

What is HumeLink?

HumeLink is one of Australia's largest energy infrastructure projects connecting renewable energy sources to the grid, increasing availability and market competition and helping to put downward pressure on energy prices in Australia.

The project consists of 365 kilometres of 500 kV overhead transmission lines connecting Wagga Wagga, Bannaby and Maragle, and new or upgraded infrastructure at four substations. HumeLink is critical to making more affordable, reliable and renewable energy available to the people of NSW and is a priority project for the Australian Energy Market Operator (AEMO) and the Commonwealth and NSW Governments. Subject to the Australian Energy Regulator's approval of HumeLink, the proposed construction of the 365 kilometre route will occur in two sections known as HumeLink East and HumeLink West.

To view HumeLink's interactive route map go to transgrid.com.au/projects-innovation/humelink#Map

HumeLink East and West map



Figure 1: HumeLink East and West map.



Construction overview

HumeLink is expected to start construction in late-2024, subject to the NSW Government and Commonwealth planning approvals. We are expecting construction works to be finished by 2026 and for HumeLink to be operational shortly after.

Site investigations and associated activities are set to begin in early 2024. The site investigations will inform the project's detailed design and support the development of the design and construction methodologies. These works do not comprise the main construction works, which are dependent on the project approvals.

If approved by the the NSW and Commonwealth Governments, we will progress preparatory works including heritage salvage (the recovery of cultural items) and environmental controls, access road works and clearing.

Early works will follow, including establishing access points, access tracks, water supply points, worker accommodation facilities and construction compounds, and setting up services and utilities.

Once early works are complete, we will begin constructing transmission towers, stringing transmission lines, building the proposed Gugaa substation and upgrading existing substations.

We will then test the transmission lines before commissioning HumeLink. This includes testing new substation equipment and ensuring all instalments meet the design and statutory standards for safe commissioning.

Restoring and rehabilitating disturbed areas and demobilising worker accommodation facilities and construction compounds will occur progressively and as soon as practicably possible. Landowners will be able to retain some of the facilities and construction infrastructure, such as access tracks, if requested and agreed with Transgrid.

Further information on each of the stages is outlined below in Figure 3, the HumeLink project construction phases draft timeline.

Detailed design for HumeLink and the final construction methodology will provide further details of activities to be undertaken during the transmission line construction stages. These details will be developed and finalised by our delivery partners who will communicate additional information in the coming months.



Figure 2: A 500 kV transmission tower being assembled onsite.



HumeLink project construction phases draft timeline



Construction phases



Planning approvals



Activities involved

Early to mid-2024 (Until environmental planning approval)

Site investigations and associated activities

Post-contract award and pre-environmental planning approval
 These works are undertaken by Transgrid's delivery partners and assessed and approved via Transgrid's environmental assessment framework

- Environmental surveys (biodiversity, heritage, contamination)
- Building and road precondition survey
- Utility investigations
- Geotechnical investigations
- Precondition surveys
- Installation of instrumentation and monitoring equipment.

Mid-2024 until early 2025 (Post-environmental planning approval)

Preparatory works

Post-environmental planning approval and pre-Construction Environmental Management Plan (CEMP) approval

- Heritage salvage
- Environmental controls
- Access road works
- Clearing / translocation.

Site establishment/ early works

Post-environmental planning approval and pre-CEMP

- Access point establishment
- Access tracks
- Accommodation facilities and compounds
- Laydown area
- Service relocation
- Heritage salvage related to the above works.

Beginning of 2025 (Post-CEMP approval)

Construction works

Post-CEMP approval

- All construction activities under CEMP.

Figure 3: HumeLink project construction phases draft timeline.



Stage 1: Site investigations and associated activities

As we progress with the project's detailed design, site investigations and associated activities including ongoing survey and fieldwork will be undertaken at some locations. This will inform design refinements and further identify ways we can avoid, minimise and mitigate impacts. Work notifications will be sent out in advance to advise residents of the site investigations and associated activities that will take place.

These include:

- heritage survey investigations by a qualified specialist to identify and assess any items of potential heritage significance. This includes documenting Aboriginal and non-Aboriginal heritage items and sites. Aboriginal heritage surveys will be undertaken with our Registered Aboriginal Parties (RAPs), to identify heritage items such as modified trees and artefacts.
- seasonal ecology surveys to supplement information we have previously gathered. These will include day and night surveys looking at flora and fauna.
- geotechnical investigations, which may include drilling, sampling and testing of boreholes, cone penetration testing and geophysical surveys.

We will also conduct associated activities including utility investigations, and set out precondition surveys.

Utility investigations will confirm the location of existing services such as power, gas, water and telecommunications. Once the location has been verified, the disturbed surface will be restored as closely as possible to its original condition. Utility investigations are generally carried out in one day by a small crew of one or two workers. There may be some temporary localised noise impacts while this work is completed.

Precondition surveys will help assess properties and roads by recording their current condition, any existing damage and aspects that may be affected by construction work.

Instrumentation and monitoring equipment will be installed as part of this stage to record and monitor factors including background noise and dust before, during and after construction. Noise loggers and dust gauges/monitors will be installed at various locations at and near the project footprint.



Figure 4: Noise logger used to measure background noise levels.



Stage 2: Preparatory works

If the NSW and Commonwealth Governments approve the project, HumeLink will receive the NSW and Commonwealth Ministers' Conditions of Approval which outline the requirements for the project's next stages. The Conditions of Approval will inform the development of the Construction Environmental Management Plan (CEMP) which will be submitted to the Department of Planning Housing and Infrastructure (DPHI) (formerly the Department of Planning and Environment (DPE)) for approval before construction work begins. The preparatory and site establishment works will be undertaken in parallel with the development of the CEMP.

The preparatory works will include:

- implementing erosion and sediment control (ERSED) measures to reduce soil erosion
- installing environmental controls
- beginning work on access roads and minor vegetation clearing.



Stage 3: Site establishment and early works

Site establishment and early works will be undertaken after the preparatory works for main construction. This will include clearing vegetation building access tracks and waterway crossings, implementing water supply points, establishing worker accommodation facilities and construction compounds, and setting up services and utilities. These works will be undertaken following planning approval.

Vegetation clearing

Vegetation clearing and pruning will be undertaken as part of the preparatory and site establishment works to help set up access tracks, construction compounds, worker accommodation facilities and other ancillary facilities.

The appropriate clearing method will be determined by the vegetation type, structure, slope and terrain, and environmental and ecological constraints.

Vegetation clearing will also be undertaken during the main construction works stage to help establish transmission line easements and structures, and to support construction or modification of substations.

Site establishment

Site establishment is needed to prepare sites for construction activities. For the HumeLink project, this will include establishing construction compounds and worker accommodation facilities, new access tracks, water supply points, and services and utilities. These preparatory works are set to start following planning approval.

Site establishment activities may include:

- setting up site environmental management and traffic controls, in accordance with separate management plans
- carrying out property adjustments to fencing, barricades, gates and access
- installing temporary fencing, clearing vegetation and topsoil, including stockpiling of soil
- improving roads to ensure safe vehicle movements
- establishing construction infrastructure including construction compounds, helicopter locations and worker accommodation facilities
- constructing hard-surfaced areas for storage, laydown areas and car parking
- building new or upgrading existing access tracks and waterway crossings.

Access tracks and waterway crossings

Access tracks

Temporary and permanent access tracks will be used during the construction and operation phases of HumeLink. Existing and new access tracks will connect the project footprint to the current road network, as well as proposed construction compounds and transmission line easements.

Access tracks will allow construction machinery and vehicles to safely travel between the transmission line structures and easements, substations and other construction work sites. Transgrid is continuing to discuss access requirements with impacted landowners as part of the property negotiation process.

Any impacts associated with establishing and using access tracks including biodiversity, noise and air quality will be appropriately assessed. Mitigation measures including water suppression will be outlined as part of the CEMP.

Waterway crossings

Construction of minor waterway crossings might be needed for vehicles to traverse small creeks or drainage lines. Waterway crossings will be reviewed on a case-by-case basis and avoided where possible. Techniques include the use of causeways or piped/culvert solutions. The crossings will be established with the least soil and vegetation disturbances and appropriate monitoring.

Road improvement work

Access tracks might need road improvement work to allow heavy vehicles to safely access and connect to existing roads. This may include minor maintenance, road widening, drainage work, regrading or resurfacing, and vegetation pruning or removal. The connection to the existing road network will be dependent on multiple factors including existing traffic volumes, types of vehicles needing access, environment, road type at the point of connections with the wider road system as well as consultation with the asset owner.

Construction compounds

HumeLink will need temporary construction compounds to support its work. These compounds will accommodate a range of facilities such as laydown areas, site offices, amenities, parking and construction support facilities such as equipment storage, maintenance sheds, chemical/fuel storage and stockpile areas.

Where possible, construction compounds will be located close to the project footprint to help vehicle movement and transport of construction materials between the compound and the easement.

Worker accommodation facilities

While only one worker accommodation facility was assessed in the EIS (Environmental Impact Statement), Transgrid identified a potential accommodation shortage across the project footprint. The community and stakeholders including locals councils also raised this concern – specifically about potential impacts on short-term accommodation for tourists, the rental market and

housing affordability – during EIS engagement. To help manage the potential impacts on short-term accommodation in nearby townships, temporary worker accommodation facilities are proposed in various locations along the project footprint. Each facility will include accommodation for workers, a common meal room, space for leisure/entertainment and vehicle parking.

The proposed accommodation facilities will be co-located with some of the construction compounds to help workers move between their accommodation and the construction site.

The number of expected workers will vary dependent on the construction works stage. The project is anticipated to employ up to 1,600 full-time construction workers across multiple work fronts during the peak of construction activities.



Figure 5: Example of worker accommodation from Project Energy Connect.



Figure 6: Example of worker accommodation from Project Energy Connect.



Figure 7: Example of worker accommodation from Project Energy Connect.

Water supply points

Water supply points will be needed for non-potable water for construction activities and potable water for worker facilities, including construction compounds and workforce accommodation.

Preparatory works will include establishing suitable non-potable water sources such as construction sedimentation basins, farm dams, rainwater tanks, groundwater bores and water purchased from existing water user allocations. Potable water will be sourced from council standpipes, connection to council water supply systems or imported.

The use of water during the construction works stage will be required for:

- dust suppression at substation and transmission line construction sites and on access tracks
- civil work and earthwork compaction in which machinery conditions soil or ground materials
- concrete batching activities
- equipment and vehicle washdown and other biosecurity measures depending on each property requirement.



Figure 8: Example of dust suppression with a water cart.



Figure 9: Example of concrete pouring.



Stage 4: Construction works

The main construction works include erecting transmission line structures, stringing of transmission lines, building the proposed new substation at Gugaa and upgrading existing substations. Construction methodologies will endeavour to minimise environmental impacts via a broad range of mitigation measures to be defined as part of the project's approval process. The approved CEMP will support the development of the construction works.

Transmission towers will be built in multiple stages from surveying, excavating and foundation construction to tower erection, stringing using helicopters and drones, and

rehabilitation., as outlined in Figure 11. The [tower factsheet](#) further explains the types of transmission towers, design features, construction sites and locations, and easements and operations.

The potential need for blasting and the temporary impacts in localised areas has been identified.

Individual engagement with impacted landowners is being undertaken.



Figure 10: Spider vehicle to assist in transmission line structure construction works.



How are transmission towers constructed?



Surveying

Surveys determine elevation levels, distances and terrain angles. This provides us with valuable information to identify potential construction sites and access points at each tower location.



Access tracks/road clearing and construction

We upgrade, clear and construct access tracks/roads where required so vehicles, machinery and equipment can safely get to the construction site. Surveying allows clearing to be kept at a minimum.



Excavations

Piling rigs and excavators move soil and rocks for the construction of the tower's foundations.



Construction of foundations

Tower legs (the base of the tower) are installed. This includes reinforcement, setting the levels and pouring concrete.



Tower assembly

The tower sections are pre-assembled at ground level using safe heavy lifting methods, such as cranes. HumeLink uses suspension and tension towers, which require a larger foundation.



Tower erection

The tower is moved in sections onto the concrete foundations using safe lifting methods such as a crane or helicopter.



Stringing

Insulators and pulley blocks are put in place to enable conductors to be installed. The stringing process uses brake and winch sites or helicopters and/or drones to pull through the conductors and connect them at each end.

The pulley blocks are then removed and the cables connected to the insulators. This is known as clipping in.



Rehabilitation

Any disturbed ground or vegetation will be stabilised during construction, and appropriately rehabilitated as soon as feasible and reasonable after construction. We will consult with the landowner to plan this work.

Figure 11: Transmission line construction process.

Extractive materials support construction

The proposed use of extractive materials is being reviewed as part of the ongoing design refinements. The extractive materials would be excavated and used to support construction. Transgrid will prioritise using existing quarries within 10 kilometres of the project footprint to minimise disturbances and continue to engage with directly impacted landowners and the local community on progressing design refinements.

Use of helicopters and drones

Helicopters and drones will be primarily used for stringing purposes during the construction stage of the project. Helicopters and drones may also be used to deliver materials, equipment and personnel, and undertake surveys and vegetation management.

Helicopter facilities for take-off and landing will be established as part of the proposed construction compounds. The anticipated flight paths will be to and from the construction compound locations and the proposed transmission line easements.



Figure 12: Example of helicopter used for aerial investigations.



Stage 5: Testing and commissioning

The testing and commissioning stage includes pre-commissioning activities, such as tests and checks to confirm the completion of construction, quality assurance documentation, inspection and test plans, checklists and associated activities. Pre-commissioning activities ensure each component of the project has been installed in accordance with design and statutory standards and is safe to proceed to commissioning.

Pre-commissioning and commissioning activities would include:

- testing and commissioning of the new substation equipment
- point-to-point testing of the new transmission lines and substation connections
- earthing testing
- high-voltage testing
- high-voltage equipment operational checks
- testing of the installed protection, metering, control, and communication systems.



Stage 6: Demobilisation and rehabilitation

Following testing and commissioning, the demobilisation and rehabilitation stage will be rolled out progressively across the project footprint. These activities include:

- Demobilisation of construction compounds and worker accommodation facilities

- Removal and disposal of materials, waste and redundant structures not required during the operation phase
- Removal of temporary fencing and environmental controls.

Acknowledgement of Country

In the spirit of reconciliation Transgrid acknowledges Wiradjuri, Ngarigo, Wolgalu and Ngunnawal peoples as the Traditional Custodians of the Country HumeLink traverses.

We pay respects to the people, the Elders both past and present and celebrate the diversity and successes of Aboriginal peoples and their ongoing connections to the lands and waters where we work and live.



Connect with us

Transgrid is committed to working with landowners and communities through the development of HumeLink. Please connect with us for more information.



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