Environmental Impact Statement

Proposed Light Weight Aggregate Facility

780 Wallgrove Road, Horsley Park

(Lot 7 in DP1059698)

Prepared by McKenzie Group Consulting Planning
on behalf of Lumetum Pty Ltd

October 2015

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CLAUSE 78A(8A) CERTIFICATE

Declaration Form	**Submission of Environmental Impact Statement (EIS)** prepared under the *Environmental Planning and Assessment Act 1979* Clause 78A(8A)
EIS Prepared By	
Name	Andrew Cowan
Qualifications	Bachelor of Urban and Regional Planning, UNE Master of Property Development, UTS
Address	Suite 601, Level 6 189 Kent Street Sydney NSW 2000
In Respect Of	Proposed Light Weight Aggregate Facility
Development Application	
Applicant Name	Lumetum Pty Ltd (Contact: Megan Kublins)
Address	Mezzanine, 50 Carrington St Sydney NSW 2000
Land to be Developed	780 Wallgrove Road Horsley Park: ▪ Lot 7 in Deposited Plan 1059698
EIS	An Environmental Impact Statement (EIS) is attached.
Certificate	I certify that I have prepared the contents of this EIS and to the best of my knowledge: ▪ it is in accordance with Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*, ▪ contains all available information that is relevant to the environmental assessment of the development, activity or infrastructure to which the statement relates, and ▪ that the information contained in the statement is neither false nor misleading.
Signature	
Name	Andrew Cowan
Qualification	BURP , UNE MPD, UTS
Date	26 October 2015

TABLE OF CONTENTS

Figures

Tables

Appendices

GLOSSARY OF TERMS

TERM	***MEANING***
AU$	Australian Dollars
Council	Fairfield City Council
SEARs	Secretary's Environmental Assessment Requirements issued 17 December 2014
DP&E	Department of Planning and Environment
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979* (as amended)
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
LWA Facility	Light Weight Aggregate Facility
MGC Planning	McKenzie Group Consulting Planning (NSW) Pty Ltd
NSW 2021	*NSW 2021: A Plan to Make NSW Number One*
OEH	NSW Office of Environment and Heritage
WSP POM	*Western Sydney Parklands Plan of Management 2020*
SEPP	State Environmental Planning Policy
Sqm or m^2	Square metres
SREP	Sydney Regional Environmental Plan
SSD	State Significant Development
The Site	780 Wallgrove Road, Horsley Park (Lot 7 in Deposited Plan 1059698) Plant No.2
WSPT	Western Sydney Parklands Trust
WSP	Western Sydney Parklands
WSP Act	*Western Sydney Parklands Act 2006*

EXECUTIVE SUMMARY

This Environmental Impact Statement (EIS) has been prepared by McKenzie Group Consulting Planning (NSW) Pty Ltd (MGC Planning) on behalf of Lumetum Pty Ltd (a fully owned subsidiary of Brickworks Limited). The proposal seeks to construct a Light Weight Aggregate Facility (LWA Facility) on the land at 780 Wallgrove Road, commonly known as Plant 2 (the Site). The proposed LWA facility will also include ancillary roads, amenities and office buildings to be constructed to support the use and extensive civil works to provide a suitable platform for development.

The site is owned by Brickworks and currently operates for the purpose of brick manufacturing. The site forms part of the Western Sydney Parklands, however it is a freehold allotment and is not under ownership of the Western Sydney Parklands Trust (WSPT).

The proposed operations do not involve the storage or handling of dangerous goods on the site. Existing infrastructure arrangements are deemed sufficient to accommodate the proposed development, with minor works proposed to the internal road network.

The process of applying for State Significant Development (SSD) requires that the Capital Investment Value (CIV) be greater than AU$10 Million for proposals within the Western Sydney Parklands. Under the *Environmental Planning and Assessment Act 1979* (the EP&A Act) it is required that a request for Secretary's Environmental Assessment Requirements (SEARs) be made prior to lodgement of an application seeking approval. SEARs were requested for the proposed development on 14 November 2014 (Reference: SSD-6820) and subsequently issued by the Department of Planning and Environment (DP&E) on 17 December 2014 (refer **Appendix 1**).

In addition to the general requirements, the SEARs for the proposal outlined a number of Key Issues to be addressed as part of an EIS, including:

- Strategic Context
- Air Quality
- Noise
- Traffic and Transport
- Soil and Water
- Waste Management
- Flora and Fauna
- Greenhouse Gas and Energy Efficiency
- Hazards
- Visual
- Cumulative Impacts

The findings of this EIS identify that the proposal can be accommodated without generating impacts below that considered appropriate by the relevant legislation.

Further, the proposed LWA Facility will not be inconsistent with the objectives of *State Environmental Planning Policy (Western Sydney Parklands) 2009* (WSP SEPP).

Based on the findings of this EIS, the proposal supports the continued development of the existing Brickworks site, providing employment opportunities and contributing to the retention and growth of industry related development in Western Sydney.

The proposal is suitable for the local context and will not result in any significant environmental impact. As such, it is recommended that the proposal be supported by DP&E.

PART A PRELIMINARY

1.1 INTRODUCTION

This Environmental Impact Statement has been prepared by McKenzie Group Consulting Planning (NSW) Pty Ltd, on behalf of the Proponent, Lumetum Pty Ltd, and is submitted to the New South Wales Department of Planning and Environment in support of development at 780 Wallgrove Road Horsley Park (Lot 7 in Deposited Plan 1059698).

This application seeks approval for the construction and use of a Light Weight Aggregate Facility that will be used to manufacture light weight aggregates to be used in concrete, masonry geotechnical fill asphalt and drainage applications. Fundamental to the proposal, the works will involve the construction of two (2) rotary kilns; installation of a multi-fuel burner for the purpose of providing energy supply to the kilns; solid fuel storage and preparation; installation of crushing and screening plant, construction of a storage and stockpiling area; construction of internal roadways; and ancillary offices and amenities.

The site is currently owned and operated by Brickworks. The operation will include the manufacture of light weight aggregate that will be transported off site and distributed to customers of Lumetum. As discussed throughout this EIS, the proposal seeks to establish an innovative operation within the light weight aggregates industry, which will benefit Brickworks' core business operation.

This EIS describes the site and proposed development, provides relevant background information, responds to the SEARs and assesses the proposed development in terms of the relevant matters set out in relevant legislation, environmental planning instruments and planning policies.

The structure of the EIS is as follows:

- Part A Preliminary
- Part B Site Analysis
- Part C Proposed Development
- Part D Legislative and Policy Framework
- Part E Consultation
- Part F Environmental Risk Assessment
- Part G Management and Mitigation Measures
- Part H Project Justification
- Part I Conclusion

1.2 PROJECT TEAM

The Project Team involved in the preparation of this application are:

- Lumetum Pty Ltd (Applicant)
- McKenzie Group Consulting Planning (NSW) Pty Ltd (Town Planning Consultant)
- McKenzie Group Consulting (Building Surveying Consultant)
- SBA Architects (Architectural Consultant)
- RawFire (Fire Services Consultant)
- AT&L Pty Ltd (Civil Engineering Consultant)
- Site Image (Landscape Consulant)
- ASON Group (Traffic Consultant)
- LG Consult (Waste Management)
- Cundall (Greenhouse Gas Consultant)
- Benbow Environmental (Noise Consultant)
- Air Labs (Air Quality Consultant)
- Turner and Townsend (Quantity Surveyor)

- Environmental Investigation Services (Contamination Consultant)

1.3 SITE HISTORY

Previous consents related to the site are summarised below and included at **Appendix 2**:

Table 1: Previous Consents	
Date Issued	***Description***
23 June 1961	Development consent issued by Blacktown Council on 17 November 1960 subsequently amended on 23 June 1961 by Blacktown Municipal Council
29 July 1971	Permit No 1006 issued for brick tile and pipeworks
23 October 1993	Development consent issued by Fairfield Council for Plant 1 & 2

1.4 THE PROPONENT

The proponent is Lumetum Pty Ltd. See **Table 2** for contact details.

Table 2: Proponent Details	
Contact Name	Megan Kublins
Company Details	Lumetum Pty Ltd
	Mezzanine, 50 Carrington Street
	Sydney, NSW 2000
Contact Number	Ph: 02 9611 4201

1.5 CAPITAL INVESTMENT VALUE

The capital investment of this project is estimated at AU$129,787,000, subject to final costing and tender clarifications (**Appendix 3**).

1.6 SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

Application to receive SEARs was submitted to DP&E on 14 November 2014 (Reference: SSD-6820). The SEARs were subsequently issued on 17 December 2014.

The SEARs issued are annexed as **Appendix 1**. An overview of how the requirements have been satisfied within the EIS is outlined in **Table 3**. This document is also consistent with the minimum requirements for Environmental Impact Statements in clauses 6 and 7 of Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*.

Table 3: Overview How SEARs have been satisfied	
General Requirements	***Satisfied by...***
▪ *The Environmental Impact Statement (ESI) for the development must meet the form and content requirements in Clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000. In addition, the EIS must include a:*	
▪ *Detailed descriptions of the development, including:* - *Need for the proposed development;* - *Justification for the proposed development;* - *Likely staging of the development;* - *Likely interactions between the development and existing, approved and proposed operations in the vicinity of the site; and* - *Plans of any proposed building works.*	**Section 3.3** addresses the need of the proposed development. **Section 3.2.2** identifies the indicative staging. **Part F** addresses the environmental impacts on the development. Plans of the proposed building works are included at **Appendix 4**.
▪ *Consideration of all relevant environmental planning instruments, including identification and justification of any inconsistencies with these instruments;*	Relevant environmental planning instruments are addressed in **Part D**.
▪ *Risk assessment of the potential environmental impacts of the development, identifying the key issues for further assessment;*	An environmental risk assessment is provided.
▪ *Detailed assessment of the key issues specified below, and any other significant issues identified in the risk assessment, which includes:* - *A description of the existing environment, using sufficient baseline data;* - *An assessment of the political impacts of all stages of the development, including any cumulative impacts, taking into consideration relevant guidelines, policies, plans and statutes; and* - *A description of the measures that would be implemented to avoid, minimise, mitigate and it necessary, offset the potential impacts of the development, including proposals for adaptive management and/or contingency plans to manage significant risks to the environment; and*	**Part B** addresses the existing environment, while a strategic overview is provided in **Part D**.
▪ *Consolidated summary of all the proposed environmental management and monitoring measures, highlighting commitments include in the EIS*	**Part G** provides draft Management and Mitigation Measures for the proposal.
The EIS must also be accompanied by a report from a qualified quantity surveyor providing: ▪ *A detailed calculation of the capital investment (CIV) of the proposal as defined in clause 3 of the Environmental Planning and Assessment Regulation 2000, including details of all components of the CIV; and* ▪ *A close estimate of the jobs that will be created by the development during the construction and operational phases of the development; and certification that the information provided is accurate at the date of the presentation.*	A calculation of the Capital Investment Value in accordance with the EP&A Regulation 2000 is provided at **Appendix 3**.
Key Issues	

The EIS must address the following specific matters: ***Strategic Context** – including:* - *Detailed justification for the proposal and suitability of the site and proposed transport routes; and* - *Demonstration that the proposal is generally consistent with all relevant planning strategies, environmental planning instruments, development control plans (DCPs), and justification for any inconsistencies.*	The strategic context is addressed in **Part D**.
***Air Quality** – including:* - *A comprehensive air quality assessment of all potential point source and fugitive air emissions (including odour) and dust impacts from the development, including details of air quality impacts on private properties in accordance with relevant Environmental Protection Authority guidelines;* - *Details of mitigation, management and monitoring measures for preventing and/or minimising both point and fugitive emissions; and* - *An assessment of the effectiveness of the proposed air quality mitigation measures.*	Air quality is addressed in **Part F** and the supporting report at **Appendix 9**.
***Noise** – including:* - *Description of all potential noise sources such as construction, operational and traffic noise;* - *A comprehensive noise impact assessment including a cumulative noise impact assessment in accordance with relevant Environment Protection Authority guidelines; and* - *Details of noise mitigation, management and monitoring measures*	Noise Impacts associated with the proposal are addressed in **Part F** and the report at **Appendix 10**.
***Traffic and Transport** - including:* - *details of all traffic and transport demands likely to be generated during construction and operation, including a description of haul routes;* - *details on access to the site from the road network including intersection location, design and sight distance;* - *an assessment of predicted impacts on road safety and the capacity of the road network to accommodate the project;* - *plans of any road upgrades or new roads required for the development including the potential to create an east-west road connection through the site linking the Erskine Park Southern Link Road (proposed arterial road extension within the Western Sydney Employment Area immediately to the west of the site) with Ferrers Road; and* - *detailed plans of the proposed layout of the internal road network and parking on site in accordance with the relevant Australian standards.*	Traffic and transport impacts are addressed in **Part F** and TIA at **Appendix 7**.

Soils and Water *- including:* - *a description of the catchment and proximity of the site to waterways;* - *consideration of potential local and mainstream flooding impacts;* - *an assessment of potential surface and groundwater impacts associated with the development, including potential impacts on watercourses and riparian areas, groundwater and groundwater dependent communities nearby;* - *a description of the surface, stormwater and wastewater management systems, including on site detention, and measures to treat or reuse water;* - *a detailed water balance including a description of the water demands and breakdown of water supplies; and any water licensing requirements;* - *description of the measures to minimise water use;* - *details of site history with regards to potential contamination; and* - *description of the construction erosion and sediment controls.*	Soil and Water is addressed in **Part F** and Civil Design Report at **Appendix 5**.
Waste Management *– including:* - *details of the quantities and classification of waste and wastewater to be generated on site;* - *details on waste storage, handling and disposal; and* - *details of the measures that would be implemented to ensure that the development is consistent with the aims, objectives and guidance in the NSW Waste Avoidance and Resource Recovery Strategy 2007.*	Waste Management is addressed **in Part F**.
Flora and Fauna *- all impacts on native vegetation on the site should be avoided wherever possible and, if not avoided, suitably offset. Potential impacts should be assessed in accordance with relevant Office of Environment and Heritage guidelines, by a person accredited in accordance with s142B(1)(c) of the Threatened Species Conservation Act 1995.*	Flora and Fauna is addressed in **Part F** and the accompanying Flora and Fauna Assessment at **Appendix 8**.
Visual *- including:* - *height, scale, signage and lighting, particularly from nearby public receivers and vantage points of the broader public domain (i.e. roads); and* - *landscaping to minimise visual impacts and/or offset any clearing. All species used for landscaping shall be listed within the 'Cumberland Plain Woodland' endangered ecological community.*	
Greenhouse Gas *- including:* - *a quantitative assessment of the potential Scope 1 and 2 greenhouse gas emissions of the development, and a qualitative assessment of the potential impacts of these emissions on the environment; and* - *a detailed description of the measures that would be implemented on site to ensure that the development is energy efficient.*	Greenhouse gas emissions have been addressed in **Part F** and the Report at **Appendix 11**.
Hazards *- including an assessment of the potential fire risks of the development*	A Fire Safety Statement has been prepared in support of the application (**Appendix 14**). **Part F** has also addressed this requirement.

Cumulative Impacts *- particularly in relation to air, noise and traffic associated with other nearby industrial or commercial operations.*	The cumulative impacts of the proposal are addressed in **Part F**.
Plans and Documents	
The EIS must include all plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the Environmental Planning and Assessment Regulation 2000. These documents should be included as part of the EIS rather than as separate documents. Where relevant, diagrams / maps of the site should include the Warragamba Pipelines and dam.	All documentation is in accordance with Schedule 1 of the EP&A Regulation 2000.
Consultation	
During the preparation of the Environmental Impact Statement, you should consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups or affected landowners. In particular you must consult with: *• Environmental Protection Authority;* *• Fairfield City Council;* *• NSW Roads and Maritime Service;* *• Office of Environment and Heritage;* *• Department of Primary Industries;* *• NSW Fire Brigade; and* *• local community and other stakeholders.* *The EIS must describe the consultation process and the issues raised, and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided.*	Consultation has been carried out as documented in **Part E**.

PART B SITE ANALYSIS

2.1 SITE LOCATION

The land which is the subject of this development is legally defined as 780 Wallgrove Road Horsley Park (Lot 7 in Deposited Plan 1059698) and lies within the Fairfield Local Government Area. Overall, the site affords an area of 82 hectares with frontage to Wallgrove Road (abutting the M7 Motorway to the west) and Ferrers Road to the east and forms part of the Western Sydney Parklands.

2.2 EXISTING SITE CHARACTERISTICS

The subject site has been used for rural brick manufacturing purposes since the 1960's. Based on previous investigations, the geology of the site comprises Bringelly Shale, while alluvial deposits of sand silt and clay are located within the riparian areas of Eastern Creek. Contamination throughout the site is generally considered to be low in the areas that are proposed to be developed due to the historic land use.

The topography of the land is relatively flat, with a fall from east to west and the elevation ranging from 60-70 metres AHD.

Council's bushfire maps indicate that the site is bushfire prone, however the site is substantially cleared now and the broader considerations in relation to the building footprints and associated risks are considered acceptable.

Alluvial forest vegetation is located in and near the creek line which is heavily impacted through weed invasion, to Cumberland Plain Woodland vegetation on the eastern and southern boundaries. The eastern boundary vegetation is moderately to heavily impacted by previous clearing and weed invasion. There has been revegetation works undertaken in several locations. Eastern Creek runs along the western boundary of the site, as depicted in **Figure 1** below. There are no known significant items of Aboriginal or European Heritage.

The site is regulated by S*tate Environmental Planning Policy (Western Sydney Parklands)* 2009 (see **Figure 3**), with strategic access to Sydney's key arterial road network including the M7 and M4 Motorway. Vehicle access to the site is available from Wallgrove Road and Ferrers Road to the east.

The existing buildings on the site are used for the sale and display of bricks and the bulk storage of brick pallets for wholesale to the market, all of which are accessible from the internal private road which runs east-west through the site. As extensive quarrying has been undertaken on the site, there are several stockpiles of material that are visible from surrounding locations.

The Warragamba-Prospect Pipeline is located immediately to the north of the project site. These pipelines are critical public infrastructure for Sydney's water supply, and will not be impacted by the proposal. Located to north adjacent the pipeline is the SITA Waste Facility, Blacktown City Council Waste Facility and commercial poultry sheds.

The nearest residential receptor is located approximately 730 metres away from the location of the proposed kilns, while the nearest sensitive receptors are located to the south on large landholdings.

Figure 1: Subject Site

2.3 LAND OWNERSHIP

The land which is the subject of this application is under ownership of Brickworks.

2.4 SITE CONTEXT

The site forms part of The Western Sydney Parklands which is located in the heart of Western Sydney that comprises a 27km corridor stretching from Quakers Hills to Leppington, however is privately held and is not owned by The Western Sydney Parklands Trust. Consisting of 5,280 hectares, the Parklands will be the largest urban parkland system in Australia and one of the largest in the world.

Although at the present time, much of the land is still to be developed for its long term parklands purpose, approximately 40 percent of the Parklands is currently interim land uses including rural residential or vacant land. Portions of the Parklands are leased for a variety of uses including agriculture, waste processing, motor sports and rural residential purposes, while about 7 percent of the corridor is still to be acquired from private owners. In addition, approximately 21 percent of the Parklands is utilised for long term infrastructure including Prospect Reservoir and the associated water supply canal and pipelines, as well as electricity, gas and water easements, waste services, water storage tanks, telecommunications towers and other essential infrastructure.

Major recreation facilities located within the Parklands include:

- Blacktown Olympic Park;
- Eastern Creek International Raceway;
- Western Sydney International Dragway;
- Sydney International Equestrian Centre; and
- Sydney International Shooting Centre.

There are also picnic grounds at Plough and Harrow, The Dairy, Sugarloaf Ridge, Lizard Log, Nurragingy, Peckys, Walder Park and extensive walking and cycling areas.

The surrounding development in the locality is shown in **Figure 2** while the extent of the Parklands is shown in **Figure 3**.

As noted previously, 780 Wallgrove Road is a freehold parcel and is not under ownership by The Western Sydney Parklands Trust.

The presence of an existing road network that provides connectivity to other areas of Western Sydney, Sydney International Airport and Freight Terminal confirms the suitability of the site for manufacture of light weight aggregate. Notable road networks include:

- M7 Westlink;
- Great Western Highway; and
- Hume Highway.

Surrounding land, predominately to the west of the site forms part of the Western Sydney Employment Area (WSEA) which is identified as a freight and logistics hub that contains modern facilities occupied by competing businesses. It is noted that the WSEA is subject to future expansion which is being driven by a shift in economics and a competitive market demand for industrial zoned land.

Figure 2: Subject Site and Surrounds

2.5 SITE SUITABILITY

The proposal provides for a facility that will manufacture Light Weight Aggregate to be used in concrete, masonry geotechnical asphalt and drainage applications. Brick manufacturing has been undertaken on the site since the 1960's whilst extensive quarrying also carried out on the site. As previously discussed, the site provides an unconstrained platform for development. The topography does not pose significant restrictions for future development and the site is not contaminated.

In summary, the suitability of the site can be attributed to the following:

- SEPP (WSP) allows for the development as a permissible use;
- access to the regional road network;
- compatibility with surrounding development and local context;
- minimal impact on the environment; and
- implementation of suitable mitigation measures where required.

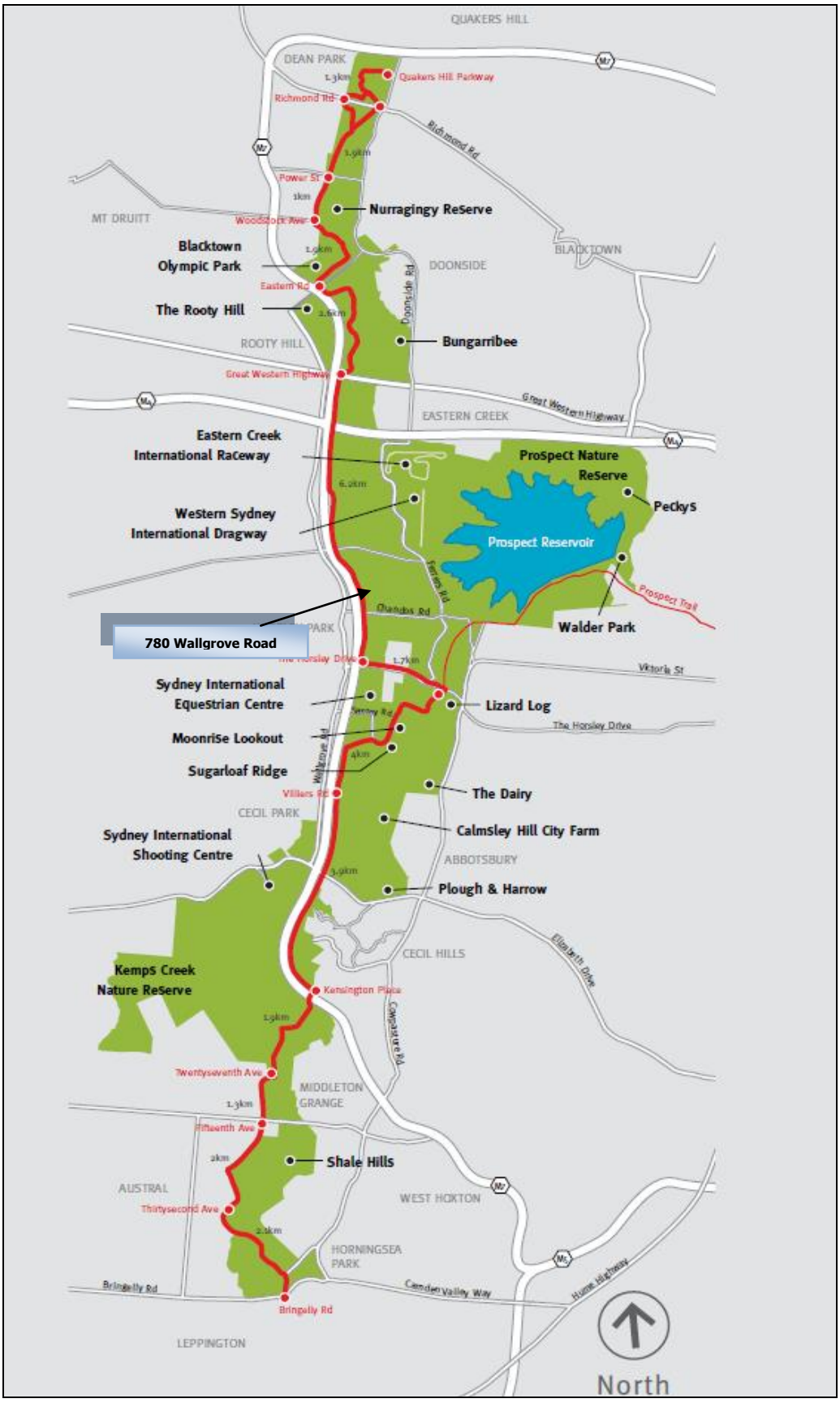

Figure 3: Western Sydney Parklands

PART C PROPOSED DEVELOPMENT

3.1 OBJECTIVES OF THE PROPOSAL

The intention of the proposal is to provide a Light Weight Aggregate Facility that:

- has appropriate access;
- provides a viable economic return;
- utilises existing stockpiles on the site;
- is compatible with surrounding development and local context;
- will result in employment generating development;
- will result in minimal impact on the environment; and
- will allow for the implementation of suitable mitigation measures where required.

3.2 DESCRIPTION OF THE PROPOSAL

The proposed development involves the construction of a Light Weight Aggregate Facility and associated site works, as described below:

3.2.1 Proposal Particulars

Operations

Upon completion of installing the plant and associated site works, it is proposed to operate on a 24 hours, 7 day basis to manufacture Light Weight Aggregate. This is consistent with the existing operations of Brickworks and surrounding industries.

All modeling and investigative studies have been based on the premise that the operation will be on a 24 hour basis.

The following is noted in respect of the operation:

- A total on site reserve of 6.5million tonnes of material in stockpiles will be used in the LWA process under the subject proposal.
- Plant No.2 currently uses 130,000 tonnes of material per annum. Half of this comes from on-site sources and half from other off site sources (due to product mix).
- Lifespan of the current material on-site is estimated to be 12 years.
- Once fully operational, it is proposed to produce 600,000 tonnes of aggregate per year. Light Weight Aggregate production would be in a staged approach where in Production Stage 1 would produce 300,000 tonnes of aggregate per year and Production Stage 2, which would commence approximately 5 years after commencement of Production Stage 1 would produce an additional 300,000 tonnes of aggregate per year, totaling a combined production volume of to 600,000 tonnes per year for Production Stage 1 and Production Stage 2. There would be construction and earthwork activities associated with both Production Stage 1 and Production Stage 2, details of which are provided in the Section 3.2.2.

The process of the operation to produce the aggregate is summarised below in **Table 4** in sequential order and a flowchart outlining the aggregate production process is illustrated in **Figure 4**.

Table 4: Process Description LWA Facility

	Process	***Description***
A.	Front End Loader	Front End Loader collects material and places onto conveyer belt.
B.	Conveyer Belt	Material is moved along conveyer belt.
C.	Feeder	Mined shale is fed into a large input hopper at the start of the process for storage and controlled feed

		to the primary crusher.
D.	Primary Crusher	Shale is fed into a jaw crusher which uses compressive force to break down large, oversized particles. This mechanical pressure is achieved by the two jaws of the crusher of which one is fixed while the other reciprocates. Crushed materials fall through the bottom opening of the crusher.
E.	Coarse Material Stockpile Bunker	Ground storage area for material that has passed through the primary crushing operation.
F.	Feeder	Shale (already crushed through the primary crusher) is fed into a large input hopper that allows controlled feed to the secondary crusher.
G.	Secondary Crusher	A second crushing operation is undertaken as per the primary crusher however particles are crushed to a smaller diameter and a finer product is produced.
H.	Vibrating Screen	A screen that sits on an angle and vibrates to allow undersize particles to fall through whilst oversized particles run of the end of the screen and are reprocessed through the secondary crusher.
I.	Material Storage Bin	Storage of crushed shale raw material in large hoppers.
J.	Mixer	The processed raw material is fed into the mixer where it is combined and mixed with other materials such as oil, prior to extrusion.
K.	Extruder	The input feed material is pushed through a narrow die with a series of circular holes to create a series of small plastic cylinders, the cut to size, to create plastic particles.
L.	Surge Bin	A storage bin for the extruded plastic particles, which can be controlled to allow consistent infeed rate into the rotary kiln.
M.	Rotary Kiln	A pyroprocessing device that allows the plastic particles to travel the length of the kiln in a controlled fashion. After an initial drying phase, the particles enter a rapid heating phase of around 1,200 degrees celcius. At this temperature gases are evolved within the clay, causing expansion and the formation of voids.
N.	Product Cooler	The heated product exits the kiln by falling through a series of grates, into a then enters a reciprocating grate cooler. A series of other grates then move backwards and forwards allowing the product to fall through slowly, as cooling air is blown upwards through the grates to lower the temperature of the particles.
O.	Fired Material Stockpile	Ground storage of processed aggregates coming out of the cooler. This stockpile contains aggregates of all sizes, and is prior to the crushing and screening operation that sorts the particles into various sizes for sale to customers.
P.	Underground Reclaim System	Stockpiled materials is stacked over the top of a material hopper which when opened allows the processed aggregates to fall through to an underground conveyor system, which takes the aggregates to the cone crusher.
Q.	Cone Crusher	Breaks the processed aggregates by squeezing the aggregates between a gyrating spindle and the enclosing concave hopper. The aggregate is crusher repeatedly until it is small enough to fall through the narrow opening at the bottom of the crusher.
R.	Vibrating Screen	A set of screens with varying aperture to sort the

		processed aggregates into different sizes. The screens sit on an angle and vibrate to allow undersize particles to fall through whilst oversized particles run of the end of the screen.
S.	20/14 Screened Stockpile	Ground storage of processed aggregates of size greater than 14 mm but less than 20 mm in diameter.
T.	14/7 Screened Stockpile	Ground storage of processed aggregates of size greater than 7 mm but less than 14 mm in diameter
U.	7/5 Screened Stockpile	Ground storage of processed aggregates of size greater than 5 mm but less than 7 mm in diameter.
V.	Fines Stockpile	Ground storage of processed aggregates of size less than 5 mm in diameter.

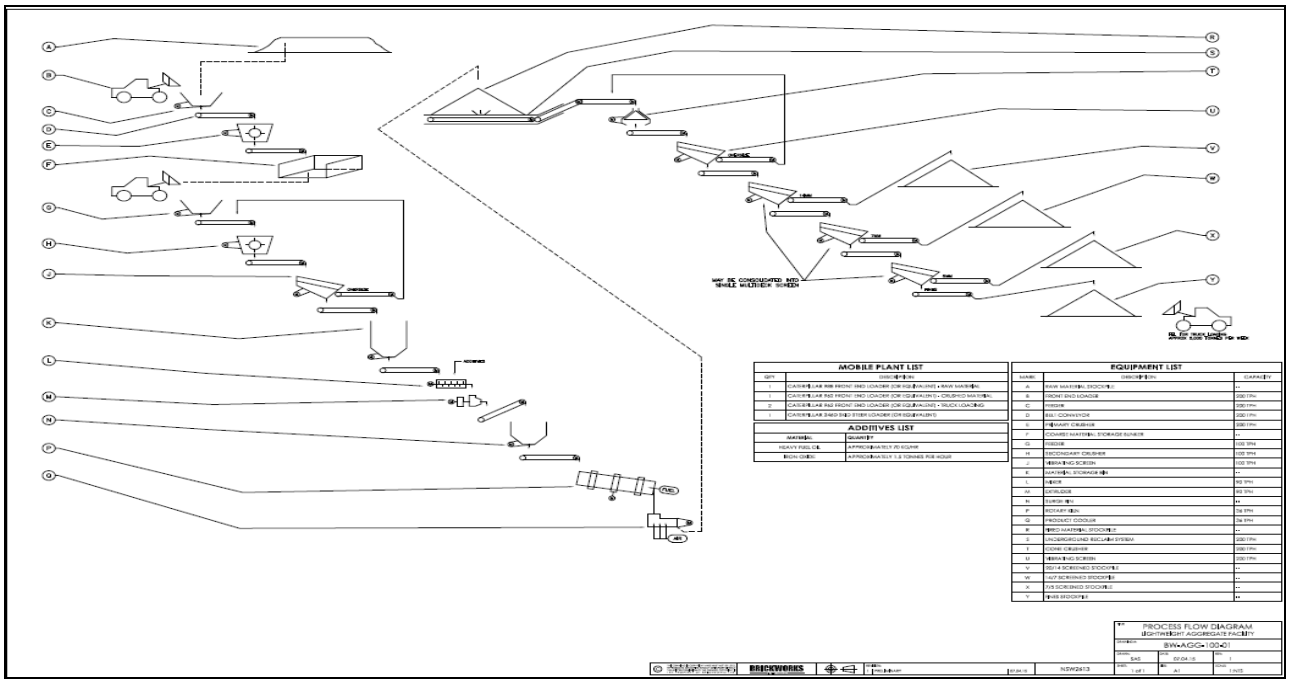

Figure 4: Light Weight Aggregate Production Flowchart

Associated Works

Stormwater Management and Earthworks

- Total cut volume of 125,000m3 across the site;
- Removal of the existing bund to the south of plant 2;
- Filling the site (50,000m3), including within the OSD/sediment basin; and
- Use of the existing stockpiles to manufacture aggregate (stockpiles 1, 2 and 4, equating to 140,000m3).

Internal Road Works and Car Park

- Construction of a new driveway on the eastern portion to provide access for employees and haulage vehicles (47 metre clear width);
- Realignment of internal roads and widening necessary; and
- Single dead-end car park accommodating 30 spaces primarily for use by employees (aisle width 6.2 metres).

Offices and amenities

- New office and amenities building for employees. This will comprise internal offices, an ancillary breakout area for staff and washrooms comprising 176sqm floor area). The car parking will be located adjacent.

The site Masterplan is provided in **Figure 5** below which illustrates all of the proposed main buildings and infrastructure.

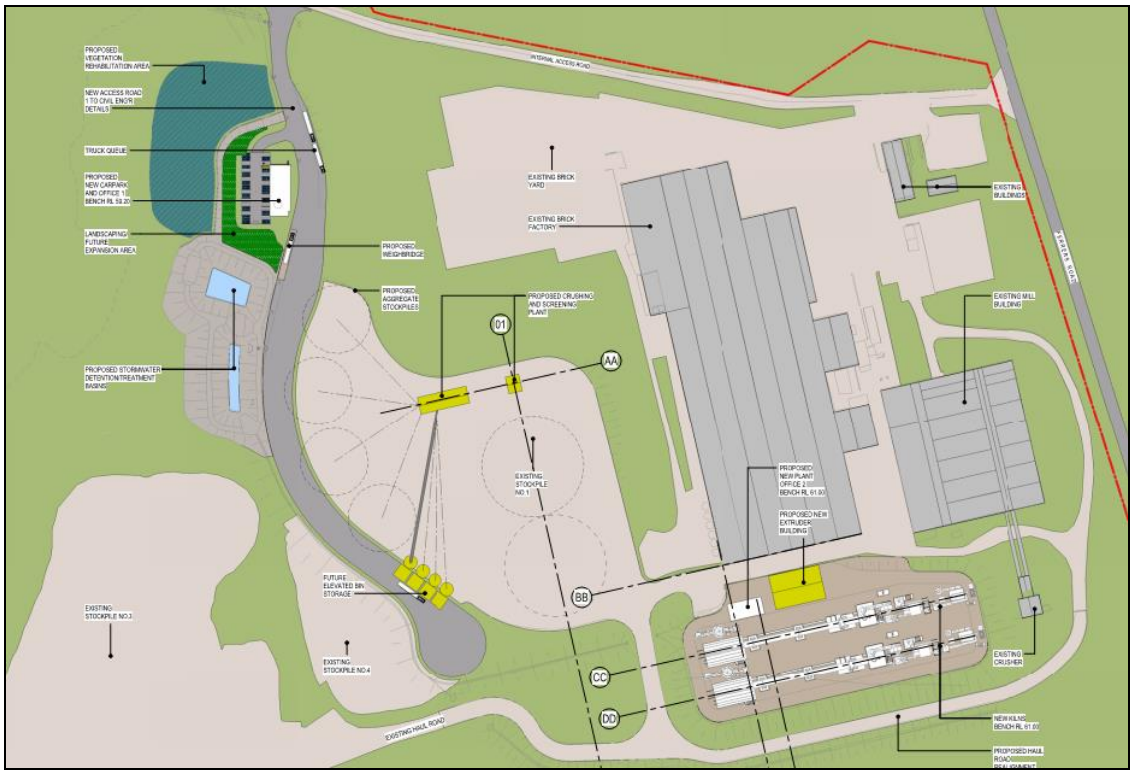

Figure 5: Site Master Plan

Figure 6: LWA Plant/Office and Amenities

Architectural plans are provided at **Appendix 4**, along with specifications of the proposed plant.

3.2.2 Staging of Works

The works described in this application are to be carried out in a staged manner, with the proposed kiln and screening plant assembled off-site. Associated earthworks and internal road modifications will be carried out prior to commencement of the operations to manufacture the aggregate. These associated works are considered fundamental to the proposal as they will optimise the functionality of the site.

The following indicative staged approach is to be adopted:

- **Stage 1** - Dewatering of the existing dam. The water will be treated prior to discharge into Eastern Creek.
- **Stage 2** - Excavation and treatment of saturated material at the base of the dam which is unsuitable for subgrade of the proposed basins.
- **Stage 3** - Construction of new basin embankments using compacted fill from Stockpile No.2. The basins will then be operational for use as sediment control measures during bulk earthworks on the wider site.
- **Stage 4** - Excavation of the existing bund south of the existing factory for use as fill across the site.
- **Stage 5** - Controlled filling of the crusher/screener pad, main stockpile pad and access road.

- **Stage 6 -** Controlled filling of the crusher/screener pad, main stockpile pad and access road.

Stages 1 to 4 comprise site preparation activities, which primarily include cut, fill and drainage works. Earthworking / construction activities pertaining to Stage 5 correspond to Production Stage 1 (300,000 tonnes per year) and Stage 6 activities correspond to Production Stage 2 (300,000 tonnes per year)

3.2.3 Site Preparation

As noted in Section 3.2.1, earthworks are required to be carried out to establish the level pad for the rotary kiln and associated plant for both Production Stage 1 (300,000 tonnes per year) and Production Stage 2 (300,000 tonnes per year). New detention basins are also required to improve the stormwater management outcomes for the site. Minor clearing of vegetation will form part of the works; however appropriate offset planting will be achieved through re-vegetation elsewhere on the site.

Civil Design plans are provided at **Appendix 5** which demonstrates the extent of earthworks proposed. Landscape Plans are provided at **Appendix 6** that illustrates the extent of planting proposed.

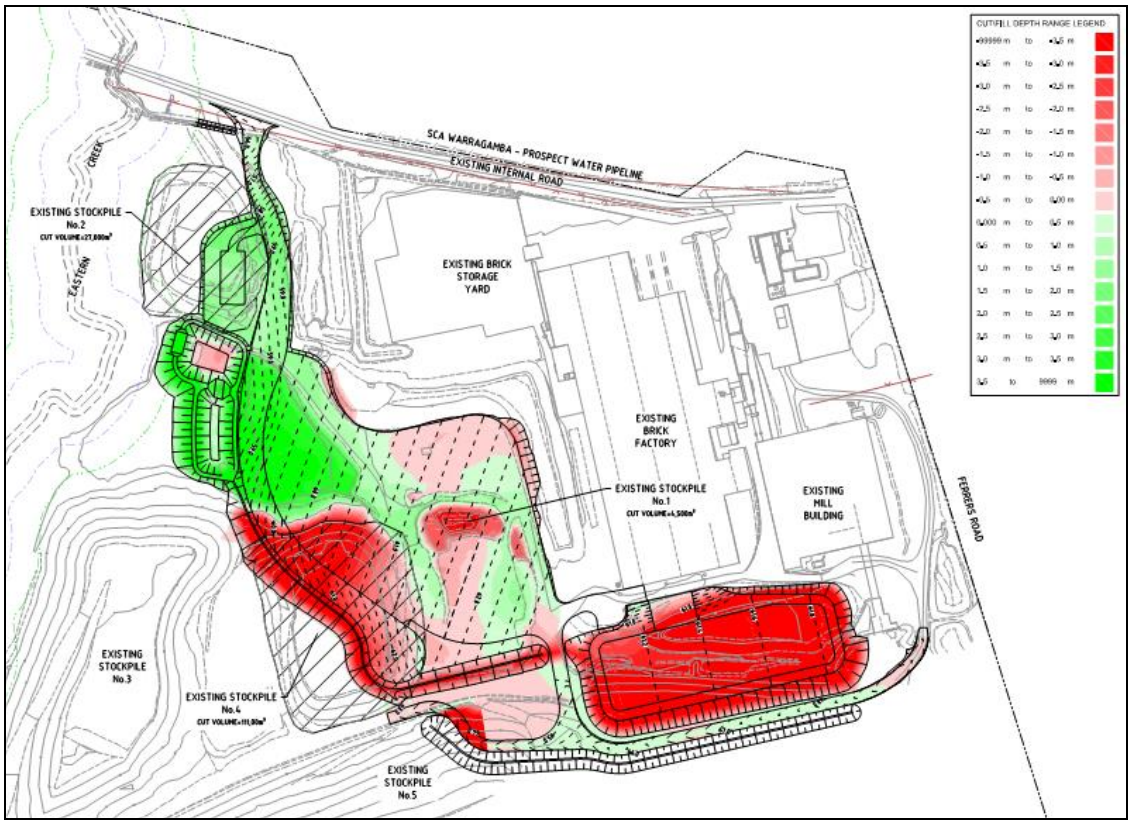

Figure 7: Bulk Earthworks Plan

3.2.4 Dangerous Goods

No dangerous good are to be stored within the proposed facilities.

3.2.5 Drawings

Drawings for the proposed development are outlined in **Table 5**.

Table 5: Drawing Schedule		
Architectural		
Drawing No.	***Description***	***Author***
DA00	Cover Sheet	SBA Architects
DA 101	Site Plan	SBA Architects
DA102	Master Plan	SBA Architects
DA201	Office 1 Plans	SBA Architects
DA202	Office 1 Elevations	SBA Architects
DA203	Office 2 Plan and Elevations	SBA Architects
DA301	Perspectives 1	SBA Architects
DA302	Perspectives 2	SBA Architects
DA303	Perspectives 3	SBA Architects
Landscape		
Drawing No.	***Description***	***Author***
000	Site Plan	Site Image
101	Landscape Plan	Site Image
102	Landscape Plan	Site Image
103	Landscape Plan	Site Image
104	Landscape Details	Site Image
Civil Engineering		
Drawing No.	***Description***	***Author***
Lot 1C		
C00	Cover Sheet and Locality Plan	AT&L
C01	General Notes and Legends	AT&L
C02	Existing Overall Plan	AT&L
C03	General Arrangement Plan	AT&L
C04	Bulk Earthworks Cut/Fill Plan	AT&L
C05	Site Works and Stomrwater Drainage Plan 1	AT&L
C06	Site Works and Stomrwater Drainage Plan 2	AT&L
C07	Site Works and Stomrwater Drainage Plan 3	AT&L
C08	Site Works and Stomrwater Drainage Plan 4	AT&L
C09	Site Works and Stomrwater Drainage Plan 5	AT&L
C10	Access Road Logitudinal Section	AT&L
C11	Typical Site Section Sheet 1	AT&L
C12	Typical Site Section Sheet 2	AT&L
C13	Typical Site Section Sheet 1	AT&L
C14	Pavement Plan	AT&L
C15	Existing Stormwater Catchment Plan	AT&L
C16	Proposed Stormwater Catchment Plan	AT&L
C17	Sediment and Erosion Control Plan Sheet 1	AT&L
C18	Sediment and Erosion Control Plan Sheet 2	AT&L
C19	Sediment and Erosion Control Plan Sheet 3	AT&L
C20	Sediment and Erosion Details	AT&L
C30	Existing Internal Road Widening Plan Typical Section	AT&L

3.2.6 Supporting Documents

Documents provided in support of the proposal are outlined in **Table 6**.

Table 6: Document Schedule		
Appendix No.	**Description**	**Author**
Appendix 1	Secretary's Environmental Assessment Requirements	NSW Department of Planning & Environment
Appendix 2	Existing Development Consents	Fairfield City Council
Appendix 3	Quantity Surveyors Report	Turner and Townsend
Appendix 4	Architectural Plans	SBA Architects

Appendix 5	Civil Plans and Design Report	AT&L
Appendix 6	Landscape Plan	Site Image
Appendix 7	Traffic Impact Assessment	Ason Group
Appendix 8	Flora and Fauna Assessment	Travers Bushfire and Ecology/Cumberland Ecology
Appendix 9	Air Quality Assessment	Air Labs Environmental
Appendix 10	Noise Impact Assessment	Benbow Environmental
Appendix 11	Greenhouse Gas Report	Cundall
Appendix 12	Phase 1 Environment Site Assessment	EIS
Appendix 13	Waste Management Report	LG Consult
Appendix 14	Fire Safety Statement	Rawfire
Appendix 15	Building Code of Australia Statement	McKenzie Group

3.3 PROJECT NEED

The proposed project is considered necessary to improve the market products and range offered to Lumetum customers, within the state of NSW and abroad. Inclusion of Light Weight Aggregate in their product range will promote growth of the business, market diversification and an end product for customers that will benefit the industry.

3.4 CONSIDERATION OF ALTERNATIVES

The intention of the proposal is to provide new Light Weight Aggregate facility at a location that:

- allows for the development as a permissible use;
- has appropriate access to the regional road network;
- is compatible with surrounding development and local context;
- will result in minimal impact on the environment; and
- will allow for the implementation of suitable mitigation measures where required.

The site is considered to be commensurate with the objectives of the project as it allows for industry based activities, whilst minimising the impact on the surrounding environment. The site design and layout seeks to maintain consistency with the objectives the Western Sydney Parklands and enhance the underlying employment character intended for the locality.

The options considered, and subsequently dismissed, in arriving to the current proposal included:

(a) 'Do Nothing' Scenario

This option was dismissed as the objectives of the project would not be met.

If the proposal was not to proceed, the site would be developed for other industry related purposes.

(b) Development on an Alternative Site

Consideration to alternative sites were made, however these were dismissed as the subject site resulted in the most beneficial outcomes for the proposal and ensures that significant infrastructure investment results in employment opportunities as:

- The site contains a stockpile of suitable shale material that will be utilised in the proposed process;
- It is currently used for a similar purpose to that proposed;
- it will be located within a locality that is surrounded by industry and employment generating uses;

- the site has appropriate proximity from sensitive land activities including residential development;
- all potential environmental impacts of the proposal can be suitably mitigated within the site;
- the proximity to the regional road network provides increased economic benefits;
- the proposal will not affect any area of heritage or archaeological significance; and
- the proposal can be developed with appropriate visual amenity given its surrounding context.

The proposal is justified on the basis it is compatible with the locality in which it is proposed while having no significant economic, environmental or social impact.

PART D LEGISLATIVE AND POLICY FRAMEWORK

Controls and Policies
The following current and draft Commonwealth, State, Regional and Local planning controls and policies have been considered in the preparation of this application:

- ***Commonwealth Planning Context***
  - *Environment Protection and Biodiversity Conservation Act 1999*

- ***State Planning Context***
  - *Environmental Planning and Assessment Act 1979*
  - *Environmental Planning and Assessment Regulation 2000*
  - *Protection of the Environment Operations Act 1979*
  - *Threatened Species Conservation Act 1995*
  - *NSW 2021 : A Plan to Make NSW Number One*
  - *State Environmental Planning Policy (State and Regional Development) 2011*
  - *State Environmental Planning Policy (Infrastructure) 2007*
  - *State Environmental Planning Policy (Western Sydney Employment Parklands) 2009*
  - *State Environmental Planning Policy No. 19 – Bushland in Urban Areas*
  - *State Environmental Planning Policy No.33 – Hazardous and Offensive Development*
  - *State Environmental Planning Policy No 55 – Remediation of Land*
  - *State Environmental Planning Policy No.64 – Advertising Structures and Signage*
  - *Sydney Regional Environmental Plan No.20 Hawkesbury – Napean River*

- ***Regional Planning Context***
  - *A Plan for Growing Sydney*
  - *Draft West Central and South West Sub-regional Strategy*

- ***Local Planning Context***
  - *Fairfield Local Environmental Plan 2013*
  - *Fairfield City Wide Development Control Plan 2013*

This planning framework is considered in detail in the following sections:

4.1 COMMONWEALTH PLANNING CONTEXT

4.1.1 Environment Protection and Biodiversity Conservation Act 1999

The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) is the Australian Government's principal piece of environmental legislation and is administered by the Commonwealth Department of the Environment (DoE). It is designed to protect national environmental assets, known as Matters of National Environmental Significance (MNES), which include threatened species of flora and fauna, endangered ecological communities, migratory species as well as other protected matters. Among other things, it defines the categories of threat for threatened flora and fauna, identifies key threatening processes and provides for the preparation of recovery plans for threatened flora, fauna and communities.

Under the EPBC Act, any action (which includes a development, project or activity) that is considered likely to have a significant impact on MNES must be referred to the Commonwealth Minister for the Environment. The Grey-headed Flying-fox (Pteropus poliocephalus) was the only MNES identified within the Austral Bricks land.

A preliminary assessment of the MNES present within the Development Site indicated that there would not be a significant impact as a result of the Project and, as such, no referral was required.

4.2 STATE PLANNING CONTEXT

4.2.1 Environmental Planning and Assessment Regulation 2000

Section 4(1) – Designated Development

Section 4(1) of the *Environmental Planning and Assessment Regulation 2000* (the Regulations) states that development described in Part 1 of Schedule 3 is declared to be Designated Development for the purposes of the Act.

The following development is listed in Part 1 of Schedule 3 of the Regulations:

> ***19 Extractive industries***
>
> *(1) Extractive industries (being industries that obtain extractive materials by methods including excavating, dredging, tunnelling or quarrying or that store, stockpile or process extractive materials by methods including washing, crushing, sawing or separating):*
> *(a) that obtain or process for sale, or reuse, more than 30,000 cubic metres of extractive material per year, or*
> *(b) that disturb or will disturb a total surface area of more than 2 hectares of land by:*
> *(i) clearing or excavating, or*
> *(ii) constructing dams, ponds, drains, roads or conveyors, or*
> *(iii) storing or depositing overburden, extractive material or tailings, or*
> *(c) that are located:*
> *(i) in or within 40 metres of a natural waterbody, wetland or an environmentally sensitive area, or*
> *(ii) within 200 metres of a coastline, or*
> *(iii) in an area of contaminated soil or acid sulphate soil, or*
> *(iv) on land that slopes at more than 18 degrees to the horizontal, or*
> *(v) if involving blasting, within 1,000 metres of a residential zone or within 500 metres of a dwelling not associated with the development, or*
> *(vi) within 500 metres of the site of another extractive industry that has operated during the last 5 years.*

The proposal will involve crushing and screening material for commercial sale, thereby triggering the requirements of Designated Development under this Clause. However, as the proposal also falls into the recently introduced State Significant Development framework, under which an Environmental Impact Statement is required, no further undertaking of the proposal under the category of Designated Development is required.

4.2.2 Environmental Planning and Assessment Act 1979

The Environmental Planning and Assessment Act 1979 (EP&A Act) is the overarching governing document for all development in NSW and pursuant to Section 89D(2) provides that:

> *A state environmental planning policy may declare any development, or any class or description of development, to be State significant development.*

The proposed development has been identified as State Significant Development under *State Environmental Planning Policy (State and Regional Development) 2011* as outlined below.

4.2.3 Threatened Species Conservation Act 1995

The specific requirements of the TSC Act must be addressed in the assessment of impacts on threatened flora and fauna, populations and ecological communities. The factors to be taken into account in deciding whether there is a significant effect are set out in Section 5A of the Environmental Planning and Assessment Act 1979 (EP&A Act) and are based on a 7 part test of significance. Where a proposed activity is located in an area identified as critical habitat, or such that it is likely to significantly affect threatened species, populations, ecological communities, or their habitats, a Species Impact Statement (SIS) is required to be prepared.

In respect of matters required to be considered under the Environmental Planning and Assessment Act 1979 and relating to the species / provisions of the Threatened Species Conservation Act 1995, two (2) threatened fauna species including Cumberland Plain Land Snail (Meridolum corneovirens) and Grey-headed Flying-fox (Pteropus poliocephalus), no threatened flora species, and two (2) EECs, Cumberland Plain Woodland and River-flat Eucalypt Forest on Coastal Floodplains were recorded within the study area. In accordance with Section 5A of the Environmental Planning and Assessment Act 1979, the 7 part test of significance concluded that the proposed development will not have a significant impact on any threatened species, populations or EECs. Therefore, a Species Impact Statement should not be required for the proposal.

4.2.4 Protection of the Environment Operations Act 1979

Schedule 1 of the *Protection of the Environment Operations Act 1979* (POEO Act) contains a core list of activities that require a licence before they may be undertaken or carried out. The definition of an 'activity' for the purposes of the POEO Act is:

> *"an industrial, agricultural or commercial activity or an activity of any other nature whatever (including the keeping of a substance or an animal)."*

It is noted that the existing development operates under Environmental Protection Licence No.546 which relates to Austral Bricks Plant 1, 2 and 3. This licence permits four separate schedules activities being Ceramic Works, Crushing, Grinding or Separating, Extractive Industries and Mining for Minerals. .

The production of Light Weight Aggregate falls within the category of Ceramic Works, already approved as part of the EPA Licence and will not need an application to the EPA to vary the classification of scheduled activities undertaken on the site.

However, as the LWA facility will require the construction of screening plant, installation of a conveyer system and provision of a new stockpile area, application will need to be made to the EPA the vary the licence to incorporate the new activities. This will be done once development consent is issued.

4.2.5 Western Sydney Parklands Act 2006

The *Western Sydney Parklands Act 2006* (WSP Act) was passed in late 2006 to guide the establishment of Western Sydney Parklands Trust (the Trust) and the Trust's management of the Parklands. The establishment of the Trust and nominated members is currently being undertaken.

Clause 12 of the WSP Act identifies the key functions of the Trust. While the principal function of the Trust is to develop the Parklands into a multi-use urban parkland for the region of Western Sydney and to maintain and improve the Parklands on an ongoing basis, Clause 12(2) outlines additional functions, including:

> *(j) to undertake or provide, or facilitate the undertaking or provision of, commercial, retail and transport activities and facilities in or in relation to the Parklands with the object of supporting the viability of the management of the Parkland*

Clause 12 also states the following actions of relevance to the proposed development are permitted by the Trust:

> *(5) In carrying out its functions, the Trust is to have regard to the principles of sustainable development, including ecologically sustainable development.*
> *(6) The Trust may, with the consent of the Minister, exercise functions on or in relation to land outside the Parklands (including, for example, acquiring any such land). The consent of the Minister is to be given only if the Minister is satisfied that the exercise of the Trust's functions in relation to that land is consistent with the exercise of its functions in relation to the Parklands.*

The Trust is also required to prepare a Plan of Management for the Parklands to identify how the Park and its resources will be managed.

Nothing the in the *Western Sydney Parklands Act 2006* prevents or restricts the development as proposed.

4.2.6 State Environmental Planning Policy (State and Regional Development) 2011

Proposals involving activities that are listed in Schedule 1 of *State Environmental Planning Policy (State and Regional Development) 2011* (State and Regional Development SEPP) are identified as being State Significant Development.

Clause 5 of Schedule 2 states:

> ***5 Development in the Western Parklands***
>
> *Development that has a capital investment value of more than $10 million on land identified as being within the Western Parklands on the Western Sydney Parklands Map within the meaning of State Environmental Planning Policy (Western Sydney Parklands) 2009.*

The capital investment value of the project is approximately AU$129,787,000, thus the proposal is deemed State Significant Development. This EIS has been prepared based on the Secretary's Environmental Assessment Requirements issued on 17 December 2014.

4.2.7 State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 (SEPP Infrastructure) repeals the former *State Environmental Planning Policy No. 11 – Traffic Generating Development* and, pursuant to Clause 104, provides for certain proposals, known as Traffic Generating Development, to be referred to NSW Roads and Maritime Services (RMS) for concurrence.

Schedule 3 lists the types of development that are defined as Traffic Generating Development. The referral thresholds for 'Industry' development are:

- *20,000m^2 or more in area with site access to any road; or*
- *5,000m^2 or more in area where the site has access to a classified road or to a road that connects to a classified road (if access is within 90 metres of connection, measured along the alignment of the connecting road).*

As the proposed development does not seek consent for industrial floor area, referral to RMS under the SEPP is not required. Notwithstanding, traffic generation and the impacts on the surrounding road network have been considered as part of the Traffic Impact Assessment (TIA) which accompanies this EIS.

It is noted that consultation with the RMS has been undertaken in the preparation of this EIS (see Section 5.6).

4.2.8 State Environmental Planning Policy (Western Sydney Parklands) 2009

State Environmental Planning Policy (Western Sydney Parklands) 2009 (WSP SEPP) applies to land identified on the Western Sydney Parklands Map (**Figure 3**) and includes the subject site. The relevant provisions of the Policy are address below.

Aims
The aim of the WSP SEPP is:

> *to put in place planning controls that will enable the Western Sydney Parklands Trust to develop the Western Parklands into a multi-use urban parkland for the region of western Sydney by:*
>
> *(a) allowing for a diverse range of recreational, entertainment and tourist facilities in the Western Parklands, and*
> *(b) allowing for a range of commercial, retail, infrastructure and other uses consistent with the Metropolitan Strategy, which will deliver beneficial social and economic outcomes to western Sydney, and*
> *(c) continuing to allow for and facilitate the location of government infrastructure and service facilities in the Western Parklands, and*
> *(d) protecting and enhancing the natural systems of the Western Parklands, including flora and fauna species and communities and riparian corridors, and*
> *(e) protecting and enhancing the cultural and historical heritage of the Western Parklands, and*
> *(f) maintaining the rural character of parts of the Western Parklands by allowing sustainable extensive agriculture, horticulture, forestry and the like, and*
> *(g) facilitating public access to, and use and enjoyment of, the Western Parklands, and*
> *(h) facilitating use of the Western Parklands to meet a range of community needs and interests, including those that promote health and well-being in the community, and*
> *(i) encouraging the use of the Western Parklands for education and research purposes, including accommodation and other facilities to support those purposes, and*
> *(j) allowing for interim uses on private land in the Western Parklands if such uses do not adversely affect the establishment of the Western Parklands or the ability of the Trust to carry out its functions as set out in section 12 of the Western Sydney Parklands Act 2006, and*
> *(k) ensuring that development of the Western Parklands is undertaken in an ecologically sustainable way.*

The proposal will also provide employment opportunities for the Western Sydney Region in a location that will minimise environmental impact and relate to its contextual setting.

All land within the Western Sydney Parklands is unzoned under the provisions of the WSP SEPP. Pursuant to Clause 11(2), the proposal represents an 'innominate development' and is therefore permissible with consent.

Nothing in the WSP SEPP prohibits or restricts the permissibility of any type of industrial development.

Matters to be considered by the consent authority—generally

Clause 12 of the WSP SEPP identifies a number of general matters that must be taken into account by the consent authority during determining of a development application on land within the Parklands. These matters are addressed in **Table 7**.

Table 7:WSP SEPP General Matters for Consideration

Matters	Compliance	Comments
(a) the aim of this Policy, as set out in clause 2	Yes	The proposal is consistent with this aim as it provides for development within the Parklands and will not impede the proposed development strategy of the Parklands.
(b) the impact on drinking water catchments and associated infrastructure,	Yes	See **Sections 6.7.**
(c) the impact on utility services and easements,	Yes	No services or easements are to be impacted as a result of the proposed development.
(d) the impact of carrying out the development on environmental conservation areas and the natural environment, including endangered ecological communities,	Yes	See **Section 6.9.**
(e) the impact on the continuity of the Western Parklands as a corridor linking core habitat such as the endangered Cumberland Plain Woodland,	Yes	See **Section 6.9.**
(f) the impact on the Western Parkland's linked north-south circulation and access network and whether the development will enable access to all parts of the Western Parklands that are available for recreational use,	Yes	No impact on the circulation of the Parklands will result from the development given the position of the development area.
(g) the impact on the physical and visual continuity of the Western Parklands as a scenic break in the urban fabric of western Sydney,	Yes	As above. See Landscape Plan at **Appendix 6** also.
(h) the impact on public access to the Western Parklands,	Yes	No impact on the circulation of the Parklands will result from the development given the position of the development area.
(i) consistency with: *(i) any plan of management for the parklands, that includes the Western Parklands, prepared and adopted under Part 4 of the Western Sydney Parklands Act 2006, or* *(ii) any precinct plan for a precinct of the parklands, that includes the Western Parklands, prepared and adopted under that Part,*	Yes	The development has been undertaken in accordance with the adopted Plan of Management. See **Section 4.5.4**
(j) the impact on surrounding residential amenity,	Yes	The site does not adjoin any residential areas.
(k) the impact on significant views,	Yes	No significant views will be impacted by the proposal given the proposal represents a minor addition to the site that is used for brick manufacturing purposes.
(l) the effect on drainage patterns, ground water, flood patterns and wetland viability,	Yes	See **Section 6.7.**
(m) the impact on heritage items,	Yes	No heritage items impacted.
(n) the impact on traffic and parking.	Yes	See **Section 6.6.**

Bulk Water Supply

Access to the Bulk Water Supply Infrastructure for maintenance and operation activities by the Sydney Catchment Authority and Sydney Water Corporation will not be impeded by the development.

Nature Reserves and Environmental Conservation Areas
The site does not contain and does not adjoin any Nature Reserves or Environmental Conservation Areas identified under the WSP SEPP.

Heritage Conservation
The site does not contain and does not adjoin any heritage items identified under the WSP SEPP

Commercial Signage
The proposal does not include any signage.

Development on Private Land
Clause 17 of the WSP SEPP states:

> *Development consent must not be granted to development on private land in the Western Parklands unless the consent authority has considered the following:*
> *(a) whether the development will contribute to or impede the implementation of the aim of this Policy,*
> *(b) the need to carry out development on the land,*
> *(c) the imminence of acquisition of the land,*
> *(d) the effect of carrying out the development on acquisition costs,*
> *(e) the effect of carrying out the development on the natural systems of the Western Parklands,*
> *(f) the cost of restoring those systems after the development has been carried out.*

The WSPT were consulted in preparing the subject application and did not raise an objection. Notwithstanding, it is considered that the proposal is consistent with the aims and objectives of the SEPP and will not impede the broader strategy for the precinct.

4.2.9 State Environmental Planning Policy No. 19 – Bushland in Urban Areas

The provisions of *State Environmental Planning Policy No 19 — Bushland in Urban Areas* (SEPP 19) do not apply to land to which SEPP WSP applies.

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

The provisions of *State Environmental Planning Policy No 33— Hazardous and Offensive Development* do not apply as any storage of dangerous good are not proposed.

4.2.11 State Environmental Planning Policy No. 55 – Remediation of Land

Under the provisions of *State Environmental Planning Policy No. 55 – Remediation of Land* (SEPP 55), where a development application is made concerning land that is contaminated, the consent authority must not grant consent unless:

> *(a) it has considered whether the land is contaminated, and*

(b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and
(c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.

A Phase 1 Environmental Site Assessment has been prepared by EIS (**Appendix 12**) and concludes that the site is suitable for the proposed development. It is recommended that the following measures be implemented with the proposed development:

1. *Undertake targeted soil sampling and analysis in the vicinity of the disused stored tanks and above ground diesel tank;*
2. *Targeted sampling should be undertaken beneath the footprint of the two proposed offices following site excavation works; and*
3. *The proposed large scale earthworks should be controlled and managed to minimise dust, water and sediment impacts on the surrounding area.*

Based on the investigation carried out and recommendations above, it is considered the proposal satisfies SEPP 55 and the site is suitable for the development.

4.2.12 State Environmental Planning Policy No. 64 – Advertising Structures and Signage

Approval is not sought for signage under the subject application.

4.2.13 Sydney Regional Environmental Plan No.20 Hawkesbury – Nepean River

The site lies within the area covered by *Sydney Regional Environmental Plan No.20 Hawkesbury – Nepean River* (SREP 20). The aim of the SREP is to:

> *protect the environment of the Hawkesbury-Nepean River system by ensuring that the impacts of future land uses are considered in a regional context*.

The subject site is located within the South Creek Catchment and does not fall within any other areas of significance.

The SREP provides the following general planning considerations relevant to the proposal:

(a) the aim of this plan, and
(b) (the strategies listed in the Action Plan of the Hawkesbury-Nepean Environmental Planning Strategy, and
(c) whether there are any feasible alternatives to the development or other proposal concerned, and
(d) the relationship between the different impacts of the development or other proposal and the environment, and how those impacts will be addressed and monitored.

The proposed development is to take place on a site that has been approved for industrial purposes. Impacts associated with the development including noise, air quality and traffic have been suitably mitigated through the design.

4.3 REGIONAL PLANNING CONTEXT

4.3.1 NSW 2021: A Plan to Make NSW Number One

NSW 2021 was developed by the NSW State Government to set economic, social and environmental directions for NSW. It sets targets, priorities and actions for delivery of services across the State. The strategies outlined in the Plan include:

- *Rebuild the economy*
- *Return quality services*
- *Renovate infrastructure*
- *Strengthen our local environment and communities*
- *Restore accountability to government*

The Chapter on Rebuilding the Economy is most relevant to the proposal as it provides objectives for achieving growth and prosperity. The plan makes a commitment that support large and small businesses and describes the importance of the private sector's role in maintaining and creating highly productive jobs to underpin the State's ability to realise higher standards of living for all people.

The proposed development will contribute to the ongoing growth WSEA to maintain and create jobs within the Sydney Metropolitan Region as the facilities will provide vital opportunities for industry. *NSW 2021* provides the policy context for the State Government to support companies in achieving significant benefits for NSW.

4.3.2 A Plan for Growing Sydney

A Plan for Growing Sydney was introduced by the NSW DP&E in December 2014 and replaced the Metropolitan Plan for Sydney 2036. A Plan for Growing Sydney supports and implements the NSW 2021 State Plan, which identifies restoring economic growth is its number one priority.

The plan presents a strategy for accommodating Sydney's future population growth. It balances the need for more housing, but also cultivates the creation of strong and resilient communities within a highly liveable city whilst protecting the natural environment and biodiversity.

New housing will be located close to jobs, public transport, community facilities and services. It acknowledges the need to offer choice in housing location, size and typologies, to better suit our lifestyles and budgets. Most importantly, more intensive housing development across the city will be matched with investment in infrastructure and services, culture and the arts, and open spaces.

A Plan for Growing Sydney will also provide a framework for strengthening the global competitiveness of Sydney, in order to facilitate strong investment and jobs growth. Specifically, the Fairfield LGA is located within the West Central subregion, earmarked for significant infrastructure investment and intensive growth over the next 20 years. In relation to the West Central Subregion the Metropolitan Strategy seeks to identify suitable locations for housing and employment growth coordinated with infrastructure delivery (urban renewal), including around priority precincts, established and new centres, and along key public transport corridors'.

In response to this aim the proposed development site is considered to provide USE located within close proximity to key precincts that are expected to experience significant employment growth and infrastructure investment.

4.3.3 Draft West Central Subregional Strategy

The Draft West Central Subregional Strategy translates objectives of the NSW Government's Metropolitan Strategy and the State Plan to the local level. The Draft West Central Subregional Strategy includes the local government areas of Auburn, Bankstown, Fairfield, Holroyd and Parramatta.

Under the Strategy, Fairfield is identified as a Regional City and has growth targets of 10,000 new dwelling houses and 15,000 new jobs by 2031, a growth of 26.3% (**Figure 8**).

WEST CENTRAL LGA	2001	2031	NEW JOBS	% GROWTH
AUBURN	43,300	55,300	12,000	**27.7%**
BANKSTOWN	71,700	77,700	6,000	**8.4%**
FAIRFIELD	57,000	72,000	15,000	**26.3%**
HOLROYD	35,500	36,500	1,000	**2.8%**
PARRAMATTA	101,000	128,000	27,000	**26.7%**
TOTAL	308,500	369,500	61,000	**19.7%**

Figure 8: West Central Sub-Region Employment Growth Forecast

The proposed development is consistent with the Strategy in that it will:

- facilitate the ongoing development of the Western Sydney Parklands;
- contribute to the development of Fairfield as a Regional City; and
- provide an appropriate use of industrial lands for industrial use and employment purposes.

The development will also achieve the following actions under the Draft Sub-Regional Strategy:

A1.1 *Provide a framework for accommodating jobs across the subregion*
A1.2 *Plan for sufficient zoned land and infrastructure to achieve employment capacity targets in employment lands*
A1.5 *Protects and enhance employment lands of state significance*
A1.6 *Improve planning and delivery of employment lands*
A1.8 *Establish a framework for the development of business parks*
A2.2 *Strengthen industry clusters*
A3.2 *Increase integration of employment and housing markets*
A3.3 *Encourage emerging businesses*

The proposal is considered to satisfy the above criterion by providing additional employment opportunities and will generate the following jobs for the construction and operation phases of the development.

Construction

- Bulk Earthworks/Services 20
- Construction of kiln; cooler; emissions control circuit installation 130

Total 150

Operation

▪ Manufacturing staff	22
▪ Sales and Admin	3
▪ Transport - delivery to customers	20
▪ Transport - delivery of input materials	5
Total	50

Total estimated jobs created: 200

4.4 LOCAL PLANNING CONTEXT

4.4.1 Fairfield Local Environmental Plan 2013

As the site is located within the WSP, the provisions of *Fairfield Local Environmental Plan 2013* do not apply.

4.5 DRAFT ENVIRONMENTAL PLANNING INSTRUMENTS

No draft Environmental Planning Instruments apply to the site or proposal.

4.5.1 Fairfield City Wide Development Control Plan 2013

It is noted that Section 11 of *State Environmental Planning Policy (State and Regional Development) 2011* states:

> ***11 Exclusion of application of development control plans***
> *Development control plans (whether made before or after the commencement of this Policy) do not apply to:*
>
> *(a) State significant development*

Notwithstanding, the proposal is generally consistent with the provisions of the *Fairfield City Wide Development Control Plan 2013* (FDCP) as applicable to industrial development. Any departure from the FDCP is minor as compliance is achieved with the Concept Plan controls.

The underlying objective of this section of the DCP is to ensure industrial development is:

- compatible with its development site;
- supporting quality design with workforce amenity a priority;
- environmentally sustainable with minimum impact on air and water quality, reduce noise impacts; and
- reinforcing recycling and waste management principles.

The subject application is consistent with the above objectives as follows:

- The development is consistent with the framework and strategic intentions for high quality development in the WSP.
- The proposed LWA facility takes into account the emerging physical context of the area.
- The proposed stormwater concept is will not adversely affect surrounding properties or riparian areas.

- The proposed LWA facility has been designed to complement surrounding development and the character of the site (**Appendix 5**).
- The development corresponds to the DCP objectives and controls for as addressed in the table below in this report.
- The proposal does not result in any unacceptable impacts on flora and fauna.

4.5.2 Direct (Section 94) Development Contributions Plan 2011

The *Direct (s94) Development Contributions Plan 2011* notes:

This Plan shall be applied to any development proposal that results in an increase in:

(a) the number of residential dwellings or occupancies;
(b) the number of residential development lots; or
(c) the area of commercial or retail floor space where a developer cannot provide the required car spaces on site; or
(d) any combination of the above

For any other development, Council's Indirect Contributions Plan 2011 applies.

As the proposal does not propose development that falls into one or more of the listed development categories, direct s94 contributions do not apply under this Plan. The *Indirect (s94A) Development Contributions Plan 2011* is addressed in the following section.

4.5.3 Indirect (Section 94A) Development Contributions Plan 2011

The *Indirect (s94A) Development Contributions Plan 2011* notes that development generated throughout the City will require ongoing improvements to community infrastructure including, but not limited to:

- Community facilities;
- Recreation and Open space embellishment;
- Public domain improvements and place making embellishments achieved through cultural arts works and installations;
- Road-works;
- Land acquisition for open space

The purposes of the Plan are to:

(a) authorise the Council to impose as a condition of development or as a condition on complying development certificates, a requirement that the applicant pay to the Council a levy determined in accordance with this plan;
(b) assist the Council to provide the appropriate public facilities, infrastructure and services, which are required to maintain and enhance the amenity of those who live, work and recreate in Fairfield City;
(c) publicly identify the specific activities for which the levies are required; and
(d) govern the application of money to those activities.

This plan applies to all applications for development consent and complying development certificates required to be made by or under Part 4 of the *Environmental Planning and Assessment Act 1979* in respect of development on land to which this plan applies, except development identified in relevant Ministerial Directions where Indirect Contributions cannot be imposed, or any development proposal relating to the land to which the *Direct (Section 94) Contributions Plan 2011* applies that results in an increase in:

(a) the number of residential dwellings or occupancies;
(b) the number of residential development lots; or

(c) the area of commercial or retail floor space where a developer cannot provide the required car spaces on site; or
(d) any combination of the above.

As State Significant Development falls under Part 4 of the EP&A Act and the proposal is not exempt under the above-listed categories of development, Contributions under the *Indirect (s94A) Development Contributions Plan 2011* will apply to the proposal as calculated by Fairfield Council.

4.5.4 Western Sydney Parklands Plan of Management 2010

The Plan of Management for the Western Sydney Parklands (WSP POM) was adopted by the Minister for Western Sydney on 25 January 2011.
The development of the WSP POM has involved a broad range of consultation activities designed to gain stakeholder feedback and suggestions on the future management of the Parklands.

The initial consultation process was conducted in two stages between June and November 2010. The second stage of the consultation process coincided with public exhibition of the draft Plan between 11 October and 22 November 2010.

The POM establishes the Vision for the Western Sydney Parklands as follows:

> *"Western Sydney Parklands is a place for people of all backgrounds to meet, celebrate, learn, play and appreciate the environment. The Parklands will be a venue for communities to create and manage a new sustainable future on the Cumberland Plain."*

The principles that underline the WSP POM are to ensure the Parklands will be:

- **enjoyable** for people of all ages, cultural groups and backgrounds;
- **sustainable** in its management, development and promotion;
- **identifiable** as Western Sydney's 'backyard', welcoming and inclusive for all;
- **educational** and provide information about sustainable park management, agriculture, recreation and a range of other activities;
- **accessible to all** — physically, economically, in terms of safety, transport and other factors;
- **viable** economically for the Trust and for those using the land; and
- **in partnership** — the above can only be achieved by working together with stakeholders and the broader community.

The proposed development will not impede the principles of the POM, as the existing character of the site will be retained, without any unacceptable environmental impacts.

PART E CONSULTATION

5.1 NSW Department of Planning & Environment & NSW Environment Protection Authority

Subsequent to lodging the request for SEARs, a site meeting was held on 26 November 2014, attendees included:

- Megan Kublins (Lumetum);
- Andrew Cowan (McKenzie Group);
- Kerry Hamann (NSW DP&E); and
- Jacqueline Roberts (NSW EPA).

Matters discussed at the meeting included the following:

- Traffic generation and impact on surrounding road network;
- Visual impact of the Kilns when viewed form Ferrers Road;
- Air quality and noise impacts;
- Vegetation impacts and the adjacent creek;
- Potential variation to the EPA License; and
- Further consultation with other authorities.

Subsequent to this meeting and the issue of SEARs, the consultant team was engaged to prepare the specialist reports.

On 12 of August, 2015, Abhilash Aitharaju (Abhi), Principal Air Quality Consultant of Airlabs Environmental Pty Ltd (Airlabs) contacted Ms. Jacqueline Roberts – Operations Officer – Sydney Industry Section, NSW-EPA to discuss the Lightweight Aggregate (LWA) Air Quality Impact Assessment (AQIA). The aim of this exercise was to brief NSW-EPA about the methodology and the findings of the LWA – AQIA before a submission was made. During the telephone conversation, Ms. Jacqueline advised the Airlabs Personnel that any discussion pertaining to the AQIA would be initiated post submission, and as-such, Airlabs are submitting the AQIA for Public Exhibition.

5.2 Fairfield City Council

A meeting was held at Fairfield City Council on 2 December 2014, attendees included:

- Megan Kublins (Lumetum Pty Ltd);
- Stephen Wall (Lumetum Pty Ltd);
- Andrew Cowan (McKenzie Group); and
- Andrew Mooney (Fairfield City Council).

The proposal was discussed in general, noting the proximity to Ferrers Road and potential visual impacts. It was agreed that a visual analysis would be carried out as part of the SSD Application submitted to DP&E and that the proposal was unlikely to result in any adverse impacts given the existing buffer that will be retained and dense vegetation.

In addition to the above, Council expressed the need to ensure that the traffic, air quality and noise impacts need to be considered as part of the proposal, however given the existing uses carried out on the site and surrounding receiving environments, the proposal would be unlikely to result in adverse impacts.

5.3 Roads and Maritime Service

On 31 March 2015, a meeting was held with RMS in respect of the proposed development. Attendees present at this meeting included:

- Andrew Cowan (McKenzie Group);
- Andrew Johnson (Ason Group);
- Pahee Rathen (RMS);

Items that were raised for consideration included:

- The intersection performance of Wallgrove Road / Access Road and Ferrers Road / Access Road using a SIDRA model of the intersection. The inclusion of solution/s to address any potential performance issues at the intersection.
- The road safety and crash history of Wallgrove Road / Access Road and Ferrers Road / Access Road.
- Plans of any road upgrades or new roads required for the development including the potential to create an east-west road connection through the site linking the Erskine Park Southern Link Road (proposed arterial road extension within the Western Sydney Employment Area immediately west of the site) with Ferrers Road.

The above matters have been addressed in detail throughout the submitted TIA.

5.4 Office of Water

On 11 June 2015 by Michael Sheather-Reid of Travers Bushfire and Ecology contacted Ruth Burton of the NSW Office of Water.

It was recommended that the investigations had been undertaken onsite and the adjustments had been made to the design in response to the proximity of the basins to Eastern Creek in accordance with the NSW Controlled Activities Guidelines 2012, and adequate setbacks had been provided accordingly.

It was noted that the Office of Water would review the proposal in more details through the formal exhibition process.

5.5 Department of Primary Industries (Water)

On 20 August 2015, McKenzie Group sent a consultation request to the NSW Department of Primary Industries (Water) regarding the proposed development request that the comments be provided in relation to:

- potential surface water impacts;
- the adequacy of flood mitigation proposed on site;
- surface and stormwater management systems;
- water treatment measures; and
- site water balance.

A written response was provided on 4 September 2015 from Mitchell Isaacs of DPI Water. The queries raised and respective responses are detailed in a separate submission prepared by AT&L at **Appendix 5A**.

5.6 NSW Fire Brigade

Confirmation was provided by Kerry Hamann of NSW DP&E on 16 June 2015 that it is not necessary to consult with the NSW Fire Brigade prior to the submission of the SSDA.

5.7 Local Residents/Stakeholders

Consultation letters were sent to surrounding properties identified within the Air Quality and Noise Impact Assessments. At the time of submission, no concerns had been raised. Should any further information be requested from the surrounding property owners, this will be made available to inform the relevant stakeholders.

PART F ENVIRONMENTAL RISK ASSESSMENT

6.1 SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

The Secretary's Environmental Assessment Requirements were received on 17 December 2014. The Key Issues include:

- Strategic Context
- Air Quality
- Noise
- Traffic and Transport
- Soil and Water
- Waste Management
- Flora and Fauna
- Greenhouse Gas and Energy Efficiency
- Hazards
- Visual
- Cumulative Impacts

The above matters are addressed in the sections below.

6.2 STRATEGIC CONTEXT

Refer Part D above in respect of the strategic context of the site.

6.3 AIR QUALITY

As mentioned in Section 3.2.1, Light Weight Aggregate (LWA) production would be in a staged approach where in Production Stage 1 would produce 300,000 tonnes of aggregate per year and Production Stage 2, which would commence approximately 5 years after commencement of Production Stage 1 would produce an additional 300,000 tonnes of aggregate per year, totaling a combined production volume of to 600,000 tonnes per year for Production Stage 1 and Production Stage 2. The rotary kiln for Stage 1 is designed to produce 300,000 tonnes of aggregate per year and as-such; a new rotary kiln would be commissioned during Stage 2.

Lumetum are also investigating the feasibility of using different types of fuels in the proposed rotary kilns and have identified 3 beneficially derived fuel sources which include:

- 100% Natural Gas
- 90% Construction & Demolition (C&D) / Construction and Industrial (C&I) Timbers and 10% Natural Gas; and
- 90% Refuse Derived Fuel (RDF) – typically comprising municipal and industrial waste and 10% Natural Gas

Based on information provided by Lumetum, it is understood that the preferred choice of fuel would be the combination of 90% Construction & Demolition (C&D) / Construction and Industrial (C&I) Timbers and 10% Natural Gas

6.3.1 Regulatory Requirements

Regulatory requirements applicable to the Air Quality assessment include:

- *Group 6 emission standards listed in the NSW-Environmental Protection Authority (NSW-EPA) Protection of the Environment Operations (POEO) Clean Air Regulation 2010;*
- *The NSW-EPA published NSW Energy from Waste Policy, as Lumetum are investigating the option of using specific beneficially derived fuels which include C&D/C&I Timbers and RDF, in conjunction with natural gas; and*
- *Ambient air quality limits in addition to meeting the Clean Air Regulation requirements and the Energy from Waste Policy requirements*

6.3.2 Sensitive Receptor Identification

Sensitive receptors that have been considered for the Air Quality Assessment are illustrated in **9** and **10**.

Discrete Receptor ID	Address	Easting (m), MGA 56	Northing (m), MGA 56	Approximate Distance (km) to the Nearest Brickworks Boundary and Orientation
DR1	785-811 Wallgrove Road, Horsley Park	301464	6254982	1.4 km/W
DR2	763-783 Wallgrove Road, Horsley Park	301531	6254784	1.2km/WSW
DR3	749-761 Wallgrove Road Horsley Park	301547	6254641	1.2km/SW
DR4	168-174 Chandos Road, Horsley Park	302576	6254299	0.5km/S
DR5	150-154 Chandos Road, Horsley Park	302700	6254271	0.5km/S

Figure 9: Sensitive Receptors - Air Quality

Figure 10: Sensitive Receptors Map – Air Quality

6.3.3 Background Air Quality

Determining background air quality levels is essential for determining cumulative impacts. No air-quality monitoring is undertaken at the facility, and as-such existing air quality was determined from the NSW-OEH ambient air quality monitoring station located at Prospect, NSW. The Prospect monitoring station is located approximately 5.3km north-east of the Project Site and records continuous concentrations of PM_{10}, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO) and ozone (O_3). In addition to the data from the OEH monitoring station, flue gas and particulate emissions were estimated for existing operations at both Plant 1 and Plant 2 for determining impacts from existing operations.

6.3.4 Emission Estimation

Emissions Corresponding to Operational Activities

Emission rates for the project have been estimated for the following:

- *Flue gas emissions from the proposed LWA rotary kiln stack for the three (3) fuel combustion options for both Stage 1 and Stage 2 operations;*
- *Fugitive particulate matter emissions corresponding to Stage 1 and Stage 2 LWA operations;*
- *Emissions released to air from existing brick making operations at Plant 2, which include flue gas emissions from the existing brick-kiln stack and associated fugitive particulate matter emissions; and*
- *Flue gas emissions from the existing brick-kiln stack at Plant 1 and corresponding fugitive particulate matter emissions.*

As mentioned earlier, Stage 1 of the Project comprises LWA production volumes of 300,000 tonnes per annum (tpa) and a total of 600,000 tpa of LWA production is forecasted for Stage 2 (including 300,000 tpa of LWA from Stage 1), which would potentially commence approximately five (5) years after commencement of Stage 1.

Flue gas emission sources and the corresponding pollutants for both Stage 1 and Stage 2 LWA operations are illustrated in **11**.

Source	Type	Associated Pollutants
Product Combustion Stack 1 (PCS 1) – Stage 1 Operations	Stack Emissions (Point Source)	Particulates, NO_2, SO_2, CO, HF, HCl, Acid Gases, Volatile Organic Compounds (VOCs), Metals, PAHs, Dioxins and Furans
Cooling Air Stack 1 (CA1) – Stage 1 Operations	Stack Emissions (Point Source)	Particulates
Product Combustion Stack 2 (PCS 2) – Stage 2 Operations	Stack Emissions (Point Source)	Particulates, NO_2, SO_2, CO, HF, HCl, Acid Gases, Volatile Organic Compounds (VOCs), Metals, PAHs, Dioxins and Furans
Cooling Air Stack 1 (CA2) – Stage 2 Operations	Stack Emissions (Point Source)	Particulates

Figure 11: LWA Flue Gas Sources and Associated Emissions – Stage 1 and Stage 2 Operations

To minimise flue gas emissions generated from LWA operations, Lumetum are proposing a set of air pollution control measures for both Stage 1 and Stage 2 operations incorporating Best Available Technology (BAT) measures, including baghouse for controlling particulate emissions and metals, wet scrubber for reducing acid gas concentrations and Regenerative Thermal Oxidiser (RTO) for effectively minimising VOC and CO emissions. Implemetation of these BAT measures would ensure compliance with Group 6 emission standards and the Energy from Waste Policy requirements. Moreover, by comparing the aforementioned proposed air pollution control measures with measures implemented by other LWA manufacturing facilities, it is observed that the measures proposed by Lumetum are in-line with best practices for minimising flue gas emissions from LWA operations.

In order to understand the emissions profile associated with each fuel source type, pollutant emission rates have been quantified for each of the following fuel combustion options for both Production Stage 1 (300,000 tpa) and Production Stage 2 (total 600,000 tpa – including 300,000 tpa from Stage 1) LWA operations:

- Option 1: 100% Natural Gas
- Option 2: 90% Construction & Demolition (C&D) / Construction and Industrial (C&I) Timbers and 10% Natural Gas; and
- Option 3: 90% Refuse Derived Fuel (RDF) – typically comprising municipal and industrial waste and 10% Natural Gas

Pollutant emission rates for each of the aforementioned fuel combustion options were estimated using emission factors, referenced from Emission Estimation Technique (EET) manuals.

Fugitive particulate emissions corresponding to Production Stage 1 and Production Stage 2 LWA operations have been estimated using EET manuals. Particulate emission rates have been quantified based on emission factors, activity details and control measures for dust mitigation.

In addition to inventorying flue gas and particulate emissions from LWA operations, emissions were also estimated for existing operations at both Plant 1 and Plant 2 using EET manuals and historical stack emission testing data.

Emissions Corresponding to Construction / Earthwork Activities

As mentioned in Section 3.2.2, construction works will be carried out in a staged manner with the proposed kiln and screening plant assembled off-site. Construction Stages 1 to 4 (refer Section 3.2.2) comprise site preparation activities, which primarily include cut, fill and drainage works. Earthworking / construction activities pertaining to Construction Stage 5 correspond to Production Stage 1 (300,000 tonnes per year) and Construction Stage 6 activities correspond to Production Stage 2 (300,000 tonnes per year)

Construction based activities which have a potential to generate dust emissions include:

- Earthwork operations such as excavation and topsoil stripping;
- Handling of spoil and structural fill material;
- Wind erosion from exposed areas and stockpiles;
- Wheel generated dust from vehicle movement on paved roads, unpaved roads or other work areas.

Based on information provided by Lumetum, equipment likely to generate dust emissions during specific stages of construction have been identified and illustrated in **12.**

Construction Stages	Associated Equipment
Stage 1 to Stage 4 - Site preparation (Cut, Fill and Drainage works)	1 x Excavators 1 x Back Hoe 1 x Dump truck 1 x Roller 1 x Dozer 1 x Scraper 1 x Grader 1 x Trencher 1 x Water truck
Stage 5 – Production Stage 1 (300,000 tonne per annum of LWA)	1 x Concrete truck 1 x Articulated truck 1 x Dump truck 1 x Water truck
Stage 6 – Production Stage 2 (600,000 tonne per annum of LWA)	Same as stage 5

Figure 12: Construction Stages and Associated Equipment

Given that construction activities are progressive in nature and considering the proximity of the nearest sensitive receptor (0.5km from the facility boundary), the potential for these activities to adversely impact local air quality is unlikely. Additionally dust emissions during construction activities would take place sporadically over a larger area and this would significantly limit the potential for any adverse off-site impacts. Though, it is unlikely that there would be any significant off-site dust impacts arising from construction activities for Production Stage 1 and Production Stage 2, Lumetum are proposing the following dust mitigation measures.

Source of Dust	Mitigation Measure	Timing
General	Identify dust generating activities and inform site personnel about location of nearby sensitive receptors.	Throughout construction
	Identify adverse weather conditions (dry and high wind blowing from dust source to sensitive receptors) and halt dust emitting activities if visible dust impacts are identified at sensitive receptors.	Throughout construction
Handling of spoil and structural fill material	Minimise drop height for material handling equipment.	Throughout construction
Wind generated dust from stockpiles and exposed areas	Apply watering through water trucks or sprinklers.	As required
	Progressive staging of dust generating activities throughout the day to avoid concurrent dust emission.	Throughout construction
	Minimise exposed area if possible.	Throughout construction
	Minimise amount of material stockpiled if possible.	Throughout construction
Wheel generated dust during hauling	Restrict vehicle movement to haul routes that are watered regularly.	Throughout construction
	Watering of unpaved haul roads.	As required
	Cleaning of haul roads.	As required
	Speed restrictions	Throughout construction

Figure 13: Construction Dust Mitigation Measures

Combustion of diesel or petrol fuels (from vehicle movements and mobile machinery) could generate emissions of particulate matter, carbon monoxide, sulphur dioxide, oxides of nitrogen and volatile organic compounds. Based on the relatively small amount of fuel burning during the construction phase, emissions from vehicle exhaust and mobile machinery are not likely to cause adverse impacts on surrounding sensitive receptors.

6.3.5 Dispersion Modelling and Results

In order to predict impacts at the identified sensitive receptors, air dispersion modelling was undertaken using the combination of the following mathematical models TAPM and CALMET / CALPUFF

To determine the air quality impacts, the following scenarios have been modelled.

- Existing Operations – Plant 1 and Plant 2 – stack emissions and fugitive particulate emissions;
- Stage 1 Operation – Existing operations and Stage 1 stack emissions (PCS 1 and CA 1) and fugitive particulate emissions. Furthermore, in order to determine impacts from the different fuel combustion scenarios, Stage 1 operations were sub-divided into the following:
  - Stage 1 Option 1: Combustion of 100% Natural Gas;
  - Stage 1 Option 2: Combustion of 90% Construction & Demolition (C&D) / Construction and Industrial (C&I) Timbers and 10% Natural Gas; and
  - Stage 1 Option 3: Combustion of 90% Refuse Derived Fuel (RDF) – typically comprising municipal and industrial waste and 10% Natural Gas
- Stage 2 Operations – Existing and Stage 1 operations and Stage 2 stack emissions (PCS 2 and CA 2) and fugitive particulate emissions. Furthermore, in order to

determine impacts from the different fuel combustion scenarios, Stage 2 operations were sub-divided into the following:

- Stage 2 Option 1: Combustion of 100% Natural Gas;
- Stage 2 Option 2: Combustion of 90% Construction & Demolition (C&D) / Construction and Industrial (C&I) Timbers and 10% Natural Gas; and
- Stage 2 Option 3: Combustion of 90% Refuse Derived Fuel (RDF) – typically comprising municipal and industrial waste and 10% Natural Gas

From the modelled results, it is observed that the predicted incremental and cumulative concentrations for all modelled pollutants comply with their respective air quality criteria for all the modelled scenarios at all identified sensitive receptors. A summary of the modelled results is illustrated in **4**. From the modelling results, it is evident that compliance is achieved for all the proposed beneficially derived fuel sources including the Lumetum preferred choice of fuel (i.e. 90% C&D/C&I Timber and 10% Natural Gas)

Modelled Scenario	DR1	DR2	DR3	DR4	DR5
	Compliance with relevant assessment criteria for all modelled pollutants				
Existing Operations	✓	✓	✓	✓	✓
Existing and Stage 1 Operations (300,000 tpa) – Option 1 (100% Natural Gas)	✓	✓	✓	✓	✓
Existing and Stage 1 Operations (300,000 tpa) – Option 2 (90% C&D/C&I Timber and 10% Natural Gas) – *Preferred choice of fuel*	✓	✓	✓	✓	✓
Existing and Stage 1 Operations (300,000 tpa) – Option 3 (90% RDF and 10% Natural Gas)	✓	✓	✓	✓	✓
Existing and Stage 2 Operations (600,000 tpa - includes 300,000 tpa of Stage 1 Operations) – Option 1 (100% Natural Gas)	✓	✓	✓	✓	✓
Existing and Stage 2 Operations (600,000 tpa - includes 300,000 tpa of Stage 1 Operations) – Option 2 (90% C&D/C&I Timber and 10% Natural Gas) – *Preferred choice of fuel*	✓	✓	✓	✓	✓
Existing and Stage 2 Operations (600,000 tpa - includes 300,000 tpa of Stage 1 Operations) – Option 3 (90% RDF and 10% Natural Gas)	✓	✓	✓	✓	✓

Figure 14: Summary of Modelling Results at Sensitive Receptors – All Scenarios – All Fuel Combustion Options

Predicted maximum 24-hour HF concentrations for existing, Stage 1 and Stage 2 LWA operations marginally exceed the relevant assessment criteria beyond the Plant site boundary, however, these reported exceedances are not at any of the identified sensitive receptors. Upon further investigation, it is understand that exceedance of the HF concentrations for all the modelled scenarios occur for only 1% of the entire year. Moreover, the assessment criteria for HF is aimed towards protection of sensitive vegetation and specialized land uses. and as per information provided by Lumetum, it is very unlikely that the areas where the predicted HF concentrations exceed the criteria are considered to be either areas sensitive to vegetation or specialised land areas (e.g. orchids, vineyards etc.), and as-such, it is expected that there would not be any adverse impacts associated with HF emissions from existing and Stage 1 and Stage 2 operations

For the pollutants where cumulative concentrations have been determined it is observed that the Project's contributions to the total concentrations are relatively minimal when compared with the corresponding background concentrations.
Based on implementation of BAT air pollution control measures and achieving compliance with Group 6 emission standards and ambient air quality limits through dispersion modelling, it is observed that there would not be any adverse air quality impacts associated with the LWA Project.

6.4 NOISE

Noise survey and assessment has been undertaken in accordance with the following guidelines:

- *Department of Environment and Climate Change NSW, Interim Construction Noise Guideline (DECC 2009);*
- *NSW Environment Protection Authority, Industrial Noise Policy (EPA 2000) (INP); and*
- *Department of Environment, Climate Change and Water NSW, Road Noise Policy (DECCW 2011)(RNP).*

The nearest sensitive receptors that have been considered are illustrated on the aerial photo in **Figure 15**.

Figure 15: Nearest Sensitive Receptors

Receptor ID	Address	Direction from Site	Approximate Distance to Proposed Development	Easting (m)	Northing (m)
Residential Receptors					
R1	785-811 Wallgrove Road, Horsley Park	W	1375 m	301473	6254991
R2	763-783 Wallgrove Road, Horsley Park	WSW	1331 m	301548	6254784
R3	259-273 Chandos Road, Horsley Park	SW	1200 m	301847	6254341
R4	203-209 Chandos Road, Horsley Park	SSW	920 m	302329	6254246
R5	168-174 Chandos Road, Horsley Park	SSW	734 m	302577	6254329
R6	150-154 Chandos Road, Horsley Park	S	730 m	302695	6254293
R7	126-130 Chandos Road, Horsley Park	S	740 m	302884	6254266
R8	108-112 Chandos Road, Horsley Park	S	760 m	302960	6254250
R9	127-131 Ferrers Road, Horsley Park	SSE	1035 m	303234	6254057
Passive Recreational Areas					
PR1	Prospect Nature Reserve	ENE	490 m	303251	6255371
Industrial Receptors					
I1	21 Shale Place, Eastern Creek	NW	1880 m	301150	6255708
I2	Wallgrove Road Eastern Creek	NW	1380 m	301723	6255687
I3	Ferrers Road, Eastern Creek	N	570 m	302835	6255503
I4	Prospect Water Filtration Plant	ENE	230 m	303066	6255203
I5	33-41 Cowpasture Road, Wetherill Park	NE	1520 m	304066	6254065

Figure 16: Addresses of Sensitive Receptors

Assessment of noise sources has been conducted that based on potential construction and operational impacts.

6.4.1 Construction Noise Impacts

The following assumptions have been applied in predicting the noise impacts of the construction phase:

- Construction activities would be typically undertaken between 7am and 6pm, Monday to Saturday, public holidays excluded;
- The expected duration of the construction period is 6 months;
- All noise sources have been modeled as point sources at several heights within the area of the proposed activities; and
- Construction works have been considered to take place within the area of the kilns.

Various scenarios have been modeled having regard to the nature of works to be carried out (refer **Figure 17** below).

Scenario/ Time Period	Construction Noise Sources
Construction Scenario 1 Cut, Fill and Drainage Works 7.00am and 6.00pm Monday to Saturday	• 1 x Excavator • 1 x Back Hoe • 1 x Dump truck • 1 x Roller • 1 x Dozer • 1 x Scraper • 1 x Grader • 1 x trencher • 3 x Diesel Pumps
Construction Scenario 2 Construction of Kiln and Crushing/ Screening Plant 7.00am and 6.00pm Monday to Saturday	• 1 x Concrete cutter • 1 x Concrete truck • 1 x Articulated truck • 1 x Grinding • 1 x Welding • 1 x Crane • 1 x Dump truck • 3 x Diesel Pumps

Figure 17: Construction Scenarios

The predicted noise levels for both scenarios are compliant with the Project Specific Noise Criteria for the various receptors as demonstrated in **Figure 18**.

Receptor	Predicted Noise Levels Day $L_{eq,\ 15min}$ Construction		PSNL Recommended Standard hours
	Scenario 1	Scenario 2	
Residential Receptors			
R1	36 ✓	25 ✓	64
R2	35 ✓	24 ✓	64
R3	33 ✓	<20 ✓	56
R4	38 ✓	34 ✓	56
R5	48 ✓	45 ✓	56
R6	48 ✓	45 ✓	56
R7	48 ✓	45 ✓	56
R8	48 ✓	44 ✓	56
R9	43 ✓	38 ✓	56
Public Recreational Areas			
PR1	41 ✓	49 ✓	60
Industrial Receptors			
I1	38 ✓	32 ✓	75
I2	42 ✓	37 ✓	75
I3	51 ✓	50 ✓	75
I4	46 ✓	58 ✓	75
I5	36 ✓	24 ✓	75

Figure 18: Noise Modeling Results - Construction

6.4.2 Operational Noise Impacts

The following assumptions have been applied for the purpose of operational noise impacts which include (but not limited to):

- Trucks have been modeled considering two moving point sources at heights of 1.5 metres and 3 metres above ground level in order to account for the engine and exhaust outlet.
- All noise sources associated with the proposed kilns have been modelled as point sou rces and will be operational for 100% of the assessment period.
- The conveyor belts have been modelled as a line source and will be operational for 100% of the assessment period.
- The front-end has been modelled as a point source at 1.5 m above ground level and will be operational for 100% of the assessment period.
- The proposed crusher is located within a building made of 0.42BMT colorbond and 20 % of this is open.
- The site is operational 24/7.
- Noise generating activities were assessed over a 15 minute assessment period.
- A total of 60 additional truck movements per day have been considered. 60 trucks per day over the 15-hour day time period have been conservatively considered.
- 30 trucks over 9-hour night time periods on Wallgrove Road have been considered in order to assess the road traffic noise impact at receptor R1 and R2.

The predicted Noise Levels for the operational phase have been considered based on neutral weather conditions and adverse weather conditions.

Scenario/ Time Period	Noise Sources for Worst 15-minute Period
Operational Scenario 1 Day and Evening and Night	• 1 x Brick Factory • 1 x Existing Crusher • 1 x Truck movement over 15 minute period • 2 x Kiln • 1 x Proposed Crusher • 2 x Vibrating Screens • 13 x Conveyor Belt

Figure 19: Operational Scenario

The results under each weather scenario are provided below in **Figures 20** and **21**:

Receptor	Operational Scenario 1							
	Predicted Noise Levels				PSNL			
	Day $L_{eq,\ 15min}$	Evening $L_{eq,\ 15min}$	Night $L_{eq,\ 15min}$	Night L_{max}	Day $L_{eq,\ 15min}$	Evening $L_{eq,\ 15min}$	Night $L_{eq,\ 15min}$	Night L_{max}
Residential Receptors								
R1	48 ✓	48 ✓	48 ✓	48 ✓	59	55	51	55
R2	45 ✓	45 ✓	45 ✓	45 ✓	59	55	51	55
R3	41 ✓	41 ✓	41 ✓	41 ✓	51	51	45	55
R4	46 ✓	46 ✓	46 ×	46 ✓	51	51	39	55
R5	50 ✓	50 ✓	50 ×	50 ✓	51	50	41	55
R6	51 ✓	51 ✓	51 ×	51 ✓	51	51	45	55
R7	50 ✓	50 ✓	50 ×	50 ✓	51	51	45	55
R8	50 ✓	50 ✓	50 ×	50 ✓	51	51	45	55
R9	48 ✓	48 ✓	48 ×	48 ✓	51	51	45	55
Public Recreational Areas								
PR1	54 ×	-	-	-	50	-	-	-
Industrial Receptors								
I1	45 ✓	45 ✓	45 ✓	-	70	-	-	-
I2	50 ✓	50 ✓	50 ✓	-	70	-	-	-
I3	57 ✓	57 ✓	57 ✓	-	70	-	-	-
I4	61 ✓	61 ✓	61 ✓	-	70	-	-	-
I5	43 ✓	43 ✓	43 ✓	-	70	-	-	-

Figure 20: Predicted Noise Level - Neutral Weather Conditions

Receptor	Predicted Noise Levels				PSNL			
	Day $L_{eq,\ 15min}$	Evening $L_{eq,\ 15min}$	Night $L_{eq,\ 15min}$	Night L_{max}	Day $L_{eq,\ 15min}$	Evening $L_{eq,\ 15min}$	Night $L_{eq,\ 15min}$	Night L_{max}
Residential Receptors								
R1	53 ✓	53 ✓	53 ×	53 ✓	59	55	51	55
R2	50 ✓	50 ✓	50 ✓	50 ✓	59	55	51	55
R3	44 ✓	44 ✓	44 ✓	44 ✓	51	51	45	55
R4	50 ✓	50 ✓	50 ×	50 ✓	51	51	39	55
R5	53 ×	53 ×	53 ×	53 ✓	51	50	41	55
R6	54 ×	54 ×	54 ×	54 ✓	51	51	45	55
R7	54 ×	54 ×	54 ×	54 ✓	51	51	45	55
R8	53 ×	53 ×	53 ×	53 ✓	51	51	45	55
R9	52 ×	52 ×	52 ×	52 ✓	51	51	45	55
Public Recreational Areas								
PR1	-	-	-	-	-	-	-	-
Industrial Receptors								
I1	50 ✓	50 ✓	50 ✓	-	70	-	-	-
I2	55 ✓	55 ✓	55 ✓	-	70	-	-	-
I3	61 ✓	61 ✓	61 ✓	-	70	-	-	-
I4	64 ✓	64 ✓	64 ✓	-	70	-	-	-
I5	48 ✓	48 ✓	48 ✓	-	70	-	-	-

Figure 21: Predicted Noise Levels - Adverse Weather Conditions

The following comments are made in respect of the above results:

- Compliance is achieved at the industrial receptors under both neutral and adverse weather conditions;
- Under neural conditions, the noise levels associated with the site's operations were predicted to comply with the Project Specific Noise Limits (PSNL) during day and evening times;
- During night time, the noise levels exceed the PSNL at receptors R4, R5, R6, R7, R8 and R9 By up to 9dB
- Noise levels were predicted to comply with the noise criteria at R2 and R3 under neutral and adverse conditions. A marginal exceedance would occur at R1 under noise enhancing conditions.
- The noise levels associated with the existing and proposed operations have been predicted to exceed the PSNL at location R5 to R9 during day, evening and night time under adverse weather conditions. AT R4, the limit would be breached during night time only.
- At the public recreation area identified, the noise levels were predicted to exceed the PNSL, however no sensitive use of the area as observed at this location.

6.4.3 Road Traffic Noise

It is anticipated that an average of 60 vehicle movements per day will occur which will generate negligible noise increases.

Receptor along Wallgrove Rd	Period	Existing Road Traffic Noise L_{eq}	Predicted Additional Road Traffic Noise	Cumulative Road Traffic Noise $L_{eq,15\ or\ 9\ hour}$	PSNL $L_{eq,15\ or\ 9\ hour}$
R1	Day	67	48	67 ✓	69
	Night	62	47	62 ✓	64
R2	Day	67	49	67 ✓	69
	Night	62	47	62 ✓	64

Figure 22: Predicted Road Noise Impacts

6.4.4 Mitigation Measures

The following noise mitigation measures are proposed to mitigate the resultant impacts;

- A 10 metre high earth berm is required south of the existing crusher (79AHD)
- Installation of a silencer at the fan outlet
- Acoustic walls;
- Sealing the western side of the crusher building;
- The proposed crusher building and buildings around the burner are to be constructed of a double cladding system of 0.48BMT steel having a 200mm air gap filled with insulating material.

As a result of implementing attenuation measures, the predicted noise levels at the considered residential receivers is compliant (refer **Figure 23**).

Receptor	Predicted Noise Levels				PSNL			
	Day $L_{eq,\ 15min}$	Evening $L_{eq,\ 15min}$	Night $L_{eq,\ 15min}$	Night L_{max}	Day $L_{eq,\ 15min}$	Evening $L_{eq,\ 15min}$	Night $L_{eq,\ 15min}$	Night L_{max}
Residential Receptors								
R1	46 ✓	46 ✓	46 ✓	46 ✓	59	55	51	55
R2	42 ✓	42 ✓	42 ✓	42 ✓	59	55	51	55
R3	36 ✓	36 ✓	36 ✓	36 ✓	51	51	45	55
R4	39 ✓	39 ✓	39 ✓	39 ✓	51	51	39	55
R5	41 ✓	41 ✓	41 ✓	41 ✓	51	50	41	55
R6	42 ✓	42 ✓	42 ✓	42 ✓	51	51	45	55
R7	41 ✓	41 ✓	41 ✓	41 ✓	51	51	45	55
R8	42 ✓	42 ✓	42 ✓	42 ✓	51	51	45	55
R9	39 ✓	39 ✓	39 ✓	39 ✓	51	51	45	55
Public Recreational Areas								
PR1	50 ✓	-	-	-	50	-	-	-
Industrial Receptors								
I1	41 ✓	41 ✓	41 ✓	-	70	-	-	-
I2	45 ✓	45 ✓	45 ✓	-	70	-	-	-
I3	55 ✓	55 ✓	55 ✓	-	70	-	-	-
I4	58 ✓	58 ✓	58 ✓	-	70	-	-	-
I5	36 ✓	36 ✓	36 ✓	-	70	-	-	-

Figure 23: Predicted Noise Levels - Neutral Weather Conditions Subject to Mitigation Measures

In terms of the level of compliance during conditions of adverse weather, R4 and R5 are exceed the PSNL despite mitigation measures being employed. At R4 the night time amenity

acceptable noise level is currently exceeded. This is due to the presence of a meter station which generates noise levels of 49 dB(A) at the boundary of location R4.

The cumulative impact at receptor R4 would result in 50 dB(A) which corresponds with the recommended maximum noise level for urban areas stipulated by the NSW EPA Industrial Noise Policy.

At Location R5, the current existing noise level associated with the meter station is 43 dB(A). This results in a cumulative noise level of 47 dB(A). Tis would exceed the amenity acceptable noise level by 2 dB which is considered a marginal exceedance and unlikely to result in disruptive noise emission from the site.

Receptor	Predicted Noise Levels				PSNL			
	Day $L_{eq,\ 15min}$	Evening $L_{eq,\ 15min}$	Night $L_{eq,\ 15min}$	Night L_{max}	Day $L_{eq,\ 15min}$	Evening $L_{eq,\ 15min}$	Night $L_{eq,\ 15min}$	Night L_{max}
Residential Receptors								
R1	51 ✓	51 ✓	51 ✓	51 ✓	59	55	51	55
R2	46 ✓	46 ✓	46 ✓	46 ✓	59	55	51	55
R3	40 ✓	40 ✓	40 ✓	40 ✓	51	51	45	55
R4	43 ✓	43 ✓	43 ×	43 ✓	51	51	39	55
R5	45 ✓	45 ✓	45 ×	45 ✓	51	50	41	55
R6	45 ✓	45 ✓	45 ✓	45 ✓	51	51	45	55
R7	45 ✓	45 ✓	45 ✓	45 ✓	51	51	45	55
R8	45 ✓	45 ✓	45 ✓	45 ✓	51	51	45	55
R9	43 ✓	43 ✓	43 ✓	43 ✓	51	51	45	55
Public Recreational Areas								
PR1	-	-	-	-	-	-	-	-
Industrial Receptors								
I1	45 ✓	45 ✓	45 ✓	-	70	-	-	-
I2	50 ✓	50 ✓	50 ✓	-	70	-	-	-
I3	59 ✓	59 ✓	59 ✓	-	70	-	-	-
I4	61 ✓	61 ✓	61 ✓	-	70	-	-	-
I5	41 ✓	41 ✓	41 ✓	-	70	-	-	-

Figure 24: Predicted Noise Levels - Adverse Weather Conditions - Subject to Mitigation Measures

6.4.5 Summary

The noise emissions associated with the operations of the proposed kilns and crushing/screening plan is predicted to exceed the project specific noise levels when no noise control measures are implemented.

As documented in the Noise Impact Assessment, a series of noise mitigation measures have been provided to significantly reduce the noise levels associated with the proposed operations.

Under neutral weather conditions, the proposal achieves compliance with the noise limits, however under adverse conditions a marginal exceedance results at locations R4 and R4 and are not considered to be of significant impact. Post commission validation is recommended during construction and operational phases.

6.5 TRAFFIC AND TRANSPORT

A Traffic Impact Assessment (TIA) prepared by Ason Group (**Appendix 7**) has been undertaken to identify the traffic and parking implications of the proposal in the context of existing conditions, prior approvals and anticipated development. The findings of the Assessment are summarised in the following sections.

6.5.1 Existing Traffic Conditions

A traffic survey was undertaken in respect of the access road, which examined vehicles entering and existing the site from Wallgrove Road and Ferrers Road. From the daily traffic flow data, the morning and evening peak hourly movements were identified and are summarised as follows:

Location	Average Weekday AM Trips per hour	Average Weekday PM Trips per hour
Wallgrove Road Access	106	59
Ferrers Road Access	40	6
Total	**146**	**65**

Figure 25: Vehicle Movement Summary

The percentage of heavy vehicles accessing the site was surveyed to be 47% of total traffic entering / exiting at Wallgrove Road and 25% of total traffic entering / exiting at Ferrers Road.

Figure 26: Key Access Roads

6.5.2 Traffic and Transport Demands

An estimate of the trips generated from the operation of the new facility was calculated (based on information obtained from Lumetum). It is expected that the proposed facility will generate approximately 50 additional light vehicle movements per day from employee and 128 heavy vehicle movements per day from hauling based activities.

A summary of future traffic volumes provided in the TIA indicates that a total of 44 peak hour vehicle trips would be generated during the morning peak as result of the proposed development. Staff vehicles would account for reduced volumes at other times, including the evening peak hour.

The traffic and transport demands that will be expected during construction have been assessed for a construction period of 6 months, based on information also provided by the client. It is expected that approximately 20 construction staff will be on-site per day therefore generating 40 light vehicle movements per day. There will also be approximately 20 heavy vehicle movements per day for construction related activities, however, these movements will occur over a finite period until such time that all the required materials are on site. Based on the information provided, the construction activities are expected to generate a peak hour traffic flow during the morning and evening peaks of approximately 20-30 vehicles per hour. This is less than the vehicle movements associated with the operation of the proposed development and therefore these impacts will be minimal.

The TIA has examined the trip distribution in detail to inform the future intersection performance of the key intersections, being Wallgrove Road and Ferrers Road as follows:

- 60% to/from Wallgrove Road (north)
- 25% to/from Wallgrove Road (south)
- 15% to/from Ferrers Road (south)

The results indicate that for both intersections during both peak hours, the additional development traffic volumes result in only minor increases in delays and – whilst the Level of Service (LoS) at the Ferrers Road intersection shifts from a B to a C during the evening peak hour and Wallgrove Road intersection shifts from a B to a C during the evening peak hour – each intersection will continue to operate generally as currently occurs.

6.5.3 Parking Requirements

The proposed development type is not listed within Fairfield City Development Control Plan, therefore the 'first principles' method has been adopted on the basis there will be 25 additional staff during any one shift. On this basis, the proposed car park which includes 30 spaces is deemed sufficient for the proposal and will adequately accommodate the expected parking demands.

6.5.4 Site Access, Car Park Design and Internal Road Design

The access road is a private road that runs in an east-west direction between Wallgrove Road and Ferrers Road. The two-lane bidirectional road with 3.5 metre lane widths is suitable to service B-Double trucks**.** Modifications to this road are required to include a new access driveway that will service the proposed amenities and car parking area for the LWA Facility employees and heavy vehicles. This driveway achieves a width of 47 metres and is considered suitable for B-Double trucks entering and existing the site from both directions.

Sight distances in excess of more than 100 metres are achieved for vehicles entering/exiting the new internal site road. This has been confirmed with swept path analysis of B-Double

vehicles entering and exiting the site from both directions. Further details relating to the Access Road can be found in Section 5 of the TIA.

Light vehicle access to the car park is shared by heavy vehicles, which are associated with on-site operations. The aisle width is 6.2 metres and dead-end aisles are provided with the required 1.0 metre aisle extension in accordance with Figure 2.3 of AS2890.1. All parking spaces have been provided in accordance AS2890.1 with the User Class 1A, which requires a minimum space length of 5.4 metres, a minimum width of 2.4 metres and a minimum aisle width of 5.8 metres. Swept paths has been undertaken (and is provided at Appendix D), which confirms the key vehicle movements in and out of the car park.

The proposed internal road has been designed with a 10 metre clear width to service 26 metre B Double trucks with a turning bay to ensure that trucks can enter and exit the site in a forward direction. Bays have been provided on both sides of the internal road for vehicles to stand or to allow overtaking. The cul-de-sac provided has been designed with sufficient area to allow vehicles to perform a U-turn in one forward manoeuvre.

In summary, the internal configuration of the site including design of vehicular access, car parking and internal roads has been designed in accordance with the relevant Australian Standards of AS2890.

6.5.6 Intersection Upgrades

The existing Wallgrove Road and Access Road intersection has sufficient capacity to service the increase in traffic volumes entering and exiting the site resulting from this application. As such, the intersection can be maintained in its current form until further developments occur in the locality

With regard to the construction of Southern Link Road, it is understood that the existing access will be signalised to form a four-way intersection with Wallgrove Road and the Southern Link Road. Information provided by the RMS however indicates that this is not expected to occur until 2030 based on the current investigations and timeline being considered by the relevant Authorities.

The RMS in its correspondence has requested that land be dedicated to the RMS to facilitate any future intersection upgrades with the Southern Link Road and Wallgrove Road. In this regard, investigations have indicated that Lot 22 of DP1107533, which lies between Wallgrove Road and the site access, is owned by a separate entity and not by Brickworks. Therefore, the required land dedications for the planned signalised intersection are not within the ownership of Brickworks Limited. Upon further details of the planned construction, Lumetum as a subsidiary of Brickworks will provide adequate input to inform the design process and ensure the new intersection layout can service future traffic volumes on the road.

The RMS has also requested that consideration be given to the dedication of land to facilitate the extension of the Southern Link Road from Wallgrove Road to Ferrers Road. This would have considerable implications to the operation of the site and in particular the internal movements of operational vehicles associated with the existing uses. Accordingly, this proposal is not considered to be viable at this time. Lumetum invites the RMS and D&P&E to hold further discussions relating to this proposal at a later date once the alignment of the Southern Link Road has been confirmed.

6.6 SOIL AND WATER

AT&L have prepared detailed engineering plans and an accompanying report for the proposed development (**Appendix 5**), which addresses in detail the SEARs in respect of soil and water. A summary of the proposal against each of the requirements is provided below:

6.6.1 Local and Mainstream Flooding Impacts

The flood modeling indicates that there no flood level impacts on the upstream or downstream properties of Eastern Creek as result of the proposal. All proposed building (FFL 59.2) have in excess 500mm freeboard the adjacent 1 in 100 year ARI flood levels I Eastern Creek.

On balance, the proposal satisfies the requirements of Fairfield City Council's DCP: Chapter 11: Flood Risk Management.

It is noted that the conceptual drainage layout for the proposed development has been designed to mitigate existing localised flooding impacts, as overland flow will drain towards the basins.

6.6.2 Stormwater Management

It is proposed to provide necessary attenuation measures to mitigate flooding impacts on Eastern creek and downstream properties by constructing two stormwater detention basins (located adjacent Eastern Creek). These basins have been designed in accordance with the required standards, to ensure the size is appropriate, having regard to the catchment areas, being 21.6 hectares which relates to Plant No.2.

The total capacity of these storage basins is approximately 6,700m^3, which exceeds the required storage volume of 4,752m^3. These basins will also act as sediment basins to perform the required water quality treatment function. To ensure safety, it is recommended that a water depth marker is provided for each basin.

6.6.3 Water Quality

Site runoff is currently impounded in the existing dam, located adjacent Eastern Creek, which assists to meet the water quality objectives for the site, in respect of the EPA License which applies to the operation. Sediment stored at the bottom of the basin is regularly excavated to ensure the required storage volume is available.

As such, the proposed development is required to meet the water quality discharge standards as existing.

The basin arrangement at the low-point of the site has been designed to allow for a two-stage operation. Basin No.1 will act as a sediment forebay/settling zone to remove the majority of medium to coarse sediment from runoff prior to discharge into Basin No.2. This will allow for a more efficient maintenance process because Basin No.1 can be cleaned out on a more regular basis, while Basin No.2 can have a reduced cleanout frequency.
The two basins will be separated by a weir, with the level established at the detailed design stage. Dredging of collected sediment will occur when the basin is at 70% capacity, and will be disposed of in an suitable manner so as to not cause contamination or downstream pollution. Sufficient access will be provided for a small excavator, by including a berm around the perimeter of the basins.

Provision of a Gross Pollutant Trap is to be installed on the pipe network leading from the access road and car park to the basin and creek outlet points.

6.6.4 Erosion and Sediment Controls

Due to the extensive bulk earthworks proposed on the site, it is necessary to prepare an erosion and sediment control plan. The following measures are proposed:
Pre-Construction

- *Designation and marking of transport routes across undisturbed portions of the site to ensure minimal vegetation disturbance. Transport routes will be provided with stabilised construction entry/exits (e.g. Blue Book SD6-14) at the designated access points;*
- *Installation of the sediment basin described in Section 7.2 will occur before bulk earthworks across the site begin so that sediment-laden runoff from the works can be captured and treated;*
- *Diversions will be constructed to divert clean stormwater away from exposed soils and development areas. The exact location and time of construction for each diversion measure will depend on construction staging.*
- *Existing vegetated buffer zones/bunds are to be fenced off;*
- *Filter rolls or geotextile inlet filters (e.g. Blue Book SD6-11&6-12) to be installed around all existing stormwater inlet gullies; and*
- *All site personnel to complete an environmental induction covering the erosion and sediment controls.*

During Construction

- *Sediment fences (e.g. Blue Book SD6-8) to be erected at the base of all batters to prevent sediment-laden stormwater from flowing into the Eastern Creek riparian zone;*
- *Regular dust suppression on exposed areas by water truck or use of chemical dust suppressant;*
- *Progressive stabilisation of filled and disturbed areas;*
- *Sediment fences to be erected around soil stockpiles;* |
- *Regular inspections as soon as practicable after storm events to check and maintain controls;*
- *Sediment to be removed from fences when controls are 40% full and at the completion of construction. All material to be re-used or stored on-site in a controlled manner or taken off-site for re-use or disposal at a licensed waste disposal facility;*
- *Filter rolls or geotextile inlet filters (e.g. Blue Book SD6-11&6-12) to be installed around all new stormwater inlet gullies; and*
- *Monitoring of water quality to determine the effectiveness of the sediment and erosion control management practices.*

Based on the above measures, it is considered that the proposed measures will be sufficient to mitigate erosion and sediment, thus minimising downstream impacts.

6.6.5 Site Water Balance

On a site of this size a large amount of surface runoff is expected throughout the year. Whilst storage has been provided to capture and detain some of this water (for OSD and treatment requirements described above), only a fraction of it will be used to meet the development's water demand and the vast majority of the water will ultimately leave the site via the Eastern Creek watercourse.

The most significant demand for water is attributed to the aggregate facility which will require 5,000L per hour, 24 hours per day, with the primary source the existing public water

supply. In the interests of sound planning, it is proposed that storage tanks are installed adjacent the existing factory buildings to store water.

Water saving measures that could be used on the site, include:

- *Re-use of stormwater runoff from the OSD basin for dust suppression across the site. Water would be pumped into water carts for wetting of haul roads, stockpiles and other exposed areas. This is similar to the existing scenario where water is extracted from the existing dam for the same purpose.*

- *Harvesting of roofwater from the existing factory buildings for use in the manufacturing process and toilet-flushing at the kiln office. This water would be stored in abovegroundtanks to be installed alongside the existing buildings and pumped from there to the kiln plant. It is recommended that a minimum storage volume of 100,000L be provided in multiple 20-30kL tanks. Potentially this volume could be a lot higher to reduce reliance on the piped supply i.e. allowing the plant to operate for several days without mains top-up. The existing buildings would require new guttering to direct flows to the storage tanks.*

- *Harvesting of roofwater from the proposed office building for toilet-flushing and any other non-potable uses. Rainwater collected by the gutters on the building is to be stored in an above-ground tank (approx. size 20,000L) fitted with a pump for nonpotablereuse within building. Overflows would be directed to the piped stormwater system.*

In respect of groundwater, the proposal is considered to have minimal interaction between surface water and ground water on the site, therefore a full groundwater investigation is not required.

6.7 WASTE MANAGEMENT

A Waste Management Report has been prepared by LG Consult in response to the SEARs (**Appendix 13**). Review of the proposed development has calculated the following waste quantities, based on the anticipated volumes for the shale light weight aggregate system are summarised below:

Table 8: Summary of Estimated Waste Quantities

Material/Waste Type	***Anticipated Quantity***
Lime (from Gas Suspension Absorber at M8)	19kg/hr
Fines (from Gas Suspension Absorber and Bag Filter M12)	669kg/hr

Waste-type-specific reduction measures will be employed by the proposed development, with the following specific targets (by weight):

- 95% of shale at M1 recycled as feed raw material in brick manufacturing;
- 100% of material from Cyclone at M7 recycled back into shale mix;
- 100% of timber recycle use as direct fire fuels;
- Maximum recycle use of lime at M8 recycled for commercial use; and
- Maximum recycle use of fines at M12 (as achievable, depending on contaminant levels and treatment potential).

All liquid and non-liquid wastes generated during the remediation works shall be classified in accordance with the requirements of NSW DECCW (2009) Waste Classification Guidelines, Part 1: Classifying Waste.

All wastes removed from the site shall be transported in accordance with relevant road and transportation regulatory requirements. Where required (depending on the classification of the wastes), appropriately licensed transport contractors shall be used. The appointed transporters shall be responsible for ensuring they are appropriately licensed to:

- Carry the particular type of waste; and
- Transport the materials to an appropriately licensed facility.

Where the waste is classified as Industrial Waste or Hazardous Waste, the transporter is required to carry (subject to a number of exceptions) appropriately completed waste data forms with each load, and provide a copy to the waste facility to which the waste is taken.

6.8 FLORA AND FAUNA

Purpose of the BAR

A Biodiversity Assessment Report (BAR) has been prepared to inform a State Significant Development (SSD) Application for the development at Plant Number 2 of the existing Brickworks facility at 780 Wallgrove Road. It has assessed the direct and indirect impacts of the proposal and has been prepared in accordance with the NSW Framework for Biodiversity Assessment 2014 (OEH 2014a).

The BAR assesses the ecological impacts of the Project and so has responded to the SEARs as they relate to flora and fauna:

> *All impacts on native vegetation on the site should be avoided wherever possible and, if not avoided, suitably offset. Potential impacts should be assessed in accordance with relevant Office of Environment and Heritage guidelines, by a person accredited in accordance with s142B(1)(c) of the Threatened Species Conservation Act 1995.*

Land use history and context of the Austral Bricks land

The Austral Bricks land has a long history of industrial/quarrying usage dating back to the earliest consents in the 1960s. Consequently it already contains infrastructure such as quarry roads, various earthworks and buildings.

Previous use of the Austral Bricks land has cleared much of the original vegetation, with the result that most remaining patches in the central and southern portions of the Austral Bricks land are small, degraded and relatively isolated.

Summary of Scale and Extent of Impacts

The Project would be located in areas largely cleared for quarry roads and earthworks. The proposed Development Site is also linked to and in close proximity to the roads and buildings in the north eastern side of the site for functional purposes.

Several minor and degraded patches of woodland occur within the Development Site and would be cleared. Avoidance of such patches had not been considered feasible and retention of such vegetation would be of limited ecological value because of ongoing threats (particularly edge effects from erosion, weed invasion, etc) and because there is a low chance of restoring and regenerating habitat connectivity in the future due to the zoning of the Austral Bricks land.

The proposed Development Site boundary would not result in clearing or other losses of corridor vegetation on the Austral Bricks land. The most intact areas of TEC vegetation would therefore be retained. Vegetation along the corridor associated with Eastern Creek, strips of vegetation along Wallgrove Road, and strips of vegetation along the northern and south eastern boundaries of the Austral Bricks land have been avoided by the proposal.

The direct ecological impacts of the Project will be to remove small patches of relatively isolated and degraded vegetation. This impact on biodiversity has been assessed by using the BioBanking credit calculator, which considers landscape values, patch size, quality of vegetation and fauna habitat. Vegetation to be removed is as follows:

- Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin (Fully structured) 0.09ha;
- Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin (Canopy only) 0.24ha;
- Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin (Canopy only) 0.41ha;
- Cleared Land / Regrowth 7.94ha

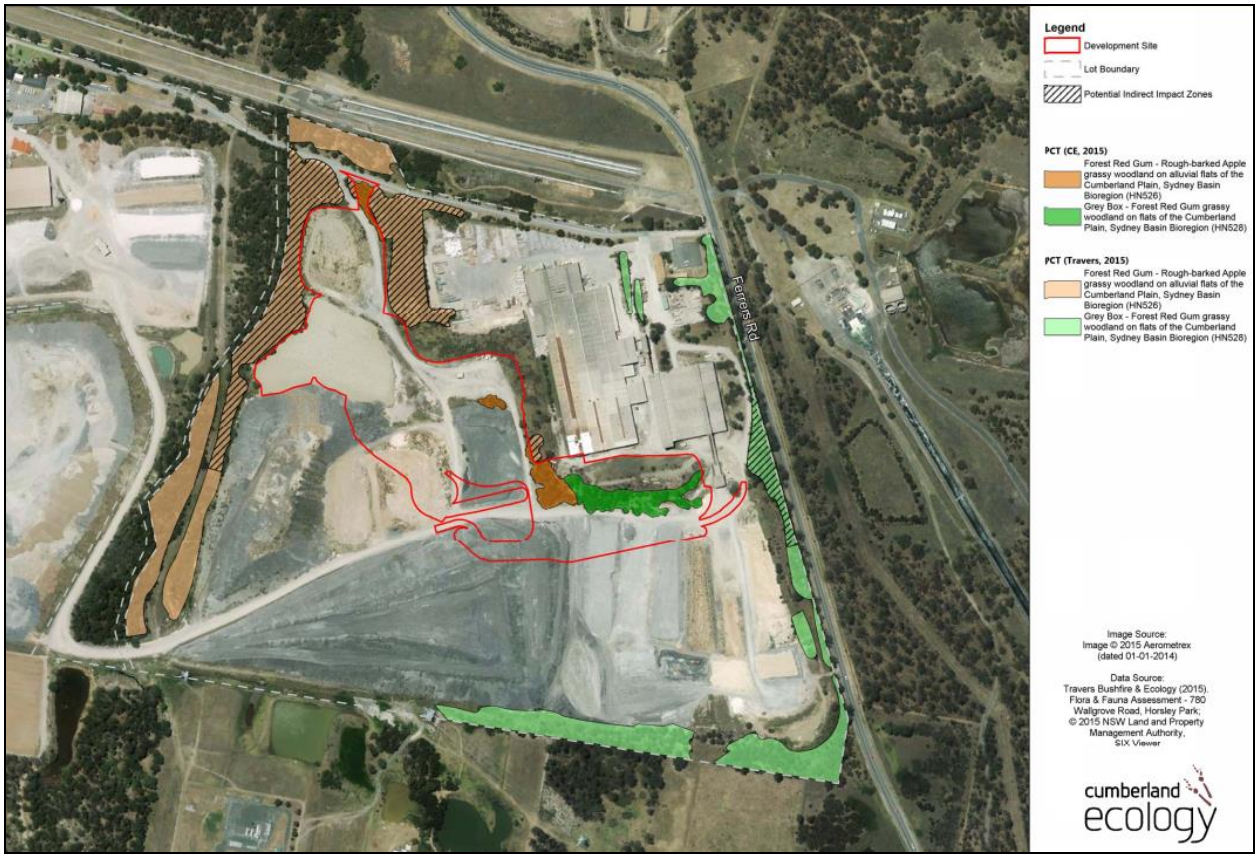

Figure 27: Vegetation to be removed within development site (development site shown in red)

The resulting ecosystem credits are:

- 10 ecosystem credits for HN526 (Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin); and
- 13 ecosystem credits for HN528 Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin). These ecosystem credits are to be acquired from a BioBank site within the same or an adjoining IBRA sub-region.

There is potential for indirect impacts to vegetation along the eastern side of Eastern Creek, a patch of vegetation in the north (adjacent to the proposed road exit) and an area of vegetation along the eastern boundary of the Austral Bricks land at the Ferrers Road frontage. Indirect impacts could include but not be limited to:

- Sedimentation and run off;
- Noise, dust and light spill;
- Impacts to adjoining vegetation and habitat;
- Introduction of feral pests, weeds and pathogens;
- Infrequent or cumulative impacts; and
- Operations phase impacts (trampling of vegetation, rubbish dumping, noise etc). The Project

The Project will include a suite of measures designed to minimise the impacts on retained Vegetation, including:

Pre-construction phase:

- Native vegetation to be retained that is in close proximity to the Development Site should be protected through a 1.8m high fence that is erected prior to demolition, construction and re-contouring of the landscape.
- Sediment and erosion control measures are to be installed immediately prior to the commencement of demolition, construction and earthworks.

Construction phase:

- Sediments are to be effectively retained within the site to minimise deterioration water quality during the construction works.
- Sediment deposition and water quality (Routine Environmental Nutrients and turbidity) is to be monitored before, during and after development to ensure that surface water quality is maintained to acceptable receiving water standards within Eastern Creek.
- Eastern Creek (watercourse 1):
  - Protect the watercourse from all proposed works within 20m of the top of bank;
  - Undertake target weed removal and regeneration within Eastern Creek immediately adjacent to the proposed works;
  - Stabilise overland flows from the existing basins into the creek (currently directed over a vegetated embankment);
  - Filter all runoff through wetland beds or sedge filter zones; and
  - Undertake restoration revegetation works to expand the width of the riparian corridor to compensate for any perceived loss in the 'riparian protection zone'.

- Unnamed watercourse (watercourse 2) – first order stream – 10m from top of bank:
  - Declassify as a watercourse to drainage line;
  - Provide a recreated watercourse with a minimum 10m fully vegetated riparian protection zone;
  - Remove fill, stabilise and revegetate with Swamp Oak Forest and or reconstruction of wetland and frog habitat; and
  - Stabilise the channels and discharge point into Eastern Creek.

Post construction phase:

- Loss of vegetation compensated by the planting of River-flat Eucalypt Forest vegetation along the remaining degraded western fringes of the site adjacent to Eastern Creek and the planting of Cumberland Plain Woodland vegetation along the remaining degraded eastern fringes of the site. Revegetation will enhance these

areas to provide north-south connectivity as well as replace foraging trees for birds and bats. A 0.5 ha rehabilitation area has been proposed in the northwesterncorner of the Austral Bricks land to compensate for the loss of habitat and existing vegetation caused by the proposal.

- Aim to filter any runoff through sedge planted filters to minimise deposition within Eastern creek of associated drainage lines.
- Target weed control should be undertaken across all retained vegetation, focussing upon invasive and noxious weed species.
- Undertaken survey for a monitor the utilisation for the site for any threatened frog species such as Green and Golden Bell Frog and if present provide alternative artificial habitat free from disturbance.

Summary of State Matters – Terrestrial Biodiversity

In respect of matters required to be considered under the Environmental Planning and Assessment Act 1979 and relating to the species / provisions of the Threatened Species Conservation Act 1995, the following were recorded within the Austral Bricks land:

- Acquiring and retiring of 23 BioBanking ecosystem credits in order to offset residual direct impacts, i.e. clearing of native vegetation and loss of fauna habitat. The credits can be of the following composition
  - 10 HN526 credits and 13 HN528 credits; or
  - 7 HN526 credits and 16 HN528 credits.

- Cumberland Plain Woodland, assigned to PCT HN528. Approximately 0.41 ha of degraded vegetation will be required to be cleared within the Development Site and does not form significant habitat for threatened species;
- River-flat Eucalypt Forest on Coastal Floodplains, assigned to PCT HN526. Approximately 0.33 ha of degraded vegetation will be required to be cleared within the Development Site and does not form significant habitat for threatened species;
- Cumberland Plain Land Snail (Meridolum corneovirens). The Cumberland Plain Land Snail was not recorded within the Development Site and so will not be directly impacted. No offsets are required for this species;
- Grey-headed Flying-fox (Pteropus poliocephalus). The Grey-headed Flying-fox is assessed and accounted for via the ecosystem credit process; and
- No threatened flora species.

Summary of State Matters – Aquatic Biodiversity

In respect of matters relative to the Fisheries Management Act 1994, no suitable habitat for threatened marine or aquatic species was observed within the subject site and there are no matters requiring further consideration under this Act.

The proposal is impacting on waterfront lands based on a 40 m setback from top of bank. A referral to the NSW Office of Water is required in accordance with the requirements of the Water Management Act 2000 and its regulation.

Summary of Commonwealth Matters

In respect of matters required to be considered under the Environment Protection and Biodiversity Conservation Act 1999, the following were recorded within the Austral Bricks land:

- Grey-headed Flying-fox (Pteropus poliocephalus). The Grey-headed Flying-fox is assessed and accounted for via the ecosystem credit process;

- No protected migratory bird species;
- No threatened flora species;
- No TECs; and
- GDE terrestrial vegetation, represented by PCT HN526: Forest Red Gum - RoughbarkedApple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin.

The Grey-headed Flying-fox and the loss of such vegetation are proposed to be offset by the acquisition and retirement of ecosystem credits via BioBanking.

The proposed Project is not considered to have a significant impact on matters of national environmental significance. As such a referral to DoE is not required.

6.9 GREENHOUSE GASES

Cundall have prepared a Greenhouse Gas Emmisions Report (**Appendix 11**) which responds specifically to the SEARs provided and estimates the scope of 1 and 2 greenhouse gas (GHG) emissions for the LWA Facility. The following objectives, targets and strategies have been provided which will be considered as part of the design of the LWA Facility.

Table 9:GHG Emission Reduction Measures

Objectives	Proposed Target	Proposed Strategy
– Appropriate sizing of plant – Reduce reliance on connection to natural gas through alternative fuel sources – Reduce exhaust emissions – Consider passive design of the office to minimise energy use such as orientation, ventilation, shading and floor plate design.	– Target a 15% reduction in Greenhouse gas emissions – Energy sub-metering for all major uses greater than 100kVa; linked to monitoring system – High efficiency external lighting and controls – Optimise insulation in the office construction for energy and thermal comfort	– Install appropriate metering; develop metering and tracking strategy to allow for self-assessment, problem solving and ongoing improvements – Use 10% Vitrifuel (waste byproduct from aluminium smelting) to increase efficiency of the kiln and reduce natural gas consumption – Use up to 40% biomass (sawdust) to reduce natural gas consumption in the kiln – Variable flow drives on all process fans – Multiple stages of filtration and cleaning of exhaust streams North, west and east facing offices - consider additional shading or solar controlled glazing to reduce heat transfer into the office space – Consider operable windows with reed switches to allow offices to operate with mixed-

		mode air conditioning – Consider office air conditioning temperature set-points for a wider comfort band – Provide energy efficient T5 lighting, with zoning and automatic controls where reasonable – Consider LED lighting strategies – Consider a solar hot water system with gas boost

6.10 HAZARDS

A Fire Safety Statement has been prepared by Rawfire (**Appendix 14**) that acknowledges that the fire engineering design will focus on:

- Occupant egress in the event of a fire emergency and the maintenance of tenable conditions for occupant evacuation and fire brigade intervention;
- Fire and smoke spread throughout the building and its impact on occupant egress;
- Site access and fire services design to facilitate fire brigade intervention.

Consultation with the fire brigade indicates there are no issues of concern that prevent the development from proceeding.

A supporting BCA Statement has also been prepared by McKenzie Group (Building Surveying) in relation to the amenities and office building which confirms compliance with the relevant BCA standards (**Appendix 15**).

6.11 VISUAL

The design of the LWA Facility has been located so as to not be highly visible when viewed from Ferrers Road or the surrounding properties. A montage has been prepared to this effect which demonstrates that the facility will not obstruct view lines or impede the scenic quality of the area. This montage is included as part of the architectural package at **Appendix 4**.

Visual analysis from Ferrers Road is provided in **Figure 27** below.

Figure 28: Visual Perspective (Ferrers Road)

Overall, a height of 37 metres (RL 61.0) is achieved to the top of the kiln stack which will not be visible from Ferres Road due to the substantial setbacks (in excess of 120 metres) and level variation.

Existing vegetation will be retained at the interface of the site and Ferres Road which comprises mature native trees and shrubs, in conjunction with the existing batter which largely screens the existing development within the site. As illustrated in **Figure 28** above, the, existing tress exceed 20 metres in height and are densely planted and have acted as visual screen for the site over an extended period.

Direct view to the proposed LWA plant will be achieved from surrounding properties due to existing vegetation, natural landforms and substantial separation. By centrally locating the plant within the site, it will generally not be visible within the public domain, thus the viual impacts are deemed acceptable.

6.12 CUMULATIVE IMPACTS

Cumulative impacts associated with the proposal are considered acceptable as summarised below:

Table 10: Cumulative Impacts

Impact	Description
Air	The proposed development seeks to adequately mitigate emissions to maintain sufficient air quality. The Project's contributions to the total concentrations are relatively minimal when compared with the corresponding background concentrations. Predicted HF concentrations exceed the assessment criteria at areas beyond the Plant 2 site boundary,

	but, not at identified sensitive receptors. It is considered that the resultant impacts are acceptable as they will be managed in perpetuity as detailed in the Air Quality Assessment.
Noise	A series of noise mitigation measures have been provided to significantly reduce the noise levels associated with the proposed operations. Under adverse conditions a marginal exceedance results at locations R3 and R4 and are not considered to be of significant impact. It is considered overall that the amenity of the locality will be upheld and surrounding land uses will not be adversely affected.
Traffic	The existing Wallgrove Road and Access Road intersection has sufficient capacity to service the increase in traffic volumes entering and exiting the site resulting from this application, thus the increase in traffic generation is not considered to unduly impact on the surrounding road network. Noise emissions throughout the day and night comply with the specified noise limits which confirm the amenity of the locality will be upheld.
Visual	As demonstrated in **Figure 28**, the proposed kiln and stacks will not be visible within the public domain as the proposed plant will be centrally located within the site. Existing vegetation will screen the Ferrers Road frontage, in combination with the existing berm which acts as a visual screen.

Based on the impacts described above an proposed mitigation measures, it is considered that the cumulative impacts are acceptable in respect of the locality and surrounding environment.

PART G DRAFT MANAGEMENT AND MITIGATION MEASURES

by Lumetum Pty Ltd
in relation to Proposed Light Weight Aggregate Facility
at 780 Wallgrove Road Horsley Park (Lot 7 in Deposited Plan 1059698)

Lumetum will undertake the construction and operation of the proposed LWA Facility in accordance with the following:

The following defines some of the terms and abbreviations used in this statement:

Approval	The Minister's approval to the Project
BCA	Building Code of Australia
Council	Fairfield City Council
Department	Department of Planning and Environment
Secretary-General	Secretary-General of the Department (or delegate)
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
Lumetum	Lumetum Pty Ltd
Project	The development as described in the EIS
Site	Land to which the project application applies
WorkCover	NSW WorkCover

ADMINISTRATIVE COMMITMENTS

Commitment to Minimise Harm to the Environment

1. Lumetum will implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction or operation of the project.

Occupation Certificate

2. Lumetum will ensure an Occupation Certificate is obtained prior to the occupation of the facilities.

Terms of Approval

3. Lumetum will carry out the project generally in accordance with the:

    a) Environmental Impact Statement;
    b) Drawings prepared by SBA Architects
    c) Management and Mitigation Measures; and
    d) Any Conditions of Approval.

4. If there is any inconsistency between the above, the Conditions of Approval shall prevail to the extent of the inconsistency.

5. Lumetum will ensure compliance with any reasonable requirement/s of the Secretary-General of the Department of Planning and Environment arising from the Department's assessment of:

    a) Any reports, plans, programs, strategies or correspondence that are submitted in accordance with this Approval; and

b) The implementation of any recommended actions or measures contained in reports, plans, programs, strategies or correspondence submitted by the Project Team as part of the application for Approval.

Structural Adequacy

6. Lumetum will ensure that all new buildings and structures on the site are constructed in accordance with the relevant requirements of the BCA

Construction Traffic Management Plan

7. Lumetum will ensure a Construction Traffic Management Plan is prepared and implemented in consultation with Council, and to the satisfaction of the Secretary-General. This plan will:

    a) be submitted to the Secretary-General for approval prior to the commencement of construction;

    b) describe the traffic volumes and movements to occur during construction;

    c) detail proposed measures to minimise the impact of construction traffic on the surrounding network, including driver behaviour and vehicle maintenance; and

    d) detail the procedures to be implemented in the event of a complaint from the public regarding construction traffic.

Operation of Plant and Equipment

8. Lumetum will ensure that all plant and equipment used on site is maintained and operated in proper and efficient manner, and in accordance with relevant Australian Standards and EPA License conditions.

SPECIFIC ENVIRONMENTAL COMMITMENTS

Noise

9. Construction on the site will only be undertaken between 7am and 6pm Monday to Friday, and 7am and 1pm on Saturdays. No construction will be allowed on site on Sundays or public holidays.

Air

Construction Traffic

10. During construction:

    a) all trucks entering or leaving the site with loads have their loads covered;

    b) trucks associated with the project do not track dirt onto the public road network; and

    c) the public roads used by these trucks are kept clean.

Dust Management

11. During the construction phase of the project, all reasonable and feasible measures to minimise the dust generated by the project.

Flue Emissions

12. Air pollution control measures will be implemented to reduce flue gas emissions generated from LWA manufacturing including – baghouse for controlling particulate emissions and metals, wet scrubber for reducing acid gas concentrations and RTO for effectively minimising VOC and CO emissions. These proposed control measures are to be designed and managed / maintained effectively to ensure that the estimated control efficiencies are achieved at all times and that the emission levels comply with the Group 6 emission standards.

Fugitive Emissions

13. Watering of unpaved / gravel surfaces –will be undertaken for proposed Stage 1 and Stage 2 LWA operations;
14. Speed restriction – Speed restrictions are to be implemented (40 km/hour), especially on unpaved, gravel surfaces to minimise wheel-generated dust for existing and proposed Stage 1 and Stage 2 LWA operations;
15. Water sprays – will be undertaken for proposed Stage 1 and Stage 2 operations.

Waste Management

16. Lumetum will ensure that all waste generated on site during operation is classified in accordance with the Office of Environmental and Heritage's *Waste Classification Guidelines: Part 1 Classifying Waste* and disposed of to a facility that may lawfully accept the waste.

Biodiversity Offset

17. Lumetum will prepare a Biodiversity Offset Strategy prior to approval which will identify biodiversity offset measures to satisfy the number of credits.

Vegetation Management

18. Lumetum will implement the following mitigation measures:

Pre-construction phase:

- Native vegetation to be retained that is in close proximity to the Development Site should be protected through a 1.8m high fence that is erected prior to demolition, construction and re-contouring of the landscape.
- Sediment and erosion control measures are to be installed immediately prior to the commencement of demolition, construction and earthworks.

Construction phase:

- Sediments are to be effectively retained within the site to minimise deterioration water quality during the construction works.
- Sediment deposition and water quality (Routine Environmental Nutrients and turbidity) is to be monitored before, during and after development to ensure that surface water quality is maintained to acceptable receiving water standards within Eastern Creek.
- Eastern Creek (watercourse 1):
  - Protect the watercourse from all proposed works within 20m of the top of bank;
  - Undertake target weed removal and regeneration within Eastern Creek immediately adjacent to the proposed works;
  - Stabilise overland flows from the existing basins into the creek (currently directed over a vegetated embankment);
  - Filter all runoff through wetland beds or sedge filter zones; and
  - Undertake restoration revegetation works to expand the width of the riparian corridor to compensate for any perceived loss in the 'riparian protection zone'.

- Unnamed watercourse (watercourse 2) – first order stream – 10m from top of bank:
  - Declassify as a watercourse to drainage line;
  - Provide a recreated watercourse with a minimum 10m fully vegetated riparian protection zone;
  - Remove fill, stabilise and revegetate with Swamp Oak Forest and or reconstruction of wetland and frog habitat; and
  - Stabilise the channels and discharge point into Eastern Creek.

Post construction phase:

- Loss of vegetation compensated by the planting of River-flat Eucalypt Forest vegetation along the remaining degraded western fringes of the site adjacent to Eastern Creek and the planting of Cumberland Plain Woodland vegetation along the remaining degraded eastern fringes of the site. Revegetation will enhance these areas to provide north-south connectivity as well as replace foraging trees for birds and bats. A 0.5 ha rehabilitation area has been proposed in the north westerncorner of the Austral Bricks land to compensate for the loss of habitat and existing vegetation caused by the proposal.
- Aim to filter any runoff through sedge planted filters to minimise deposition within Eastern creek of associated drainage lines.
- Target weed control should be undertaken across all retained vegetation, focussing upon invasive and noxious weed species.
- Undertaken survey for a monitor the utilisation for the site for any threatened frog species such as Green and Golden Bell Frog and if present provide alternative artificial habitat free from disturbance.

PART H PROJECT JUSTIFICATION

The proposal is considered to be justified in the context of environmental, social and economic terms and is compatible with the locality in which it is proposed.

This application is lodged on the basis of:

Supporting State, Regional and Local planning objectives

The proposal is consistent with the objectives, provisions and strategies outlined within the *A Plan for Growing Sydney*, the *Central and South West Subregional Strategy*, and *State Environmental Planning Policy (Western Sydney Parklands) 2009*

Appropriate use of an approved site

The proposal will retain and contribute to the growth of important industry for the region. The strengthening of this sector is important strategy for the economic welfare of Western Sydney as a region as well as NSW. The development complements significant government investment in infrastructure and results in employment generating development.

Environmental impacts have been minimised

Specialist consultants have assessed the risks and determined that the development can be undertaken with minimal environmental impacts. No significant risk to the locality is to result from the proposal.

Compatibility with surrounding development

The proposed use is compatible with existing uses on the subject site and adjacent land. The investigations undertaken as part of this application conclude that no significant cumulative impact is to occur from the proposed use for the purpose of a LWA Facility.

Ecologically Sustainable Development

The principles of ecologically sustainable development as outlined in Clause 7(4) of the EPA Regulations are addressed as follows:

- *Precautionary Principle*
  No unmanageable threat or irreversible damage to the environment has been identified in relation to the proposal.

- *Inter-generational Equity*
  No unreasonable use of resources, affectation of environmental processes or prevention of the use of land for future generations will occur from the proposal.

- *Conservation of Biological Diversity and Ecological Integrity*
  The site has been previously disturbed. No processes, habitats or species outside the site are likely to be significantly affected by the development.

- *Improved Valuation, Pricing and Incentive Mechanisms*
  The proposal seeks to implement measures to avoid, contain and address any associated waste or pollution through appropriate design and management.

  The proposal will effectively enable improved cost efficiencies in the provision of Light Weight Aggregate that is vital for building and construction industry.

PART I CONCLUSION

The proposed Light Weight Aggregate Facility is defined as State Significant Development pursuant to Schedule 2 of *State Environmental Planning Policy (State and Regional Development) 2011*.

The provisions *State Environmental Planning Policy (Western Sydney Parklands) 2009* permit the proposed development as 'innominate development' pursuant to clause 11(2).

No unacceptable impacts are anticipated to result from the construction or operational phases of the proposal given its context in a developing area that has been identified for the intended activities. The proposal is also suitably separated from residential areas and is serviced by adequate infrastructure, including a capable road network.

The proposal is consistent with the document entitled *NSW 2021: A Plan to Make NSW Number One* as well as *A Plan for Growing Sydney* by allowing an existing business to develop and expand (within NSW) and creating employment opportunities in a site earmarked for such development. The proposed development is also consistent with the legislative and policy framework for the local and regional area.

Based on the findings of this EIS, the proposal supports the continued development of jobs in Western Sydney and contributes to the retention and growth of industry. The proposal is suitable for the local context and is appropriate based on social, cultural, economic and environmental considerations.

As such, it is recommended that the proposal be supported by the Department of Planning and Environment.

APPENDIX 1

SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

APPENDIX 2

EXISTING DEVELOPMENT CONSENTS

APPENDIX 3

QUANTITY SURVEYORS REPORT

APPENDIX 4

ARCHITECTURAL PLANS

APPENDIX 5

CIVIL PLANS AND DESIGN REPORT

APPENDIX 5A

CONSULTATION RESPONSE DPI WATER

APPENDIX 6

LANDSCAPE PLAN

APPENDIX 7

TRAFFIC IMPACT ASSESSMENT

APPENDIX 8

BIODIVERSITY ASSESSMENT REPORT

APPENDIX 9

AIR QUALITY REPORT

APPENDIX 10

NOISE IMPACT ASSESSMENT

APPENDIX 11

GREENHOUSE GAS REPORT

APPENDIX 12

PHASE 1 ENVIRONMENTAL SITE ASSESSMENT

APPENDIX 13

WASTE MANAGEMENT REPORT

APPENDIX 14

FIRE SAFETY STATEMENT

APPENDIX 15

BUILDING CODE OF AUSTRALIA STATEMENT