BlueScope Steel (AIS) Pty Ltd

No. 6 Blast Furnace Reline and Operations Scoping Report

June 2021

Abbreviations

Term/ acronym	Definition
ABS	Australian Bureau of Statistics
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
ANZECC	Australian and New Zealand Environment and Conservation Council
ASS	Acid sulphate soils
BC Act	Biodiversity Conservation Act 2016
BFG	Blast furnace gas
BF-BOF operating model	Blast Furnace ironmaking and Basic Oxygen Furnace steelmaking
Biosecurity Act	Biosecurity Act 2015
BlueScope	BlueScope Steel (AIS) Pty Ltd
BoM	Bureau of Meteorology
BOS	Basic oxygen steelmaking
BSL	BlueScope Steel Limited
^{o}C	Degrees Celsius
CAS-OB	Composition adjustment station – oxygen blowing
CBD	Central Business District
CLM Act	Contaminated Land Management Act 1997
CO	Carbon monoxide
CO2	Carbon dioxide
Coastal Management SEPP	State Environmental Planning Policy (Coastal Management) 2018
COG	Coke oven gas
CSSI	Critical State Significant Infrastructure
DAWE	Department of Agriculture, Water and Environment
DECC	Department of Environment and Climate Change
DECCW	Department of Environment, Climate Change and Water
DPIE	Department of Planning, Industry and Environment
DRI	Direct Reduced Iron
EAF	Electric Arc Furnace
EEC	Endangered ecological community
EIS	Environmental Impact Statement
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
EPI	Environmental planning instrument
EPL	Environment Protection Licence
Fe	Iron
GDE	Groundwater Dependent Ecosystems
GHD	GHD Pty Ltd
GHG	Greenhouse Gas
H2S	Hydrogen sulphide

Term/ acronym	Definition
ha	Hectares
Heritage Act	Heritage Act 1977
HRC	Hot rolled coil
km	Kilometres
km/h	Kilometres per hour
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
LNG	Liquified Natural Gas
m	metres
m3	cubic metres
ML	megalitres
MNES	Matters of National Environmental Significance
mm	millimetres
Mt	megatonnes
Mtpa	megatonnes per annum
NPW Act	National Parks and Wildlife Act 1974
NSW	New South Wales
PKSW	Port Kembla Steel Works
PMST	Protected Matters Search Tool
POEO Act	Protection of the Environment Operations Act 1997
Reline	Major repair and maintenance of a blast furnace, involving the replacement of internal linings including replacement of some or all of the refractory, cooling elements and shell plate
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
SO2	Sulphur dioxide
SSD	State Significant Development
SSI	State Significant Infrastructure
SRD SEPP	State Environmental Planning Policy (State and Regional Development) 2011
t	Tonnes
TfNSW	Transport for NSW
Three Ports SEPP	State Environmental Planning Policy (Three Ports) 2013
TRT	Top gas recovery turbine
WGHR	Waste gas heat recovery
5BF	No. 5 Blast Furnace
6BF	No. 6 Blast Furnace

Executive summary

Background

BlueScope Steel (AIS) Pty Ltd (BlueScope) is one of Australia's leading manufacturers and is a global leader in finished and semi-finished steel products. Steelmaking operations are undertaken at the Port Kembla Steelworks (PKSW), within an industrial site of approximately 750 hectares located in the Wollongong Local Government Area. PKSW is the largest steel production facility in Australia, and comprises of the No. 1 Works, No. 2 Works, Steelhaven and the Recycling area.

The Port Kembla Steelworks is an important national economic asset. It is the only plant in Australia manufacturing upstream flat iron and steel products, supplying the essential feedstock that keeps all of the other domestic manufacturing facilities owned by BlueScope's parent entity, BlueScope Steel Limited (BSL), operational. PKSW, and the adjacent Springhill Works, owned and operated by BSL, employ approximately 4,500 direct employees and on-site contractors, and generate about 10,000 jobs in total including indirectly in supplier and customer businesses. PKSW provides sovereign manufacturing capability for a range of important construction, infrastructure, manufacturing, energy and defence applications. Together with the Springhill Works, it makes a significant economic contribution to the Illawarra region, generating $6.5 billion or 24 per cent of the region's output per annum.

PKSW includes two blast furnaces, No. 5 Blast Furnace (5BF) (currently operating), and the No. 6 Blast Furnace (6BF) which is in care and maintenance. The 5BF is currently used to manufacture molten iron on a continual basis, and will reach the end of life sometime between 2026 and 2030. Following the cessation of production from 5BF, BlueScope is considering a move to molten iron production from the 6BF.

6BF last manufactured iron in 2011, at which point it was placed into care and maintenance. In order to prepare the 6BF to become operational again, major maintenance works are required. To support this, BlueScope is now seeking Critical State Significant Infrastructure (CSSI) approval to undertake the project. An environmental impact statement (EIS) is required to identify and assess the environmental issues associated with the project.

The project, if approved, aims to return 6BF to service through a reline process that will be carried out while 5BF continues to operate. A reline is a term used to describe major repair activities which are required every 20 years or so and requires the furnace to be out of service for an extended period. The maintenance work involves the replacement of the worn out or damaged internal linings of the blast furnace, which includes replacing some or all of the refractory lining, cooling elements and shell plate. Upgrade, repair and replacement of ancillary equipment necessary for blast furnace operation is also undertaken as part of the reline. Traditionally, a blast furnace reline is carried out in a relatively short shutdown window (130 days), with around the clock construction activity, large numbers of people on site and a heightened risk profile. As 6BF is not currently operating, the reline can be executed over a longer time period in a measured way with minimal operational disruptions, limited after-hours work, reduced risks, and greater use of local contractors.

If the reline is approved, 6BF will be ramped up for ironmaking operation, after 5BF has been ramped down and decommissioned.

Alternative iron and steelmaking technologies

In considering the options available to continue iron and steelmaking at PKSW, a range of alternative iron and steelmaking technologies were considered, including both mature and emerging technologies.

Mature technologies that were considered included retrofitting the existing Basic Oxygen Steelmaking (BOS) building with Electric Arc Furnace (EAF) steelmaking or constructing a new EAF steelmaking facility on under-utilised land within PKSW. However, neither of these options was considered economically viable given Australia's high energy costs and insufficient availability of cost effective, quality scrap steel to support three million tonnes of flat steel production at Port Kembla.

Consideration was also given to emerging technologies. A diverse range of hydrogen-based ironmaking technologies are currently being explored around the globe. These range from injection of hydrogen into existing blast furnace operations to manufacturing iron by a direct reduced iron (DRI) process utilising hydrogen as a fuel source. However, these technologies are in the early stages of development worldwide, with most at concept study, protype or demonstration stage. They are yet to be commercialised at the scale required at Port Kembla.

Emerging technologies will also require significant capital and public policy support to reach commercial scale. For technologies based on the use of hydrogen, large-scale supply chains would need to be established to provide 'green' hydrogen from renewable sources at cost-competitive prices.

Accordingly, at this point in time a reline is the most technically feasible and economically viable option for steelmaking at PKSW while longer-term breakthrough low-emission technologies are developed. Technology to reduce the greenhouse gas (GHG) emissions intensity of Blast Furnace – Basic Oxygen Furnace (BF-BOF) iron and steelmaking is proposed as part of the reline. BlueScope also has the capability and flexibility to adopt new technologies and iron making configurations in the medium to longer term, as and when they are technically and commercially ready.

Project description

The proposed project involves the reline of 6BF to return it to service and commence ironmaking after 5BF ceases operation. The project is expected to take approximately three years to complete, and the key elements of the project are described below.

Pre-reline preparation

Number 6BF has been non-operational since 2011, and the site is ready for work to commence with minimal preparatory works. Preparatory works required include condition assessments of equipment (potentially including in-situ testing or removal for off-site assessment), completion of engineering, planning, contract finalisation and procurement of replacement and new equipment and items.

Reline construction activities

Major construction work will be required within the blast furnace and surrounding facilities and will involve removing the remaining burden materials, refractory bricks and blocks and cooling elements (known as staves) within the interior of the blast furnace for replacement. Key components in this phase are the removal of the iron skull and refractories.

Iron skull is a conglomerate layer of iron and slag that solidifies on the inner surface of the hearth lining. The iron skull is typically demolished by fracturing into smaller pieces, sometimes requiring the use of explosives. To facilitate this work an opening will be cut into the side of the hearth shell plate, beneath the casthouse floor, and the broken sections of skull material will be extracted through this opening using an excavator or other appropriate heavy equipment. Only small sections of the skull will be blasted away at any one time so as to minimise the amount of explosive used.

Refractory material will be removed by jackpicking and breaking up the blocks into smaller pieces for extraction. A telescopic boom excavator machine will be used to rake the material out from the furnace. Most of the material in the upper shaft will be demolished and dropped into the bottom of the furnace and removed by a telescopic boom excavator. Removed refractories will be recycled or disposed of, depending on the ability of iron and steel making facilities to accept and process the removed materials.

Following removal of the old components, a new hearth, sidewall refractories and staves will be constructed within the blast furnace. In addition, a new slag granulation system, stoves waste gas heat recovery system and top gas recovery turbine will be constructed. Repairs to the blast furnace shell and ancillary equipment will also be undertaken during this stage.

Commissioning and ramp 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 re-heated and pressure and leak tests conducted. The cooling systems will also be filled and flushed. The furnace proper will be dried out using hot blast at limited temperatures, then charged with kindling (comprising firewood/railway sleepers and coke) and filled with a mix of burden material (coke and iron ore). The gas systems will be purged ready for use and the furnace will be ‘blown in’, which involves the introduction of hot blast air through the tuyeres. Gas will initially discharge until its composition is satisfactory for internal use at which time the gas is then diverted into the off gas and gas cleaning system.

The furnace is progressively heated until regular casting of iron and slag commences, although the iron quality is not usable initially, and it will take several days to produce useable iron which can be converted to steel. The furnace is then uprated to target production over the following weeks, reaching full production within one or two months.

Operation

Operation of 6BF following completion of reline activities, commissioning and ramp up will be generally the same as existing operations utilised at 5BF. Specific locations of certain activities within the PKSW site will change due to the transfer of ironmaking 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.

Approvals process and document purpose

BlueScope is seeking CSSI approval for the project under Part 5, Division 5.2 of the Environmental Planning and Assessment Act 1979 (EP&A Act). An Environmental Impact Statement (EIS) is a requirement of the approval process. Before preparing an EIS, terms of reference must be established. In NSW, the terms of reference for an EIS are referred to as the Secretary’s Environmental Assessment Requirements (SEARs). In order for a proponent to receive SEARs for a project, an application must be made to the Secretary of the NSW Department of Planning, Industry and Environment (DPIE). The application is to be accompanied by a Scoping Report prepared in accordance with the requirements of Part 2 of Schedule 2 of the NSW Environmental Planning and Assessment Regulation 2000 (EP&A Regulation).

This document has been prepared to support BlueScope's request for SEARs for the project. Its purpose is to brief government agencies, the community and other stakeholders about the project, and identify key matters to be addressed in the EIS and the proposed assessment methodologies. It is expected that DPIE will circulate this document to relevant government agencies. It will assist government agencies in preparing their advice to DPIE on matters seen as relevant for assessment in the EIS.

Assessment process

The project is in the early stages of the comprehensive assessment and approval process. This Scoping Report accompanies BlueScope's request to the Secretary of DPIE for SEARs. It is expected that DPIE will circulate it to the relevant government agencies and invite them to recommend assessment requirements. The Secretary for DPIE will then issue the SEARs for the project, which will identify the matters that must be addressed in the EIS.

The assessments will be prepared in accordance with relevant guidelines, policies and assessment requirements issued by DPIE, and in consultation with government agencies and other stakeholders. The findings will be documented in the EIS for the project.

The details of the project will continue to be developed and defined during development of the EIS in response to the outcomes of ongoing investigations, studies and stakeholder consultation. The EIS will accompany BlueScope's application for planning approval for the project and will be made publicly available for review and comment.

Matters of consideration for the EIS

Key issues for consideration in the EIS and the proposed level and scope of assessments were identified using the DPIE's draft Scoping Worksheet. The relevant matters and impacts proposed for detailed consideration in the EIS include air quality; noise and vibration; hazard and risk; hydrology; traffic; soils and geology; biodiversity; heritage; visual amenity; land use; socio-economic; greenhouse gas and energy; water management and utilities and services. Leading specialists will be commissioned to conduct the required impact assessment studies for the EIS.

Stakeholder engagement

BlueScope's community engagement approach is based on living up to 'Our Bond', which is the company's set of guiding principles that outlines how 'we choose to do what is right' and that 'Our communities are our homes'. BlueScope prides itself on upholding its strong reputation by being a good neighbour and also a good corporate citizen.

The project is in its early development stage and environmental assessment is proceeding in parallel with the design and feasibility considerations. As such, limited consultation specific to the project has been undertaken to date.

Community engagement is aimed at keeping key stakeholders informed of the assessment process and anticipated project impacts such that concerns can be raised and addressed through the design process. This is expected to be achieved through a number of different channels including existing forums, key stakeholder briefings, news, and BlueScope's social media and local, public website.

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1. Introduction

1.1 Background

BlueScope Steel (AIS) Pty Ltd (BlueScope) is one of Australia's leading manufacturers and 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 manufacture (molten) iron on a continuous basis until it reaches the end of its operational life at some stage between 2026 and 2030. BlueScope is considering a move of iron manufacture from 5BF to 6BF, after 5BF ceases operation.

6BF last manufactured iron in 2011, at which point it was taken out of service and placed into care and maintenance. In order to prepare 6BF to become operational again, major 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.

Prefeasibility assessment of the project is currently underway. In parallel, BlueScope (the proponent) is seeking Critical State Significant Infrastructure (CSSI) approval to undertake the project. An environmental impact statement (EIS) is required to identify and assess the environmental issues associated with the project.

This Scoping Report has been prepared by GHD Pty Ltd (GHD) on behalf of BlueScope to request the Secretary's Environmental Assessment Requirements (SEARs) for the EIS.

1.2 Proponent details

BlueScope Steel (AIS) Pty Ltd (ABN 19 000 019 625) is the owner and operator of Port Kembla Steelworks and is the proponent for the project.

2. Site setting

2.1 Site details

2.1.1 BlueScope Steel Port Kembla

PKSW is located within an industrial site of approximately 750 hectares (ha) in the Wollongong Local Government Area (LGA) approximately 80 kilometres (km) from Sydney and 2.5 km from the City of Wollongong (see Figure 2-1). PKSW is the largest steel production facility in Australia and specialises in the production of flat steel products, including slab, hot rolled coil, cold rolled coil, plate, and coated and painted steel products.

The PKSW is an important national economic asset. It is the only plant in Australia manufacturing upstream flat iron and steel products, supplying the essential feedstock that keeps all of BlueScope's other domestic manufacturing facilities operational. PKSW, and the adjacent Springhill Works, employ approximately 4,500 direct employees and on-site contractors, and generate about 10,000 jobs in total including indirect employment in supplier and customer businesses. PKSW provides sovereign manufacturing capability for a range of important construction, infrastructure, manufacturing, energy and defence applications. Together with the Springhill Works, it makes a significant economic contribution to the Illawarra region, generating $6.5 billion or 24 per cent of the region's output per annum.

PKSW site comprises the No. 1 Works, No. 2 Works, Steelhaven and the Recycling area (see Figure 2-2). The No. 2 Works is divided into two sections by Allans Creek. The southern half of the No. 2 Works comprises the cokemaking, ironmaking and steelmaking facilities, while the northern half contains the Recycling area and the packaging products section. All sectors of PKSW are internally linked by road and rail and are currently supplied with electricity, water and gas services.

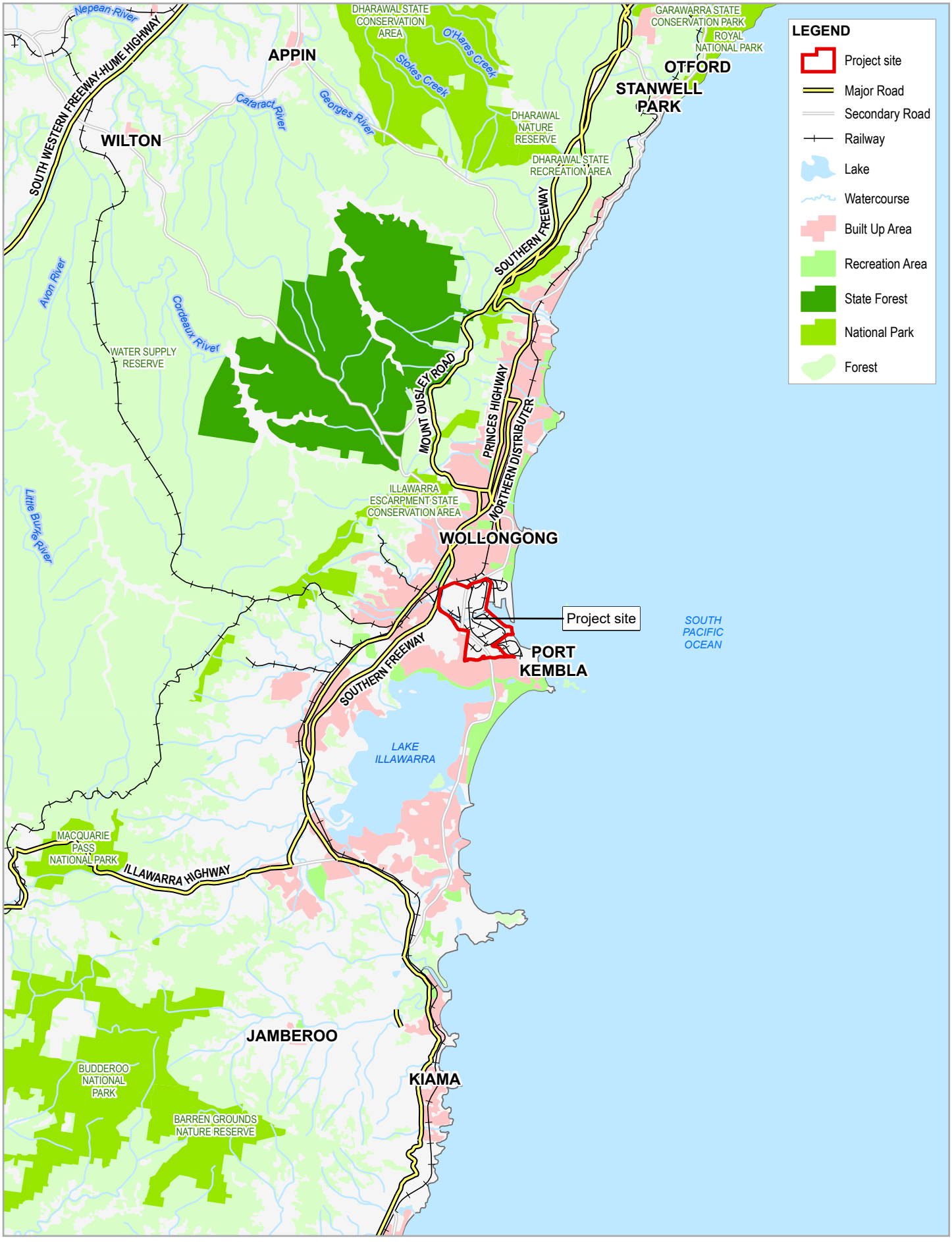
The specific facilities in the southern sector of the No. 2 Works include the:

- No. 3 sinter plant
- Coke ovens batteries
- Coke ovens gas processing
- No. 2 blower station
- No. 5 and No. 6 blast furnaces
- Raw materials handling area
- Basic oxygen steelmaking (BOS) plant
- Steel ladle injection unit and vacuum degasser
- Composition adjustment station - oxygen blowing (CAS-OB) steel ladle
- Treatment station
- Continuous slab casters

The flat products area (northern sector) comprises the:

- Hot strip mill
- Plate mill
- Cryogenics plant
- Packaging products

Each facility plays a different, but integrated, function in the production of steel products. The land to which this project applies, including all connecting infrastructure and materials handling elements that require upgrades as part of the project, is within the southern section of the No. 2 Works, and part of the ironmaking facilities, which is located entirely within Lot 1 DP 606434.



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Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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GHD

BlueScope Steel Ltd
No.6 Blast Furnace Reline and Operations
Scoping Report

Project No. **12541101**
Revision No. **0**
Date **01/06/2021**

Regional Location

FIGURE 2-1

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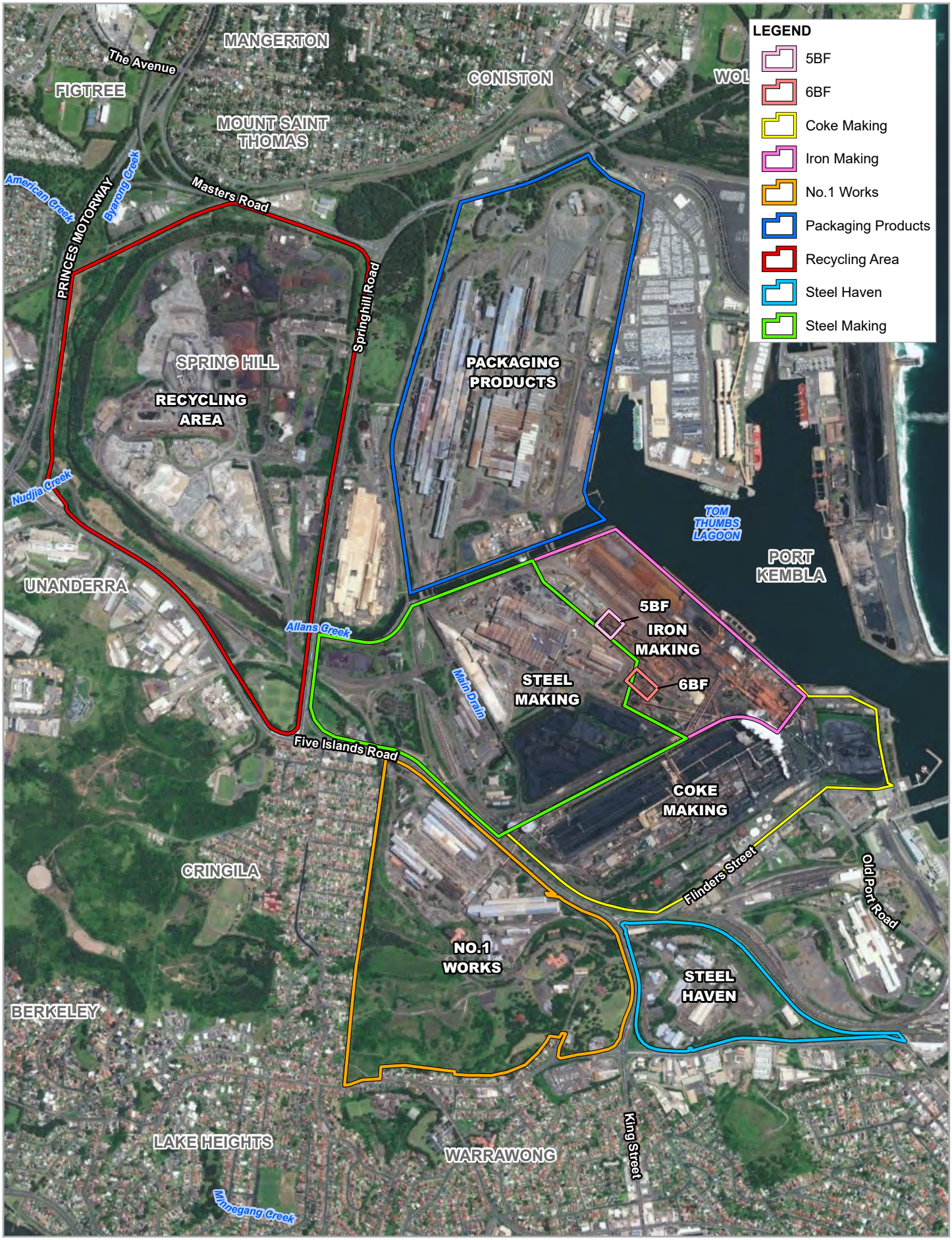

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Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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GHD

BlueScope Steel Ltd
No.6 Blast Furnace Reline and Operations
Scoping Report

Port Kembla Steelworks site layout and locality

Project No. **12541101**
Revision No. **0**
Date **01/06/2021**

FIGURE 2-2

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Data source: LPI: DCDB/DTDB, 2017. World Imagery: Maxar.
Created by: tmorton

2.1.2 Ironmaking operations and systems

Ironmaking at PKSW is via a thermochemical process of reduction within the blast furnace. In general, iron ore, coke and other raw materials are charged into the blast furnace for smelting and molten iron is generated. A mixture of elemental iron (Fe), slag (mineral by-products), carbon monoxide (CO) and carbon dioxide (CO_2) and other gases is generated from the blast furnace.

Fine iron ore particles and other materials are first processed in the sinter plant to achieve an efficient blend of raw materials for the smelting process. Following the smelting process, molten iron is cast via tapholes located near the base of the blast furnace, into waiting rail-mounted torpedo ladles. The ladles transport the molten iron to other plants within PKSW for processing into steel.

By-products from the blast furnace operation are blast furnace gas (BFG) and slag. The hot gases leaving the top of the blast furnace are cooled and cleaned then piped to other plants within PKSW as an energy source to the maximum practical extent, with remaining gases vented to atmosphere in accordance with Environment Protection Licence (EPL) 6092 conditions. Slag exiting the bottom of the furnace is either formed into rock or granulated slag for sale as construction materials.

Raw materials handling

The raw materials handling area covers over half of the ironmaking area and is accessible from the Inner Harbour. Raw materials are delivered via rail, road and sea and include:

- Iron ore
- Coal
- Coke
- Limestone and other fluxes (materials that assist in removing impurities during smelting)

Raw materials are processed and then transferred to storage bins at the blast furnace stockhouse. From the storage bins, they are transported via covered conveyors to the blast furnace.

Sinter plant

Sintering is an agglomeration process that fuses fine iron ore, coke, limestone dust and other materials to form a porous solid lump material. Sinter is used as an iron source and also aids the permeability of the material within the blast furnace. PKSW has one sinter machine, the No. 3 sinter plant.

Within the sinter plant, iron ore, coke and fluxes are blended and moistened before being spread onto a continuously moving grate where it is then fused and screened into suitably sized pieces. After cooling and screening, sinter is sent to the stockhouse storage bins and then to the blast furnace via a covered conveyor.

Waste gas from the sintering process is captured and treated at the waste gas cleaning plant, using activated carbon filters, prior to discharge.

Wastewater streams from the blast furnace are treated at the sinter plant dewatering plant before being discharged or are returned to the gas cleaning system.

Solids are stockpiled at the Recycling area. Recycling opportunities for this material are under investigation.

Blast Furnace

There are two similar sized blast furnaces at PKSW, 5BF and 6BF. 5BF was commissioned in 1972. Since then, 5BF has undergone three relines and is now into its fourth campaign. A campaign is the period of operating time (measured in years) in between construction and subsequent reline outages. 6BF was initially commissioned as a new facility in 1996 and operated until closure in 2011 as a result of difficult market conditions, rather than poor furnace condition. Since this time, 6BF has been in care and maintenance in case it is required for future operation. 6BF's first and only campaign commenced in 1996 and lasted approximately 15 years, over which time it produced 38.5 megatonnes (Mt) of iron.

The blast furnace facility incorporates a number of components, including the charging system, the blast furnace vessel, cooling systems, casthouses, hot blast system and off gas system. 6BF and major process elements are shown on Figure 2-3.

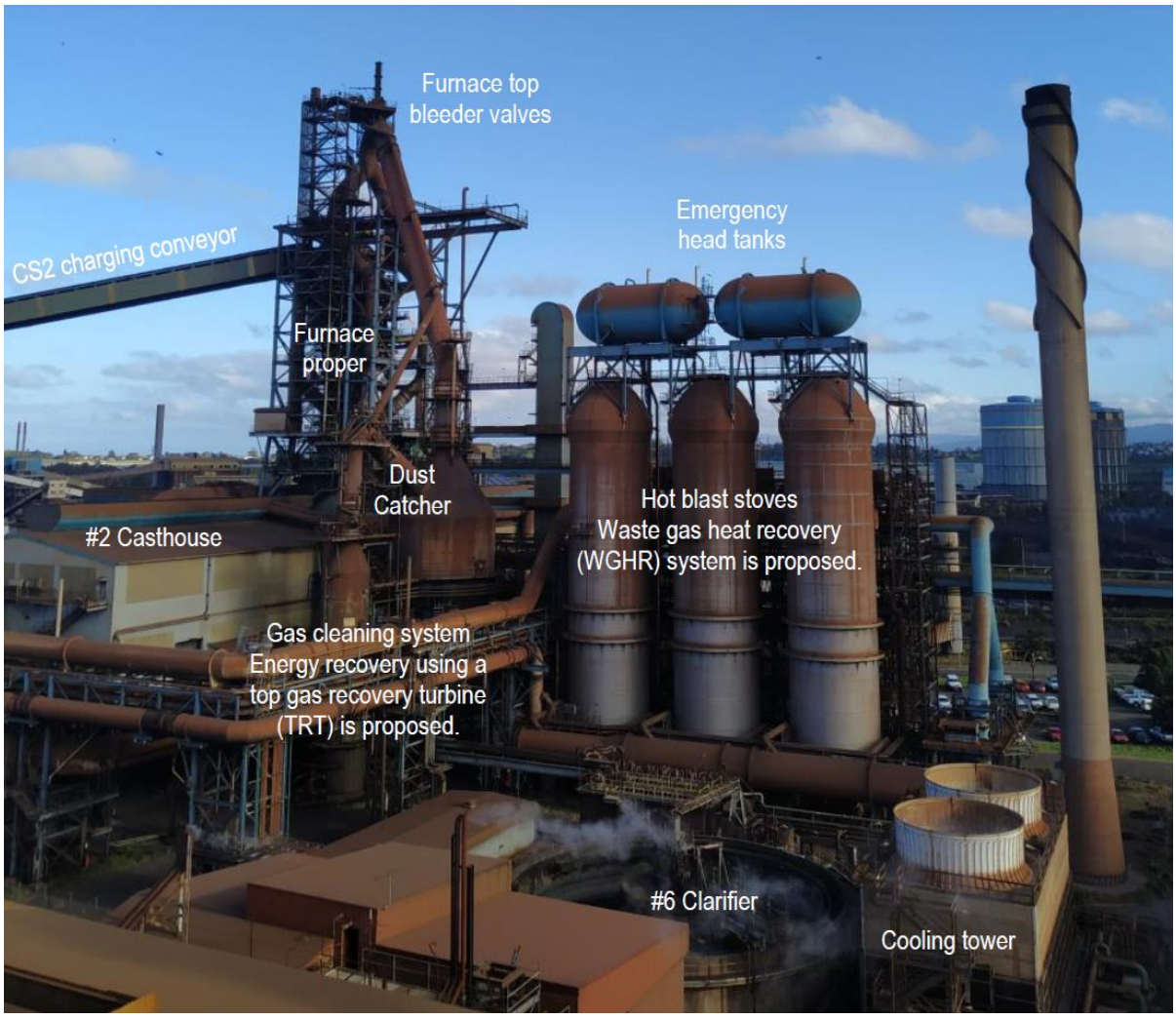

Figure 2-3 No.6 Blast Furnace and major process elements

Charging system

The charging system comprises the stockhouse and charging conveyor for delivering raw material to the blast furnace vessel. Feed material is transferred from the raw materials handling area and the coke handling area to the stockhouse prior to charging into the blast furnace. The stockhouse comprises a series of bins that coordinate feeds to the blast furnace to ensure that charging occurs in the correct sequence. Iron ore, sinter, coke and fluxes are charged into the blast furnace vessel via a covered charging conveyor that runs from the stockhouse to the top of the blast furnace.

Blast furnace vessel

The blast furnace vessel is a vertical, conical shaft of circular cross-section approximately 14 m internal diameter in the lower section and 8.5 m in the upper section and stands approximately 40 m high. The overall blast furnace facility is approximately 90 m tall when gas collection mains and other equipment are taken into account.

Raw materials are charged into the blast furnace vessel at regular intervals via a material hopper located at the top of the furnace. A furnace charge comprises a batch of coke, and two batches of blended ferrous feed, flux and coke. Each batch is fed to the furnace separately via a rotating chute, resulting in an evenly distributed layering of the burden material.

Oxygen enriched air heated to about 1,200 degrees Celsius (°C) is blown into the furnace through water cooled copper nozzles called tuyeres that are spaced around the lower section of the furnace. The air causes the coke to burn, producing carbon monoxide which creates a chemical reaction, reducing the iron ore to molten iron. To ensure that good iron quality is produced in the furnace, the temperature of the molten iron is maintained at 1,500 °C.

The blast furnace vessel contains a refractory lining that can resist thermal spalling and chemical deterioration for a long period of time. Normally, blast furnace refractory linings can efficiently operate for a period of 15 years or more before they need to be replaced.

Cooling system

The steel furnace shell is lined with cast iron or copper cooling elements called staves. Staves are also located between the furnace shell and the refractory lining in the hearth. The staves house internal pipes for cooling water passages, which protects the blast furnace shell integrity and the staves themselves.

Casthouse

From the blast furnace, molten iron and slag is poured into a refractory lined trough on the casthouse floor. The furnace operates continuously with molten iron and slag being cast out of the furnace regularly via 3 tapholes located at the bottom of the vessel, in the hearth.

During tapping, dust, kish (flaky graphite), and sulphur dioxide (SO_2) are released. An air extraction system along the trough and pouring positions captures airborne particulates, which are subsequently managed by dedusting equipment in the casthouse baghouse.

Approximately 1030 tonnes of molten iron and 330 tonnes of slag are tapped at each cast, and there are nominally 7-10 casts per day.

Molten iron is transported by rail, using brick lined torpedo ladles, to the steelmaking area for further processing.

Hot blast system

Pre-heated air (hot blast) is blown into the blast furnace to react with the iron ore and coke. Using turbo blowers, atmospheric air is charged to heating chambers called hot blast stoves. The air is heated to a temperature of 1,200 °C, and piped to the blast furnace via the hot blast main and into the vessel via tuyeres. There are three stoves that operate in a cyclic manner to provide a continuous supply of hot blast. The hot blast air maintains a process reaction which produces iron with a temperature of 1,500 °C within the blast furnace.

Off gas system

Surplus gasses produced from the blast furnace vessel are directed from the top of the furnace to be treated by the gas cleaning system.

The gas cleaning system comprises a dirty gas main, dust collector and a high energy scrubber.

Collected dust is periodically discharged and agglomerated for transfer to the sinter plant feed beds via trucks.

Impurities are removed from the gas via washing with high velocity recycled closed loop water. This creates a slurry which is thickened and transferred to the sinter plant dewatering plant. The cleaned gas, blast furnace gas (BFG), is then piped to the 6BF hot blast stoves for use as a heating fuel, as well as an energy source for other processes throughout PKSW.

Air emissions

The ironmaking process produces a number of point-source and fugitive air emissions, including:

- Flue gas discharged from the stoves waste heat stack
- Filtered and unfiltered air from the casthouse and stockhouse
- Steam from the slag granulation stack
- BFG from furnace top bleeders and discharged during charging
- H_2S and SO_2 from slag pits, casthouse and slag granulation stack
- Dust from the raw materials and charging conveyors, off gas system and traffic

Liquid wastes

Liquid waste streams produced in the ironmaking process include:

- Blow down of wastewater from the blast furnace clarifier, which treats closed loop process water used in cleaning the BFG as well as various other sources of water related to furnace operations.
- Bottom sludge from the blast furnace clarifier, which is sent for treatment at the sinter plant dewatering plant, with the resultant filtrate returned to the blast furnace effluent system.
- Water used in the granulation of slag is predominantly recycled within the process, but a small amount is discharged via a soak pit into the groundwater.
- Wastewater from the blast furnace cooling system is a closed loop system with only periodic blowdown water being discharged to the gas effluent system.
- Condensates from the BFG and coke oven gas (COG) systems.

Blast furnace slag

Slag is a saleable by-product from ironmaking. It is a mixture of mineral impurities from the iron ore, coke and fluxes. The slag is less dense than the molten iron and is easily separated using a skimmer box arrangement positioned in the casthouse troughs. The slag is tapped from the casthouses into large 34 m^3 slag pots and transported in liquid form via Kress Carriers to a location away from the blast furnace.

Two types of slag are subsequently produced remote from the blast furnace, granulated slag and rock slag. Granulated slag is produced by spraying with a jet of recycled water. It has properties that allow it to be used as a replacement for a portion of Portland cement in cement production. Alternatively, rock slag is produced by slow atmospheric air cooling and quenching in large pits. From the pits it is crushed into different sizes which form different products. The bulk of rock slag is sold as road base.

Dust handling

Dusts are collected from the blast furnace dustcatcher within the gas cleaning system and moistened before being transferred to the sinter plant feed beds via truck.

Dust is also collected from dedusting baghouses in the casthouse and stockhouse before being transferred to the sinter plant feed beds via truck .

2.2 Baseline information

2.2.1 Project setting and land use

The project is located in Port Kembla in the Wollongong LGA and Illawarra region of NSW. Sydney is approximately 80 km to the north of Port Kembla, while the Wollongong Central Business District (CBD) is approximately 2.5 km to the north and Lake Illawarra is approximately 3 km to the south. Port Kembla is the main industrial centre of the Illawarra region.

Port Kembla lies in the coastal plain which is bounded to the west by the Illawarra Escarpment and to the east by the Pacific Ocean. The key features of Port Kembla are the heavy industrial area and the port. The heavy industrial area is constructed around the port and includes industrial developments such as PKSW, fertiliser production facilities and petroleum hydrocarbon storage and wholesaling.

The PKSW site is zoned IN3 – Heavy Industrial under *State Environmental Planning Policy (Three Ports) 2013*. PKSW and the adjacent Springhill Works together comprise the largest site in the Port Kembla industrial area, occupying approximately 750 ha and are mostly built around the western and northern side of Port Kembla's Inner Harbour. The PKSW site is a multiuse industrial area which includes storage, manufacturing, port berths, private internal roads and offices. Access to PKSW is provided by Springhill Road, Five Islands Road and Flinders Street, and then private internal roads in PKSW.

The port of Port Kembla is located between the Pacific Ocean and the Port Kembla heavy industrial area and is zoned SP1 – Special Activities. The Inner Harbour, specifically developed as an all weather shipping port, covers approximately 60 ha with around 2,900 m of commercial shipping berths. BlueScope operates a number of berths in the Inner Harbour.

The area surrounding Port Kembla industrial area is primarily occupied by residential development. These urban areas provide small and large-scale retail outlets, community services (e.g. medical facilities, hospital, schools and sporting facilities) and commercial facilities (e.g. banking and post office). The closest urban developments to PKSW are the suburbs of Cringila, Berkeley, Lake Heights, Warrawong and Port Kembla to the south, Unanderra, Cobblers Hill, Mount St Thomas, Coniston and Figtree to the north and west.

2.2.2 Existing environment

The PKSW site is generally flat and resides upon a base of artificial fill, including dredged sand and mud, rocks and local soil materials. The site is generally sealed, with small areas of exposed soil. Soils on site are classified as disturbed terrain, have a low probability of acid sulphate soils, and are generally susceptible to erosion, subsidence and lack permeability. The PKSW is listed as a contaminated site on the EPA's register of contaminated sites, with contamination managed and regulated under licence conditions attached to BlueScope's EPL 6092. The site drains into two creeks, Main Drain and Allans Creek, which run into Tom Thumbs Lagoon and the inner harbour. There are also several constructed drains on the site. Currently, saltwater from the harbour is used for indirect cooling in industrial processes within the site and is returned to the harbour after use. A small amount of water from industrial processes is also deposited into the harbour via licenced discharge drains. Groundwater beneath the site generally flows towards Tom Thumbs Lagoon and Allans Creek. Given the flat topography of the site, rainfall is expected to pool in some areas, and be drained from the site via the creeks into the harbour. The PKSW is located above the 1 per cent AEP level.

PKSW was established in 1929 and has operated since that time. The site is predominantly cleared and provides minimal habitat value. Vegetation on site comprises of planted species and opportunistic weed species. No threatened ecological communities have been identified as occurring within PKSW. The waterways surrounding the site are mapped as Key Fish Habitat. The site has recorded sightings of the endangered Green and Golden Bell Frog (*Litoria aurea*). The presence of the Green and Golden Bell Frog is managed across PKSW in accordance with site manual MA-ENV-03-03 Management of Threatened Species, the Green and Golden Bell Frog (BlueScope, 2021). Listed bird species may also visit the site temporarily.

No statutory listed Aboriginal or historic heritage items have been recorded on the PKSW site. The nearest Aboriginal heritage item is located approximately 1500 m from the project. The nearest historic heritage item is the Commonwealth Rolling Mill Plant and Gardens located approximately 1700 m to the south of the project.

Traffic associated with PKSW enters the site via Springhill Road, Five Islands Road and Flinders Street. PKSW is located close to the Princes Motorway, Princes Highway, Shellharbour Road and Masters Road which are used as major transport roads for vehicles transiting to wider NSW. PKSW also contains several internal roads and a functioning dock area for transport of goods via shipping.

Current industrial activities at PKSW generate dust, steam, particulate matter, unfiltered air and gasses. Noise is also generated by activities at PKSW and other surrounding industrial uses. The closest sensitive receivers to 6BF are residences approximately 1.2 km to the west of the project site.

A detailed description of the existing environment in relation to each of the key and other environmental issues relevant to the project is provided in Section 5.

2.3 Land ownership

The project is located entirely within Lot 1 DP 606434 which is owned by BlueScope.

3. Description of the project

3.1 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.

The reline of the furnace initially involves removal of remaining burden material and iron skull, followed by stripping of the staves, refractories and hearth from inside the shell. In places, repairs to the furnace shell will be required. Once stripped, installation of the new hearth, sidewall refractories and staves will be completed, together with repairs/replacement of the tuyeres, tapholes, furnace cooling systems and instrumentation. Significant work will also be required to prepare each of the 6BF ancillary systems for continuous operation across the length of the new campaign.

Following construction, and after the 5BF has been ramped down and decommissioned, 6BF will be ramped up for operation. The capital investment of the project is expected to be approximately $700 - 800 million.

Each of the project components are described below with key project features shown on Figure 3-1.

3.2 Project rationale and alternatives considered

3.2.1 Project rationale

PKSW currently operates as an integrated iron and steel plant utilising Blast Furnace ironmaking and Basic Oxygen Furnace steelmaking (BF-BOF operating model). The plant is co-located with hot rolling mills for plate and coil and has adjacent manufacturing facilities for coated products, flat products and welded beams.

Current operations produce around 3.1 million metric tonnes of steel per year (Mtpa) of which around 2.2 Mtpa services the domestic market with the remainder being exported. The PKSW is the only domestic manufacturer of upstream flat steel products. As such, continuation of BF-BOF iron and steelmaking at Port Kembla is essential to maintaining a domestic feedstock supply chain to all of BSL's other Australian manufacturing plants and operations. Together, PKSW and the other facilities owned by BSL around Australia employ approximately 6,200 people.

The blast furnace is operating well, and the business is planning to continue to operate this facility for as long as it is efficient, reliable and safe to do so. The current operating campaign is expected to extend into approximately 2030, however, the risk of unplanned shutdown progressively increases as furnace condition deteriorates with age and use.

While the design life for the current campaign was nominally 20 years, 5BF has experienced higher total liquid productivity and higher slag rates during the current campaign than in the previous campaign as well as several long furnace outages that have been necessary to address problems which have arisen during the campaign. By January 2025, 5BF is predicted to reach an equivalent liquid throughput as was achieved in the previous campaign.

For these reasons, and in order to manage this potential operational discontinuity and safeguard supply, it is considered prudent risk management to have 6BF ready for operation from mid to late 2026.

The project will allow operations to continue at PKSW following the end of the current 5BF campaign with minimal disruption to production levels. This will maintain the provision of steel to the domestic and export market and continue to provide economic benefit to the region.

3.2.2 Alternatives considered

BlueScope has investigated a number of alternatives for continuing ironmaking operations at PKSW following the end of the current 5BF campaign. These include:

- Option 1 - Cessation of iron and steelmaking at PKSW and moving toward an import model
- Option 2 - Reline of 5BF
- Option 3 - Reline of 6BF (the project)
- Option 4 - The introduction of alternative ironmaking technologies

These alternatives are discussed below.

Option 1 – Cessation of steelmaking at PKSW (import model)

Option 1 would involve BlueScope ceasing steelmaking at PKSW. 5BF would be run for as long as possible before transitioning to an import model where all primary steelmaking operations and hot-rolling at PKSW cease, and hot rolled coil (HRC) is imported to supply BSL's coated flat product facilities.

New infrastructure and equipment requirements for Option 1 would be modest, consisting primarily of upgrades to coil transportation handling and storage facilities. Large portions of the PKSW site would be required to be closed. Closure of the ironmaking and steelmaking operations would result in significant social and economic impacts to the region through high levels of job losses and loss of commerce to local suppliers.

Cessation of steelmaking at Port Kembla would result in the loss of sovereign manufacturing capability for upstream flat steel products, and would increase Australia's reliance on import supply chains. The COVID-19 pandemic has demonstrated the fragility of some global supply chains and the negative economic consequences that can flow from their disruption. Cessation of steelmaking at Port Kembla would also make Australia's steel supply chain more vulnerable to economic and trade coercion by other countries.

Option 2 – Reline of 5BF

Option 2 would involve the reline of 5BF. 5BF is currently the only operating iron making unit and, in order to reduce the production impact, the reline would have to be completed in an intense 130 day outage, with coated product operations being maintained for the duration of the reline by using imported product. The reline activities would require a large workforce to work 24 hours a day through the outage period, resulting in additional facilities (such as amenities, parking and transport) and associated potential for community disturbance and environmental impacts when compared with the reline model of Option 3. The need for a larger workforce would also mean the need to import a higher proportion of workers from outside Wollongong, the immediate region and NSW to meet project requirements. If COVID-19 restrictions are still in place this could impact delivery of this option.

The 130 day outage could potentially impact on customers and the supply chain, disrupting commercial activities during this time. Additionally, the compressed timeframe reduces flexibility in scheduling reline activities, impacting the ability to respond to changes in furnace condition.

Following completion of the reline, the operating model and technology would be the same as existing operations, resulting in minimal further impacts to customers and the supply chain. Similarly, operational environmental impacts would be generally similar to existing conditions.

Option 3 – Reline of 6BF

Option 3 would involve the reline of 6BF in a progressive and measured manner. 6BF would be relined and readied for operation while 5BF continues to operate. Operations would transition from 5BF to 6BF with minimal disruption of supply of iron to the steelmaking operations.

The reline would be completed progressively over a period of approximately 3 years as engineering design is completed and materials become available. With 6BF currently not operating the work could be managed effectively with a predominantly day-shift workforce, avoiding the need for the compressed construction timeframe associated with relines of in-service furnaces. This approach would allow a greater portion of the overall workforce to be sourced locally compared to the 5BF reline option. This would result in greater economic multiplier effects remaining within the local community.

As Option 3 would involve a familiar and well understood operating model and technology, the technical and execution risks to the project would be low and impacts to the community, customers and the supply chain would be minimal.

As this option would generally maintain the existing operational model at PKSW, operational environmental impacts would be generally similar to existing conditions.

Option 4 – Introduce alternative steelmaking technologies

Option 4 would involve the replacement of the BF-BOF operating model with alternative steelmaking technologies (mature or emerging). These include:

- Retrofit the existing Basic Oxygen Steelmaking (BOS) building with Electric Arc Furnace (EAF) steelmaking.
- Construct a new EAF steelmaking facility on land within PKSW.
- Construction of a Direct Reduced Iron (DRI) plant, utilizing hydrogen as a fuel source, in conjunction with a transition to EAF steelmaking within the PKSW site.

A transition to alternative mature steelmaking technologies, for example using EAF steelmaking, would involve the shut down of sintering, ironmaking and BOS at PKSW and replacement with new or retrofitted EAF steelmaking. EAF steelmaking technology would likely reduce the environmental footprint for the site, including air emissions and discharges to Port Kembla Harbour. However, while total energy requirements would likely be lower than existing operations, electricity requirements would be much higher, requiring construction of new transmission infrastructure.

It has been found that a transition to EAF steelmaking is not economically viable for large scale flat steel production on the East Coast of Australia at this time, given insufficient availability of cost effective, quality scrap steel to support three million tonnes of flat steel production at Port Kembla and the high cost of electricity.

Transitioning PKSW to emerging alternative steelmaking technologies, such as EAF steel production from hydrogen based DRI, would require significantly more capital investment than the other options and would be a complex process, impacting all aspects of operations, such as operating practices, workforce configuration and skill set and steel grades. This risks impacts to employees, customers and the supply chain.

Additionally these emerging alternate options would require a long project timeframe in order to carry out investigations and feasibility testing of the new technology. For example hydrogen based DRI production has yet to be proven to operate commercially at scales similar to the production levels required to manufacture sufficient amounts of steel to meet market demand. While several demonstration plants are being built globally to trial this technology, industrial-scale implementation will require successful technology trials at much larger scale.

Adoption of some of the emerging technology options, such as hydrogen based DRI, would also require a breakthrough in the cost of 'green' hydrogen production, and the establishment of a large-scale supply chain for hydrogen that does not currently exist. The current cost of hydrogen in Australia is five to six dollars per kilogram, or $40-48 per gigajoule (GJ) – which is around five times the cost of natural gas. The Federal Government's stretch target of $2 per kilogram (*First Low Emissions Technology Statement*, September 2020) would reduce the cost to around $16 per GJ. Clearly there is a lot to do to make hydrogen competitive.

In considering the likely commercialisation, cost and feasibility of adopting alternative steelmaking technologies at Port Kembla, BlueScope has consulted with a range of expert sources. These include the World Steel Association ('worldsteel') and the International Energy Agency's (IEA's) *'Iron and Steel Technology Roadmap – Towards more sustainable steelmaking report'*, published in October 2020[1].This report explores the technologies and strategies necessary for the iron and steel sector to pursue a pathway compatible with the IEA's broader vision of a more sustainable energy sector. It considers both the challenges and the opportunities and analyses the key technologies and processes that would enable substantial CO_2 emission reductions in the sector. The IEA report includes an assessment of the technology readiness level (TRL) of each of the fourteen main near zero emissions technologies currently being researched or trialled in the iron and steel sector globally. We expect these emerging technologies will continue to develop over this decade and the next, with larger-scale take-up across the steel industry in the 2040's.

Due to the time required for development of these alternate emerging technology options, their implementation is not possible in time to maintain production following the end of the current 5BF campaign.

Preferred Option

Option 3 is the preferred option for the following reasons:

- Operations at PKSW would be maintained with minimal disruption to production.
- Construction activities would be carried out at a more moderate level while 5BF continued to operate. This would minimise the size of the workforce required, maximise local participation, reduce the amount of construction work required outside of standard working hours and minimise construction facilities and traffic.
- Technical and execution risks to the project would be low and impacts to customers and the supply chain would be minimal.
- Environmental impacts during operation would be generally consistent with existing conditions.
- Severe social and economic impacts associated with cessation of steelmaking at PKSW would be avoided.
- Development and implementation timeframes for alternative steelmaking technologies are too long to be successfully implemented before work needs to be initiated prior to the end of the current 5BF campaign.

[1] This report can be accessed at https://iea.org/reports/iron-and-steel-technology-roadmap

While BlueScope is proposing to proceed with the preferred option to reline 6BF, this does not preclude the company from continuing to investigate a future move to lower emission steelmaking alternatives. In fact, given the strong earnings and cash flow capability of BSL's Australian operations there is significant flexibility and optionality to adopt new technologies and iron making configurations in the medium to longer term, as and when they are technically and commercially ready.

3.3 Pre-reline preparation

6BF previously operated for a period of 15 years and has been in care and maintenance since 2011. As a result, the site is ready for work to commence with a minimum of preparatory works.

Preparation works in advance of reline activities will include condition assessments of existing equipment, potentially including in-situ testing or removal for off-site assessment, completion of engineering, planning, contract finalisation and procurement of new and replacement equipment and items.

Paper Size ISO A4

0 0.1 0.2 0.3 0.4

Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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GHD

BlueScope Steel Ltd
No.6 Blast Furnace Reline and Operations
Scoping Report

Project No. **12541101**
Revision No. **0**
Date **01/06/2021**

Key Project features

FIGURE 3-1

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Data source: LPI: DTDB/DCDB, 2017. World Imagery: Maxar.
Created by: tmorton

3.4 Reline activities

Major construction work will be required within the blast furnace and surrounding facilities and will involve removing the remaining burden materials, refractory bricks and blocks and staves within the interior of the blast furnace for replacement. Any required repairs or replacement of ancillary equipment or structures will also be carried out.

Construction activities will indicatively involve the following tasks:

- Removal of the remaining burden materials
- Removal of the iron skull as detailed further in Section 3.7.1
- Removal of worn carbon block refractories in the hearth as detailed further in Section 3.7.2
- 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 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
- Commissioning, ramp up and operation of 6BF

Removal of the iron skull and refractories is discussed in more detail in Section 3.7.

3.5 Site access

The majority of the construction traffic will access the site via the major roads that service the Port Kembla industrial area, including the Princes Motorway and Princes Highway, Shellharbour Road, Springhill Road, Five Islands Road and Masters Road. Site access is discussed further in Section 5.2.5. No changes to existing access arrangements are proposed as part of the project. Onsite parking will be available for the workforce as shown in Figure 3-1.

3.6 Construction laydown areas

Laydown areas for construction equipment and materials is anticipated to be within the PKSW site. The delivery of materials and equipment to the work sites will be staged as required with minimal storage close to 6BF. Indicative laydown areas are shown on Figure 3-1.

Construction support facilities, car parks and laydown areas identified are already established on site and therefore do not require approval as part of the Project. Where new support facilities are required and can be carried out as exempt or complying development, those facilities will be excluded from the Project.

3.7 Construction materials and equipment

Much of the equipment and materials required for the project has a long lead time for procurement. Specific types and quantities of equipment and materials will be determined during project planning. An indicative list of equipment and materials that may be required for the project is provided in Table 3-1 and Table 3-2 respectively.

Table 3-1 Indicative construction equipment

Construction equipment			
Excavators ranging from 5 t to 40 t	Bobcats (skid steer loaders)	Water blasters	Rail tamper
Cranes of various capacity ranging from 15 t to 800 t	Rock breaker	Grit blasters	Various brick saws and mixers
Dump trucks	Explosives equipment	Semi trailers	Material hoists and winches
Front end loaders	Air compressors	Abbey hoists	Refractory gunning machine
Telescopic boom excavator	Diesel welders	Forklifts	Temporary stove burners, fuel pipe and fans.
Liquids tankers	Welding Machines	Sykes pumps	Alimak passenger and goods lifts
Tear-Out machine	Temporary conveyors	Temporary Oxygen, Acetylene, LPG, Argon, Nitrogen welding and cutting gases	Scaffolding
Boom and scissor lifts	Vacuum loading (suck) trucks	Concrete mixers	Concrete pumps
Fuel trucks	Flat Bed Trucks	Road Rollers	Piling Rigs
Scaffolding	Plate compactors		

Table 3-2 Indicative construction materials

Construction material	Approximate quantity
Concrete	100 m^3
Steel	1,500 t
Stainless Steel	20 t
Cast Iron	600 t
Copper	400 t
Refractory	2000 t
Insulation	50 m^3

3.7.1 Iron skull removal

Iron skull is a conglomerate layer of iron and slag that solidifies on the inner surface of the hearth lining. The iron skull will be removed using mobile equipment and recycled on site. Recycling activities are managed by Australian Steel Mill Services (ASMS) within a licensed area within PKSW.

Iron skull demolition using explosives is the most widely used technique internationally and it has an established track record at Port Kembla. An experienced blasting contractor will be engaged to drill and blast the skull into manageable pieces of about 25 tonnes, using small explosive charges. To facilitate this work an opening will be cut into the side of the hearth shell, beneath the casthouse floor, and the broken sections of skull material will be extracted through this opening using an excavator or other appropriate heavy equipment.

Only small sections of the skull will be blasted away at any one time so as to minimise the amount of explosive used. Blasting has been undertaken during previous reline projects at PKSW, with noise and vibration impacts to surrounding receivers being found to be minimal. Noise and vibration impacts are discussed in Section 5.2.2.

Blasting will be undertaken in accordance with BlueScope's existing blasting safety procedures.

3.7.2 Removal of refractories

Refractory material will be removed by jack picking and breaking up the blocks into smaller pieces for extraction. A telescopic boom excavator machine will be used to rake the material out from the furnace. Most of the material in the upper shaft will be demolished and dropped into the bottom of the furnace and removed by the telescopic boom excavator.

Refractories removed from the blast furnace will be stockpiled at one of the construction laydown areas prior to recycling or disposal to an appropriately licensed facility.

3.8 6BF commissioning and ramp 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 re heated and pressure and leak tests conducted. The cooling systems will also be filled and flushed.

The furnace proper will be dried out using hot blast at limited temperatures, then charged with kindling (comprising firewood/railway sleepers and coke) and filled with a mix of burden material (coke and iron ore). The gas systems will be purged ready for use and the furnace will be 'blown in'. This involves the introduction of hot blast air through the tuyeres, with gas initially discharged until its composition is satisfactory for internal use at which time the gas is then diverted into the off gas and gas cleaning system.

The furnace is progressively heated until regular casting of iron and slag commences, although the iron quality is not usable initially, and it will take several days to produce useable iron which can be converted to steel. The furnace is then uprated to target production over the following week, reaching full production within one or two months.

3.9 Workforce

The 6BF reline methodology allows reline activities to be completed in a measured way requiring a smaller construction workforce when compared to a 5BF multi-month reline outage.

Labour requirements for the 6BF reline model will be modest and will be mostly satisfied by local contractors. Across the duration of the project a workforce of approximately 250 full time equivalent (FTE) workers will be required. If 6BF is required online earlier than 2026 for strategic, operational or safety reasons, this workforce size may be increased to complete the work in the reduced timeframe. The required increase in workforce would be dependent on the timeframe required to complete the remaining works however this may result in a maximum of up to 1,000 workers being required, equivalent with what might be needed during a traditional reline.

During operation it is anticipated that workforce requirements will not change significantly from existing operations with the 5BF workforce transferring to 6BF once operational.

3.10 Work hours

Authorisation for 24 hour construction is being sought as part of the request for planning approval.

Where practical, and subject to the final construction timetable, construction will be carried out during the following construction hours:

- Monday to Friday: 7.00 am to 6.00 pm
- Saturday: 7.00 am to 6.00 pm; and
- Sundays and public holidays: no work

However, there will be a number of construction activities scheduled to be undertaken as night works to manage interaction with the remainder of the PKSW operations and the higher day shift workforce.

Where practical noise generating activities with potential to impact any nearby receivers would be scheduled during standard hours.

Final installation of components inside the blast furnace and other residual construction activities will require 24 hour construction (estimated to be a period of 5 months). Further, 24 hour construction may be required for an extended period to speed up the completion of construction if 6BF is required online earlier than 2026.

Operation of 6BF would be 24 hours per day seven day a week in line with 5BF current operations. There will be no concurrent ironmaking operation of both 5BF and 6BF.

3.11 Work schedule

The reline and transition to operation of 6BF will be completed in approximately three years which, assuming a construction start during 2023 would see completion of construction in 2026. An indicative works schedule is provided in Table 3-3. The actual construction start and completion dates will depend on the operational performance of the 5BF facility and its ability to complete its planned campaign life (ending in 2030).

As detailed in Section 1.1 it is anticipated that 5BF may come to the end of its operable life between 2026 and 2030. This presents a potential overlap between when 6BF is needed and when it may be ready for use based on the schedule provided in Table 3-3. To address this potential issue BlueScope would monitor the operation of 5BF during the construction phase. If it is identified that 6BF is required online sooner, measures can be taken to speed up the completion of construction. For example, procurement of items with long lead time can be brought forward. In addition the construction schedule could be condensed and additional resources applied to achieve a revised start of 6BF operations.

Table 3-3 Indicative works schedule

Project stage	Activities	Approximate duration
1	• Procurement of long-lead time items (hearth, refractories, staves) initiated. • Progress with refurbishment activities that do not require long-lead items.	24 to 30 months
2	• Reline furnace and install long lead items. All mechanical and structural works completed. • Control system and automation upgrade.	6 months
3	• Initiated with 6 months advance notice of end of 5BF operations. • Pre-commissioning and commissioning of 6BF.	6 months
4	• Managed transition of ironmaking operations from 5BF to 6BF with ramp-down of 5BF followed by ramp-up production of 6BF. • 5BF decommissioned and made safe on ceasing operation.	1 month

Once operational the target campaign duration for 6BF will be 20 years.

3.12 6BF operations

Operation of 6BF following completion of reline activities, commissioning and ramp up will be generally the same as existing operations utilised at 5BF (see Section 2.1). 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. 6BF could operate for 20 or more years depending on the health of the refractory and other element of the blast furnace and how these perform overtime.

3.13 Project exclusions

To provide clarity in regards to how the project interacts with the ongoing operation of the PKSW, the following activities are excluded from the project:

- Tests, surveys, sampling or investigation for the purposes of the design or assessment of the project.
- Any development undertaken prior to the commencement of construction of the project that is the subject of a complying development certificate or that would otherwise be development which is exempt development or development which does not require development consent.

- Any of the following undertaken prior to the commencement of the construction of the project:
  - Adjustments to, or relocation of, existing utilities infrastructure and installation of new utilities infrastructure.
  - The establishment of construction compounds including the erection of temporary buildings and the provision of associated facilities including access roads and car parks.
- Where approved as part of an existing consent or otherwise exempt or complying, removal of existing steelworks infrastructure, buildings and redundant underground services.
- Development authorised by development consent No. D93/16 granted by Wollongong City Council for the construction and continued operation of 6BF. Subject to the approval of the application to which this Scoping Report applies, BlueScope would surrender D93/16 and ongoing operation would occur subject to the new approval.

4. Strategic and statutory context

4.1 Critical State significant infrastructure

The project involves works to rejuvenate a large and bespoke piece of infrastructure which is the only steelworks of this nature in NSW and one of only two within Australia. Without the continued provision of operational blast furnace infrastructure provided by the project, there is a risk that steel making will be unable to continue at PKSW from as early as 2026 and consequently that no primary steel making will occur in NSW from that time. Steel made at the PKSW is used throughout Australia for a range of infrastructure and construction projects both large and small as well as being exported to key overseas markets.

The project has an estimated capital investment value of about $700 - 800 million. The proposed approach of carrying out the project over a construction period of approximately three years, rather than the usual shorter timeframe for a reline (typically only 130 days), will provide the opportunity for BlueScope to prioritise engagement of local contractors and other NSW businesses.

The project is considered to be essential to NSW for the following economic and social reasons:

- The project will secure continued operation of the PKSW, the largest manufacturing facility in NSW and Australia, ensuring the continued manufacturing of flat steel products in NSW and supply of approximately 2.2 million tonnes of these products used in a range of infrastructure and construction activities of key importance to the NSW economy including:
  - Defence.
  - Infrastructure projects such as road and rail projects.
  - Building and construction, including hospitals, schools, stadiums, residential homes, commercial and industrial buildings.
  - Energy infrastructure, including wind towers, solar farms, electricity transmission infrastructure and pumped hydro.
- The continued operation of the PKSW beyond 2026 will enable the continued significant contribution which PKSW makes to the Illawarra economy, which is currently about $6.5 billion or 24 per cent of regional output per annum.
- The continued operation of PKSW beyond 2026 will facilitate the retention of approximately 4,500 jobs at the site itself (both BlueScope employees and full-time contractors on the site) and support in the order of 10,000 highly skilled jobs in total in the region.

For these reasons, BlueScope is seeking CSSI approval by the Minister under Section 5.13 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The application of the EP&A Act with regard to the assessment and determination of the project is discussed in Section 4.5.

4.2 Global and national strategic context

PKSW is a regionally cost-competitive steel maker that is located close to major population centres and is well-serviced by port, rail and road logistics. PKSW is one of only two integrated steelworks in Australia, and the only Australian facility producing hot-rolled steel flat products for downstream processing. Ongoing operation of PKSW supports a variety of downstream manufacturing businesses.

Increasing globalisation has led to a thinning of industrial production in developed economies such as Australia, raising concerns for the nation’s capacity to produce goods locally in the event of a disruption to world trade.

Cessation of ironmaking in Australia is an issue of national importance, as the complexity and outright cost to establish replacement ironmaking, steelmaking and hot-rolling facilities may be prohibitive if PKSW is shutdown.

Additionally, although the full impact of COVID-19 will not be apparent for some time, it has disrupted many global supply chains, highlighting the risk of being too reliant upon these global supply chains for critical products.

If the project does not proceed, it is highly likely that BlueScope will be unable to continue primary steelmaking in Australia. Such an outcome could have significant consequences for Australia, not least of which would be the impact on supply chain resilience for industries of critical strategic significance including but not limited to defence.

4.3 State and local strategic context

The Illawarra region has grown with the steel industry and continues to be reliant upon the steel industry as a major contributor to the local economy, through direct employment, employment of contractors and by supporting downstream manufacturers. Centred around the steel industry, the Illawarra has accumulated a highly skilled workforce and contractor base from which a broader range of industries can draw.

The Illawarra is emerging as a major industrial hub for manufacturing and energy infrastructure. A number of potential energy projects have been identified in connection with the area, including the proposed Port Kembla Gas Terminal for the import of Liquified Natural Gas (LNG) and the potential associated development of a dual fuel LNG-Hydrogen power station. In addition there is the potential development of the Illawarra Hydrogen Hub as part of the National Hydrogen Roadmap and NSW Electricity Roadmap. BlueScope is also supporting sustainable manufacturing through the commitment to invest $20 million in the BlueScope Renewable Manufacturing Zone (BRMZ) as announced in November 2020.

BlueScope's position as an established manufacturer and potential customer will be of value to these projects and will help support many more than its own 3,000 direct employees, 1,000-1,500 contractors and around 10,000 jobs in total including indirect employment, the majority of which are in NSW. The project is therefore an important factor in maintaining the Illawarra's contribution to the state and national economies.

4.4 Strategic policies

4.4.1 NSW 2040 Economic Blueprint

The NSW 2040 Economic Blueprint (NSW Government 2019) aims to inform views on what the NSW economy can achieve over the next two decades. The Blueprint has been informed by research on economic, jobs and productivity trends, and through broad consultation with various stakeholders. The Blueprint identifies a range of recommendations to enhance the performance of the NSW economy guided by the following aspirations:

- A two-trillion-dollar economy after 2040
- Healthy, productive people
- Vibrant, well-connected cities
- Productive, vibrant regions
- Innovative, world-class businesses
- Sustainable environmental and resources management
- Better government performance

A key aspect of the Blueprint in achieving the above aspirations is a focus on economic growth, advanced manufacturing and new industries. The project will contribute to these areas through the significant capital investment for the project delivering benefits to the State economy. Additionally, the continued production of steel at PKSW will benefit downstream manufacturing industries, helping to promote the development of advanced manufacturing and new industries.

4.4.2 NSW COVID-19 Recovery Plan

The NSW COVID-19 Recovery Plan (NSW Government 2020) is the government's plan to ensure the NSW economy is rebuilt following the COVID-19 pandemic. It identifies a number of investments and initiatives aimed at harnessing the innovations and lessons learnt during the COVID-19 pandemic to ensure the NSW economy is resilient and self-sufficient.

These initiatives outlined in the plan include:

- Investing $100 billion in a four-year infrastructure pipeline to drive employment growth.
- A Planning System Acceleration Program bringing forward immediate planning reforms to support productivity, investment and jobs by reducing the time taken to approve projects.
- Review of education and training programs to respond to skill shortages and focus on core competencies, as well as increased investment in schools.
- Adopting innovative digital models to facilitate seamless and easy interactions with government.
- Building a self-sufficient economy through supporting advanced manufacturing and local supply chains.
- Supporting national reforms to Federal-State relations to reduce overlap and regulation in cross-jurisdictional areas.

The project will contribute to the goals of the NSW COVID-19 Recovery Plan by providing continued hot-rolled steel flat products to support a variety of downstream manufacturing businesses. This will support the local manufacturing sector and maintain local supply chains. The project will also provide ongoing employment opportunities during construction and operation, supporting a resilient and self-sustaining NSW economy.

4.4.3 State Infrastructure Strategy 2012 – 2032

The State Infrastructure Strategy (NSW Government 2018) is a 20-year infrastructure investment plan for the NSW Government that aims to place strategic fit and economic merit at the centre of investment decisions. The strategy assesses infrastructure problems and solutions, and provides recommendations to best grow the State's economy, enhance productivity and improve living standards for the NSW community.

The strategy focusses on investment in road, rail, ports, telecommunication, water, schools, hospitals, sports arenas and other local infrastructure as a means of achieving economic growth and improving living standards. Such infrastructure projects are steel intensive, therefore, the project will support the aims to the strategy through providing a local source of steel products to downstream manufacturers and the construction industry. Similarly the State Infrastructure Strategy identifies a range of road, rail and port projects and priorities including ones which support the ongoing operation of the PKSW, an acknowledgement of the importance of the operation to the State.

4.4.4 Illawarra Shoalhaven Regional Plan

The Illawarra Shoalhaven Regional Plan (NSW Government 2015) is an overarching regional plan applying to the local government areas of Kiama, Shellharbour, Shoalhaven and Wollongong. The plan identifies key planning principles for the region, which include:

- Protecting land with high environmental value and recognising cultural heritage values.
- Sustainable use of land and resources while building resilience to climate change.
- Supporting a strong, resilient and diversified economy.
- Supporting improvements to transport infrastructure including active, public and freight.
- Provide for the balanced and orderly supply of land for housing development.
- Increase housing density around centres with access to jobs and transport.
- Encourage urban design that reduces car dependency and promote energy efficiency.
- Improvement coordination on the delivery of infrastructure.

The project is considered broadly consistent with these planning principles. The project will contribute to a strong, resilient and diversified economy and will have limited environmental impacts as it will be located within the existing PKSW site which has already been disturbed.

The Illawarra region has grown with the steel industry and continues to be reliant upon the steel industry as a major employer through direct employment and contractors and by supporting downstream manufacturers. PKSW is therefore an important factor in maintaining the Illawarra's contribution to the state and national economies. The project will have a number of economic benefits including maintaining NSW's steelmaking capacity, providing capital investment and substantial employment opportunities.

4.4.5 Wollongong 2028 — Community Strategic Plan

The Wollongong 2028 Community Strategic Plan outlines the community's main priorities and aspirations for the future, and includes strategies for how to achieve them. The plan identifies a goal to have an innovative and sustainable economy to increase local employment opportunities and expand the profile of Wollongong as a regional city. The project will contribute to the sustainability of the local economy by enabling ongoing steel production to continue and will provide local employment opportunities during construction and operation. Ongoing operation of the PKSW will also see continued support provided to community programs through BlueScope's community partners program.

4.5 Approval pathway and permissibility

4.5.1 Environmental Planning and Assessment Act 1979

The key legislation in NSW regulating the use of land is the *Environmental Planning and Assessment Act 1979* (EP&A Act) and *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation). The EP&A Act institutes a system for environmental planning and assessment, including approvals and environmental impact assessment requirements for proposed developments. The EP&A Act contains three key parts that impose requirements for planning approval. These include:

- Part 4, which provides for the assessment and determination of development that requires development consent from the local council, a regional planning panel or the NSW government for development which is classed as State Significant Development (SSD).

- Part 5 (Division 5.1), which provides for the environmental assessment of activities that do not require approval or development consent under Part 4.
- Part 5 (Division 5.2), which provides for the assessment and determination of State Significant Infrastructure (SSI) including critical SSI (CSSI).

The need or otherwise for consent for a new development application is set out in environmental planning instruments (EPIs) as described below.

BlueScope is seeking CSSI approval for the project under Part 5, Division 5.2 of the Environmental Planning and Assessment Act 1979 (EP&A Act). The Minister for Planning and Public Spaces is the consent authority and the project is to be assessed in accordance with the provisions of Division 5.2 of the EP&A Act.

4.5.2 Environmental planning instruments

State Environmental Planning Policy (State and Regional Development) 2011

State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP) identifies development that is considered to be of state significance and includes provisions for SSD and SSI including CSSI. The SRD SEPP defines CSSI as development that is, in the opinion of the Minister for Planning, essential to the State for economic, environmental or social reasons. BlueScope is seeking CSSI approval for the project. If declared CSSI, the project will be listed in Schedule 5 of the SRD SEPP.

Under Section 16 of the SRD SEPP, the project therefore:

(a) may be carried out without development consent under Part 4 of the EP&A Act, and

(b) is declared to be State significant infrastructure for the purposes of the EP&A Act if it is not otherwise so declared, and

(c) is declared to be critical State significant infrastructure for the purposes of the EP&A Act.

4.5.3 Other environmental planning instruments

BlueScope is seeking CSSI approval as identified above. Section 5.22(2) of the EP&A Act provides that environmental planning instruments do not apply to or in respect of SSI (including CSSI), except where they apply to the declaration of infrastructure as SSI or CSSI. While environmental planning instruments other than SEPP SRD therefore do not apply, the following instruments will be taken into consideration when assessing the potential impacts of the project.

State Environmental Planning Policy (Three Ports) 2013

State Environmental Planning Policy (Three Ports) 2013 (Three Ports SEPP) provides a planning regime for the development and delivery of infrastructure on land in Port Botany, Port Kembla and the Port of Newcastle.

The project falls within the Port Kembla land application map under the Three Ports SEPP and the project is located on land zoned IN3 Heavy Industrial. The project meets the definition of a heavy industry in accordance with the Three Ports SEPP and is considered to be consistent with the objects of the land zoning.

While the project is permissible with consent under the provisions of the Three Ports SEPP, it has also been declared CSSI and will therefore be assessed under Division 5.2 of the EP&A Act and can be undertaken without consent under Part 4 of the EP&A Act.

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development

State Environmental Planning Policy No. 33 - Hazardous and Offensive Development (SEPP 33) regulates, amongst other matters, the determination of development applications to carry out development for the purposes of a potentially hazardous industry or potentially offensive industry. A hazard and risk assessment will be undertaken as part of the EIS and include the assessment of potential hazards associated with the construction and operation of the project.

State Environmental Planning (Coastal Management) 2018

State Environmental Planning Policy (Coastal Management) 2018 (Coastal Management SEPP) aims to promote an integrated and co-ordinated approach to land use planning in the coastal zone in a manner consistent with the objectives of the *Coastal Management Act 2016*. The objectives of the Coastal Management SEPP are to manage development in the coastal zone and establish a framework for land use planning and decision making in the coastal zone.

The project is located partially within the coastal use and coastal management zone mapped under the policy and therefore development consent would ordinarily be required. While the CSSI declaration overrides the need for consent under the Coastal Management SEPP, the EIS for the project will seek to demonstrate consistency with Clause 13 and Clause 14 of the SEPP, where practical, including consideration of the following principles:

- The development is designed, sited and will be managed to avoid adverse impacts, or
- If that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or
- If that impact cannot be minimised—the development will be managed to mitigate that impact

For development within the coastal use area, the responsible authority has the additional requirement of taking into account the surrounding coastal and built environment, and the bulk, scale and size of the proposed development. The potential impacts of the project on the coastal environment will be considered when assessing the potential project impacts in the EIS.

State Environmental Planning Policy No 55 – Remediation of Land

State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55) provides for a state-wide planning approach to the remediation of contaminated land. In particular, SEPP 55 aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment.

The project represents a continuation of the existing industrial land use and the management of any contaminated land and the suitability of the site for the project will be considered in the EIS.

4.6 Other relevant legislation

4.6.1 NSW legislation

Protection of the Environment Operations Act 1997

The objectives of the *Protection of the Environment Operations Act 1997* (POEO Act) are to protect, restore and enhance the quality of the environment, in recognition of the need to maintain ecologically sustainable development. The POEO Act provides for an integrated system of licensing and contains a core list of activities in Schedule 1 which require an Environment Protection Licence (EPL).

PKSW, is operated under EPL 6092, which applies to a range of scheduled activities carried out at the site. It is expected that this license will be varied to incorporate any new or discontinued scheduled activities associated with the project.

Section 5.24 of the EP&A Act provides that an EPL cannot be refused if it is necessary for carrying out an approved CSSI project and is consistent with the project approval.

Biodiversity Conservation Act 2016

The purpose of the *Biodiversity Conservation Act 2016* (BC Act) is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future. The BC Act lists threatened species, populations and ecological communities as well as critical habitat and key threatening processes to be considered when assessing an activity.

Under Section 7.9 of the BC Act an application to carry out SSI, including CSSI, is to be accompanied by a biodiversity development assessment report (BDAR) unless the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values.

The project will be unlikely to have a significant impact on any threatened species, populations or ecological communities listed under the BC Act. Impacts to biodiversity will be assessed in the EIS a described in Section 5.3.2.

National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act) provides for the protection of Aboriginal objects (sites, objects and cultural material) and Aboriginal places.

It is an offence under Section 86 of the NPW Act to harm or desecrate an object the person knows is an Aboriginal object. It is also a strict liability offence to harm an Aboriginal object or harm or desecrate an Aboriginal place, whether knowingly or unknowingly. Section 87 of the NPW Act provides a series of defences against the offences listed in Section 86 which includes if the harm was authorised by and conducted in accordance with the requirements of an Aboriginal Heritage Impact Permit (AHIP) under Section 90 of the NPW Act.

The project will be restricted to a highly disturbed industrial site of the existing PKSW. It is proposed that potential for impacts upon Aboriginal cultural heritage will be considered through a due diligence process in the EIS. Further, under section 5.23 of the EP&A Act, an AHIP permit under Section 90 of the NPW Act is not required for approved CSSI.

Heritage Act 1977

The *Heritage Act 1977* is concerned with all aspects of heritage conservation ranging from basic protection against indiscriminate damage and demolition of buildings and sites, through to restoration and enhancement.

Heritage places and items of particular importance to the people of NSW are listed on the State Heritage Register. Approval under Section 59 of the Act is required for any direct impacts on an item on the register. Approval from the NSW Heritage Council under Section 139 of the Act is required prior to disturbance or excavation likely to encounter or harm a relic.

The project is not expected to impact upon any identified heritage item or relic. Under section 5.33 of the EP&A Act, approval under Section 59 or Section 139 is not required for approved CSSI.

4.6.2 Commonwealth legislation

Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act is administered by the Commonwealth Department of Agriculture, Water and the Environment (DAWE) and provides a legal framework to protect and manage nationally important flora, fauna, ecological communities and heritage places defined as matters of national environmental significance (MNES). Part 9 of the EPBC Act provides that an action that has, will have or is likely to have a significant impact on MNES may not be undertaken without prior approval from the Commonwealth Minister. Approval under the EPBC Act is also required for actions carried out by Commonwealth agencies or impacting on Commonwealth land.

A search using the Protected Matters Search Tool (PMST) with a 10 kilometre buffer from the proposal was undertaken on 9 December 2020. Table 4-1 provides a summary of the results.

An assessment of whether the project will have a significant impact on these MNES will be undertaken as part of the environmental assessment process, however, based on this review of MNES in proximity to the project, a referral to DAWE under the EPBC Act is not considered necessary.

Table 4-1 EPBC protected matters search results

Protected matter	Matter located within search radius	Comments	Potential impact
Matters of national environmental significance			
World Heritage Property	None	N/A	N/A
National Heritage Places	None	N/A	N/A
Wetlands of International Importance	None	N/A	N/A
Great Barrier Reef Marine Park	None	N/A	N/A
Commonwealth Marine Areas	1	No impact expected from project	
Threatened Ecological Communities	6	Discussed further in Section 5.3.2	
Threatened Species	91	Discussed further in Section 5.3.2	
Migratory species	76	Discussed further in Section 5.3.2	
Other matters			
Commonwealth Land	15	None occurring on site	N/A
Commonwealth Heritage Places	None	N/A	N/A
Marine Species	106	Discussed further in Section 5.3.2	
Whales and Other Cetaceans	14	Discussed further in Section 5.3.2	
Critical Habitats	None	N/A	N/A
Commonwealth Reserves Terrestrial	None	N/A	N/A
Australian Marine Parks	None	N/A	N/A

5. Matters and impacts

5.1 Overview

The identification of issues to be addressed in the EIS has been undertaken through a risk based and consultative approach in accordance with the draft *Scoping an Environmental Impact Statement Guideline* (DPIE 2017). Key potential issues are those environmental aspects that will require project specific assessments to assess the potential impacts and develop measures to avoid, mitigate and/or offset those impacts, where necessary. The key assessment issues were identified with consideration of a range of factors including:

- The existing environmental context of the project and its surrounding locality (see Section 2.1 and Section 2.2).
- The proposed project activities (see Section 3).
- The regulatory framework applicable to the project (see Section 4).
- The outcomes of consultation undertaken with the community and other relevant stakeholders (see Section 6).
- The project team's experience from previous environmental approvals for projects in NSW.

Key issues and the proposed level and scope of assessments were documented using DPIE's draft Scoping Worksheet, a copy of which is provided in Appendix A. In accordance with the draft Scoping Worksheet, each issue has been categorised as either a 'Key' issue, 'Other' issue, or 'Scoping only' issue. Further details regarding the identified issues and the proposed level and scope of assessment are presented in the following sections.

5.2 Key issues and other issues for inclusion in the EIS

Described below are the key matters and impacts proposed for detailed consideration in the EIS. This includes those that are of particular concern to the community and other stakeholders. For each relevant matter, further details of the baseline conditions, proposed assessment methodology are provided.

5.2.1 Air quality

Existing environment

Local meteorological data was obtained from the Port Kembla Signal Station located in Port Kembla (BoM, 2020a).

Mean monthly maximum temperatures range between 16.7 °C in July to 24.4 °C in February. Mean monthly minimum temperatures range between 9.8 °C in July to 18.7 °C in February. Autumn and spring are generally mild with sporadic temperature fluctuations.

Mean monthly rainfall in the area ranges between 183.7 millimetres (mm) in March to 55.0 mm in September, with most of the mean annual 1260.6 mm of rainfall occurring between October and March.

Mean monthly wind speeds are typically greater in summer and spring, ranging from 19.7 kilometres per hour (km/h) in October to 14.7 km/h in March and April. Winds are predominantly from the south, south west and west in the morning, and predominantly from the north east and south in the afternoon.

A wide range of anthropogenic sources currently impact the air quality in the area, including industrial operations surrounding the site, shipping and logistics operations, quarries and coal storage. Windblown dust is also expected to be present from on-site and off-site sources. Natural attenuators of air quality include the sea breeze which is prevalent in the afternoons.

The existing blast furnace operations at the site are responsible for several emission types that impact local air quality. These include:

- Flue gas
- Various gasses, such as H_2S and SO_2
- Blast furnace gas
- Steam
- Filtered and unfiltered air
- Dust

The nearest residential receivers are located approximately 1.2 km to the west of the site.

Potential impacts

Potential air quality impacts from the project will result from emissions associated with a variety of activities during construction, commissioning and operation.

During construction, the local air quality could potentially be impacted as a result of dust generation from materials handling (including the removal and transport of refractory material) and machinery and truck movements. Additionally, construction traffic and machinery will generate exhaust emissions.

During commissioning the blast furnace will be charged with timber, coke and iron ore and reignited. Exhaust gases from this process will be released for typically 1 hour or less before sufficient molten iron and slag is generated to commence normal operations. This will generate carbon monoxide (CO), carbon dioxide (CO_2), hydrogen (H_2), dust and soot emissions. Following commissioning, 6BF will operate in generally the same manner as 5BF, producing sulphur dioxide (SO_2), hydrogen sulphide (H_2S), and particulate emissions, which will be controlled through a bag filter system.

Proposed assessment approach

An air quality impact assessment in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (EPA, 2016) will be undertaken as part of the EIS to assess potential impacts on nearby sensitive receptors. The assessment will include:

- Review project information related to sources of air emissions accounting for construction and operation.
- Define the existing air quality environment at the site, including the identification of sensitive receivers.
- Identification of all likely sources of air pollution.
- Preparation of dispersion models for current and proposed activities at the site, including comparison against EPA criteria.
- Quantification of potential impacts.
- Recommendations on mitigation and management strategies.

5.2.2 Noise and vibration

Existing environment

The ambient noise environment in the vicinity of the is expected to be influenced by operational activities at PKSW and surrounding industrial activities. Traffic noise from local road and rail transportation will also be present.

The nearest residential receivers are located approximately 1.2 km to the west of the project site.

Potential impacts

During construction, the project has the potential to generate noise emissions from a variety of sources, including:

- Demolition activities at 6BF, including blasting to remove iron skull.
- Activities associated with relining and commissioning at 6BF.
- Loading and dumping of materials and waste.
- Movement of heavy vehicles to and from the site.
- Construction traffic on local roads.

The project proposes the continued operation of steelmaking facilities in an existing industrial site. As such operational noise impacts are expected to be generally consistent with existing conditions, however, the location of noise generating activities may change with the transition of ironmaking operations from 5BF to 6BF.

Proposed assessment approach

A noise and vibration impact assessment will be prepared for the EIS with regard to the Noise Policy for Industry (EPA, 2017), Interim Construction Noise Guideline (DECC, 2009) and Road Noise Policy (DECCW, 2011) including the following tasks:

- Review of background information to inform the assessment including meteorological data.
- Undertake unattended background noise monitoring at two locations for a period of a week.
- Undertake attended noise monitoring at the existing 5BF.
- Development of a noise model for the 6BF including identification of additional noise sources.
- Identification of noise trigger levels and criteria for assessment.
- Identify the likely noise and vibration impacts from construction and operational activities.
- Undertake an assessment of traffic noise impacts with consideration to the relevant guidelines.
- Identification of noise management strategies and mitigation measures, as required.

5.2.3 Hazard and risk

Existing environment

The project is located within an industrial precinct, with existing hazardous or potentially hazardous activities currently being undertaken as part of operations at PKSW. These include:

- Storage and transportation of dangerous goods, hazardous substances and chemicals (for example, sodium hydroxide, sodium hypochlorite or explosives for blasting).
- Mechanical failures due to degradation or failure of mechanical systems, such as corrosion of pipes or vessels.
- Process failures, including the failure of control systems to maintain safe operating conditions, resulting in high temperatures or uncontrolled emissions.

Potential impacts

Materials required to complete the project are generally benign and are not expected to generate additional hazards to what is currently being undertaken on the site, though there may be some exceptions due to specific requirements of construction.

During demolition, explosives will be required to remove residual iron from the bottom of the existing blast furnace. These explosives are expected to be stored offsite by a specialist contractor who will also control explosive activities undertaken on site. Although it is possible that blasting activities on site will pose a risk to surrounding industrial uses, in particular highly flammable coal and grain storage areas, it is considered unlikely that significant impacts will arise due to reliance on specialists and activities carried out in accordance with strict procedures.

During commissioning of the blast furnace, it will be relit which will increase the risk of fire on site during this time. As discussed above, the land use surrounding the site contains several highly flammable stores of materials, requiring careful management to avoid significant consequences. Following successful commissioning of the 6BF, fire risk is not expected to be greater than the risk generated by current operations.

The project will require water to be discharged into adjacent water bodies and therefore additional water treatment chemicals may need to be stored on site for the duration of this process.

Following completion of the reline there will be no new hazardous activities introduced to the site and risks will be consistent with current operations. There will be no significant quantities of new chemical materials that are required to be kept on site compared to existing conditions.

Proposed assessment approach

An initial risk screening will be undertaken using criteria and guidance in DPIE's Applying SEPP 33 (DPIE 2011b), to confirm whether or not the project is classified as potentially hazardous, requiring a preliminary hazard analysis (PHA) and if so, the level of assessment required. The screening criteria relate to factors such as the types and quantities of hazardous materials to be stored on-site, how and where they will be stored, and the anticipated frequency of road movements of this material to and from the site.

If a PHA is required, it will be conducted in accordance with SEPP 33 requirements, following relevant DPIE guidance. The PHA will identify potential hazards associated with the project and estimate the likelihood and consequences of them occurring, taking into account BlueScope's proposed controls. This information will then be reviewed to assess the level of off-site risk to people, property and the environment.

Additional risk mitigation measures will be incorporated into the project design if required.

5.2.4 Water and hydrology

Existing environment

The project is located within close proximity to Port Kembla Harbour and Tom Thumbs Lagoon. Two natural water courses drain into the harbour, namely Main Drain and Allans Creek. Allans Creek is the predominant source of freshwater inflow into Port Kembla Harbour, with a catchment area of 41 km^2. Industrial activities (including PKSW) discharge water into the creek. Majority of the water discharged from PKSW is saltwater that has been used for indirect cooling. Industrial discharges are of sufficient volume that they have the potential to impact upon water quality and water volume in the creek. Discharge waters are slightly warmer and less dense that the receiving waters found in the Harbour.

There are also several constructed drains servicing the site, which drain into Allans Creek and the Harbour. The site is relatively flat and four to six metres above sea level. The PKSW is located above the 1 per cent AEP level.

Groundwater beneath the site generally flows towards Tom Thumbs Lagoon and Allans Creek. Groundwater recharge is generally from infiltration of rainfall and groundwater flow from up hydraulic gradient areas to the north west and south west of the site. Previous studies have indicated that on site groundwater has elevated concentrations of heavy metals, organic and inorganic contaminates above the relevant screening criteria (Senversa, 2019 and JBS&G, 2016).

Potential impacts

Construction activities may mobilise sediment into the constructed drains on site, which has the potential to impact water quality receiving waters. Spills of hydrocarbons and other chemical from construction plant and machinery would also negatively impact the surface water quality of the surrounding area.

During commissioning, cooling water systems will be filled and flushed with industrial water. There is potential for foaming to occur from the gas system during start up, which may require discharge, affecting local water quality.

During operation of the project, water will be discharged to the harbour through licensed discharge points. It is anticipated the discharges will be generally consistent with existing operations.

As only minor, if any, excavation will be required for the project, no groundwater impacts are predicted.

Proposed assessment methodology

A water quality impact assessment will be undertaken as part of the EIS to assess potential impacts on surface water. This assessment will be prepared in accordance with the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018) and guidelines set by the NSW Marine Water Quality Objectives in NSW (DEC, 2006). The assessment will include:

- Background information regarding the site and a review of existing monitoring and hydrodynamic modelling data.
- Assessment of the impact of undertaking the project, including an assessment of the existing and expected performance of the project against relevant criteria.
- Provide a discussion of the project impact on water quality to receiving waters from the use of cooling and process water.
- Identification of management strategies and mitigation measures, as required.

5.2.5 Traffic

Existing environment

PKSW is strategically located within the regional road network, with good connectivity to road and rail links to major cities within NSW. There are six main roads servicing PKSW:

- Princes Motorway (M1) – this is the main arterial road through the Illawarra region. This road runs in a north-south direction. A large amount of traffic travelling to and from Port Kembla uses this route.
- The Princes Highway (A48) – The Princes Highway links Port Kembla to Sydney. This road passes through commercial and residential areas.
- Springhill Road (B65) – Forms part of the road link between the Wollongong CBD and the southern areas of Shellharbour and Port Kembla.
- Five Islands Road (B65) – runs in an east – west direction and provides connections to several other main roads in the area.
- Masters Road – connects Springhill Road to the Princes Motorway.

Traffic associated with PKSW enters the site via Springhill Road, Five Islands Road and Flinders Street, which is a two-lane council operated road. From here, vehicles use private internal roads to access specific sites within PKSW. Designated parking areas are located on site.

Traffic volumes were recorded in 2018 along Five Islands Road, east of its intersection with Springhill Road. On average, there were 41,534 vehicle movements along this road per day. Of these movements, heavy vehicles made up 11.14 per cent (TfNSW, 2020).

PKSW can be accessed by rail lines from the north (Sydney), south coast and west. PKSW also has direct port access for the import of raw materials such as iron ore and coking coal. The port also provides access to export markets for iron and finished products.

Potential impacts

Construction of the project will require materials and equipment to be transported to the project site by road. This is expected to increase the amount of heavy vehicle movements on local roads.

Construction will also generate light vehicle traffic associated with the construction workforce. Impacts will be greatest during morning and afternoon peak times. Construction traffic will utilise private roads once in PKSW.

During operation, the project is not expected to generate additional traffic when compared to current operations. The project will not change existing rail and port connections or usage compared to current arrangements.

Proposed assessment methodology

A traffic, transport and access impact assessment will be undertaken as part of the EIS. This assessment will be prepared with reference to the *Guide to Traffic Generating Development* (RMS, 2002) and *Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments* (Austroads, 2020) and will include:

- A review of baseline information and a description of the existing environment.
- A site inspection of the existing infrastructure.
- A determination of the existing operational performance of the surrounding road network.

- A quantitative assessment of traffic generation during construction and operation of the project, including traffic modelling to identify operational performance of key intersections.
- An assessment of the traffic implications from construction and operation of the project on road network capacity and amenity.
- Provide management and mitigation measures to reduce the impact of the project on local traffic and transport (if required).

5.3 Other issues for inclusion in the EIS

Described below are other matters and impacts proposed for consideration in the EIS. This includes matters for which impacts can be managed through well understood and routine mitigation measures. For each relevant matter, further details of the baseline conditions and proposed assessment methodology are provided.

5.3.1 Soils and geology

Existing environment

Soils and geology

A search of the DPIE eSpade soil and land information database was undertaken on 18 December 2020 (DPIE, 2020a). The site is mapped as Disturbed Terrain soil landscape (9029xx) occurring within other landscapes. The site is underlain by artificial fill, including dredged sand and mud, rocks and local soil materials. Demolition rubble, industrial and household waste are also present under the site. The site is not undermined. The bedrock is exposed on some parts of the site. The site is generally void of soil and covered in hard, impervious bitumen surfaces. Any remaining soil or sediments present on the site are highly disturbed thin coverings overlying fill material. Key limitations of the disturbed soils are mass movement hazards, subsidence and impermeable soils.

As the site is highly disturbed, it is not known what the acid sulphate potential is in this area. However, as the terrain contains filled areas resulting from the reclamation of Tom Thumb Lagoon, which is mapped as having a high probability of acid sulphate bottom sediments, it is probable that some acid sulphate soil material may be present below the layers of fill at the site.

Contamination

A search of contaminated land record and record of sites notified to the Environment Protection Authority was conducted on 18 December 2020. The PKSW is listed as a contaminated site by the EPA. The site has had four notices issued to it, the last being in March 2018, which was a notification to cease the Voluntary Management Plan for the site on the basis that regulation of the site under the *Contaminated Land Management Act 1997* (CLM Act) is no longer warranted. Ongoing management of site contamination occurs under EPL 6092.

Field investigation undertaken at the 5BF indicates there is some heavy metal contamination in the immediate area (Senversa, 2019 and JBS&G, 2016), which is expected to be the case at the 6BF site.

Potential impacts

There will be some limited disturbance of the soil during the re-line process at 6BF. Activities such as the movement of plant and machinery over exposed surfaces may lead to erosion and compaction of fill within the area. There is also potential to encounter contaminated soils during any excavations. Any soil stockpiled or exposed would also be prone to wind and water erosion. As most of the site is a sealed surface, the extent of soil exposure and disturbance is expected to be low. Acid sulphate soils are unlikely to be encountered, given the site is situated on fill material and minimal excavation will be required.

There is potential for further contamination of soils during construction due to spills of hydrocarbons and other chemical.

Proposed assessment methodology

Assessment of impacts to soils will be included as part of the EIS and will include:

- Assessment of the existing soils by utilising available regional mapping and existing site specific data gained from environmental investigations.
- Assessment of potential erosion and sedimentation impacts from the project.
- Identification of proposed sediment and erosion controls for the project.
- Identification of any other necessary mitigation measures.

5.3.2 Biodiversity

Existing environment

A search of the DPIE BioNet Atlas for records of threatened species listed under the BC Act and EPBC Act (DPIE, 2020b) was undertaken on 9 December 2020. Threatened species previously recorded within 10 km of the site are listed in Table 5-1.

Table 5-1 Threatened species recorded within 10 km

Class	Scientific name	Common name	BC Act status*	EPBC Act status*
Animalia	*Litoria aurea*	Green and Golden Bell Frog	E	V
Animalia	*Pseudophryne australis*	Red-crowned Toadlet	V	-
Animalia	*Chelonia mydas*	Green Turtle	V	V
Animalia	*Eretmochelys imbricata*	Hawksbill Turtle	-	V
Animalia	*Stictonetta naevosa*	Freckled Duck	V	-
Animalia	*Ptilinopus magnificus*	Wompoo Fruit-Dove	V	-
Animalia	*Ptilinopus regina*	Rose-crowned Fruit-Dove	V	-
Animalia	*Ptilinopus superbus*	Superb Fruit-Dove	V	-
Animalia	*Hirundapus caudacutus*	White-throated Needletail	-	V
Animalia	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	V	-
Animalia	*Diomedea exulans*	Wandering Albatross	E	E
Animalia	*Thalassarche impavida*	Campbell Albatross	-	V
Animalia	*Thalassarche melanophris*	Black-browed Albatross	V	V
Animalia	*Ardenna carneipes*	Flesh-footed Shearwater	V	-
Animalia	*Macronectes giganteus*	Southern Giant Petrel	E	E
Animalia	*Macronectes halli*	Northern Giant-Petrel	V	V
Animalia	*Pterodroma leucoptera leucoptera*	Gould's Petrel	V	E
Animalia	*Puffinus assimilis*	Little Shearwater	V	-

Class	Scientific name	Common name	BC Act status*	EPBC Act status*
Animalia	*Ephippiorhynchus asiaticus*	Black-necked Stork	E	-
Animalia	*Botaurus poiciloptilus*	Australasian Bittern	E	E
Animalia	*Ixobrychus flavicollis*	Black Bittern	V	-
Animalia	*^^Lophoictinia isura*	Square-tailed Kite	V	-
Animalia	*^^Pandion cristatus*	Eastern Osprey	V	-
Animalia	*Haematopus fuliginosus*	Sooty Oystercatcher	V	-
Animalia	*Haematopus longirostris*	Pied Oystercatcher	E	-
Animalia	*Thinornis rubricollis*	Hooded Plover	CE	V
Animalia	*Calidris canutus*	Red Knot	P	E
Animalia	*Calidris ferruginea*	Curlew Sandpiper	E	CE
Animalia	*Limicola falcinellus*	Broad-billed Sandpiper	V	-
Animalia	*Limosa limosa*	Black-tailed Godwit	V	-
Animalia	*Numenius madagascariensis*	Eastern Curlew	P	CE
Animalia	*Gygis alba*	White Tern	V	-
Animalia	*Onychoprion fuscata*	Sooty Tern	V	-
Animalia	*Sternula albifrons*	Little Tern	E	-
Animalia	*^^Callocephalon fimbriatum*	Gang-gang Cockatoo	V	-
Animalia	*Glossopsitta pusilla*	Little Lorikeet	V	-
Animalia	*^^Lathamus discolor*	Swift Parrot	E	CE
Animalia	*^^Ninox connivens*	Barking Owl	V	-
Animalia	*^^Ninox strenua*	Powerful Owl	V	-
Animalia	*^^Tyto novaehollandiae*	Masked Owl	V	-
Animalia	*^^Tyto tenebricosa*	Sooty Owl	V	-
Animalia	*Anthochaera phrygia*	Regent Honeyeater	CE	CE
Animalia	*Epthianura albifrons*	White-fronted Chat	V	-
Animalia	*Grantiella picta*	Painted Honeyeater	V	V
Animalia	*Coracina lineata*	Barred Cuckoo-shrike	V	-
Animalia	*Petroica phoenicea*	Flame Robin	V	-
Animalia	*Dasyurus maculatus*	Spotted-tailed Quoll	V	E
Animalia	*Phascogale tapoatafa*	Brush-tailed Phascogale	V	-
Animalia	*Phascolarctos cinereus*	Koala	V	V
Animalia	*Cercartetus nanus*	Eastern Pygmy-possum	V	-
Animalia	*Petaurus norfolcensis*	Squirrel Glider	V	-
Animalia	*Petauroides volans*	Greater Glider	P	V
Animalia	*Pteropus poliocephalus*	Grey-headed Flying-fox	V	V
Animalia	*Dugong dugon*	Dugong	E	-
Animalia	*Arctocephalus pusillus doriferus*	Australian Fur-seal	V	-
Animalia	*Megaptera novaeangliae*	Humpback Whale	V	V
Animalia	*Physeter macrocephalus*	Sperm Whale	V	-
Animalia	*Miniopterus australis*	Little Bent-winged Bat	V	-
Animalia	*Miniopterus orianae oceanensis*	Large Bent-winged Bat	V	-
Plantae	*Cynanchum elegans*	White-flowered Wax Plant	E	E
Plantae	*^^Arthropteris palisotii*	Lesser Creeping Fern	E	-
Plantae	*Senna acclinis*	Rainforest Cassia	E	-

Class	Scientific name	Common name	BC Act status*	EPBC Act status*
Plantae	*Gossia acmenoides*	Gossia acmenoides population in the Sydney Basin Bioregion south of the Georges River	EP	-
Plantae	*Rhodamnia rubescens*	Scrub Turpentine	CE	-
Plantae	*Syzygium paniculatum*	Magenta Lilly Pilly	E	V
Plantae	*Zieria granulata*	Illawarra Zieria	E	E

** V = vulnerable, E = endangered, CE = critically endangered, EP = endangered population*

PKSW is a highly disturbed environment with minimal vegetation and retains limited biodiversity value. Vegetation present around the site is dominated by planted species or opportunistic weeds. The waterways surrounding the site are mapped as Key Fish Habitat.

A review of the Atlas of Groundwater Dependent Ecosystems (BOM, 2020b) indicated that no known groundwater dependant ecosystems (GDEs) have been identified within the site.

Potential impacts

The project is located within a highly modified industrial setting and retains limited biodiversity values. Impacts to native vegetation are not anticipated and fauna habitat at the site is expected to be limited.

Numerous sightings of Green and Golden Bell Frog (*Litoria aurea*) have been recorded within the southern area of the PKSW site and the species is known to inhabit highly disturbed areas. The nearest records of this species are approximately 1 km from the project site. It is therefore expected that impacts to this species as a result of the project are unlikely.

Listed threatened or migratory bird species have also been recorded in the vicinity of the project site and may visit the site temporarily. Given the disturbed nature of the site and lack of suitable habitat, any such species are unlikely to be permanently present and are not expected to be impacted by the project.

Numerous aquatic species have been recorded within 10 km of the project site. The marine environment is unlikely to be directly impacted during construction as mitigation measures will be implemented to prevent sediment or contaminants entering waterways. During operation discharges to the harbour are expected to be generally consistent with current operations and therefore impacts to aquatic species are not anticipated.

Proposed assessment methodology

Under Section 7.9 of the BC Act an application to carry out SSI is to be accompanied by a Biodiversity Development Assessment Report (BDAR) unless the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values. As discussed above, it is considered that the project is unlikely to have a significant impact on biodiversity values and BlueScope seeks confirmation that preparation of a BDAR is not required.

The EIS will include an assessment of biodiversity impacts based on review of existing literature and databases, including:

- Identification of the fauna likely to occur within the site.
- Assessment of potential impacts on State and Commonwealth listed terrestrial and aquatic species, populations, ecological communities or their habitats.
- Identify measures that will be implemented to mitigate the impacts of the project on species, populations, ecological communities and their habitats (if applicable).

5.3.3 Aboriginal heritage

Existing environment

The project site is located within the administrative boundaries of the Illawarra Local Aboriginal Land Council (LALC). The entire PKSW, within which 6BF is located has been subject to heavy disturbance from the initial construction of the PKSW starting in 1928 and production beginning in 1929. The project sits wholly within this heavily disturbed area.

A preliminary search of the DPIE Aboriginal Heritage Information System (AHIMS) for the project site was undertaken on 9 December 2020. No listed Aboriginal or historic heritage items have been recorded on the PKSW site. The search identified one site within 200 m of the overall PKSW and approximately 1500 m from 6BF.

Potential impacts

The site is highly disturbed and located on land underlain by introduced fill, and therefore the likelihood of occurrence of Aboriginal items is considered low.

Proposed assessment methodology

Due to the highly disturbed nature of the site an Aboriginal Cultural Heritage Assessment Report (ACHAR) is not considered necessary and a due diligence approach should be undertaken. The EIS will include a desktop assessment of potential impacts to Aboriginal Heritage in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW, 2010). The EIS will also outline methods to mitigate impacts to Aboriginal items (if any).

5.3.4 Historic heritage

Existing environment

The following sources were searched on 9 December 2020 to identify any historic heritage items located within or near the project site:

- Australian Heritage Database
- NSW Heritage Register
- Wollongong LEP 2009
- Three Ports SEPP

These searches returned no identified historic heritage items within the project site. An item known as the Galloway Steam Engine is located on the PKSW site and is a registered item with the National Trust of Australia. This item is located within a building on the PKSW site that would not be impacted by the project.

The nearest historic heritage item is the locally listed Commonwealth Rolling Mills and the Hill 60 Illowra Battery Landscape Area including Hill 60, Fisherman's Beach, Boilers Point and MM Beach listed on the State heritage register located approximately 1.7 km to the south of the project site. Hill 60 and its environs is listed as containing a rare suite of Aboriginal heritage sites which demonstrate the evolving pattern of Aboriginal cultural history and the Aboriginal land rights struggle.

Potential impacts

As no historic heritage items were identified within the project site, the project is not expected to impact on historic heritage. Listed sites located to the south of the site will not be impacted by the project.

Proposed assessment methodology

A desktop assessment of potential impacts to historic heritage will be included in the EIS.

5.3.5 Visual amenity

Existing environment

The project site is located within PKSW, which is an industrial area adjacent to Tom Thumbs Lagoon and Port Kembla Harbour. PKSW is located next to other industrial developments such as grain and coal export, manufacturing premises and truck depots. The nearest residential development is approximately 1.2 km to the west of the site.

PKSW consists of a variety of open-structure plants, exhaust stacks, equipment, operational buildings, storage areas, internal roads and storage tanks. There are also two canals, Allans Creek and Main Drain, that are located within the site. PKSW is visible from distant public vantage points, such as local lookouts and highways, as well as from the surrounding residential areas and arterial roads.

Potential impacts

During construction of the project, views of 6BF will be temporarily altered with the presence of construction plant and associated facilities, such as scaffolding and laydown areas. Given the context of the surrounding industrial area and the fact that the main component of the projects activities will be within the confines of the existing blast furnace and associated structures, the impact of construction plant and associated facilities will have a negligible impact on the visual amenity of the site. During operation, the presence of the new cooling tower and change in location of emissions sources may be more visible from public view points, however the site will be generally consistent with the pre-existing visual landscape.

Proposed assessment methodology

The EIS will provide a qualitative assessment to consider the impact of the project on visual amenity during construction and operation.

5.3.6 Land use and property

Existing environment

The PKSW site (Lot 1 DP606434) is zoned IN3 – Heavy Industrial under the Three Ports SEPP. PKSW is the largest site in the Port Kembla industrial area, occupying approximately 750 ha and is mostly built around the western and northern side of Port Kembla's Inner Harbour. The PKSW site is a multiuse industrial area which includes storage, manufacturing, port berths, private internal roads and offices. The site is located near a wide variety of other industrial developments.

The port of Port Kembla is located to the east of Port Kembla heavy industrial area and is zoned SP1 – Special Activities. The Inner Harbour, specifically developed as an all weather shipping port, covers approximately 60 ha with around 2,900 m of commercial shipping berths. BlueScope operates a number of berths in the Inner Harbour.

The area surrounding Port Kembla industrial area is primarily occupied by residential development. These urban areas provide small and large-scale retail outlets, community services (e.g. medical facilities, hospital, schools and sporting facilities) and commercial facilities (e.g. banking and post office). The closest urban developments to PKSW are the suburbs of Cringila, Berkeley, Lake Heights, Warrawong and Port Kembla to the south, Unanderra, Cobblers Hill, Mount St Thomas, Coniston and Figtree to the north and west.

Potential impacts

The project will be consistent with the industrial land use of the site, as it will enable steel making activities to continue to occur within the PKSW. No change to existing land use is expected.

No land acquisition or new easements are required to complete the project.

Proposed assessment methodology

The EIS will include discussion of the potential land use impacts as a result of the project.

5.3.7 Social and economic

Existing environment

The project is located within the Wollongong LGA, which recorded a population of 203,630 in 2016, of which 18 per cent were children under 14 and 17.6 per cent were adults over 65. 2.6 per cent of the population identified as Aboriginal and/or Torres Strait Islander. The median weekly household income was $1,339 and the most common industries of employment were hospitals, higher education and aged care residential services (ABS, 2016a).

PKSW is located in the suburb of Port Kembla, which is approximately 2.5 km south of the City of Wollongong. The population of Port Kembla was recorded as 5,014 in the 2016 census. This comprised 1,303 families, with an average of 1.8 children per family (for families with children). Children aged 0 - 14 made up 16.6 per cent of the population and adults over 65 made up 20.2 per cent of the population. 3.7 per cent of the population identified as Aboriginal and/or Torres Strait Islander. The median weekly household income was $1,016 and the most common industries of employment were hospitals, iron smelting and steel manufacturing and building and other industrial cleaning services (ABS, 2016b).

The key economic metrics for the Wollongong LGA (idcommunity, 2019) are summarised in Table 5-2.

Table 5-2 Community statistics

Key statistics	Value
Gross regional product	$12.15 billion
Residents	218,114
Employed residents	103,797
Unemployment rate (2016)	6.9%
Local businesses	13,887
Largest industry (by employment)	Health care and social assistance
Value of primary metal and metal product manufacturing (2018/19)	$1,762 million
Population forecast	220,598 (2020) 254,805 (2036)

Potential impacts

The project will secure continued operation of the PKSW, ensuring the continued manufacturing of flat steel products in NSW and supply of approximately 2.2 million tonnes of these products used in a range of infrastructure and construction activities of key importance to the NSW economy.

The continued operation of the PKSW will enable the continued significant contribution which it makes to the economy, including about $6.5 billion or 24 per cent of regional output per annum. The continued operation of PKSW beyond 2026 will facilitate the retention of approximately 4,500 jobs at the site itself (both BlueScope employees and full-time contractors on the site) and support in the order of 10,000 highly skilled jobs in total in the region and across NSW. As a result of the proposed reline approach a greater proportion of the projects economic benefits would be realised within the local community compared to an intense shutdown reline approach.

The project may have some negative socio-economic impacts during construction, such as amenity impacts resulting from potential noise (Section 5.2.2), air quality (Section 5.2.1), and traffic (Section 5.2.5) impacts however these are expected to be relatively minor.

Proposed assessment methodology

The social and economic impacts of the project will be considered as part of the EIS.

5.3.8 Greenhouse gas and energy

Existing environment

Iron and steelmaking via BF-BOF technology, as is used at PKSW, results in the production of greenhouse gases (GHG). Greenhouse gasses produced by current operations at the PKSW including CO, CO_2 and oxides of nitrogen (NO_x).

BlueScope reports annually on its total Australian net energy consumption and GHG emissions to the National Greenhouse and Energy Reporting Scheme (NGERS). PKSW emitted a total of 6,661,351 tonnes of carbon dioxide equivalent (CO_2e) in the 2020 financial year. The dominant source of GHG emissions from PKSW is the use of coal in the iron and steelmaking process, contributing approximately 82 per cent of total GHG emissions from PKSW.

Potential impacts

Construction of the project will generate GHG emissions through the use of plant and vehicles. GHG that will be produced will likely include CO, NO_x, SO_2, and H_2S.

During operation, GHG emissions are expected to be generally consistent with existing operations, however, the project will include several process improvements that will incrementally reduce GHG emissions, including a stove waste gas heat recovery (WGHR) system and a top gas recovery turbine (TRT).

A range of innovative “green steel” ideas are starting to be piloted globally and BlueScope gave consideration to the potential use of these breakthrough technologies when examining the possible steel production and supply options to be adopted at the conclusion of the current Port Kembla blast furnace campaign. However, expert advice is that these technologies, and the supporting infrastructure required to implement them (e.g. a cost competitive ‘green’ hydrogen supply chain) will not be commercialised at scale in time to maintain production once the current campaign of the 5BF concludes.

Despite these breakthrough steelmaking technologies not yet being suitable for adoption in Port Kembla, there continue to be several emission reduction opportunities for existing BF-BOF steelmaking facilities. BlueScope is planning to continue to pursue these opportunities to reduce the emissions intensity from its existing operations through progressive investment in complementary technologies such as use of renewable energy and additional on-site electricity generation.

BSL has elevated climate change strategy to the core of its corporate strategy, and has set a target to reduce the GHG intensity of its steelmaking sites by 12 per cent by 2030 compared to 2018. In FY2019 the company achieved a 1.2% reduction in intensity (FY2020 performance was affected by government-mandated COVID closures).

The company has taken a range of measures to enhance its management of climate change risks and opportunities, including reporting annually in line with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), enhanced governance through the establishment of a Risk and Sustainability Committee of the Board and a Climate Change Council, introduction of shadow carbon pricing for the evaluation of capital projects, and investment in a solar power purchasing agreement equivalent to 20 per cent of its Australian electricity consumption. BSL is also participating in and leading several collaborations with industry and research organisations, including ResponsibleSteel, the Australian Industry ETI project, and work with the University of Wollongong.

Consistent with the direction set by BSL, BlueScope is in the process of refreshing its climate scenario analysis, along with its long term carbon reduction aspiration and pathway, and will have more to say publicly on these matters during the 2021 calendar year.

Proposed assessment methodology

A GHG assessment for the project will be performed in terms of direct (Scope 1) emission potential, indirect (Scope 2) emission potential and significant upstream/downstream (Scope 3) emission potential.

The magnitude of greenhouse gas emissions for the project will be assessed in relation to national greenhouse gas objectives, and the impacts of those emissions in the context of Commonwealth and State government policies and protocols. Mitigation and management measures will be determined as required.

5.3.9 Waste management

Existing environment

The operation of PKSW generates waste that is managed under Waste Management Plans and in accordance with the EPL 6092 held by BlueScope.

A range of waste streams generated onsite are treated, processed or disposed of at the premises in accordance with EPL 6092 including:

- Scrap metal processing
- Storage of other types of waste
- General waste recovery
- Recovery of waste tyres

Potential impacts

Construction of the project will involve the removal of burden materials, refractory bricks, blocks, staves and scrap metal. This will generate various waste materials which will need to be classified in accordance with the EPA waste classification guidelines (EPA, 2014). It is expected that the spent refractories will be the most significant waste generated from the relining of 6BF.

Some excavations may also be required to complete the project. As discussed in Section 5.3.1, previous investigations on the site have found that soil contains elevated levels of heavy metals. If spoil is required to be removed from the site, it will be required to be validated prior to disposal.

Materials generated through the project will be recovered and recycled were practical.

The project will also generate general construction waste including packaging, domestic waste, redundant erosion and sediment controls and sewage.

During operation, waste streams are expected to be generally consistent with existing operating conditions. A primary product from iron production is slag. This is reused in secondary processes to produce products for the construction and infrastructure industries. Details of this reuse will be outlined in the EIS.

Proposed assessment methodology

The EIS will assess the predicted waste generation impacts of the project, including:

- Classification of wastes and an estimate of the quantity of each waste classification.
- Identification of waste handling procedures, management measures and waste minimisation and reuse opportunities.

5.3.10 Utilities and services

Existing environment

PKSW is located in an established industrial precinct, and is currently provided with internal electricity, water and gas services.

Potential impacts

The project may require relocation of existing services within the PKSW site in order to transition operations from 5BF to 6BF.

As the project will be contained within the PKSW site impacts to public utilities or services are not anticipated.

Proposed assessment methodology

The EIS will consider any impacts to utilities and services as a result of the project.

5.4 Scoping only issues

A number of project matters have been classified as ‘Scoping only’ issues during the scoping process. These matters were considered during scoping, but it was concluded, for various reasons, that the proposed project activities are unlikely to have any significant impacts on them. BlueScope does not propose to investigate these matters further in the EIS. A brief summary of each of the identified ‘Scoping only’ issues, and a justification as to why further investigation is not warranted, is presented as follows:

5.4.1 Microclimate

Due to its relative scale and the fact that the majority of works are upgrading existing infrastructure, there is limited potential for the project to influence microclimate. The project does not propose large-scale vegetation clearing, extensive landform changes, or the establishment of large water bodies that may influence local climatic conditions. Ongoing operations will be consistent with current operations. As such, a detailed assessment of the project’s potential to influence microclimate is not considered warranted.

5.4.2 Public domain and other built assets

As the project will be entirely contained within the PKSW site, there is minimal potential for impacts to public spaces which provide opportunities for recreation and other community activities. Similarly no impacts to public structures or infrastructure are considered likely. A detailed assessment of the project's impacts on the public domain and other built assets is not considered warranted.

5.4.3 Soil chemistry, stability, structure and land capability

The project will be located within an existing industrial site generally void of soil and covered in hard, impervious bitumen surfaces. Minimal ground disturbance is proposed as part of the project. As such, impacts to soil chemistry, stability, structure and land capability will likely be negligible and further detailed assessment as part of the EIS is not considered warranted.

5.4.4 Coastal hazards

The project is not located within an area that is susceptible to shoreline recession or coastal inundation, as it is within proximity to the operating areas of Port Kembla, which comprises constructed shipping berths and other built infrastructure designed to withstand coastal hazards. A detailed assessment of coastal hazards is not considered warranted.

5.4.5 Bushfire

The project will be located within an existing industrial site with minimal vegetation within or near the site. As such the potential for the project to influence or be impacted by bushfire is considered negligible and a detailed assessment is not considered warranted.

5.4.6 Undermining and steep slopes

The project site is not undermined and does not contain steep slopes, therefore a detailed assessment of these risks is not considered warranted.

5.5 Cumulative impacts

5.5.1 Existing environment

A search of the major projects register was undertaken on the 22 December 2020 to identify other major projects that may contribute to cumulative impacts. A search was completed for the Wollongong LGA, which identified the following projects that were deemed SSD or SSI within 10 km of the project site:

- Port Kembla Resource Recovery Facility (SSD-6494) – preparing EIS
- Unanderra Liquid Waste Facility (SSD-8304) – preparing EIS
- UOW - Western Building (Arts & Social Sciences) (SSD-8596) - recommendation
- Dendrobium Mine Extension Project (SSD-8194) – refused by Independent Planning Commission
- Port Kembla Bulk Liquids Terminal (SSD – 7264) – approved
- Port Kembla Coal Terminal (MP08_0009) – approved
- Port Kembla Gas Terminal (SSI-9471-Mod-2) - approved
- Kembla Grange Waste Facility (SSD-5300-Mod-2) – approved
- Tallawarra B Power Station (MP07_0124-Mod-2) – approved

5.5.2 Potential impacts

Potential cumulative impacts may occur as a result of construction occurring simultaneously or consecutively with the construction of other major projects in the vicinity of the project, particularly those within the wider Port Kembla industrial area. These impacts are expected to be negligible to minor and temporary in nature, given that the project is not expected to significantly change the existing environment during ironmaking operation as the 5BF and 6BF will not concurrently produce iron.

Any potential cumulative impacts will be reduced through the application of individual project specific environmental mitigation measures.

Further investigation

The EIS will include a cumulative impact assessment component. The cumulative impact assessment will:

- Take into consideration past, present and reasonably foreseeable planned developments that are relevant due to their proximity and/or potential to interact with the identified proposal impacts.
- Assess cumulative impacts to air, noise and traffic.
- Outline how cumulative impacts may be managed through strategic planning or policy.
- Document how cumulative impacts have been considered and, to the fullest extent possible, the project's relative contribution to those cumulative impacts.

6. Community and stakeholder engagement

BlueScope's Port Kembla Steelworks, together with the adjacent Springhill Works, is the largest manufacturing site in Australia at approximately 750 hectares and for the best part of a century has been situated near the heart of the city of Wollongong. With neighbours bordering the site, BlueScope is very much interconnected with the local community.

BlueScope maintains an open door approach by having 5-6,000 visitors tour the plant every year (with the exception of COVID-19 restrictions) with the aim of maintaining open, transparent and effective communication and relationships with neighbours, the local community and all interested stakeholders. BlueScope's community engagement approach is based on living up to 'Our Bond', which is the company's set of guiding principles that outlines how 'we choose to do what is right' and that 'Our communities are our homes'. BlueScope prides itself on upholding its strong reputation by being a good neighbour and also a good corporate citizen. Furthermore, in August 2020 BlueScope announced its new Purpose and Corporate Strategy, which reinforced the commitment to 'Strengthening our Communities'.

According to Reptrak, who produce the Corporate Reputation Index globally, BlueScope has a very 'Strong' reputation in Australia including within the local Illawarra community. In fact, out of the Top 60 companies in Australia, BlueScope has consistently ranked in the top 10 to 20 companies with a score in the 'Strong' range. BlueScope is also the highest ranked manufacturer/industrial company amongst the Top 60.

As an active participant in the local community, BlueScope contributes in many ways. One example, is the longstanding BlueScopeWIN Community Partners Program (in the Illawarra) which has funded over $5 million donations and sponsorships to support local community groups with their important projects and programs over the last decade.

6.1 Engagement undertaken to date

The project is in its early development stage and environmental assessment is proceeding in parallel with the design and feasibility considerations. As such, only high level communication has occurred so far with limited consultation specific to the project undertaken to date.

BlueScope's Community Consultative Committee (CCC) aims to provide a forum for open discussion between BlueScope, community representatives and other stakeholders in relation to the environmental management and performance of operations at PKSW. The CCC is chaired by the Lord Mayor of Wollongong and includes representation from a broad stakeholder group who represent significant number of residents across their local community groups, including:

- NSW Ports
- Wollongong City Council
- Environment Protection Authority
- Industry groups
- Port Kembla Pollution Group
- Community service groups
- Local schools
- Neighbourhood forums

- Area health services
- Healthy Cities Illawarra

The CCC meets four times per year and provides a platform for ongoing consultation with a large portion of the local community. As part of the regular CCC meeting in November 2020, BlueScope provided a short briefing on ironmaking at Port Kembla post 2026 including this project as the preferred option. A more detailed briefing will be provided at the March 2021 meeting. During the preparation of the EIS the CCC would be further briefed on the project and provided the opportunity to actively engage with BlueScope's project team and provide input into the environmental assessment. Out of cycle communications (via email) are also common to keep the CCC informed of key activities.

On 14 December 2020, BlueScope notified the DPIE of the project background, desired approval pathway, project timeframes and key issues expected to be addressed in the EIS approval.

On 22 February 2021, BlueScope publicly announced the project at its Half-Year FY2021 Results Announcement. The project was extensively covered in subsequent Investor (analyst) reports and via national and local media coverage. The feedback from our broad range of stakeholders, including the local community, local media, employees and suppliers, has been that the project has been very well received.

6.2 Matters raised by the engagement to date

While project specific community and stakeholder consultation is in its early stages it is anticipated that matters of interest will include:

- GHG emission reduction opportunities (as part of the project scope)
- Provision of local jobs (including the local contractor community)
- Impacts to ongoing operations
- Economic impacts
- Whether other options were considered (e.g. Green steel using Hydrogen to replace carbon)
- Project specific impacts (increased traffic, noise etc.)

6.3 Community and stakeholder engagement program

6.3.1 Stakeholder engagement during EIS preparation

BlueScope will develop a detailed community and key stakeholder consultation plan for the EIS once SEARs are received. The outcomes of consultation will be included in the EIS and relevant technical studies. The purpose of the consultation plan is to ensure ongoing and effective communication with key stakeholders and the local community.

Stakeholder groups, with an interest in the project are expected to include:

- DPIE
- NSW Government
- Federal Government
- Local Councils (Wollongong, Shellharbour and Kiama)
- Regulators (e.g. NSW EPA)

- Local, State and Federal politicians (located in the Illawarra and/or with relevant ministerial portfolios)
- Transport NSW (TfNSW)
- Residents, neighbouring the PKSW site
- Local community groups (e.g. neighbourhood forums, local schools, indigenous groups)
- Environmental groups
- Industry bodies
- Business Leaders
- Local and National Media
- Investors / shareholders and analysts
- Suppliers / contracting community (e.g. Utility providers).
- Unions
- Neighbouring businesses (e.g. NSW Ports, Port users group, Coal Terminal)
- BlueScope Employees
- Customers

Community engagement is aimed at keeping key stakeholders informed of the assessment process and anticipated project impacts such that concerns can be raised and addressed through the design process. This is expected to be achieved through a number of different channels including:

- Direct consultation with key stakeholders via one-to-one or one-to-few briefings. This affords the opportunity to discuss the project in detail and provide feedback input into the process.
- Presentations at existing forums which BlueScope actively attends and participates (e.g. quarterly CCC meetings, Wollongong City Council regular briefings, i3Net forums, Port Kembla Harbour users group, The Port Kembla Pollution Group, Inside Industry Board meetings, Business Illawarra functions).
- A public display about the project at BlueScope's Visitors Centre at the Port Kembla Steelworks, open to the 5-6,000 visitors per annum.
- Tours of the steelworks (5-6,000 visitors per year), conducted by Inside Industry, to include high level information about the project.
- Regular local and national media stories about the project.
- Regular posts on BlueScope's social media about the project (LinkedIn, Twitter and Facebook).
- Project details/updates to be displayed on the www.bluescopeillawarra.com.au website.
- BlueScope employees (3,000 direct in the Illawarra) to be informed of project updates through its own internal Workplace site (Facebook for businesses).

6.3.2 Stakeholder engagement during future project stages

Opportunities for members of the community and other stakeholders to engage with BlueScope during the project will be provided through a range of mechanisms, as outlined in Table 6-1.

Table 6-1 Stakeholder engagement mechanisms

Mechanism	Description
Key Stakeholder Briefings	Direct consultation with key stakeholders via one-to-one or one-to-few briefings affords the opportunity to discuss the project in detail and provide feedback input into the process.
Existing Forums	BlueScope will continue to provide community and other stakeholders updates through existing forums such as the quarterly CCC meetings. Presentations in these forums will provide the attendees with an opportunity to communicate community sentiments regarding project activities and raise any issues or concerns.
News and Social Media	Updates about the project will be regularly posted on BlueScope's social media, and local and national media will be engaged to broadcast stories about the project.
BlueScope in the Illawarra website	Project updates will be made available for members of the public via the BlueScope in the Illawarra website. The website will also allow members of the public to register their interest to stay informed about the project.

7. Conclusion

BlueScope proposes to move iron manufacture from 5BF to 6BF, after 5BF ceases operation sometime between 2026 and 2030. BlueScope has considered alternative technologies, however, at this point, a reline of 6BF to allow the transfer to occur is the most technically feasible and economically viable option for Australian steelmaking while longer-term breakthrough low-emission technologies are developed. Evaluation of measures to reduce the carbon emissions intensity of iron and steelmaking are a key part of the process. Given the strong earnings and cash flow capability of BSL's Australian businesses, of which BlueScope's PKSW is a key component, there is significant flexibility and optionality to adopt new technologies and iron making configurations in the medium to longer term, as and when they are technically and commercially ready.

The project is important socially and economically in maintaining local production and manufacturing, supporting 3,000 full time direct employees, approximately 1,500 full-time on-site contractors, and up to 10,000 jobs in total including indirect employees, reducing reliance on material import and assisting NSW with its port COVID-19 recovery. For these reasons, BlueScope has sought for CSSI approval by the Minister for Planning.

An EIS will be prepared for the project in accordance with the SEARs and with consideration of feedback received during the community and stakeholder engagement program.

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Appendices

Appendix A – EIS Scoping Worksheet Content

Environmental Impact Statement (EIS) scoping worksheet for:	*BlueScope BF 6 refurb* hh								Date:	Dec-20		
What matters might be impacted?			**What activities might cause an impact?**	**What are the characteristics of the impact?**						**How will the impact be managed?**	**What are the community and other stakeholder views?**	**What level of assessment and engagement is required in the EIS preparation phase?**	
Social and environmental matters **I.e. natural or human assets or values aggregated at the level most appropriate for informing management and assessment requirements** ***Click on the matter for a description, or the link above for full glossary***			**Without any mitigation, is the proposal likely to impact on the matter?** ***(Select from list)***	**If there is a 'likely' impact:** **1. list the activities expected to cause the impact; and** **2. if applicable, list the receptor being impacted and its status.** *E.g. construction noise will be heard at nearby school* **If 'unlikely', briefly explain why. Has the impact been actively avoided through project design or site location?** ***(Manual entry)***	**Is the impact, without mitigation, expected to cause a material effect with regard to its...** ***(Answer 'Y', 'N' or '?')*** ***Click on characteristic for description, or the link above for further detail***				**Does the impact need assessment in the EIS?** ***(Auto fills)***	**Is the impact, without mitigation, expected to have a material cumulative effect with other impacts (including from other projects)?** ***(Select from list)***	**What safeguards and management measures are expected to be required to address the impact?** ***(Select from list)***	**Are there community or other stakeholder concerns regarding the impact or activity?** ***(Based on engagement with community and other stakeholders)*** ***(Select from list)***	**Expected level of assessment and/or engagement required** ***(Auto fills)***	**Relevant section in Scoping Report** ***(Manual entry)***
					extent?	duration?	severity?	sensitivity?						
What does the proposal mean for people?	AMENITY	acoustic	Likely	New noise sources at new locations within the site.	N	Y	Y	N	Yes	Yes	Project Specific	Yes	Key Issue + CIA + Focussed Engagement	4.2.2.3
		visual	Unlikely	Upgrade to existing infrastructure within the site with limited visibility								No	Scoping Report	
		odour	Likely	Various air emissions sources potentially producing odour	Y	N	N	Y	Yes	Yes	Project Specific	Yes	Key Issue + CIA + Focussed Engagement	4.2.1.3
		microclimate	Unlikely	Ongoing operation consistent with current								No	Scoping Report	
		other - please specify												
	ACCESS	access to property	Unlikely	No impacts to 3rd party property anticipated								No	Scoping Report	
		utilities	Unlikely	Utility impacts confined to BlueScope assets								No	Scoping Report	
		road and rail network	Likely	Construction traffic generation cumulative with ongoing operational	Y	Y	N	N	Yes	No	Project Specific	Yes	Key Issue + Focussed Engagement	4.2.5.3
		offsite parking	Unlikely	Not required								No	Scoping Report	
		other - please specify												
	BUILT ENVIRONMENT	public domain	Unlikely	Fully within the existing BlueScope site								No	Scoping Report	
		public infrastructure	Unlikely	Fully within the existing BlueScope site								No	Scoping Report	
		other built assets	Unlikely	Fully within the existing BlueScope site								No	Scoping Report	
		other - please specify												
	HERITAGE	natural	Unlikely	Heavily disturbed industrial site								No	Scoping Report	
		cultural	Unlikely	No listed items in proximity to works.								No	Scoping Report	
		Aboriginal cultural	Unlikely	No nearby sites from AHIMS search								No	Scoping Report	
		built	Unlikely	No listed items in proximity to works.								No	Scoping Report	
		other - please specify												
	COMMUNITY	health	Likely	Health issues primarily associated with air quality	N	Y	N	Y	Yes	Yes	Project Specific	Yes	Key Issue + CIA + Focussed Engagement	4.2.1.3
		safety	Likely	Issues associated with dangerous goods and materials handling	N	Y	N	Y	Yes	Yes	Project Specific	Yes	Key Issue + CIA + Focussed Engagement	4.2.3.3
		services and facilities	Unlikely	No impacts to community services / facilities								No	Scoping Report	
		cohesion, capital and resilience	Unlikely	Project proceeding would support social cohesion								No	Scoping Report	
		housing	Unlikely	No impact to housing								No	Scoping Report	
		other - please specify												
	ECONOMIC	natural resource use	Likely	likely interest due to COe but not a risk of overuse	Y	Y	N	N	Yes	No	Standard	Yes	Other Issue + Focussed Engagement	
		livelihood	Likely	security of ongoing direct and indirect employment	Y	Y	Y	Y	Yes	Yes	Standard	Yes	Other Issue + CIA + Focussed Engagement	
		opportunity cost	Likely	Options comparision indicates the preferred option would result in positive feedback from capital costs	Y	Y	Y	Y	Yes	No	Standard	No	Other Issue	
		other - please specify												
What does the proposal mean for the natural environment?	AIR	particulate matter	Likely	Various stack and fugitive emission sources	Y	Y	Y	Y	Yes	Yes	Project Specific	Yes	Key Issue + CIA + Focussed Engagement	4.2.1.3
		gases	Likely	Various stack and fugitive emission sources	Y	Y	Y	Y	Yes	Yes	Project Specific	Yes	Key Issue + CIA + Focussed Engagement	4.2.1.3
		atmospheric emissions	Likely	Various stack and fugitive emission sources	Y	Y	Y	Y	Yes	Yes	Project Specific	Yes	Key Issue + CIA + Focussed Engagement	4.2.1.3
		other - please specify												
	BIODIVERSITY	native vegetation	Unlikely	Existing disturbed industrial site (BDAR waiver pending)								No	Scoping Report	
		native fauna	Unlikely	Existing disturbed industrial site (BDAR waiver pending)								No	Scoping Report	
		other - please specify												
	LAND	stability and/or structure	Unlikely	existing industrial site								No	Scoping Report	
		soil chemistry	Unlikely	existing industrial site								No	Scoping Report	
		capability	Unlikely	existing industrial site								No	Scoping Report	
		topography	Unlikely	Site has flat topography								No	Scoping Report	
		other - please specify												
	WATER	water quality	Likely	Water quality of process water and releases needs to be assessed	Y	Y	Y	Y	Yes	Yes	Project Specific	Yes	Key Issue + CIA + Focussed Engagement	4.2.4.3
		water availability	Unlikely	Same water sources as current operation retained								No	Scoping Report	
		hydrological flows	Unlikely	No impacts to hydrological flows								No	Scoping Report	
		other - please specify												
What risks does the proposal face?	RISKS	coastal hazards	Unlikely	No changes to the coastal zone								No	Scoping Report	
		flood waters	Unlikely	Impact to flood duration or severity unlikely								No	Scoping Report	
		bushfire	Unlikely	No bushfire prone land								No	Scoping Report	
		undermining	Unlikely	No undermining present								No	Scoping Report	
		steep slopes	Unlikely	Site has flat topography								No	Scoping Report	
		other - please specify												

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