

**WinZero Submission on SSD-10422 Development Application**  
**Austral Brickworks New Berrima**

**Introduction**

1. By way of introduction, WinZero is a not-for-profit incorporated association established to transition the Wingecarribee Shire to net zero emissions over the next 10 to 15 years. On 12 February 2020 Wingecarribee Shire Council made a Climate Emergency Declaration, recognising that carbon emissions must be reduced as far as possible throughout the Shire. Unfortunately, the Development Application for the new brickworks at New Berrima fails to utilise technology that addresses this need to reduce Green House Gases (GHG). In particular, the use of natural gas to fire the bricks will not only emit carbon on an industrial scale, but also inevitably leak methane (an even more potent GHG).
2. The State authorities need to address climate change as a primary concern of this and other major industrial developments, and require technology that addresses the climate emergency we are in.

**Brief Outline of Project**

3. Capital Investment Value of approximately \$80m, therefore a State Significant Development (because it is valued at more than \$30m).
4. It triggers the EPA to issue an Environment Protection Licence (“EPL”) under the *Protection of the Environment Operations Act 1997*.
5. Comprises an area of 51.68ha, tributaries of Stony Creek.
6. EPA requirements are set out in a letter dated 21 January 2020 to Shaun Williams (DPIE). Briefly, the key issues to be addressed in the Secretary’s Environmental Assessment Requirements (SEARS) are:  
(a) Air Quality, (b) Water Quality, (c) Noise, (d) Waste Management ((e)Contaminated Land Management, but this does not appear to apply).
7. The Planning Secretary’s Environmental Assessment Requirements dated 11/02/2020, also require consideration of Visual, Greenhouse Gas, Soils and Water, Biodiversity and Cumulative Impacts.

**Greenhouse Gas: Technologies to be Employed in Brick Manufacture**

8. The Environmental Impact Statement, prepared by Willow Tree Planning, (“EIS”) states on page 19:

***Stage Four - Firing in a Tunnel Kiln***

*Bricks are fired (baked) at temperatures between 1000°C and 1200°C depending on the clay. Light colours are usually fired at the lower temperature and darker colours at the higher. They are **fuelled by natural gas** [emphasis added]. A tunnel kiln is continuous, with the bricks moving on kiln cars past stationary fires. Spent combustion gases preheat unfired bricks and airflow over cooling bricks is used to dry green bricks.*

9. On page 159 of the EIS, it states:

*The total estimated annual operational GHG emissions from the Proposed Development are expected to be approximately 23,238.3 tonnes of Carbon Dioxide (CO<sub>2</sub>-e). .../... The Proposed Development annual emissions contribute to approximately 0.02% and 0.004% of the State and National GHG emissions respectively.*

10. Whilst the total Green House Gas (GHG) emissions may “only” be 0.02% to 0.04% of the national total, this is still a massive amount of GHG to be emitting annually over the coming decades.

11. With climate change a major concern for our Shire, nation and the world, natural gas is an inappropriate form of fuel for firing the bricks. Hydrogen, produced from water by the use of renewable energy, itself becomes a renewable energy source. Australia should be leading the world with this technology. Accordingly, Austral should be required to use hydrogen derived through renewable energy for the firing of the bricks, if not immediately, then in the future (meaning that the kilns and piping need to be adaptable to hydrogen). In addition, there are now new technologies which can also dramatically reduce the CO<sub>2</sub> and methane emissions that are produced as a result of the use of natural gas. Thus, hydrogen used in conjunction with microwave technology is a much better technology to use in brickworks.

See:

(1)

[https://www.researchgate.net/publication/292139598\\_ASSESSMENT\\_INFLUENCE\\_OF\\_MICROWAVE\\_HEATING\\_ON\\_A\\_PHYSICAL\\_PROPERTIES\\_OF\\_DRIED\\_CLAY\\_BRICKS\\_COMPARED\\_WITH\\_CONVENTIONAL\\_METHODS](https://www.researchgate.net/publication/292139598_ASSESSMENT_INFLUENCE_OF_MICROWAVE_HEATING_ON_A_PHYSICAL_PROPERTIES_OF_DRIED_CLAY_BRICKS_COMPARED_WITH_CONVENTIONAL_METHODS)

(2)

[https://www.energiteknologi.dk/sites/energiteknologi.dk/files/slutrappporter/64013-0538\\_eudp\\_final\\_report\\_2017-12-14.pdf](https://www.energiteknologi.dk/sites/energiteknologi.dk/files/slutrappporter/64013-0538_eudp_final_report_2017-12-14.pdf)

(3)

[https://www.zi-online.info/en/artikel/zi\\_Microwave-assisted\\_gas\\_firing\\_3064258.html](https://www.zi-online.info/en/artikel/zi_Microwave-assisted_gas_firing_3064258.html)

## 12. **Ancillary Greenhouse Gas Emissions**

The proposed project will also employ many vehicles, which could be electrical. The extensive conveyor belts could be powered by renewable electricity. The general lighting of the site and other operations drawing on electricity could be powered by renewable electricity. The nearby land owned by Austral is sufficient in area to install a major solar array large enough to provide the necessary power. The electricity generated should be stored in a battery system. This should be addressed in the conditions of development consent.

13. The industrial site will have a very large area of concrete or other surface treatment for the factory and the yards. This surface material should be low-carbon in both content and in its production method.

**14. Co-generation and other Alternative Technologies for Energy Efficiency**

There are also design features, such as passive solar, insulation and re-use of waste heat that should be incorporated into the design. Indeed, the use of heat from the kilns is a major opportunity for co-generation of electricity that can be fed back into the grid at times of peak electricity demand. The return of income from the peak demand electricity price would be a major offset against the running costs of the plant. This technology has been used in Germany for an aluminium smelting plant. That plant now earns as much from the peak demand electricity as the smelting. See:

(1) <https://www.greentechmedia.com/articles/read/german-firm-turns-aluminum-smelter-into-huge-battery>

(2) <https://reneweconomy.com.au/australias-big-smelters-could-also-be-giant-batteries-and-go-green-at-same-time-86721/>

**15. Accordingly, the EPL should stipulate that it be a condition of development consent that hydrogen gas be used in the firing of the bricks. If this is not possible initially, the kilns and piping should be such as to be adaptable to hydrogen in the future. The company should also be encouraged, if not required, to install a solar array on the land or adjoining land owned by the company, sufficient in size to produce enough electricity to run the electrical components of the plant and vehicles on site. Co-generation of electricity from the heat of the kilns should be required to be incorporated into the design. Finally, all materials used in the construction and running of the plant should be low carbon content (e.g. cement used in the concrete covered areas) and aimed at energy efficiency (e.g. insulation)**

**Water Quality & Biodiversity: Protection and Enhancement of Riparian Zones**

16. Of all Shires in NSW, Wingecarribee Shire has the highest percentage of its area in the Sydney Drinking Water Catchment Area (95% of the Shire). It is now recognised that protection and restoration of riparian zones is an essential part of the protection of the Sydney Water Catchment Area. This can best be done by replanting the riparian zones with native vegetation that is endemic to the area. This not only protects and filters the water, but also provides important shelter and habitat corridors for the local fauna.

17. Figure 3 (Riparian Lands and Watercourses) on page 5 of the EIS, shows that the actual building site is traversed by tributaries to Stony Creek. To the extent that the construction site for the brickworks will destroy these riparian zones, then as a minimum, by way of offset, there needs to be additional protection of Stony Creek to that afforded under the conditions of consent for the Austral Masonry Plant, approved by WSC in December 2019. That approval only required protection of 20 metres on either side of Stony Creek. The LEP requirement is that 30 metres on each side of Stony Creek be identified as a Category 2 stream (LEP 2010 Clause 7.5(5)(b)). The

impact of the brickworks and the masonry plant will be cumulative, and the requirements should be increased from 20 metres on each side of Stony Creek to 30 metre in accordance with the LEP.

18. The EIS conducted on behalf of the company by Willow Tree Planning, states:

*It [the site] is mapped within the Wingecarribee River sub-catchment of the Sydney Drinking Water Catchment under State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011 (Drinking Catchment SEPP).*

19. Because of its proximity to the Wingecarribee River and the importance of that river and the water catchment to the State of NSW and Sydney in particular, special protection needs to be given to the revegetation of Stony Creek and its major tributary to the West (marked in red on the accompanying aerial view, **ATTACHMENT 1**). In addition, the removal of the native forest shown on page 114 of the EIS (Figure 35 of the EIS and reproduced as **ATTACHMENT 2** below) justifies the requirement for offsets by planting native vegetation around the perimeter of the Lot and along the riparian zones outlined above. The wildlife corridor created as a result will also strengthen the protection and enhancement of the area's biodiversity. The SEARS requirements regarding biodiversity require the project to include the number of trees to be planted. This needs to be calculated on the basis of the area of the revegetated riparian zones, together with the appropriate density of planting.

20. The provisions for the protection and enhancement of biodiversity, set out on page 166 of the EIS, are inadequate and need to be supplemented with the requirement for the native plantings set out above.

**21. Accordingly, the EPL should stipulate that it be a condition of development consent that the 60 metre wide Stony Creek riparian zone and the 20 metre wide riparian zone of the tributary of Stony Creek should be revegetated with native plant species, including koala food trees and *E.macarthurii*. Both of these are endemic to the area and in need of increased planting to offset the general environmental degradation of the site due to overgrazing from cattle and the coming intense industrial use of the land. See Attachment 1 below (riparian zones to be revegetated marked in red, 30 metres each side of Stony Creek and 10 metres each side of its tributary)**

#### **Air and Noise Quality: Perimeter Native Plantings for Filtering Dust and Visual Amenity**

22. On page 6 of the Environment Assessment, there is the following description of the treatment and conveyance of raw material:

#### **3.1.2 Raw Materials**

*A raw materials area would be located to the west of the proposed factory building. These raw materials would be delivered to the site from the Mandurama quarry via a conveyor (with tunnels under the existing quarry road). Raw materials conveyed*

*to the site would be crushed and ground onsite before being stored onsite in raw materials bunkers prior to processing.*

23. In addition to the dust created by the approved Austral Masonry Plant, the conveyance and crushing of the rock will create more dust. And it is important to note that the site is close to the village of New Berrima, which already suffers periodic “dust events” from the adjacent massive Boral cement works. The combination of cement dust and rock dust raises a heightened risk of silicosis for the residents of New Berrima, and if the wind is strong enough for the residents of Berrima which lies just beyond New Berrima.

24. To address the dust issue and to provide screening of the industrial site, there needs to be a 20 metre perimeter native plantings around the total site (i.e. the brickworks and the masonry plant). This planting would reinforce the environmental benefits of the riparian zone revegetation discussed above.

**25. Accordingly, the EPL should stipulate that it be a condition of development consent that the entirety of the boundary of Lot 1 DP785111 have a 20 metre wide native vegetation planting, to act as a dust and sound filter for the industrial activities and as a screen to maintain the visual amenity of this area which is going to be increasingly impacted by heavy industry development.**

**Air and Noise Quality: Covering of Conveyor Belt Carrying Raw Materials from the Quarry to the Brickworks**

26. As explained above, dust is of particular concern, and the crushing and grinding of the materials needs to be under cover and confined to an enclosed building. There is an initial crushing at the quarry site, and this should be done in a fully enclosed building. The secondary crushing at the brickworks should also be done in a fully enclosed building. Finally, there is the secondary crushing by grinding of the raw materials, which also needs to be done in a fully enclosed building. These measures would greatly reduce the noise as well as dust pollution from the operations, and in doing so address the amenity of the nearby villages of New Berrima and Berrima.

27. Similarly, the conveyer of the materials from the quarry needs to be covered for the length of its journey from the quarry to the brickworks.

28. The covered conveyor belts will also address the significant noise issues associated with this project. The amenity of the nearby villages of New Berrima and Berrima will be adversely affected if the conveyor belts are not covered.

**29. Accordingly, the EPL should stipulate that it be a condition of development consent that the conveyor belt of the raw materials should be covered for the entire length of the conveyor’s journey from the quarry to the brickworks for crushing. It should also be a condition of consent that the crushing of the material be confined to enclosed buildings.**

**Cumulative Impacts: Need for 20 metre wide native planting around the perimeter of the brickworks lot; and revegetation of the banks of the Wingecarribee River**

30. As stated above, the EPL must take into account the cumulative impact of the Brickworks project in relation to air, noise, traffic and biodiversity associated with nearby industrial operations.

31. There is presently a very large industrial site in very close proximity to the site for the brickworks, namely, the Boral Cement Works which already generates significant noise, and dust, as well as traffic (see **ATTACHMENT 3** below: aerial view of the Boral Cement Works in close proximity to the Brickworks site).

32. In addition, Austral received approval in December 2019 for the development of its massive masonry plant, to be constructed and operated on the same lot (Lot 1 DP785111) as the brickworks.

33. Finally, there is the nearby Austral shale quarry, which forms part of the parcel of lots adjacent to each other, thus forming a cohesive industrial operation.

34. It is because of the cumulative impact of these activities that we ask for the 20 metre native plantings around the entire perimeter of **Lot 1 DP785111**.

35. The parcel of land impacted on by these activities includes the bank of the Wingecarribee River, which is of particular concern to the State's water authorities. Accordingly, consideration should be given to the imposition of a condition of consent to revegetate the riverbank of the Wingecarribee River, that runs alongside the Austral quarry site.

36. At present, the banks of the river next to the quarry have been completely denuded by cattle grazing to the edge of the river and entering, creating bare muddy banks of the river at this point. The platypus habitat has been adversely affected and there should be native plantings to extend the platypus habitat from the nearby Berrima Weir upstream past the Austral Shale Quarry site. The Wingecarribee LEP 2010 stipulates that the Wingecarribee River riparian zone be 50 metres on each side of the river (LEP 2010 Clause 7.5(5)(a)).

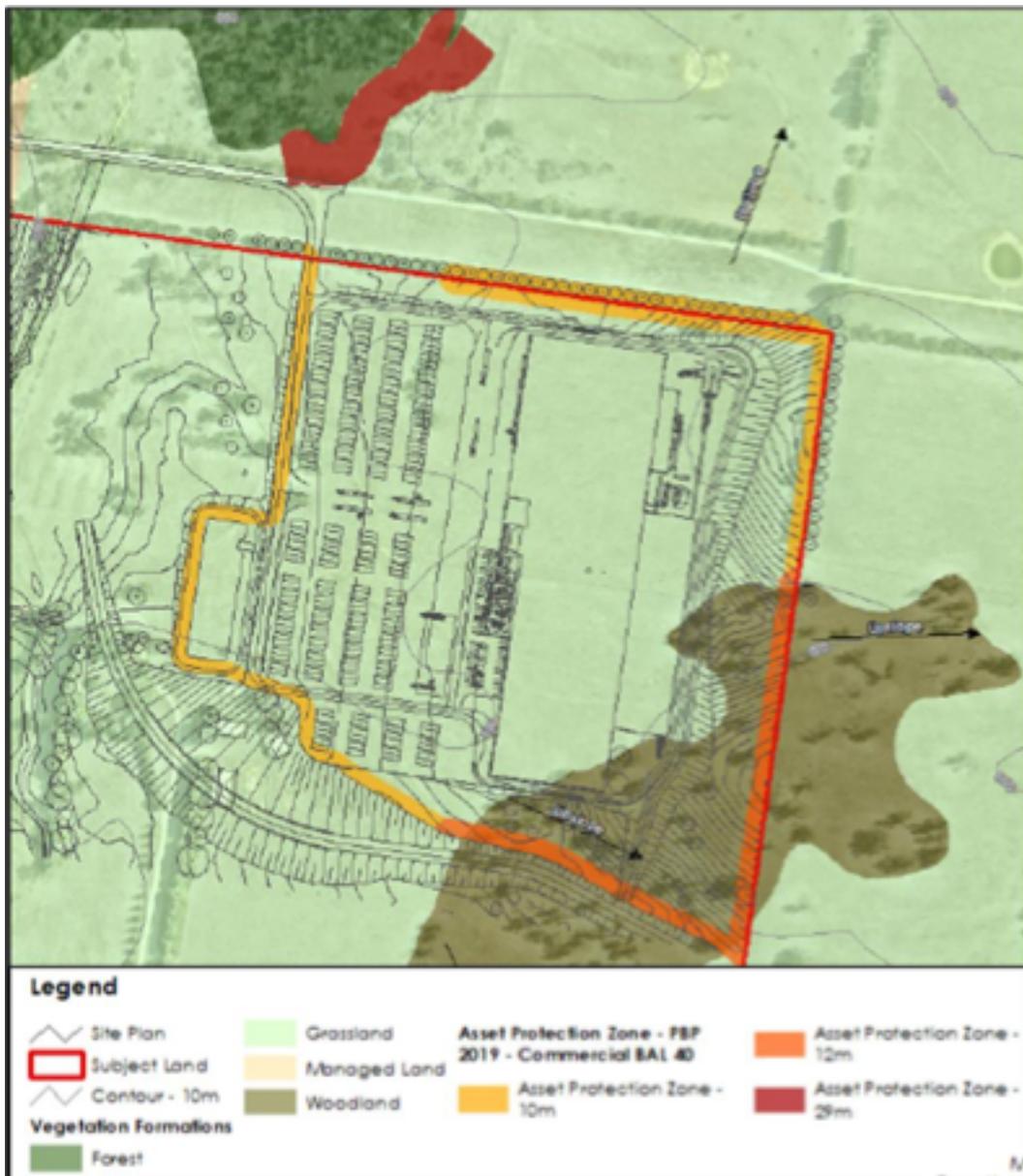
37. Below is the aerial view of Lot1 DP414246, showing the denuded banks of the river (**ATTACHMENT 4**), together with an aerial view of the shale quarry site (**ATTACHMENT 5**). It is clear that the 50m wide revegetation of the riverbank will not impinge at all on the quarry operations but will offset the cumulative negative environmental effects of the three major Austral projects on this very significant environmental location.

38. Accordingly, the EPL should stipulate that it be a **condition of development consent for the brickworks**, because of the cumulative impact of the brickworks combined with their quarry and masonry plant, that Austral be required, to revegetate the banks of the Wingecarribee River on Lot 1 DP414246 with a 50 metre-wide native planting

**ATTACHMENT 1: (riparian zones to be revegetated marked in red, 30 metres each side of Stony Creek and 10 metres each side of its tributary)**



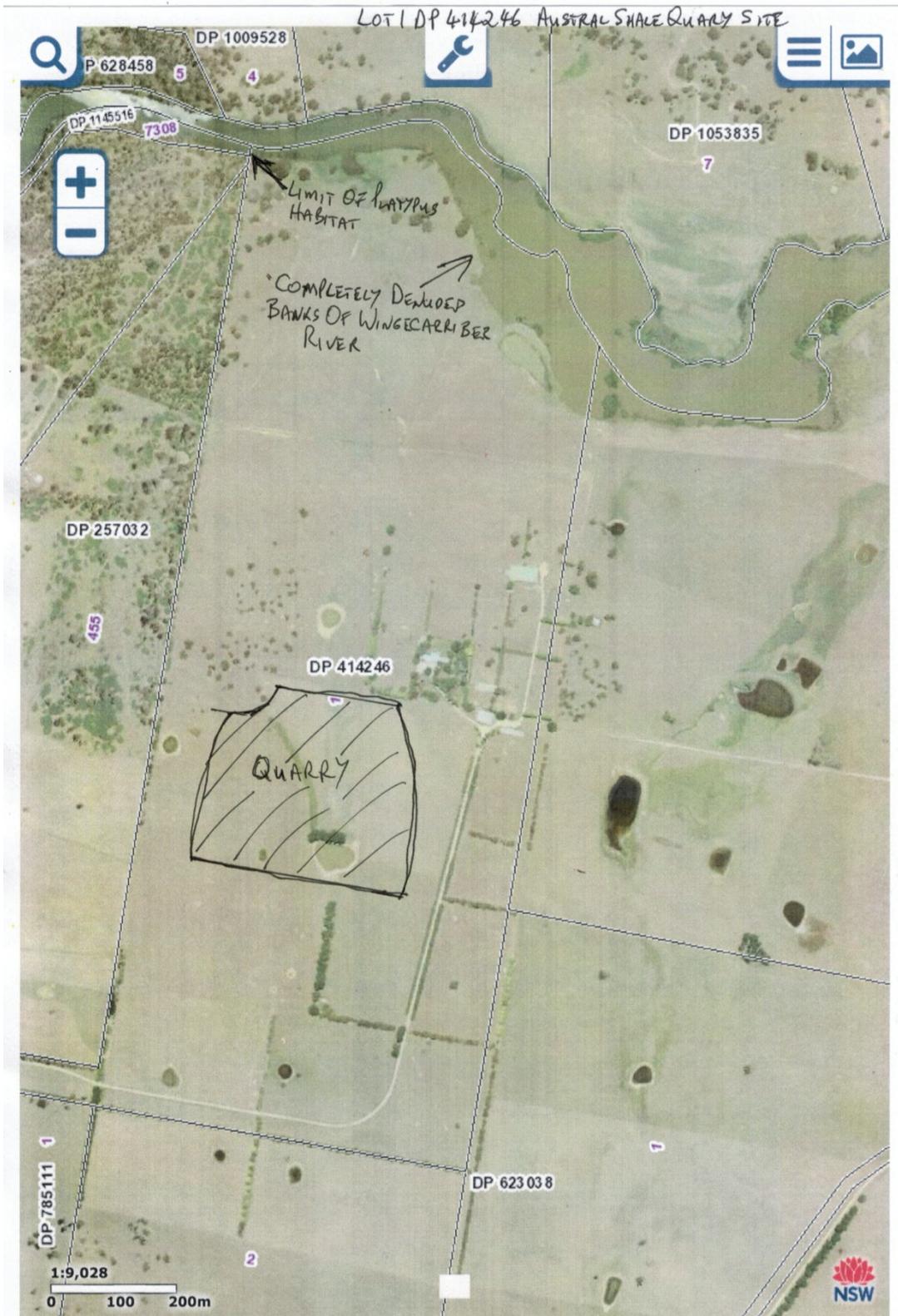
**ATTACHMENT 2: Site Plan showing native forest (marked as “Woodland” in brown) to be removed**



**ATTACHMENT 3: Aerial view of the Boral Cement Works in close proximity to the Brickworks site**



**ATTACHMENT 4: Denuded banks of the Wingecarribee River**



**ATTACHMENT 5: Aerial view of the shale quarry site (Attachment 4).**

