Berrima Cement Works: Modification 9: Environmental Assessment – Use of Waste Derived Fuels

VISUAL IMPACT ASSESSMENT

Prepared for:

Boral Cement Ltd

Prepared by:

GREEN BEAN DESIGN
landscape architects

16 January 2015

Project:	Berrima Cement Works Modification 9
Project Number:	14-185
Report Title:	Visual Impact Assessment
Revision:	V3 - Final
Author:	Andrew Homewood, Registered Landscape Architect, AILA, MEIANZ Grad. Dip. Landscape Management, BSc.Dual Hons (Landscape Architecture & Archaeology), Nat. Dip. Horticulture
Date	16 January 2015

Green Bean Design – Capability Statement

Green Bean Design (GBD) was established as a landscape architectural consultancy in 1999 and has specialised in landscape and visual impact assessment over the past 10 years. As an independent consultancy, GBD provide professional advice to a wide range of commercial and government clients involved in large infrastructure project development.

GBD owner, and principal landscape architect Andrew Homewood, is a registered landscape architect and member of the Australian Institute of Landscape Architects and the Environmental Institute of Australia and New Zealand. Andrew has over 21 years continuous employment in landscape consultancy and has completed numerous landscape and visual impact assessments for a variety of large scale and state significant infrastructure, including mines, transmission lines/substations, wind farms and solar power developments.

Contents Page

Contents Page

Figures

Executive Summary

Green Bean Design (GBD) was commissioned by SLR Consulting Pty Ltd on behalf of Boral Cement Limited (the Proponent), to prepare a Visual Impact Assessment (VIA) for the Berrima Cement Works: Modification 9: Environmental Assessment – Use of Waste Derived Fuel Project (the Project). The Project will be wholly located within the existing cement works site boundary and contained within the south east portion of the existing site. The area occupied by the proposed works (Project Area) is largely contained within the visual catchment defined by industrial infrastructure associated with the cement works and specifically the Pre-heater Tower (pre-heater tower).

This VIA involved an evaluation of the visual character of the landscape in which the Project will be located and an assessment of the potential visual impact that could result from the construction and operation of various components and infrastructure associated with the Project.

The Project will have an overall negligible visual significance on residential dwellings and public spaces beyond the Project Area. The negligible visual significance results from the screening influence of local undulating landforms, combined with tree cover which occurs with the Project site and across portions of the landscape surrounding the existing Berrima Cement Works. The negligible significance also results from, and is largely mitigated by the fact that the proposed infrastructure is located within or adjacent to existing large scale industrial development.

The Project has limited potential to increase the significance of cumulative visual impact due to the extent of existing visual screening within the Project Area, the screening influence of the existing pre-heater tower and the location of proposed constructed elements relative to existing infrastructure.

Introduction

Section 1

1.1 Introduction

The Proponent proposes to design, construct and commission a system to receive, store and transfer non standard / waste derived fuels at the Berrima Cement Works for use in kiln 6 as heat energy to offset and reduce current coal based fuel sources. The proposed waste derived fuels for kiln 6 will include:

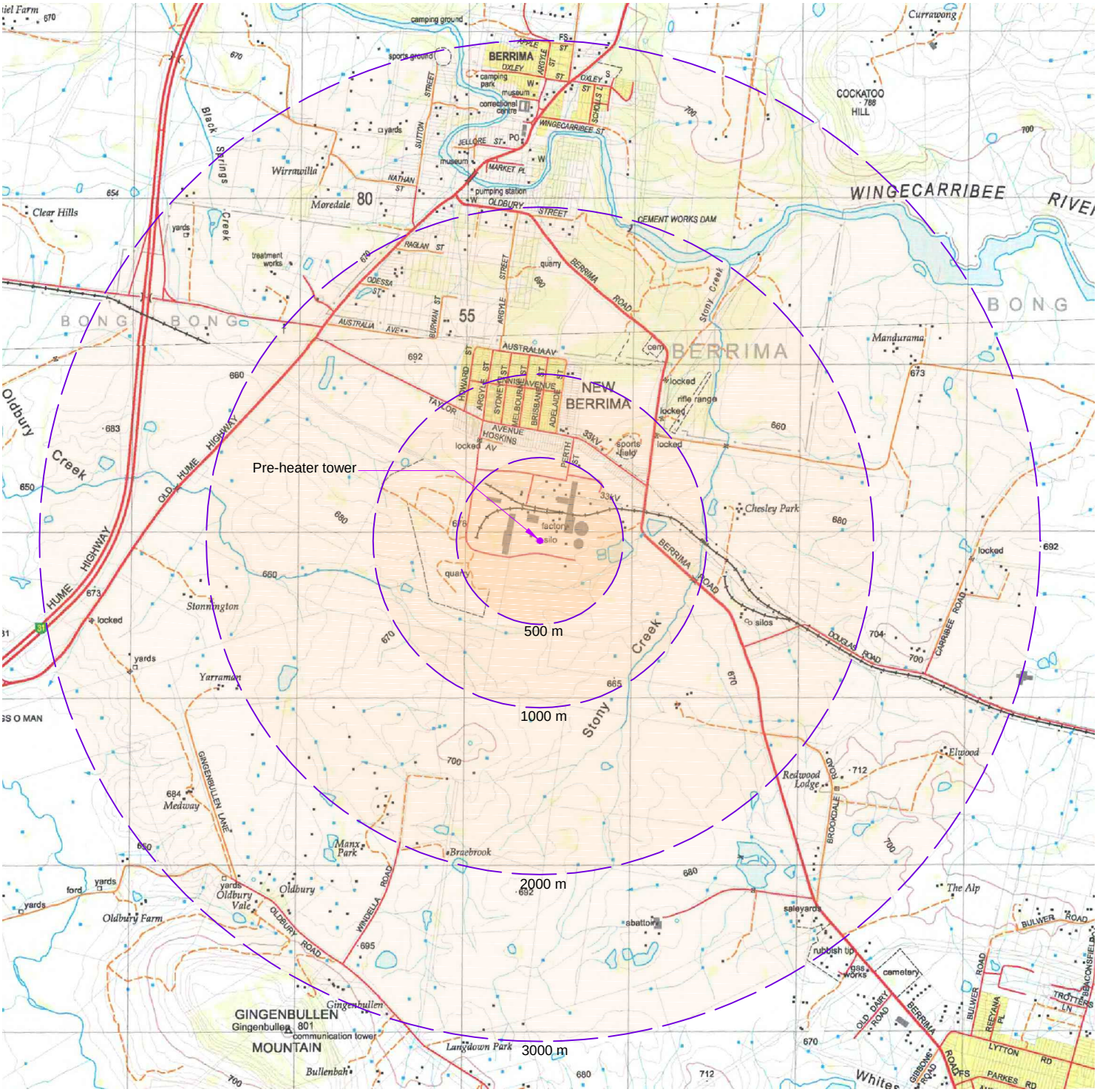
- chipped tyres;
- wood waste chip; and
- refuse derived fuels (RDF), also known as process engineered fuels.

1.2 Project Area

The Berrima Cement Works are located approximately 2.5 km south of the Berrima Township, adjoining New Berrima in the New South Wales Southern Highlands.

Works associated with the Project will be wholly located within the existing Berrima Cement Works site boundary and in general proximity to the Pre-heater Tower. The north of the Project Area is defined by existing industrial infrastructure including the pre-heater tower and kiln 6. An existing storage shed is located to the west of the Project Area, with areas of grass and scattered tree cover extending to the south and east.

The location of the Berrima Cement Works, the existing site and Project Area are illustrated in **Figures 1**, **2** and **3**.



0km 500m

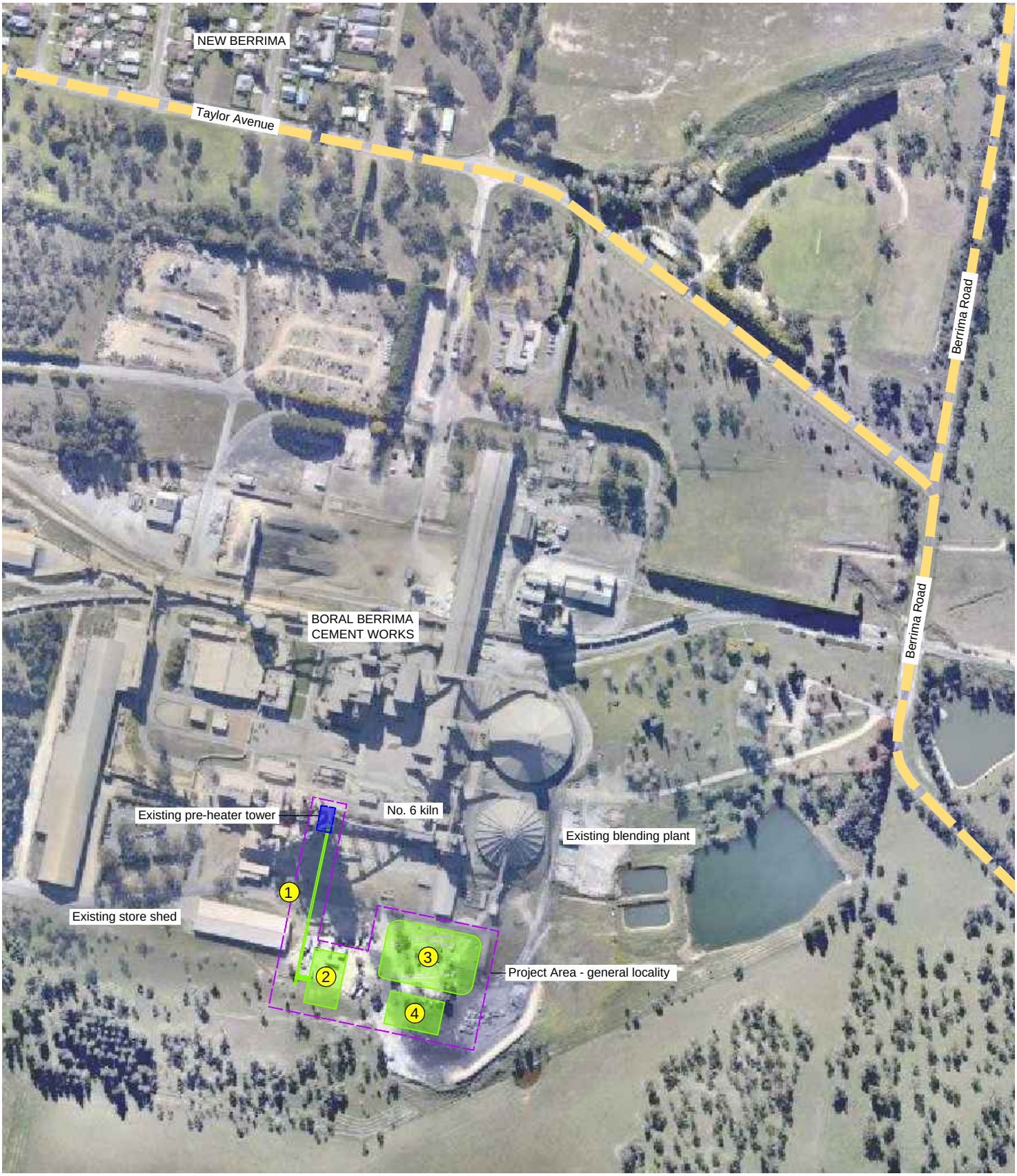
Regional location

Not to scale

Figure 1
Location Plan

Berrima Cement Works Modification 9

GREEN BEAN DESIGN
landscape architects



Existing site and proposed works

0m 50m

Legend (proposed works - indicative extent)

1 Enclosed conveyor

2 Waste Derived Fuels Reception Shed

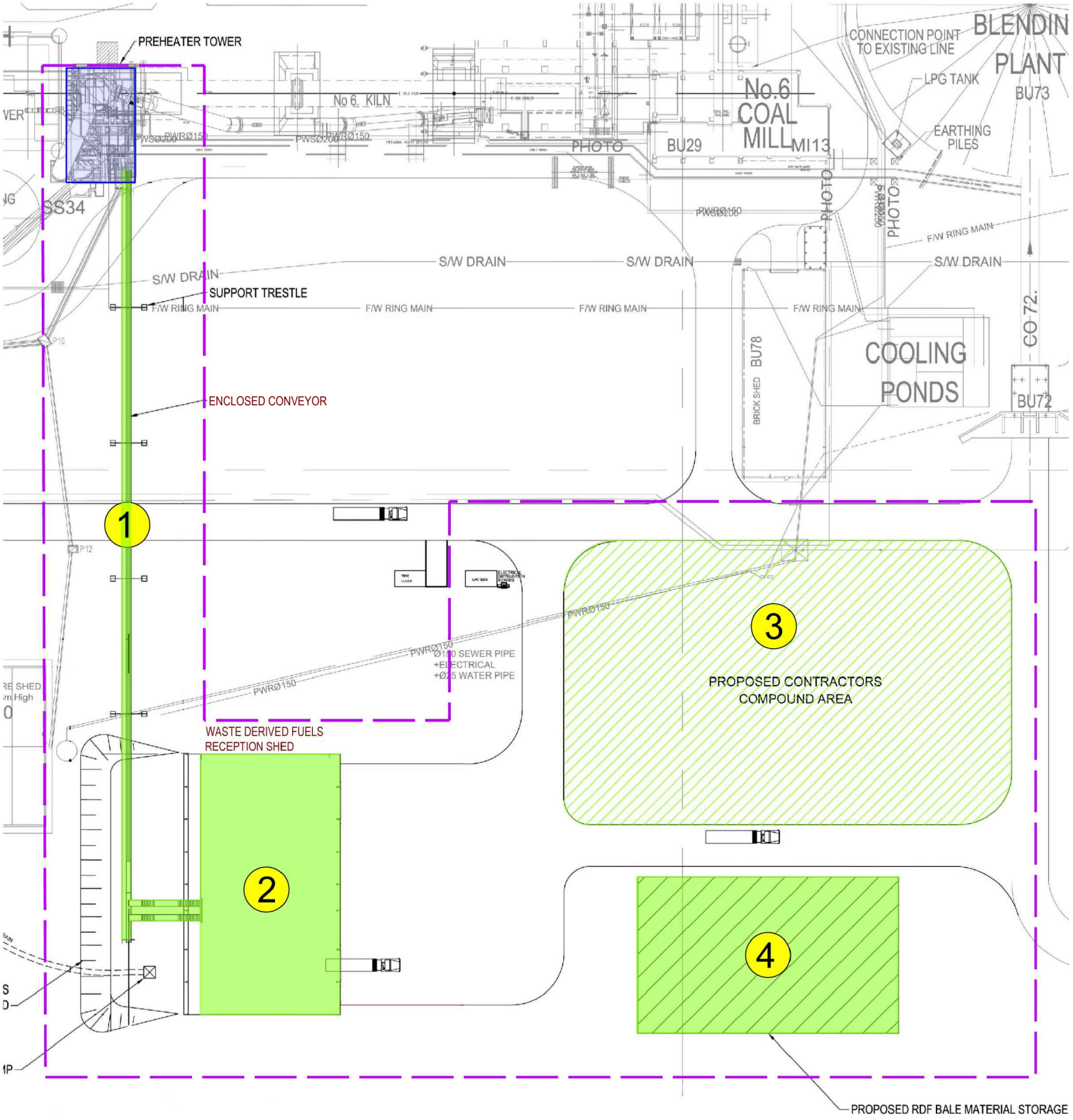
3 Contractors compound area

4 RDF bale material storage

Figure 2
Existing site and proposed works (general locality)

Berrima Cement Works Modification 9

GREEN BEAN DESIGN
landscape architects



Existing site and proposed works

Legend (proposed works - indicative extent)

1	Enclosed Conveyor	3	Contractors compound area
2	Waste Derived Fuels Reception Shed	4	RDF bale material storage

0m 10m

Figure 3
Project Area
(general locality)

Berrima Cement Works Modification 9

GREEN BEAN DESIGN
landscape architects

VIA objectives and methodology

Section 2

2.1 Legislative framework

There are no known Federal, New South Wales State Government or Local Government Authority planning policies, guidelines or standards that apply to the visual impact assessment prepared for this Project. Notwithstanding the lack of policies, guidelines or standards, this VIA has been prepared with regard to industry standards including those such as:

- Visual Landscape Planning in Western Australia (Western Australian Planning Commission, November 2007); and
- Guidelines for Landscape and Visual Impact Assessment 3rd Ed. (Landscape Institute and Institute of Environmental Management and Assessment, 2013).

2.2 VIA objectives

The primary objective of this VIA is to determine the likely visual significance of the Project on people living and working in, or travelling through the landscape within and surrounding the Project Area. This VIA has also been undertaken to:

- assess the existing visual character of the Project Area as well as the surrounding landscape;
- determine the extent and nature of the potential visual significance of the Project on surrounding areas; and
- identify measures to mitigate and minimise any potential visual impacts.

The VIA methodology has been applied to a number of similar VIA for large scale infrastructure developments prepared by GBD, which have been assessed and approved by the New South Wales Department of Planning and Environment.

2.3 Methodology

This VIA methodology included the following activities:

- desktop study addressing visual character and identification of view locations within the surrounding area;
- fieldwork and photography;
- assessment and determination of visual significance; and
- determination of potential mitigation measures.

2.4 Desktop study

A desktop study was carried out to identify an indicative viewshed for the Project. This was carried out by reference to 1:25,000 scale topographic maps and aerial photographs of the Project Area and surrounding landscape.

Topographic maps and aerial photographs were also used to identify the locations and categories of potential view locations that could be verified during the fieldwork component of the assessment. The desktop study also outlined the visual character of the surrounding landscape including features such as landform, elevation, landcover and the distribution of residential dwellings.

2.5 Fieldwork and photography

The fieldwork involved:

- a site inspection to determine and confirm the potential extent of visibility of the Project and ancillary structures; and
- determination and confirmation of the various view location categories and locations from which the Project structures could potentially be visible.

2.6 Assessment of visual significance

The visual significance of the Project on surrounding residential view locations will result primarily from a combination of the potential visibility of the Project infrastructure and the characteristics of the landscape between, and surrounding, the view locations and the Project. The potential degree of visibility and resultant visual significance will be partly determined by a combination of factors including:

- distance between view location and various proposed elements within the Project Area;
- duration of view from receptor locations toward various constructed elements within the Project Area;
- predicted impact of the Project on existing visual amenity;
- nature of predicted visual impacts; and
- visual sensitivity of locations from which views toward the Project exist.

The determination of a visual significance is also subject to a number of other factors which are considered in more detail in this VIA.

2.7 Mitigation measures

Mitigation measures have been determined to assist in the reduction and, where possible, remediation of any significant adverse effects on surrounding view locations that may arise from the Project.

Project description

Section 3

3.1 Introduction

The Project will include works or modifications to existing industrial infrastructure located within the Project Area. These works include:

- construction of a waste derived fuels receiving station and storage building;
- construction of a waste derived fuel material handling and transfer system (including enclosed conveyor); and
- various infrastructure upgrade to feed fuels into the pre-calciner.

The waste derived fuels that are proposed to be used at the cement works would be transported by road and unloaded directly into an onsite enclosed purpose built steel clad building (waste derived fuels reception shed) on the Berrima Cement Works site. The shed will be approximately 33 m long by 50 m wide and 13 m high and located in proximity to an existing storage shed.

The proposed enclosed conveyor will extend north for around 110 m from the waste derived fuels reception shed and connect to the pre heater tower approximately 65 m above existing ground level at the tower base. The enclosed conveyor will be supported by a number of regularly spaced trestle structures along its alignment. The enclosed conveyor will have a relatively small profile against the existing pre-heater tower and approximately 1.5 to 2 m in diameter.

Panoramic photographs and photomontages

Section 4

4.1 Panoramic photographs and photomontages

A series of individual and panorama digital photographs were taken during the course of the fieldwork to illustrate existing views in the vicinity of a number of view locations inspected and assessed as part of this VIA. The panorama photographs were digitally stitched together to form a segmented panorama image to provide a visual illustration of the existing view from each photo location.

The panoramic photographs presented in this VIA have been annotated to identify the pre heater tower located within the existing view. The panoramic photograph locations are illustrated in **Figure 4**, and the panoramic photographs illustrated in **Figures 5** to **18**.

Photomontages have been prepared from photo location 6 on Berrima Road and photo location 11 on Oldbury Road. The photomontages illustrate views toward the proposed enclosed conveyor from around 1.3 kilometres and 2.7 kilometres distance. The photomontages also indicate that views toward the proposed Waste Derived Fuels Reception Shed will be screened by existing tree cover within and adjoining the site. The photomontages are illustrated in **Figures 19** and **20**.

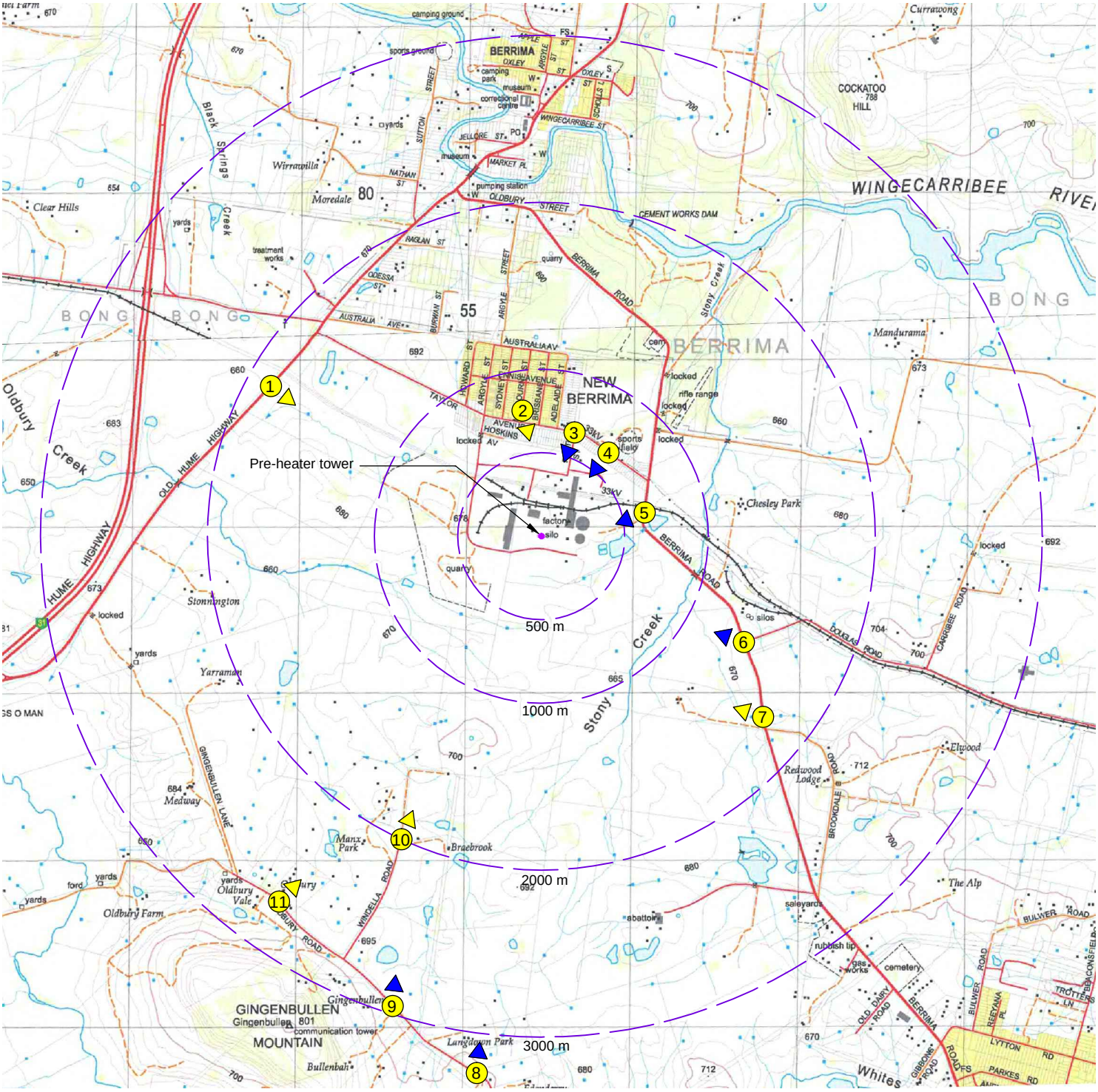


Photo locations

Legend

- Pre-heater tower
- Distance from pre-heater tower
- Single photo location
- Single photo and panorama photo location

0km 500m

Figure 4
Photo locations

Berrima Cement Works Modification 9

GREEN BEAN DESIGN
landscape architects

Photo location 1 view east toward the pre-heater tower from the Old Hume Highway (distance 1,875 m). Views toward the Waste Derived Fuels Reception Shed and future RDF bale material storage area will be screened by existing tree cover. A small section of the proposed enclosed conveyor will be visible beyond existing visible pipe work.

Figure 5
Photo location 1

Photo location 2 view south east toward the pre-heater tower from Melbourne Street, New Berrima (distance 835 m). The Waste Derived Fuels Reception Shed and future RDF bale material storage area will not be visible from residential dwellings within New Berrima. The proposed enclosed conveyor will generally not be visible as it located on the south side of the pre-heater tower.

Figure 6
Photo location 2

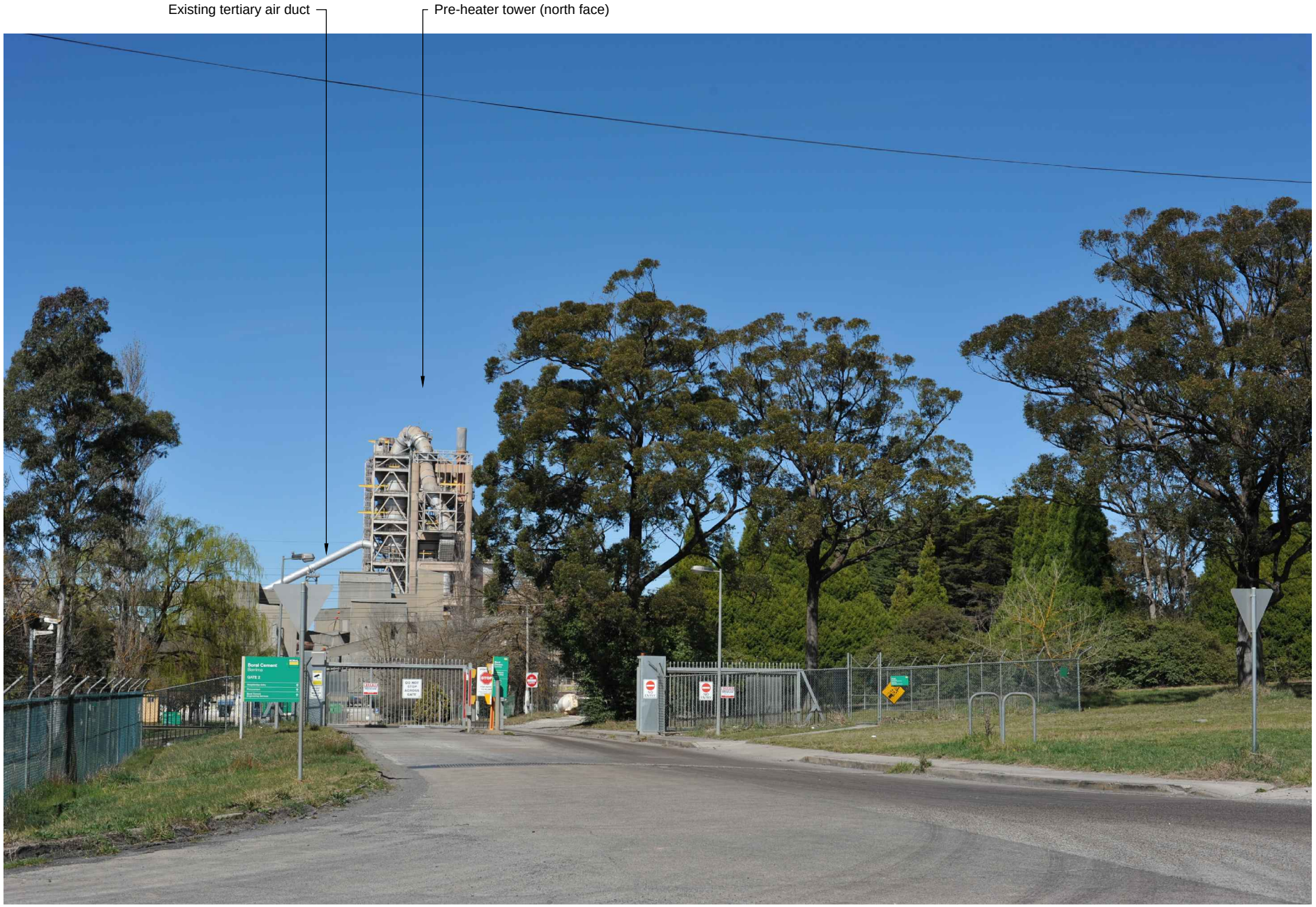


Photo location 3 view south toward the pre-heater tower from Taylor Avenue, New Berrima (distance 665 m). The Waste Derived Fuels Reception Shed and future RDF bale material storage area will not be visible from Taylor Avenue. The proposed enclosed conveyor will generally not be visible as it is located on the south side of the pre-heater tower.

Figure 7
Photo location 3

Photo location 4 view south west toward the pre-heater tower from Taylor Avenue, New Berrima (distance 634 m). The Waste Derived Fuels Reception Shed and future RDF bale material storage area will not be visible from Taylor Avenue or the oval located on the north side of Taylor Avenue. The proposed enclosed conveyor will generally not be visible as it located on the south side of the pre-heater tower.

Figure 8
Photo location 4

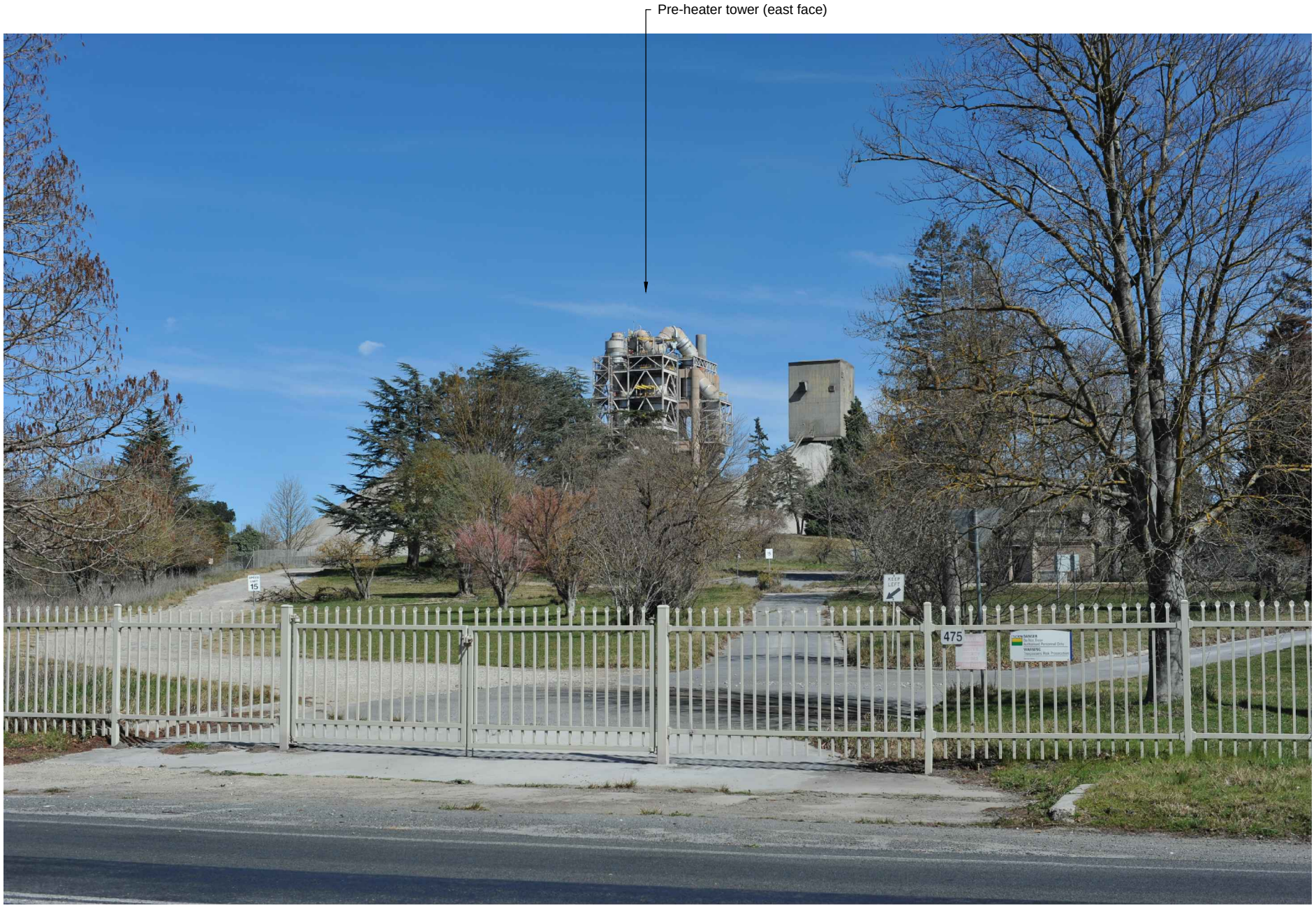


Photo location 5 view south west toward the pre-heater tower from Berrima Road (distance 587 m). The Waste Derived Fuels Reception Shed and future RDF bale material storage area will not be visible from Berrima road where screened by existing infrastructure and tree cover . The proposed enclosed conveyor may be partially visible from its location on the south side of the pre-heater tower.

Figure 9
Photo location 5

Photo location 6 view west toward the pre-heater tower from Berrima Road (distance 1,332 m). The Waste Derived Fuels Reception Shed and future RDF bale material storage area will not be visible from the majority of Berrima Road. The upper and mid portion of the proposed enclosed conveyor will be visible, located on the south side of the pre-heater tower.

Figure 10
Photo location 6

Photo location 7 view north west toward the pre-heater tower from Berrima Road (distance 2,189 m). The Waste Derived Fuels Reception Shed and future RDF bale material storage area will not be visible from the majority of Berrima Road. The upper and mid portion of the proposed enclosed conveyor will be visible, located on the south side of the pre-heater tower

Figure 11
Photo location 7

Photo location 8 view north toward the pre-heater tower from Oldbury Road (distance 3,244 m). The Waste Derived Fuels Reception Shed and future RDF bale material storage area will not be visible from the majority of Oldbury Road. The upper and mid portion of the proposed enclosed conveyor will be visible, located on the south side of the pre-heater tower; however, will be generally viewed against the backdrop of the exsting pre-heater tower structure.

Figure 12
Photo location 8

Photo location 9 view north toward the pre-heater tower from Oldbury Road (distance 2,944 m). The Waste Derived Fuels Reception Shed and future RDF bale material storage area will not be visible from the majority of Oldbury Road. The upper and mid portion of the proposed enclosed conveyor will be visible, located on the south side of the pre-heater tower; however, will be generally viewed against the backdrop of the exsting pre-heater tower structure.

Figure 13
Photo location 9

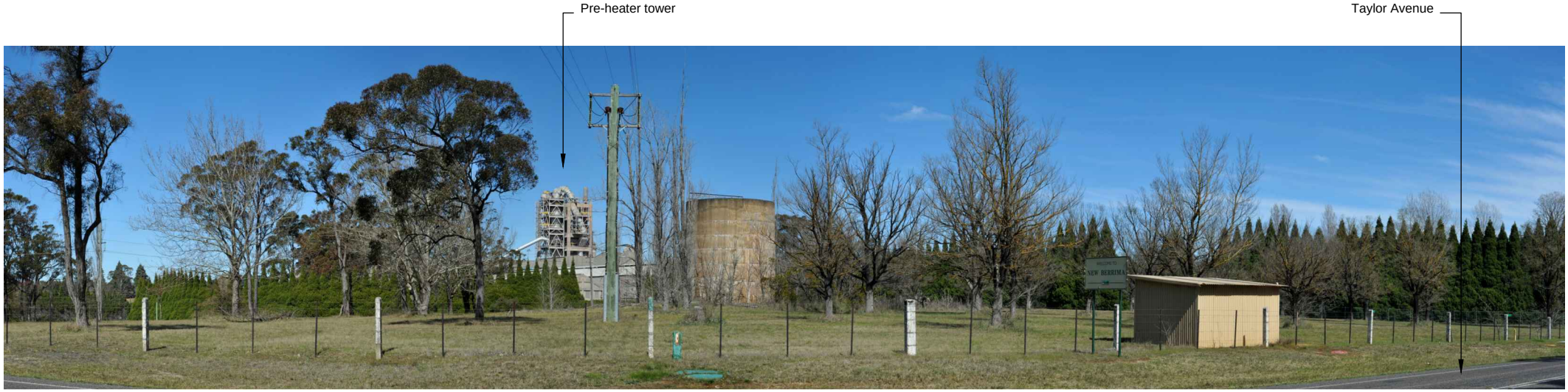
Photo location 10 view north toward the pre-heater tower from Windella Road (distance 2,000 m). The Waste Derived Fuels Reception Shed and future RDF bale material storage area will not be visible from the majority of Windella Road. The upper portion of the proposed enclosed conveyor may be visible, located on the south side of the pre-heater tower; however, will be generally viewed against the backdrop of the exsting pre-heater tower structure.

Figure 14
Photo location 10

Photo location 11 view north east toward the pre-heater tower from Oldbury Road (distance 2,700 m). The Waste Dervied Fuels Reception Shed and future RDF bale material storage area will not be visible from the majority of Oldbury Road. The upper and mid portion of the proposed enclosed conveyor will be visible, located on the south side of the pre-heater tower; however, will be generally viewed against the backdrop of the exsting pre-heater tower structure and tree cover beyond.

Figure 15
Photo location 11

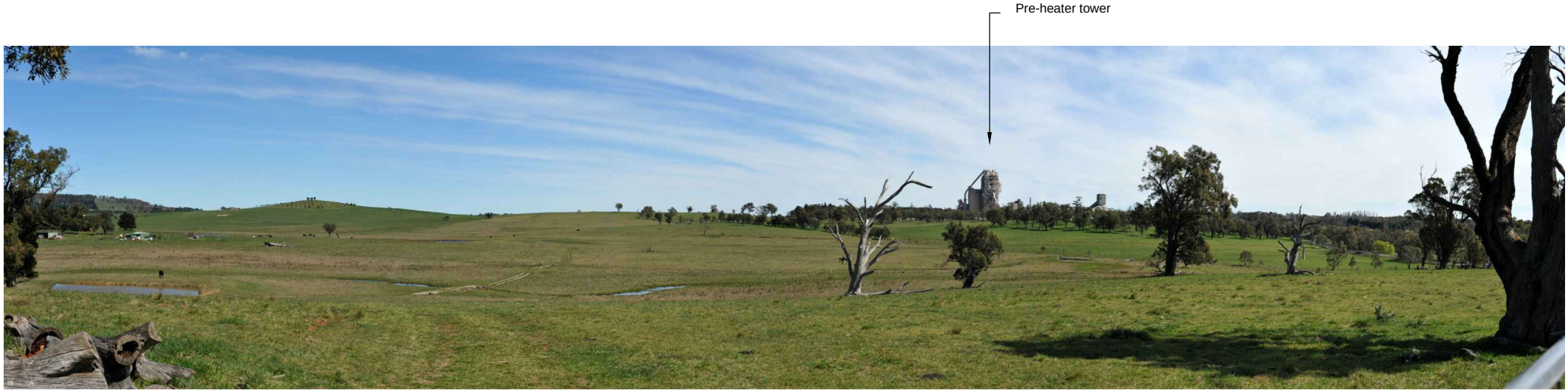
Panorama 1 (Photo location 3) view south toward the pre-heater tower from Taylor Avenue, New Berrima (distance 665 m)



Panorama 2 (Photo location 4) view south west toward the pre-heater tower from Taylor Avenue (distance 635 m)

Figure 16
Panorama 1 & 2

Panorama 3 (Photo location 5) view south west toward the pre-heater tower from Berrima Road (distance 590 m)



Panorama 4 (Photo location 6) view west toward the pre-heater tower from Berrima Road (distance 1,300 m)

Figure 17
Panorama 3 & 4

Berrima Cement Works Modification 9

GREEN BEAN DESIGN
landscape architects

Panorama 5 (Photo location 8) view north toward the pre-heater tower from Oldbury Road (distance 3,240 m)

Panorama 6 (Photo location 9) view north toward the pre-heater tower from Oldbury Road (distance 2,940 m)

Figure 18
Panorama 5 & 6

Photomontage P1 (from photo location 6) view west toward the existing pre-heater tower, proposed enclosed conveyor and support trestles from Berrima Road

Figure 19
Photomontage P1

Photomontage P2 (from photo location 11) view north east toward the pre-heater tower and proposed enclosed conveyor from Oldbury Road

Figure 20
Photomontage P2

Visual effects

Section 5

5.1 Introduction

The assessment of visual effects describes:

- the changes in the character of the available views resulting from the Project; and
- the changes in the visual amenity of the visual receptors.

The magnitude and significance of visual impact resulting from the construction and operation of the Project will primarily result from a combination of the following factors:

- distance between the view location and elements within the Project;
- duration of the view from view location toward elements within the Project;
- predicted impact of the Project on existing visual amenity;
- nature of predicted impacts; and
- receptor sensitivity of locations from which views toward elements within the Project exist.

5.2 View distance

The criteria for the view distance are set out in the VIA Table 1. The period of view parameters include:

- Long views for distances beyond 2 km of the surface facility;
- Medium views for distances between 1 km and 2 km of the surface facility; and
- Short views for distances within 1 km of the surface facility.

These distances have been determined against the likely visibility and visual scale of constructed elements associated with the Project. From short distances the Project will be a significant and dominant feature within the surrounding landscape and may be at complete variance with the landform, scale and pattern of the landscape. From medium distances the Project will be a recognisable feature, but not dominate views within the surrounding landscape. From long distances the Project will form a visible element within the surrounding landscape but is unlikely to constitute a marked effect on existing views.

5.3 View duration

The criteria for the period of view are set out in the VIA Table 2. The period of view parameters include:

- Long term for a view period of over 2 hours;
- Moderate term for a view of 30 minutes to 2 hours; and
- Short term for 10 minutes up to 30 minutes.

These periods of time have been determined against the overall period of view that may be available during daylight hours (assumed to be a period of around 12 hours, discounting seasonal variation). Therefore, as a percentage of the maximum viewing time available during daylight hours:

- a period of 2 hours represents approximately 17% of daylight hours;
- a period of 30 minutes represents approximately 4.5% of daylight hours; and
- 10 minutes represents approximately 1.5% of daylight hours.

5.4 Receptor sensitivity

The following indicators have been adopted to define the sensitivity of individual receptors at specific viewpoints:

- High sensitivity - people with proprietary interest and prolonged viewing opportunities such as residents and users or visitors to attractive and/or well-used recreational facilities. Views from a regionally important location whose interest is specifically focussed on the landscape;
- Medium sensitivity - people with an interest in their environment e.g. visitors to environmental areas, such as bush walkers and horse riders, or a larger numbers of travellers with an interest in their surroundings; and
- Low sensitivity - people with a passing interest in their surroundings e.g. those travelling along principal roads. Viewers whose interest is not specifically focussed on the landscape e.g. farm workers or commuters.

An overall determination of the visual impact significance at each view location has also been assessed and determined against the criteria outlined in **Table 1** below:

Table 1 - View Location Assessment Criteria

Criteria	Definition
View Distance:	
Long (L)	> 2 km
Medium (M)	1km – 2 km
Short (S)	< 1km
View Duration:	
Long term (LT)	> 2 hours
Moderate term (MT)	30 - 120 minutes
Short term (ST)	10 – 30 minutes
Predicted Impact:	
Adverse (A)	Predicted impact of the Project on existing view is likely to be negative.
Neutral (N)	Predicted impact of the Project on existing view is likely to be neutral.
Beneficial (B)	Predicted impact of the Project on existing view is likely to be

Table 1 - View Location Assessment Criteria

Criteria	Definition
	positive.
Nature of Impact:	
Temporary (T)	Visual impact will be temporary in nature
Permanent (P)	Visual impact will be permanent in nature
Reversible (R)	Visual impact will be considered reversible (for example constructed elements may be removed at the decommissioning and rehabilitation stage)
Irreversible (IR)	Visual impact will be considered irreversible (for example proposed alteration to existing infrastructure associated with the Project will be both permanent and irreversible)
Magnitude:	
High (H)	Total loss or major change to pre-development view or introduction of elements which are uncharacteristic to the existing landscape features.
Medium (M)	Partial loss or alteration to pre-development view or introduction of elements that may be prominent but not necessarily uncharacteristic with the existing landscape features.
Low (L)	Minor loss or alteration to pre-development view or introduction of elements that may not be necessarily uncharacteristic with the existing landscape features.
Negligible (N)	Very minor loss or alteration to pre-development view or introduction of elements which are not uncharacteristic with the existing landscape features (resulting in a no change situation).
Receptor Sensitivity:	
High (H)	Residential locations
Medium (M)	Public open space
Low (L)	Highway and local access roads
Visual Significance:	
High (HS)	The Project will be a significant and dominant feature within the surrounding landscape and at complete variance with the landform, scale and pattern of the landscape. The Project will have the capacity to cause a significant deterioration in the existing view. The Project's visual effects may not be minimised by mitigation measures and cumulative impacts may result in an increased level of impact.

Table 1 - View Location Assessment Criteria

Criteria	Definition
Moderate (MS)	The Project will be a recognisable feature, but not dominate views within the surrounding landscape. The Project will be out of scale and discordant with the landform, scale and pattern of the landscape and have the capacity to cause a noticeable deterioration in the existing view. The Project's visual effects may be partially mitigated through appropriate measures.
Low (LS)	The Project will form a visible element within the surrounding landscape but is unlikely to constitute a marked effect on existing views. The Project will complement the scale, landform and pattern of the surrounding landscape and will not create a noticeable deterioration in the existing view. The Project's visual effects will be positively mitigated through appropriate measures.
Negligible (NS)	The Project will result in no discernible deterioration in the existing view.

The visual significance criteria outlined in **Table 1** is used **as a guide** to determine significance of visual impact. The significance of visual impact for each view location is also considered against other factors, which include the overall visibility of the Project from surrounding view locations. The general relationship between view category and its potential level of sensitivity is outlined in **Table 1.**

5.5 Visual Significance Matrix

The matrix presented in **Table 2** presents the assessment and determination of visual impact significance for selected receptor view locations beyond the Project Area. The representative view locations are illustrated in **Figure 21**.

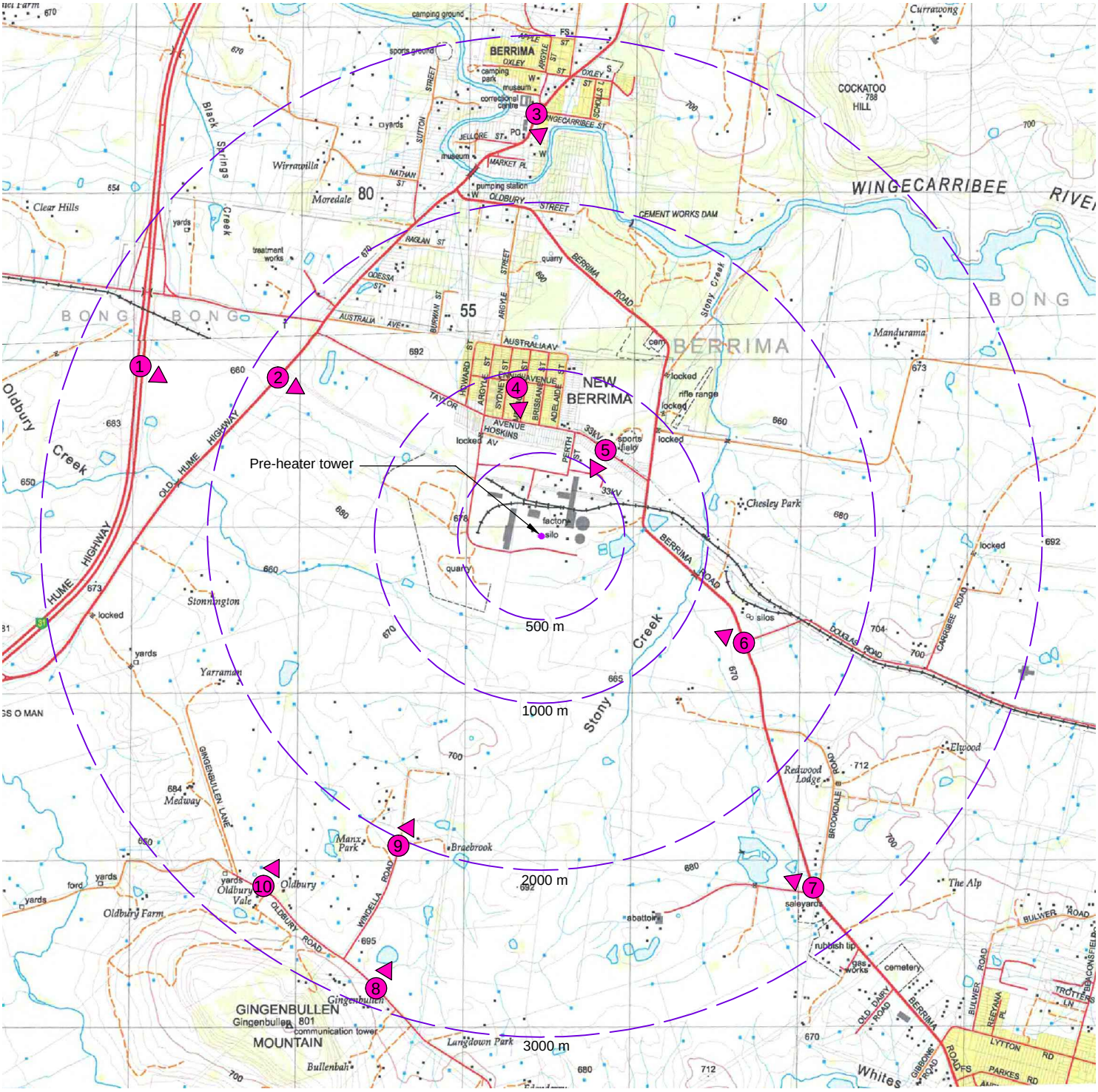


Photo locations

Legend

0km 500m

Pre-heater tower

Distance from pre-heater tower

Representative view location

Figure 21
Representative view locations

5.6 Visual significance matrix – Representative view locations

Table 2 - Visual Significance Matrix

Receptor viewpoint (Figure 19)	View direction and distance toward Project Area	Description	Distance			Duration			Predicted Impact			Nature of Impact				Magnitude	Receptor sensitivity	Significance
			L	M	S	LT	MT	ST	A	N	B	T	P	R	IR			
1 Hume Highway	East to south east – between 2.5 km and 3 km	Views from the Hume Highway toward the Berrima Cement Works and Project Area are largely screened by a gently undulating landform and tree screening to the east of the Highway corridor.														N	L	NS
2 Old Hume Highway	East to south east – between 1.8 km and 3 km	Views from the Old Hume Highway toward the Berrima Cement Works and Project Area are largely screened by a gently undulating landform and tree screening to the east of the Old Hume Highway corridor.														N	L	NS
3 Berrima and surrounds	South – between 1.5 km and 3 km	Views from the Berrima township, including surrounding rural residential dwellings, toward the Berrima Cement works and Project Area are generally screened by tree cover extending along and beyond the Wingecarribee River corridor.														N	H	NS
4 New Berrima	South – between 600 m and 1.2 km	Views toward the Project Area are largely restricted to the upper portions of existing infrastructure, including the pre heater tower. Views are partially screened by existing tree cover along and to the south of Taylor Avenue.														N	H	NS
5 Taylor Avenue	South east to south east – between 650 m to 1.8 km	Indirect views from vehicles travelling along Taylor Avenue are screened and partially filtered by existing tree planting alongside and south of the road corridor. Views are generally restricted to upper portions of existing infrastructure.														N	L	NS

Table 2 - Visual Significance Matrix

Receptor viewpoint (Figure 19)	View direction	Description	Distance			Duration			Predicted Impact			Nature of Impact				Magnitude	Receptor sensitivity	Significance
			L	M	S	LT	MT	ST	A	N	B	T	P	R	IR			
6 Berrima Road	West to north west – between 600 m and 3 km.	Views extend toward the Berrima Cement works from sections of Berrima Road travelling in both south to south east and north to north west directions. Distant and proximate views are largely restricted to the upper portions of taller infrastructure, including the pre heater tower.														N	L	NS
7 Moss Vale	North west – in excess of 3 km	Views toward the Berrima Cement works are largely screened by local undulating landform and tree planting alongside and beyond local road corridors.														N	H	NS
8 Oldbury Road east of Gingenbullen Mountain	North to north east up to and beyond 3 km	Views toward the Berrima Cement works are restricted by local undulating landform with views toward the upper portions of taller infrastructure within the Project Area including the pre heater tower.														N	H	LS
9 Windella Road	North to north east	Views toward the Berrima Cement works are restricted by local undulating landform with views toward the upper portions of taller infrastructure within the Project Area including the pre heater tower.														N	H	NS
10 Oldbury Road east of Gingenbullen Mountain	North east	Views toward the Berrima Cement works are restricted by local undulating landform with views toward the upper portions of taller infrastructure within the Project Area including the pre heater tower.														N	H	NS

5.7 Summary of visual significance

The majority of view locations surrounding the existing Berrima Cement Works, including private residential dwellings, road corridors and public spaces, within and beyond the Project Area have been determined to have an overall negligible significance with regard to the Project and its associated infrastructure.

The negligible to low visual significance results from a combination of factors which include:

- screening provided by existing industrial infrastructure within the cement works;
- gently undulating and ridgeline landforms that extend beyond the cement works and Project Area; and
- moderate to dense tree cover within and surrounding the Berrima Cement works and residential dwellings.

5.8 Construction activities

Whilst construction activities would tend to be more visible than the operational stage of the Project, the construction activities would be temporary and transient in nature. Views toward construction activities would be largely restricted by existing tree cover surrounding the Project Area.

5.9 Night time lighting

Key components associated with the Project will include some additional low level intensity night lighting around some constructed elements. Night lighting will include individual and direction spot lighting and will avoid broad area or floodlighting where possible. The majority of infrastructure areas associated with the Project will be unlikely to require additional lighting, or lighting that will be directly visible from surrounding view locations.

Cumulative Impact Assessment

Section 6

6.1 Cumulative Impact Assessment

A cumulative visual impact could result from elements of the Project being constructed in conjunction with other existing infrastructure within the cement works which could be either associated or separate to it.

The Project is considered to have a very limited potential to increase the significance of cumulative visual impact with regard to existing infrastructure. This is largely due to the extent of visual screening surrounding the Project Area and the location of proposed constructed elements relative to existing infrastructure.

Mitigation measures

Section 7

7.1 Mitigation measures

While the overall significance of the Project's visual impact has been determined as negligible, the following mitigation measures will potentially help to minimise the level of residual visual impacts. The mitigation measures generally involve reducing the extent of visual contrast between the visible portions of the Project structures and the surrounding landscape.

7.2 Structures

The colour and texture of any new structures should be dark in tone and utilise non-reflective materials where possible. This will potentially minimise the visual contrast between the structures and surrounding background to a small number of receptor locations surrounding the Project Area. Colour selections should incorporate a palette similar to those selected for existing infrastructure at the cement works. The darker colour tones will tend to exhibit less contrast with tree cover across hillside areas to the north of the Berrima Cement Works.

7.3 Lighting

Whilst the majority of proposed light sources will tend to be contained by both landform and tree cover for the majority of receptor locations, it is noted that:

- any additional lighting requirements for the Project will be designed and installed to avoid direct line of sight from areas surrounding the site where possible;
- the Project will not require aviation obstacle lighting;
- large floodlights will typically not be used. It is possible that some lights may be required for emergency lighting or to allow for emergency maintenance; and
- low intensity security lighting will be designed to minimise light spill.

Conclusion

Section 8

8.1 Summary

This VIA concludes that overall the key Project activities and operations will have a negligible visual impact on people living in or travelling through the landscape within and surrounding the Berrima Cement Works.

The overall negligible visual impact will be due to a combination of the following factors:

- The majority of Project activities and operations will be partially visible during construction stages and will be temporary in nature.
- Most Project activities and operations will be located within the Berrima Cement Works and will not be visible from surrounding view locations including residential view locations within New Berrima.
- Landform and tree cover will result in a high visual absorption capability for the existing landscape to accommodate the Projects key elements and associated development infrastructure.
- There are no key or significant views toward the Project Area from dedicated public lookouts. Distant pubic vantage points (in excess of 2 km) will not be significantly visually impacted by the Project.
- The extent and condition of existing tree cover surrounding and within the cement works will also limit the potential for cumulative visual impacts in association with existing industrial infrastructure or other industrial development beyond the Berrima Cement Works.
- The use of appropriate finished colours and non-reflective materials for proposed infrastructure will help to minimise the potential for visual contrast against the surrounding landscape when viewed from some view locations beyond the Project Area.