/L)	21	<0.001	<0.001	<0.001	--	85	20	4.4	--
Lead (µg/L)	24	<20	<20	<20	12	12	6.6	4.4	--
Mercury (µg/L)	26	<0.05	<0.05	0.27	1.4	1.4	0.7	0.4	0.1
Nitrogen (total) (mg/L)	7	<0.01	0.46	0.9		0.12*			
Naphthalene (µg/L)	4	<0.05	<0.05	0.15	--	120	90	70	50
Oil and Grease (mg/L)	253	<5	<5	<5	50	--	--	--	--
pH	253	7.6	8.1	8.4	6.5-9	8.0-8.4*			
Phenanthrene (µg/L)	4	<0.05	<0.05	0.1	--	8	4	2	0.6
Phosphorus (mg/L)	11	<0.05	<0.05	0.07	--	0.025*			
Selenium* (µg/L)	23	<10	<10	<10	--	34	18	11	5
Total Iron (mg/L)	253	0.06	0.19	1.4	--	0.18^			
TSS (mg/L)	253	<2	10	29	500	--	--	--	--
Zinc (Total) (µg/L)	253	<50	<50	520	3000	21	12	8	--

Notes:

– Freshwater DGVs used for As(V), Se
– Where individual readings were below LOR, a value of zero has been adopted in calculating average values
– Where all readings were below LOR, average value has been reported as <LOR
– *Default trigger value for physical and chemical stressors for south-east Australia for slightly disturbed ecosystems ANZECC 2000
– ^Draft DGV ANZG 2020

From examination of the above data, it is apparent that relatively few exceedances of the DGVs occur during operations. Cyanide exceeded the 95% LOSP 11 times in 253 samples over the 5-year period and remained compliant with EPL 6092 concentration limits on all sampling occasions. Mercury did not exceed the 95% LOSP in any of the samples collected however, 2 of the 26 samples exceeded the 99% LOSP during the sampling period. As outlined previously, the laboratory Limit of Reporting (LOR) for cadmium, copper, lead, mercury, selenium and zinc is not sufficiently low to assess compliance against the DGVs.

The current and proposed actions of BlueScope to add to the existing dataset are discussed under the relevant headings below.

Details of the potential measures that can be taken to mitigate the impacts of discharges to Allans Creek are presented under the relevant headings below and summarised in Table 5.9.

[9] DGVs presented for toxicants that can bioaccumulate only

Following consideration of the additional data and revised DGV's presented above, the impact assessment and proposed mitigation measures presented in the water resources impact assessment of the EIS are considered valid and appropriate.

5.2.1.2 Discharges from the Blast Furnace

Comment

The proposed wastewater discharges from the blast furnace have not been characterised for all pollutants and there is no assessment of practical measures to mitigate pollutant levels in discharges to the site drainage system. The assessment refers to the current licence condition, Pollution Reduction Program (PRP 182) for Number 5 Blast Furnace (5BF) and that the outcomes would be applied to No 6 Blast Furnace (6BF).

The proposed blast furnace gas wet scrubber wastewater is to report to an effluent treatment system, where a portion of the treated water is 'blowdown' (discharged) at a rate of 30 – 45 cubic metres per hour (m^3/hr) into about 26,000 m^3/hr of salt cooling water and discharges into Allans Creek and the Inner Harbour via the No. 2 Blower Station (2BS) Drain. This 5BF wastewater stream has not been characterised and assessed for the full range of potential impacts & mitigation measures such as improved treatment.

The 2BS Drain receives process water discharges from multiple sources including the blast furnace. Large volumes of cooling water are presently used to dilute some high concentration pollutants in the 2BS Drain, that then discharge to Allans Creek and Port Kembla Inner Harbour. This is not an appropriate long term management measure and does not constitute best practice. Additionally, reliance on compliance with existing licence limits is a secondary consideration as they are largely based on historical results and part of the PRP investigation is to determine if these limits remain fit for purpose.

The EIS assesses future discharges to Allans Creek and the Inner Harbour on the basis that the 6BF discharge contribution to the 2BS Drain will be the same as that associated with 5BF. The data acquired from licence monitoring and load based licencing requirements at the 2BS Drain discharge to Allans Creek have been used to inform this assessment. The EIS assessment refers to PRP 182 as a basis for ongoing management of the potential water quality impacts of discharges to Allans Creek.

All potential water pollution risks, including prevention and treatment options should be considered in the EIS, in the context of pollutant concentrations and loads, including: at-source; in blast furnace wastewater prior to discharge to 2BS Drain; and in diluted site discharges from the 2BS Drain. The assessment should include:

- *Consideration of the full range of analytes that may have a non-trivial risk of harm to human health or the environment (discussed further below).*
- *Preventing or minimising the generation of any pollutants at source or into 2BS Drain, including the full range of analytes being considered in the current PRPs.*
- *New treatment options at-source or prior to discharge to 2BS Drain, consistent with the current PRP to reduce reliance on cooling water dilution in the 2BS Drain.*
- *Where impacts cannot be addressed prior to discharge to 2BS Drain, consideration of options to reduce the frequency, load and concentration of pollutant discharges at the point of discharge to Allans Creek.*

Response

In relation to the EPA's comments on the blast furnace gas wet scrubber wastewater, and to expand upon the description of the current treatment of this water contained in section 4.4.2 of the WQIA, the effluent treatment system treats and cools the water which is used in the wet scrubber (which cleans blast furnace gas that exits the top of the furnace). Treatment of the wastewater involves aeration, coagulation and flocculation of the water. The majority of the treated water is re-used, however, approximately 30 – 45 m^3/hr of the treated water is discharged to drain. This discharge water is called "blowdown" water. Samples of blowdown water are collected at the clarifier as a process quality check. This sample point is not a licenced discharge point and does not discharge direct to the aquatic environment, first mixing with saltwater used for cooling at the No. 2 Blower Station before discharging at the 2BS Drain.

The results of the recent sampling of this blowdown water (undertaken in addition to sampling required by PRP 182) are presented in Table 5.4. While subject to the limitations raised by the EPA in its submission in relation to the 2BS Drain data, the data provides a useful supplement to the data obtained through monitoring at the licensed discharge point.

Table 5.4 Assessment of 5BF Blowdown water against DGVs

Parameter / units	No. samples	Min value	Av. value	Max. value	80% LOSP	90% LOSP	95% LOSP	99% LOSP[10]
Cadmium (µg/L)	27	<5	<5	9	36	14	5.5	0.7
Copper (µg/L)	17	<10	<10	20	8	3	1.3	-
Cyanide (Total) (µg/L)	27	88	360	940	14	7	4	-
Lead (µg/L)	27	100	369	1,120	12	6.6	4.4	-
Total Iron (µg/L)	27	250	1,064	5,700	--	--	--	-
Zinc (Total) (µg/L)	27	260	1,341	5,200	21	12	8	-

This data will be considered in conjunction with the full dataset being collected under PRP 182 which is due for completion following independent peer review in early 2023. The findings of the independent review of the data will be used to determine if additional treatment of the blowdown water is required.

In response to the EPA's submission, BlueScope has given further consideration to the potential options available re-use the blowdown water in other areas of PKSW. Consideration was given to the use of blowdown water as a make-up water feed for the slag granulation system. In this process, the blowdown water would be directed to the cooling tower at the slag granulator where it would be cooled and re-used in the granulation process instead of discharging to drain. Due to the risk of metals building up in the cooling tower and contaminating slag granulate, this option is not appropriate. Since this option is not considered feasible, BlueScope has also undertaken a preliminary evaluation of options to treat pollutants prior to discharge to 2BS Drain. A summary of the evaluation is provided in Table 5.9.

Comment

Abnormal Operation

Currently during abnormal furnace operation, the chemical composition of the wastewater may vary; as such, the blowdown water from the effluent treatment system is diverted to contingency storage to prevent release to the environment. It is then stored until such time as the quality of the water is confirmed to be acceptable for discharge in accordance with the EPL. This is also proposed for 6BF however further treatment or storage of this wastewater has not been considered and it may contain highly elevated levels of some pollutants such as ammonia and cyanide which could be further mitigated prior discharge to the 2BS Drain.

[10] DGVs presented for toxicants that can bioaccumulate only

Response

During abnormal operation, concentrations of some analytes may become elevated. As explained in the WQIA, during these periods, water is diverted to a temporary storage containment and stored until such time as the quality of the water is confirmed to be acceptable for discharge in accordance with the EPL. This allows for solids to settle out, and for non-metallic inorganics such as cyanide to degrade with exposure to air and ultraviolet radiation (UV).

Treatment of this water has been considered by BlueScope. Investigations are currently underway at 5BF to treat cyanide in the water during periods of abnormal operation so containment is not required. The treatment system will be designed such that it can be used for the 6BF blowdown water. The adoption of this treatment system will achieve further reduction of cyanide levels prior to discharge to 2BS Drain.

Comment

Default Guideline Values

The EIS refers to analytes without Default Guideline Values (DGV) in ANZG (2018), e.g. iron, fluoride. Where there is no DGV, there is less understood regarding the risks which therefore requires a precautionary approach. Information on risk in often available in ANZG (2018) technical briefs or relevant information may be available in international literature/guidelines. This information should be assessed when there are no DGV for a pollutant of potential concern for the site.

Response

The WQIA referenced analytes for which there are no current DGVs. Further consideration has been given to the potential impacts associated with each below and in Table 5.1.

In relation to iron, in June 2020, the Australian and New Zealand Governments (ANZG) released a draft document for public comment titled: *Toxicant default guideline values for aquatic ecosystem protection: Total iron in marine water, New Zealand Guidelines for Fresh and Marine Water Quality*. The document proposed DGVs for 99, 95, 90 and 80% species protection of 48 µg/L, 180 µg/L, 340 µg/L and 670 µg/L, respectively. The draft stipulated that the DGVs should be applied to unfiltered water samples to account for the potential toxicity of precipitated forms of iron. Long-term monitoring data acquired from the 2BS Drain at the point of discharge to Allans Creek (see Table 5.2), indicates that average iron concentrations associated with 5BF operations (0.19mgL or 190 µg/L) exceed the proposed draft 95% species protection level for total iron in marine water (180 µg/L) for adoption in the assessment of slightly-to-moderately disturbed ecosystems under current operations. The toxicant default guideline values for iron in marine water were open to public comment until late October 2020 and are now under review following the draft consultation phase. Concentrations of iron within 2BS Drain discharges during 6BF operations are expected to remain consistent with historical data. Following publishing of iron DGVs BlueScope will assess monitoring data against the DGV and undertake investigations into mitigation measures as needed.

In relation to fluoride, ANZG notes that the derivation of a freshwater DGV for fluoride has commenced however no DGV for marine waters is mentioned. Similarly, the US EPA water quality criteria for aquatic life does not include any criteria relating to fluoride. The Government of British Colombia Ministry of Environment published a review of Ambient Water Quality Criteria for Fluoride which recommended that the total fluoride concentration of marine waters should not exceed 1.5 mg/L (Government of British Columbia, 1990). The review notes that natural fluoride levels in seawater vary from 1.2 to 1.4 mg/L, of which approximately half is in the biologically available form of fluoride ions and the remainder is present as a relatively insoluble magnesium fluoride complex. The review also referenced the following historical Australian guidelines published by the Western Australian and Victorian governments in the early 1980s:

– Victoria Government Gazette, No. 113, Fri. Nov. 20, 1981. page 3875-3877 (No. 114-43092/81).
– Water Quality Criteria for Marine and Estuarine Waters of Western Australia. Report of the Working Group. Dep't. of Cons. and Envir. West. Aust. Bull. No. 103, April 1981.
– 1982a. Draft State Environmental Protection Policy for the Waters of the Dandenong Valley with Explanatory Notes. EPA. Draft Policy No. W-28A. Melbourne, Australia.
– 1982b. Victoria Government Gazette, No. 12, Thur. Feb. 11, 1982. page 447 (No. 12- 45874/82).

These historical guidelines proposed the following limits:

– 1.5 mg/L: Threshold levels for marina and estuarine waters for maintenance of aquatic ecosystems
– 2.0 mg/L: 6 month median, marine and estuarine water for harvesting aquatic life for food or non-edible uses and maintenance of aquatic ecosystems
– 10.0mg/L: Single sample limit, marine and estuarine water for harvesting aquatic life for food or non-edible uses and maintenance of aquatic ecosystems

Monitoring data acquired from the 2BS Drain at the point of discharge to Allans Creek indicates average fluoride concentrations of 0.68 mg/L and a maximum value of 1.4 mg/L during the monitoring period under current operations. Based on the available literature, no significant impacts to water quality are expected as a result of fluoride concentrations in the water discharging from the 2BS Drain, in connection with 6BF operations.

As outlined in Table 5.1, the DGVs for Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) are not a defined number, rather they are the 80th %ile of a reference system. BOD and COD monitoring undertaken on behalf of BlueScope under PRP182 will be assessed via a qualitative discussion of the likely impacts of the discharge in relation to the receiving environment.

Comment

Cyanide

Cyanide is present in the blowdown water discharged from the blast furnace effluent treatment system. Investigations are currently underway at 5BF to determine additional, online treatment solutions to reduce the concentration of cyanide in the blowdown water before it is discharged to the 2BS Drain. Solutions identified through the investigations are proposed to be implemented at 5BF. Learnings and solutions for cyanide treatment at the 5BF are proposed to be applied to future operation of the 6BF.

Potential practical mitigation measures to mitigate discharge concentrations into 2BS Drain are not assessed in the EIS including risks during abnormal operation of 6BF. Thiocyanate should also be considered in the assessment.

The proponent has stated to the EPA that it is installing best available technology (BAT) for water treatment at 6BF based on the European BAT reference document. This document references the treatment of cyanide using formaldehyde. However, the proponent is investigating ozonation as a preferred treatment option given the risks associated with the transportation, storage, and use of formaldehyde. While this investigation is underway for 5BF, the proponent has stated the outcomes will be applied to 6BF during its campaign. The EPA would look to have this, or similar, commitments encapsulated in any planning approval.

Response

As noted above, and as acknowledged by the EPA in its submission, BlueScope is currently investigating options for treatment of cyanide during periods of abnormal operation at 5BF, with the selected option intended to be incorporated into operations at 6BF. BlueScope has considered the cyanide removal option noted in the European best available techniques (BAT) reference document (2013), that is, treatment using formaldehyde. BlueScope has used this option on several occasions in the past when running the furnace levels down to allow internal furnace repairs. Whilst effective, the toxicity of the formaldehyde is detrimental to its long-term storage on site, presenting safety and environmental risks during transportation and storage.

Instead, BlueScope proposes to install an ozone destruction system as part of the operating plant of 5BF subject to Council development approval. The ozone system will be an on-demand system that will be used during abnormal operation when cyanide concentrations in the blowdown water may be elevated. This option means there will be no storage of dangerous goods, as ozone will be generated as required. BlueScope will use the ozone cyanide destruction system built for 5BF at 6BF, once operational.

In relation to the EPA's request for consideration of thiocyanate, total cyanide is measured at the 2BS Drain and in the blowdown water however, there is currently no data available specifically on thiocyanate concentrations in the discharges from 2BS Drain. The ANZECC Guidelines note that cyanides present in effluents may be of different forms such as hydrocyanic acid, cyanide ion, various metallo-cyanide complexes, cyanogen, cyanates, thiocyanates and nitriles. Free cyanide is the sum of cyanide present as molecular hydrocyanic acid and ionic cyanide whereas total cyanide includes the measurable cyanide from breakdown of metallo-cyanide and organic

complexes. Forms of cyanide such as thiocyanate, cyanate and nitriles do not form free cyanides (except for thiocyanate in acidic media) and are much less toxic as a result. However, BlueScope is willing to incorporate sampling for thiocyanate into PRP 182 for assessment under PRP 182.

Comment

Metals

The detection levels used for copper, lead and zinc are not sensitive enough to compare to ANZG (2018) DGVs and enable consideration of the need for further mitigation measures.

Hexavalent chromium is listed in the EIS as not having a DGV. While chromium VI was not detected in the data presented in the EIS, the ANZG (2018) marine DGV for chromium VI is 4.4 µg/L (this value referenced as a DGV for total chromium used elsewhere in the WQIA).

Aluminium, boron, manganese, magnesium, manganese, molybdenum, nickel, and titanium are potential risks in discharges to 2BS Drain but there is no assessment of these metals in the EIS.

Response

The EPA's submission refers to the detection levels used for copper, lead and zinc not being sufficiently sensitive to compare to ANZG (2018) DGVs and enable consideration of further mitigation measures. The monitoring and reporting carried out by BlueScope in accordance with its EPL has been sufficiently comprehensive for the EPA to understand key potential impacts on the receiving environment for many years. However, as also noted above, BlueScope has committed to working with the EPA on PRP 182, which will address this issue through extensive sampling to identify and quantify all sources of pollutants entering, and ultimately discharging from the 2BS Drain to Allans Creek, including from the blast furnace effluent treatment system.

An initial assessment of the composition of blowdown water provided in Table 5.4 indicates the concentration of some metals exceed recommended DGVs. However, data from the 2BS Drain discharge point provided in Table 5.2 and Table 5.3 shows the concentration of metals meet the 95% LOSP and 99% LOSP for contaminants that can bioaccumulate, except for where the LOR is higher than the guideline values.

Aluminium, boron, manganese, magnesium, molybdenum, and nickel are included in the PRP 182 study. To date, results of two PRP 182 sampling events are currently available. Four additional sampling events will be conducted before the results are presented to an independent consultant for assessment. Preliminary data for metals tested under PRP 182 is provided in Table 5.5.

Table 5.5 Preliminary results of PRP 182 water quality sampling for metals

Metal	Saltwater Channel Intake	Saltwater Channel Intake	5BF Blowdown	5BF Blowdown	2BS Drain	2BS Drain	95% LOSP[11]	99% LOSP[12]
	Sample 1	Sample 2	Sample 1	Sample 2	Sample 1	Sample 2		
Aluminium (µg/L)*	110	110	570	820	100	130	56	-
Antimony (µg/L)	<1	<1	24	11	<1	<1	270	9
Arsenic (µg/L)*	1.8	1.7	9.9	10	1.9	1.6	24	-
Boron (µg/L)*	4470	4200	190	220	4960	3830	370	-
Cadmium (µg/L)	<0.1	<0.1	2	8	<0.1	<0.1	5.5	0.7
Chromium (µg/L)^	1.2	<1	<1	<1	<1	1.4	27	-
Hexavalent Chromium (µg/L)	1	NT	<1	NT	<1	NT	4.4	-
Cobalt (µg/L)	<1	<1	2.2	1.9	<1	<1	1	-
Copper (µg/L)	7.1	1.8	7.7	<1	7.9	1.9	1.3	-
Iron (µg/L)[$]	200	150	460	380	190	360	180	-

[11] Adopted criteria under PRP182
[12] DGVs presented for toxicants that can bioaccumulate only

Metal	Saltwater Channel Intake	Saltwater Channel Intake	5BF Blowdown	5BF Blowdown	2BS Drain	2BS Drain	95% LOSP[11]	99% LOSP[12]
	Sample 1	Sample 2	Sample 1	Sample 2	Sample 1	Sample 2		
Lead (µg/L)	2.7	<1	490	580	1.3	1.6	4.4	-
Manganese (µg/L)	6.8	30	210	210	11	54	80	-
Mercury (µg/L)	<0.1	0.12	0.24	<0.05	<0.1	<0.05	0.4	0.1
Molybdenum (µg/L)*	11	14	13	11	14	13	3.88	-
Nickel (µg/L)	<1	<1	3.9	5.9	<1	<1	70	7
Phosphorus (µg/L)	<0.05	<0.05	0.18	1.5	<0.05	0.059	25	-
Selenium (µg/L)*	<1	<1	6.7	13	<1	<1	11	5
Tin (µg/L)[#]	1	<1	<1	1.8	<1	<1	0.006	-
Vanadium (µg/L)	3.1	2.6	5.1	6.8	2.9	4.6	100	-
Zinc (µg/L)	14	8.2	1410	790	9.2	14	8	-

– Notes:
  – * - *Freshwater value has been used in absence of a marine water value*
  – ^ - *Chromium (III) marine water value has been used in absence of a Total Chromium value*
  – [#] - *Tributyltin marine water value has been used in absence of a Tin value*
  – [$] - *The draft marine water value for iron has been used in absence of a published value*

Concentrations of additional toxicants for which there is no DGV are currently being assessed under PRP 182. As agreed with the EPA, PRP 182 has adopted guideline values from the following sources where DGVs have not been published:

– Van Dam JW, Trenfield MA, Streten C, Harford AJ, Parry D, and RA van Dam (2018). Water quality guideline values for aluminium, gallium and molybdenum in marine environments, Environmental Science and Pollution Research, 3 July 2018.
– Freshwater guideline values published by ANZG (2018) or ANZECC (2000) where marine values were not available.
– Adoption of values based on reference site(s) for selected physical and chemical stressors, as per ANZG (2018) / ANZECC (2000) guidance.
– Canadian Council of Ministers of the Environment (CCME), Canadian Water Quality Guidelines for the Protection of Aquatic Life (various dates).
– United States Environment Protection Agency (US EPA) National Recommended Water Quality Criteria - Aquatic Life (various dates).
– California Regional Water Quality Board aquatic habitat screening levels (2019).

The preliminary data indicates the concentration of some metals exceed recommended DGVs in the blowdown water however, the concentration of metals at the 2BS Drain discharge point meet 95% LOSP and 99% LOSP for contaminants that can bioaccumulate, except for where they are already exceeded in the saltwater channel intake (water taken from the outer harbour used for cooling at the No. 2 Blower Station). On one occasion, the 95% DGV for iron is exceeded at the 2BS Drain where it is not at the saltwater channel intake. Analysis of the data indicates the blowdown water was not the main contributor to the iron concentration recorded at 2BS Drain on this occasion.

Titanium was not included in the PRP 182 study and will be incorporated into future analysis for assessment.

Table 5.6 of the WQIA incorrectly referenced the DGV LOSPs for hexavalent chromium against total chromium, instead of against the hexavalent chromium. The error was limited to Table 5.6 only, with the hexavalent chromium DGVs correctly listed in Table 2.2 of the WQIA. Table 5.6 of the WQIA has been corrected in Table 5.3 of this report.

Treatment options considered for the blowdown water include a secondary clarifier, carbon filtration, ultra-filtration, and dissolved air flotation as outlined in Table 5.6. All options will result in solid output streams that will require assessment for suitability of reuse, recycling, or waste disposal options.

Comment

Other toxicants

Sulfur compounds, a range of hydrocarbons, organohalogen compounds such as PCDD/F (dioxins and furans) and PCB; and fluoride compounds from any waste gas cleaning/condensate are not assessed in the EIS but may be a risk in wastewater. They should be assessed and addressed in a response to submissions report or equivalent.

Response

Sampling for toxicants including sulphur compounds, hydrocarbons, organohalogen compounds such as PCDD/F (dioxins and furans) and PCB, and fluoride compounds is included in the PRP 182 project.

Preliminary data from PRP 182 indicates the concentration of these compounds in the blowdown water and at the 2BS Drain discharge point meet the 95% DGVs under current operations.

Table 5.6 Preliminary results of PRP 182 water quality sampling for other toxicants

Parameter	Unit	Saltwater Channel Intake	Saltwater Channel Intake	5BF Blowdown	5BF Blowdown	2BS Drain	2BS Drain	95% LOSP [13]	99% LOSP [14]
		Sample 1	Sample 2	Sample 1	Sample 2	Sample 1	Sample 2		
Carbon Disulphide	µg/L	<10	NT	<10	NT	<10	NT	20	-
Dioxins and Furans	µg/kg	0.000021	NT	<0.00000055	NT	0.000027	NT	0.005	-
Fluoride	mg/L	3.8	4.5	8.8	10	<10	<4.0	120	-
Hydrocarbons C6-C10	µg/L	<25	<25	<25	<25	<25	<25	640	-
Hydrocarbons >C10-C16	µg/L	<25	<25	32	<25	<25	<25	640	-
Hydrocarbons >C16-C34	µg/L	<100	<100	<100	<100	<100	<100	640	-
Hydrocarbons >C34-C40	µg/L	<100	<100	<100	<100	<100	<100	640	-
PCB	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	-
Sulphate	mg/L	2720	2510	82	86	2590	2660	-	-
Total Sulphide	mg/L	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	0.001	-

Comment

Flocculants and coagulants

Flocculants and coagulants are added to the effluent treatment system to assist with the settling of solids in the clarifier (part of the effluent treatment system) and prevent excessive scaling. The slurry formed in the clarifier is sent via pipework for dewatering at the sinter plant, with recovered water returned to the effluent treatment system and the remaining solids transported to the PKSW Recycling Area.

Resultant concentrations of flocculants and coagulants (or their key constituents) in wastewater discharges are not assessed against relevant water quality guidelines to consider any need for further mitigation or consider consistency with label requirements.

[13] Adopted criteria under PRP182
[14] DGVs presented for toxicants that can bioaccumulate only

Response

BlueScope's use of flocculants and coagulants are in line with supplier recommendations and will continue to be during the operation of 6BF, as presented in Table 5.1 of the WQIA. Ecotoxicity information for various marine species was sourced from Safety Data Sheets (SDSs) for each chemical. Ecotoxicity dosages are dependent on concentration and exposure time (e.g. 50 mg/L over 96 hours). The time component was not considered in the assessment, so the concentration was conservatively assumed to be toxic for instantaneous exposure.

The WQIA concluded that there was no need for further mitigation measures or changes in use of flocculants and coagulants within the effluent treatment system.

Comment

Ammonia as a nutrient stressor

Ammonia as a toxicant is discussed above, however, ammonia is not considered as a nutrient stressor risk. ANZG (2018) states that: "For ecoregions where regional PC-stressor DGVs are not yet provided and local jurisdictions have not yet derived finer scale (for instance catchment, basin or physiographic level) guideline values, refer to the regional DGVs provided in the ANZECC & ARMCANZ (2000) guidelines". The ANZG (2018) DGV for ammonia is therefore 0.02 mg/L (Table 3.3.2, ANZECC (2000). In addition, load risk of nutrients should be considered.

The EIS refences "EPA advice regarding mixing zones". Section 2.5 of the WQIA quotes that advice as follows:

"Mixing zones should not be used to manage the biostimulant impacts of nutrients, since the stimulation of algae (e.g. phytoplankton) may occur at considerable distances away from the nutrient source and is mediated by the biological characteristics of the waterbody as a whole."

This highlights the need to consider the nutrient concentration & the load risk of ammonia in the EIS.

Response

The WQIA assessed potential water quality risks associated with ammonia as a toxicant based on the 95% LOSP. In response to the EPA submission, further discussion is provided below regarding ammonia as a nutrient stressor for which the relevant default trigger value under the ANZECC 2000 guidelines in 20 µg/L.

The existing data set for the 2BS Drain and the blowdown water has a level of reporting of 60 µg/L for ammonia. Table 5.3 shows that under normal operations between 2016 and 2021 average ammonia concentrations within 2BS Drain were less than the detection limit of 60 µg/L with a maximum value of 310 µg/L. Hence whilst ammonia concentrations within the 2BS Drain remain below the DGV relating to 95% LOSP, the data indicates that there have been isolated exceedances of the relevant default trigger value as nutrient stressor under the ANZECC 2000 guidelines during 5BF operations.

Ammonia is a bioavailable form of nitrogen and can lead to nuisance plant and algae growth, low dissolved oxygen levels and toxic dinoflagellate blooms where nutrient loads to a waterbody are excessive. The most common sources of ammonia entering surface waters are domestic sewage and industrial effluents. No historical issues relating to excess ammonia have been reported in Port Kembla Harbour which is most likely due to ongoing improvements to water quality and the catchment, natural flushing characteristics of the Inner Harbour, sporadic nature of any exceedances, and lack of other significant nitrogen discharges to Port Kembla Harbour.

In response to the EPA submission, consideration has been given to ammonia stripping via a mechanical process where air is used to strip ammonia from alkaline water streams. As discussed in Table 5.6, this requires large amounts of caustic to adjust pH, high energy requirements, and a large footprint. In addition, while ammonia strippers remove ammonia from water, they result in emissions of ammonia to air presenting different environmental risks and introducing safety risks. Ammonia stripping is therefore not considered an appropriate mitigation measure particularly given that no historical issues relating to excess ammonia have been reported in Port Kembla Harbour.

Comment

Other physical and chemical stressors

Key physico-chemical stressors are not considered in the EIS or have not been compared to relevant DGVs, e.g. phosphorus, turbidity/total suspended solids (TSS), pH, total nitrogen, oxides of nitrogen.

- *DGVs for total phosphorus, total nitrogen and turbidity. are correctly listed in Table 2.2 of the WQIA but these analytes are not assessed further in the EIS.*
- *TSS-turbidity correlations are commonly used and are straight-forward to develop on a site- specific basis. Turbidity DGVs have not been assessed in relation to TSS risk. Sediment loading risks are also not assessed as discussed below.*
- *pH level is an important wastewater characteristic for 6BF discharges and should be assessed.*
- *Nitrate is a key water quality indicator for blast furnace wastewater and oxides of nitrogen are not assessed in the EIS for surface water discharges. The nutrient stressor guideline value for nitrate is 0.04 mg/L.*

Response

Monitoring data is available from the period 2016 to 2021 for TSS and pH. Comparison of the available data to relevant criteria is presented in Table 5.7.

Table 5.7 Assessment of other physical and chemical stressors

Parameter / Units	No. samples	Av. value	Min. value	Max. value	EPL 100%ile limits	Criteria	Comments
Nitrogen (total) (mg/L)	4	<0.05	<0.05	0.15	--	0.12	Criteria for marine waters ANZECC 2000 - Default trigger values for south-east Australia.
TSS (mg/L)	253	10.2	<2	29	50	10	Limit of 10 NTU converted to 10 mg/L based on correlation of 1 mg/L TSS to 1 NTU as documented in the most recent EPL issued for Port Kembla (EPL 21529)
pH	253	8.1	7.6	8.4	6.5 – 9.0	8.0-8.4 7.0 – 8.5	Criteria for marine waters Criteria for estuarine waters ANZECC 2000 - Default trigger values for south-east Australia.
Phosphorus (mg/L)	11	<0.05	<0.05	0.07	--	0.025	Criteria for marine waters ANZECC 2000 - Default trigger values for south-east Australia.

From examination of the data presented in Table 5.7, the average TSS concentrations slightly exceed turbidity / TSS guideline levels for ambient water quality but are well within the 100th percentile limits of BlueScope's current EPL. Increased suspended solids concentrations have the potential to lead to sedimentation of waterways, reducing water depths, light levels, and modifying environments such that species abundance and composition may also change over time. BlueScope's ongoing improvements to management of process water and stormwater are expected to further reduce the sediment load entering Allans Creek via 2BS Drain over time, including following transition of operations to 6BF.

Varying pH levels beyond natural ranges can present a direct stressor to biota or an indirect stressor by increasing the impacts of other toxicants. BlueScope already manage pH as part of existing operations. The available data indicates that discharges to Allans Creek comply with maximum pH criteria and generally comply with minimum pH criteria for marine waters. Occasional pH levels are recorded below lower marine criteria however, all results remain above the lower criteria for estuaries.

Sampling for nitrate is included in the PRP 182 project. Preliminary data from PRP 182 indicates the 95% LOSP is exceeded at times in the blowdown water under current operations.

Table 5.8 Preliminary results of PRP 182 water quality sampling for Nitrate, pH and TSS

Parameter	Unit	Saltwater Channel Intake	Saltwater Channel Intake	5BF Blowdown	5BF Blowdown	2BS Drain	2BS Drain	95% LOSP
		Sample 1	Sample 2	Sample 1	Sample 2	Sample 1	Sample 2	
Nitrate	mg/L	<10	1.5	1.2	3.3	<10	<4.0	2.4
pH		7.7	8.1	8.2	8.2	7.8	7.9	-
TSS	mg/L	2	5	11	13	4	5	-

Comment

Pollutants loads

ANZG (2018) refers to ANZECC (2000) load-based guideline packages/factsheets covering general guidance on:

- *Load-based guidelines*
- *Why loads are important, and*
- *How loads could be considered for suspended particulate matter and nutrients.*

There may be a range of potential risk factors that have not been assessed in the EIS including:

- *The rate of sedimentation in relation to an ecological risk such as smothering.*
- *The concentrations of metals (dissolved and sediment attached) to ensure contaminant concentrations in sediment of the harbour are not exceeded.*
- *Nutrient loading risks related to stimulation of nuisance plant or algae growth in the harbour.*

Recommendation

Further information is required to inform the above characterisation, impact assessment, and potential mitigation measures associated with proposed blast furnace discharge to 2BS Drain.

Response

BlueScope's existing licence conditions under EPL 6092 define concentration based limits only. Discussion is provided above in Section 5.2.1 relating to nutrient loading and sediment loading however, further data is required in order to assess the broader risk factors noted in the EPA's submission. PRP 182 requires quantification of pollutants entering 2BS Drain including flow data and estimated pollutant loadings which will enable this assessment.

As part of BlueScope's commitment to ongoing improvement and reduction of pollutants discharged to Allans Creek, consideration has been given to several blowdown water treatment options which are summarised below in Table 5.9. BlueScope is currently reviewing treatment processes in use at other steel manufacturing plants to identify any potential treatment options that have not yet been considered.

Ozone oxidation is planned for use in the final years of the 5BF campaign and throughout the 6BF campaign. Additional treatment of the blowdown water has not yet been decided. Additional feasible treatment solutions will be identified and adopted throughout the 6BF campaign based on the recommendations from the independent assessment of PRP 182 results, and treatment practices observed at other steelworks.

Table 5.9 Assessment of blowdown water treatment options

Option	Description
Pre-discharge dilution	BlueScope understands the EPA's position is that dilution is not an appropriate mitigation measure for the treatment of blowdown water. This option was therefore not considered.
Re-use blowdown water in the slag granulation system	Consideration was given to the use of blowdown water as make-up water for the slag granulation system. This option involved directing blowdown to the cooling tower at the slag granulator where it would be cooled and re-used in the granulation process. This option was not considered appropriate due to the potential for heavy metals to build up in the granulation cooling tower, and the potential for contamination of slag granulate.
Formaldehyde dosing	Formaldehyde is identified as a cyanide treatment option in the European BAT BREF (2013). This process reacts formaldehyde with cyanide in the water to produce glycolonitrile. Formaldehyde is a hazardous substance. It is flammable, toxic, corrosive and carcinogenic. This option is not proposed for implementation due to the safety and environmental risks associated with the transport, storage and use of this chemical at PKSW.
Ozone oxidation	A project is currently in progress at 5BF to treat cyanide in blowdown water during abnormal blast furnace operation when cyanide concentrations may be elevated. The project involves the oxidation of cyanide using ozone. The ozonation unit will be designed such that, if successful, it can be utilised for 6BF operation. Installation will incur moderate capital costs and ongoing operational costs. This treatment option will result in increased energy usage and will generate a solid output stream that would need to be assessed for suitability of re-use, or waste disposal options.
Secondary clarification tank	This option involves directing blowdown water to a second clarifier prior to discharge. It entails the installation of an additional clarifier on site such that the clarifier currently used at 5BF can be used as a temporary containment option for blowdown once the 5BF campaign has concluded. The pH of the second clarifier would be controlled at a higher pH than the first clarifier to remove heavy metals more efficiently. The installation of a clarifier would incur moderate capital costs and ongoing operational costs. Chemical dosing for flocculation, biofouling, and pH control would be required for the operation of the clarifier. The resulting solids collected would need to be assessed for suitability of re-use, or waste disposal options.
Carbon filter	A carbon filter could be used to treat blowdown water before it is discharged to the 2BS Drain. It has the potential to reduce solid particulates, metals, and organic compounds from the water. While relatively low cost compared to other treatment options, this option introduces an additional carbon-based media and will result in an increased solid output stream compared to other options. This output stream would need to be assessed for re-use or waste disposal options.
Ultra-filtration	Ultra-filtration uses a membrane to remove particulates from the water and is another potential option for blowdown water treatment. This option can remove smaller particles from the water than a carbon filtration system. This treatment option would incur moderate capital costs and ongoing operational costs. It has increased energy requirements compared to carbon filtration, but lower than that of reverse osmosis. Antifouling treatment is required for ultra-filtration units. Particles removed from the blowdown will produce a solid output stream that would need to be assessed for re-use or waste disposal options.
Reverse osmosis	Consideration has been given to reverse osmosis as a treatment option. Reverse osmosis removes dissolved salts and metals from water by passing it through a semi-permeable membrane. Reverse osmosis requires moderate to high capital costs, ongoing operational costs, antifouling treatment, and significant energy use. Assessment of this option found it was not appropriate for this application.

Option	Description
Ammonia stripper	Ammonia stripping is a mechanical process where air is used to strip ammonia from alkaline water streams. This treatment option requires large amounts of caustic to adjust pH, high energy requirements, and a large footprint. While ammonia strippers remove ammonia from water, they result in emissions of ammonia to air presenting different environmental risks and introducing safety risks. This treatment option is therefore not considered feasible.
Dissolved Air Flotation	This treatment process uses air dissolved in a pressurised water stream to separate suspended solids and light oils from wastewater. The resulting sludge on the surface of the water is subsequently removed. Dissolved air flotation units have a moderate footprint and require the use of flocculants. Sludge removed would need to be assessed for re-use or waste disposal options.

5.2.1.3 Temperature

Comment

The proposed 6BF furnace cooling systems are a closed loop design with heat exchangers. This differs from the evaporative cooling tower currently utilised at Number 5 Blast Furnace (5BF). The closed loop design would require additional salt water and would result in an increased volume of salt cooling water discharge (approximately 10%) compared to current operations, with a temperature increase predicted at the No. 2 Blower Station Drain (2BS Drain) Licence Discharge Point (LDP 79). An increase of about 0.5 – 1°C is predicted at the LDP.

ANZG (2018) refers to ANZECC (2000) for temperature guidelines as follows:

– *Hot water discharges should not be permitted to increase the temperature of the aquatic ecosystem above the 80%ile temperature value obtained from the seasonal distribution of temperature data from the reference system. This is the Default Guideline Value (DGV).*
– *A less stringent cut-off than 80th percentile value may be used for highly modified ecosystems, however, the 80th percentile value should be used as a target for site improvement.*

The EIS has not assessed the less stringent cut-off value listed above and in general, for an ongoing discharge, the less stringent value is not appropriate as it would not provide for site improvement but would lock-in a deterioration in water quality for the site.

The WQIA has compared the discharge to the temperature DGV for slightly to moderately disturbed ecosystems, however, the assessment then accepts a deterioration in water quality by stating that discharges will comply with the temperature limits specified in the current Environment Protection Licence (EPL) and the predicted increase in temperature at the point of discharge into Allans Creek will comply with the site-specific temperature criteria (an increase of less than 3°C). This does not adequately address the SEARs (specifically around NSW Water Quality Objectives and avoid / minimise water pollution) or follow best practice (continual improvement in water quality over time).

The WQIA references a previous 2006 study on site-specific temperature criteria which concluded a "water temperature trigger value of 3°C be adopted". The context for this study is unknown and a 3°C temperature change is not consistent with guidelines for continual improvement (ANZG (2018)).

Possible mitigation options for site improvement do not appear to have been assessed in the EIS. Section 6.3 does not adequately consider mitigation options. Section 4.4.3 considers two alternative cooling systems (air cooling towers and evaporative cooling) but these were considered unreliable or more energy intensive.

The proposed cooling system without further mitigation therefore results in increased water pollution due to temperature increases in the inner harbour.

Recommendation

Further information is required to address the SEARs; the EPA mixing zone policy of needing to remove the need for mixing zones over time; and include assessment of all practical measures to avoid or minimise water pollution and protect human health and the environment from harm.

Response

Cooling systems are essential for the operation of a blast furnace as they protect the blast furnace shell against significant damage or failure that can be caused by overheating.

At 6BF, both cooling systems are closed loop designs with heat exchangers as shown in Figure 5.1. The Recirculated Water System (RWS) supplies cooling water to furnace equipment cooling elements including the hot blast valves, clay gun, casthouse supplies, taphole staves, under-hearth cooling, tuyere coolers, and the Top Gas Recovery Turbine. The Stave Body Cooling System (SBC) provides cooling water to the stave cooling elements which are located between the refractory lining and the outer shell of the furnace.

In these closed loop systems, cold water supplied to the cooling elements is heated during its circulation. To cool the water and enable its reuse in the cooling circuit, the heated water is passed through a heat exchanger and heat is removed by an alternate water stream on the cooling side of the exchanger. At 6BF, saltwater is used in the cooling side of the heat exchanger to reduce the temperature of the water in the closed loop cooling system. This saltwater is sourced from Port Kembla Harbour and is discharged back into the harbour via the 2BS Drain and Allans Creek. As noted in the WQIA, the water discharging back into Allans Creek is anticipated to be 0.5 - 1°C warmer than the water sourced from the harbour.

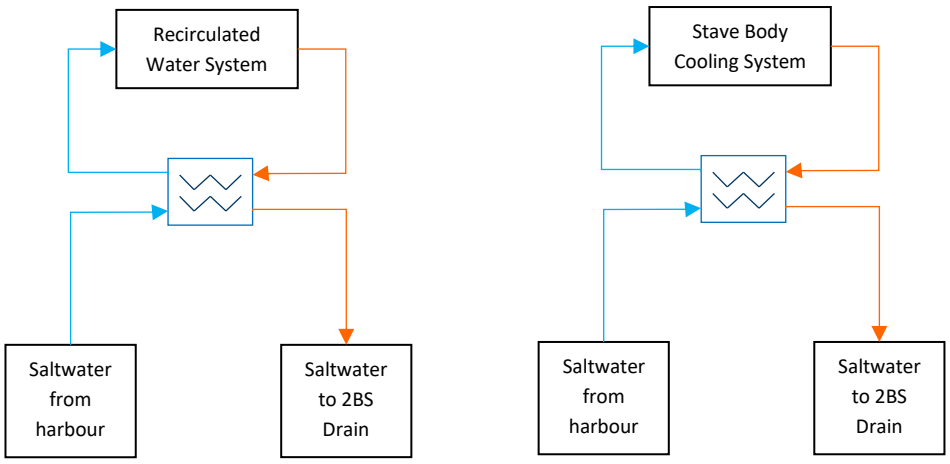

Figure 5.1 6BF cooling system schematics

The previous 2006 study referenced in the WQIA concluded a “water temperature trigger value of 3°C be adopted”. Whilst the 2006 study related to the receiving environment of Allans Creek and the Inner Harbour, the study related to a different upgrade project which was not progressed. Accordingly, it is considered more relevant to compare against the 80%ile temperature value obtained from the seasonal distribution of temperature data from the reference system, which was also referenced in the WQIA.

BlueScope acknowledges the EPA mixing zone policy, which stipulates a requirement to remove the need for mixing zones over time. Consideration has been given to treatment options that would reduce or eliminate the impact associated with the proposed saltwater cooling system. An assessment of the available options are provided in Table 5.10. The assessment demonstrates that the proposed cooling water approach results in the best overall environmental outcome.

Table 5.10 Assessment of cooling water treatment options

Option	Description
Pre-discharge dilution	To reduce the increased temperature at the 2BS Drain discharge point, the use of additional saltwater through the cooling system was explored. To mitigate the anticipated temperature increase of 0.5-1°C, 640 ML/day of saltwater would be required to flow through the cooling system. This is equivalent to the amount of saltwater currently used for cooling at PKSW and would therefore double the amount of saltwater required to be taken from Port Kembla Harbour for PKSW operations. The existing pipework for saltwater cooling at PKSW was not designed to receive this capacity of water and would likely require replacement to proceed with this option. Considerable engineering costs would be associated with this work. Further, the pumping of additional water from the harbour into PKSW would result in increased energy usage and associated emissions. As such, this option is not considered appropriate.
Use of diffusers	Consideration was given to mixing behaviours within Allans Creek and opportunities to improve nearfield mixing behaviours through the use of diffusers or flow deflectors. Due to the limited volumetric capacity of Allans Creek, it was concluded that the use of diffusers would offer little improvement to water quality within Allans Creek or the Inner Harbour.
Discharge to alternate location	Consideration was given to directing the cooling water discharge to alternate locations. These included Main Drain, a holding dam, and other PKSW or Port Kembla Harbour users. Main Drain is an existing drain in PKSW that also discharges into Allans Creek. Due to the low flow of water through the Main Drain compared to 2BS Drain, it is anticipated that the temperature of the discharging water would be elevated by 3-7°C at the Main Drain discharge point. This option was therefore deemed inappropriate. The option for a holding dam allowing the water used for cooling to be retained and ambiently cooled was explored. The proposed cooling water system requires approximately 108 ML of saltwater per day to pass through the system. Given the volume of water and location of the project area, no location for a sufficiently sized holding dam was identified. The potential to utilise the water at other areas within PKSW was investigated. No options were identified. The Port Kembla Gas Terminal was identified as a possible receiver of the water for use in the regasification system. The regasification system utilises approximately 228 ML of water from the Harbour for warming which is subsequently discharged back into the harbour at a lower temperature. Significant engineering and costs would be associated with this work given its location across the harbour from the project site, and it was considered to provide relatively little overall benefit. It was therefore determined to be unfeasible.
Use of alternate cooling system	Different cooling systems were explored to mitigate the anticipated temperature increase at the 2BS Drain. An evaporative cooling system was identified as a potential option. While this option would not result in increased temperature at the discharge point, it requires additional freshwater usage to replace water lost through evaporation, and chemical treatment to avoid corrosion, bacteria, and Legionella risk, which pose environmental and human health risks. Further, this option requires a large footprint, has significant engineering costs, and requires increased energy usage equivalent to approximately 3,000 tCO_2-e/year due to operation of additional fans and pumps. Due to these factors, BlueScope's preferred option is to progress with the once through saltwater cooling system.

5.2.1.4 Stormwater

Comment

The stormwater drainage system proposed for the project should capture and reuse stormwater and contain any spills. The 'first flush' system should capture and hold the initial hardstand surface runoff during a rain event before discharging any stormwater off-site.

The Water Quality Impact Assessment indicates the project site has established stormwater drainage consisting of a series of sumps and collection tanks which capture the 'first flush' of rainfall events and any potential spills. These sumps are capable of pumping back to the effluent treatment system should further treatment be required. In a rain event, a "first flush" of stormwater (10 millimetres in a day) is collected in sumps and tanks in the stormwater drainage system.

Based on the information provided within the EIS it is difficult to determine how this system will operate. In the absence of detailed information, the EPA seeks a commitment from the proponent that the designed system will achieve the proposed "first flush" rainfall capture and reduce any discharge of polluted stormwater from the premises.

Recommendation

The proponent provides a commitment that the designed system will achieve the proposed "first flush" rainfall capture and reduce any discharge of polluted stormwater from the premises.

Response

BlueScope commits to achieving containment of first flush (10mm/day) from 6BF process areas.

5.2.2 Air quality

5.2.2.1 New equipment and controls

Comment

The EIS and AQIA outline that BSL is proposing to implement several additional process and emission controls as part of the project. These include cast house floor manipulator and trough covers, additional extraction at the main trough and tapholes, lowered tilting platforms during casting, extraction at the iron ladles and lag tilting spouts, a slag handling condensing unit, and stove hot blast waste gas heat recovery. EPA supports such improvements however requests further details, explanation and/or assessment on the information provided in the EIS as listed below. Additionally, some of the proposed controls are new, while others operated during the previous 6BF campaign.

Recommendation

The proponent clarifies which of the proposed controls were operational in the previous 6BF campaign.

Response

The design of the casthouse floor dedusting system will remain unchanged from the first campaign. All iron and slag transfer points will be equipped with a dedusting point, all of which are collected in the common casthouse baghouse. An improvement over the 5BF dedusting system is the inclusion of a further collection point above the taphole (which existed on 6BF in its previous campaign). This collection point, combined with lowered tilting platforms over the tapholes, is expected to result in an improvement in air quality compared to current operations. To maximise collection efficiency, the iron and slag runners are covered to reduce fume escape. These covers also provide an important safety barrier to prevent contact with the molten liquids.

The slag granulation system is proposed to be equipped with a closed condensation tower in which cooled water will be used to condense the steam plume visible from the granulation stacks. The water directly contacts the steam arising from the granulation process, condensing it so that it falls back into the granulation bath. The stove Waste Gas Heat Recovery system reclaims heat from the stove flue gases to preheat the air and fuel used for heating the stoves. The aim is to reduce the amount of enrichment gas required for heating the stoves (in this case, Coke Ovens Gas) which will potentially lead to a reduction in sulphur emissions from the stoves stack.

A summary of the status of proposed controls is provided in Table 5.11.

Table 5.11 Summary of proposed controls

Proposed control	Status
Manipulator and Trough Covers	Operational in previous 6BF campaign
Extraction at trough and tapholes	Operational in previous 6BF campaign
Lowered tilting platform during casting	Operational in previous 6BF campaign
Extraction at iron ladles and slag tilting spouts	Operational in previous 6BF campaign
Slag handling condensing unit	New control
Stove hot blast waste gas heat recovery	New control

Comment

a. Cast House Fugitives and Iron Kish

AQIA, Section 10.2 describes improvements in cast house fugitive emissions control through covers (manipulator and trough), additional extraction (main trough, tapholes), and lowered tilting platforms during casting. Additionally, extraction at the iron ladles and lag tilting spouts is proposed. However little descriptive information is provided on these additional controls.

Recommendation

For both cast house and iron kish fugitives, EPA requests details on:

i. The operating principle(s) of proposed covers and how they reduce emissions.

ii. The size of proposed additional extraction points, and the volume of air proposed to be collected for each additional extraction point.

iii. Where additional air extraction will be piped too, and how collected fugitive air emissions will be treated.

iv. If there are fugitive emission points that aren't proposed to include fugitive emission capture and control as part of the proposal.

Response

Further details for each item as requested by EPA are as follows:

i. The operating principle(s) of proposed covers and how they reduce emissions

All of the molten liquid runners are covered with heavy duty covers to prevent contact with the materials being conveyed. These covers are in place during normal operations and are generally only removed for maintenance of the runners. With the runners in place, generated fumes are drawn away by various suction points to a common baghouse where any particulate material is removed on filter bags. The act of keeping the covers in place significantly reduces the volume of air required to contain the fumes, thus reducing power requirements for this pollution control activity.

ii. The size of proposed additional extraction points, and the volume of air proposed to be collected for each additional extraction point

There are no additional extraction points proposed for 6BF casthouse floor runners compared to the previous campaign.

In comparison to 5BF, 6BF has one extra extraction point, that is, a secondary hood at the taphole. The secondary hood is a movable hood that can be placed over the taphole to collect fumes that rise from this area which are not collected by the extraction point directly adjacent to the taphole. This extra collection point was operational in the previous 6BF campaign. The combined flowrate at the inlet of the casthouse baghouse is 19,155 Am^3/min.

A comparison of casthouse floor fugitive dust emissions from 5BF and 6BF when both furnaces were operational shows that 6BF experienced approximately 50% less fugitive dust emissions from the casthouse floor. In regard to 'significant' dust emissions, that is, emissions that are reportable to the EPA, 6BF recorded approximately 70% less emissions in comparison to 5BF over the same period.

iii. Where additional air extraction will be piped too, and how collected fugitive air emissions will be treated

All of the collected air is piped to the existing common casthouse baghouse. There are no proposed changes to this system from the previous 6BF campaign.

iv. If there are fugitive emission points that aren't proposed to include fugitive emission capture and control as part of the proposal

There are no fugitive emissions points that are not covered by the system described above.

Comment

b. Slag handling

AQIA, Section 10.2 states that cold water slag granulation with a condensing unit is proposed to minimise H_2S generation for 6BF. The condensing unit uses water sprays to condense steam generated during granulation. This condensate is collected and circulated through a cooling tower with the water from slag dewatering. H_2S emissions from the granulation process may be emitted from the slag granulation cooling tower. This is a change to operations since previous 6BF operating campaigns.

The AQIA is based on H_2S sampling data collected for 5BF. The AQIA does not provide an assessment (quantitative or qualitative) of the potential reduction in H_2S emissions that could be achieved through the implementation of this proposed process modification.

Recommendation

EPA requests details of how the slag handling area will be configured, a clear description of the process flow, equipment, and infrastructure, and additional details on the anticipated changes in H_2S emissions.

Response

As noted in section 6.3.2 of the AQIA, a reduction in H_2S emissions from the slag granulating system is anticipated in comparison to existing operations due to use of a condensing unit which uses water sprays to condense steam generated during granulation. This is a new control mechanism that is not used for 5BF and was not used in the previous 6BF campaign. Current 5BF sources emit H_2S emissions without any prior condensation treatment.

A process flow diagram of the slag granulation system currently in use at 5BF is provided in Figure 5.2. Molten slag generated in the blast furnace is fed into the granulation tower via the slag runner. In the granulation tower, the molten slag stream is subjected to a continuous stream of high-pressure water. The resulting slag granulate and water form a slurry which is pumped from the granulation tank into a dewatering drum. The dewatered slag granulate is conveyed from the dewatering drum into a stockpile. The water removed from the slurry is collected, cooled and reused. Steam generated in the granulation tower is subsequently emitted from a stack. These stacks are sampled once per quarter for hydrogen sulphide in compliance with EPL 6092 requirements.

The proposed granulation system at 6BF differs in the way slag is fed into the granulation tower, and by incorporation of a condensing unit in the design to capture the steam generated in the granulation tower. Due to the location of the slag handling area at 6BF compared to 5BF, the slag must be transported from the casthouse floor to the granulator. At 6BF, the slag runner feeds the molten slag into a slag pot which is transported to the granulator using a Kress carrier (see Figure 5.5). The Kress carrier transports the slag to the granulator and pours it into the granulation tower. The granulation process is the same as described for 5BF. The condensing unit uses cooled water to condense the steam arising from the granulation tower, condensing it so that it falls back into the granulation bath where it is combined with the rest of the water from granulation that is collected cooled and reused. This process is demonstrated in Figure 5.3.

The reduction in H_2S emissions is expected because some of the H_2S contained in the steam is dissolving into the cooling tower water, thereby decreasing the total amount of H_2S in the steam. Consequently, H_2S emissions would decrease, as some mass of H_2S is now captured within the cooling tower water instead of being emitted to air. The reduction in H_2S is difficult to quantify. Therefore, dispersion modelling made use of historic 5BF data. Use of the historic 5BF data is considered conservative as no reduction factor (to account for H_2S being dissolved and consequently removed from the emission) was applied to the H_2S emissions.

Works are currently underway with the Original Equipment Manufacturer (OEM) to better understand future emissions especially any potential emissions reductions however, performance guarantees for H_2S emissions from the proposed granulation system have not been received at this time.

The layout of the proposed slag handling area is shown in Figure 5.4.

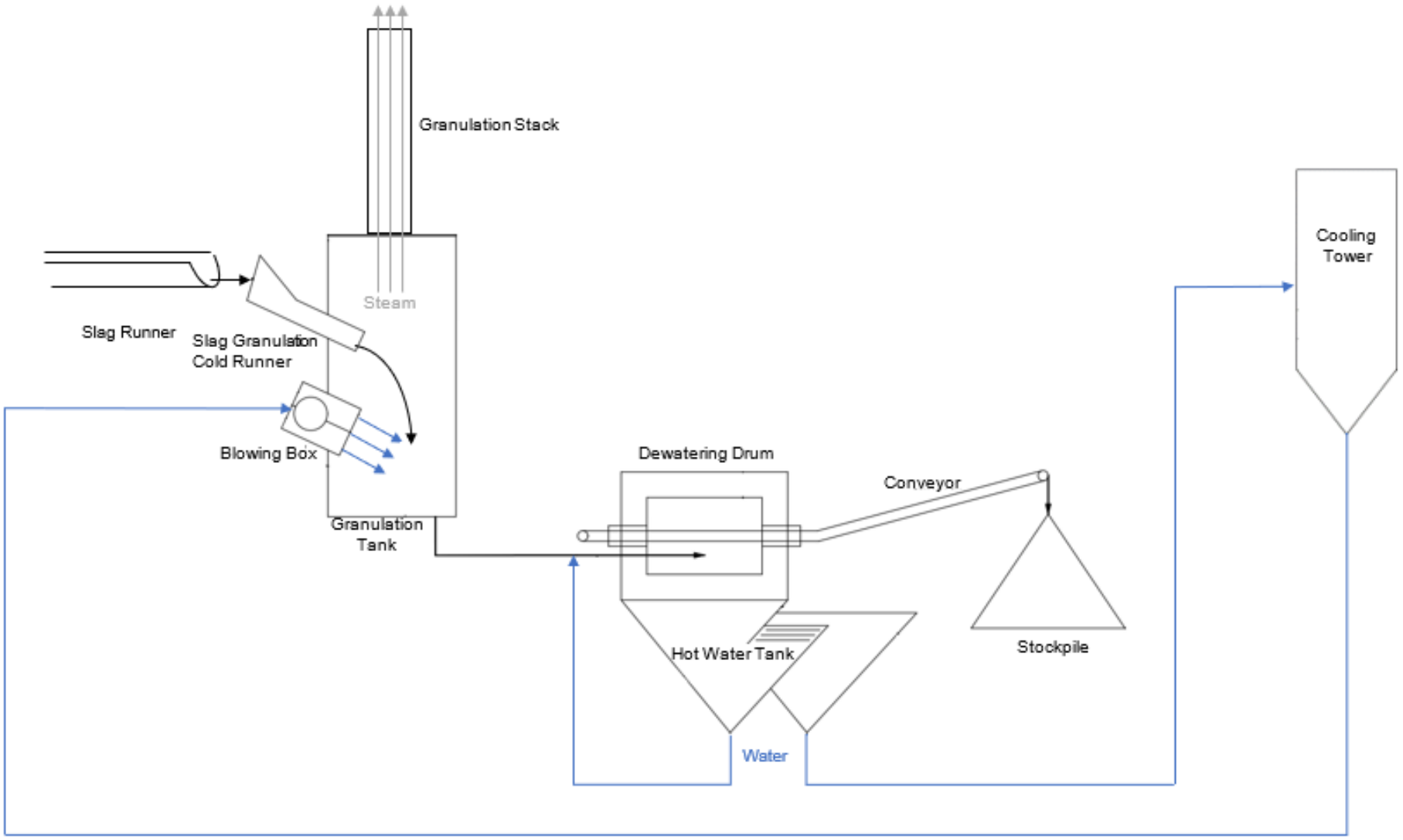

Figure 5.2 5BF slag granulation process overview

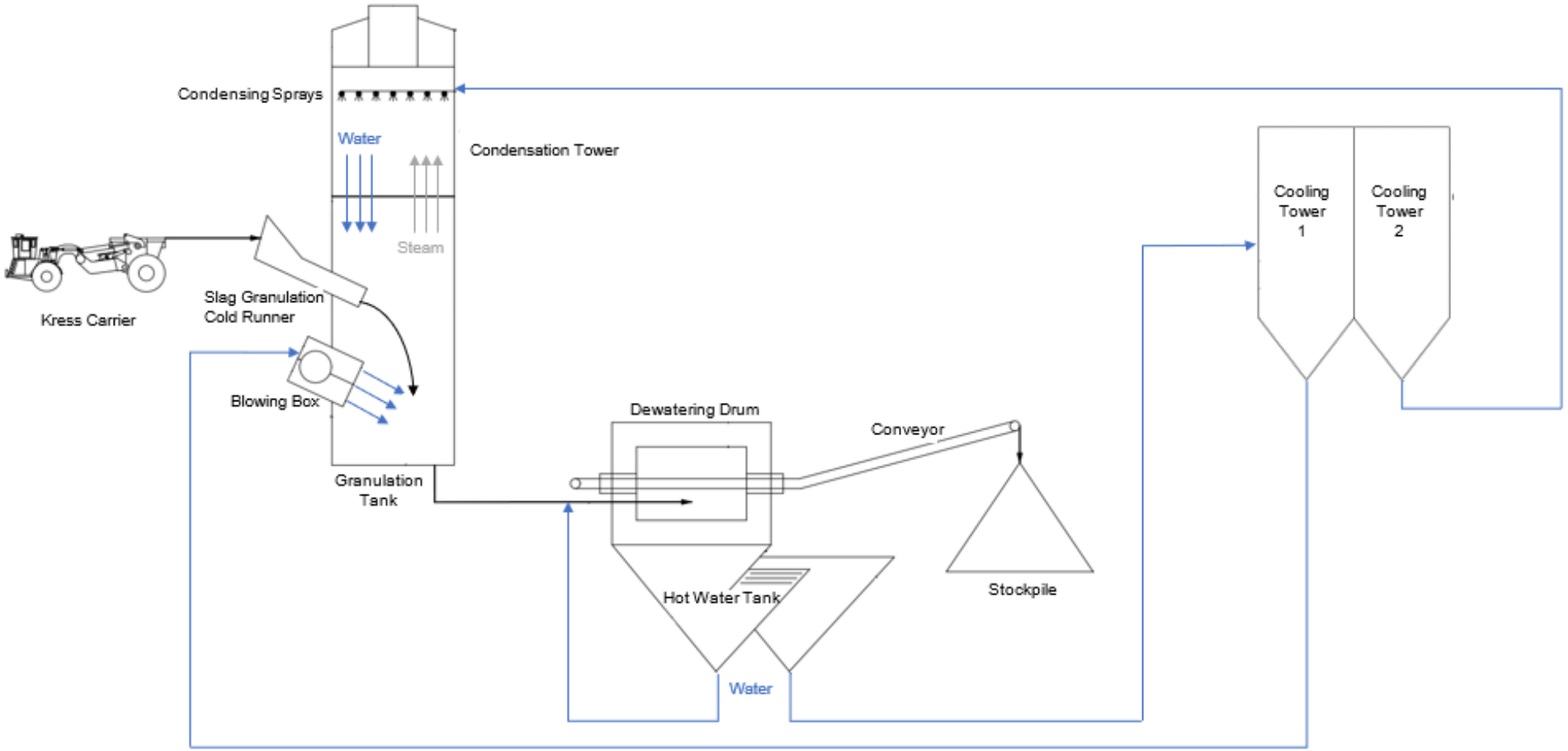

Figure 5.3 6BF slag granulation process overview

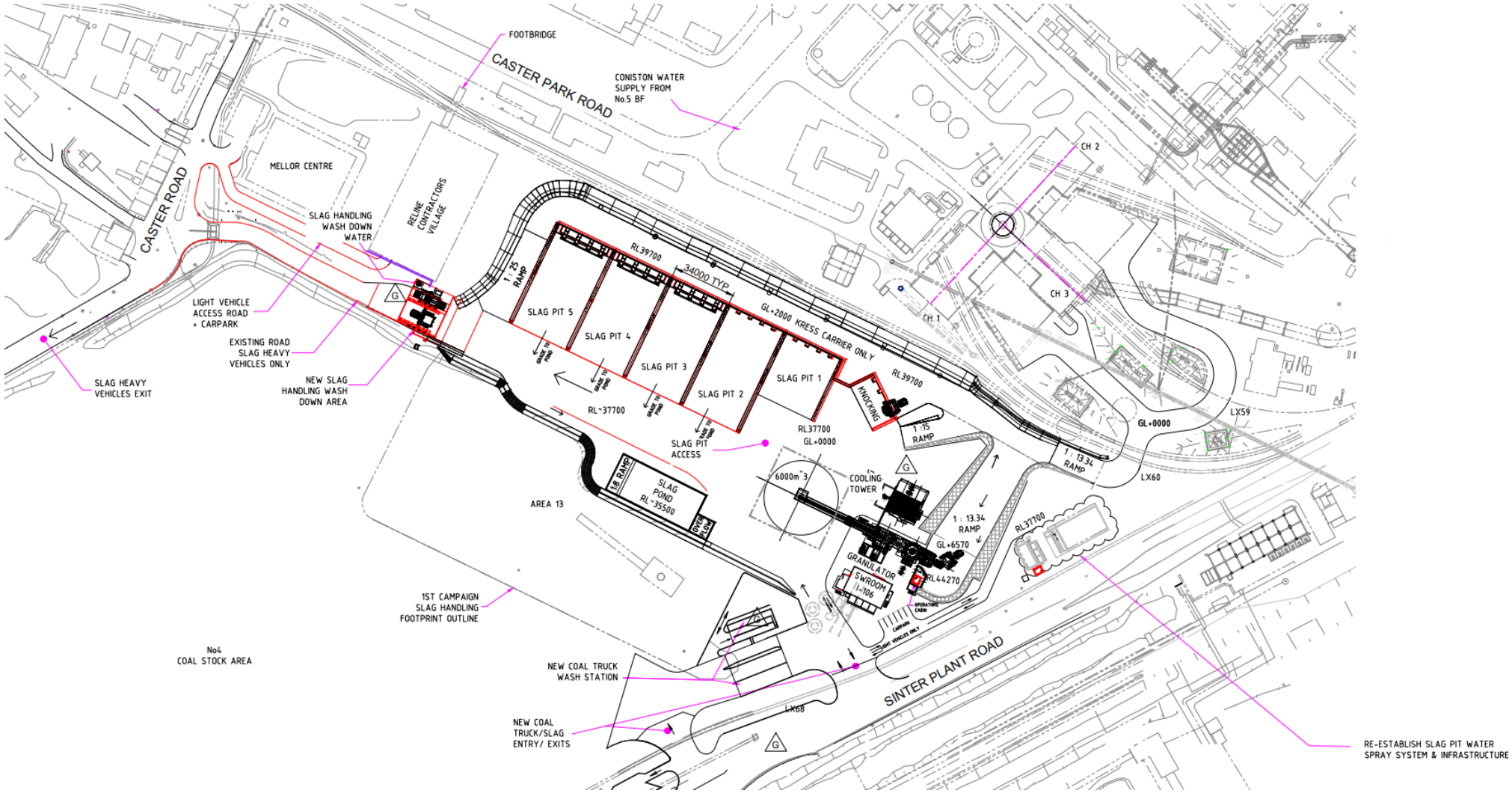

Figure 5.4 ***Proposed slag handling area layout***

Comment

c. Hot Blast Waste Gas Heat Recovery

Table 9.18 outlines that the proposed recovery of waste heat from the hot blast stoves would allow for a reduction in fuel consumption. However, any fuel reductions or changes to air emissions (with the exception of greenhouse gas emissions) have not been presented (qualitatively or quantitatively)

Recommendation

For each of the above controls or systems (a-c), where practicable to do so, a quantitative assessment of the potential emission (or fuel reduction) changes that could be achieved (as compared with emissions from previous 6BF operating campaigns) should be provided. If this is not practicable, a qualitative assessment and detailed description should be provided.

Response

BlueScope is still in discussions with equipment manufacturers regarding the technical specifications for equipment proposed for the 6BF campaign. As confirmed technical specifications are not currently available, a quantitative assessment of potential emissions or fuel usage reductions could not be undertaken for the EIS. Therefore, a qualitative discussion is provided below for each control or system.

a) Casthouse and iron kish

As noted above, there are currently no proposed changes to the casthouse dedusting system beyond the system which was in place for the previous 6BF campaign. Therefore, it is expected that casthouse emissions will be similar to the first 6BF campaign and improved over those from 5BF.

In addition to the covered runners, extraction at the taphole, and the secondary dedusting hood at the taphole previously discussed, there is also extraction at the iron tilting spouts where molten iron is transferred to torpedo ladles, and at the slag tilting spouts where molten slag is transferred to slag pots to collect any fugitive dust emissions generated during the transfer process. The dust collected reports to the casthouse baghouse. The torpedo ladles and slag pots will also be fitted with level sensors to ensure they are filled in a controlled manner, reducing the amount of dust generated. This process is consistent with current 5BF operation and previous 6BF operation.

b) Slag handling

Molten slag generated at the furnace is collected in slag pots and transported to the slag handling area in large mobile machinery, called Kress carriers. An example of a Kress carrier transporting a slag pot during 6BF previous campaign is presented in Figure 5.5. The slag is transported to the granulator or to pit via dedicated internal roadways.

As described in Section 6.3 of the AQIA, potential emission reductions from slag granulation are not known and emissions included in the assessment have been estimated based on emissions from 5BF slag granulation. Works are currently underway with the equipment manufacturer to better understand the potential emissions reductions.

It is BlueScope's intention that the slag granulator will operate as much as possible, however, there will be periods in which the slag pits will be used, due to granulator maintenance and market demand for rock slag. As shown in Figure 5.4, five slag pits will be available during 6BF operation. Slag in the slag pits will be air-cooled for 24 hours before quenching water is sprayed onto the pits. Currently at 5BF, quenching water is applied approximately 10 minutes after flow to the pits is stopped, as there is only one pit per casthouse and the pit needs to be dug out within 3 hours to facilitate the next pour. Leaving the slag for 24 hours before application of quenching water allows for the slag to partially cool, which significantly reduces the amount of sulphurous gases produced.

Dust suppression for roadways, stockpiles and loading areas is included in the design of the slag handling area.

Figure 5.5 Slag pot Kress carrier in operation during previous 6BF campaign

c) Hot blast waste gas

The stoves are three large, steel shell, refractory lined, pressure vessels that are used to preheat and pressurise a volume of air to temperatures in excess of 1,200°C to provide the hot blast to the blast furnace. The stoves are supplied Blast Furnace Gas (BFG) as the combustion gas in combination with Coke Ovens Gas (COG) and natural gas. COG and natural gas are used as enrichment gases to increase the calorific value of the BFG to achieve the high temperatures required for the hot blast. These gases are mixed dependent on the heat demand required, and then combusted within the stove with a combustion air supply to achieve the target temperature.

The proposed stove Waste Gas Heat Recovery (WGHR) system reclaims heat from the stove flue gases, which would otherwise be emitted to the atmosphere, to preheat the air and fuel used for heating the stoves. Therefore, the recovery and reuse of energy for heating reduces the amount of enrichment gas required for heating the stoves. A reduced use of COG in the stoves is expected to reduce sulphur emissions from the stoves stack.

A new burner style is proposed for the project. The new burner design provides potential for more efficient mixing of the air and gas streams, improving the combustion properties within the stoves. This is expected to reduce CO and NOx emissions through improved burner efficiency.

A study of emission reductions resulting from the installation of the WGHR system and the new burners is currently underway with the equipment manufacturer.

5.2.2.2 Further assessment of identified best practice measures

Comment

The AQIA provides an assessment of Best Available Techniques (BAT) for the proposed 6BF operations. The assessment references the BAT conclusions contained in the European Commission BAT Reference Document for Iron and Steel Production.

Blast Furnace Gas

BAT 64 as referenced in the AQIA is to reduce blast furnace dust emissions by using a combination of techniques. The BAT associated emission level for cleaned blast furnace gas is a dust concentration < 10 mg/m³ determined over the sampling period. The AQIA states that BSL will achieve this emission level however no data, explanation, or comparison has been provided to support this conclusion.

Additionally, the emission concentration contained in Table 7.2 [of the AQIA] appears incorrect (possibly due to a unit conversion error). EPA estimate a TSP discharge concentration of 19 mg/Nm³ for No 6 Blast Furnace Stove Waste Gas Stack, whilst the AQIA states a TSP discharge concentration of 0.019 mg/Nm³. Where this data has been used to inform the AQIA conclusions (including the benchmarking against best practice), it should be revised and resubmitted as necessary.

Recommendation

EPA requests information on:

a. how the referenced dust concentration will be achieved and

b. clarification and inclusion (as necessary) of any revised emission rates in the AQIA.

Response

Further information on EPA points is provided below:

a. How the referenced dust concentration will be achieved:

The BAT associated emission level for cleaned blast furnace gas is a dust concentration < 10 mg/m^3 (determined over the sampling period). Emissions testing data of total solid particulates (TSP) of cleaned blast furnace gas at 5BF recorded concentrations of < 10 mg/m^3 as detailed in Table 5.12, reproduced from BlueScope's *Air Quality Report No5 Blast Furnace Clean Gas Main June – July 2015*.

Table 5.12 Cleaned blast furnace gas total particulate matter concentrations at 5BF

Date	Analyte	Concentrations (mg/m^3, 101.3 kPa, 0°C, dry)
23/06/2015	TSP Run 1	5.4
03/07/2015	TSP Run 2	< 1

Emissions testing data of TSP of cleaned blast furnace gas from the previous operation of 6BF recorded concentrations of < 10 mg/m^3 as shown in Table 5.13, reproduced from BlueScope's *Air Quality Report No6 Blast Furnace Clean Gas Main September – November 2009*. TSP concentrations during the new 6BF campaign are therefore expected to be < 10 mg/m^3 in accordance with the BAT associated emission level.

Table 5.13 Cleaned blast furnace gas total particulate matter concentrations during previous 6BF operation

Date	Analyte	Concentrations (mg/m^3, 101.3 kPa, 0°C, dry)
08/09/2009	TSP Run 1	3.8
09/09/2009	TSP Run 2	3.5

b. Clarification and inclusion (as necessary) of any revised emission rates in the AQIA:

It is acknowledged that a unit conversion error was presented in Table 7.2 of the AQIA relating to the concentrations of TSP, NOx and H_2S. It should be noted that the conversion error was limited to Table 7.2 only, and no other tables or assessments were affected. A revised version of AQIA Table 7.2 is provided as Table 5.14. The revised pollutant concentrations remain compliant with the Protection of the Environment Operations (Clean Air) Regulation 2021 Group 6 standards of concentration for primary iron and steel production.

Table 5.14 Revised summary of emission limit assessment

ID	Description	Pollutant concentration (mg/Nm^3)					
		TSP	**NOx**	**H_2S**	**Type 1 substances and Type 2 substances (in aggregate)** [15]	**Cadmium (Cd)** [15]	**Mercury (Hg)** [15]
POEO standard of concentration for Iron and steel: primary production (Group 6)		**50**	**500**	**5**	**1**	**0.2**	**0.2**
EPA003	No 6 Blast Furnace Stove Waste Gas Stack	19	104	0.3	-	-	-
EPA004	No 6 Blast Furnace Cast House Dedusting Stack	17	-	-	-	-	-
EPA005	No 6 Blast Furnace Stock House Dedusting Stack	16	-	-	0.040	0.00042	0.00023

Concentrations for total solid particles and hydrogen sulphide at the 6BF stove waste gas stack provided in Table 5.14 are based on pollutant mass emissions rates calculated using the results of emissions of BFG, COG and natural gas analysis at an alternate location, annual gas consumption, and proposed normalised exhaust flowrates during the previous campaign of 6BF. It is of note that the calculated emission rates are applied to both 5BF stove emissions and 6BF stove emissions. The emissions rates used for the assessment were those calculated when 6BF was last operating. The current emission rates for the 5BF stoves have decreased since this time.

As a consequence, the modelled mass emission rates and corresponding concentrations used in the AQIA for these pollutants at the stove stack may be conservative due to conservativisms adopted within the emission factors.

Comment

Hot Blast Stoves

BAT 65 as referenced in the AQIA for hot blast stoves is to reduce emissions by using desulphurised and dedusted surplus COG, dedusted blast furnace gas, dedusted basic oxygen furnace gas and natural gas, individually or in combination.

[15] Normalised flowrate calculated based on most recent available sampling data

BAT associated emission levels are referenced in the AQIA which are determined as a daily mean value related to an oxygen content of 3 %. The AQIA outlines that the 6BF stoves use dedusted blast furnace gas, dedusted coke oven gas and natural gas. The AQIA advises that current emissions do not achieve the associated BAT emission levels, however reductions in emissions are anticipated.

A comparison of the emission performance at the BSL premises against the BAT emission levels has not been included to understand any disparity between current/future emissions and the referenced BAT emissions levels.

EPA also notes that the referenced BAT emission levels are daily averages. It is not clear if there is emission data available to inform a comparison against emission levels derived for a daily averaging period. There may be limitations to such comparisons depending on data availability.

Recommendation

Where reasonable and practical to do so, the proponent provide a comparison for 6BF performance against the BAT emission levels referenced.

Response

A comparison of modelled 6BF emissions against the applicable European BAT emission levels is provided in Table 5.15. The findings of this comparison should be interpreted alongside knowledge that mass emission rates for total solid particulates (TSP) at the 6BF Stove Waste Gas stack are calculated rates which are considered conservative, as described above.

Mass emission rates for all other pollutants in Table 5.15 are based on results acquired from stack sampling. The data is not a daily average, rather it is based on shorter averaging periods.

Table 5.15 6BF emissions performance BAT comparison

ID	Description	Pollutant concentration (mg/Nm^3)		
		TSP	SO_2	NOx
EPA003	*BAT - hot blast stoves (daily mean value related to an oxygen content of 3 %.*	*< 10 mg/Nm^3*	*< 200 mg/Nm^3*	*< 100 mg/Nm^3*
	No 6 Blast Furnace Stove Waste Gas Stack	19	341	104
EPA004	*BAT for casting house*	*<1 – 15 mg/Nm^3*	*N/A*	*N/A*
	No 6 Blast Furnace Cast House Dedusting Stack	17	-	-

The modelled 6BF emissions are above the European BAT emissions levels at sources EPA003 and EPA004.

The exceedance of the BAT pollutant concentration for TSP at the 6BF Stove Waste Gas stack in Table 5.15 is considered to be a result of the conservatism that was adopted in emissions estimation for the assessment (i.e. the use of calculated emissions factors and annual gas consumption rates). The conservatism resulted in increased pollutant emissions which increase the predicted pollutant ground level concentrations. Revised dispersion modelling using a lower pollutant mass emission rate is not considered useful as the current modelling (which assumed a higher emission rate) predicted compliance with the assessment criteria. Therefore, revised modelling using a lower pollutant mass emission rate would predict a higher margin of compliance.

SO_2 and NOx concentration at the 6BF Stove Waste Gas Stack are based on continuous gas analysis sampling results. These results are not oxygen corrected. Emissions testing data of continuous gases at the 6BF Stove Waste Gas Stack from the previous operation of 6BF is presented in Table 5.16, reproduced from BlueScope's *Air Quality Report No6 Blast Furnace Stoves June - August 2008*.

Table 5.16 BF Stove Waste Gas Stack sample results from previous 6BF operation (2008)

Stove	Pollutant concentration		
	SO_2 (mg/Nm^3)	NOx (mg/Nm^3)	O_2 (%)
61 Stove	200	84	4.4
62 Stove	180	50	2.9
63 Stove	270	99	3.8

As previously discussed, the proposed installation of the WGHR system and the new burner design at the stoves are expected to result in emission reductions for SO_2 and NOx concentrations due to reduced enrichment gas use and improved burner efficiency, respectively. As the potential emission reductions remain the subject of a study currently underway by the equipment manufacturer, previous emissions data was used in the AQIA.

The BAT pollutant concentration for TSP at the casthouse dedusting stack is exceeded by 2 mg/Nm^3 in the modelled 6BF emission. The mass emission rates used in the assessment are based on results obtained during the previous operation of 6BF. While slightly above the emissions range in the BAT document, these emissions are significantly below the Protection of the Environment Operations (Clean Air) Regulation 2021 Group 6 limit of 50 mg/m^3 for any furnace used in the primary production of iron and steel. The overhaul of the dedusting system planned as part of the project may result in improved emissions performance however, this factor was not taken into consideration for this assessment.

5.2.2.3 Fuel types

Comment

It is unclear if the development application incorporates new alternative fuels.

The EIS describes proposed additional technologies as part of the project. This includes dual lance tuyeres which would allow the use of supplementary gaseous fuels such as COG or hydrogen gas.

EPA supports the use of alternative or new fuels which result in environmental improvements or improved equipment/site efficiencies. New or alternative fuels could result in a change in air emissions and impacts. When seeking any approval for use of alternative fuels as part of this development application, then an assessment of the air emissions, changes on current emissions, and potential air quality impacts associated with the use of alternative fuels should be provided.

Recommendation

EPA requests clarification on the planning process. That is, if BSL is seeking approval for these alternate fuels in this application, or if they would be the subject of future modifications or development applications.

Response

BlueScope is not seeking approval for the use of alternative fuels at this time. The design and installation of dual lance tuyeres to enable COG and hydrogen gas injection to offset the use of pulverised coal at the blast furnace is included in the scope of the project and therefore in the EIS. However, the EIS did not include an assessment of the impacts of COG and hydrogen gas injection into the blast furnace.

An assessment of the impacts of COG and hydrogen gas injection will be undertaken in conjunction with the High Pressure COG facility and Hydrogen Electrolyser projects.

5.2.2.4 Measures to minimise air emissions during commissioning

Comment

The AQIA states that the commissioning period will take several months with the furnace blown in and gradually uprated to full production over 6 weeks. The AQIA identifies the potential for visible emissions during commissioning and reduced capacity of the dedusting system during parts of the commissioning phase. Details on the measures to minimise emissions during this period have not been provided.

The AQIA explains that during the commissioning period, combustion pollutants will occur during charging, purging and heating of the furnace. During blow-in, gas generated during the initial combustion period varies slightly in composition when compared to blast furnace gas and is unable to be re-used in other areas at the premises. This gas will be vented through the furnace top bleeders being directed through the gas cleaning system. The AQIA states that this will result in visible emissions for a period of approximately two to three hours. Additionally, the AQIA states the cast house dedusting system will be operating with reduced capacity during the initial commissioning phase.

Recommendation

EPA seeks further information on the gas cleaning system to be used during the commissioning phase, and the proposed measures to minimise emissions during commissioning. EPA suggests that some of this information could be used to inform a future commissioning management plan which would also incorporate community consultation and information distributed in advance of the commissioning period.

Response

Blast furnace commissioning is a complex process which is highly managed to ensure safety of on-site personnel and community members.

During the blow in of the furnace, it is expected that the composition of the gas coming off the top of the furnace will be such that it contains significant quantities of oxygen. If this gas is introduced to the interworks reticulated gas system too early, there is a significant risk of ignition and potential explosion. BlueScope will be monitoring the quality of this gas to understand when it is safe to introduce the gas to the interworks system for consumption by other users within the steelworks (including the blast furnace itself).

When the furnace begins to cast molten liquids for the first time, it will not be at a normal operating temperature, and as such will be more viscous than usual. Left unattended, these liquids will tend to coagulate in the runners leading to a real risk of overflow onto the casthouse floors, which can result in injury or damage to equipment. To address this issue, it will be necessary to cast molten liquids without all of the normal runner covers in place, compromising the overall effectiveness of the casthouse dedusting system. BlueScope will be employing its operational experience to ensure that this period of uncovered operation is minimised to the greatest extent possible.

A summary of the status of proposed controls during commissioning is provided in Table 5.17. Commissioning of 6BF would be in accordance with industry best practice procedures to minimise air quality impacts as far as practicable. A commissioning management plan or similar along with a community consultation plan would be prepared and distributed to relevant stakeholders and the community prior to the commissioning period to help manage any concerns.

Table 5.17 Summary of proposed controls during commissioning

Proposed control	Status	
	During operation (reproduced from Table 5.11)	**During commissioning**
Manipulator and Trough Covers	Operational in previous 6BF campaign	Manipulator and trough covers will be removed during commissioning. Cast house dedusting system is operational, albeit operating at reduced efficiency due to the removal of the runner covers during commissioning.
Extraction at trough and tapholes	Operational in previous 6BF campaign	Extraction at the taphole will be operating during commissioning. During this period, tapholes are open, allowing escape of combustion gases until enough slag is generated to seal the tapholes.
Lowered tilting platform during casting	Operational in previous 6BF campaign	Tilting platforms will be lowered during commissioning.
Extraction at iron ladles and slag tilting spouts	Operational in previous 6BF campaign	Extraction at iron ladles and slag tilting spouts will be operational during commissioning.
Slag handling condensing unit	New control	N/A
Stove hot blast waste gas heat recovery	New control	Not operational during commissioning

5.2.3 Noise

5.2.3.1 Sound power levels

It is noted that the EPA considers the proposal relatively low risk given the history of noise performance of the BSL premises. The operational noise impact assessment has been undertaken against the Noise Policy for Industry (NPfI – EPA, 2017).

Comment

Sound Power levels supporting the Noise Impact Assessment (NIA) draw on previous studies for 5BF derived by measurement. This approach is preferred by EPA over data base type libraries of similar plant.

Recommendation

The proponent must confirm that the modelled sound power levels in the original 5BF assessment are reasonable and appropriate for this NIA. The EPA requests that the proponent confirm that 5BF is meeting its original design noise objectives.

Response

The modelled sound power levels for 6BF are based on measurements undertaken from the original 5BF noise assessment for similar or identical equipment. Where noise data was unavailable, additional noise measurements were undertaken in 2021 at 5BF to supplement the source noise inventory informing the 6BF noise modelling. This approach is considered appropriate and reasonable as it based on in-situ noise measurements of similar equipment.

The 5BF reline project was conducted under the Department of Planning Development Approval Number 113-5-2005i. This Development Approval included a number of Conditions of Consent associated with noise levels generated by the development. These conditions can be summarised as:

- Condition 3.9 Operational noise limit of $L_{Aeq(15min)}$ 35 dBA to be met the most-affected residences
- Condition 5.2 Noise performance verification
- Condition 5.3 Remedial measures required if the requirements of Condition 3.9 are not met

A noise compliance report, *No. 5 Blast Furnace Reline Project – Environmental Noise Compliance Report* (Hatch and BlueScope Steel, 2009) was prepared to verify the noise performance of 5BF to address Condition 5.2. The assessment concluded that:

- *'statistical environmental sound levels at both boundary and receiver locations were not significantly increased following the development; and*
- *'the development has not exceeded the contribution sound level objectives of 35 dBA at the nearest residential receivers*'

In addition to the above, BlueScope Steel operates a complaint receiving and recording system. Since 2012 (as far back as the current complaints system records as held), there have been no noise-related complaints relating to 5BF activities.

5.2.3.2 EPL Limits

Comment

The EIS proposes that the 6BF satisfy existing EPL limits for 5BF and for the combination of the 6BF and the slag handling area and stockhouse to satisfy existing Port Kembla Steel Works current noise emissions minus 10dB so that the total site noise does not increase. This approach is allowable under the NPfI (s.6.1) and is commonly termed the "discrete process" approach.

This discrete criteria approach has been developed from monitoring undertaken by SLR in 2018 at three locations. These locations are identified as M2, M5 and M6 in the assessment but are not clearly marked in Figure 5-1. The NIA requires additional justification that noise levels at these 3 monitoring locations (M2, M5 and M6) are suitable to describe existing site noise levels at all residential locations surrounding the steelworks.

Recommendation

EPA requests the proponent:

a. clearly identify locations M2, M5, & M6 on Fig 5.1

b. provide additional justification that the noise levels and monitoring locations (M2, M5 and M6) used to derive the discrete process assessment levels (SLR, 2018) are appropriate and representative of long-term noise emissions from the Port Kembla Steel Works

c. provide additional information to inform the discrete process assessment levels

Response

An environmental noise survey was undertaken as part of the report, *BlueScope Steel – Port Kembla N&V Compliance Monitoring August 2018* (SLR, 2018). The SLR 2018 noise monitoring locations M1 (included for an additional reference and comparison), M2, M5 and M6 are shown in Figure 5.6.

The survey locations in the SLR (2018) are considered appropriate to establish the existing noise levels at residential location surrounding PKSW as they generally capture and represent the most-affected residences with regards to proximity and line-of-sight to the PKSW site. Google street view images showing the indicative noise monitoring locations and the view of the Port Kembla Steel Works from each monitoring location are shown in Table 5.18. The SLR noise survey locations are also considered representative of the most-affected residences that would be exposed to noise from the 6BF. In view of this, it was considered appropriate to use the noise survey data from SLR to determine existing noise levels informing the discrete process assessment levels.

Table 5.18 Google street view of SLR noise monitoring sites

SLR ID	Monitoring location	Google street view image
M1	Wentworth Street, Port Kembla	

SLR ID	Monitoring location	Google street view image
M2	Flagstaff Road, Lake Heights	
M5	Merrett Avenue, Cringila	

SLR ID	Monitoring location	Google street view image
M6	Corner of Hill Street and Ocean Street, Mt. St. Thomas	

Figure 5.6 also shows the monitoring locations where long-term noise monitoring was undertaken for the *No. 5 Blast Furnace Reline Project – Environmental Noise Compliance Report* (Hatch and BlueScope Steel, 2009) that are generally consistent with the 2018 locations. These locations have been identified as:

- A1 – Corner of Hill Street and Ocean Street, Mt St. Thomas (similar to M6 from SLR report)
- A2 – Merrett Avenue Carpark (similar to M5 from SLR report)
- A3 – 9 Lawarra Street, Port Kembla (similar to M1 from SLR report)

A summary of the measured L_{A90} (background) noise levels and the L_{Aeq} (ambient) noise levels during the night period from both the 2009 and 2018 noise surveys is presented in Table 5.19. The results of the noise monitoring surveys indicate that the 2018 measured noise levels are generally consistent with the noise levels measured in 2009 (post-reline operations) and likely have reduced at Merrett Avenue and in Mt St Thomas. It is difficult to accurately determine the long-term noise levels from the PKSW to the surrounding receivers, however using the lower of the two noise monitoring levels (2009 and 2018) to set the NPfI discrete assessment criteria (discussed later) is considered conservative as it results in a lower criteria for the assessment of noise emission from 6BF.

Table 5.19 Comparison of previous noise monitoring surveys undertaken for BlueScope

6BF NVIA NCA	2009 DA Condition 5.2 survey (Hatch)			2018 noise monitoring survey (SLR)		
	Measurement Location	Night industrial noise level from PKSW		Measurement location	Night industrial noise level from PKSW	
		L_{A90}	Min L_{Aeq}[1]		L_{A90}	L_{Aeq} – SLR estimated contribution
NCA01 and NCA02	Hill Street / Ocean Street, Mt. St Thomas (A1)	~48	~50	Hill Street / Ocean Street, Mt. St Thomas(M6)	39	~41
NCA03	Merrett Avenue (A2)	~51	~55	Merrett Avenue, Cringila (M5)	51	~51
				Flagstaff Road, Lake Heights (M2)	45 to 47	~48
NCA04	9 Lawarra Street (A3)	~42	~47	Wentworth Street, Port Kembla (M1)	51	~51

Notes:

1. The contribution of the BlueScope steelworks site could not be determined based on the presented measurement data. The minimum LAeq noise level has been presented in this table to represent a conservative estimate of the BlueScope noise contribution to the overall L_{Aeq} noise level.

The EIS noise assessment aims to assess the noise emission from the 6BF noise sources against two separate assessment noise levels to ensure future noise levels do not adversely impact the acoustic amenity of nearby residences. The two assessment noise levels can be summarised as:

- Assessment against the existing EPL 6092 noise limit of L_{Aeq} 35 dBA for 5BF at the most-affected residences for the blast furnace operations (excluding the stockhouse and slag handling areas that currently do not fall under the existing EPL noise limits)
- The Noise Policy for Industry discrete assessment process. This is described in Section 6.1 of NPfI and is reproduced below:

  "Where a development proposal involves a discrete process and premises-wide mitigation, has or is to be considered outside of the development proposal, a project noise trigger level for noise from new/modified components (not the whole site) of the operation may be set at 10 dB(A) or more below existing site noise levels or requirements. This approach means that the increase in noise from the whole site is minimised and provides scope for existing components to achieve noise reductions over time.'

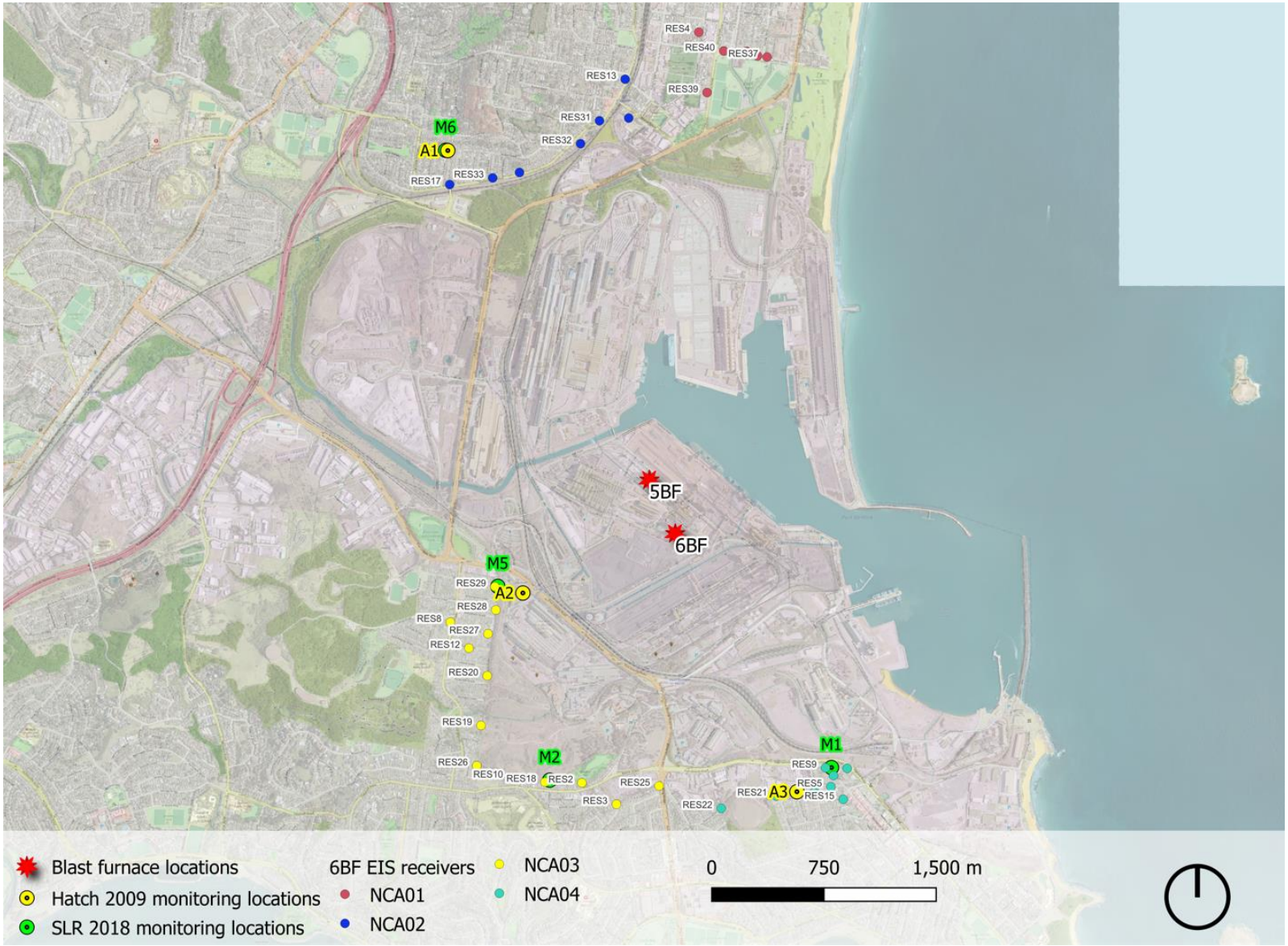

Figure 5.6 Previous noise monitoring survey locations and sensitive receiver locations

The 6BF EIS noise assessment results indicate that EPL 6092 noise limit of L_{Aeq} 35 dBA is predicted to be met for noise sources associated with the 6BF (hot blast, conveyor, blasts, bag houses, furnace top, gas cleaning, and cooling).

Based on Section 6.1 of the NPfI, the discrete assessment noise levels have also been established for all additional noise sources associated with the 6BF reline project (blast furnace, charging system and slag handling areas). The discrete assessment noise levels are based on the lower of the SLR (2018) and the Hatch (2009) noise monitoring results of the existing industrial noise levels as a conservative assessment approach.

Table 5.20 presents the discrete assessment noise levels for each noise catchment area and the predicted noise level at the closest residences to the monitoring locations (also generally the most-affected residences in the NCA). The results indicate that the 6BF noise emission levels are predicted to comply with the discrete assessment noise levels at all the most-affected residences surrounding the Port Kembla Steel Works site.

Table 5.20 Discrete assessment noise levels (NPfI Section 6.1), $L_{Aeq(15min)}$ dBA

6BF NVIA NCA	Existing site noise level from PKSW operations	Discrete assessment noise level and noise monitoring reference	Predicted noise level (Closest / most-affected residences)	Complies with NPfI discrete assessment noise level?
NCA01 and NCA02	41 (M6 - SLR 2018) 50 (A1 Hatch 2009)	**31 (M6 SLR 2018)** 40 (Hatch 2009)	28 (RES33) 27 (RES17)	Yes
NCA03	51 (M5 SLR 2018) 55 (A2 Hatch 2009)	**41 (M5 SLR 2018)** 45 (A2 Hatch 2009)	39 (RES29) 38 (RES28)	Yes
	48 (M2 SLR 2018)	**38 (M2 SLR 2018)**	35 (RES18) 34 (RES2)	Yes
NCA04	47 (Hatch 2009) 51 (M1 – SLR 2018)	**37 (A3 Hatch 2009)** 41 (M1 – SLR 2018)	35 (RES11) 34 (RES21)	Yes

Notes: The lower of the two monitoring noise levels has been used to establish the NPfI discrete assessment noise level and is considered conservative as it results in a lower assessment criteria. This discrete assessment noise level is highlighted in **bold**.

5.3 DPE - NSW Heritage

Comment

HNSW has reviewed the following documentation prepared to support the project, including the Environmental Impact Statement (EIS), dated 7 March 2022 prepared by GHD. From the information supplied, HNSW understands that up to 2011, two blast furnaces (Blast Furnace 5 (BF5) and 6BF) operated concurrently at the PKSW site, after which time 6BF transitioned into care and maintenance and BF5 remained in operation. The proposed reline of 6BF will allow the transfer of ironmaking from BF5 to 6BF when BF5 needs to be decommissioned between 2026 and 2030.

Previous HNSW advice (DOC21/497782-3) dated 30 June 2021 in relation to Secretary's Environmental Assessment Requirements (SEARs) issued for the project acknowledged the highly disturbed nature of the development site and recommended the SEARs include an avenue for consultation with the Aboriginal community. HNSW noted the requirement to identify 'potential impacts on Aboriginal cultural heritage values through consultation with the Aboriginal community' as per the SEARs issued for the project. HNSW is of the view that the consultation completed for the project does not currently satisfy the project SEARs by failing to provide adequate evidence to demonstrate how community consultation has been undertaken. HNSW recommends that additional information be supplied, clearly articulating how consultation with the Aboriginal community has been addressed by the proponent.

Response

BlueScope undertook consultation with members of the Illawarra Local Aboriginal Land Council (LALC) during and after the exhibition of the EIS. No issues were raised in relation to the project itself or its potential impact to Aboriginal places, artefacts, or cultural heritage. Details of the consultation undertaken are summarised in Appendix C.

In addition to consultation with the LALC BlueScope also undertakes regular consultation with other Aboriginal community groups as part of its First Nations Engagement Strategy. This includes regular meetings with the Warrigal Employment Illawarra Aboriginal Cooperation and Regional Development NSW – Aboriginal Partnerships Division. Details of recent meetings with these organisations are summarised in Appendix C.

5.4 Department of Premier and Cabinet – Heritage Council of NSW

Comment

The subject site is not listed on the State Heritage Register (SHR), nor is it in the immediate vicinity of any SHR items. Further, the site does not contain any known historical archaeological relics. Therefore, no further heritage comments are required. The Department does not need to refer subsequent stages of this proposal to the Heritage Council of NSW.

Response

Comment noted.

5.5 Fire and Rescue NSW

Comment

FRNSW made the following recommendations:

1. *That the site Emergency Response Plan (ERP) is updated to incorporate the use and storage of Class 1.1 explosives.*
2. *That two copies of the ERP are stored in a prominent 'Emergency Information Cabinet' which is located in a position directly adjacent to the site's main entry point/s.*
3. *That an Emergency Services Information Package is developed/updated as detailed in FRNSW guideline - Emergency Services Information Package and Tactical Fire Plans for use by responding firefighters - and stored along with the ERP in an 'Emergency Information Cabinet' which is located in a position directly adjacent to the site's main entry point/s.*

Response

BlueScope commits to:

– Updating the ERP to incorporate the use and storage of Class 1.1 explosives when the quantity required and appropriate storage location have been identified, prior to their use on site.
– Storing two copies of the ERP in a prominent 'Emergency Information Cabinet' located in a position directly adjacent to the project site's main entry point/s.
– Preparing an Emergency Services Information Package in accordance with the FRNSW guideline, which will be stored alongside the ERP in an Emergency Information Cabinet.

5.6 Wollongong City Council

5.6.1 Economic impact

Comment

Wollongong Council (Council) supports the project as a critical piece of economic infrastructure necessary for the continuation of steelmaking and growth of advanced manufacturing in the Illawarra region, supporting local employment outcomes as well as our national sovereign manufacturing capability. As noted in the Environmental Impact Statement (EIS), BlueScope currently supports around 4,500 direct employees and on-site contractors, generating about 10,000 jobs across the broader local supply chain. It is estimated that BlueScope's current operation generates around 24% per cent of the Illawarra region's economic output per annum. This project is also estimated to provide between 250 to 1,000 new jobs throughout the construction period. Retention of BlueScope's existing workforce and associated economic activity is crucial to supporting the ongoing economic viability of the Wollongong and regional economy. This aligns with a number of Council's strategic plans including the Wollongong 2028 Community Strategic Plan which commits Council to the development of an innovative and sustainable local economy as well as the Economic Development Strategy 2019-29, which includes a target of growing 10,500 net new jobs in Wollongong local government area by 2028.

Response

Council's acknowledgment of the economic importance of the project to the local and regional economies is noted.

5.6.2 Climate change

Comment

Wollongong City Council declared a Climate Emergency in August 2019. Council recognises urgent action is needed from all levels of government to address and combat climate change. Council plays an important leadership role in helping the community move towards the 'new normal' of a zero-carbon future. Council is reducing its greenhouse gas emissions to net zero by 2030 and supporting the community to do the same by 2050. Council encourages BlueScope to implement new technologies and iron making configurations as soon as possible.

Response

A Greenhouse Gas Report was prepared for the project and was attached to the EIS at Appendix J. As part of that report an assessment was made of the project's consistency with national, state and local government climate change strategies and policies. In relation to Wollongong City Council, the Report reviewed the project for consistency with the following documents:

– Wollongong City Council's Climate Change Mitigation Plan 2020
– Sustainable Wollongong 2030

As outlined in BSL's Climate Action Report (BSL, 2021), BSL is pursuing a goal of net zero scope 1 and 2 GHG emissions across all BSL operations by 2050 with interim targets to achieve by 2030. BlueScope is exploring a range of measures and technologies aimed at reducing its greenhouse gas emissions as detailed in Section 6 of the Greenhouse Gas Report. The reline of 6BF provides a 'bridge' to transition from the current blast furnace technology to new and emerging low emissions technologies when they are commercially available.

BlueScope intends to implement measures as they become commercially proven and economically viable. The implementation of these measures into the project is consistent with Objective 5 (Support the community and businesses to reduce their greenhouse gas emissions) of the Wollongong City Council's Climate Change Mitigation Plan 2020 as they would reduce the greenhouse gas emitted during operation. The project is also consistent with the priority objectives of the Sustainable Wollongong 2030 plan as detailed in the Greenhouse Gas Report that accompanied the EIS.

5.6.3 Biodiversity

Comment

We note that a Biodiversity Development Assessment Report (BDAR) is not required. Council's records indicate the site potential habitat for Green and Golden Bell Frogs (GGBF) and Council recommends stop work conditions of consent.

Response

To date, there have been no recorded sightings of GGBF in the project site. As detailed in Section 9.2 of the EIS, there is a known population of GGBF in the southern area of the PKSW site, approximately 1.4 kilometres from the project site. Potential impacts to this population are currently managed in accordance with the BlueScope procedure, *Management of Threatened Species, The Green and Golden Bell Frog, Litoria Aurea (BlueScope, 2020)*. As committed to in management measure B2 in the EIS, and Appendix B, this procedure would continue to be in place for the duration of the project despite the project not impacting the identified habitat corridor through the PKSW.

5.6.4 Environmental management

Comment

Conditions of consent are recommended regarding demolition, safe asbestos handling and disposal, sediment and erosion controls, acoustic and air quality monitoring, environmental licences, dust suppression, construction environmental management plan and acid sulfate soils.

Response

As a result of the detailed environmental assessment undertaken in the EIS, a range of environmental management measures were recommended commensurate with the potential impacts of the project.

5.6.5 Flooding

Comment

No flooding controls are considered necessary.

Response

Councils comment that no flooding controls are deemed necessary is noted.

5.6.6 Stormwater

Comment

Conditions of consent regarding stormwater discharge are recommended. Council's relevant policy is Wollongong Development Control Plan 2009 (DCP) Chapter E14: Stormwater Management.

Response

Noted. BlueScope will comply with all conditions of consent. As the project is CSSI, the provisions of the DCP do not apply to the project, however stormwater management systems will be designed, constructed and operated in accordance with the relevant Australian Standards.

5.6.7 Traffic and transport

Comment

The proposed access design must comply with the AS2890 series and be designed for the largest anticipated vehicle to enter the site with adequate clearances. Condition/s of consent are recommended regarding preparation of dilapidation survey and report, addressing the condition of public and private infrastructure before and after the development and detailing measures to protect infrastructure during the works.

Response

The project does not propose to alter any access points to the public road network or impact road transport infrastructure owned by independent third parties. As described in Section 5.4 of the EIS, heavy vehicles would access the site via Princes Motorway and Princes Highway, Shellharbour Road, Springhill Road, Five Islands Road and Masters Road. These roads are all approved by TfNSW as B-Double heavy vehicle routes. A dilapidation survey and report are not within the scope of the project, as roads impacted would be either internal (owned by BlueScope) or approved by TfNSW as heavy vehicle routes.

On this basis and having regard to the relatively small change in traffic generated by the project relative to background traffic on the public road network, dilapidation surveys are not considered necessary. Internal road changes would be designed in accordance with the AS 2890 where applicable.

5.7 DPE Water

Comment

DPE Water notes there is potential for groundwater interception based on current groundwater levels and the proposed excavation depth of the project. However, the specific details and extent of interception with groundwater (and the associated need to manage and licence groundwater take) will not be established until the detailed designs are produced. As such, DPE Water notes the following:

- *A Water Access Licence (WAL) under the Water Management Act 2000 must be obtained for take unless an exemption applies, that is:*
  - *The take is less than or equal to 3ML of water per year for any aquifer interference activities listed in Clause 7 of Schedule 4 of the Water Management (General) Regulation 2018. To qualify for an exemption to hold a water access licence, the proponent should:*
    - *Record the water take within 24 hours in the approved form and manner.*
    - *Provide the water take records to the Minister by no later than 28 July for the year ending 1 July during which the water was taken (e.g. included in the annual report).*
    - *Keep the water take records for a period of five years. For more information, please visit: https://www.dpie.nsw.gov.au/nrar/how to apply/water licences/Groundwater.*
- *Should the project be approved, the relevant management plans should reference our groundwater guidelines where applicable. These guidelines should be published shortly. Please get in contact if you require further details.*
- *DPE Water does not need to be consulted during the development or approval of these management plans.*

Response

Only small volumes less than 3ML are anticipated to be dewatered from the excavations required during construction works, such that a WAL is not required. If changes during detailed design or construction result in the potential for greater volumes to be dewatered, BlueScope will consult with DPE Water regarding licencing requirements.

5.8 DPE – Hazards Branch

Comment

DPE hazards branch made the following comment on the project:

1. *We note that 6BF (PHA Figure 4-3, red area), including the operational areas associated with 6BF (PHA Figure 4-3, blue area) is generally located within the central interior of the wider BlueScope Steel works comprising coke, iron and steel making sections. As such, major incidents arising from 6BF in isolation will not reach off-site of the wider BlueScope Steel works, particularly the closest residential area (at least 1 km south-west of 6BF). However, it has not apparent from the PHA if escalation risks from 6BF has been analysed and assessed, especially escalation to on-site coal storage, the closest being approximately 200 m from 6BF. A fire involving coal storage is likely to impact off-site. As such, the PHA should be updated to analyse such escalation risks and assess if these risks comply with the Department's HIPAP 4.*
2. *The PHA did not include a clear process description of 6BF. EIS Section 2.2.2 only includes a high-level general description of the major processes of 6BF. As such, we are not able to verify from the PHA and the EIS if the scenarios considered in PHA Section 6.3 fully represents the consequences from 6BF, especially if escalation risks are considered (item 1 above). As such, the PHA should be updated to include a clear process flow diagram (PFD) showing the major streams entering and exiting the overall 6BF process, and between sub-units within 6BF. The PFD must include the maximum flow rates, compositions and operating conditions (temperature, pressure, etc.). The information in the PFD must be consistent with other specialist assessment reports, such as emissions reports (air, water). The operating capacity of the major sub-units must also be provided, especially the blast furnace, regenerative heaters and proposed heat recovery systems.*
3. *In providing the PFD as per item 2 above, further information on the following units as noted in EIS Figure 2.3 should be provided:*
    - *The purpose of the "Emergency head tanks" above the hot blast stoves, especially if these tanks are safeguards against major incidents.*
    - *The meaning of the term "CS2 charging conveyor".*
    - *The proposed "Waste gas heat recovery (WGHR)" and "Energy recovery using top gas recovery turbine (TRT)".*
4. *The failure frequencies assumptions in PHA Appendix C are to be further discussed with the Applicant's risk consultant. For example, only using 10 m of piping in estimating the total failure frequency of coke ovens piping when the closest distance between 6BF and the coke making section is approximately 400 m (PHA Table C.1).*
5. *Given that 6BF has already been constructed, the PHA should be specify if 6BF in its entirety has been subjected to HAZOP and verify if all HAZOP actions (or other safety-related studies) have been completed.*

Response

In response to DPE – Hazards Branch comments we note the following:

1. When assessing impacts associated with a development, there is always consideration of escalation events. The distance impacts are expected to reach will determine what, if any escalation or knock-on events could occur.

   Whilst not explicitly stated in the report, this approach was also taken for the assessment of the 6BF development. The impact distances were assessed against neighbouring equipment and processes; the assessment demonstrated that the molten metal – water contact explosion (refer to Section 8.3 of the EIS) has the largest consequence contours. The lowest peak overpressure impact radius (HIPAP 4 criteria for injury) of 100 meters did not approach any sensitive on-site areas, such as the coal storage, and therefore no plausible escalation events could be seen.
2. Due to the proprietary nature of the information contained within the details PFD's of the blast furnace and associated systems these have been excluded from inclusion in this RTS and will be provided commercial in confidence to DPE under separate cover.

3. **Emergency Head Tanks**

   The Emergency Head Tanks provide a third layer of system security to the furnace cooling systems. Normally, cooling water is circulated via electrically driven pumps. In the event of a power failure, diesel pumps on both of the furnace cooling circuits (Recirculated Water System and Stave Body Cooling) will automatically start on loss of detection of system pressure. There is enough fuel in the diesel pumps to allow the furnace to safely stop, with the provision to add extra diesel as required to extend the pump running times.

   In the event that a diesel pump fails to start, the volume of water in the Emergency Head Tanks is such that the furnace can safely stop, although this scenario may result in a prolonged recovery time.

   CS2 Charging Conveyor

   CS2 is the name given to the primary furnace charging conveyor which elevates materials from the Stockhouse to the Furnace Top, where the materials are charged into the furnace.

   Waste Gas Heat Recovery

   The Waste Gas Heat Recovery system will recover sensible heat from the flue gases used to raise the temperature in the Hot Blast Stove refractories. This recovered heat can be used to offset chemical fuel normally used to heat the stoves, allowing it to be released for other purposes (such as injection into the furnace to offset the use of Pulverised Coal).

   Top Gas Recovery Turbine

   The Top Gas Recovery Turbine (TRT) uses the pressure and thermal energy of the gas coming from the top of the furnace to generate electricity by expanding the gas over a rotating turbine. The pressure energy bled over the turbine then allows the low-pressure gas to be transported safely throughout the steelworks where it can be used as a low calorific value fuel.

4. The frequency assumptions, such as 10 meters of pipe, were originally based on application of the boundary of the work to the immediate extent of the area covered by the application for planning approval (6BF will sit within an existing, operational site). As the piping further afield was not being changed or updated because of the proposed development, areas beyond the immediate extent were not included. Noting DPE's position (as communicated at BlueScope's meeting with DPE on 27 April 2022) that regardless of the boundary, coke oven gas would flow in these pipes to 6BF during operation and therefore should be included in the assessment, changes were made to release frequency changes as follows (see Table 5.21).

Table 5.21 Release frequency changes

Parameter	Original Basis	Updated Basis	Reasoning	New Value
50 mm natural gas flange failure – 5 mm (per flange per year)	1 flange	2 flanges	Flange at connection to 6BF and connection to existing pipework	1.00×10^{-05}
100 mm natural gas pipe split – 50 mm (per meter per year)	10 meters pipe	300 meters pipe	Approximate distance to natural gas offtake to 6BF	2.01×10^{-05}
400 mm coke ovens gas pipe pin hole – 10 mm (per meter per year)	10 meters pipe	400 meters pipe	Approximate distance to coke making section	4.00×10^{-05}
400 mm coke ovens gas pipe split – 200 mm (per meter per year)	10 meters pipe	400 meters pipe	Approximate distance to coke making section	2.60×10^{-06}

   The result of the change does not change the conclusion that the onsite probable loss of life value complies with HIPAP4 – the PLL moves from 8.46×10^{-7} to 8.80×10^{-7}. This is because the hazard that is driving the onsite risk is the molten metal/ water explosion.

5. HAZOP studies were previously undertaken at 6BF however, as these studies would have taken place prior to 1996, BlueScope intends to conduct new HAZOP studies with up-to-date Piping and Instrumentation Diagrams that accurately reflect the configuration of the furnace as a result of this project. These studies are proposed to be undertaken in accordance with HIPAP No. 8.

5.9 Transport for NSW

Comment

TfNSW made the following comments in relation to the EIS:

1. *Car Parking: All parking must be accommodated within the site and there cannot be any parking on the state roads or within the road reserve of the state roads (i.e. on the kerb). TfNSW notes that the existing central car park off Cringila Car Park Road, which has approximately 570 parking spaces, will be available for the expected workforce and that there is formal and informal overflow parking within the site if the central car park is insufficient. TfNSW expects that any surplus car parking demand be accommodated on site in these formal and informal parking spots.*
2. *Oversized vehicles: TfNSW notes that oversize or overmass vehicles (OSOM) will be utilised during the construction stage and will be following specific routes, and that the key state roads are NSW Oversize Overmass Load Carrying Vehicles Network Approved Roads. Prior to transporting any OSOM loads, the applicant shall obtain a National Heavy Vehicle Regulator (NHVR) OSOM permit for each OSOM load. As part of the application, you must demonstrate to TfNSW that the arrangements for the route are acceptable and all relevant approvals have been obtained (e.g. approvals required to do alterations to the existing classified road network).*
3. *Sydney Trains and Transport Asset Holding Entity (TAHE): Sydney Trains and TAHE raise no issues with this proposal, noting that No. 6 Blast Furnace is 772m away from the rail corridor.*

Response

In response to TfNSWs comments we note the following:

1. As outlined in the EIS, all parking associated with the reline project would be contained within the PKSW site.
2. In relation to the need for oversized vehicles, BlueScope is committed to only using haulage contractors who have obtained the necessary OSOM permitted. This includes, where necessary, demonstrating to TfNSW that heavy vehicle route selection is appropriate for the type of load being transported.
3. It is noted that Sydney Trains and TAHE have raised no issues with the proposal noting the distance between the proposal and their nearest asset.

6. Response to organisation submissions

Submissions received by organisations are made up of the following:

– 36 submissions in total
– 33 submissions in support
– 2 submissions that are comments
– 1 objection

Within the 36 submissions, 40 issues were raised. A breakdown of these issues is presented in Figure 6.1.

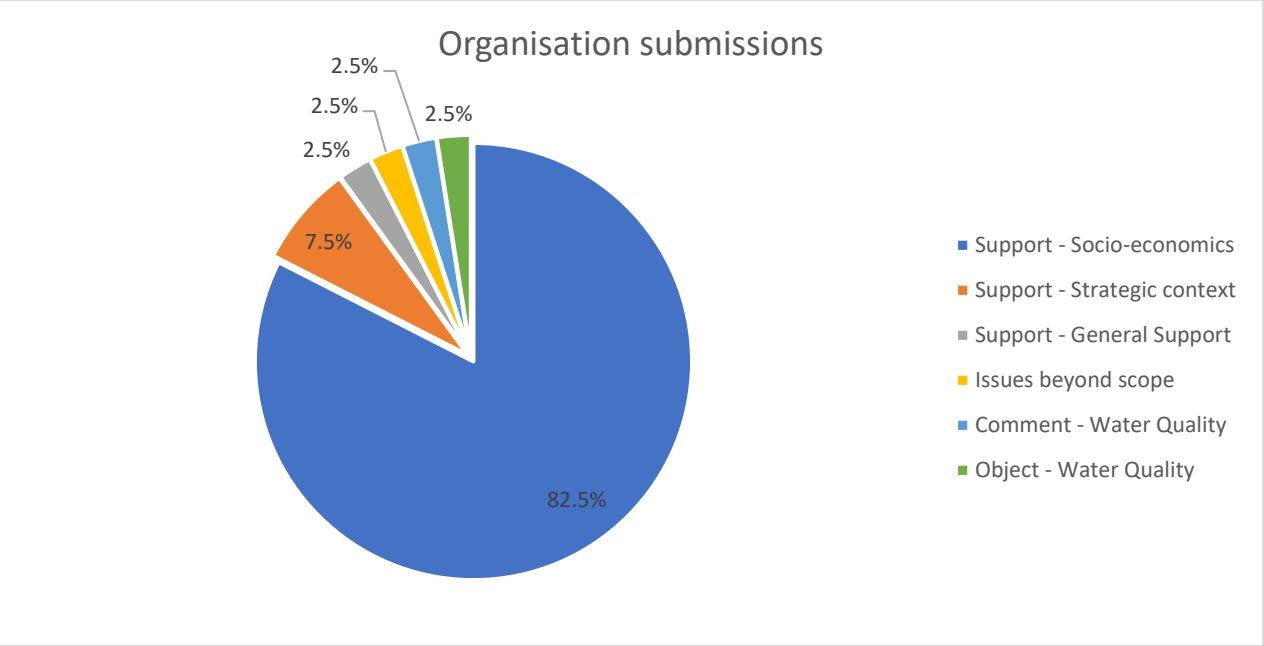

Figure 6.1 Breakdown of issues raised by organisations

A summary of the organisational submissions received in support of the project is contained in Section 6.1. Detailed responses to organisational submissions which are comments or objections are provided in Sections 6.2 to 6.4.

6.1 Summary of organisation submissions in support

During the exhibition of the EIS most submissions received from organisations and interest groups were in support of the project. Issues raised in these submissions are presented in Table 6.1.

Table 6.1 Summary of organisation submissions received in support

Issue raised in support	Number of times issues raised	Percentage of issues raised in support of the project
Socio-economic	33	89%
Strategic context	3	8%
Issues beyond scope of EIS	1	3%

There was strong support for the project amongst organisations based on the socio-economic benefits of continuing steelmaking in the Illawarra, primarily in relation to the direct and indirect employment the project would support, and the resulting economic and social benefits across the wider community. Several organisations noted that their business is directly or indirectly impacted (positively) by BlueScope's operations. Several submissions also noted that the continuation of steelmaking in the Illawarra was important to maintain Australian sovereignty.

6.2 Protect Our Water Alliance

Comment

Protect Our Water Alliance (POWA) supports Australian steel production using the lowest emissions possible and urges that the challenge of the No 6 Blast furnace reline be met with the most ambitious plans for emissions reduction in steelmaking at Port Kembla.

POWA calls for an end to extractive industries in the Greater Sydney Water Catchment, the catchment upon which 5.5 million people rely for their drinking water. We maintain that underground coal mining is a fundamentally incompatible land use with water catchment and storage.

Underground coal mining is damaging the Schedule 1 Special Areas of the catchment. Dendrobium mine, while exporting most of its coal, supplies BlueScope's Port Kembla Steel Works and is a particularly destructive mine, causing water loss and contamination. The cumulative and long-term impacts of this damage and the implications for Greater Sydney's water supply are poorly understood.

We strongly object to steel production which uses coal from beneath the Schedule 1 Special Areas of the Sydney Water Catchment.

Response

POWA's support for ongoing steel production at the PKSW is noted. Historically BlueScope has used coking coal from the Dendrobium mine but is also continuously exploring sourcing materials from other suppliers to optimise operations and supply chain, subject to contractual commitments. As with all suppliers, BlueScope only sources materials and services from operations which are approved and operated in accordance with the relevant statutory approvals and licences. BlueScope supports the protection of the Sydney Drinking Water Catchment through the appropriate regulation and management of all activities that occur within it.

6.3 Protect Our Water Catchment

Objection

Protect Our Water Catchment (POWC) strongly objects this proposal, and we ask you to reject it. The mutually held position of all members of POWC is that BlueScope Steel should not be using coal from the Greater Sydney Water Catchment. BlueScope Steel should make plans for their Steel making operations including the proposed blast furnace reline that are not dependent on coal supply from our Drinking Water Catchment. POWC strongly believes in holding BlueScope Steel to their bond which is a commitment to using an environmentally conscious supply chain. Long wall mining in the water catchment is not environmentally conscious and the impacts of this will go on into perpetuity.

It is known that endangered animal populations such as koalas and frogs are impacted by long wall mining in the Greater Sydney Water Catchment. POWC do not agree with offsetting loss of habitat due to long wall coal mining. POWC strongly believes that offsetting habitat loss is not successful in preventing further population declines or even extinctions. POWC does not agree that fixing leaks in Sydney Water supplies is an appropriate offset for water losses into perpetuity from the Greater Sydney Water Catchment. POWC hopes that BlueScope Steel sill find an alternative way to produce steel that does not involve any materials supplied from the Greater Sydney Water Catchment. As the plans for the blast furnace involve long term use of this local coal, POWC is not in support of this development as it stands.

Response

Comments regarding the use of coal from mines located within the Sydney Drinking Water Catchment are noted. BlueScope is committed to sourcing its supplies from responsible producers. BlueScope only obtains raw materials from suppliers who have the required Commonwealth and State environmental approval and licences and who comply with BlueScope's Supplier Code of Conduct. The Code of Conduct requires suppliers to implement controls and initiatives to minimise environmental impacts from their operations, promote greater environmental responsibility, and actively seek technologies and remedies that positively impact environmental performance. BlueScope has also been recently awarded Responsible Steel Certification, which is global certification ensuring steel is responsibly sourced and produced.

6.4 Port Kembla Gateway

Comment

Port Kembla Gateway Pty Limited (PKG) has been operating maritime shipping terminal in Port Kembla since the late 1980s PKG manages rail siding and a 360m Jetty in Port Kembla and handles the approximately 450,000 tonnes p.a. of mineral concentrate, approximately 800,000 tonnes p.a. of cement clinker which is imported by Cement Australia for their Port Kembla Mill (the cement provided covers a large component of the Sydney and southern NSW market). Other materials including coal tar, gypsum, fertilisers, scrap steel and general cargo.

PKG is a close neighbour to the BlueScope steelworks and we have no reservations about fully supporting the development. We are confident from our experience of over 30 years in Port Kembla that there will be no detrimental effects on the environment from this proposal. Our facility borders the BlueScope steelworks on its southeast boundary, and we can support the proposed blast furnace reline with no reservations because our experience with our neighbour has always been good.

We anticipate many benefits to existing businesses and industries in the region. BlueScope Steel supports many local businesses through its purchases of materials and services. There will be a significant boost to employment in the region, both during construction and ongoing from the proposed blast furnace reline. As long-term stakeholders in the local community we have observed many environmental improvements made by BlueScope over the years, some of these include leading the way in industrial waste management, additional air monitoring in the community and the improvement in the water quality entering the Port Kembla harbour.

BlueScope is a good corporate citizen (committed to net zero carbon emissions by 2050) and has an outstanding record of proven benefits to Port Kembla and the region.

Response

PKG's comments regarding their relationship with BlueScope and its shared history of being a socially and environmentally responsible neighbour are noted.

7. Response to individual submissions

Submissions received by individual members of the community are made up of the following:

– 412 submissions in total
– 385 submissions in support
– 7 submissions that are comments
– 20 objections.

Within the 412 submissions, 526 issues were raised. A breakdown of these issues is presented in Figure 7.1.

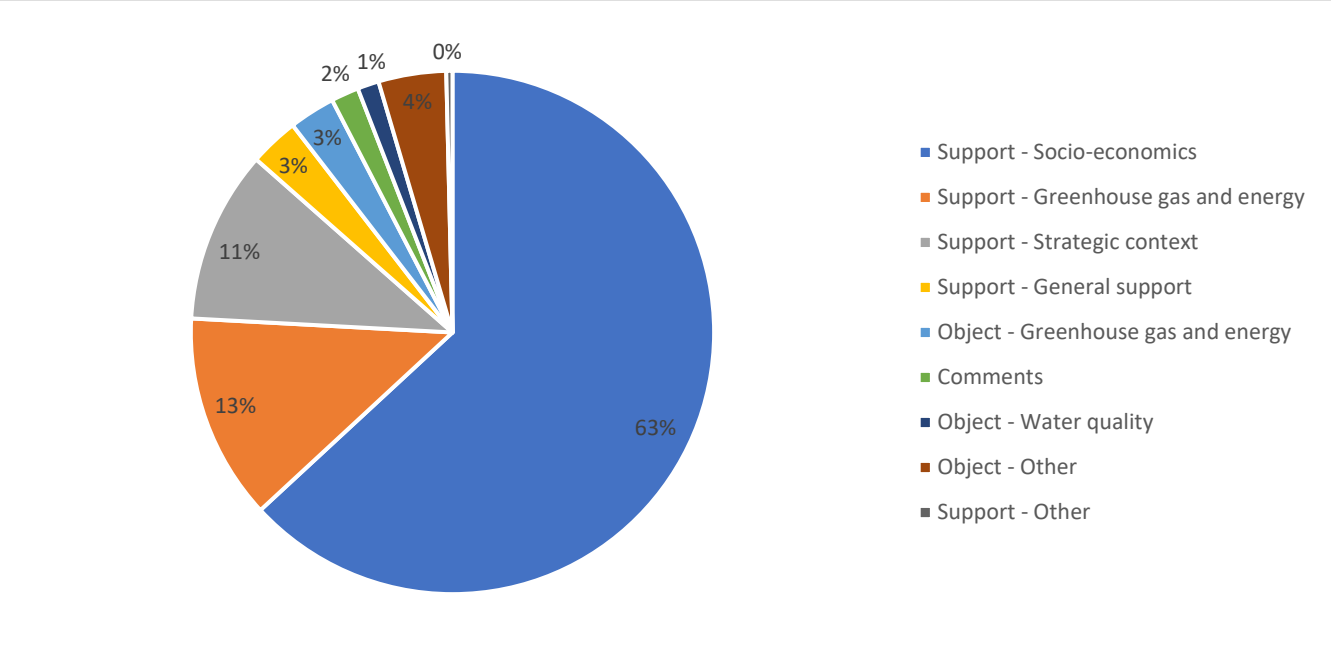

Figure 7.1 Breakdown of issues raised by individuals

A summary of the individual submissions received in support of the project is outlined in Section 7.17.1. Detailed responses to individual submissions which are comments of objections are outlined in Sections 7.2.1 to Section 7.2.3.

7.1 Summary of individual submissions in support

Table 7.1 provides a summary of the issues raised in individual submissions received supporting the project.

Table 7.1 Summary of individual submissions received in support

Issue raised in support	Number of times issues raised	Percentage of total issues raised in support of the project*
Socio-economics	332	70%
Greenhouse gas and energy	67	14%
Strategic context	56	12%
General support	16	4%
Compliance with legislation, regulations and guidelines	1	Less than 1%
General environmental impact	1	Less than 1%.

*rounded to the nearest percent

The project was heavily supported by the community based on the positive socio-economic benefit that the continuation of steel making would have for residents of the Illawarra. Support for the project was also expressed based on BlueScope proposing measures to reduce carbon emissions generated by steelmaking. The submissions which expressed support for reduction of carbon emissions from steelmaking also expressed support for the implementation of new technology in steelmaking. There was also support for the project based on the strategic context of keeping manufacturing jobs in Australia and securing onshore steel production considering recent world events.

7.2 Summary of individual submissions in objection

Table 7.2 provides a summary of the issues raised in individual submissions received objecting to the project.

Table 7.2 Summary of individual submissions received in objection

Issue raised in objection	Number of times issues raised	Percentage of total issues raised in objection the project*
Greenhouse gas and energy	15	34%
Water quality	7	16%
Project options	4	9%
Issues beyond the scope of the report	4	9%
Socio-economics	3	7%
General environmental impact	2	5%
Air quality	2	5%
Project need	2	5%
Operation activities	1	2%
Stakeholder and community engagement	1	2%
Compliance with legislation, regulations and guidelines	1	2%
Project outcomes	1	2%
General objection	1	2%

*Rounded to the nearest percent

Responses to these issues raised are presented below in Section 7.2.1 to Section 7.2.3.

7.2.1 Greenhouse gas emissions and climate change

Objection

Objections to the project raised greenhouse gas, climate change and energy usage a total of 15 times. Key issues raised included:

- *The reline of Blast furnace 6 at this time would facilitate more burning of coal and the resultant greenhouse gas emissions at a time when we should be rapidly reducing emissions.*
- *The project is inconsistent with the Intergovernmental Panel on Climate Change (IPCC).*
- *There is desire to see strong government support for zero carbon steel making technology, such as making steel from green hydrogen, to develop and commercialise green steel production at Port Kembla using Australian iron ore.*
- *In a decarbonising world, priority transition to green steel would provide job security for steelworkers. It would also create jobs for workers in the Illawarra's other carbon intensive industries, such as coal mining.*

– *BlueScope's proposed investment in a coal fired blast furnace reline is not consistent with the serious nature of the climate crisis.*
– *The production and recycling of steel using hydrogen produced from the electrolysis of water using renewable electricity is already a proven and industrially scaled process in Europe. BlueScope (with NSW government support) should be investing in this technology for a clean energy future rather than continuing to rely on out-dated and environmentally damaging blast furnace technology.*

Response

A detailed Greenhouse Gas Report (GHD 2022) was prepared and submitted with the EIS at Appendix J. The Greenhouse Gas Report provided a quantitative assessment of the construction and operational greenhouse gas generation associated with the project. The Greenhouse Gas Report was prepared in accordance with the:

– NGER (Measurement) Determination 2008 (as amended) and NGER Act 2007, Commonwealth Department of Environment and Energy.
– Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (GHG Protocol) (World Business Council for Sustainable Development and World Resources Institute, 2015).

The Greenhouse Gas Report considered the availability of breakthrough low GHG emissions ironmaking technologies for the future operation of PKSW. However, as technologies that are suitable for use at PKSW are unlikely to be available and commercially viable at scale until a time well after that required to replace 5BF, the only technically feasible and commercially viable option for BlueScope to continue steelmaking at Port Kembla in the short to medium term is to progress with the existing configuration and reline 6BF. The reline of 6BF provides a 'bridge' to transition from the current blast furnace technology to new and emerging low emissions technologies when they are commercially available and economically viable.

GHG reduction measures incorporated in the project design are outlined in section 6 of the Greenhouse Gas Report. These measures include the installation of:

– A Top Gas Recovery Turbine to generate electricity
– A Waste Gas Heat Recovery system to reduce fuel consumption at the stoves
– Dual lances at the tuyeres to enable the use of alternative reductants such as hydrogen-rich Coke Ovens Gas and renewable hydrogen.

These measures will reduce the GHG emissions intensity of steelmaking at PKSW and are part of a broader suite of climate-related projects at the PKSW that have the potential to further reduce GHG emissions intensity.

In addition to these measures and outside of the scope of the project, BlueScope and BSL are currently investigating emerging technologies such as the use of sustainably sourced biochar as a replacement for pulverised coal used in the blast furnace, the design, build and operation of a 10 MW renewable energy hydrogen electrolyser to test the use of renewable hydrogen in the blast furnace at PKSW in partnership with Shell Energy Operations Pty Ltd, and using renewable hydrogen to replace coking coal as the reductant for iron ore in partnership with the Rio Tinto Group.

The measures being implemented as part of the project and investigated for the future operation of 6BF and the wider PKSW site, are consistent with commitments made in BSL's Climate Action Report (BSL 2021) (Climate Action Report). The Climate Action Report sets out BSL's goal to achieve net zero GHG emissions by 2050[16] as well and achieving interim reduction targets by 2030. Meeting these targets is consistent with the goals of the IPCC as published in the Summary for Policymakers of IPCC Special Report on Global Warming (IPCC 2021).

Similarly, the IPCC 2030 and 2050 targets are reflected in Australia's Long-Term Emissions Reduction Plan (Commonwealth Government 2021) and NSW Climate Change Policy Framework (NSW Government 2020). As detailed in section 3 of the Greenhouse Gas Report, BSL's approach to addressing climate change as described in its Climate Action Report and by BlueScope as part of the project is consistent with international, national and State Strategies. In addition, as detailed in Section 5.6.2 of this report, the project is also consistent with Wollongong Council mitigation of climate change strategies.

[16] BlueScope's 2050 net zero goal covers its Scope 1 and 2 GHG emissions. Achieving the 2050 net zero goal is highly dependent on several enablers, including commerciality of emerging and breakthrough technologies, the availability of affordable and reliable renewable energy and hydrogen, availability of quality raw materials, and appropriate policy settings.

BlueScope is committed to continue research and investment in emerging technologies for PKSW over the campaign life of 6BF to more substantially reduce GHG emissions. Notably the reference to steel produced in Europe using hydrogen has only been achieved at very small quantities compared to PKSW's required production rates and is therefore not feasible to be implemented at this time. There is potential for new technologies and iron making configurations to be adopted in the medium to long term as they become technically and commercially viable. This approach is considered by GHD to be consistent with international, national, state and local GHG policies aimed at achieving a net zero future.

7.2.2 Water quality

Objection

Objections raised issues related to water quality impacts a total of seven times. Issues raised included concerns regarding water quality impacts in the Sydney Drinking Water Catchment from coal mining for coking coal. Concerns included use of water that would otherwise be used for drinking water, loss of water from the catchment due to activities such as mine dewatering, and impacts to water quality due to the potential release of contaminated water within the drinking water catchment.

Response

It is understood that there is concern in relation to mining activities undertaken by third parties extracting coal in the Sydney Drinking Water Catchment for use in the project (as well as other operations not undertaken by BlueScope). All suppliers to BlueScope are required to follow the BlueScope Supplier Code of Conduct. The Code of Conduct requires suppliers to implement controls and initiatives to minimise environmental impacts from their operations, promote greater environmental responsibility, and actively seek technologies and remedies that positively impact environmental performance. BlueScope has also been recently awarded Responsible Steel Certification, which is global certification ensuring steel is responsibly sourced and produced.

7.2.3 Project options

Objection

Objections to the project raised project options and alternatives a total of four times. The four submissions were of the view that those options were not adequately explored, in particular the option to produce steel via electric arc furnace, which would allow scrap steel to be recycled.

Response

Alternative options for steelmaking have been explored, including the option to produce steel via an Electric Arc Furnace (EAF). EAF steelmaking was determined to be unviable for PKSW operations due to insufficient availability of scrap steel of the required quality to support three million tonnes of flat steel production, and the cost of electricity coupled with high electricity demands. Emerging technologies have been identified, however will not be commercially viable on a large scale by the time 5BF reaches the end of its campaign.

Current steelmaking practices at PKSW allow for the incorporation of scrap steel and recycling, with approximately 25% of the steel produced derived from scrap. BlueScope is actively seeking to increase the use of scrap steel recycled but is subject to the limitations of availability of quality scrap steel referred to above, as well as process constraints. Further discussion is presented in Section 4.2.4 of the EIS.

7.2.4 Socio-economics

Objection

Objections to the project raised socio-economic factors a total of three times. Key issues raised included:

- *Concerns that the proposed option may not be commercially viable in the future 'carbon constrained' economy.*
- *BlueScope are investing in 'green steel' options elsewhere, why not at Port Kembla.*
- *The actions and investments of BlueScope overseas at the North Star facility demonstrate more clearly the current and future intentions of BlueScope company directors and executives. After Colourbond asset is successfully functioning offshore, there will be no real reason to invest in the blast furnace technology.*
- *Concern that the project may result in cost to tax payers as a result of BlueScope being able to offset taxes, access subsidies or use other means to over project costs.*

Response

As discussed in Section 9.7 of the EIS, the project would generate employment during the construction phase, and secure the significant levels of indirect and direct employment at PKSW during ongoing operations. The PKSW contributes approximately 24% of the regional output per annum.

BlueScope has taken into account all available information on global market trends in its analysis of the project case. As the PKSW produces almost a quarter of the region's output per annum, it is considered critical that the project be constructed to ensure that the region does not suffer economically.

In relation to impacts to tax payers and project costs, the full cost of the project is being covered by BlueScope. There are no costs being covered by Commonwealth or State governments.

BlueScope is investing in the research and development of 'green steel' projects including the installation of a hydrogen electrolyser at PKSW, and direct reduction of Pilbara iron ores to produce iron in an electrical furnace. BlueScope's intention to continue operations at PKSW is evident through the significant investments made for the 6BF reline, and through its involvement in research and development of emerging technologies that may be applicable for future steelmaking operations at the PKSW.

7.2.5 General environmental impact

Objection

Objections to the project raised general or overall environmental factors a total of two times.

Response

Environmental impacts would be managed as per the measures outlined in Appendix D of the EIS and the PKSW Environmental Management System, which is ISO 14001:2015 certified.

7.2.6 Air quality

Objection

Objections to the project raised air quality factors a total of two times. Key issues raised included:

- *Concerns the air quality assessment was not comprehensive enough for construction*
- *Concerns regarding human health impacts from exposure to dust and dioxins and furans*
- *Belief that pollution monitoring required by EPL 6092 is not adequate and project should be designed to avoid pollution.*

Response

Construction impacts to air quality have been discussed in Section 8.1 and Appendix E of the EIS. Dust generated from demolition is expected to be minor and contained within the PKSW. The potential for dust emissions during construction will be dependent on the activity being undertaken. BlueScope commits to implementing dust suppression controls during activities that have the potential generate excessive dust. These controls will be detailed in a dust management plan that will be prepared prior to construction of the project.

In terms of operational air quality impacts, BlueScope has an excellent understanding of the potential air pollutants related to blast furnace operation. Section 3.2.1 of the AQIA that accompanies the EIS undertook a review of the air quality species of interest relevant to the project. This did not identify dioxins and furans (PCCD/Fs), including 2,3,7,8-Tetrachlorodibenzo-p-dioxin, as species of concern with regard to the operation of the blast furnace and therefore no further assessment of these pollutants was undertaken. The project is not expected to create an increased exposure risk to the community in relation to these species.

BlueScope has a legislative obligation to monitor for pollution in accordance with EPL 6092. Additional measures to reduce air emission impacts as a result of the project are provided in section 8.1.5 of the EIS.

7.2.7 Project need

Objection

Objections to the project raised project need a total of two times. Key issues raised included:

– *General doubt regarding project completion*
– *Concern regarding BlueScope financial investment in the project*
– *Concern regarding the ironmaking technology proposed for the project*

Response

As discussed in Section 3 of the EIS, the project has been identified as being a critical piece of infrastructure in the state, national and global context. The project is required to be completed from an economic standpoint and to enable Australia to retain its sovereignty in manufacturing.

BlueScope is committed to the project to secure ongoing iron making and therefore steel production in Australia. BlueScope is also committed to investing in recycling scrap steel however, scrap quantities available do not meet demand for steel products and therefore securing ongoing iron production is crucial to meeting domestic demand. The project is intended to ensure ongoing supply to business demand however represents a change and improvement to iron production when compared to the operation of 5BF.

Separately, BlueScope is working towards green steel and has invested in this space as detailed in Section 9.8 of the EIS. However, until such time that green steel production methodologies are commercially viable, the project is necessary to ensure that suitable quantities of iron and steel can be produced to meet demands.

7.2.8 Operational activities

Objection

Objections to the project raised impacts from operational activities once. The submission included a general statement that the submission was opposed to the operation of 5BF and 6BF.

Response

A thorough assessment of potential operational impacts was included in the EIS. BlueScope has been operating at PKSW for many decades and has a sound understanding of potential impacts that may result from its operational activities. Established environmental management systems would continue to be implemented during the operation of the project. This will also include the implementation of the management measures as detailed in Section 8.

7.2.9 Stakeholder and community engagement

Objection

Objections to the project raised stakeholder and community engagement once. The submission commented that the EIS was complicated and difficult to understand, and that the presentations by BlueScope were not independent or neutral meaning that comments fell back onto unfunded community volunteers.

Response

BlueScope undertook extensive consultation during the development and exhibition of the EIS as outlined in Section 7.2 of the EIS. Additional stakeholder consultation undertaken since submission of the EIS is outlined in Section 3.2.

Due to the technical nature of the operation of a blast furnace, some aspects of the EIS are technical. These elements have been closely scrutinised by regulators with technical expertise as detailed in Section 5 of this RTS. The EIS was prepared by an independent environmental consultant engaged by BlueScope. Data and information regarding the project was supplied by BlueScope and supported by reviews of best available techniques from independent, international sources. BlueScope welcomes the involvement of the community in reviewing and responding to the EIS, which has also been scrutinised by a number of government regulatory bodies as outlined in Section 5.

7.2.10 Compliance with legislation, regulations and guidelines

Objection

Objections to the project raised compliance with legislation, regulation and guidelines once. The submission believes the proposal should trigger assessment under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) as climate change is a key threatening process for many species and ecosystems, as well as being an existential threat to human life and development.

Response

Section 6.2.2.1 of the EIS assessed the project against the Matters of National Environmental Significance (MNES) which would trigger the need for further assessment under the EPBC Act. No impacts to MNES have been identified that are considered likely to be significant and consequently require a referral to the Commonwealth Department of Agriculture, Water and the Environment (DAWE) for approval of the project under the EPBC Act.

7.2.11 Project outcomes

Objection

Objections to the project raised project outcomes once. The submission stated the project would lead to an oversupply and over production of steel and that BlueScope should only produce steel needed for projects in the local area.

Response

The PKSW is one of only two steel producing facilities in Australia. The project has been identified as essential to supplying steel for projects in NSW and Australia and prevent a reliance on imported steel products from other countries. Securing onshore steel production is important for the security of supply of a product that is crucial to many sectors of the national economy. Refer to Section 3.1, Section 3.2 and Section 3.3 in the EIS.

As the 6BF will not be operational until 5BF is decommissioned, the project will not result in additional steel production. Rather, it enables the continuation of steel production at PKSW.

7.2.12 General objection

Objection

There was one general objection to the proposal. No reasons were given for the objection.

Response

Noted.

7.2.13 Issues beyond the scope of the EIS

Objection

Objections to the project raised beyond the scope of the EIS were raised three times. Key issues raised included:

- *BlueScope's lobbying to overturn the Independent Planning Commission (IPC) refusal of the Dendrobium extension based on the unsupported claim that it is essential to BF operation degrades BlueScope's social licence*
- *A general request that PKSW stockpiles would need to be covered at all times*
- *A general call for more Governmental support for clean energy and 'green steel' production.*

Response

In relation to these issues:

- It is noted that BlueScope submitted a submission in support of the Dendrobium Mine Extension Project (SSD-8194). This project was subsequently refused by the IPC. BlueScope has not lobbied the IPC regarding the Dendrobium extension project.
- Stockpiles at the PKSW generally are managed in accordance with the site environmental management system. Whilst there may be some short-term stockpiling of materials during construction of the project, no additional operational material stockpiles are proposed.
- The call for more government support in regard to clean energy is noted and is consistent with BSL's objective of achieving net zero greenhouse gas emissions by 2050 over its global operations.

7.3 Summary of individual comments

Seven individual submissions were categorised as comments by DPE. In these comments, nine issues were raised which generally related to four broad categories. A breakdown of the categories is presented below:

- General support for the project was raised five times.
- Comments around greenhouse gas and energy were raised twice. Comments included the suggested use of hydrogen to power the plant and alternative steelmaking processes. Refer to Section 7.2.1.
- Water quality was raised once. The comment was regarding stormwater capacity and surface water impacts generated by the Dendrobium Mine, and not in relation to the project design. Refer to Section 7.2.2.
- Air quality was raised once regarding dust emissions generated by demolition and construction of the project. Refer to Section 7.2.6.

8. Updated environmental management

8.1 Environmental management system

As detailed in the EIS, PKSW operates under an Environmental Management System (EMS) that is certified to the international environment management standard: ISO 14001:2015. The EMS includes a series of management plans and procedures to assess and mitigate environmental risks.

BlueScope also maintains a Pollution Incident Response Management Plan (PIRMP) as required under EPL 6092. EPL 6092 also stipulates the discharge points to air and water and monitoring requirements and limits for discharges from these points.

These plans will be reviewed to incorporate the environmental management commitments and any conditions of approval for the project.

All safeguards and management measures outlined in this RTS will be managed by implementing a Project Environmental Management Plan. The Project Environmental Management Plan will manage the impacts of all stages of the project and will include the following sub plans:

– Construction Environmental Management Plan (CEMP) to address the impacts of the construction phase.
– Operational Environmental Management Plan (OEMP) to address the impacts of the operational phase.
– Decommissioning Environmental Management Plan to address the impacts of the decommissioning phase. (although this plan will be similar to the CEMP as many of the measures to be implemented during this phase are similar to those in the CEMP).

Each of the above plans will be prepared prior to the commencement of each of the stages and will include but not be limited to the following:

– Roles of specific staff
– Reporting requirements
– Monitoring requirements
– Environmental targets and objectives
– Auditing and review timetables
– Emergency response requirements
– Details of training and inductions required
– Complaint response procedures
– Adaptive management mechanisms to encourage continuous improvement

The above plans will also potentially contain sub-plans for specific issues such as erosion and sedimentation and waste management plans.

8.2 Decommissioning

In addition to the CEMP and OEMP, a plan will be required at the end of the project life to mitigate and manage the potential environmental impacts of decommissioning.

Decommissioning activities will involve a rundown, salamander tap, and make safe operation as described in Section 5.6 of the EIS.

A summary decommissioning plan will be prepared as outlined in Section 5 of the EIS with a detailed decommissioning plan to be developed in consultation with relevant stakeholders at the end of the project life.

8.3 Summary of safeguards and management measures

Environmental safeguards and management measures outlined in the EIS have been updated based on the comments received during the exhibition period. These safeguards will minimise any potential adverse impacts arising from the project on the surrounding environment.. Where there have been changes to safeguards and management measures from the EIS, edits are shown in bold and new measures in highlighted rows.

9. Justification and conclusion

9.1 Strategic justification

The EIS included a detailed description of the projects strategic justification and merits confirming the need for the project to proceed specifically the EIS included:

– Strategic justification – Section 11.1.1 of the EIS
– The projects consistency with the objects of the EP&A Act – Section 11.1.2 of the EIS
– How the project is consistent with the principles of ecologically sustainable development (ESD). Specifically:
  - The precautionary principle – Section 11.1.3.1 of the EIS
  - Intergenerational equality – Section 11.1.3.2 of the EIS
  - Conservation of biological diversity and ecological integrity – Section 11.1.3.3 of the EIS
– A merits assessment in relation to the biophysical, economic and social costs and benefits of the project – Section 11.1.3.3 of the EIS.

The strategic justification, review against ESD principles and assessment of the project's merits provided in the EIS have been reviewed as part of this RTS. This review concluded that the justification as provided in the EIS remains applicable and that based on the outcomes of the EIS and RTS, the project should proceed at proposed.

9.2 Conclusion

BlueScope's PKSW operation in NSW includes two blast furnaces: 5BF is currently operating, while 6BF is currently in care and maintenance.

5BF is expected to continue to produce (molten) iron on a continuous basis until it reaches the end of its operational life at some stage between 2026 and 2030. BlueScope is proposing a move of iron production from 5BF to 6BF, after 5BF ceases operation.

BlueScope has investigated a number of alternatives for continuing ironmaking operations at PKSW following the end of the current 5BF campaign, as well as the option of ceasing iron and steelmaking at PKSW and has concluded that a reline of 6BF is the only option which can be executed within the timeframes necessary to maintain uninterrupted iron production at PKSW.

The project will secure the ongoing production of steel at PKSW, which is an important domestic source of steel for a range of construction and infrastructure projects that are of key importance to the NSW economy. PKSW also provides a significant contribution to the local economy, with the project facilitating the retention of approximately 4,500 jobs at the PKSW site itself and supporting approximately 10,000 jobs in total including indirectly in supplier and customer businesses.

The EIS and RTS have documented the potential environmental impacts of the project, considering both negative and positive impacts. The project has been designed and assessed with regard to the matters for consideration under the EP&A Act and is consistent with the principles of ecologically sustainable development.

The design of the project, in conjunction with the detailed assessment of potential environmental impacts, has sought to minimise impacts on the environment while maintaining feasibility. The EIS has demonstrated that the project will not have a significant environmental impact, and in some respects is expected to result in an improved environmental performance, when compared to the existing 5BF operations.

The project will also make provision for the use of low emission fuel such as renewable hydrogen during the 6BF campaign. The project will 'build a bridge' to transition to low emissions steelmaking as BSL works towards its goal of net zero GHG emissions by 2050[17], while securing significant employment and economic benefits for the Illawarra region and NSW for the duration of the 6BF campaign. With the implementation of the proposed management and mitigation measures, the beneficial effects of the project are considered to significantly outweigh any potential negative impacts.

[17] BlueScope's 2050 net zero goal covers its Scope 1 and 2 GHG emissions. Achieving the 2050 net zero goal is highly dependent on several enablers, including commerciality of emerging and breakthrough technologies, the availability of affordable and reliable renewable energy and hydrogen, availability of quality raw materials, and appropriate policy settings.

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11. Limitations

This report has been prepared by GHD for BlueScope Steel (AIS) Pty Ltd and may only be used and relied on by BlueScope Steel (AIS) Pty Ltd for the purpose agreed between GHD and the BlueScope Steel (AIS) Pty Ltd.

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Appendices

Appendix A

Register of submissions received

Table A1 Register of submissions – State Government Agencies

State Government Agencies	Issue Category	Issue Sub-category
DPE – Biodiversity and Conservation Division	Economic environmental social impacts	Biodiversity
Environmental Protection Authority	Economic environmental social impacts	Water quality
	Economic environmental social impacts	Air quality
	Economic environmental social impacts	Noise
NSW Heritage	Economic environmental social impacts	Aboriginal Heritage
Department of Premier and Cabinet - Heritage Council of NSW	Economic environmental social impacts	Non-Aboriginal Heritage
Fire and Rescue NSW	Economic environmental social impacts	Hazard and risk
DPE Water	Economic environmental social impacts	Water quality
DPE – Hazards Branch	Economic environmental social impacts	Hazard and risk
Transport for NSW	Economic environmental social impacts	Traffic and transport

Table A2 Register of submissions – Local Government

Local Government	Issue Category	Issue Sub-category
Wollongong City Council	Economic environmental social impacts	Socio-economics
	Economic environmental social impacts	Greenhouse gas and energy
	Economic environmental social impacts	Biodiversity
	Economic environmental social impacts	Environmental management
	Economic environmental social impacts	Water quality
		Stormwater
	Economic environmental social impacts	Traffic and transport

Table A3 Register of submissions – Organisations

Organisations	Issue Category	Issue Sub-category
Australian Workers Union	Economic environmental social impacts	Socio-economics
Peabody	Economic environmental social impacts	Socio-economics
Fenner Conveyors	Economic environmental social impacts	Socio-economics
Aurizon	Economic environmental social impacts	Socio-economics
Fredon	Economic environmental social impacts	Socio-economics
The Flagstaff Group	Economic environmental social impacts	Socio-economics

Organisations	Issue Category	Issue Sub-category
SCE Group	Economic environmental social impacts	Socio-economics
Pipe & Engineering Supply	Economic environmental social impacts	Socio-economics
Regional Development Australia (RDA) Illawarra	Economic environmental social impacts	Socio-economics
IXOM Operation Pty Ltd	Economic environmental social impacts	Socio-economics
Community Industry Group	Economic environmental social impacts	Socio-economics
Arrow Electrical Services	Economic environmental social impacts	Socio-economics
Arrow Electrical	Economic environmental social impacts	Socio-economics
360HR Solutions Pty Ltd	Economic environmental social impacts	Socio-economics
Qube Holdings	Economic environmental social impacts	Socio-economics
Triple I	Economic environmental social impacts	Socio-economics
Illawarra Industrial Supplies Pty Ltd	Economic environmental social impacts	Socio-economics
Alsco Pty Ltd	Economic environmental social impacts	Socio-economics
K & R Fabrications	Economic environmental social impacts	Socio-economics
Nathan Thompson Engineering Pty Ltd	Economic environmental social impacts	Socio-economics
QCM Pty Ltd	Economic environmental social impacts	Socio-economics
CorrWear Pty Ltd	Economic environmental social impacts	Socio-economics
Hirono (Aust) Pty Ltd	Economic environmental social impacts	Socio-economics
Heymans & Associates Pty Ltd	Economic environmental social impacts	Socio-economics
Galway Refectories Pty Ltd	Economic environmental social impacts	Socio-economics
Port Kembla Gateway Pty Ltd	Economic environmental social impacts	Socio-economics
	Issues beyond the scope of the report	Disclosure statement
Allmen Industrial Services	Economic environmental social impacts	Socio-economics
	Project	Strategic context
Bridge Project Solutions pty ltd	Economic environmental social impacts	Socio-economics
	Project	Strategic context
DBC Group Australia	Economic environmental social impacts	Socio-economics
	Project	Strategic context
Protect Our Water Alliance	Economic environmental social impacts	Water Quality
	Economic environmental social impacts	Socio-economics

Organisations	Issue Category	Issue Sub-category
Protect Our Water Catchment	Economic environmental social impacts	Water Quality
Port Kembla Gateway	Justification evaluation	General support

Table A4 Register of submissions – Individual

Individual submission	Issue Category	Issue Sub-category
Aaron Porteous	Economic environmental social impacts	Socio-economics
Aby Abraham	Economic environmental social impacts	Socio-economics
Adam Jackman	Economic environmental social impacts	Socio-economics
Adam Joils	Economic environmental social impacts	Socio-economics
Adam Kaim	Economic environmental social impacts	Socio-economics
Adam McDonnell	Economic environmental social impacts	Socio-economics
Adam Schofield	Economic environmental social impacts	Socio-economics
Ali Lucato	Economic environmental social impacts	Socio-economics
Amber Waldron	Project	Strategic context
Andrew Guthrie	Economic environmental social impacts	Socio-economics
Andrew Guthrie	Project	Strategic context
Andrew Peters	Economic environmental social impacts	Socio-economics
Andrew Relf	Economic environmental social impacts	Socio-economics
Andy Stirling	Economic environmental social impacts	Socio-economics
Anita Rojas	Economic environmental social impacts	Socio-economics
Anita Rojas	Economic environmental social impacts	Greenhouse gas and energy
Anne Marett	Economic environmental social impacts	Greenhouse gas and energy
Anne Marett	Economic environmental social impacts	Water quality
Anne Marett	Economic environmental social impacts	Air quality
Annie Marlow	Economic environmental social impacts	Greenhouse gas and energy
Annie Marlow	Economic environmental social impacts	Water quality
Annie Marlow	Issues beyond the scope of the report	Direction for BlueScope outside of project scope
Anthony Dutton	Economic environmental social impacts	Socio-economics
Anthony McKeown	Economic environmental social impacts	Socio-economics
Antonio De Santis	Economic environmental social impacts	Socio-economics

Individual submission	Issue Category	Issue Sub-category
Argirios Androutsopoulos	Economic environmental social impacts	Socio-economics
Arron Arntz	Economic environmental social impacts	Greenhouse gas and energy
Arron Arntz	Economic environmental social impacts	Socio-economics
Barry Neill	Project	Strategic context
Ben Gearon	Economic environmental social impacts	Socio-economics
Billy Vicoroski	Economic environmental social impacts	Socio-economics
Bob Maghboli	Economic environmental social impacts	Socio-economics
Brad Love	Economic environmental social impacts	Socio-economics
Bradley Coulstock	Economic environmental social impacts	Socio-economics
Brendan McNally	Economic environmental social impacts	Socio-economics
Brett Monkman	Economic environmental social impacts	Socio-economics
Brian Whalan	Economic environmental social impacts	Socio-economics
Brian Whalan	Economic environmental social impacts	Greenhouse gas and energy
Brooke Rawlings	Economic environmental social impacts	Socio-economics
Cath Blakey	Economic environmental social impacts	Greenhouse gas and energy
Cath Blakey	Economic environmental social impacts	Water quality
Cath Blakey	Economic environmental social impacts	Socio-economics
Cath Blakey	Economic environmental social impacts	Air quality
Cath Blakey	Procedural matters	Compliance with legislation, regulations and guidelines
Cath Blakey	Procedural matters	Stakeholder and community engagement
Cath Blakey	Project	Project options
Cath Blakey	Project	Operation activities
Cath Blakey	Issues beyond the scope of the report	Government/Policy outside of project scope
Chapman Michael	Project	Strategic context
Charles Chen	Economic environmental social impacts	Socio-economics
Charlie Wheatley	Economic environmental social impacts	Socio-economics
Charlie Wheatley	Economic environmental social impacts	Greenhouse gas and energy
Cherie Sammut	Economic environmental social impacts	Socio-economics
Chris Hughes	Economic environmental social impacts	Socio-economics

Individual submission	Issue Category	Issue Sub-category
Chris Killmore	Economic environmental social impacts	Greenhouse gas and energy
Chris Nicholson	Economic environmental social impacts	Socio-economics
Christian McCarthy	Economic environmental social impacts	Socio-economics
Christian McCarthy	Economic environmental social impacts	Greenhouse gas and energy
Christine Catling	Economic environmental social impacts	Greenhouse gas and energy
Christine Cooper	Economic environmental social impacts	Socio-economics
Clint Mackenzie	Economic environmental social impacts	Socio-economics
Clint Mason	Economic environmental social impacts	Socio-economics
Clint Mason	Project	Strategic context
Colin Paturel	Economic environmental social impacts	Socio-economics
Cornelis Quinten	Economic environmental social impacts	Socio-economics
Craig Nealon	Economic environmental social impacts	Socio-economics
Da Be	Economic environmental social impacts	Socio-economics
Damian Jones	Economic environmental social impacts	Socio-economics
Daniel Bogovac	Economic environmental social impacts	Socio-economics
Daniel McKinna	Economic environmental social impacts	Greenhouse gas and energy
Daniel Ranschaert	Economic environmental social impacts	Socio-economics
Daniel Ranschaert	Project	Strategic context
Darcy Bennett	Economic environmental social impacts	Socio-economics
Darcy Bennett	Economic environmental social impacts	Greenhouse gas and energy
Darcy Bennett	Project	Strategic context
Darren Evans	Economic environmental social impacts	Greenhouse gas and energy
Darren Evans	Project	Strategic context
Darren Fletcher	Economic environmental social impacts	Socio-economics
Darren Jennison	Economic environmental social impacts	Socio-economics
Darren Jennison	Project	Strategic context
Darren Komene	Economic environmental social impacts	Socio-economics
David Fairley	Economic environmental social impacts	Socio-economics
David Halcomb	Economic environmental social impacts	Greenhouse gas and energy

Individual submission	Issue Category	Issue Sub-category
David Otsyula	Economic environmental social impacts	Socio-economics
David Scott	Economic environmental social impacts	Socio-economics
David Shepherd	Economic environmental social impacts	Socio-economics
David Williams	Economic environmental social impacts	Socio-economics
Dean De La Torre	Economic environmental social impacts	Socio-economics
Deidre Stuart	Economic environmental social impacts	General environmental impact
Deidre Stuart	Economic environmental social impacts	Water quality
Deidre Stuart	Project	Project options
Deidre Stuart	Justification evaluation	Project outcomes
Deidre Stuart	Issues beyond the scope of the report	Government/Policy outside of project scope
Elana Kells	Economic environmental social impacts	Socio-economics
Emily Greenwell	Economic environmental social impacts	Socio-economics
Enoch Aduse-Poku	Economic environmental social impacts	Socio-economics
Frank Soto	Economic environmental social impacts	Socio-economics
Garry Rosser	Economic environmental social impacts	Greenhouse gas and energy
Gary Meta	Economic environmental social impacts	Socio-economics
Gary Meta	Economic environmental social impacts	Greenhouse gas and energy
Gasper Adaikalaswamy	Economic environmental social impacts	Socio-economics
Geoffrey Fisher	Economic environmental social impacts	Socio-economics
Geoffrey Fisher	Economic environmental social impacts	Greenhouse gas and energy
George Garcia	Economic environmental social impacts	Socio-economics
Gerry Mann	Economic environmental social impacts	Socio-economics
Gerry Mann	Project	Strategic context
Glenn Leake	Economic environmental social impacts	Socio-economics
Gonzalo Gutierrez	Economic environmental social impacts	Socio-economics
Graeme Gulloch	Project	Strategic context
Graeme Mayo	Economic environmental social impacts	Socio-economics
Graeme Mayo	Economic environmental social impacts	Greenhouse gas and energy
Graeme Mayo	Project	Strategic context

Individual submission	Issue Category	Issue Sub-category
Graham Mackander	Justification evaluation	General support
Greg Baldock	Economic environmental social impacts	Socio-economics
Greg Baldock	Economic environmental social impacts	Greenhouse gas and energy
Greg Barnier	Economic environmental social impacts	Socio-economics
Greg Burke	Economic environmental social impacts	Socio-economics
Greg Engel	Economic environmental social impacts	Socio-economics
Greg Engel	Economic environmental social impacts	Greenhouse gas and energy
Gregory Adams	Economic environmental social impacts	Socio-economics
Gregory Adams	Economic environmental social impacts	Greenhouse gas and energy
Gregory Adams	Project	Strategic context
Gregory Szloch	Economic environmental social impacts	Socio-economics
Guy M Kovacs	Economic environmental social impacts	Socio-economics
Haley Williams	Justification evaluation	General support
Hamid Fard Aghaei	Economic environmental social impacts	Socio-economics
Harry Cameron	Economic environmental social impacts	Socio-economics
Heather West	Economic environmental social impacts	Socio-economics
Heather West	Economic environmental social impacts	Greenhouse gas and energy
Henrik Dux	Economic environmental social impacts	Greenhouse gas and energy
Henrik Dux	Economic environmental social impacts	Socio-economics
Ian Waldron	Economic environmental social impacts	Socio-economics
Ingrid Dungey	Economic environmental social impacts	Socio-economics
Jackie Gregory	Economic environmental social impacts	Socio-economics
Jackie Gregory	Economic environmental social impacts	Greenhouse gas and energy
James Mathen	Economic environmental social impacts	Socio-economics
James Tarlinton	Economic environmental social impacts	Socio-economics
Jamie Buhagiar	Economic environmental social impacts	Socio-economics
Jared Kells	Justification evaluation	General support
Jason Lukasiak	Economic environmental social impacts	Socio-economics
Jason Mackinnon	Economic environmental social impacts	Socio-economics

Individual submission	Issue Category	Issue Sub-category
Jason Prestwidge	Project	Strategic context
Jay Ferguson	Economic environmental social impacts	Socio-economics
Jayakumar T Nair	Project	Strategic context
Jayden McInally-Rixon	Economic environmental social impacts	Socio-economics
Jayden McInally-Rixon	Economic environmental social impacts	Greenhouse gas and energy
Jeff Robinson	Economic environmental social impacts	Socio-economics
Jeff Robinson	Project	Strategic context
Jenny Staff	Economic environmental social impacts	Socio-economics
Jeremy Park	Economic environmental social impacts	Greenhouse gas and energy
Jeremy Park	Project	Project need
Jerry Clinch	Economic environmental social impacts	General environmental impact
Jess Whittaker	Economic environmental social impacts	Greenhouse gas and energy
Jihad Salem	Economic environmental social impacts	Socio-economics
Jill Sopher	Economic environmental social impacts	Socio-economics
Jill Sopher	Project	Strategic context
Joe Parsons	Economic environmental social impacts	Socio-economics
Joe Soto	Economic environmental social impacts	Socio-economics
Joe Vill	Economic environmental social impacts	Socio-economics
John Fusco	Economic environmental social impacts	Socio-economics
John Fusco	Economic environmental social impacts	Greenhouse gas and energy
John Gorman	Economic environmental social impacts	Socio-economics
John Heslin	Economic environmental social impacts	Socio-economics
John Smith	Economic environmental social impacts	Greenhouse gas and energy
John Smith	Economic environmental social impacts	Socio-economics
John Thomas Boss	Economic environmental social impacts	Socio-economics
John Wilkinson	Economic environmental social impacts	Socio-economics
John Zielinski	Economic environmental social impacts	Socio-economics
John Zuzic	Economic environmental social impacts	Socio-economics
Jonathon Quinten	Project	Strategic context

Individual submission	Issue Category	Issue Sub-category
Justin Reed	Economic environmental social impacts	Socio-economics
Justin Smithers	Economic environmental social impacts	Socio-economics
Kamini Wijekulasuriya	Economic environmental social impacts	Socio-economics
Kane Moore	Economic environmental social impacts	Socio-economics
Kathy Piggott	Economic environmental social impacts	Socio-economics
Kaye Osborn	Economic environmental social impacts	Greenhouse gas and energy
Kaye Osborn	Economic environmental social impacts	Water quality
Kaye Osborn	Issues beyond the scope of the report	Government/Policy outside of project scope
Kayleigh Wheeler	Economic environmental social impacts	Socio-economics
Kelly Roderick	Project	Strategic context
Kerrie Noakes	Economic environmental social impacts	Socio-economics
Keven O'Sullivan	Economic environmental social impacts	Socio-economics
Kylie MacKenzie	Project	Strategic context
Kylie McCarthy	Economic environmental social impacts	Socio-economics
Kylie McCarthy	Economic environmental social impacts	Greenhouse gas and energy
Kylie Reay	Economic environmental social impacts	Socio-economics
Lara De Oliveira	Economic environmental social impacts	Socio-economics
Lara Mathewson	Economic environmental social impacts	Socio-economics
Leanne Thomson	Economic environmental social impacts	Socio-economics
Lee Casaru	Economic environmental social impacts	Socio-economics
Lee Casaru	Project	Strategic context
Leo Hughes	Economic environmental social impacts	Socio-economics
Leong Zhen Lim	Economic environmental social impacts	Socio-economics
Leong Zhen Lim	Economic environmental social impacts	Greenhouse gas and energy
Linda Woods	Economic environmental social impacts	Socio-economics
Linda Woods	Project	Strategic context
Lisa Byleveld	Economic environmental social impacts	Socio-economics
Lorenzo Belsito	Economic environmental social impacts	Socio-economics
Luca Ciccarelli	Economic environmental social impacts	Socio-economics

Individual submission	Issue Category	Issue Sub-category
Luca Ciccarelli	Economic environmental social impacts	Greenhouse gas and energy
Luke Mayer	Justification evaluation	General support
Luke Thompson	Project	Strategic context
Madi Girardot	Economic environmental social impacts	Socio-economics
Manuel Rodriguez	Economic environmental social impacts	Socio-economics
Mark and Dorraine Wilson	Economic environmental social impacts	Socio-economics
Mark and Dorraine Wilson	Project	Strategic context
Mark Carberry	Economic environmental social impacts	Greenhouse gas and energy
Mark Dobbins	Economic environmental social impacts	Socio-economics
Martin Aicken	Economic environmental social impacts	Socio-economics
Martin Castelli	Economic environmental social impacts	Socio-economics
Martin Feld	Economic environmental social impacts	Socio-economics
Matthew Tugrul	Economic environmental social impacts	Socio-economics
Melissa Faulks	Economic environmental social impacts	Socio-economics
Michael Biro	Economic environmental social impacts	Socio-economics
Michael Bryant	Economic environmental social impacts	Greenhouse gas and energy
Michael Bryant	Economic environmental social impacts	Socio-economics
Michael Gifford	Economic environmental social impacts	Socio-economics
Michael Lawer	Economic environmental social impacts	Socio-economics
Michael Nicastri	Economic environmental social impacts	Socio-economics
Michael Reay	Economic environmental social impacts	Socio-economics
Michael Rhydderch	Economic environmental social impacts	Greenhouse gas and energy
Michael Semmler	Economic environmental social impacts	Socio-economics
Michael Sharrock	Economic environmental social impacts	Socio-economics
Michael Sopher	Economic environmental social impacts	Socio-economics
Mick Grogan	Economic environmental social impacts	Greenhouse gas and energy
Mick Grogan	Economic environmental social impacts	Socio-economics
Milco Stojanoski	Economic environmental social impacts	Greenhouse gas and energy

Individual submission	Issue Category	Issue Sub-category
Mohsen Shehata	Economic environmental social impacts	Socio-economics
Murray Smith	Economic environmental social impacts	Socio-economics
Nathan Bartolo	Economic environmental social impacts	Socio-economics
Nathan Eastwood	Economic environmental social impacts	Socio-economics
Neil Craddock	Project	Strategic context
Nick Di Giorgio	Economic environmental social impacts	Socio-economics
Nick Di Giorgio	Economic environmental social impacts	Greenhouse gas and energy
Nick Di Giorgio	Project	Strategic context
Nick Ziogas	Economic environmental social impacts	Socio-economics
Nick Ziogas	Economic environmental social impacts	Greenhouse gas and energy
Nicole Curby	Economic environmental social impacts	Greenhouse gas and energy
Nicole Weber	Economic environmental social impacts	Socio-economics
Paul Condran	Economic environmental social impacts	Socio-economics
Paul Gunning	Economic environmental social impacts	Greenhouse gas and energy
Paul Jarman	Economic environmental social impacts	Socio-economics
Paul Lomas	Economic environmental social impacts	Socio-economics
Paul Martin	Economic environmental social impacts	Socio-economics
Paul Mele	Economic environmental social impacts	Socio-economics
Paul Roach	Project	Strategic context
Paul Roach	Procedural matters	Compliance with legislation, regulations and guidelines
Peter Austin	Economic environmental social impacts	Socio-economics
Peter Barkeit	Economic environmental social impacts	Socio-economics
Peter Barkeit	Project	Strategic context
Peter Cable	Justification evaluation	General support
Peter Di Pietro	Economic environmental social impacts	Socio-economics
Peter Ellsmore	Project	Strategic context
Peter Ellsmore	Economic environmental social impacts	Socio-economics
Peter Lisch	Economic environmental social impacts	Socio-economics
Peter Macpherson	Economic environmental social impacts	Socio-economics

Individual submission	Issue Category	Issue Sub-category
Peter McIndoe	Economic environmental social impacts	Socio-economics
Peter Munro	Economic environmental social impacts	Socio-economics
Peter O'Brien	Economic environmental social impacts	Socio-economics
Philip Jones	Economic environmental social impacts	Socio-economics
Philip Ringk	Economic environmental social impacts	Socio-economics
Pierre Paturel	Economic environmental social impacts	Greenhouse gas and energy
Pierre Paturel	Project	Strategic context
Prashant Jagatap	Economic environmental social impacts	Socio-economics
Rada Germanos	Economic environmental social impacts	Greenhouse gas and energy
Rada Germanos	Economic environmental social impacts	Water quality
Rebecca Roberts	Economic environmental social impacts	Socio-economics
Reece Cullen	Economic environmental social impacts	Socio-economics
Rhea Zaulich	Economic environmental social impacts	Socio-economics
Richard Lorenc	Economic environmental social impacts	Socio-economics
Ricky Adams	Economic environmental social impacts	Socio-economics
Rob Verheyen	Economic environmental social impacts	Socio-economics
Rob Verheyen	Economic environmental social impacts	Greenhouse gas and energy
Robert Cakarovski	Economic environmental social impacts	Socio-economics
Robert Cakarovski	Economic environmental social impacts	Greenhouse gas and energy
Robert Dombkins	Justification evaluation	General support
Robert Nightingale	Economic environmental social impacts	Greenhouse gas and energy
Robert Nightingale	Economic environmental social impacts	Socio-economics
Rocco Zagari	Economic environmental social impacts	Socio-economics
Rod Aleckson	Justification evaluation	General support (socio-economic)
Rod Doyle	Justification evaluation	General support
Roger Tindall	Economic environmental social impacts	Socio-economics
Roger Tindall	Economic environmental social impacts	Greenhouse gas and energy
Roger Tindall	Project	Strategic context
Rohan Stanger	Economic environmental social impacts	Greenhouse gas and energy

Individual submission	Issue Category	Issue Sub-category
Rohan Stanger	Economic environmental social impacts	Socio-economics
Rory McNeill	Economic environmental social impacts	Greenhouse gas and energy
Rory McNeill	Economic environmental social impacts	Socio-economics
Rory McNeill	Project	Strategic context
Ruby O'Driscoll	Economic environmental social impacts	Socio-economics
Ruwan Brell	Economic environmental social impacts	Greenhouse gas and energy
Ryan Connor	Project	Strategic context
Ryan Houston	Justification evaluation	General support
Salvatore Capri	Economic environmental social impacts	Socio-economics
Samuel Thompson	Project	Strategic context
Samuel Thompson	Economic environmental social impacts	Greenhouse gas and energy
Sandhya Chavan	Economic environmental social impacts	Socio-economics
Sarah Drage	Economic environmental social impacts	Socio-economics
Sarah Scott	Economic environmental social impacts	Socio-economics
Sasa Kajkut	Economic environmental social impacts	Socio-economics
Scott Clarke	Economic environmental social impacts	Socio-economics
Scott Madden	Economic environmental social impacts	Socio-economics
Shane McVicar	Economic environmental social impacts	Greenhouse gas and energy
Shane McVicar	Economic environmental social impacts	Socio-economics
Shannon Peace	Economic environmental social impacts	Socio-economics
Shaun Hamilton	Economic environmental social impacts	Socio-economics
Simon Took	Economic environmental social impacts	Socio-economics
Sophie Boss	Economic environmental social impacts	Socio-economics
Stacey Sutherland	Economic environmental social impacts	Socio-economics
Stephen Donnelley	Economic environmental social impacts	Socio-economics
Stephen Young	Economic environmental social impacts	Greenhouse gas and energy
Stephen Young	Project	Project options
Steven Christlo	Economic environmental social impacts	Socio-economics
Steven Guy	Economic environmental social impacts	Socio-economics

Individual submission	Issue Category	Issue Sub-category
Steven Guy	Economic environmental social impacts	Greenhouse gas and energy
Steven Leuver	Economic environmental social impacts	Greenhouse gas and energy
Stiven Nedeski	Economic environmental social impacts	Socio-economics
Stuart Martin	Economic environmental social impacts	Socio-economics
Tahnee Lowe	Economic environmental social impacts	Greenhouse gas and energy
Tahnee Lowe	Economic environmental social impacts	Socio-economics
Terry Usnar	Economic environmental social impacts	Socio-economics
Timothy David Lakelin	Economic environmental social impacts	Socio-economics
Timothy Rodwell	Economic environmental social impacts	Socio-economics
Tonia Morosin	Economic environmental social impacts	Socio-economics
Tony Bernich	Economic environmental social impacts	Socio-economics
Travis Dalla	Economic environmental social impacts	Socio-economics
Trent Johnson	Economic environmental social impacts	Socio-economics
Trent Tolhurst	Economic environmental social impacts	Socio-economics
Troy Galbraith	Economic environmental social impacts	Socio-economics
Troy Galbraith	Economic environmental social impacts	Greenhouse gas and energy
Troy Smolenaars	Justification evaluation	General support
Tushar Ghamandi	Justification evaluation	General support
Vince Laina	Economic environmental social impacts	Socio-economics
Warren Harrington	Economic environmental social impacts	Socio-economics
Wayne Staff	Economic environmental social impacts	Socio-economics
Wayne Staff	Economic environmental social impacts	Greenhouse gas and energy
William Short	Project	Strategic context
William Sloan	Economic environmental social impacts	Socio-economics
William Stevens	Project	Strategic context
William Wilkins	Economic environmental social impacts	Socio-economics
Withheld	Economic environmental social impacts	Socio-economics
Withheld	Project	Strategic context
Withheld	Justification evaluation	General support

Individual submission	Issue Category	Issue Sub-category
Withheld	Economic environmental social impacts	General environmental impact
Withheld	Economic environmental social impacts	Greenhouse gas and energy
Withheld	Economic environmental social impacts	Water Quality
Withheld	Project	Project options
Withheld	Justification evaluation	General objection
Withheld	Economic environmental social impacts	Water quality
Xue Feng Dong	Economic environmental social impacts	Socio-economics
Zac Forst	Economic environmental social impacts	Socio-economics
Zeljko Horvat	Project	Strategic context
Zoran Grijak	Economic environmental social impacts	Socio-economics

Appendix B

Updated management measures

Where mitigation measures have been updated, they are shown as:

– Strikethrough = ~~deleted measures or text.~~
– Bold = **new text or edit to existing mitigation measures**
– Highlighted grey = New measures.

Table B.1 Consolidated list of management measures for 6BF reline project

Impact	ID	Measure	Timing
Air quality			
Dust control	AQ1	A dust management plan for use during construction activities will be prepared prior to works commencing.	Pre- Construction
Dust control	AQ2	Existing ambient air quality stations will be used to monitor dust generating construction activities.	Construction
Dust control	AQ3	During demolition of any contaminated areas, extra measures will be implemented to prevent dust leaving the work area.	Construction
Dust control	AQ4	Dust generating activities will be ceased or reduced if a visual plume of dust leaves the site or monitoring shows excessive particulate levels.	Construction
Dust control	AQ5	Blasting or heavy demolition which may lead to excessive dust will only be undertaken in conditions not likely to disperse dust towards sensitive receptors.	Construction
Dust control	AQ6	Operations conducted in areas with low moisture content material will be suspended during high-speed wind events or water sprays will be used.	Construction
Dust control	AQ7	Stockpile sizes will be kept to a minimum, where practical.	Construction
Dust control	AQ8	Limit cleared areas of land and stockpiles, and clear only when necessary to reduce fugitive dust emissions.	Construction
Dust control	AQ9	Control on-site traffic by following specific routes for haulage and access in accordance with signposted speeds.	Construction
Dust control	AQ10	All trucks hauling material will be covered on the way to the site and should maintain a reasonable amount of vertical space between the top of the load and top of the trailer.	Construction

Impact	ID	Measure	Timing
Additional emission controls	A11	BlueScope intends to provide the following additional process and emission controls as part of the project: – Cast house floor fugitives - manipulator and trough covers, extraction from main trough, extraction at taphole with primary and secondary hood ~~(5BF only has a primary hood so this is an improvement),~~ lowered tilting platforms during casting ~~(also an improvement on 5BF).~~ – Iron Kish - extraction at iron ladles and slag tilting spouts, both the iron ladles and slag pots will have level sensors to ensure they are filled in a controlled manner. – Slag Handling - Coldwater slag granulation with condensing ~~stack - BAT and improvement on 5BF~~ **unit**. Slag pits - air cooling for up to 24 hours before applying water to minimise H_2S generation during watering. – Dust catcher - A lock-hopper will be installed at the base of the dust catcher and will minimise BFG and dust emissions to the atmosphere. – Dust suppression - Sealed roads, street sweepers and truck wheel washes from stock house and slag handling areas.	~~Construction~~ **Operation**
Commissioning phase impacts	AQ12	If there is potential for local residents to experience impacts, they will be notified about the proposed commissioning timetable and provide advice on what they can expect regarding emissions including smoke.	~~Construction~~ **Operation**
Commissioning phase impacts	AQ13	Where practicable, any commissioning activities that may lead to excessive emissions or visible smoke (excluding blow-in) will be timed as much as possible to occur when winds are not blowing towards residential areas.	~~Construction~~ **Operation**
Operational Air Quality Management	AQ14	BlueScope will develop and implement an Air Quality Management Plan prior to commencement of operations including: – Identify all major sources of air emissions and associated proactive and reactive mitigation measures to ensure air pollution is prevented or minimised – Describe protocols for regular maintenance of plant and equipment – Outline procedures for monitoring and reporting air emissions – Describe measures to regularly review the effectiveness of air pollution control measures.	Operation
Operational Air Quality Management	AQ15	Conduct ongoing emission sampling in accordance with conditions of approval and EPL 6092.	Operation

Impact	ID	Measure	Timing
Noise and vibration			
Construction Noise and Vibration Management Plan	NV1	A construction noise and vibration management plan (CNVMP) will be developed once a detailed construction methodology has been prepared. The plan will include: – Details of the construction methodology – Updated noise predictions at sensitive receivers based on finalised construction methodology – A noise monitoring procedure and program for the duration of works in accordance with the construction noise and vibration management plan and any approval or licence conditions. Monitoring reports will be prepared in accordance with the requirements of the noise monitoring procedures. – Feasible and reasonable mitigation measures to be implemented to mitigated predicted impacts to sensitive receivers that may be noise affected – A community consultation plan to liaise with the noise affected receivers, including: • Notification to residences a minimum of 7 calendar days prior to the start of high noise generating works, including information such as total building time, what works are expected to be noisy, their duration, what is being done to minimise noise and when respite periods will occur. • A procedure for complaints, including maintaining a complaints register on site.	Pre-construction
Site induction	NV2	All employees, contractors and subcontractors are to receive an environmental induction. The site induction must at least include: – All project specific and relevant standard noise and vibration mitigation measures. – Relevant licence and approval conditions. – Permissible hours of work – Any limitations on high noise generating activities – Location of nearest sensitive receivers – Construction employee parking areas – Designated loading/unloading areas and procedures – Site opening/closing times (including deliveries) – Environmental incident procedures.	Pre-construction Construction
At source mitigation measures – pre - construction	NV3	Quieter and less vibration emitting construction methods will be used where feasible and reasonable.	Pre-construction
At source mitigation measures – pre - construction	NV4	The noise levels of plant and equipment will have an operating sound power lower or similar to the levels presented in ~~Table 8.18 and Table 8.19~~. **the NVIA.**	Pre-construction
At source mitigation measures – pre - construction	NV5	The size of the vibratory compactor will be limited to 18 tonnes or less to maintain the safe work buffer distances.	Pre-construction
At source mitigation measures - construction	NV6	Where practical noise generating activities with potential to impact any nearby receivers would be scheduled during standard hours.	Construction

Impact	ID	Measure	Timing
At source mitigation measures - construction	NV7	As much distance as possible will be placed between the plant or equipment and residences and other sensitive land uses.	Construction
At source mitigation measures – construction	NV8	Equipment with directional noise characteristics will be oriented away from noise sensitive receivers.	Construction
At source mitigation measures – construction	NV9	Where additional activities or plant may only result in a marginal noise increase and speed up works, the duration of impact will be limited by concentrating noisy activities at one location and moving to another as quickly as possible.	Construction
At source mitigation measures – construction	NV10	Only the necessary size and power of equipment will be used.	Construction
At source mitigation measures – construction	NV11	Loading and unloading of materials/deliveries will occur as far as practically possible from sensitive receivers.	Construction
At source mitigation measures - construction	NV12	The use of engine compression brakes will be limited in proximity to residences.	Construction
At source mitigation measures - construction	NV13	Equipment will not be operated until it is maintained or repaired, where maintenance or repair would address the annoying character of noise identified.	Construction
At source mitigation measures – road noise	NV14	Construction traffic travelling along Emily Road: need to ensure that traffic remains below the speed limit of 40 km/hr.	Construction
Rock breaking	NV15	– All rock-breaking and pile driving activities to be confined between the hours: daytime hours of 7:00 am to 6:00 pm from Monday to Friday and 8:00 am to 1:00 pm on Saturday, with the exception of the following activities: – The delivery of oversized plant or structures – Emergency work to avoid the loss of life or damage to property, or to prevent environmental harm Removal of the salamander and staves from inside the furnace will likely be carried out 24 hours a day to minimise the hire time and maximise the utilisation of the specialised wreck out equipment sourced from overseas.	Construction
Out of hours work	NV16	Out of hours movements will be minimised where possible. The need for out of hours work will be justified in the CEMP from the project and assessed against the noise requirements of the ~~ICNG.~~ **Interim Construction Noise Guidelines (DECC, 2009).**	Construction
	NV17	Approval in writing from the EPA will be sought for construction activities outside of the standard hours of construction per EPL 6092 requirements.	Construction

Impact	ID	Measure	Timing
Noise validation	NV18	All conclusions from the operational noise assessment are based on a combination of similar noise sources from 5BF, alongside additional noise measurements where required. To check that noise model predictions are representative of 6BF operational noise emissions at sensitive receivers, noise validation measurements will be undertaken at an intermediate location in the path between source equipment and Cringila receivers. Refer to Section 8.2 in Appendix F to the EIS.	Operation
In transmission path mitigation measures	NV19	Temporary site buildings and materials stockpiles will be used as noise barriers.	Construction
Operational noise management plan	NV20	An operational noise management plan ~~to~~ **will** be developed to minimise the risk of adverse noise impacts during the operation.	Operation
Hazard and risk			
Explosives	HR1	Explosives will be stored in a non-ferrous receptacle clearly marked 'Explosives' that is kept closed and locked (except during use by authorised personnel) and stored in the original containers which are securely sealed. The storage area will be a well-ventilated magazine licenced for Class 1.1 explosives, which protects the explosives from the weather, contamination, sources of ignition and access from unauthorised individuals. Storage will be isolated from other dangerous good stores and the area free of debris, waste and combustibles. The explosives containers will be protected against physical damage and regularly checked for spills and leaks.	Construction
Explosives	HR2	Explosive storage magazines will comply with the requirements of AS 2187.1 *Explosives – Storage, transport and use – Storage*.	Construction
Explosives	HR3	Where more than 2.5 kg of Class 1.1 explosives are stored onsite, every perimeter entrance to the site must be labelled with a 'Hazchem' placard in accordance with the Explosives Regulation 2013. Adequate security will be provided for the explosives storage area, and only those who are authorised for unsupervised access to the area will have means to unlock the explosive storage magazine.	Construction
Explosives	HR4	There will be no smoking, naked light, heat or ignition source present at the explosives storage area.	Construction
Explosives	HR5	The explosives stock will be rotated to prevent ageing (use on first in-first out basis).	Construction
Explosives	HR6	Explosives will be stored at least 90 metres from the site boundary.	Construction
Fire or explosion from gas leak.	HR7	An inspection and maintenance regime for the gas reducing station and the blast furnace gas pipework and associated fittings will be implemented to prevent leaks.	Construction Operation
Fire or explosion from gas leak.	HR8	The site gas reticulation line will be suspended from the wall or roof above and away from the reach of any mobile equipment.	Detailed design Construction
Fire or explosion from gas leak.	HR9	Barriers will be erected around the gas pipe in key areas.	Construction Operation

Impact	ID	Measure	Timing
Molten metal-water explosion	HR10	Any water use will be separated from the blast furnace area where possible. Any use of water within proximity to the blast furnace area will be tightly controlled to prevent mixing of water with molten metal.	Operation
Molten metal-water explosion	HR11	Furnace will be designed to avoid inadvertent water leakage into the furnace and casting areas.	Detailed design Construction
Toxic gas release	HR12	An inspection and maintenance regime for the BFG system will be implemented to prevent leaks.	Construction Operation
Dangerous goods and chemical spills	HR13	All chemicals and DGs will have appropriate labelling, be separated where necessary, contained within a bund and be disposed of in accordance with Australian Standards.	Construction Operation
Dangerous goods and chemical spills	HR14	A copy of the Safety Data Sheet (SDS) for all chemicals present on site will be made readily accessible to emergency services.	Construction Operation
Dangerous goods and chemical spills	HR15	Appropriate safe work procedures will be implemented for safe handling of all chemicals and dangerous goods, including transfer, storage, spill prevention and clean up requirements.	Construction Operation
Emergency response plan (ERP)	HR16	The sites ERP will be updated to incorporate the use and storage of Class 1.1 explosives when the quantity required and appropriate storage location have been identified, prior to their use on site Two copies of the ERP will be stored in a prominent 'Emergency Information Cabinet' located in a position directly adjacent to the site's main entry point/s. An Emergency Services Information Package will be prepared in accordance with the FRNSW guideline for storage alongside the ERP in an Emergency Information Cabinet.	Construction Operation
Water and hydrology			
Surface Water General	WQ1	To manage impacts to water quality during the construction phase, it is recommended that the CEMP include a site specific SWMP outlining site management requirements, specific controls, environmental inspection requirements, roles and responsibilities, health and safety, incident management and emergency response including arrangements for managing wet weather events. The SWMP will include an Erosion and Sediment Control Plan (ESCP) which will be prepared in accordance with the *Blue Book -Managing Urban Stormwater: Soils and Construction* (4th edition, Landcom, 2004).	Pre-construction
Surface Water General	WQ2	A commissioning Water Quality Management Plan (WQMP) will be developed following investigations during detailed design to assess the likely composition of initial flushing water, the potential for foaming, the characteristics of the start-up blowdown water and commissioning of the granulator. Where required monitoring programs and corrective measures will be developed to ensure that discharges to groundwater, No.2 Blower Station (2BS) Drain and Allans Creek are in accordance with EPL 6092. The commissioning WQMP may be a standalone document or may form part of the SWMP.	Pre-construction

Impact	ID	Measure	Timing
Surface Water General	WQ3	The only direct discharge to 2BS Drain will be from the effluent treatment system. All other discharges will be directed to Ironmaking East Drain (IMED), a secondary containment basin, which will then be pumped to 2BS Drain.	Operation
Process Water / Stormwater	WQ4	The slag handling area will include: – Hardstand surfaces graded to internal drains in the area so surface water will flow into either the new slag pit settling pond or the granulator settling pond – Collected water from the water sprays in the area will be recycled as make up water to the granulator or as slag pit sprays In a rain event the first flush **(10 mm)** will be collected in the new slag pit settling pond, **for re-use in the slag handling area**. ~~which~~ **Rainfall in excess of 10 mm collected at the settling pond** will flow into the plant stormwater drain before draining to IMED and subsequently being pumped to 2BS Drain for release to Allans Creek.	Operation
Process Water / Stormwater	WQ5	The effluent treatment system will be above ground and bunded underneath to capture any flows. Any spillage will be captured and directed to the effluent treatment system. Additional paving between the effluent treatment system and the road on the east side of the plant will cover the unsealed area.	Operation
Process Water / Stormwater	WQ6	COG and BFG condensate will be managed with the controls that have previously been identified as part of PRP181-Seal Pot Risk Assessment. 'No-blow' seal pots will be installed for BFG seal pots which will improve the risk of gas condensate overflows. **COG condensate** collection tanks will be bunded and level detection with alarming installed to avoid over fill events.	Operation
Process Water / Stormwater	WQ7	The effluent treatment system will discharge cleaned and treated water to 2BS Drain, however if the water quality is variable, ~~this~~ **the water** will be **further treated or** directed to contingency storage for further treatment and reassessment.	Operation
Process Water / Stormwater	WQ8	All process wastewater within the 6BF area will be either captured or treated and then discharged as per below: – Blowdown water from the effluent treatment system is discharged to 2BS Drain following the treatment process – Contingency storage for all discharges will be used when water quality is variable – Collection of blast furnace gas ~~seal pot water~~ **condensate** and return to the effluent treatment system – Collection of COG ~~seal pot water~~ **condensate** with pick up by truck – ~~Seal pot~~ **COG Condensate collection** tanks will have bunds installed and level detection with alarming on collection tanks to avoid over fill events Online treatment for cyanide is currently under investigation at 5BF. Outcomes and learnings will be applied to 6BF.	Operation

Impact	ID	Measure	Timing
Process Water / Stormwater	WQ9	In high rainfall events water in the IMED may overflow the weir into Port Kembla Harbour at licensed discharge point 89.	Operation
Process Water / Stormwater	WQ10	Surface and groundwater monitoring will be undertaken in accordance with EPL conditions and the outcomes of any Pollution Reduction Plans requirements.	Operation
Process Water / Stormwater	WQ11	Spill management will involve: – EPA compliant bunding of all hazardous chemicals – Spill kits readily available – High risk process areas sealed – All runoff, including spills, from the gas cleaning and effluent treatment plants will be collected and returned to the water treatment plant during normal operation – Spill containment and additional paving between effluent treatment system and road on the east side of the plant – No-blow seal pots installed on blast furnace gas mains ~~reducing the chance of make-up water being left on for extended periods of time~~ – Level detection and alarming on gas condensate collection tanks – Seal pot tanks will have bunds installed and level detection with alarming on collection tanks to avoid over fill events - Above ground effluent treatment system clarifier with bunding underneath to capture any overflows.	Construction and Operation
Process water	WQ12	BlueScope commits to: – Continuing investigations already underway as part of Pollution Reduction Program (PRP) 182 – Implementing additional reasonable and feasible management measures as developed in consultation with the NSW EPA as a result of the PRP 182 process.	Operation
Decommissioning	WQ13	A rundown and decommissioning strategy (or similar) will be developed prior to decommissioning, in consultation with the EPA. The strategy will describe the water dosage and treatment processes during the rundown phase and management measures that will be implemented during decommissioning to ensure that water quality in the No.2 Blower Station Drain meets EPL conditions throughout the rundown process.	Pre-Decommissioning

Impact	ID	Measure	Timing
Traffic			
Construction Traffic Management Plan	TT1	A Construction Traffic Management Plan (CTMP) will need to be prepared prior to the commencement of works. The CTMP will provided measures to: – Minimise the impact of the construction vehicle traffic on the overall operation of the road network. – Provide continuous, safe, and efficient movement of traffic for both the general public and construction workers. – Details regarding installation of appropriate advance warning signs to inform users of the changed traffic condition. – A description of the construction vehicles and the volume of these construction vehicles accessing the construction site. – Include information regarding the changed access arrangement and a description of the proposed external routes for vehicles, including the construction vehicles, accessing the site. – Establishment of a safe pedestrian environment in the vicinity of the site. – All staff and subcontractors engaged on site should be required to undergo site induction. The induction will outline the requirements on the CTMP, including site access routes, environmental and occupational health and safety responsibilities, emergency procedures, potential carpooling opportunities and vehicle height restriction under the power lines, among others. Additionally, the Site Manager will discuss CTMP requirements regularly as a part of “toolbox talks”.	Pre-construction
Traffic management measures	TT2	Key stakeholders, including owners/operators of adjacent lands and emergency service providers, will be notified of any changes to the traffic management arrangements prior to the commencement of works.	Pre-construction
Traffic management measures	TT3	The construction site access will be reviewed during design development to consider the turn path required for the construction vehicles.	Pre-construction
Traffic management measures	TT4	Construction works should occur within the standard hours defined by the Interim Construction Noise Guideline (DECC, 2009) where practical. As discussed in Section 5.12 of the EIS, some works may occur outside of these hours.	Construction
Traffic management measures	TT5	Truck drivers will be directed to follow the predetermined haulage routes	Construction
Traffic management measures	TT6	Workers required to undertake works or traffic control will be suitably trained and hold the required accreditation to carry out works on site and will also be site inducted	Construction
Traffic management measures	TT7	Protection will be provided to workers and road users through advanced warning of roadworks, speed changes, safety barriers with adequate offsets and deflection allowance, where necessary	Construction
Traffic management measures	TT8	Site access should be restricted to authorised personnel only and existing employees on site. Pedestrian access to and around the site will be maintained at all times.	Construction

Impact	ID	Measure	Timing
Traffic management measures	TT9	Roadwork speed zones must be logical, credible, and enforceable. They should only be used where they are self-enforcing or will be enforced. Roadwork speed zones will be used with traffic control signs and devices and should not be used in place of more effective traffic controls. They will be used only while road works are in progress or the lower speed road conditions exist.	Construction
Traffic management measures	TT10	A Transport Access Guide (TAG) should be prepared to identify alternate travel options for visitors and staff to encourage sustainable transport and reduce parking demand. The TAG summarises alternate transport options to access the development, outlining where and how these services can be accessed and the frequency of the service. This could include but is not limited to: – Public transport locations (bus and train connection). – Active transport (cycle / walking) opportunities. – Bicycle infrastructure facilities. – Carpooling between workers (subject to COVID-19 safe practices).	Construction
Traffic management measures	TT11	The following environmental requirements should be adhered to: – All vehicles transporting loose materials will have the entire load covered and/or secured to prevent any large items, excess dust or debris depositing onto the roadway during travel to and from the site, including but not limited to construction rumble strips/wheels wash at the site egress location. – The lead contractors will monitor the roads leading to and from the site and take all necessary steps to rectify any road deposits caused by site vehicles, to maintain the safety of all road users. – Vehicles operating to, from and within the site shall do so in a manner, which does not create unreasonable or unnecessary noise or vibration. – Public roads and access points will not be obstructed by any materials, vehicles, refuse skips or the like, under any circumstances.	Construction

Impact	ID	Measure	Timing
Soils, geology and groundwater			
Erosion and sedimentation	S1	Prior to construction commencing, a site specific Soil and Water Management Plan (SWMP) will be prepared. The plan will include arrangements for managing wet weather events, specific controls and environmental inspection requirements. The SWMP will include an Erosion and Sediment Control Plan (ESCP) which will be prepared in accordance with the Blue Book -Managing Urban Stormwater: Soils and Construction (4th edition, Landcom, 2004) and Volume 2 (DECC, 2008a).	Pre-construction
Erosion and sedimentation	S2	The ESCP will detail the erosion controls used for the project and where they will be established. The ESCP will include soil specific measures to: – Prevent sediment moving off-site and sediment laden water entering any watercourse, drainage lines, or drain inlets – Prevent mixing of soils – Ensure soils are replaced in their pre-existing configuration during rehabilitation – Reduce water velocity overland and capture sediment on site – Minimise the amount of material transported from site to surrounding pavement surfaces – Divert clean water around the site – Install measures and site entry and exit points to minimise movement of material onto public roads.	Pre-construction
Erosion and sedimentation	S3	Erosion and sediment controls will be established prior to works commencing on site.	Pre-construction
Erosion and sedimentation	S4	Erosion and sediment controls will be inspected on a regular basis and replaced when their function is compromised.	Construction
Erosion and sedimentation	S5	Erosion and sediment controls will be inspected promptly after rainfall events.	Construction
Erosion and sedimentation	S6	If excavations are required during demolition works, soil generated will be reused where applicable. Excess spoil not required or able to be reused onsite will be disposed of appropriately as per the EPA's Waste Classification Guidelines (2014).	Construction
Erosion and sedimentation	S7	Vehicles will be restricted to existing access routes where practical.	Construction
Erosion and sedimentation	S8	Disturbed areas will be returned to pre-existing condition following the completion of construction.	Post-construction
Contamination	C1	An incident emergency spill plan will be detailed in the CEMP	Pre-construction
Contamination	C2	Spill response kits will be provided on site and be located in a clearly defined location.	Construction
Contamination	C3	Plant and machinery will be inspected regularly to ensure that they are in sound working order	Construction

Impact	ID	Measure	Timing
Contamination	C4	If soils that appear to be contaminated are exposed during construction of the project, works will cease in the area until further investigation can be undertaken. The following factors are indications of potential contamination on site: – Stained or discoloured fill – Hydrocarbon or chemical odour – Construction wastes such as concrete, bricks, timber, tiles, fibre cement sheeting, fragments and pipes – Imported material such as ash, slag or coal ~~chitter~~ **containing material.** – Contaminated soils requiring disposal will be classified under the Waste Classification Guidelines (EPA,2014) prior to disposal.	Construction
Contamination	C5	All chemical/fuel storage and loading areas will be bunded or otherwise contained.	Construction, Operation
Contamination	C6	All plant personnel that may encounter chemicals/fuels will be trained in required handling procedures.	Construction, Operation
Biodiversity			
General biodiversity	B1	The following measures will be implemented to manage general biodiversity impacts: – Measures proposed in the SWMP will be implemented to ensure appropriate sediment control measures are put in place to ensure run-off during construction does not result in indirect impacts to surrounding habitats – Construction machinery will be cleaned prior to entering and leaving site to ensure weed propagules are not transported – No native flora will be cleared during the establishment of laydown areas – Laydown areas will be placed on existing hardstand, and where possible, as far away from drainage lines and places where surface water can pool. – These measures will be implemented in the CEMP and may be revised at any time to manage potential environmental impacts.	Pre-construction Construction
Green and Golden Bell Frog	B2	All measures outlined in Management of Threatened Species, The Green and Golden Bell Frog, *Litoria Aurea* (BlueScope, 2020) will be implemented during construction of the project.	Construction
Green and Golden Bell Frog	B3	All workers will be trained in the procedures outlined in Management of Threatened Species, The Green and Golden Bell Frog, *Litoria Aurea* (BlueScope, 2020) and their responsibilities under the BC Act and EPBC Act in the project induction. This will also be discussed periodically during the toolbox talks.	Construction

Impact	ID	Measure	Timing
Green and Golden Bell Frog	B4	If a **Green and Golden Bell Frog** (GGBF) is found in the project site or laydown area, work in the vicinity will cease immediately. Work will not recommence until clearance from a qualified ecologist can be provided. Following confirmation of the sighting of GGBF either by a local ecologist or by means of identification using the GGBF Audit / Inspection Checklist, the sighting must be registered with the EPA and NSW BioNet Species sightings via the web or telephone.	Construction
Unexpected species discovery	B5	If other endangered species are discovered on the project site or in laydown areas, work will cease in the vicinity and a qualified ecologist will be employed to assess the discovery. Additional mitigation measures presented by the ecologist will be incorporated into the CEMP. Work in the area will not commence unless clearance is given by the ecologist.	Construction
Aboriginal heritage			
Unexpected Aboriginal heritage finds	AH1	In the event of an unexpected find of potential Aboriginal object/s (or suspected item), work will cease in the area and DPE notified. Works will not recommence until continuation is authorised by DPE.	Construction
Historic heritage			
Unexpected finds	HH1	In the unlikely event that unexpected historical (non-Aboriginal) archaeological remains are discovered during works they will be managed with reference to the standard protocols and procedures of Section 146 of the *Heritage Act 1977*.	Construction
Visual amenity			
Visual amenity – construction works	LV1	Temporary boarding, barriers, traffic management and signage will be removed when no longer required.	Construction
Visual amenity – construction works	LV2	Roads providing access to the site and work areas will be maintained free of dust and mud as far as reasonably practicable.	Construction
Visual amenity – construction works	LV3	Materials and machinery will be stored neatly during construction works.	Construction
Visual amenity – construction works	LV4	Temporary lighting required during the construction period will be sited and designed to avoid light spill into the surrounding area.	Construction
Visual amenity – construction works	LV5	Existing site features will be utilised as screening when positioning plant where practical.	Construction
Land use and property			
Land use	LU1	Management and mitigation strategies presented in the following sections will be implemented during construction of the project: – Air quality (Section 8.1.5 of the EIS) – Noise and vibration (Section 8.2.6 of the EIS) – Traffic (Section 8.5.5 of the EIS) – Visual amenity (Section 9.5.3 of the EIS) – Waste management (Section 9.9.3 of the EIS)	Pre-construction Construction Operation
Land use	LU2	BlueScope will coordinate project activities to minimise the impact to land use and services within the PKSW site.	Construction

Impact	ID	Measure	Timing
Social and economic			
Investment and employment	SE1	A contracting and procurement strategy focusing on maximising local content will be prepared to support local employment and business opportunities during construction. During operation, the project should seek to work with interested local parties to fulfil workforce requirements.	Construction, operation
Investment and employment	SE2	BlueScope will continue to invest into the local community through the continuation of the BlueScopeWIN Community Partners Program.	Construction, operation
Community engagement	SE3	The project will include a comprehensive, multi-stakeholder engagement program to inform decisions regarding the project.	Construction
Community engagement	SE4	A Community Consultative Committee (CCC) will continue to be operated by BlueScope for the PKSW	Construction
Community engagement	SE5	BlueScope will provide a contact number and email address for the community to make comments on throughout the project.	Construction
Amenity	SE6	Ensure that measures discussed in other sections that reduce environmental impacts are implemented effectively for the duration of the project.	Construction, operation
Greenhouse gas and energy			
Construction GHG emissions	GHG1	All plant and equipment used during the construction works shall be regularly maintained to comply with the relevant exhaust emission guidelines	Construction
Construction GHG emissions	GHG2	Sustainable procurement practices will be adopted where feasible	Construction
Construction GHG emissions	GHG3	Where reasonable and feasible, measures to be implemented by contractors may include, but not be limited to: – Construction materials sourced locally where possible – Construction materials that have minimal embodied energy be selected – Use of PVC plastic minimised – Construction materials that are low maintenance and durable – Plant and equipment will be switched off when not in constant use and not left idling – Plant and equipment brought onsite will be regularly serviced and energy efficient vehicles or equipment will be selected where available – Any plant and equipment that is not working efficiently (i.e. emitting excessive smoke) will be removed from site and replaced as soon as possible Construction works will be planned to ensure minimal movement of plant and equipment., ~~including barges~~	Construction

Impact	ID	Measure	Timing
Operational GHG emissions	GHG4	Subject to confirmation of engineering suitability, the following elements will be incorporated into the operation of the project: – Dual lance tuyeres. – Waste gas heat recovery unit installed on 6BF stoves – Top Recovery turbine installed to extract energy from gases vented from the top of the blast furnace.	Detailed design
Operational GHG emissions	GHG5	All operational equipment will be operated and maintained to minimise leaks, accidental venting of gases or other fugitive GHG emissions to the extent practical.	Operation
Operational GHG emissions	GHG6	Annually report on total PKSW net energy consumption and GHG emissions under the NGERS in accordance with the methodology prescribed by the National Greenhouse and Energy Reporting (Measurement) Determination 2008 (Measurement Determination).	Operation
Operational GHG emissions	GHG7	BlueScope will seek to maximise the use of steel manufacturing co-products to offset carbon intensive material inputs into industrial processes e.g. the use of Granulated Blast Furnace Slag as a cementitious replacement for Portland Cement in concrete construction to lower GHG emissions	Operation
Waste management			
Construction waste	WM1	A waste management plan for the project will be prepared prior to construction commencing. The waste management plan will detail: – Statutory requirements for waste in NSW – Systems to sort and track the actual types and quantities of waste generated – Measures for separating waste based on classification of management options including colour coded bins – Options for offsite reuse, reprocessing, recycling and energy recovery	Pre-construction
Construction waste	WM2	Awareness of waste minimisation practices will be included in the project induction.	Construction
Construction waste	WM3	Waste will be classified, managed, and disposed of in accordance with the *Waste Classification Guidelines* (EPA, 2014).	Construction
Operational waste	WM4	Operational waste streams will continue to be managed in accordance with EPL 6092.	Operation
Operational waste	WM5	Slag recycling and resource recovery activities will continue to be managed by a slag service provider.	Operation
Cumulative impacts			
General impact reduction	CI1	The mitigation measures presented in this table will be implemented effectively to reduce the project's impact on the environment.	Pre-construction Construction Operation

Appendix C

Stakeholder engagement table

Table C.1 Stakeholder engagement during EIS exhibition

Date	Stakeholder	Engagement method	Project specific outcomes and feedback
24 March 2022	All stakeholders	Website updated with notice of public exhibition period, link to DPE and information flyer	No feedback
28 March 2022	Employees and key stakeholder groups	Information flyers distributed across PKSW sites Email / flyer sent to suppliers and key stakeholders (1,500 copies distributed as well as over 50 A2 posters around the BlueScope site and targeted external locations such as the Visitors Centre)	No feedback
29 March 2022	Employees and key stakeholder groups	Notification of public exhibition of project distributed to all sites/shifts at PKSW	No feedback
30 March 2022	BlueScope workforce	Workplace post issued to BlueScope employees	No feedback
31 March 2022	Illawarra Business Community	IB Federal Budget Luncheon - attendance at event	No feedback
1 April 2022	BlueScope workforce	Workplace post issued to BlueScope employees	No feedback
2 April 2022	BlueScope workforce	Workplace post issued to BlueScope employees	No feedback
5 April 20222	Illawarra Business Community	Promotion in Presidents address and slide presentation at the Illawarra Connections Dinner event	More than 100 people in attendance. No comments received at event
6 April 2022	EPA	Project briefing	No feedback
7 April 2022	BlueScope workforce	Workplace post issued to BlueScope employees	No feedback
	General Public	WIN News story (coordinated by BlueScope) feat. 6BF project	No feedback
		Community Open Day advertisement in Illawarra Mercury	No feedback
	BlueScope Community Consultative Committee	Presentation, Q&A and flyer handout on 6BF	No concerns raised at meeting - all in support of the Project.
9 April 2022	General Public	Community Open Day 1 (including tour to 6BF) held at the Visitors Centre - posters, BlueScope senior staff in attendance, tour, video animation	10 people in attendance, no feedback
		Community Open Day advertisement in Illawarra Mercury	No feedback
11 April 2022	BlueScope workforce	Workplace post issued to BlueScope employees	No feedback
	i3net Chair and CEO	Briefing with GM Manufacturing, David Scott	No feedback
	General Public	Community Open Day advertisement in Illawarra Mercury	No feedback

Date	Stakeholder	Engagement method	Project specific outcomes and feedback
12 April 2022	General Public	Community Open Day 2 (including tour to 6BF) held at the Visitors Centre - posters, BlueScope senior staff in attendance, tour, video animation	12 people in attendance + inform to amateur radio club (20 members) – no feedback
13 April 2022	EPA	Project briefing 2	General update meeting and opportunity to discuss the project with the EPA.
14 April 2022	South32	One to one briefing with South32 VPO and David Scott	No feedback
	General Public	Illawarra Mercury article on 6BF	No feedback
		WIN News story (coordinated by BlueScope) feat. 6BF project	No feedback
	i3net / BlueScope Townhall	Industry network, presentation from GM Manufacturing and Q&A Panel discussion on 6BF	90 in attendance – No feedback
19 April 2022	BlueScope workforce	Workplace post issued to BlueScope employees	No feedback

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