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Mt Piper Energy Recovery Project

Project Overview

Re.Group Pty Ltd and EnergyAustralia Pty Ltd

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Contents

1 Introduction

1.1 The proposal

Re.Group is working with EnergyAustralia to develop a refuse derived fuel (RDF) waste to energy plant to improve environmental outcomes and efficiency of coal usage at Mt Piper Power Station (the proposal). RDF is produced by processing selected municipal and other solid waste that would otherwise be disposed of to landfill.

The proposal would involve constructing a dedicated RDF boiler and associated RDF storage facility within the Mt Piper Power Station and integrating this with the station's existing electricity generating infrastructure. A portion of the ash generated by the plant would likely be disposed of within an ash repository, located within the landholdings of the Mt Piper Power Station, while the more contaminated ash and other waste material would be transported to a suitably licensed waste disposal or recycling facility. The majority of RDF consumed at the plant would be sourced from the greater Sydney metropolitan area.

The proposal would demonstrate the first use of hybrid renewable/fossil fuel waste to energy technology at an Australian power station. Waste to energy technology is widely used internationally, with hundreds of RDF electricity generating plants operating internationally. Such energy recovery plants provide broad environmental and community benefits, which include reduced landfill waste and reduced reliance on fossil fuels.

1.2 The site

The proposal would be located within the existing Mt Piper Power Station landholdings (refer to Figure 1), which are owned by EnergyAustralia. Built in 1992 and 1993, Mt Piper Power Station comprises two 700 megawatt (MW) coal-fired steam turbine generators which have the capacity together to generate about 12,000 gigawatt hours of electricity per year (GWh/year).

Mt Piper Power Station is surrounded by state forests, existing coal mining operations and rural properties. Ben Bullen State Forest is located north east and south east. The recently decommissioned Wallerawang Power Station is located approximately 6 km to the south-east. The nearest townships are Portland, which is approximately 4 km to the west and Wallerawang, located approximately 6 km to the south-east.

Mt Piper Power Station is located within the City of Lithgow Local Government Area and the suburb of Blackman's Flat. The area is subject to the provisions of the Lithgow City Local Environmental Plan (LEP) 2014 and is zoned SP2 Infrastructure.

The proposal would be constructed immediately adjacent to the power station's Unit 2 boiler close to the inclined coal conveyer (refer to Photographs 1 to 3), or within the Mt Piper Power Station Extension Area (refer to Figure 1 and 2). The Mt Piper Power Station Extension Area would be used during construction for laydown areas, plant, parking, roads, stockpiles, contractor's camp and associated facilities. The plant area and construction area is hereafter referred to as the proposed plant site. The site consists of cleared and levelled land that was originally disturbed during construction of the Mt Piper Power Station Units 1 and 2 and earmarked for Units 3 and 4. More recently, the site was subject to a concept plan approval for the Mt Piper Power Station Extension Project (MP 09_0119), which is no longer being progressed (refer to Section 3.1 for more details). An area for the proposed ash repository has not yet been determined, but would be located within previously disturbed areas, possibly within the undeveloped footprint area of the approved Lamberts North ash repository (refer to Figure 1 for an indicative area).

The total area of the proposed plant site is about 9 hectares (ha), which represents a small portion of the overall Mt Piper Power Station landholdings. The waste to energy plant would occupy an area of only about 80 metres by 40 metres, while the ash repository area would occupy approximately 4ha.

Photograph 1: Looking west from the Mt Piper Power Station over the Mt Piper Extension Project Area that may accommodate the proposal or be used during construction

Photograph 2: Inclined coal conveyor belt at Mt Piper Power Station. Proposed waste to energy plant would be located in this general vicinity in close proximity to Unit 2

Photograph 3: View over the northern portion of Mt Piper Power Station Extension Project Area with the inclined coal conveyor belt in the foreground.

1.3 The applicants

This proposal has been developed by recycling company Re.Group and energy company EnergyAustralia (the applicants). The applicants would construct and operate the proposal under a formal joint venture or similar arrangement.

It is proposed that Re.Group would provide the long term RDF and that EnergyAustralia would take a long term energy offtake, as well as operating the waste to energy plant which would be integrated into the Mt Piper Power Station.

1.4 Purpose of this report

The Mt Piper Energy Recovery Project is likely to be considered State Significant Development (SSD) (refer to Section 3.2) and therefore requires approval from the NSW Minister for Planning, or the Minister's delegate under Division 4.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The purpose of this Proposal Overview report is to request, and inform the content of, Secretary's Environmental Assessment Requirements (SEARs) for the proposal. The SEARs will provide requirements for the Environmental Impact Statement (EIS) that will be prepared to accompany the Development Application for the proposal. This document also serves to inform agencies and the public of the proposal.

This Proposal Overview report previously referred to as a Preliminary Environmental Assessment report has been prepared by Aurecon on behalf of Re.Group and EnergyAustralia.

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Extent

Legend

- Proposed plant site
- Proposed plant area
- Proposed ash area (indicative)
- Proposed ash site
- Main road
- Local road
- Track
- Perennial creek
- Non-perennial creek
- 10m contour
- Cadastre

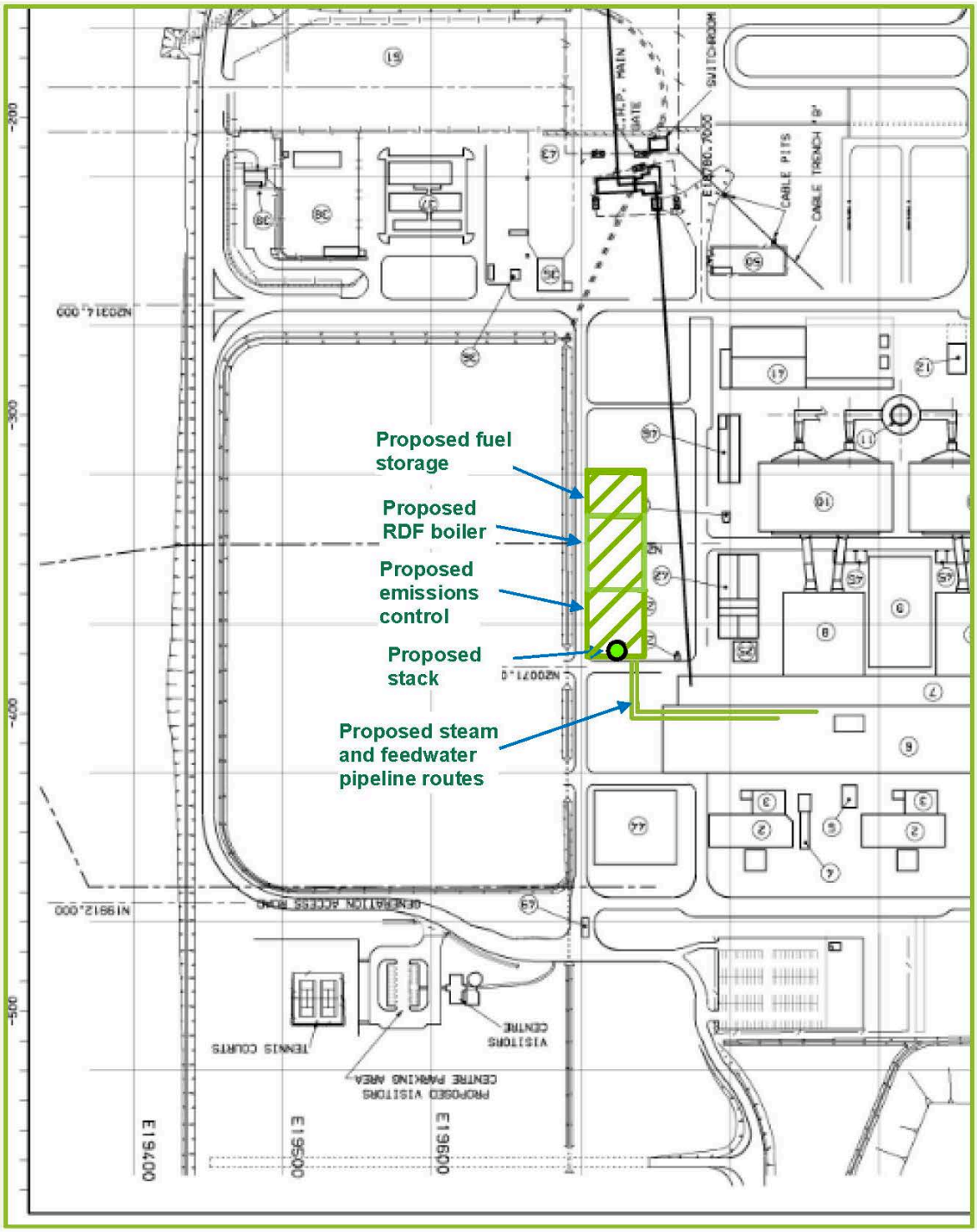
Source: Aurecon, DPI

1:15,000
0 200 400m

Projection: GDA 1994 MGA Zone 56

Mt Piper Energy Recovery Project

FIGURE 1: Proposal overview



Legend

Proposed waste to energy plant

Source: Aurecon

1:4,000 (approx.)
0 30 60m

Mt Piper Energy Recovery Project

FIGURE 2: Proposed Plant Area

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2 The proposal

2.1 Summary

The proposal will involve the construction of a standalone waste to energy boiler facility, immediately adjacent to the existing Unit 2 coal boiler at Mt Piper Power Station. The boiler would be dedicated to combusting RDF and would consume approximately 100,000 tonnes of RDF per annum. This is estimated to produce a total of 110,000 megawatt hours per year (MWh/a), of which 37,000 MWh/a can be classed as renewable energy. The proposal will also result in a net reduction of greenhouse gases of some 60,000 tonnes per annum for the same amount of electrical output.

The key advantages of the proposal include:

- utilisation of “off-the-shelf” technology that has successfully been used internationally
- more efficient use of fossil fuel (coal) use at Mt Piper Power Station, allowing the potential to generate more electricity at Mt Piper Power Station while using the same amount of coal, or to use less coal without reducing electricity generation
- development would occur within a previously disturbed site immediately adjacent to an existing power station, which would result in considerably less social and environmental impacts compared to a greenfield site
- the use of existing services and infrastructure at Mt Piper Power Station will minimise capital expenditure which would be required for associated infrastructure at another site.

2.2 Refuse derived fuel

RDF is derived from municipal and other waste and consists of a mixture of non-recyclable materials such as dirty paper, plastics, fabrics and organic matter. About one-third of RDF is comprised of biomass material, making it a renewable energy source that is eligible for Large Scale Generation Certificates under the Commonwealth *Renewable Energy (Electricity) Act 2000*.

Currently RDF being produced in Australia is exported to south-east Asia, although approval has recently been granted for use of RDF in a cement kiln at Berrima in the Southern Highlands some 150 km south west of Sydney. The proposal is expected to use RDF sourced from RDF processing facilities in Greater Sydney, although other sources may be used if these are developed. All RDF used as part of the proposal will be required to meet pre-defined specifications and quality control requirements. It is envisaged that testing of RDF for compliance with these specifications would occur at the source before it is transported to Mt Piper Power Station.

RDF would be transported to the site via road (possibly taut-liners, walking floor trailers or shipping container trucks) or rail. Road transport would generally occur along the M4 Motorway, Great Western Highway and Castlereagh Highway to Mt Piper Power Station. Rail transport would occur via the Main Western Railway to a siding or rail loop and then possibly by road to the power station.

A minimum of a week’s supply of RDF would be stored at the site in a specially designed warehouse or bunker during operation of the proposal.

It is estimated that more than 250,000 tonnes of RDF could be available each year in the Sydney metropolitan area alone if other processing facilities are developed.

2.3 Waste to energy process

The most common waste to energy combustion technologies operate by combusting RDF on a grate fired furnace (refer to Figure 3 for a typical plant layout). Another type of combustion system uses fluidisation. In such a system, RDF is processed to have a relatively small particle size and is burned in a sand bed which is turned into a fluid-like state through the injection of air. This type of system is less widely used, although a number of such plants have been established in Japan and the United Kingdom.

A dedicated RDF boiler would be constructed for the proposal that may use either of these technologies. This boiler would connect to Mt Piper Power Station's existing steam systems and consume approximately 100,000 tonnes per annum of RDF.

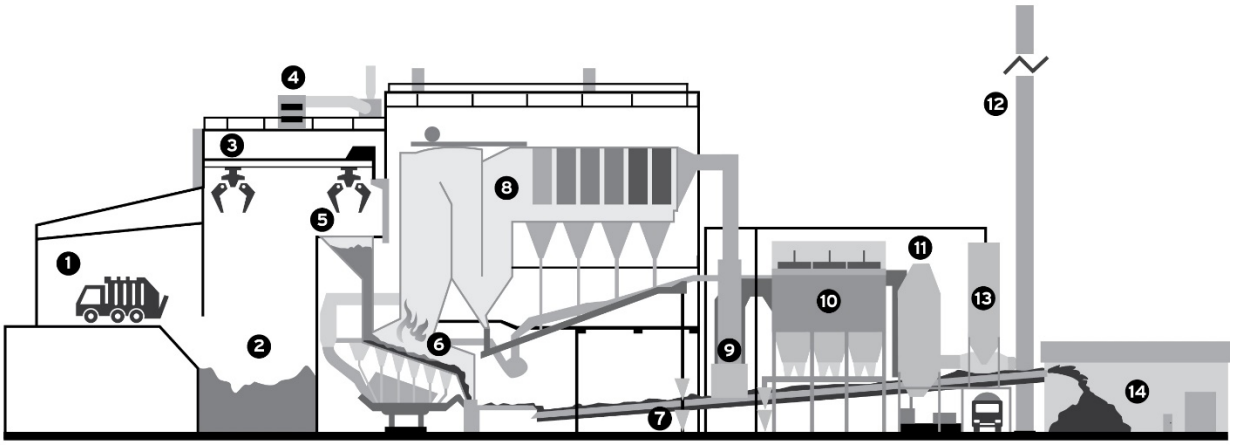
The use of a dedicated RDF boiler has significant advantages over the direct use of RDF in the existing Mt Piper Power Station Unit 2 boiler, which include:

- the RDF boiler is designed specifically for RDF, which has different specifications and characteristics to coal. Use of RDF in the existing boiler would require significant modifications and result in reduced thermal efficiency.
- the RDF combustion technology is established and well proven. Firing of solid fuels for steam generation has been in use for more than 100 years.
- separate ash streams will allow the coal ash from Unit 2 to continue to be utilised by the cement industry. Co-combustion of RDF and coal may result in overall ash properties that are undesirable for cement industry utilisation.
- RDF related issues such as fuel handling, boiler fouling and boiler corrosion would not impact on the reliability of the existing plant. It is expected that the design will allow the RDF boiler to be brought in and out of service with minimal disruption to normal Mt Piper Power Station operations.

A dedicated emissions control system would be established to capture and treat air emissions from the RDF boiler to minimise the release of particulates and other pollutants to the atmosphere.

Ash generated by the proposal would likely be disposed of to a dedicated ash repository, which is likely to be located within the Mt Piper Power Station landholdings. The applicants are currently investigating suitable sites for this repository in conjunction with ash characterisation studies, as well as reuse and recycling options for the ash.

Due to the development of other waste treatment facilities and technologies, the waste streams targeted may change over the life of the proposal. As such, the proposed RDF boiler would be designed to allow for a range of fuel characteristics.



Fuel receiving and storage		Combustion and boiler		Flue gas treatment		Ash and residue handling	
1	Tipping hall	5	Feed hopper	9	Dry reactor	13	Residue silo
2	RDF bunker	6	Grate	10	Fabric filters	14	Bottom ash storage
3	RDF crane	7	Bottom ash conveyer	11	Catalyst		
4	RDF bunker ventilation (for outages)	8	Boiler	12	Stack		

Figure 3: Typical arrangement for a waste to energy plant

2.4 Waste to energy technology use

Waste to energy technology has been used for decades internationally and is estimated to account for about 2.4 percent of electricity output in countries that are part of the Organisation for Economic Co-operation and Development (CEFC 2015).

Such technology is not as widely used in Australia and currently accounts for less than one percent of electricity output. The slow uptake of waste to energy technology in Australia has been due to a combination of:

- restrictive waste to energy policies (until recently)
- low landfill levies in most states (excluding New South Wales)
- competition from other renewable energy technologies (unlike the international market, where specific technologies are subsidised)
- high capital costs associated with developing the first RDF processing and generation units.

Waste to energy technology is widely used internationally and has particular prevalence in European countries.

2.5 Benefits of the proposal

The proposal would result in a number of environmental, social and economic benefits, including:

- creation of a long-term option for the continued operation of Mt Piper Power Station, which will provide certainty for existing jobs and contributions from the station to the local community
- providing a New South Wales solution to waste generated in the state

- reduction of waste being disposed to landfill
- support of State and Federal renewable energy policies and targets
- investment of about $60 million to local and state economies
- creation of approximately 120 jobs during construction and 15 jobs during the operations phase
- generation of about 110,000 MWh/a of which 37,000 MWh/a would be from a renewable energy source
- net reduction of NSW greenhouse gas emissions by up to 60,000 tonnes per annum
- implementation of an internationally proven technology for the first time in Australia
- showcase project demonstrating how an existing coal fired power station can reduce its emission profile.

2.6 Commitment to stakeholder and public engagement

Re.Group and EnergyAustralia are aware of potential concerns from stakeholders and have developed a comprehensive engagement strategy to ensure that government and regulators, local community, interest groups, staff and contractors are provided with clear relevant information about the project and provided with a range of options to engage with the project team.

Stakeholder engagement has commenced and will continue as part of the project planning process, and if the waste to energy proposal is approved, will continue during construction and operation. EnergyAustralia has an existing community relations program to inform the community of operational activities and to obtain community feedback. This is achieved via the following:

- independent community surveys
- consultation with key community stakeholders
- quarterly Community Reference Group meetings
- interaction with the media to provide information about operational and community activities
- publication of reports such as Annual Returns and environmental reports
- the Energy Expo at Mt Piper Power Station
- daily tours of the power station.

The Community Reference Group for the Mt Piper Power Station was briefed on the proposal in February. Local and state government representatives and departments have also been briefed, and discussions with these groups will continue during the coming months.

3 Planning context

3.1 Existing approvals

Mt Piper Power Station operates under DA 80/10060 which was issued in May 1982 and Environment Protection Licence 13007.

The Mt Piper Power Station Extension Project (MP 09_0119) Concept Plan was approved in 2009 under Part 3A of the EP&A Act. The approved extension included the construction and operation of two additional units with a capacity of up to 2,000 MW, which could be fuelled by either coal or gas. The extension project was intended to be operated in conjunction with the existing Mt Piper Power Station or as a standalone operation. Due to changes in the demand for electricity, the Extension Project has not progressed.

The proposed waste to energy facility would be located within a portion of the study area of the extension project. However, as the proposal differs fundamentally from the extension project, a separate planning approval will be sought.

The placement of ash at Mt Piper Power Station currently takes place in terms of various approvals including the Mt Piper Power Station Ash Placement Project (MP 09-0186). It is anticipated that furnace ash from the waste to energy plant may be placed within the Lamberts North area. The most appropriate approvals pathway will be ascertained once the detailed characteristics of the ash and repository have been confirmed.

3.2 Approval pathway

State Environmental Planning Policy (State and Regional Development) 2011 defines certain developments as State Significant Development (SSD), based on certain criteria. SSD criteria provided in Schedule 1 of the State and Regional Development SEPP includes:

- *Development for the purpose of electricity generating works that has a capital investment value of more than $30 million.*
- *Development for the purpose of waste incineration that handles more than 1,000 tonnes per year of waste.*

As the proposal would be development for the purpose of electricity generating works, with a capital investment value of greater than $30 million and would result in the consumption of more than 1,000 tonnes per year of waste, it would meet the definition of SSD.

The Lithgow Local Environmental Plan 2014 permits electricity generating works, with consent, in the SP2 Infrastructure zone. Approval for SSD projects is required under Division 4.1 of Part 4 of the EP&A Act. Section 78A(8A) of the EP&A Act requires a Development Application (DA) for SSD to be accompanied by an Environmental Impact Statement (EIS). Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (the EP&A Regulation) requires an EIS to be prepared in accordance with the SEARs issued for the proposal (refer to Section 1.4).

3.3 Other approvals required

Approvals and licences required for the proposal will be determined in the EIS. In addition to approval under Division 4.1 of the EP&A Act, other approvals likely to be required would include:

- an environmental protection licence (EPL) under the NSW *Protection of the Environment Operations Act 1997* (POEO Act)

Under section 89k of the EP&A Act, these approvals cannot be refused for a project that has been approved under Division 4.1 of the EP&A Act.

3.4 Strategic context

The proposal involves extracting energy from waste which would otherwise be disposed of into landfill. Australia does not currently harness any significant energy from the 7.6 million tonnes of municipal solid waste that is disposed to landfill annually.

At least 800,000 tonnes per annum of municipal waste produced in the Sydney Metropolitan Area is disposed of to landfill. Currently, this material is not used for further processing, reuse or recycling and represents a large source of potential renewable energy.

It is estimated that up 250,000 tonnes per annum of RDF could be produced in the Sydney Metropolitan Area alone from current waste going to landfill. Exploiting this wasted resource would bring a large supply of baseload renewable energy to the electricity market and lower the overall cost of meeting the State's renewable energy target as discussed in Section 3.4.2.

The proposal will recover the energy contained in this waste and displace some of the fossil fuels used to generate electricity in NSW. The proposal is supported by national, state and local government policies that aim to reduce waste and encourage the development of renewable energy technologies. These policies are discussed in more detail in the following sections.

3.4.1 Australian Government – Renewable Energy Target

The Australian Government's Renewable Energy Target (RET) was agreed to by the Australian Parliament on 23 June 2015 and is enacted through several acts, including the Commonwealth *Renewable Energy (Electricity) Act 2000* (the RE Act). The RET seeks to double the amount of large-scale renewable energy from sources such as power stations, so that by 2020, 23.5 percent of Australia's electricity generation will come from renewable sources.

Renewable energy developments are supported by a number of other Australian Government initiatives including the Solar Towns and Solar Communities programs, Clean Energy Finance Corporation and Australian Renewable Energy Agency (ARENA). The Clean Energy Finance Corporation invests commercially in renewable energy, energy efficiency and low emissions technologies. ARENA provides funding for renewable energy projects and an application for such funding of the proposal has recently been made by the applicants.

Use of the biomass-based components of the RDF can make electricity generating plants such as Mt Piper Power Station eligible to create large-scale generation certificates (LGCs) under Section 17(1)(q) of the RE Act. LGCs act as a form of currency and can be exchanged by companies seeking to trade credits for greenhouse gas emissions. As a large scale renewable energy project, this proposal will assist in achieving the Australian government's RET.

3.4.2 NSW Government – Renewable Energy Action Plan

The NSW Renewable Energy Action Plan (NSW Government 2013) aims to support the Australian Government's RET. The plan positions NSW to increase the use of energy from renewable sources at the least cost to energy customers and maximise benefits to the State. The plan includes three key goals, which are:

- attract renewable energy investment and projects
- build community support for renewable energy
- attract and grow expertise in renewable energy technology.

Twenty-four actions underpin these goals, which include support for research and development of bioenergy projects and removal of barriers to investment in renewable energy.

The proposal would assist the State with implementing its Renewable Energy Action Plan by developing a bioenergy project with a number of advantages over other renewable energy technologies currently used in Australia. In particular, the proposal would:

- use an operational coal-fired power station site and tie it to its existing infrastructure, which would result in lower impacts to a number of environmental and socio-economic considerations than a greenfield facility
- establish a “new” renewable technology in Australia that has been proven through hundreds of existing applications internationally
- provide for the beneficial use of a waste stream that would otherwise be disposed to landfill
- use existing energy generation infrastructure to reduce costs and enable rapid uptake of cleaner electricity
- provide ‘next generation’ jobs within an area that has traditionally depended on fossil fuels.

3.4.3 NSW Government – Energy from Waste Policy Statement

The NSW Government’s Energy from Waste Policy Statement (NSW EPA 2015) recognises that positive outcomes for the community and environment can be achieved through the recovery of energy from waste, provided:

- further material recovery through reuse, reprocessing or recycling is not financially sustainable or technically achievable
- community acceptance to operate such a process has been obtained.

The policy provides technical criteria for facilities that propose to recover energy from waste, dividing such facilities into two categories:

- thermal treatment facilities (which treat eligible waste fuels)
- energy recovery facilities (which treat non-eligible waste fuels).

Eligible waste fuels are generally materials that pose a low risk of harm to human health and the environment. These generally comprise wastes with a uniform source, composition and consistency such as landfill gas, sawmill residues and recovered waste oil.

RDF is not an eligible waste fuel as it is sourced from municipal waste which does not have consistent composition or source. The proposal would therefore be an energy recovery facility under this policy and would need to meet specific criteria relating to:

- process design and control
- emission control equipment design and control
- emission monitoring with real-time feedback to the controls of the process
- arrangements for the receipt of waste
- management of residues from the energy recovery process.

RDF has been used for electricity generation in numerous applications overseas. The technology that would be used for the proposal is proven, well understood and capable of handling the expected variability and type of waste feedstock. This would be demonstrated for the proposal through the EIS process.

3.4.4 NSW Government - Waste Avoidance and Resource Recovery Act 2001

The NSW *Waste Avoidance and Resource Recovery Act 2001* (WARR Act) aims to ensure that consideration of resource management options follows a hierarchy of:

1. avoidance of unnecessary resource consumption
2. resource recovery options (including reuse, reprocessing, recycling and energy recovery)
3. disposal.

Where waste cannot be avoided or products reused, recovery technologies are a viable option for maximising resource efficiencies. The thermal treatment of waste to produce energy that would occur for the proposal is a recovery technology that would support the waste avoidance hierarchy outlined in the WARR Act by:

- avoiding unnecessary resource consumption by offsetting the use of non-renewable energy sources (ie. coal)
- reducing disposal of waste sent to landfill.

3.4.5 NSW Government – Waste Avoidance and Resource Recovery Strategy 2014-21

The NSW Waste Avoidance and Resource Recovery Strategy 2014-21 aims to improve recycling behaviour and promote the development of new markets for recycled materials in NSW. The strategy sets the following targets:

- increase recycling for municipal solid waste from 52 percent (in 2010-11) to 70 percent by 2021-22
- increase the waste diverted from landfill from 63 percent (in 2010-11) to 75 percent by 2021-22

The proposal would support the strategy in achieving these targets by diverting a significant proportion of municipal waste generated in the Sydney Metropolitan Area from landfill and providing a means for re-use of this waste.

4 Review of potential impacts

4.1 Overview

A review of potential environmental and socio-economic impacts associated with the proposal was undertaken to determine the nature of further investigations that will need to be undertaken to refine the proposal and to inform the SSD EIS.

This review was based on details of the site gained through previous environmental assessments, desktop studies and a site walkover. The review identified the construction and operational activities associated with the Mt Piper Energy Recovery Project and assumed that typical management and mitigation practices would be implemented and relevant statutory obligations, including sustainability considerations, would be complied with.

Table 4.1 provides a summary of the potential impacts identified while Sections 4.2 to 4.13 below discuss the potential impacts and proposed investigations.

Table 4.1 Summary of proposed activities and potential environmental impacts

Issue	Project phase	Proposed Activity	Potential Impacts
Air quality	Construction	Construction of RDF plant and associated components	Generation of airborne dust from areas of soil disturbance and stockpiling
	Construction	Use of construction machinery and vehicles	Greenhouse gas emissions
	Operational	Combustion of RDF	Heat and pollutant emissions exceeding relevant criteria for human health
	Operational	Source and composition of RDF	Source and quality of RDF not suitable
	Operational	Transport, storage and disposal of by-products (ie. ash)	Generation of airborne dust
	Operational	Combustion of fuel	Greenhouse gas emissions
Human health	Construction	Exposure to contaminants including dust	Acute and chronic impacts to human health
	Operational	Emissions from plant resulting in exposure to air, particulates, ozone, noise, hazards (on or off site accidents), soil and water	Acute and chronic impacts to human health
Odour	Operational	Transport and storage of RDF including during outages	Emission of offensive odours
Waste	Construction	Poor management of construction waste	Contamination, pollution, or poor resource efficiency
	Operational	Transport, storage and disposal of by-products (ie. ash and hazardous materials)	Soil or water contamination from ash, materials or chemicals spills
Noise and vibration	Construction	Use of noisy construction plant, machinery and vehicles	Noise levels exceeding relevant criteria
	Operational	Operation of RDF plant and on-site ash repository	Noise levels exceeding relevant criteria
	Operational	Vehicles/ rail transport of RDF to site and waste products off site	Noise levels exceeding relevant criteria

Traffic and transport	Construction	Material and construction equipment transport	Increased road traffic reducing level of service of transport networks. Safety hazards on public roads
	Operational	Transport of RDF to site and waste products off site via trucks or rail	Increased road and/or rail traffic reducing level of service of transport networks, and impacting on safety.
Soil and water	Construction	Clearing, excavation and stockpiling associated with construction of the facility	Erosion of soils and accumulation of sediment in waterways or adjacent environments
	Operational	Discharge of contaminated stormwater or other water into local waterways	Surface water contamination
	Operational	On site storage and disposal of ash	Constituents in the ash leach into the groundwater and/or contaminate surface waters
Flora and fauna	Construction	Vegetation clearing for construction of plant and facilities	Impacts to native flora and fauna; chance find of unexpected ecological feature (e.g. threatened species); injury to fauna
Heritage	Construction	Surface excavation for construction of the RDF boiler	Unauthorised disturbance of known or previously unidentified Aboriginal artefacts, sites or places of cultural significance
	Construction	Soil disturbance for construction of activities	Disturbance of known or previously unidentified historic heritage sites
Social and economic	Construction	Temporary increase in construction staff on site	Temporary unforeseen changes in local population; temporary unforeseen economic impacts
Visual amenity	Construction	Construction of RDF boiler and associated components	Temporary impacts to the visual amenity of adjacent properties
	Operational	Operation of the energy from waste plant	Changes to landscape character
Compliance with Energy from Waste Policy	Construction	Construction of the energy from waste plant	Specification of the plant and RDF
	Operational	Operation of the facility	Operation of the energy recovery plant

4.2 Air quality

4.2.1 Existing environment

Air quality in the vicinity of the site is expected to be typical of a rural area and affected by the existing power station's operations, transport movements on the highway, mining, agricultural activities and regional polluting processes such as bushfires.

4.2.2 Potential impacts

During the construction phase of the proposal it is likely that air quality impacts will be associated with dust generation as a result of soil disturbance as well as greenhouse gas emissions from construction plant and vehicles. Operational air quality impacts would occur from exhaust emissions from combustion of RDF, although these would be mitigated by emission control technologies which will be built into the plant. The pollutant emissions from the waste to energy stack would comply with European Union Industrial Emissions Directive emission limits for waste incineration plants (2010/75/EU) and the requirements of the NSW Government's Energy from Waste Policy Statement (NSW EPA 2015). These include at a minimum the Group 6 emission standards within the Protection of the Environment Operations (Clean Air) Regulation 2010.

The emissions would need to comply with ambient air quality guidelines developed to protect human health and occupational criteria for workers at Mt Piper Power Station.

In addition the transport, storage and disposal of by-products such as flyash are likely to generate dust and therefore have impacts on air quality. Some additional greenhouse gas emissions will also be associated with the additional electricity use as a result of operating plant.

Preliminary air quality modelling has been used to inform the design of the energy recovery plant and suggests that:

- there will be no exceedances of occupational criteria for Mt Piper Power Station workers
- there will be no exceedances of the ambient air quality criteria for the protection of human health beyond the EnergyAustralia site boundary
- a 100 m high stack would be the optimal stack height
- the cumulative impacts of the waste to energy plant and the existing Mt Piper Power Station needs further consideration.

4.2.3 Further investigations

Potential impacts from construction and operation of the proposal will be assessed through a detailed study that will be prepared for the EIS. This study will be undertaken in accordance with the Approved Methods for the Modelling and Assessment of Air Pollutants in NSW and will assess pollutant emissions associated with the combustion of RDF as well as dust impacts from ash transport, storage and disposal.

An assessment of dust as well as greenhouse gas emissions associated with the use of construction machinery and vehicles during construction would also be prepared.

4.3 Human health

4.3.1 Existing environment

The proposed site is surrounded by state forests, existing coal mining operations and rural properties. Ben Bullen State Forest is located north east and south east. The nearest townships are Portland,

which is approximately 4 km to the west and Wallerawang, located approximately 6 km to the south-east. The project is located within the Cox's River catchment some 80km upstream of Warragamba Dam, Sydney's primary drinking water supply. No schools, childcare facilities, aged care facilities or hospitals are located within close proximity to the site.

The staff at Mt Piper Power Station and operators of the energy recovery plant would be in close proximity to the plant during both construction and operation.

4.3.2 Potential impacts

While similar waste to energy plants are located within many European cities and the proposed project will be designed to comply with stringent air quality and safety standards, Re.Group and EnergyAustralia are committed to fully assess the potential for human health impacts. The sources of potential impact to human health would be due to exposure to air, particulates, ozone, noise, hazards (on or off site accidents), soil and water. Exposure pathways could include inhalation of pollutants and particulates by both surrounding residents and staff at Mt Piper Power Station and operators of the energy recovery plant, ingestion of produce primarily by surrounding residents, and dermal contact. Potential impacts could be acute or chronic and would consider cumulative impacts and management measures.

4.3.3 Further investigations

A human health risk assessment would investigate the cumulative emissions and risks from the Mt Piper Power Station and the energy recovery facility on people working at Mt Piper Power Station/ energy recovery facility and the surrounding community. The human health risk assessment would comply with the Department of Health Guidelines 2012.

4.4 Odour

4.4.1 Existing environment

There are no sensitive receivers located in close proximity to the site and Mt Piper Power Station generally. The nearest sensitive receivers to the site are located at Blackmans Flat to the east, at a distance of approximately three kilometres. However, the location of the RDF boiler and storage facility would be located close to the Mt Piper Power Station canteen and administration buildings. The proposed RDF transport and storage facilities would be designed to minimise odour emissions. Odour control measures will include:

- all receival, storage and processing of RDF will be within an enclosed building,
- fuel storage and processing areas will be used as the source of combustion air – ensuring negative pressure within the building and destroying any odorous air.

4.4.2 Potential impacts

The POEO Act introduces the concept of 'offensive odour' for regulating odour from EPA scheduled activities (listed in Schedule 1 of the Act). This framework emphasises the importance of pollution prevention in managing 'offensive odour' where new development is being undertaken. Potential odour emissions during the operational phase of the proposal will be associated with the transport, storage and processing of RDF.

4.4.3 Further investigations

An odour assessment will be prepared for the EIS that will include odour modelling to assess potential odour impacts from the proposal in line with the NSW EPA's *Technical framework: assessment and*

management of odour from stationary sources in NSW (NSW EPA, 2006). This framework provides criteria for odour emissions in relation to the population size of the affected community. The study would focus on the odour during planned and non-planned outages of the RDF boiler and would inform refinement of the plant design.

4.5 Waste

4.5.1 Existing environment

Mt Piper Power Station currently produces ash as a waste product which is stored in the Mt Piper Ash Repository and Lamberts North Ash Repository to the east of the power station site (refer to Figure 1). Project approval has also been granted for use of the Lamberts South ash repository site once Lamberts North reaches its capacity.

4.5.2 Potential impacts

During construction various streams of construction waste will need to be managed.

During operation the main waste management consideration will be around the disposal of by-products from the emissions control system and furnace ash. By-products from the emissions control system and associated fly ash are likely to be classified as hazardous waste and therefore strict transport and off-site disposal requirements will need to be met. The furnace ash would likely be deposited in a dedicated suitably located and engineered repository, or possibly co-disposed in the Lamberts North or South ash repository areas.

4.5.3 Further investigations

An assessment of the various waste streams likely to be generated by the proposal will be undertaken and a waste management strategy will be developed. This will include quantification of the amounts and nature of ash produced during operation of the proposal. In addition, detailed investigations will be undertaken to select a location and design for a suitable furnace ash repository, and to assess ash reuse and recycling opportunities.

4.6 Noise and vibration

4.6.1 Existing environment

As described in Section 4.4, there are no sensitive receivers in close proximity to the site with the nearest sensitive receivers being located about three kilometres to the east at Blackmans Flat Road and Back Cullen Road. The dominant noise sources in the vicinity of these receivers is expected to be natural sources such as wildlife and road traffic. A noise assessment was undertaken for the Mt Piper Power Station Extension EIS (Sinclair Knight Merz, 2009c).

4.6.2 Potential impacts

There is the potential for both construction and operation of the proposal to generate noise. Construction noise will be associated with the transport and installation of the proposed plant. During the operational phase potential noise impacts will be associated with the operation of the RDF boiler facility as well as from the vehicles transporting RDF to site and waste products off site. Due to the small scale of these operations in relation to the overall operation of the Mt Piper Power Station, noise impacts from the proposal are expected to be minor. The noise impacts on the adjacent Mt Piper Power Station canteen and administrative buildings would be considered.

There is the potential for the proposal to result in cumulative noise impacts as a result of concurrent operation of the existing power station and proposed development, including noise from the proposed furnace ash repository.

4.6.3 Further investigations

As part of the EIS, a specialist assessment of the potential noise impacts to the surrounding community will need to be completed for both construction and operational noise. Occupational noise exposure would also be considered in the refinement of the plant design and layout.

4.7 Traffic and transport

4.7.1 Existing environment

Mt Piper Power Station is located at the intersection of Castlereagh Highway and Boulder Road. Castlereagh Highway is a rural highway linking the Great Western Highway from near Lithgow with Central Western NSW. It is primarily a two-way undivided road with a 100km/h speed limit. The Great Western Highway and Main Western Railway traverse various towns and villages in the Blue Mountains.

4.7.2 Potential impacts

It is expected that the majority of the project's RDF would be transported by truck or rail from Greater Sydney. This would require about 12 truck trips per day or several train deliveries per week to transport the RDF. One truck trip per day may be required to transport the more hazardous wastes from the air quality control systems and fly ash to a suitable landfill site.

Traffic impacts may occur from both the construction and operation of the proposal. Construction transport impacts are expected to be mainly associated with staff movement to and from site as well as transport of plant, materials and equipment. These impacts will be temporary in nature. Operational transport impacts will be largely related to transportation of RDF to the site. Other operational transport impacts will be associated with the movement of waste products (such as hazardous by-products and ash) off-site as required.

4.7.3 Further investigations

Construction and operational transport impacts would be assessed through a transport impact study that would be undertaken for the EIS. The impacts associated with transport of RDF to site and waste products off site will need to be considered extensively as part of the EIS.

4.8 Soil and water

4.8.1 Existing environment

The site is located in the upper catchment of the western arm of Neubecks Creek which joins the Cox's River and eventually flows to Warragamba Dam. Mt Piper Power Station is operated as a zero discharge site, with only stormwater released to Neubecks Creek. Mt Piper Power Station obtains its water supply from the Fish River under the Fish River Water Supply Agreement and Cox's River under a Water Management License.

The geology underlying the site is sandstone however overall the landscape has been heavily modified with the current ground surface being a result of cut and fill activities during construction of the existing power station. Investigations have not shown any contamination on the site.

4.8.2 Potential impacts

There is the potential for construction activities such as excavation and stockpiling to cause erosion and sedimentation impacts. These can be readily managed by implementing standard erosion and sediment control measures.

During the operation phase water requirements will be supplied from shared services with Mt Piper Power Station. The proposal's water requirements are expected to be minor and serviced by the existing power station's water supply arrangements. No additional discharges are expected from the power station as a result of the proposal.

The disposal of furnace ash to a repository site has the potential to result in soil and groundwater impacts.

4.8.3 Further investigations

A water balance study will be undertaken for the EIS to demonstrate the proposal's ability to integrate with the existing Mt Piper Power Station water management and supply system.

Additionally, soil and water quality studies will be prepared to determine potential impacts and appropriate mitigation measures relating to soil disturbance and prevention of pollution to adjacent waterways and groundwater resources, during both construction and operation of the proposal. This will include an assessment of the potential for contaminated soil to be disturbed during construction of the proposal. The ash repository would be designed so that the potential for such impacts would be minimised and this would be further investigated through the EIS.

4.9 Flora and fauna

4.9.1 Existing environment

A detailed flora and fauna study was undertaken to support the proposal for the Mt Piper Extension Project (Sinclair Knight Merz, 2009a). The site falls within area 1 of this study which was found to include a cleared paddock covered with exotic lawn species that is regularly mown. The site has been maintained in this condition and no changes to the ecology of the site are expected to have occurred since the 2009 assessment.

Some small trees and shrubs have been planted in areas adjacent to the site and consist of a mixture of native species which are generally not representative of species found in the surrounding natural bushland. The biodiversity assessment determined that this vegetation provides minimal fauna habitat, with habitat value largely limited to a transient space for temporary basking and resting for birds. Overall, the habitat and vegetation communities present within and adjacent to the site are considered to be of low ecological value.

4.9.2 Potential impacts

Given the low ecological value of the study area, it is unlikely the proposal would cause significant flora or fauna impacts. There may be some clearing required for the construction of the facility and establishment of an ash repository, depending on the selected location.

4.9.3 Further investigations

A study of potential biodiversity impacts to assess the full range of possible impacts during construction and operation would be undertaken and appropriate avoidance, management and mitigation measures developed.

4.10 Aboriginal Heritage

4.10.1 Existing environment

Prior to the Mt Piper power station, much of the area comprised a series of open cut coal mines. The site was then subject to extensive earthworks as part of the construction of the Mt Piper power station. For these reasons the ground surface has been highly disturbed. A detailed heritage assessment was undertaken to support the proposal for the Mt Piper Extension Project (Navin Office Heritage Consultants, 2009). This study identified that no Aboriginal heritage sites, objects or potential archaeological deposits have been previously recorded or listed as occurring within the Mt Piper power station study area.

4.10.2 Potential impacts

Given the highly disturbed nature of the site it is highly unlikely that the proposal would result in any impact to Aboriginal heritage items.

It is likely that the furnace ash repository would be located in a disturbed area. Nonetheless, it may contain Aboriginal artefacts or cultural heritage value.

4.10.3 Further investigations

An Aboriginal heritage due diligence assessment would be prepared as part of the EIS process for the proposal. This investigation would focus on the proposed furnace ash repository.

4.11 Socio-Economic

4.11.1 Existing environment

Generally, the population within the Greater Lithgow Local Government Area are predominantly Australian born, aged 25 to 65. The majority of the population is employed in mining, health and community services. The unemployment rate for the Lithgow area is relatively high at 8.5%.

4.11.2 Potential impacts

The proposal has the potential to employ people especially during construction of the facility. This could create an influx of people from outside the region during the peak construction period. This could place pressure on the local economy through demands for services and accommodation during this period. Overall given the scale of the proposal in relation to the existing power station it is unlikely that any socio-economic impacts will be significant.

4.11.3 Further investigations

A socio-economic assessment would be prepared for the EIS, focusing on demands for services in the local area during the construction period of the proposal.

4.12 Visual amenity

4.12.1 Existing environment

The Mt Piper Power Station is surrounded by undulating terrain, State Forests, mines and agricultural operations. While the topography and vegetation provide some screening and limit views, the existing Mt Piper power station is a dominant visual feature in the landscape.

4.12.2 Potential impacts

The proposal will be located immediately adjacent to the existing power station and would not change the site's overall visual character. The existing power station site will absorb any visual impacts of the project. The existing vegetation screening will not be affected.

4.12.3 Further investigations

Visual impacts from the project would be assessed and mitigation measures including that for the ash repository, would be developed and specified in the EIS.

4.13 Compliance with Energy from Waste Policy

4.13.1 Existing environment

The NSW Government's Energy from Waste Policy Statement (NSW EPA 2015) is discussed in Section 3.4.3 above. The policy recognises that positive outcomes for the community and environment can be achieved through the properly controlled recovery of energy from waste.

To ensure emissions are below levels that may pose a risk of harm to the community, the Policy Statement requires facilities to meet current international best practice techniques, particularly with respect to:

- process design and control
- emission control equipment design and control
- emission monitoring with real-time feedback to the controls of the process

While the proposed site is industrial land that supports a coal-fired power station, there are currently no energy from waste activities on the site.

4.13.2 Potential impacts

There is a risk that improper design or operation of the facility, or RDF specifications and controls could lead to non-compliance with the Energy from Waste Policy Statement. This could lead to unacceptable outcomes including impacts on air quality and waste management.

4.13.3 Further investigations

The technical specification of the project will be aligned with the Energy from Waste Policy Statement. Compliance against each aspect of the policy will be documented in the EIS. Re.Group and EnergyAustralia are committed to complying with all aspects of the Energy from Waste Policy Statement including continuous monitoring and reporting of emissions.

5 Summary and conclusion

5.1 Summary

Re.Group and EnergyAustralia propose to construct and operate an energy recovery plant at the existing Mt Piper Power Station. The proposed plant would be located immediately west of the Unit 2 boiler and would be integrated into the existing Mt Piper systems and operations.

The proposed plant would consume approximately 100,000 tonnes per year of RDF and thereby meets the definition of SSD under the State and Regional Development SEPP. The proposal therefore requires approval from the NSW Minister for Planning.

The purpose of this report is to request, and inform the content of, Secretary's Environmental Assessment Requirements (SEARs) for the proposal. The SEARs will provide requirements for the Environmental Impact Statement (EIS) that will be prepared to accompany the Development Application for the proposal.

A review of environmental issues associated with the proposal was undertaken to inform the types of investigations likely to be undertaken for the EIS that will be prepared to address the identified risks of the proposal. This determined that the EIS will include detailed assessments of:

- operational air quality
- human health risk
- operational odour
- refuse derived fuel specification, availability and quality assurance
- operational waste and ash disposal
- construction and operational traffic and transport
- construction and operational noise and vibration impacts.

5.2 Conclusion

The proposed project is aligned with the NSW Government's Energy from Waste Policy Statement (NSW EPA 2015). This would be demonstrated through in-depth investigations and critical study during the EIS process. The key advantages of the proposed project include:

- utilisation of "off-the-shelf" technology that has successfully been used internationally
- more efficient use of fossil fuel (coal) at Mt Piper Power Station, allowing the potential to generate more electricity at Mt Piper Power Station while using the same amount of coal, or to use less coal without reducing electricity generation
- development would occur within a previously disturbed site immediately adjacent to an existing power station, which would result in considerably less social and environmental impacts compared to a greenfield site

- the use of existing services and infrastructure at Mt Piper Power Station will minimise capital expenditure which would be required for associated infrastructure at another site.

Re.Group and EnergyAustralia are committed to undertaking extensive consultation with the community and stakeholders as part of the project planning process, and if approved, during construction and operation.

6 References

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