

Frequently Asked Questions



Ensuring reliable energy

This guide provides general information about how Tilt Renewables develops, builds and operates Battery Energy Storage System (BESS) facilities.

BESS Technology

BESS facilities are used to store energy generated from another source. They improve the reliability of the energy grid by storing energy when there is an oversupply or during periods of low demand, such as the middle of the day. This energy is released during times of high demand, such as evenings.

Being able to store electricity and use it when needed helps the grid in several ways:

- it reduces the need for more expensive energy such as gas at high demand times
- it can stabilise the grid during frequency disruptions
- it helps reduce the chance of blackouts when there is a supply imbalance.

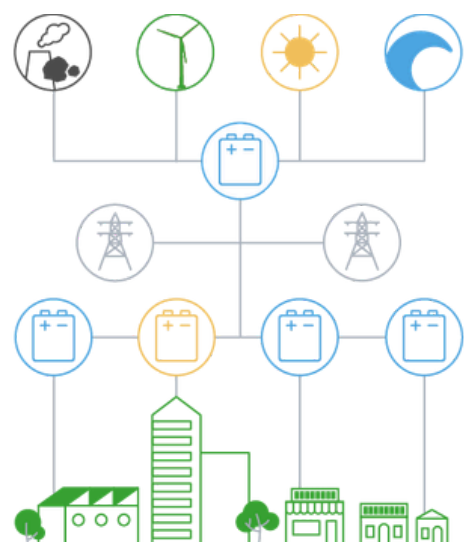
BESS facilities typically consist of several key components including battery units or 'enclosures', inverters and transformers. The final configuration of a BESS facility will depend on the BESS technology, BESS supplier and required output.

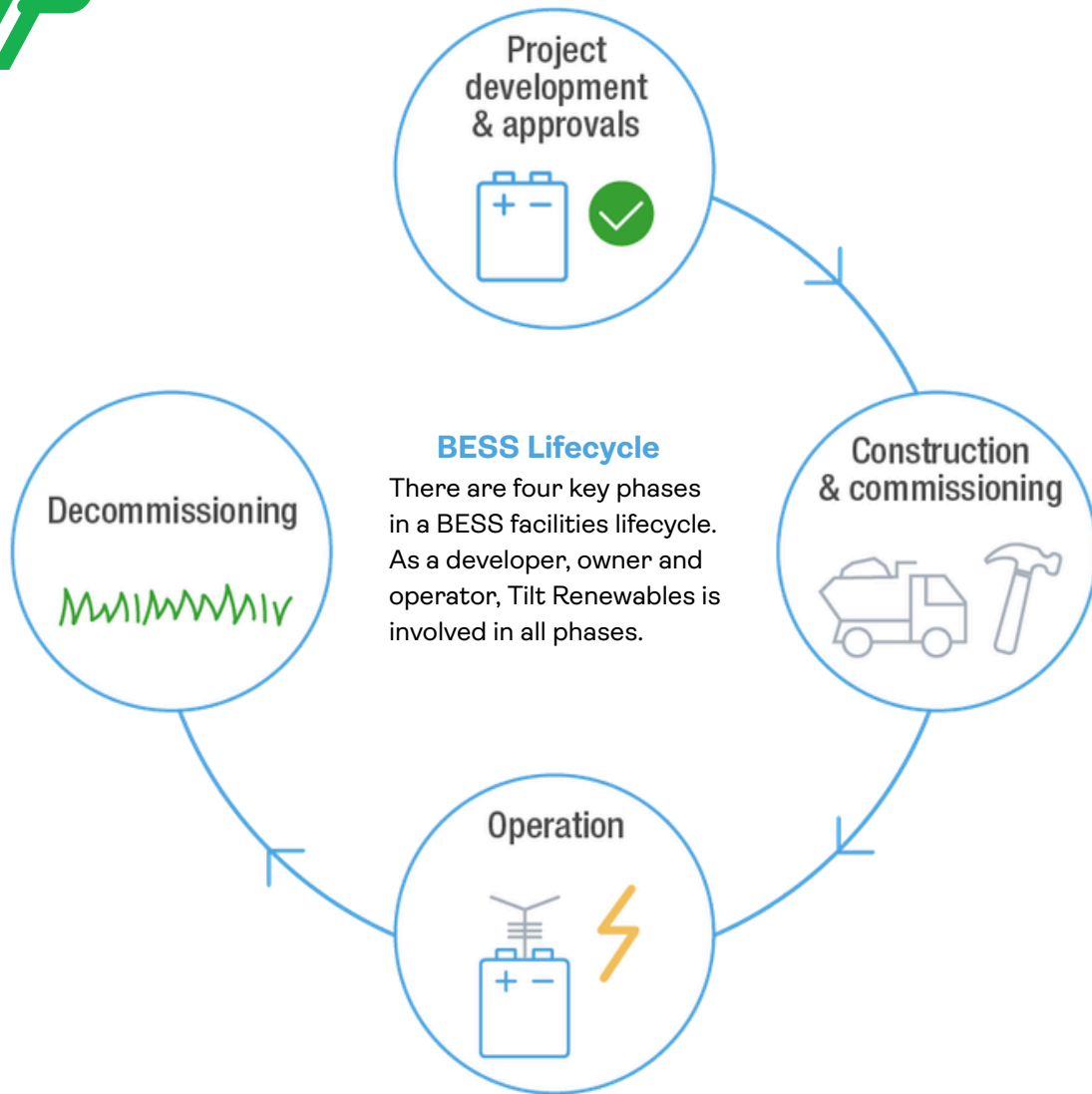
Where possible, BESS facilities are co-located with or near a grid connection point (such as a terminal station), minimising the need for additional connection infrastructure.

Centralised fossil fuel production



Large-scale sustainable production





Project Development and Approvals

From finding the right location to obtaining approvals and finalising a design – a lot of work goes into developing a BESS. Key activities in BESS development include:

- Feasibility studies
- Grid connection studies
- Site investigations
- Consultation with local Council, government agencies and community
- Establishing agreements with landowners
- Planning and environmental studies and approvals
- Detailed design
- Preparation of management plans in accordance with the development approval
- Procurement of contractors and components
- Investment decision

What's involved in designing a BESS?

BESS facilities are designed in consideration of a range of technical, community and environmental factors including:

- Proximity and connectivity to the grid
- Safety
- Relevant standards, guidelines and legislations
- Constructability – whether the design is practical to build
- Potential environmental and heritage impacts
- Operations and maintenance requirements
- Project costs

What planning and environmental approval process is undertaken for a BESS Project?

Depending on the BESS location, local, state and/or federal government approvals may be required.

What environmental studies do you undertake?

As part of early feasibility of a BESS, we identify key environmental values across a project area that could influence the BESS design. The aim is to minimise environmental impacts where possible.

To support to this detailed environmental assessments are undertaken by technical specialists to assess the potential impacts and associated mitigation measures.

The extent to which these environmental assessments are required are based on the location and jurisdiction of the BESS, but typically include:

- Biodiversity
- Cultural heritage
- Noise
- Traffic
- Landscape and visual
- Hydrology
- Bushfire and/or Hazard

Construction and commissioning

At Tilt Renewables, we work closely with our contractors, neighbours, local councils and communities to plan and manage construction responsibly.

We are committed to reducing construction impacts on communities and environment and keeping people safe whilst we work. Some of the ways we do this include:

- Working during standard construction hours when possible
- Monitoring and actively managing construction activities
- Using well-maintained equipment
- Meeting requirements set out in planning conditions, legislation, industry standards and guidelines
- Regular communication with the surrounding community and local council
- A strong safety culture and clear procedures

How long does it take to build a BESS?

The size of the BESS will determine the construction period. Typically, it can take between 6 to 12 months.

How do you make sure construction is undertaken responsibly?

There are a range of requirements, standards and guidelines that ensure construction is well planned and effectively managed. Requirements are set by government authorities, developed as part of the planning process and built into the construction contracts.

Management plans are developed to ensure all requirements are understood and addressed. A Construction Environmental Management Plan (CEMP) provides a 'guidebook' for workers on site. It sets out the approach to managing all aspects of construction including working hours, safety and security, water and dust management, noise and vibration controls and traffic.

Other environmental management plans (e.g. an Environment Management Plan) identify potential impacts and strategies in place to manage impacts and meet requirements. It ensures that appropriate environmental management practices are followed.

How do BESS facilities connect to the Grid?

BESS facilities connect to the grid either via an overhead or underground transmission connection to a nearby terminal station or substation.

What are the batteries made of?

BESS facilities most commonly use lithium-ion to store the electricity. However, there are a variety of technologies available to store the electricity including sodium ion, molten-state (such as sodium sulphur) and others.

What should I expect during construction?



TRAFFIC AND ROADS

Peak traffic movements associated with a BESS will occur during construction. A Traffic Management Plan (TMP) is developed in consultation with the relevant road authority to ensure that construction traffic is appropriately managed. We use major highways and main roads where possible and local roads where necessary to access the construction site.



WORKING HOURS

The Environment Protection Agency (EPA) in each state recommends standard construction hours. This is generally around 7am to 6pm Monday to Friday and 8am to 1pm on Saturdays.



NOISE

Construction noise targets are guided by state or territory legislation. If construction activities on one of our projects is expected to exceed the noise targets at any time, we put mitigation measures in place to limit the impact on local residents as much as possible. This may include scheduling works so that noisier activities occur at times when they will have the least impact. Using well maintained equipment and machinery, minimising noise from vehicle reversing beepers, turning off machinery that is not in use and putting speed limits in place to minimise engine noise, are some other measures used to reduce noise from our sites.



SOCIAL & ECONOMIC

During construction, you may find more people and vehicles around town and on the roads. This additional temporary workforce will provide local towns an economic boost through spending on accommodation, food and local goods and services.

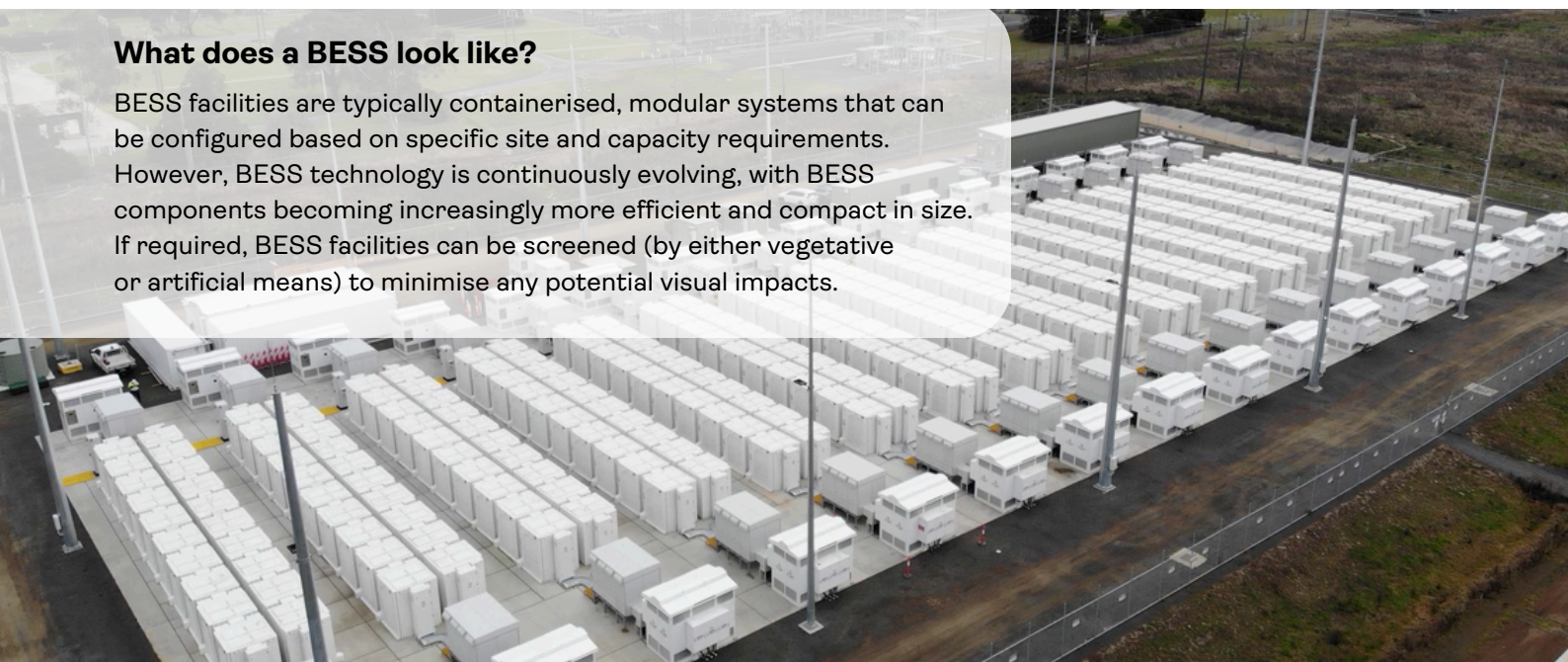


SAFETY

Safety is our first priority. We work closely with our construction contractors and Health and Safety Management Plans are developed to ensure safe construction practices. Potential risks are identified, mitigated and communicated to workers. All staff and contractors undertake mandatory training in safety and emergency procedures before starting work on site.

What does a BESS look like?

BESS facilities are typically containerised, modular systems that can be configured based on specific site and capacity requirements. However, BESS technology is continuously evolving, with BESS components becoming increasingly more efficient and compact in size. If required, BESS facilities can be screened (by either vegetative or artificial means) to minimise any potential visual impacts.



Fire Management

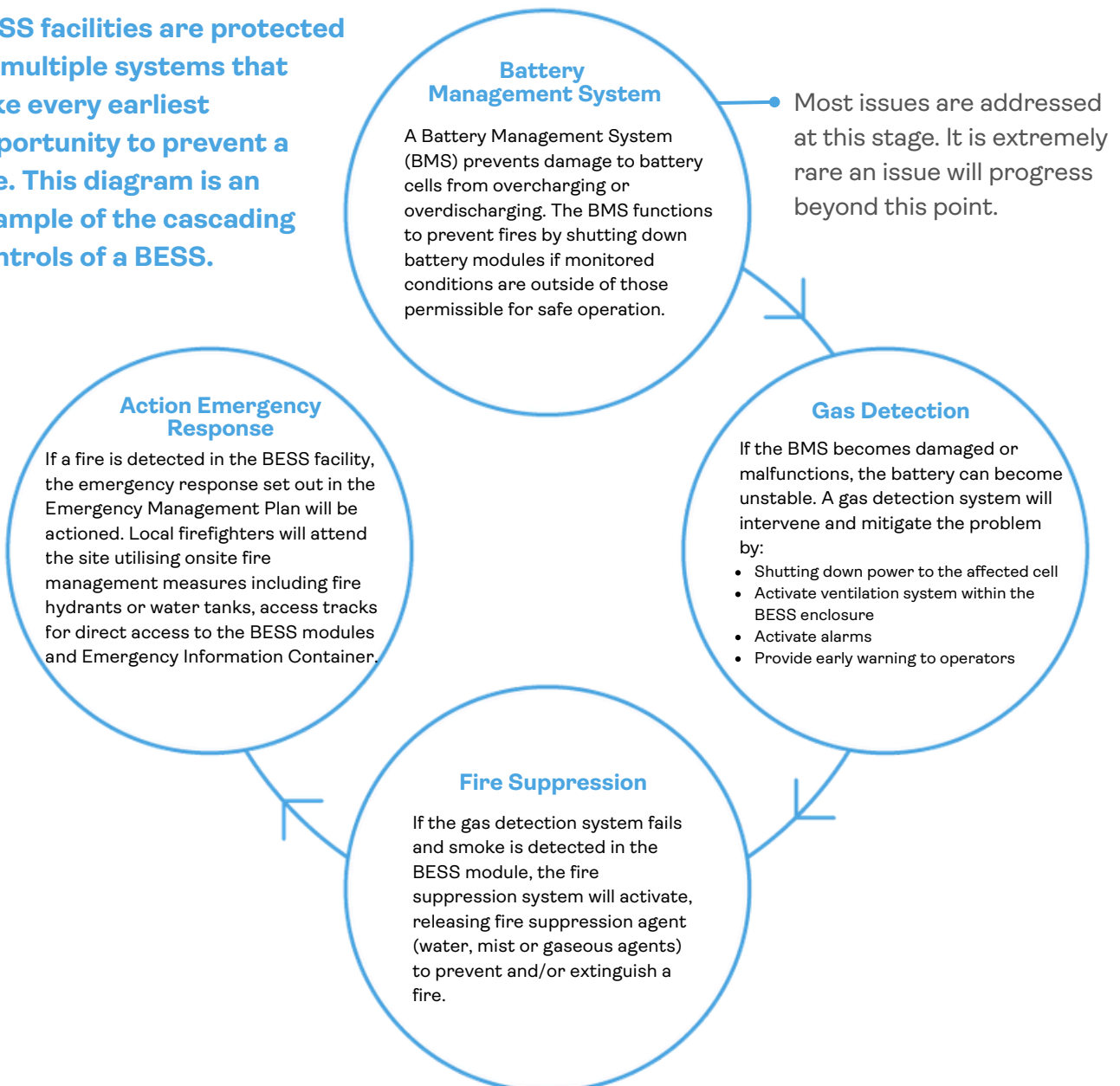
BESS facilities are equipped with Battery Management Systems (BMS) that monitor all parameters required to ensure safe operation of the BESS. This includes State of Charge (SOC), voltage, current, power limits, and temperatures.

The BMS functions to prevent potential fires by shutting down battery modules if monitored conditions are outside of those permissible for safe operation.

Different BESS suppliers have differences in their fire monitoring and control systems. However, all BESS facilities must comply with the relevant guidelines and standards of any approvals and operate in accordance with the legislation in the BESS jurisdiction.

Risk management of a BESS facility is typically undertaken using a Risk Management Plan, developed in conjunction with the relevant fire authority. The Risk Management Plan identifies, assesses and outlines controls for the management of on-site and off-site risks at the BESS facility. The emergency procedures for a BESS facility are typically developed in conjunction with the relevant fire authority and outlined in an Emergency Management Plan.

BESS facilities are protected by multiple systems that take every earliest opportunity to prevent a fire. This diagram is an example of the cascading controls of a BESS.



Managing Chemicals

BESS facilities are designed to manage chemicals on site. In the unlikely event of a leak, containment measures such as bunding, spill trays and chemical absorbents are in place to capture materials on site. Chemical hazards or 'dangerous goods' are typically identified and addressed by way of a Hazard Assessment and Emergency Management Plan (or equivalent).

Will I be able to hear a BESS?

Like other utility scale facilities, BESS facilities have the potential to generate some sound. The main source of the sound is the cooling fans required to regulate the operating temperature of the individual battery cells. The sound they make is similar to an air conditioning unit or a dull whirring noise.

Detailed noise studies are undertaken by specialist consultants who apply authorised environmental noise guidelines to measure noise levels during project development to ensure that noise generated will be within the applicable noise limits.

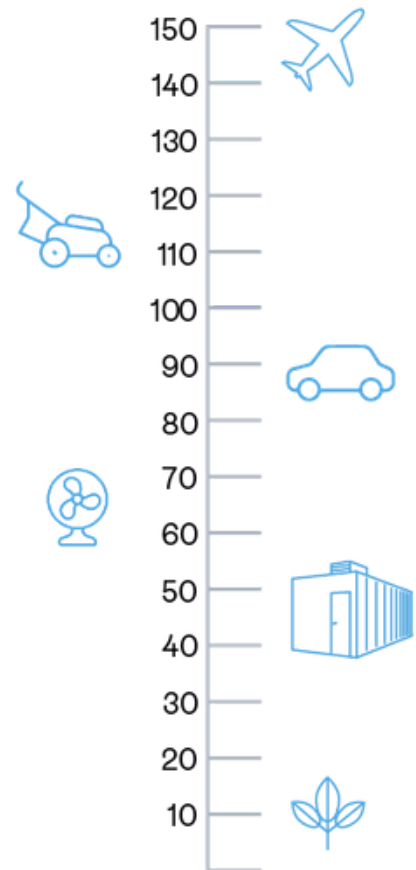
Once operating, BESS facilities are required to meet strict noise requirements which are put in place through the planning process and comply with the relevant noise protocols and/or guidelines.

Diagram: Typical BESS noise levels are 45dB approx. 200m from the facility.

What does MW and MWh mean?

MW means megawatts and is the amount of energy the BESS can send out to the grid at one time. MWh means megawatt-hours and is used to measure how long the BESS can send energy out to the grid at full capacity. For example, a BESS with 200 MW of power and 800 MWh, can release 200 megawatts of power to the grid continuously for four hours (200MW x 4 hours = 800 MWh).

Decibels (dB)



Decommissioning

When a BESS reaches the end of its life, the facility can be decommissioned and the area returned to its original condition. Decommissioning of a BESS facility would involve:

- Dismantling and removing the BESS facility infrastructure
- Removing related infrastructure
- Rehabilitation of the site

The BESS operator will be responsible for the decommissioning of the BESS. Requirements for decommissioning – such as rehabilitating the land – are set out in contracts with landowners and in planning approvals.

Details of the decommissioning process are typically outlined in a Decommissioning Management Plan, that is prepared just prior to a BESS being decommissioned and identifies all infrastructure, equipment and buildings to be removed and details of how these will be removed.

Decommissioning of a BESS facility will be undertaken in accordance with the applicable regulations that govern the safe transport and disposition of used equipment or waste. Where possible, balance of plant material (such as steel and concrete) will be recycled. Inverters, control systems and other electronic equipment may be more challenging to recycle however, useful materials from these components can often be recovered.

The research and opportunities for recycling BESS components is ongoing. The industry continues to develop processes that are in line with circular economy principles: cradle to-cradle design, achieving 100% recyclability, designing out waste and using recycled inputs.

What kind of jobs do BESS facilities create during construction?

The types of jobs created during construction include:

- Transport operators
- Competent machine operators
- General labourers
- Accommodation providers
- Local pubs, hotels, food service providers

We are committed to employing local people and buying local wherever possible. We are always on the look out to build new working relationships in the industry and encourage you to register your services or business on our Goods & Services Register.

Tilt Renewables, as the owner of the BESS facility, will not typically be directly employing workers. This will be done by our delivery partners and contractors (and their sub-contractors).

You can contact them directly when they are appointed or register your interest on our Goods & Services Register and we will pass your details onto the appropriate delivery partner or contractor when appointed.

What kind of jobs do BESS facilities create during operation?

During the operation of a BESS, employment is generally limited to inspection and maintenance activities by the BESS operator.

To register your interest in providing goods or services for our BESS projects please head to www.tilt.au/goodsandservices or hover over the QR code



What economic benefits can a wind farm create for local community?

Local economic benefits can include:

- boost to the local and regional economy and local businesses
- jobs during construction and operation
- direct payments to landowners
- wider community benefit sharing such as education and training programs

How do you keep people informed about the Project?

We use a range of tools to keep people up to date.

These include:

- website – dedicated project page
- meetings, phone calls, emails and/or letters to anyone directly affected
- newsletters
- fact sheets
- updates during construction
- meetings with relevant Council, government agencies and community groups

How do you involve communities in planning for, and making decisions about, a BESS?

We are committed to positive engagement practices and ongoing engagement throughout all stages of a project's life – from site selection through to decommissioning.

We engage with local councils, landowners, neighbours and surrounding communities as early as possible, keeping people informed and involving people in decisions that they are able to influence, such as benefit sharing initiatives. We also encourage our community stakeholders to sign up to our project newsletters to make sure they stay up to date with projects as they progress.



You can sign up for project updates by hovering over the QR code below.



Questions?

If you have any questions, get in touch by calling: 1800 WE TILT (938 458)

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