Australian Government

Climate Active Public Disclosure Statement

An Australian Government Initiative

NAME OF CERTIFIED ENTITY:	Brickworks Building Products Pty Ltd
REPORTING PERIOD:	1 July 2018 – 30 June 2019; including projected emissions for FY2020-21

Declaration

To the best of my knowledge, the information provided in this Public Disclosure Statement is true and correct and meets the requirements of the Climate Active Carbon Neutral Standard.

Signature		Date	20 November 2020
Name of Signatory	Cathy Inglis		
Position of Signatory	General Manager Technical & Innovation		

Australian Government
Department of Industry, Science, Energy and Resources

1. Carbon neutral information

Description of certification

Brickworks Building Products Pty Ltd (Brickworks) is one of Australia's largest, best known and most diverse building material manufacturers. Our products include clay bricks and pavers, concrete masonry blocks, retaining wall systems, stone, precast concrete panels, concrete, terracotta and solar roof tiles, terracotta façades and lightweight building systems.

Brickworks has been transformed from originally a New South Wales state-based operation to a national organisation with currently eleven brick manufacturing operations in NSW, Victoria, Tasmania, South Australia, Western Australia and Queensland. Austral Bricks is the subsidiary of Brickworks that manufactures and sells Australian made clay bricks and pavers. Austral Bricks holds multiple ABN's in each state, and multiple brands including Daniel Robertson, Bowral Bricks and Nubrik, therefore for the purpose of Climate Active, the certification is held by Brickworks Building Products Pty Ltd but Austral Bricks and its brands will use the Climate Active certification to sell carbon neutral bricks.

Our Climate Active inventory covers opt-in defined brick and paver products manufactured at any of Brickworks Australian plants (Horsley Park 1, 2 and 3, Bowral and Punchbowl (NSW), Wollert (Vic), Longford (Tas), Golden Grove (SA), Bellevue and Cardup (WA) and Rochedale (QLD)). At these eleven sites (see **Figure 1**), Brickworks produces bricks and pavers for the Australian and overseas markets.

The manufacturing process for bricks and pavers is identical and for the purpose of this document, pavers may be referred to as bricks. It starts with mining clay and shale and mechanically processing it prior to shaping and firing the bricks in kilns fuelled predominantly by natural gas.

Clay bricks are used in construction; typically walling systems, planter boxes, etc. Clay pavers are used in paving and landscaping applications.

Figure 1: Brickworks brick plant locations throughout Australia

Bricks are a building material predominately used in the construction of walls, pillars, and pavement. Bricks hold many benefits including:

- Offer a long life
- Low maintenance
- Durable
- Healthy
- Used in energy efficient building design
- Fire resistant
- Excellent acoustic properties
- Reusable and recyclable
- Inert

Table 1 and Table 2 present examples of the products studied in this LCA.

Table 1: Typical brick product configurations (Source: Austral Bricks)

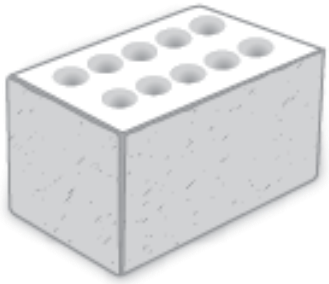
Brick shape & core hole configuration	Examples - bricks in wall application
Standard brick with 10 core holes 	
Standard brick with 3 core holes 	
Twin brick 	

Table 2: Typical paver product configuration (Source: Austral Bricks)

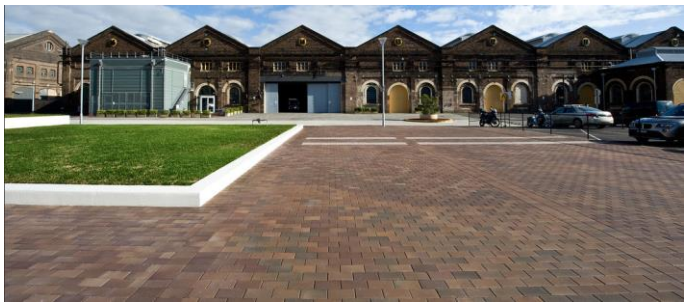
	Paver shape	Example - pavers in paving application
Classic paver (no core holes)		

Photo: Climate Active Certified Bricks, Daniel Robertson Hawthorn – London by Austral Bricks Tasmania

The carbon inventory has been prepared and verified based on the Climate Active Carbon Neutral Standard for products and services, the ISO14040:2006 and ISO14044:2006 standards for life cycle assessment.

Brickworks intends to certify selected Australian made clay brick products as carbon neutral under the Climate Active program. Brick products will become carbon neutral certified in two ways:

1. All bricks made in Tasmania will remain carbon neutral and available to all customers. Austral Bricks Tasmania has held Carbon Neutral Certification since 2013-14;
2. On a project and/or client basis for all other Australian brick factories. This option will entail negotiation with our clients. i.e. for the type and quantity of bricks and pavers supplied to a project or to a client. This is a new local offering.

To differentiate the two offerings, we will refer to option 1 - Austral Brick Tasmania as “Carbon Neutral” and option 2 – All other factories as “Brickworks National Carbon Neutral Scheme”.

Brickworks intends to hold two Climate Active Licences, one for each scenario. This PDS reflects the life cycle assessment for option 2.

Functional unit

The functional unit for this study is:

One thousand (1,000) bricks or pavers – specified by product type – manufactured by Brickworks in Australia and used in various applications throughout Australia and overseas.

Our bricks and pavers are kiln-fired products of different dimensions and weight. We have undertaken a life cycle assessment (LCA) that covers all our products manufactured at our eleven production sites across Australia. Initially, Brickworks intends to offer carbon neutral bricks in two ways:

1. to selected clients and projects,
2. all customers who purchase bricks made at Austral Bricks Longford

For this purpose, the LCA has been built into Brickworks' bespoke carbon calculator, a tool that allows us to easily calculate the total amount of greenhouse gas emissions associated with the lifecycle of any given brick type and for the exact quantity of bricks supplied to a client or building project.

The total carbon inventory to be offset will be assessed annually based on the quantity of carbon neutral certified products sold.

The functional unit covers the whole life cycle of the products, including cradle-to-gate manufacturing (including packaging), delivery to site, manual application, cleaning and maintenance by hand, and disposal of the bricks at end-of-life. Note: Mortar and/or other materials used to bond bricks in their application are excluded from the carbon footprint assessment. The reasons for this exclusion are:

- Brickworks does not supply the mortar to clients, and therefore has no control over the composition and quantity of mortar used.
- Furthermore, the bricks and pavers are used in a range of applications that have varying requirements regarding ancillary materials. Any attempt to capture these requirements within the scope of this study would introduce additional uncertainty.

Product process diagram

The system boundary (key processes and flows shown in Figure 2) describes which processes are included and excluded in the LCA. This LCA for Brickworks covers the full life cycle of clay bricks and pavers manufactured at Brickworks Australian operations. The diagram depicts attributable upstream processes, processes within the operational control of Brickworks and attributable downstream processes. The excluded and non-attributable emission sources (land use and land use change emissions, business ground travel (e.g. taxis and rental cars used by corporate staff), head office energy use emissions, demolition of the structure in which bricks are used) are not attributable or not relevant to the product.

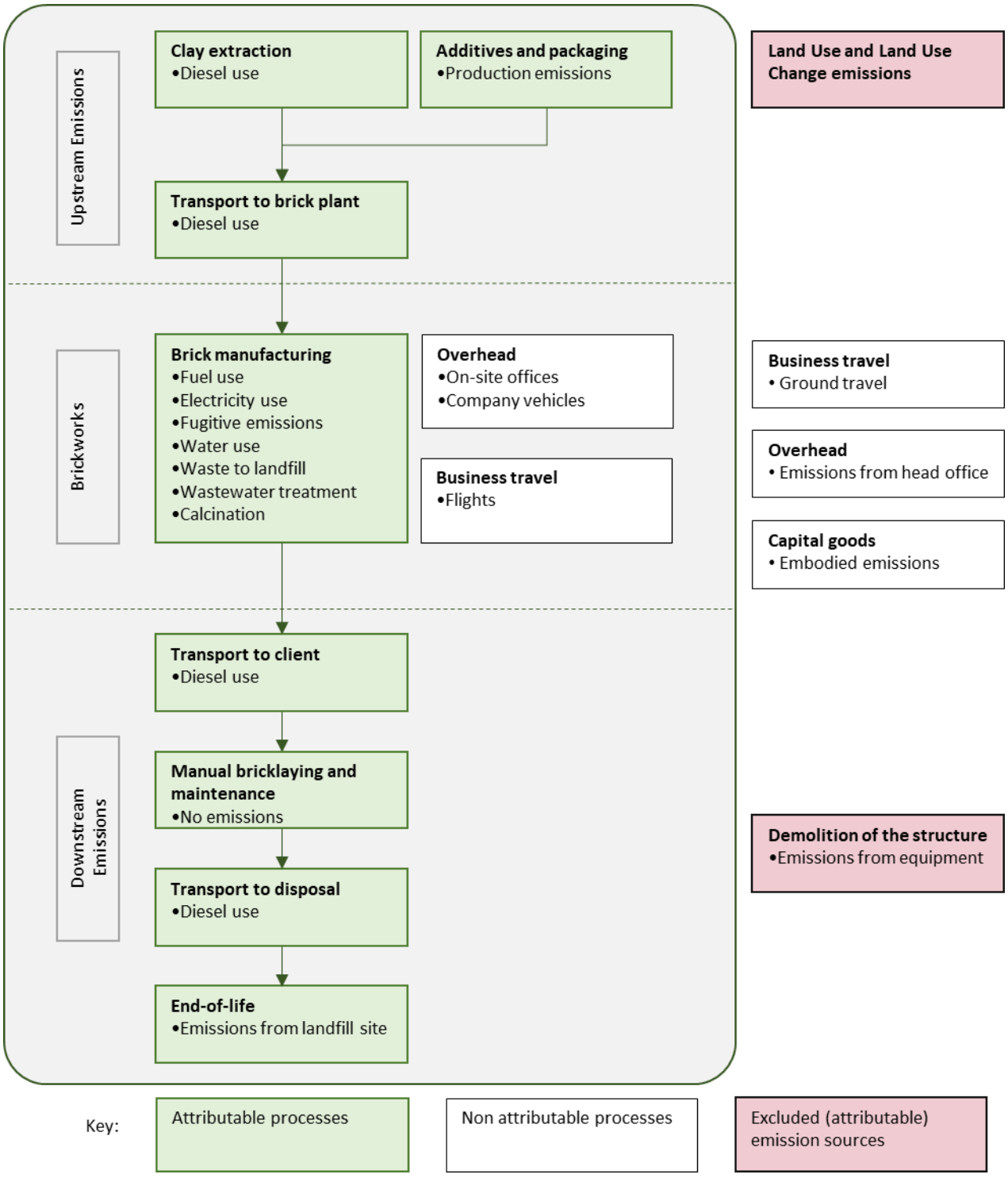


Figure 2: Brickworks life cycle diagram

Emissions reduction strategy

2025 Energy and Carbon Strategy

From its earliest days, Brickworks Building Products has been committed to continually investing in the latest manufacturing technology to contain costs and improve productivity and product quality. Today that same commitment is being applied to lowering the carbon intensity of our operations and building a sustainable future, through driving energy efficiency and exploring the use of hydrogen fuel in our kilns.

We are currently aligning our greenhouse gas reduction strategy with the recognised standard of the Task Force on Climate-related Financial Disclosures (TCFD) recommendations including risk management disclosures, metrics and targets. This process will also involve an exploration of carbon management strategies for the long term and integration of our North American business into targets. While the development of long-term carbon targets is underway, these future goals are underpinned by our target to achieve a 10% improvement in natural gas efficiency for the Austral Bricks business by 2030 based on 2018 levels.

Progress to Date

Greenhouse gas emissions from our Australian operations are on a downward trend. In 2019 our emissions were 27% lower than in 2006, reflecting a step change in manufacturing efficiencies.

Brickworks has invested in various low carbon technologies at multiple brick manufacturing facilities. Austral Bricks Longford produces low embodied carbon bricks fired in traditional kilns fuelled by sawdust at over 1000^{o}C. The management team has implemented numerous initiatives to reduce energy consumption and greenhouse gas emissions including upgrades to energy intensive plant.

The kilns at Horsley Park Plant 21 and Plant 23 are partially fuelled with Landfill Gas (LFG) sourced from neighbouring landfills. Plant 21 has capacity to operate at approximately 1:2 LFG to Natural gas ratio and Plant 23 has a 1:3 ratio.

In 2011, Brickworks consolidated its Victorian operations, with the construction of two efficient kilns located on one site; replacing seven old inefficient kilns spread out over three locations; achieving an estimated 65% reduction in emissions.

In 2016, Brickworks' Bowral plant commissioned an innovative ductwork and bypass system which improved heat recycling capacity, resulting in an approximate 15% reduction in gas and electricity consumption. It also provided the site with the ability to manufacture its iconic Bowral Blue range in the efficient tunnel kiln – a product that was previously made in the historic dome kilns.

Gas efficiency is a key priority for Brickworks with periodic audits undertaken of all kilns. In 2018, gas efficiency plans were developed for all Australian brick kilns including Austral Bricks Longford. Those plans are being implemented.

2. Emission Boundary

Diagram of the certification boundary

For each life cycle stage, all attempts have been made to identify and quantify material flows, energy flows and emission sources. The inputs include materials, fuels and energy while the outputs include products, emissions and waste.
For the purposes of this study, the embodied energy incorporated in the infrastructure (buildings, plant, equipment, roads, vehicles, etc.) associated with manufacturing bricks and pavers is excluded from the product system. Other capital goods (e.g. power lines) are excluded as well. This is due to the long lifetime of capital goods in the brick lifecycle and the expected impact of this exclusion on the footprint is small. Brickworks has applied a cut-off limit for flows smaller than 1% of expected greenhouse gas emissions. This means we have estimated emissions based on data from our existing LCA for bricks manufactured in Longford, instead of collecting detailed information for these smaller emission sources for each site. These are listed as non-quantified sources in figure 3 below.

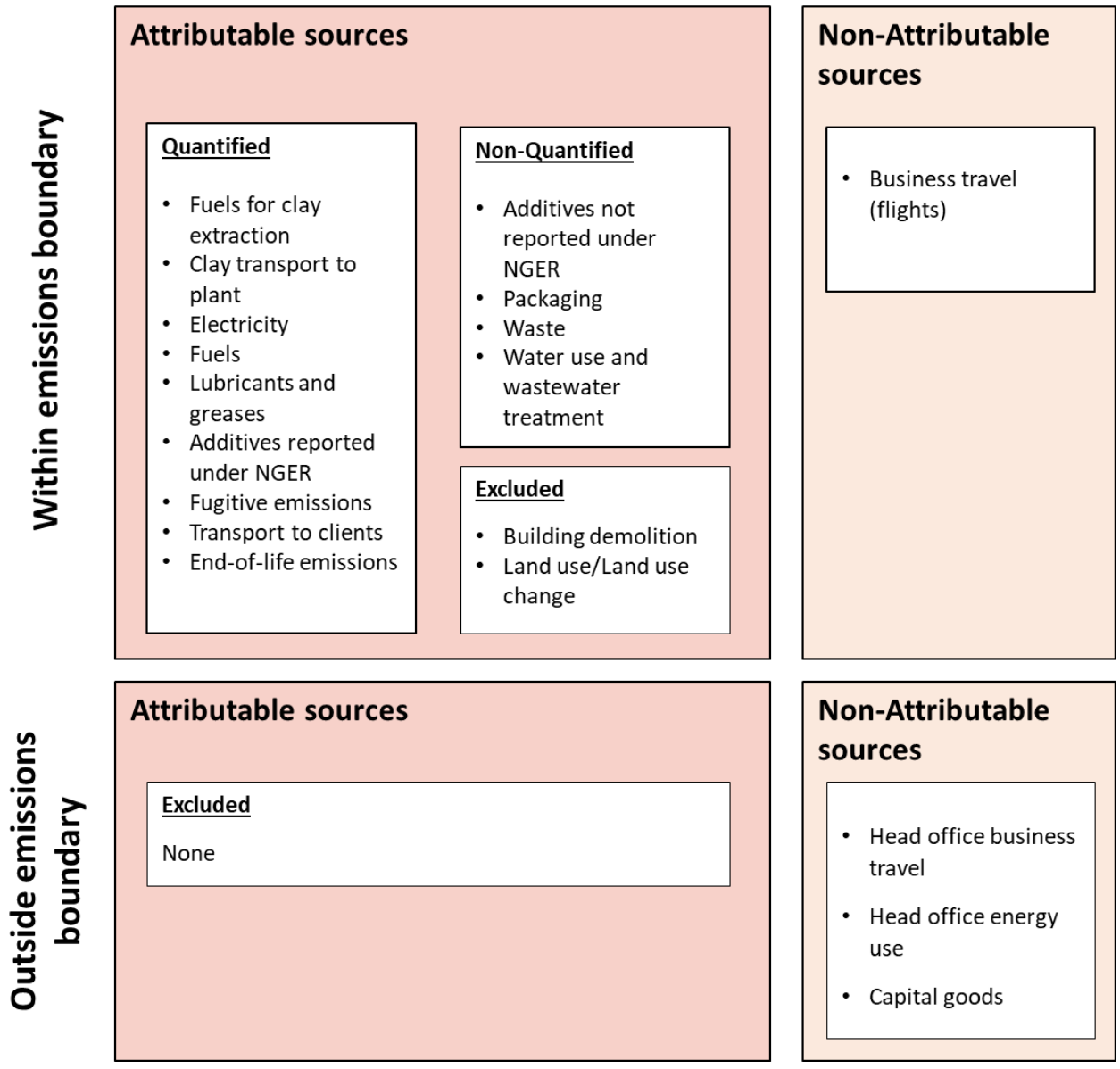


Figure 3: Attributable and non-attributable emission sources included and excluded in the LCA

Attributable quantified sources (within certification boundary)

This Climate Active LCA encompasses the complete life cycle of bricks and pavers:

- Raw material extraction
- Transport of raw materials to our brick manufacturing plants
- Brick and paver manufacturing
- Packaging of fired products
- Transport to customers
- Manual application in works
- Manual maintenance (cleaning) during their life time
- Disposal at end-of-life

The collected site energy data include non-production related company facilities (i.e. on-site offices) and company vehicles of site-based staff.

The bricks and pavers can be applied in a range of construction works. Ancillary items that may be required for the application, such as mortar, have been excluded as these items are not supplied by Brickworks.
A description of the processes in each life cycle stage is provided hereafter. This section refers mostly to bricks only. Unless specifically stated, the process is identical for pavers.

Raw materials
Natural clay minerals, including shale, make up the main body of brick. Small amounts of manganese and other additives (sawdust, coal) are blended with the clay to produce different colours. Production waste is ground and recycled back into the clay mixture, resulting in a situation where no production waste leaves the manufacturing facilities.
A variety of coating materials and methods are used to produce brick of a certain colour or surface texture. To create a typical coating, sand is mechanically mixed with some type of colourant (e.g. manganese, red oxide, char, sawdust, etc.). Sometimes frit (a glass containing colourant) is added to produce surface textures.

Extraction of raw materials
Clay and other minerals are extracted from the earth using typical mining equipment. Some clay pits require removal of a top layer before the clay can be extracted. Brickworks sources its clay mostly from local clay pits. Actual transport distances of raw materials have been determined for each site.

Land Use and Land Use Change (LULUC) emissions related to clay extraction have been excluded from this assessment, as these are likely negligible. Clay pits typically operate for many years, with limited annual change in land use. Furthermore, any attempt to determine the land use emissions would be impractical due to the lack of verifiable data.

Transport of raw materials to brick plants
All clay and shale raw materials are transported by truck. Additives are also typically supplied by truck; some require additional shipping. Upon arrival at the plant, raw materials such as clay and shale are ‘stockpiled’ in proportioned layers for a desired mixture.

The brick manufacturing process
The initial step in producing bricks is crushing, followed by grinding. The raw materials are crushed by a crusher and then go through a pan mill for grinding. Particle size is controlled by a screen installed in the grinding machinery. The raw materials are mixed homogeneously in the crushing and milling process. Next, the blend of ingredients desired for each batch is sent on to the brick shaping processes (extrusion). Once the bricks are formed, they are dried to remove excess moisture that might otherwise cause an explosion during the ensuing firing process. The bricks are fired in a tunnel kiln and then cooled. Finally, they are dehacked —automatically stacked on pallets and particleboard, wrapped with plastic strap, plastic corner protectors and potentially shrink film.

Transport of bricks to the customer

Packaged bricks are transported to customers using Brickworks' own fleet of trucks as well as contractors' trucks. Brickworks' trucks have cranes or tractors to unload the bricks safely (see figure 4).

Literature data was used to estimate fuel use for transport based on transport volumes (mass) and distances. Shipping has been included for all transport across Bass Strait (between Port of Melbourne and Devonport), as well as for exported bricks up to the port of destination.

Figure 4: Typical delivery truck

Application of bricks and pavers in their application

Bricklaying is mostly a manual exercise. Therefore, there are no emissions associated with the application of bricks and pavers.

Note that ancillary materials, such as mortar, are not included within the system boundaries.

Use and maintenance of bricks and pavers

Bricks and pavers are inert. Therefore, there are no greenhouse gas emissions directly associated with the products during use.[1]

Bricks do not require regular, extensive cleaning under normal circumstances. However, there are a number of mechanisms that can lead to stains or damaged bricks. Examples[2] are:

- Mortar smears - These are the result of the bricklaying process and can be easily wiped off with water before they have hardened. Removing hardened mortar smears requires a hydrochloric acid based cleaner.
- Stains – Efflorescence (see Figure 5). Crystallised salts on the surface of bricks can mostly be removed with a dry brush.
- Stains – Insoluble white deposits (e.g. calcium). These deposits can be removed with acids.
- Stains – Iron oxide, manganese, vanadium stains. These stains can occur for various reasons when the mineral or oxide is present in the bricks. They can be removed with specific *acid-based cleaning solutions.*

[1] When bricks are used in the wall of a building they become part of the functional unit of that building. The operational energy used by the building depends on many factors and cannot be related to the bricks alone. Therefore, operational energy is outside the system boundary of this LCA.

[2] Source: Think Brick Australia, Industry Reference Guide, Fifth Edition 2009

Apart from these examples, walls might also be stained with organic growths, soils, timber, soot and smoke. There is not a single or typical scenario for cleaning of bricks, especially given that many of the causes for smears or stains are external.
It is also not practical to define a cleaning scenario related to a single brick (or 1,000 Single Brick Equivalents – SBEs) as illustrated by Figure 5: many problems are restricted to minor areas on a wall.
For these reasons, cleaning of bricks has been excluded from the carbon footprint assessment.

Figure 5: Efflorescence; the result of soluble salts that migrated to the surface
(Source: Think Brick Australia, Industry Reference Guide, Fifth Edition 2009)

The service life of bricks depends on the application. However, their durability means that under normal circumstances replacements are not required. The carbon footprint presented in this report is expressed for 1,000 bricks and excludes any replacements.
Maintenance of bricks during their service life is not required under normal circumstances.

Demolition of bricks and pavers
Demolition is excluded from the life cycle of a brick or paver as it is assumed that demolition only takes place when the structure (e.g. house) is demolished. Given the scarcity of reliable data on demolition processes and their limited estimated impact (<5%) on the overall environmental impacts of a building, it was deemed not useful to try to allocate demolition impacts to a single brick, brick wall or paved area. This is in line with the exclusion conditions in Climate Active Carbon Neutral Standard for products & services, section 2.3.1.

Disposal at end-of-life
Although in some places bricks are recycled or reused, we have applied a conservative scenario assuming all bricks and pavers are sent to landfill. We assume bricks are transported 50 km from the building site to the landfill site by truck.

Note: The National Waste Report 2018 indicates 72% of masonry products is recycled in Australia. Bricks can be reused as whole bricks or recycled into rubble for landscaping, road foundations, pathways, etc. Only a very small percentage of bricks get recycled into new bricks. The recycled products typically replace sand, crushed rocks or clay.

Attributable non-quantified sources (within certification boundary)

The following items meet the condition of 'attributable', but are below the cut-off and are considered non-quantified. We have applied uplift factors based on the existing LCA for bricks manufactured in Longford.

- Additives not reported under National Greenhouse and Energy Reporting (NGER) Act 2007: We use a large range of additives to give each brick its unique properties (colour, glaze, etc.). Additives that are energy carriers (e.g. char, sawdust, vegetable oils, starch-based additives) are reported under our NGER obligations and have been included based on actual use and emission factors. The remaining additives are mainly minerals (e.g. iron oxide, manganese oxide) or frits (glass containing colorant). Using conservative literature data applicable to additives used at Longford (Tas), based on Brickworks' NCOS

LCA FY19, the weighted average emission factor was established as 214 kg CO_2e/t of additives not already reported under NGER. This equates to 1.4 kg CO_2e per tonne of bricks. This factor has been applied as the uplift factor across all products.

- Packaging, waste to landfill, water use and wastewater treatment: Based on Brickworks' NCOS LCA FY13, the total of greenhouse gas emissions associated with these sources added up to 2.2 kg CO_2e per tonne of bricks. This factor has been applied as the uplift factor across all sites and products.

Cumulatively, the uplift factors account for 1-3% of the products' life cycle emissions.

Non-attributable non-quantified sources (within certification boundary)

Apart from the non-attributable emission sources that are included within the sites' NGER data (site personnel vehicle use, site office energy use), we have also included business travel pertaining to flights taken by site-staff. The greenhouse gas emissions associated with business flights are included in the uplift factor (for packaging, waste to landfill, water use and wastewater treatment) of 2.2 kg CO_2e per tonne of bricks.

Excluded sources (within certification boundary)

The demolition of the building or structure in which bricks are used is excluded from the assessment, as explained earlier in this document. No other attributable emission sources have been excluded from the LCA.

Non-Attributable sources (outside certification boundary)

The following items meet the condition of 'non-attributable' and are therefore left outside the system boundaries:

- Corporate business travel and office energy use have been excluded from the LCA, as these emission sources are not attributable to the products.
- The embodied emissions of capital goods (plant equipment, buildings, infrastructure) are considered non-attributable to the product. This is consistent with industry standard LCAs for construction product, as outlined in the Product Category Rules (PCR) of the International EPD System, and has been verified by the Registered Consultant that has compiled our inventory (Rob Rouwette; Energetics).

3. Emissions summary

Brickworks has undertaken an LCA for all bricks made in Australia, allowing us to calculate the emissions intensity of each product individually (based on product characteristics and site processes) in the context of the place where it is used (transport to client). Table 3 shows the life cycle emission factor per tonne[3] of bricks at each of our eleven production locations. These factors include emissions from transport of bricks to clients by a delivery truck over 50 km. When determining the emissions associated with bricks supplied to a client or project, we use the actual mass of the bricks supplied and actual transport distance from plant to client to get an accurate carbon footprint for the consignment.

Note: in line with our NGER reporting, we have applied a location-based approach for electricity.

Table 3. Emission Factor Summary			
Production locations	**Quantity of bricks and pavers produced in FY19 (t)**	**Life cycle emission factor (kg CO_2-e/t bricks)[3]**	**t CO_2-e**
Wollert (Vic)	515,023	201.1	103,572
Longford (Tas)	39,120	102.4	4,005
Golden Grove (SA)	138,708	175.9	24,400
Horsley Park Plant 21 (NSW)	199,881	202.2	40,421
Horsley Park Plant 22 (NSW)	28,535	369.4	10,540
Horsley Park Plant 23 (NSW)	392,676	195.8	76,903
Bowral Plant 28 (NSW)	83,739	319.8	26,778
Punchbowl Plant 91 (NSW)	42,713	289.7	12,372
Bellevue Plant 64 (WA)	148,282	214.5	31,807
Cardup Plant 67 (WA)	80,940	328.1	26,558
Rochedale Plant 41 (QLD)	193,982	213.0	41,319
Total	**1,863,599**		**398,674**

The contribution of emission sources to the inventory will vary by site and depends on site to client transport requirements. Table 4 shows an example of the contribution of various emission sources to the life cycle footprint of bricks produced at our largest facility in Wollert (Victoria), assuming 50 km transport to client by delivery truck.

[3] Our functional unit is expressed per 1,000 bricks, as bricks and pavers are ordered in number of units required. However, since we have hundreds of different product types, it is easier to present results per tonne of bricks since cradle-to-gate manufacturing impacts are calculated at site level per tonne of product.

Table 4. Life cycle emissions summary (inventory) for 1 tonne of bricks produced at Wollert and transported to client by delivery truck over 50 km	
Emission source category	tonnes CO_2-e/t bricks[3]
Fuel use (diesel) at clay quarry	0.004
Fuel use (diesel) for transport of raw materials	0.001
On-site energy: Natural gas used for firing clay	0.126
On-site energy: Electricity	0.043
On-site energy: Other energy sources	0.001
Additives reported under NGER	<0.001
CO_2 released (from organic carbon) during production	<0.001
Additives not reported under NGER	0.001
Transport of bricks to customer (assuming 50km)	0.011
Manual application and manual maintenance/cleaning	0
Transport of bricks to end-of-life landfill	0.011
Bricks in landfill	0
Total inventory emissions per tonne of bricks	**0.197**
Net emissions per functional unit, assuming 1,000 bricks of type "MELBOURNE HAWTHORN"*	0.61
Number of functional units projected to be sold as carbon neutral (This FY21 volume is based on current discussions with key clients.)	700 x 1,000 bricks (i.e. 700,000 bricks)
Total net emissions (projected carbon neutral products sold in FY21) **Brickworks has hundreds of different products. In future reports we will provide a detailed overview of the number of each product sold as carbon neutral, the emissions per functional unit and the associated quantity of total emissions.*	427 t CO_2-e (This is a proxy value based on Melbourne Hawthorn bricks)

Uplift factors

Table 5. Uplift factors	
Reason for uplift factor	tonnes CO_2-e/t bricks[3]
Uplift factor for packaging, business travel and other overhead	0.002
Uplift factor for additives not reported under NGER	0.002
Total Footprint to offset (uplift factors + net emissions)	**0.201**

Carbon Neutral products

Brickworks has not used any Climate Active certified carbon neutral products that should be included in this inventory.

Electricity Summary

Electricity was calculated using a location-based approach.

The Climate Active team are consulting on the use of a market vs location-based approach for electricity accounting with a view to finalising a policy decision for the carbon neutral certification by July 2020. Given a decision is still pending on the accounting way forward, a summary of emissions using both measures are provided for full disclosure and to ensure year on year comparisons can be made**.**

Table 6 Market-based approach Electricity summary

Electricity inventory items	**kWh**	**t CO_2e**
Electricity Renewables	16,616,046	0.00
Electricity Carbon Neutral Power	0	0.00
Electricity Remaining	72,717,534	78,614
Renewable electricity percentage	19%	
Total net electricity emissions (Market-based approach)		**78,615**

Table 7 Location-based approach Electricity summary

State	**Electricity inventory items**	**kWh**	**Full Emission factor (Scope 2+3)**	**t CO_2e**
NSW	Electricity Total	35,791,272	0.90	32,212
SA	Electricity Total	6,491,378	0.53	3,440
Vic	Electricity Total	19,587,922	1.12	21,938
QLD	Electricity Total	10,562,628	0.93	9,823
WA	Electricity Total	13,866,754	0.74	10,261
Tas	Electricity Total	3,033,627	0.17	516
Total net electricity emissions (Location-based)				**78,191**

As shown by the total electricity emissions of the market-based approach and location-based approach, the difference in greenhouse gas emissions is relatively small (around 0.5%), which could be due to rounding of emission factors. For Brickworks, the similarity in results justifies using the location-based approach.

4. Carbon offsets

Offset purchasing strategy: Brickworks intends to apply a forward purchasing strategy for the first year of the Carbon Neutral Local (opt-in) certification. We have purchased and retired 500 tonnes of Australian carbon offsets upfront. At the end of each reporting period, the actual amount of certified carbon neutral products will be determined, as well as the number of offsets to be retired. We will consolidate any shortcomings with Australian carbon credits (if available in the required quantities on the carbon market) and any surplus purchased units will be retired and banked for following reporting periods. We aim to hold approximately 500 carbon credits in surplus at the beginning of each reporting year.

Table 8 Forward purchasing summary for the new Carbon Neutral Local (opt-in) certification

Item	t CO_2e
1. Total offsets previously forward purchased for this reporting period	0
2. Total offsets required for this reporting period (estimated)	0
3. Net offset balance for this reporting period	0
4. Total offsets to be forward purchased for next reporting period (Table 4)	427

We plan to deliver a mix of Australian carbon credits and International carbon credits. Any surplus purchased units will be retired and banked for following reporting periods.
For our national opt-in carbon neutral certification, Brickworks has retired and banked 500 units upfront for the FY20/21 reporting year, consisting of:

- Northern Savanna KACCUs (ERF104944) (250 units; serial numbers 3,801,409,481 – 3,801,409,730). The Northern Savanna (Project ID: ERF 104944) is an early dry season savanna burning project aimed at reducing late dry season wildfires. The project is run by the Alka Bawar (Kalpowar) Aboriginal Corporation (ABAC) and is situated above the 1,000 mm rainfall isohyet. Uncontrolled wildfires late in the dry season are common in Northern Australia, emitting large volumes of greenhouse gases. In addition, the wildfires threaten cultural sites, essential infrastructure and biodiversity. To achieve compliance with the Methodology, the proponent undertakes strategic fire management planning and implementation, including early dry season prescribed burns (i.e. fires occurring between January 1 and July 31). This strategic burning is intended to reduce the risk of late dry season wildfires (i.e. fires occurring on or after 1 August), at which time the fuels generally have a lower moisture content, resulting in a more complete burn with higher greenhouse gas emissions. The Project is intended to generate annual revenue from the sale of ACCUs, which will support ongoing conservation management and indigenous-owned cattle operations. The project has significant cultural and environmental co-benefits. A fire management program was instigated from 2017 and continues to the present. This mitigates wildfire risk, conserves vegetation and animal species, protects wetlands and controls weeds. Burning takes place prior to July 31st each year, before the start date of the late dry season (LDS) of the 1st of August. The operations are conducted by staff and contractors as required.
- Paroo River North Environmental Project KACCUs (ERF104646) (250 units; serial numbers 3,788,417,534 – 3,788,417,617 (84 units) and 3,786,369,101 – 3,786,369,266 (166 units))
  This project establishes permanent native forests through assisted regeneration from in-situ seed sources (including rootstock and lignotubers) on land that was cleared of vegetation and where regrowth was suppressed for at least 10 years prior to the project having commenced.

Table 9 Offsets Summary									
1. Total offsets required for this report	0								
2. Offsets retired in previous reports and used in this report	0								
3. Net offsets required for this report	0								
Project description	***Eligible offset units type***	***Registry unit retired in***	***Date retired***	***Serial number (including hyperlink to registry transaction record)***	***Vintage***	***Quantity (t CO_2e)***	***Quantity used for previous report***	***Quantity to be banked for future years***	***Quantity to be used this report***
Northern Savanna burning project in Queensland	KACCUs	ANREU	2020	3,801,409,481 – 3,801,409,730	2019-20	250	0	250	0
Paroo River North Environmental Project native forest regeneration in Queensland	KACCUs	ANREU	2020	3,788,417,534 – 3,788,417,617 and 3,786,369,101 – 3,786,369,266	2019-20	250	0	250	0
Total offsets retired this report and used in this report							0		0
Total offsets retired this report and banked for future reports								500	0

Co-benefits

Existing Certification – Austral Bricks Tasmania

Austral Bricks supported the Redd Forests Grouped Project - Protection of a Tasmanian Native Forest (Vintage 2012 – 2013) by purchasing and retiring 400 Verified Carbon Units (VCU's). Austral Bricks is proud of supporting this project and uses it in its marketing material.

New Certification – Brickworks Building Products local offering

Brickworks National Carbon Neutral scheme is our premium carbon neutral offering. As such, Brickworks will be offseting carbon emissions with Australian generated carbon units. Brickworks has pre-purchased 500 Australian Carbon Credit Units (ACCUs) from two projects in Queensland.

The Northern Savanna burning project is a registered Emissions Reduction Fund project under the 'savanna fire-management' method. The project is working to manage strategic and planned burning of savanna areas in the high rainfall zone during the early dry season to reduce the risk of late dry season wildfires.

At the end of the reporting period, we will consolidate our carbon account. Brickworks will procure Australian generated units (if available) for any additional carbon liability after the consolidation.

Should a lack of Australian units exist in the market, we will explore other units which hold co-benefits towards the Australian environment – such as EcoAustralia™ credits, which consists of international carbon credits and biodiversity offsets.

5. Use of trade mark

Brickworks intends to use the trademark in the following ways:

Table 10 Use of Climate Active trademark	
Description where trademark is used	Logo type
Carbon Neutral Brick Brochure	Carbon Neutral Certificate Trade Mark (for product)
Austral Brick Product Brochures	Carbon Neutral Certificate Trade Mark (for product)
Brickworks Website	Carbon Neutral Certificate Trade Mark (for product)
Austral Brick Website	Carbon Neutral Certificate Trade Mark (for product)

Brickworks is in the process of updating its marketing material following the launch of the new Climate Active offering. All material containing the Climate Active trademark will be sent to Climate Active for approval as per the guidelines.

Appendix 1. Non-attributable emissions for products

To be deemed attributable an emission must meet two of the five relevance criteria. Non-attributable emissions are detailed below against each of the five criteria.

Table 11 Relevance test					
Non-attributable emission	The emissions from a particular source are likely to be large relative to the organisation's electricity, stationary energy and fuel emissions	The emissions from a particular source contribute to the organisation's greenhouse gas risk exposure.	Key stakeholders deem the emissions from a particular source are relevant.	The responsible entity has the potential to influence the reduction of emissions from a particular source.	The emissions are from outsourced activities previously undertaken within the organisation's boundary, or from outsourced activities typically undertaken within the boundary for comparable organisations.
Business travel - flights	No	No	No	Yes	No
Head office business travel	No	No	No	Yes	No
Head office energy use	No	No	No	Yes	No
Capital goods	Possibly	No	No	Yes	No

Appendix 2. Non-quantified emissions for products

The following table outlines which of the reasons apply to each of our non-quantified emissions.

Table 12 Non-quantification test				
Relevant-non-quantified emission sources	Immaterial <1% for individual items and no more than 5% collectively	Quantification is not cost effective relative to the size of the emission but uplift applied.*	Data unavailable but uplift applied. A data management plan must be put in place to provide data within 5 years.	Initial emissions non-quantified but repairs and replacements quantified
Additives not reported under NGER	Yes	Yes	No	No
Packaging	Yes	Yes	No	No
Waste	Yes	Yes	No	No
Water use and wastewater treatment	Yes	Yes	No	No

* We have previously assessed the emissions associated with these four emission sources in our life cycle assessment of bricks produced at Longford, Tasmania. This showed the emissions are immaterial. It is disproportionally time-consuming to collect these data annually, so we have applied an uplift factor instead.