Birkenhead Draft EIP Project List

Adbri's Cement draft EIP project list has been informed by community priority topics of dust, communication, monitoring, odour and noise and incorporates feedback from the EPA on a previous draft. Information is for consultation purposes and further review.

Adbri seeks your feedback on the proposed projects. You can provide feedback via the planned community drop-in sessions or BHCommunity@adbri.com.au or 83000520 by 27 September 2024.

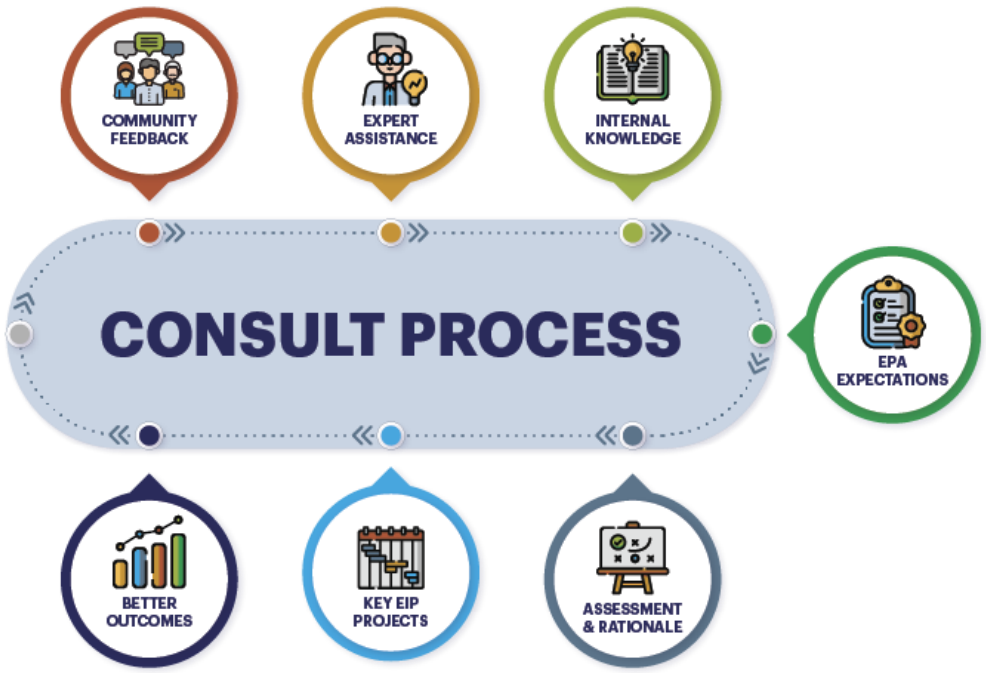
Adbri is also available to discuss the EIP project list at other arranged times.

Content

- EIP overview, timeline and consultation
- Focus areas
- Draft EIP project list
- Appendix

EIP overview, timeline and consultation

Consultation process



Process:

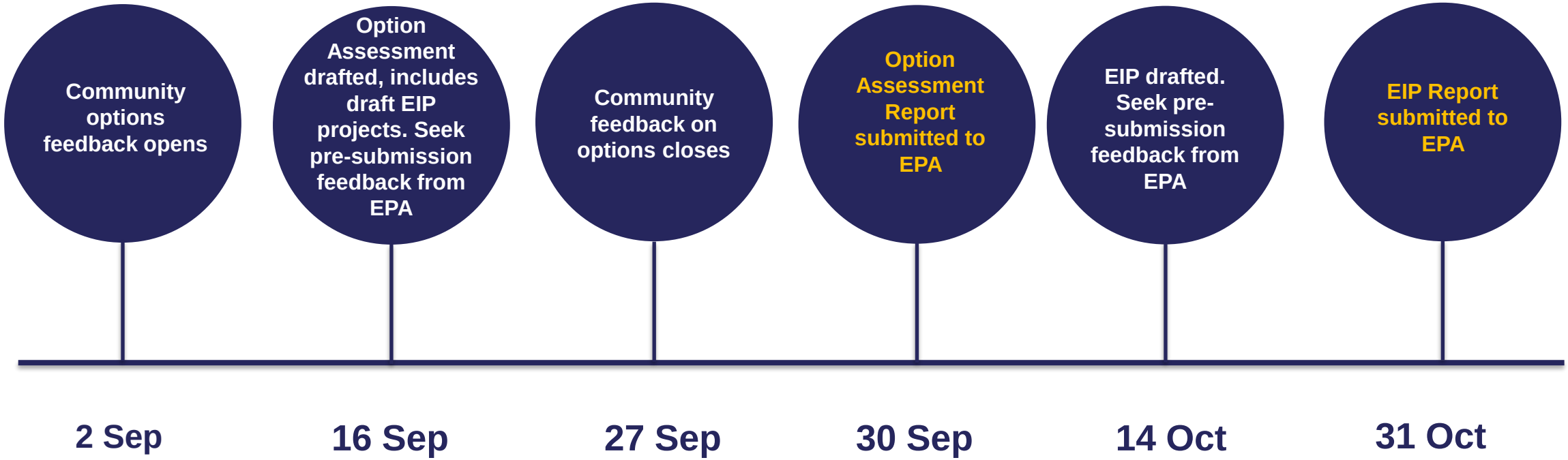
- We create options directly from community feedback and internal knowledge, as well as use expert advice for dust and noise.

- We assess options following a rationale framed around community expectation to develop a draft EIP project list.

Outputs:

- This project list is expanded into the full EIP programme of work with two documents making up key components of our Licence – Options Assessment Report and EIP Report.

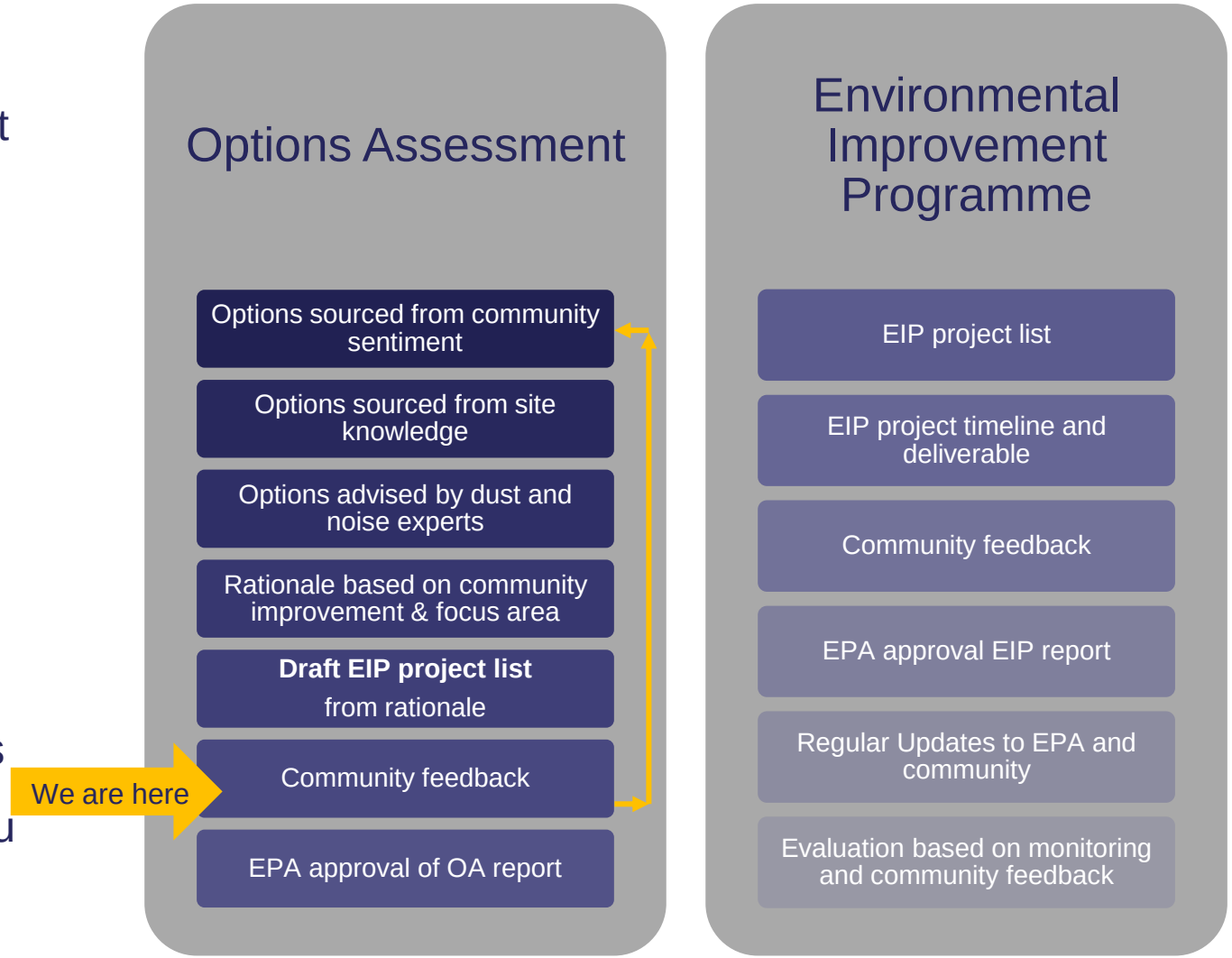
Indicative timeline



Community consultation

- Since May, Adbri has refined the focus areas and methodology to assess options to reflect recent concerns raised by the community.
- Key changes include
  - Prioritise focus areas of dust, communication, monitoring, odour and noise
  - Further prioritisation of dust into clinker, cement, and general dust types

Your feedback through upcoming consultation is very important and we are interested in what you have to say

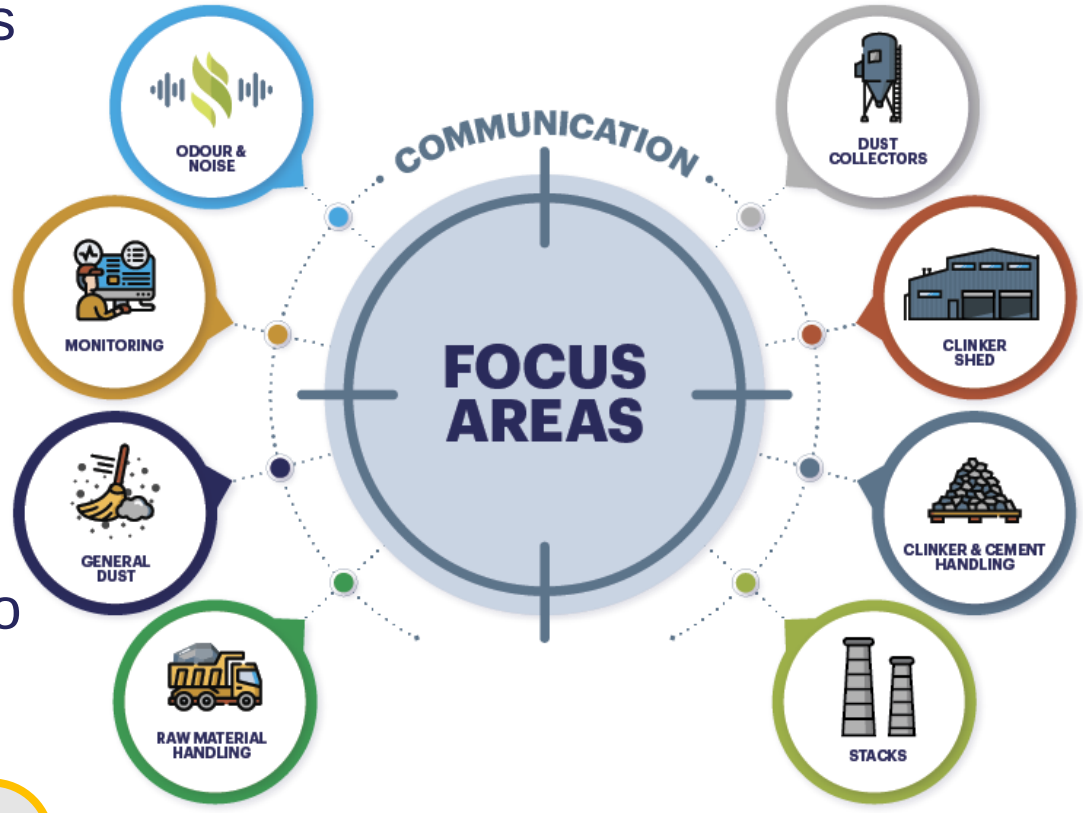


Focus Areas

Focus areas and idea generation

Improvement ideas are generated for each focus area and involved:

- Cross functional workshops with Adbri operational staff and subject matter experts.
- Air quality expert assessments of dust collectors, and independent advice on improvement opportunities
- Engage global technology service providers to bring best practice perspective



A new focus area for communication was identified following community feedback

Focus area rationale

Improvement idea options are prioritised by applying the rationale to generate a feasible EIP project list.

The rationale ranks options by scoring against different categories, with double weighting for community criteria.
Ranking = a + 2*b + c + d + e

Double weighting on community criteria

	Category	Score = 1	Score = 5	Score = 10
a)	Environment improvement	Low	Medium	High
b)	Community focus area	General dust adhoc,	Clinker dust ad-hoc, Cement dust, odour, noise	Clinker dust baseline, communication, monitoring
c)	Ease of implementation	Complex (requires significant engineering and driver for major shut)	Moderate (requires minor shut resources)	Easy (use on-site resources & down days)
d)	Project value add (H&S, efficiency, CO2 reduction)	Maybe	Probably	Very likely
e)	Project cost	High >$5m	Moderate <$5m	Minor <$0.5m

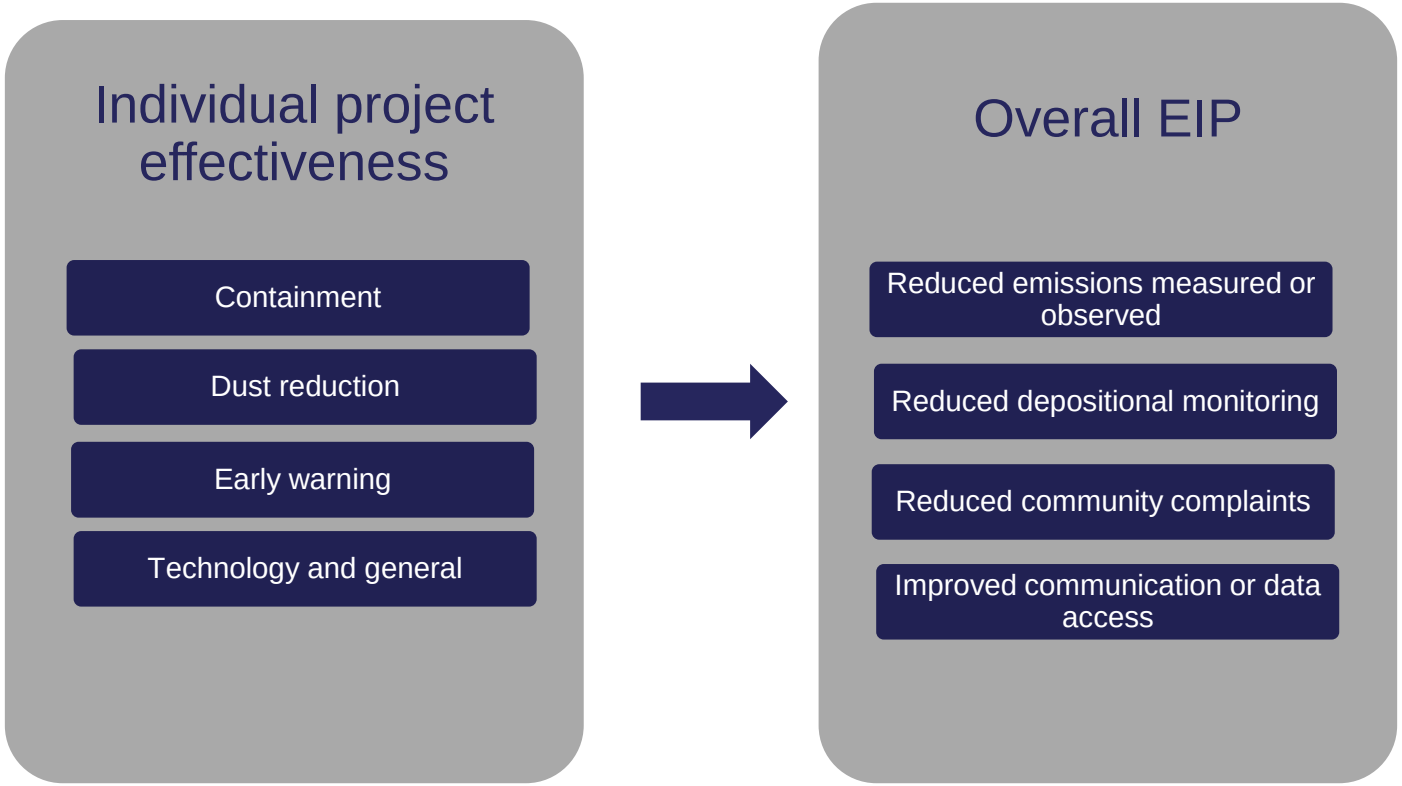
Dust generated by different focus areas are grouped into clinker, cement and general dust. Following community sentiment, clinker has been scored highest when determining EIP projects from the improvement options

Highest score

Clinker	Cement	General
Dust is grey/back and might be small or large particles and gritty	Dust is pale grey, small and also gritty	Dust is from raw materials and is white or brown

Measuring effectiveness

Projects also have an improvement pathway through which we can measure and assess individual project effectiveness, and their contribution to the overall EIP success



Draft EIP Project List

Draft EIP project list

Focus area	No.	Projects from May EIP and additional projects since then	Score
Communication 	1.	Provide additional communication via alert to community in addition to website updates	51
	2.	Provide additional information about RDF quality controls at a dedicated CLG meeting	41
Clinker shed 	3.	Develop and implement program to further mitigate dust emissions from clinker shed	55
Dust collectors 	4.	Dust collector performance review and upgrade	50
	5.	Early detection of emissions from dust collectors by improving performance monitoring	50
	6.	Upgrade key clinker dust collector infrastructure to enable return of dust to process	50
Clinker handling 	7.	Upgrade cooler bag filter dust pumping system to transfer dust to cement mill 6	50
	8.	Modify CS2 cooling sprays to minimise dust lift from the conveyor	45
	9.	Self-closing doors on critical seal doors	55
	10.	Design and install dribble chute and belt cleaners for clinker handling and transfer points	50
	11.	Develop and implement program to better seal clinker transfer galleries and cement mill 6 building	55
	12.	Repair heat exchanger inlet ducting to improve containment	50
Stacks 	13.	Review 4A stack input stream performance and recommend improvement including economically viable technology upgrades for a) cooler bag filter, b) 4A ESP, c) 4A Bypass ESP	45
Material handling 	14.	Improve overfill protection and increased dust collection in dry mix plant	51
	15.	Improve dust emissions from slag transfer tower	45
	16.	Reduce fugitive dust from additive materials management areas	40
	17.	Install additional wind curtains on east side of limestone stockpile	40
Monitoring 	18.	Install additional CCTV cameras to provide visual of key emission sources	41
	19.	Improve monitoring network to measure larger particles across community and improve small particle reporting	50
	20.	Revise dust dashboard and update action responses, including predictive weather	55
Noise and odour 	21.	Evaluate and implement noise reduction options for kiln shell cooling fan	35
	22.	Complete odour study of site and assess odour contributors	50

Map of draft EIP projects

Emission type | Clinker | Cement | Others | Raw materials

Communication improvement project

Project No 12

Issue	Community have to go to the website to find out about operational issues.
Current state	A community website provides information for the community to stay informed on operational issues. This relies on the community actively seeking information.
Future state	Alert system established to allow the community to opt-in for the services to learn first-hand of any updates. Dedicated forum to outline quality aspect of RDF
Benefit	Community proactively informed of operational updates

Clinker shed improvement project

Project No 3

Issue	The main clinker shed, located alongside Victoria Road, was the main source of a recent dust event
Current state	Maintenance works has been completed to cover holes in the shed, with special filler used to seal any small gaps
Future state	We are looking at options to further strengthen sealing of the shed and improve settling of dust inside the shed
Benefit	Improved containment of clinker dust and also potential dust from raw materials being transferred through the shed

Clinker shed

Dust collector improvement project

Project No 456

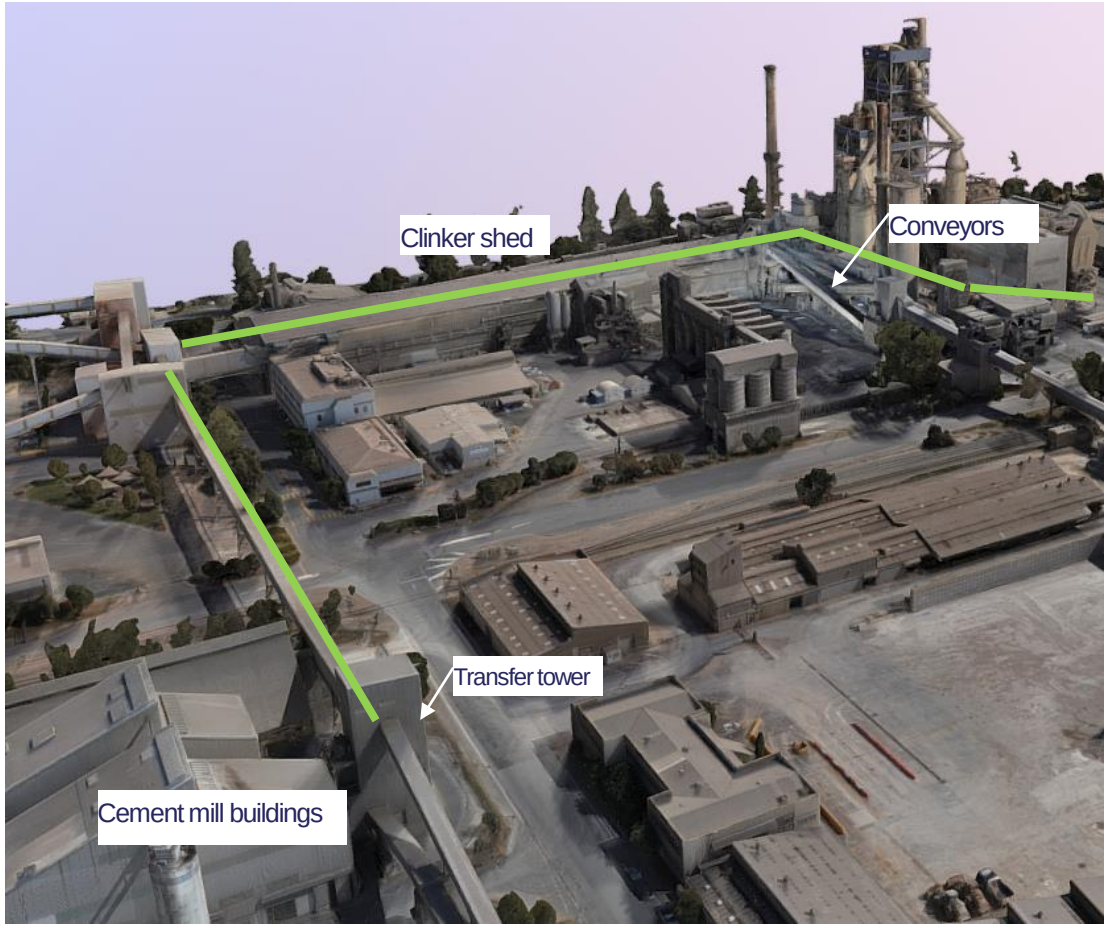
Issue	Dust collectors are important as they clean air before releasing it – like a vacuum cleaner
Current state	Several dust collectors vent to the atmosphere and we have completed a best available technology and performance assessment on each
Future state	Automatic performance monitoring installed on key dust collectors, with redirection of the dust return of others has been highlighted as improvement options
Benefit	Improved early warning for when the filters are full to support more proactive maintenance – supporting reducing emissions

Clinker and cement handling improvement project

Project No

7 8 9 10 11 12

ADBRI Cement

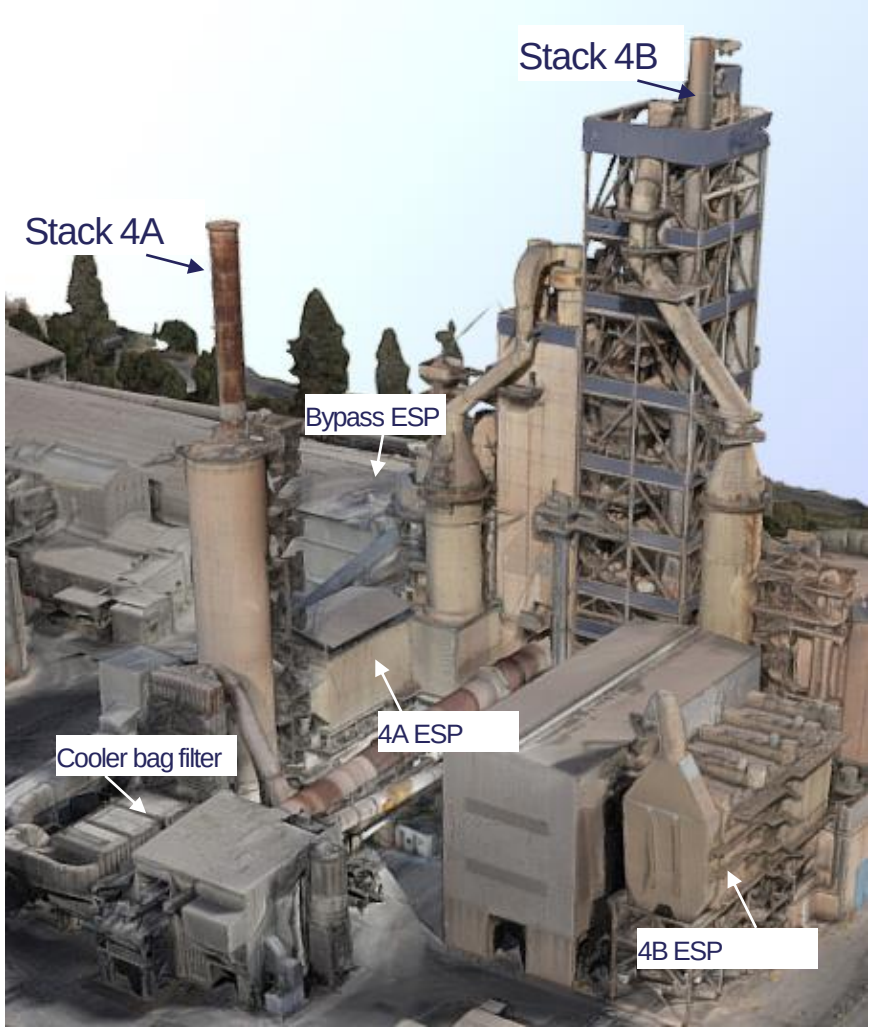


Issue	Clinker and cement is transferred through a range of conveyors and towers
Current state	The conveyors are covered and have dust collectors
Future state	We are looking at options to • further improve sealing of the handling network • to reduce spills on the inside of the towers to reduce dust generated from the process and ensuring all doors remain closed
Benefit	Improved containment of clinker and cement dust as it is transferred through the system

Stacks improvement project

Project No 13

Issue	Stacks release cleaned air to environment and keep the released air away from ground level We have focused on stack 4A emissions as it has more process streams entering it
Current state	Each stack has specialised filters dedicated to cleaning the air. Stack emissions meet air quality guidelines
Future state	We are looking at short-term performance improvements in addition to long-term technology assessments on the three inputs (cooler bag filter, 4A ESP and Bypass ESP) to stack 4A
Benefit	Further reduction in stack emissions



The cooler bag filter is a giant dust collector. ESP stands for electrostatic precipitator and removes dust using electrically charged plates

Raw materials improvement project

Project No 14 15 16 17

Issue	Raw materials stockpiles and transfers are sources of dust
Current state	Stockpiles have a range of existing dust controls – bunkers, sprinklers, dust suppressant
Future state	We are improving dust collection from the dry mix silo, the raw material transfer tower and dust containment around the material management truck tip off We are also installing additional wind curtains on the river side of the limestone stockpile to reduce wind generated dust
Benefit	Further reduce the raw material dust emissions from the site

General dust improvement project

Clinker shed air knife and rapid raise door

Issue	General dust sources such as those from roads and traffic movement already have dust controls via daily operation of water carts and street sweepers
Current state	We are always responding to weather conditions and monitored dust levels across site to better utilise these controls. Other controls in place include: • Truck and loader movements are minimised as much as possible • Use of pneumatic trucks (instead of open top trucks) across the site • Truck unloading areas (except project 20) have rapid raise doors to contain dust from unloading operations • The clinker shed has an air lock which provides additional sealing
Future state	Continued improvement and vigilance in reducing fugitive dust
Benefit	Continued reduced levels of dust in the community

Monitoring improvement project

Project No 18 19 20

ADBRI Cement

Issue	Monitoring network is not designed to measure dust which deposits on property
Current state	We have a number of monitors in place including • In Process: computerised monitors to control the process and manage emissions. • On-site: Operators and CCTV watching and reporting • On-boundary: 4x dustrax monitor wind speed & direction, PM2.5 & PM10 linked to response actions such as water carts • In-community: 1x dustrax monitor wind speed & direction, PM2.5 & PM10 used for stack and general site compliance to national standards
Future state	Full review of on-boundary and in-community monitoring network to better measure a range of dust types, including depositional dust
Benefit	The benefit for community will be better understanding and monitoring of dust deposition and clearer alignment with EPA monitoring network

Depositional dust gauge

Typical air monitoring station

Additional in-community monitoring requires support from stakeholders, including residents. Please let us know if you'd support a dust gauge and / or full monitoring station located on or near your property.

Noise improvement project

Project No 21

Issue	Noise in community is heavily impacted by road noise with noise from site, with others sources contributing such as trains
Current state	Site generally meets requirements, except if there is a faulty piece of equipment, to which we respond to quickly.
Future state	We are modifying the cooling fans on the kiln, which is the highest level of noise on site, with quieter technology.
Benefit	Overall reduced noise emissions from site

Odour improvement project

Project No 22

Issue	Odour has been raised by community as a cause for concern
Current state	Adbri also notes odour at times and when investigated, the odour typically originates from off-site
Future state	We will use an independent odour consultant to assess the site to clarify odour contributors,
Benefit	Provide understanding of the contributors of odour

Appendix

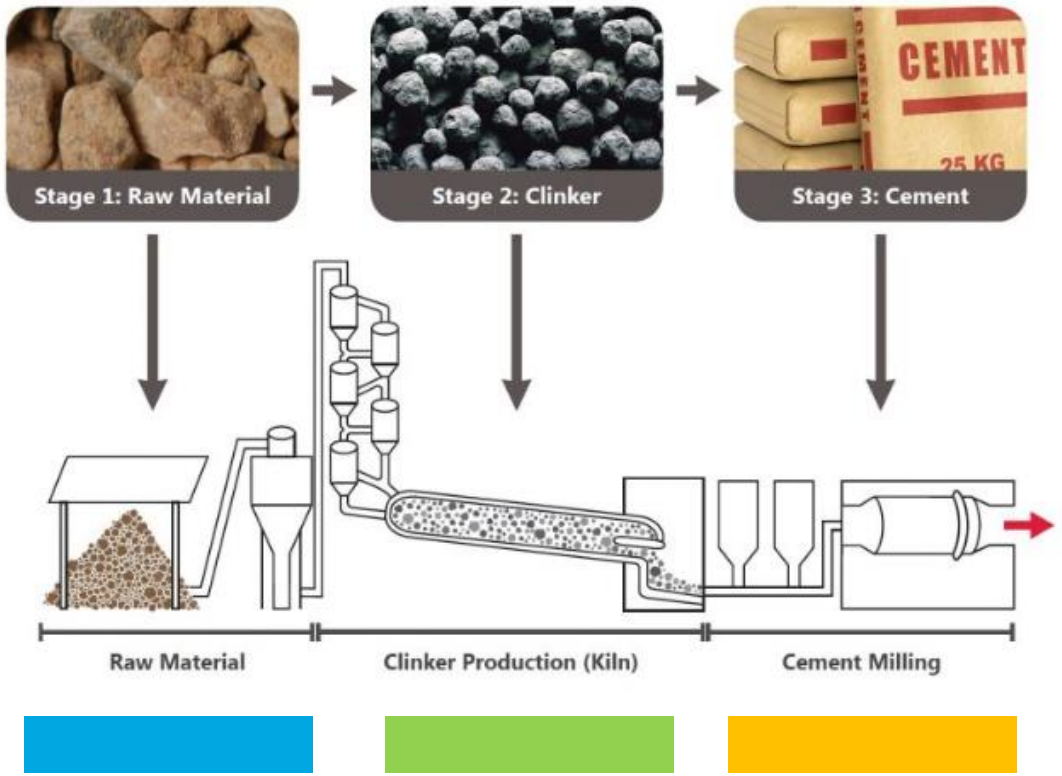
Birkenhead material storage areas

Raw materials | Clinker | Cement

Cement manufacturing process

Birkenhead is an integrated clinker-cement manufacturing plant

There are three main stages of cement production:



https://cement.org.au/australias-cement-industry/about-cement/

Birkenhead clinker, cement, concrete

Making clinker, cement and concrete

The process begins with the mined raw materials being ground into a raw meal ready for the kiln. This precise mixture of ground limestone, clay and sand is heated in the precalciner before being fed into the kiln where it is transformed (calcined) into clinker at very high temperatures – typically around 1,450˚C.

The resulting clinker exits the kiln as a small, stone-like material comprised of the special compounds that give cement its binding properties. From here it is cooled and then ground with gypsum and other materials to make cement, which is then sent on to market either in bulk or bagged form.

A modern integrated cement plant incorporates technology and practices that makes the most efficient use of heat throughout the plant.

RDF background

RDF

- RDF, is a process engineered fuel from waste. Our Birkenhead facility currently uses RDF produced from construction and demolition (C&D) (primarily timber) and commercial and industrial (C&I) waste, that has been used safely in our operations since 2003.
- RDF is used extensively as a fuel for clinker kilns in Europe and UK with increasing rates in Asia and the Americas. Several European countries replace over 75% of their cement industry fuels with RDF, with some plants achieving 100% subsitituion of fossil fuels.
- The safety interlocks in a cement kiln guarantee adequate oxygen and 800degC which ensures molecules are destroyed to their safe elemental parts.
- Replacing fossil fuels with RDF in a cement kiln is recognised by every country as a safer and more environmentally friendly alternative than sending that waste to landfill.
- RDF is received, stored and consumed within specially engineered receival stations, bunkers and transport systems.

This is a summary presentation for consultation purposes only.

We encourage you to provide your feedback on the options assessment to BHCommunity@adbri.com.au or 83000520 by 27 September 2024.