SMITHFIELD PACKAGE BOILER REINSTATEMENT PROJECT

ENVIRONMENTAL ASSESSMENT

13 NOVEMBER 2014

DA13/94

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Glossary & abbreviations

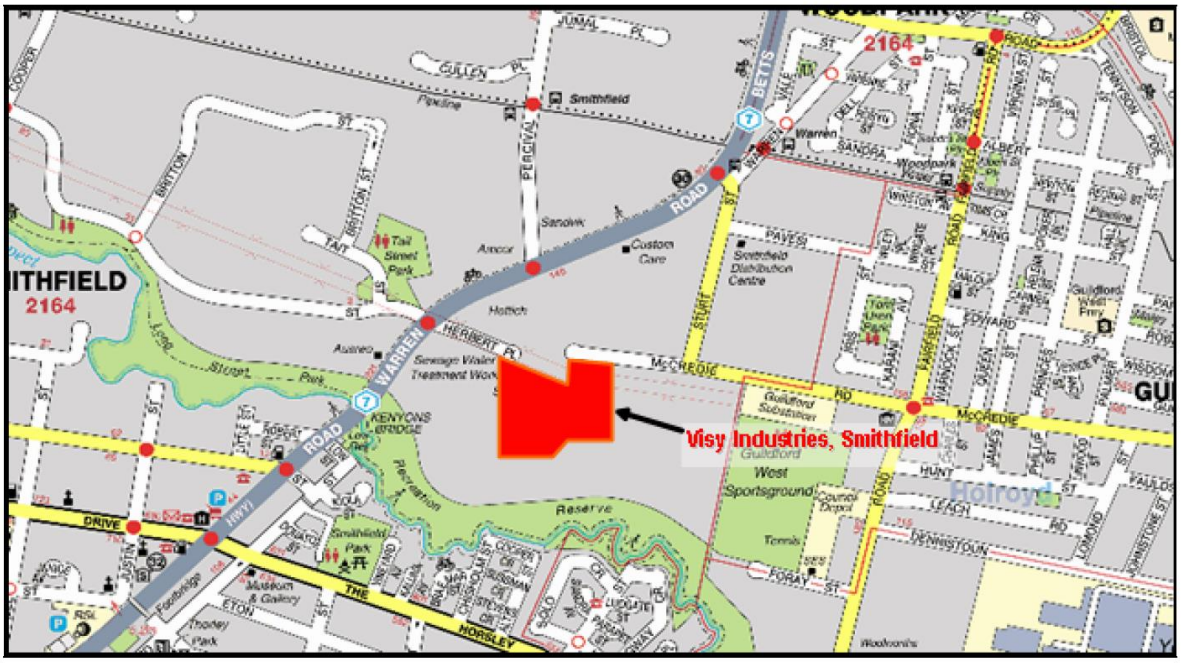
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
EPL	Environmental Protection Licence
HDPE	High-density polyethylene
Marubeni	Smithfield Energy Facility
MW_{th}	MegaWatts thermal (measure of energy output)
PET	Polyethylene terephthalate
SEPP	State Environmental Planning Policy
SRP	Smithfield Recycling Precinct
POEO Act	Protection of the Environment Operations Act (NSW)

INTRODUCTION

Introduction and overview

BACKGROUND

The subject site is the Smithfield Recycling Precinct, operated by Visy Industries in western Sydney (Holroyd City Council). Operations on the site include sorting and conversion of post-consumer waste into new paper and plastic products. The site location in the Smithfield LGA is shown below.



In 1994, the facility was expanded, following an approval by the Minister (DA13/94). This approval related to the existing plant, including a recycled paper mill (VP3), gas package boilers to generate steam for the paper mill (3x12.5 MW_{th}), and the extended plant, namely the additional paper mill (VP6) and also a gas-fired power station to be operated by a company external to Visy (now Marubeni).

The power station was designed to supply waste heat as steam to the Visy operations, with the existing boilers then being retained for back-up purposes only.

The boilers were relocated to another site and replacement boilers are now required to replace them to ensure redundancy in steam energy supply.

It is proposed to reinstate three backup boilers (3x20 MW_{th}) to replace the boilers previously approved. The planning pathway proposed is section 75W of the Environmental Planning and Assessment Act 1979.

The Visy paper mill complex operates under and Environmental Protection Licence (4100 – see Attachment 2), and the Marubeni facility operates under a separate Environmental Protection Licence (5701 – see Attachment 3). The modification would result in the need to also amend Visy's EPL for the paper mill complex.

INTRODUCTION

NEED FOR THE PROJECT

Visy has determined that, in the context of possible disruptions to, or closure of, the Smithfield Energy Facility, it must establish an alternative source of steam to continue its operations on the site. Since the backup gas package boilers are no longer on the site, replacement boilers are now required to be reinstated.

Given that the boilers are intended to provide redundancy in energy supply, rather than increasing the existing energy supply, they are expected to operate only in the event that the required amount of steam to operate the paper mills was not available from the Smithfield Energy Facility.

SCOPE OF MODIFICATION

The scope of the project is:

- New boilers: three (3) 20MWth shop assembled integral furnace gas-fired package boilers in suitable buildings complete with associated infrastructure including steam connections and feedwater plant
- New stacks: three (3) each 38m high, with emissions control technologies

Due to the incremental improvements to the Smithfield facility in the intervening 20 years, the boilers are now required to generate 47.5% more energy than their original counterparts.

Over the last 20 years boiler technology has improved, and the new boilers will reflect latest technology including superior fuel efficiency and emissions controls compared with that of the original backup boilers.

THE APPLICANT

Visy is an integrated packaging and resource recovery company with a unique product and service offering that spans the entire packaging lifecycle. Sustainability is at the core of the company's business model and drives the pursuit for customer value through resource efficiency and constant innovation.

Visy started in 1948 in Melbourne as a manufacturer of corrugated cardboard boxes. Since then it has grown to become a leading, privately owned packaging and resource recovery company. Visy's operations through the lifecycle of materials is summarized in the diagram on the following page.

Visy operates in over 120 sites across Australia, New Zealand, Thailand, Vietnam and Malaysia, and has trading offices in Singapore and China. Visy also has a 'sister' company, Pratt Industries USA, which operates in North America.

As well as providing packaging to some of the world's best known brands, Visy also offers recycling solutions to commercial businesses and councils throughout Australia. Innovative packaging solutions are created for a number of different sectors in domestic and international markets including FMCG, beverage, primary agricultural industries, health, beauty and pharmaceutical sectors.

INTRODUCTION

OVERVIEW OF THE SITE

Visy's Smithfield Recycling Precinct is the subject site of this Environmental Assessment. Visy has operated the site at 6 Herbert Place, Smithfield NSW since 1985.

The site is located within the Holroyd City in a general industrial area. The site area is approximately 25 hectares. It is bounded to the north by Herbert Place, Marubeni Power Station and McCredie Rd, to the northwest by the Cumberland Hwy, to the southwest and south by Fairfield Road Park encompassing Prospect Creek, and to the east by an industrial neighbour. Prospect Creek drains into the Georges River approximately 10 km downstream.

The Smithfield Recycling Precinct covers:

- Lot 2 in DP 849480 – 2 Herbert Place, Smithfield
- Lot 34 in DP 850596 – 6 Herbert Place, Smithfield
- Lot 12 in DP 808195 – 158-160 McCredie Road, Smithfield

The proposed development will be located on Lot 34 DP 850596 – 6 Herbert Place, Smithfield.

Existing site operations

OVERVIEW OF OPERATIONS

Visy's SRP currently hosts the following operations:

- Materials Recycling Facility which receives kerbside comingled bin waste and recovers paper and cardboard, steel, aluminium, glass, and PET & HDPE plastics
- Recycled Plastics Facility which converts post-consumer plastics (PET and HDPE) into value-added plastic pellets for conversion into new food-grade plastic packaging
- Two paper mills which produce recycled liner and recycled paper of medium grades
- A corrugator box plant which converts recycled and Kraft paper into cardboard boxes
- Water management and recycling system including waste water treatment plant (WWTP)
- Smithfield Energy Facility which is operated separately from Visy by Marubeni which is co-located on the site. The Marubeni facility delivers steam to Visy's processes on the site and electricity to the National Electricity Market.

Paper and cardboard recovered at the Materials Recycling Facility are used as feedstock for the recycled paper mills and PET and HDPE plastics are sent as feedstock to the Recycled Plastics Facility. Other recyclable materials from the Materials Recycling Facility are sent offsite for remanufacture.

The box plant has been operating since 1985. The first paper mill was added in 1986 and the second in 1994. The Materials Recycling Facility has been operating since 2006. The most recent addition to the site, the Recycled Plastics Facility, has been operating since 2012.

The site plan is shown in Figure 1.

ENERGY SERVICES ON THE SITE

Steam is a critical requirement of several of the processes operating at the Smithfield Recycling Precinct, including the paper mills and the recycled plastics facility. The steam can be sourced either from the adjoining Smithfield Energy Facility or through proposed gas package boilers operated by Visy.

Prior to the SEF's operation, all steam was generated by the gas package boilers on the site. Currently all steam is sourced from the SEF, and the package boilers have been relocated to another facility.

After the backup boilers are reinstated, it is expected that steam will continue to be provided from the SEF, and that the boilers would be started up in the event that steam was not available from Marubeni.

Given the high and increasing gas prices, the Marubeni operations may become uneconomic. The Company has advised Visy it may be forced to close as early as 2017. In this event, the backup boilers would be required to provide the steam for the Visy operations. This scenario would mean that no electricity was generated.

Electricity is also used at the Smithfield Recycling Precinct and is sourced from the National Electricity Market.

THE MODIFICATION

Modification Overview

OBJECTIVE

The principal objective of the Modification is to reinstate backup gas boilers to provide a backup source of steam in the event that steam is unavailable from Marubeni.

EQUIPMENT AND BUILDINGS

The modification will involve the construction of the boilers and their associated infrastructure. An indicative layout of the installation is shown in Figure 2.

The reinstated boilers are located in a slightly different setting to the original boilers' location because they are larger and would not fit in the existing boiler house. The new location actually corresponds to lesser potential impact on nearby receivers because it is further from the site's boundary than the original location.

The new equipment and building associated with the modification are:

Boiler house

The three boilers will be located inside a new structure to adjoin existing structures in the SRP. The structure will be approximately 8 metres x 19.5 metres, with a height of 8 metres (excluding the stacks).

Boilers

The boilers will comprise three 20MWth shop assembled integral furnace type watertube package boilers complete with drums, boiler tubes and supporting structural frame complete with insulation and outer casing. Each boiler is designed to generate up to 30 tonnes per hour of saturated steam at the outlet of the boiler stop and non-return valve, when firing natural gas and feed water to the economizer at an appropriate temperature.

The boiler unit will include forced draft fan including inlet box and silencer, inlet vane control, coupling, and OSHA coupling guard all mounted and shipped on the fan. The fan will be capable of inducing the flue gas recirculation to meet the required NOx limits.

Stacks

Three stacks (one per boiler) will be required measuring 38 metres above grade discharge height, fabricated from steel plate and a diameter of approximately 1.4 metres. Each stack will be mounted on the economizer gas outlet.

Connection and supporting infrastructure

Feedwater: One duplex water softener will be designed to treat the incoming raw water required for all three boilers in simultaneous service at 100% of maximum continuous rating plus a blowdown allowance.

Piping: The piping will exit the boiler houses and connect with an existing pipe bridge to service the SRP.

Planning context

EXISTING PLANNING CONSENTS

Given the site's long operating history, a range of approvals exist for the site. The consent authorities are Holroyd Council and the NSW Department of Planning & Environment and its predecessor agencies. The known approvals relating to the site are shown in Table 1.

The key approval relevant to this modification is the modification by the Minister for Planning on 18 November 1994 under section 92 of the EP&A Act, according to SEPP 34 – Major Employment Generating Industrial Development (DA13/94). A copy of the approval is provided in Attachment 1.

TABLE 1 PREVIOUS APPROVALS ON THE SITE IN ADDITION TO DA13/94

DATE	REF. NO.	APPROVAL AUTHORITY	SUMMARY OF SCOPE
24/11/1981	81/338	Holroyd Council	Cardboard box manufacturing facility
26/1/1984	84/18	Holroyd Council	Modification of Visy Board cardboard box manufacturing facility
1/5/1985	85/106	Holroyd Council	Paper reclamation plant and associated storage and factory areas
24/6/1985	85/158	Holroyd Council	New warehouse
13/11/1985	85/274	Holroyd Council	LPG storage tank and dispensing equipment
6/6/1988	88/158	Holroyd Council	Extension to board plant
19/8/1988	88/270	Holroyd Council	Factory extension
22/5/1989	89/144	Holroyd Council	Office extension
14/12/1989	89/347	Holroyd Council	Extension to waste storage
15/9/1992	92/199	Holroyd Council	Machinery parts store
24/12/1993	93/373	Holroyd Council	Extensions to office and factory area, new pollution control
27/9/1994	94/252	Holroyd Council	Extensions to paper mill
9/4/1997	96/372	Holroyd Council	Cardboard box manufacturing facility
7/5/1997	96/372	Holroyd Council	Minor supporting infrastructure changes
28/5/2012	2012/69/1	Holroyd Council	Relocation of fire hydrant and new silos
7/8/2012	2012/127/1	Sydney West Joint Regional Planning Panel	Change of use to Recycled Plastics Facility
13/6/2013	2012/127/2	Holroyd Council	Change of use to Recycled Plastics Facility

Modifications to 1994 Ministerial approval (DA13/94) included:

- Mod 1, 2005
- Mode 2, 2006
- Mod 3, 2007
- Mod 4, 18/11/2007
- Mod 5, 7/5/2008
- Mod 6, 16/7/2012

THE MODIFICATION

PLANNING PATHWAY FOR MODIFICATION

The modification is proposed to be effected under section 75W of the EP&A Act.

This is because the 1994 modification which is sought to be further modified was granted under the State Significant Development system which is now repealed, and the current transitional provisions require all existing consents for State Significant Development to be modified under section 75W of the EP&A Act.

LEGISLATION RELEVANT TO THIS MODIFICATION

Environmental Planning & Assessment Act 1979

As stated above, the modification is proposed to be effected under section 75W of the EP&A Act.

Protection of the Environment Operations Act 1997 and Protection of the Environment (Clean Air) Regulation 2010

The modification will result in air emissions which will be subject to the Protection of the Environment Operations (POEO) Act. The burner type is designed to generate low concentrations of NOx, typically 150–250 mg/m^3 at 3% oxygen, and is well within the requirements of the Protection of the Environment (Clean Air) Regulation 2010. This Regulation sets a concentration for Group 6 plant of 450 mg/m^3 at 3% oxygen.

The site is licenced with an Environmental Protection Licence. This Licence will need to be amended to reflect the reinstatement of the boilers on the site.

LOCAL GOVERNMENT

Holroyd Local Environment Plan 2013

The modification is permissible development under the Holroyd Local Environment Plan 2013.

The zoning of the site is IN1, General Industrial. The objectives of this zone are:

- To provide a wide range of industrial and warehouse land uses.
- To encourage employment opportunities.
- To minimise any adverse effect of industry on other land uses.
- To support and protect industrial land for industrial uses.
- To enable other land uses that provide facilities or services to meet the day to day needs of workers in the area.

Among the purposes permissible with consent in the IN1 zone is *general industry*. The current operations on the site and the proposed modification come within the definition of *general industry*.

Holroyd Development Control Plan 2013

The modification is consistent with the Holroyd Development Control Plan 2013.

Environmental Impacts

SUMMARY

The impact of the modification has been assessed at the maximum possible envelope, that is, if Marubeni continued to operate and the package boilers operated simultaneously. However, given that the objective of reinstating the package boilers is specifically to provide steam redundancy, this scenario is unlikely to occur in practice.

The expected changes in impact and required assessment are outlined below.

TABLE 2: SUMMARY OF CHANGES IN ENVIRONMENTAL IMPACT

TYPE OF IMPACT	EXISTING IMPACTS	IMPACT DUE TO MODIFICATION	ASSESSMENT UNDERTAKEN
Air quality	Existing NOx background concentration between 19 and 44.5 µg/m^3. Original package boilers and turbine estimated to emit 5.2 g/s.	New background NOx emissions between 19.6 and 20.9 µg/m^3 (a large reduction). A reduction in NOx emissions from the package boilers compared with boilers already approved (5.2 g/s to 0.7 g/s)[1].	Quantitative modelling
Noise	Limits as low as 41 dBA ($L_{Aeq\ 15\ min}$, night)	Noise impacts predicted to be within current limits	Quantitative modelling
Visual amenity	Three stacks of 30m each with visible steam emissions; several large buildings	Additional three stacks of 38m high; one building not visible from site boundaries	Qualitative analysis
Greenhouse gas	~2 million tCO_2-e per year	~ 1.6 million tCO_2-e per year, representing a reduction in aggregate Greenhouse gas emissions of 22%[2]	Quantitative assessment
Water management	Water feed from Rosehill Recycled Water Scheme; wastewater disposed through sewer	No change	Quantitative assessment
Traffic	Not relevant to the Modification	Nil	Nil
Flora, fauna, heritage	Not relevant to the Modification	Nil	Nil

The following section describes each potential impact in more detail.

[1] In the very unlikely event that the back-up boilers and Marubeni are operating concurrently with the Marubeni plant, there would be a very small aggregate increase in emissions of 2.5 kg/hr.

[2] In the very unlikely event that the back-up boilers are operating concurrently with the Marubeni plant, there would be a very small aggregate increase in Greenhouse gas emissions of 1.8% (insignificant).

THE IMPACTS

AIR QUALITY

A quantitative air quality impact assessment was undertaken by Benbow Environmental. This report is provided in Attachment 4. The report assesses the noise impacts from this modification in the context of existing development on the site.

The assessment was undertaken in accordance with the NSW EPA guidelines "Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales". Air emission impacts were quan tified using AERMOD to determine whether or not exceedances to health-impact derived assessment criteria were apparent.

The dispersion modelling undertaken has shown that no exceedances to the referenced air qualit y limits were predicted. Given no application of further air emission reduction controls are requir ed, it is to be expected that no air impact issues are associated with the proposal. The assessmen t concludes that the proposal meets the most relevant and applicable air assessment criteria in ac cordance with the NSW EPA guidelines and is expected to not cause any impact or harm to any of the nearest potentially affected residences.

The AERMOD model, was used for the quantification of air impacts from the proposed developm ent. The methods used to quantify the impacts through AERMOD have been conducted in accordance wwith the document "Approved Methods for the Modelling and Assessment of Air Polluta nts in New South Wales" (herein referred to as the AMMAAP) published by the NSW EPA.

The modelling showed that at all receivers, the cumulative emissions resulting from the modification are within relevant limits. The results at each receiver are shown in the following table.

TABLE 3 AIR IMPACTS (NOX, 1 HOUR AVERAGING PERIOD)

RECEIVERS	INCREMENTAL IMPACT (µG/M^3)	BACKGROUND AIR QUALITY (µG/M^3)	CUMULATIVE IMPACT (µG/M^3)	LIMIT (µM/M^3)	PASS (YES/NO)
R1	50.3	94	144.3	246	Yes
R2	50.4	94	144.4	246	Yes
R3	44.4	94	138.4	246	Yes
R4	55.9	94	149.9	246	Yes
R5	51.8	94	145.8	246	Yes
R6	35.5	94	129.5	246	Yes
R7	25.5	94	119.5	246	Yes
R8	23.5	94	117.5	246	Yes
R9	30.5	94	124.5	246	Yes
R10	22.4	94	116.4	246	Yes
R11	23.5	94	117.5	246	Yes

NOISE

A quantitative noise impact assessment was undertaken by Benbow Environmental. The report assesses the noise impacts from this modification in the context of existing development on the site. There are 11 residential receptors for noise according to the current EPL for the site. At each receptor, the modification

will result in noise levels within currently approved limits. This has been possible due to locating the boilers at the furthest point from receivers at the centre of the site, and incorporating noise mitigation technology into the design, including fan silencers and building insulation.

The specific noise levels at each receptor have been modelled and yielded the following results.

TABLE 4 PREDICTED NOISE LEVELS

RECEPTORS	ADDRESS	DISTANCE TO BOILERS (M, APPROX)	MIN. NOISE CRITERIA ($L_{AEQ\ 15\ MIN}$, NIGHT)	PREDICTED NOISE
R1	6 Low Street, Smithfield	447	41	29
R2	12 Kiola Street, Smithfield	425	41	29
R3	20 Vineyard Avenue, Smithfield	407	41	30
R4	31 Chisholm Street, Smithfield	310	43	31
R5	44 Solo Crescent, Smithfield	336	43	28
R6	124 Granville Street, Fairfield	494	43	27
R7	126 Fairfield Road, Guilford West	1006	43	20
R8	127 McCredie Road, Guilford West	848	43	22
R9	79 Warren Road, Woodpark	1079	43	19
R10	9 Magnolia Street, Greystanes	1564	43	16
R11	17 Rhondda Street, Smithfield	1727	43	15
Western boundary			60	28

The full details are provided in the Noise Impact Report by Benbow Environmental, Attachment 5.

VISUAL AMENITY

The impacts on visual amenity of the modification will be insignificant, due to being dwarfed by existing surrounding buildings and three existing stacks of a similar height.

The site is located on the Cumberland Highway in an industrial area. The existing stacks are 30 metres tall, and at times emit visible steam.

The boilers subject to this Environmental Assessment will be located at the centre of the site and therefore will not be visible from any site boundary at normal viewing positions due to the existing surrounding buildings and mature vegetation.

Plates 1 to 4 below show the view from the site boundaries towards the reinstated boiler installation site. It is noted that the site boundary is not accessible to the public from the south due to dense riparian vegetation, nor from the east due to other private land uses.

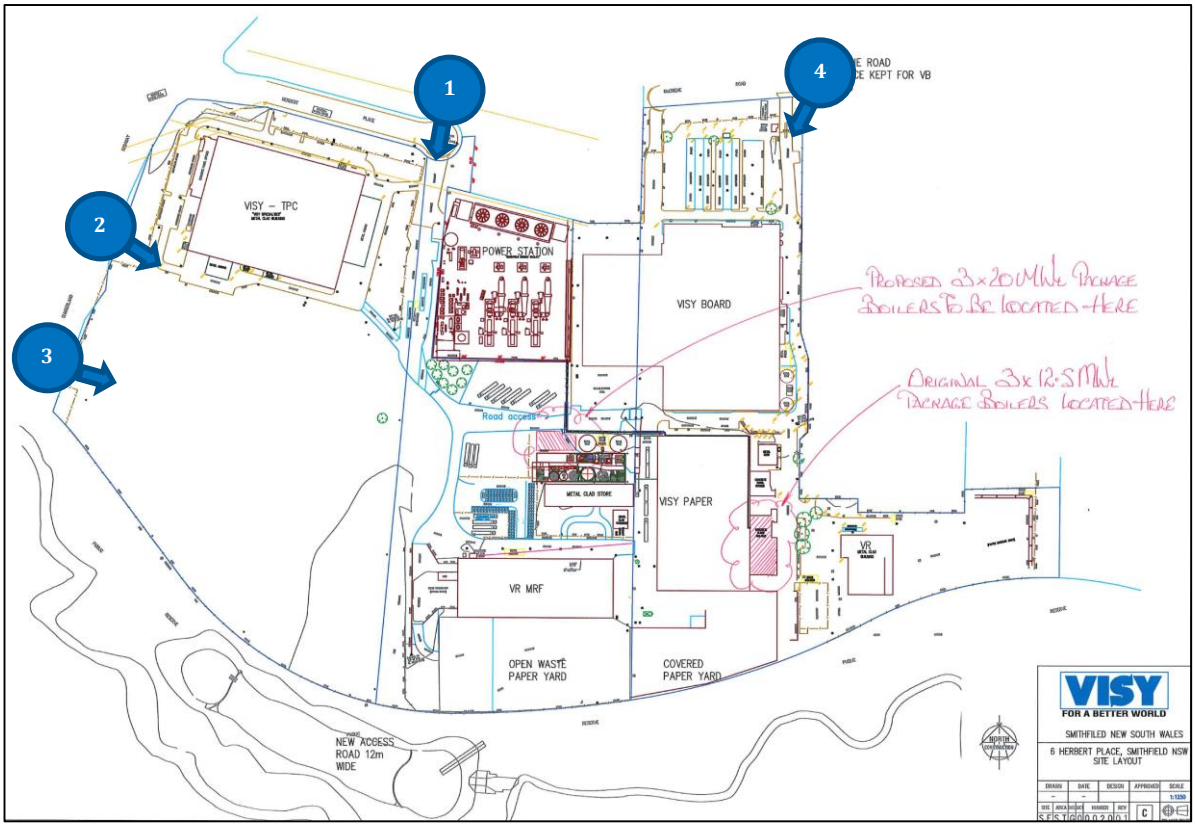


Plate 1: View of main entry and Marubeni power station from Herbert Place

Plate 2: View through mature vegetation from Cumberland Highway

Plate 3: View taken on the Cumberland Highway over a 2m fence. Position of future boilers is to the immediate left of the silo marked “Visy”

Plate 4: View of site from McCredie Road

It is noted that the stacks may be visible from some aspects, including the approach to the site from the north on the Cumberland Highway and from Herbert Place. The following image depicts the current view including the power station stacks from Cumberland Highway, approximately 1.6 kilometers north-northeast of the site.

GREENHOUSE GAS

Greenhouse gas emissions from the site will likely be less as a result of the modification when the package boilers are run when Marubeni is not operating. In the unlikely event that the package boilers are operated concurrently with Marubeni, the emissions will be 1.8% higher than at current. This increase is considered marginal and therefore not significant.

The results are shown in Table 5 below.

TABLE 5 GREENHOUSE GAS ASSESSMENT (SOURCE: NATIONAL GREENHOUSE AND ENERGY REPORTING SCHEME)

EMISSIONS (TCO2-E PA)	MARUBENI	SRP	TOTAL
Current emissions	481,427	1,518,537	1,999,964
Incremental emissions from reinstated boilers			36,659
Emissions due to mod (likely)	0	1,555,196	1,555,196
Percentage increase on current total (likely)			**-22%**
Emissions due to mod (maximum)	481,427	1,555,196	2,036,623
Percentage increase on current total (maximum)			**1.8%**

WATER MANAGEMENT

The water impacts associated with the modification are minimal.

Boiler feed water will be taken from the existing Rosehill Recycled Water Scheme connection.

Any wastewater will be disposed of in the existing trade waste link to Sydney Water's sewerage system.

There will be no change to the amount of rainwater collected on the newly roofed area, because it will replace the water currently collected on the existing sealed surface.

Consultation

NSW ENVIRONMENTAL PROTECTION AGENCY (EPA)

The EPA was consulted in a meeting on 12 September 2014. Present were David Gathercole (Senior Regional Operations Officer/Inspector), Anthony Savage (Air Policy) and Ruby Kan from the EPA; Richard Benbow, Daniele Albanese and Brent Winning from Benbow Environmental; and Julia Beck representing Visy. The EPA expressed the need for the modification to operate within noise and emission limits. Visy will continue to consult with the EPA as the project progresses, and to enable the Environmental Protection Licence to be amended.

HOLROYD COUNCIL

Visy maintains regular contact with the Council's general management and councilors as part of the operation of the Smithfield facility, and has held briefings on the site's energy projects. A draft copy of this Environmental Assessment was provided to Council on 30 October 2014, with an invitation for any comments, and a final copy will be provided after lodgement with the Department.

CONCLUSION

Conclusion

A modification is sought to amend DA13/94 to reinstate backup gas package boilers which were previously approved. A modification is required because the capacity of the boilers is larger than those originally approved and their location will be different, although the cumulative impacts of the reinstated boilers will be within the approved noise and emission limits for the site.