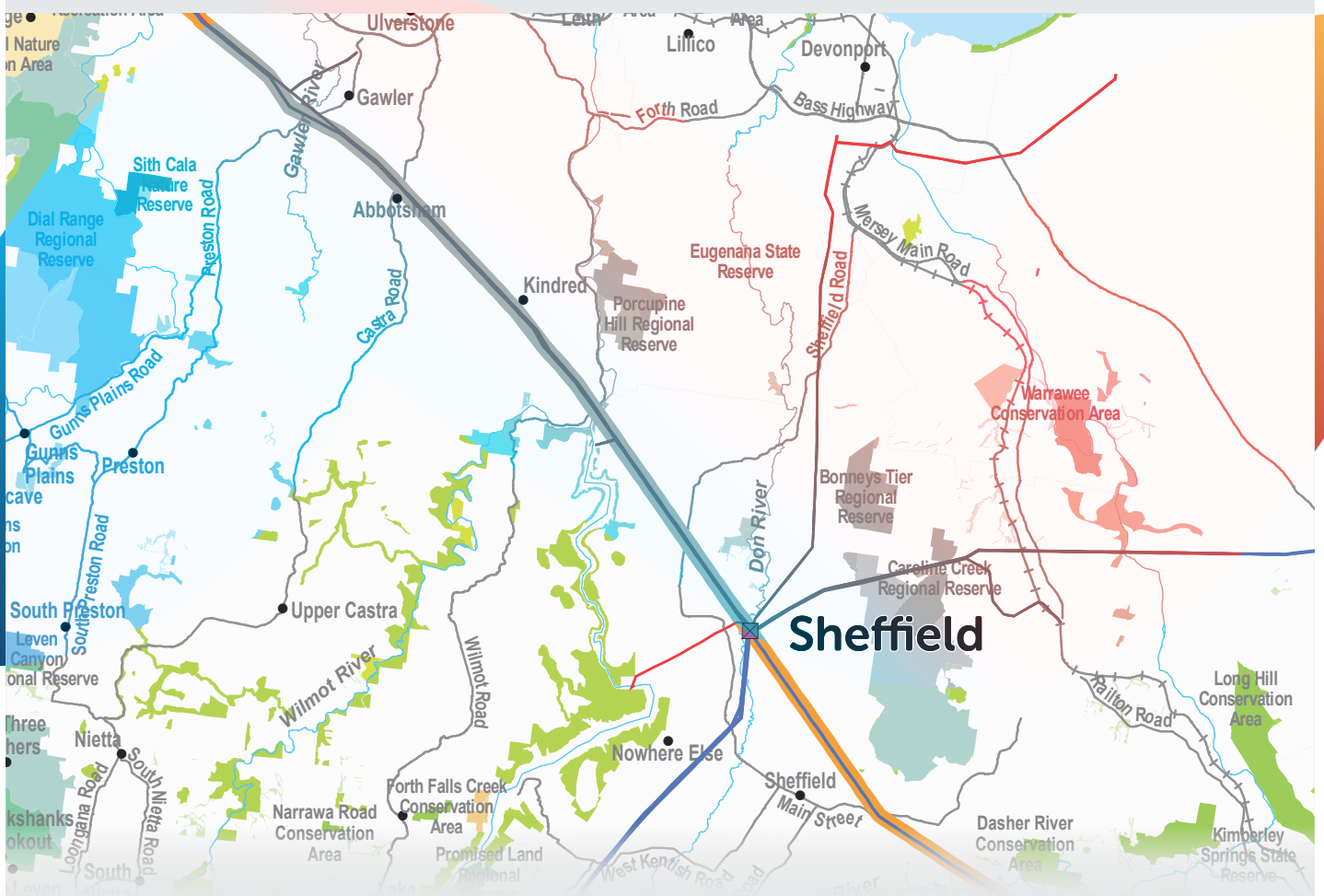


Proposed North West Transmission Developments Palmerston to Heybridge

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Responsibilities

This document is the responsibility of Tasmanian Networks Pty Ltd
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Palmerston to Heybridge Proposed Developments

TasNetworks is planning for transmission developments between Palmerston and Burnie as part of the proposed North West Transmission Developments. The transmission line proposed between Palmerston, Sheffield and Heybridge will be comprised of two sections; Palmerston–Sheffield 220 kV transmission line, Sheffield–Heybridge 220 kV transmission line.

We are commencing engagement activities with landowners and the local community ahead of undertaking a range of environmental, social and technical investigations from early 2021.

This work forms part of the critical early works required to progress the proposed North West Transmission Developments, which are needed to support Marinus Link and the implementation of TasNetworks' strategic plan for North West Tasmania.

This document provides information on:

- why these developments are proposed for North West Tasmania
- how TasNetworks is planning for them
- where the proposed developments will go
- what the proposed developments will look like
- how TasNetworks has selected the route, and
- how you can provide input through the design and approvals process.



Why are these developments planned for North West Tasmania?

The electricity transmission network in North West Tasmania is expected to undergo significant changes over the coming years to support the region's role in Australia's transition to a low emissions future. As part of this transition, the Australian Energy Market Operator has developed a blueprint to manage the evolution of Australia's power system. This blueprint is called the Integrated System Plan.

North West Tasmania and Central Tasmania are identified as high priority renewable energy zones in the Australian Energy Market Operator's Integrated System Plan. This is because these regions have excellent potential for developing renewable generation, storage and dispatchable 'on demand' energy projects, including:

- new large-scale wind generation in the order of 2,000 megawatts (MW)
- latent/repurposed hydro power of up to 750 MW, and
- new pumped hydro energy storage developments of at least 750 MW.

The region also hosts the anticipated connection point for Marinus Link, a proposed 1500 MW capacity

undersea and underground electricity corridor that will link North West Tasmania to Gippsland in Victoria. The extra capacity provided by Marinus Link is critical to unlocking the large-scale wind, existing hydro capacity and new pumped hydro energy storage resources planned for development in Tasmania.

Did you know?

A megawatt (MW) is approximately equivalent to the energy needed, at a point in time, for powering 1,000 homes. This means that Marinus Link will have the capacity to transport low cost, reliable and clean power for approximately 1.5 million homes.

The work TasNetworks has done to date shows that Marinus Link and the supporting transmission developments in North West Tasmania stack up. The benefits to customers and local economies will outweigh the costs.

How is TasNetworks planning for these developments?

Changes to the existing transmission network and potential new transmission routes will be required in North West Tasmania to increase network capacity and ensure the power system can accommodate the future renewable energy and storage developments proposed for the region, including Marinus Link.

TasNetworks' role as a network planner

TasNetworks is the electricity network planner for Tasmania. We develop plans to outline how the transmission network will be developed to connect new generation and meet customers' energy needs. This includes the network requirements to efficiently unlock Tasmania's renewable energy zones identified by the Australian Energy Market Operator's Integrated System Plan. We work with all parties interested in the future development of the transmission network.

Strategic planning

TasNetworks' strategic planning for the North West Tasmanian transmission network considers planned developments required to support the energy market in the long term. As part of progressing plans, TasNetworks is now assessing the transmission upgrades and potential new transmission developments that may be required. This strategic planning aims to minimise adverse impacts on landowners, community, environment and areas of cultural significance by using existing transmission routes where viable and cost-efficient. Our assessment is that in order to support efficient development of renewable energy zones in Tasmania, some new transmission routes will also be needed.

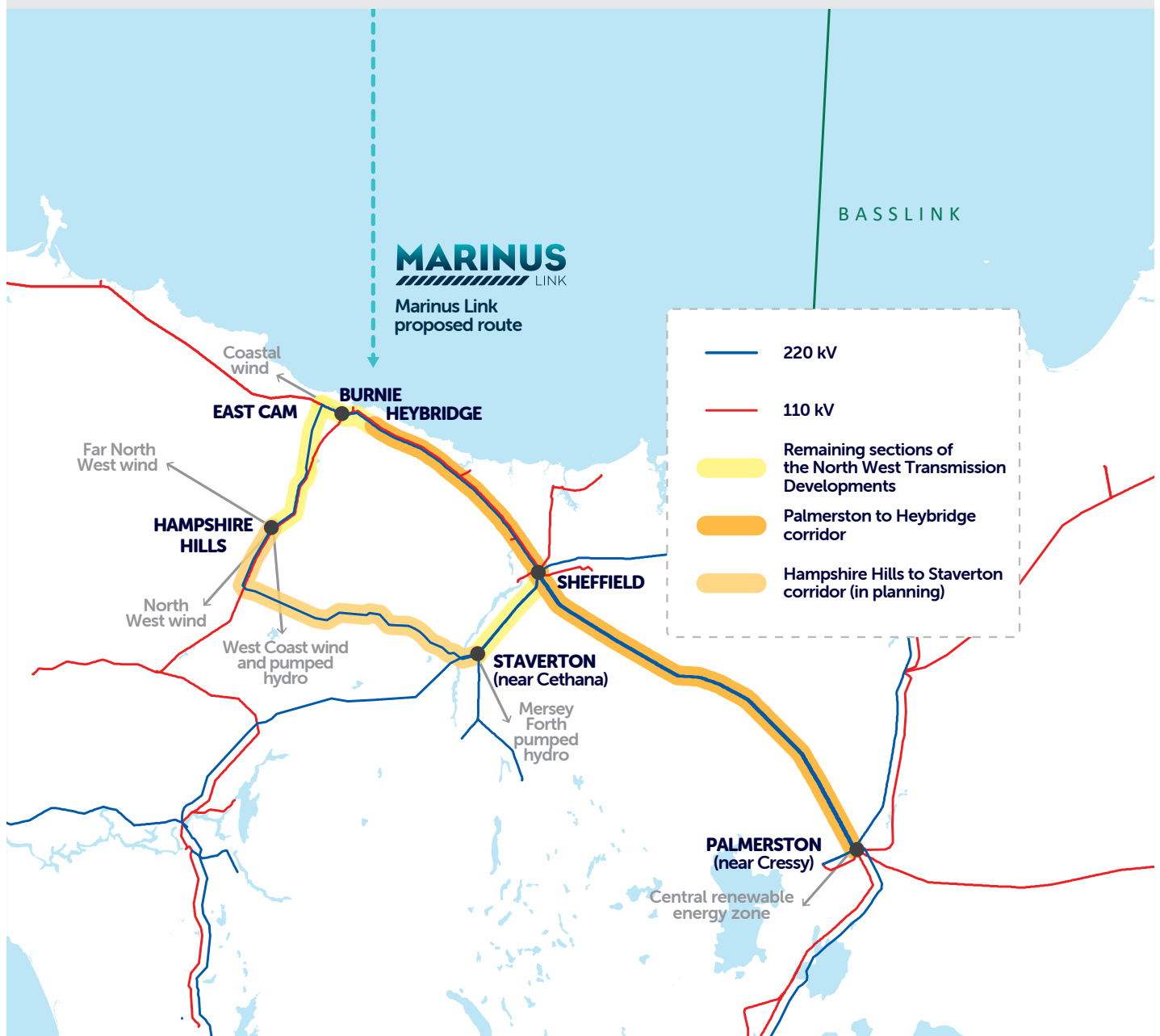
The map on the next page shows the existing transmission network. It also indicates the proposed transmission upgrades and new transmission routes that are being investigated.

TasNetworks' strategic planning recommends strengthening the transmission network in North West Tasmania by creating a 220 kV 'rectangle' that connects the existing Sheffield and Burnie substations with two new switching stations in Hampshire Hills and Staverton. This 220 kV rectangle provides significant system benefits, including transmission route diversity and redundancy, reduced transmission losses, maximising power transfer capability and system resilience. This means that the rectangle will allow Tasmania's power system to remain strong and stable while passing more energy efficiently through the network.

Where will the proposed developments go?

The developments currently under consultation involve changes to the existing 220 kV transmission line between Palmerston and the Heybridge area.

This proposed new line will ultimately connect Marinus Link to the Tasmania developments shown in orange/yellow below.



Why does the Palmerston to Heybridge transmission line **need to change?**

The existing 220 kV transmission line between Palmerston and Burnie was built in 1957.

It has sufficient capacity to support present network and customer needs. However, there is insufficient remaining capacity to support future network and customer needs as new renewable energy and storage developments progress, including the proposed 1500 MW Marinus Link. Therefore, additional carrying capacity is required which triggers the need for new transmission developments.

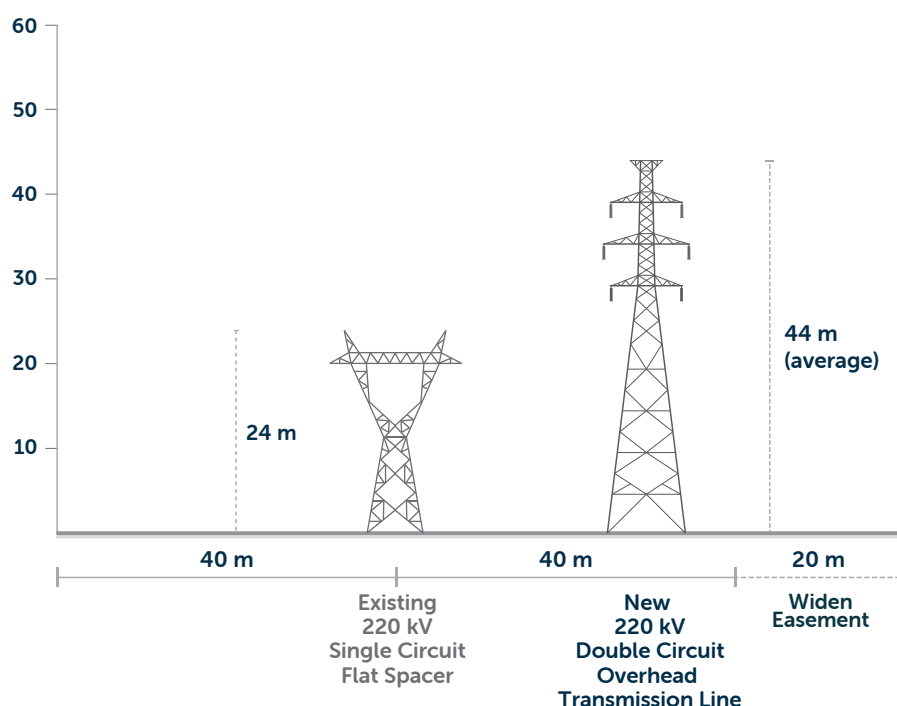
What are you proposing to build?

Palmerston to Sheffield

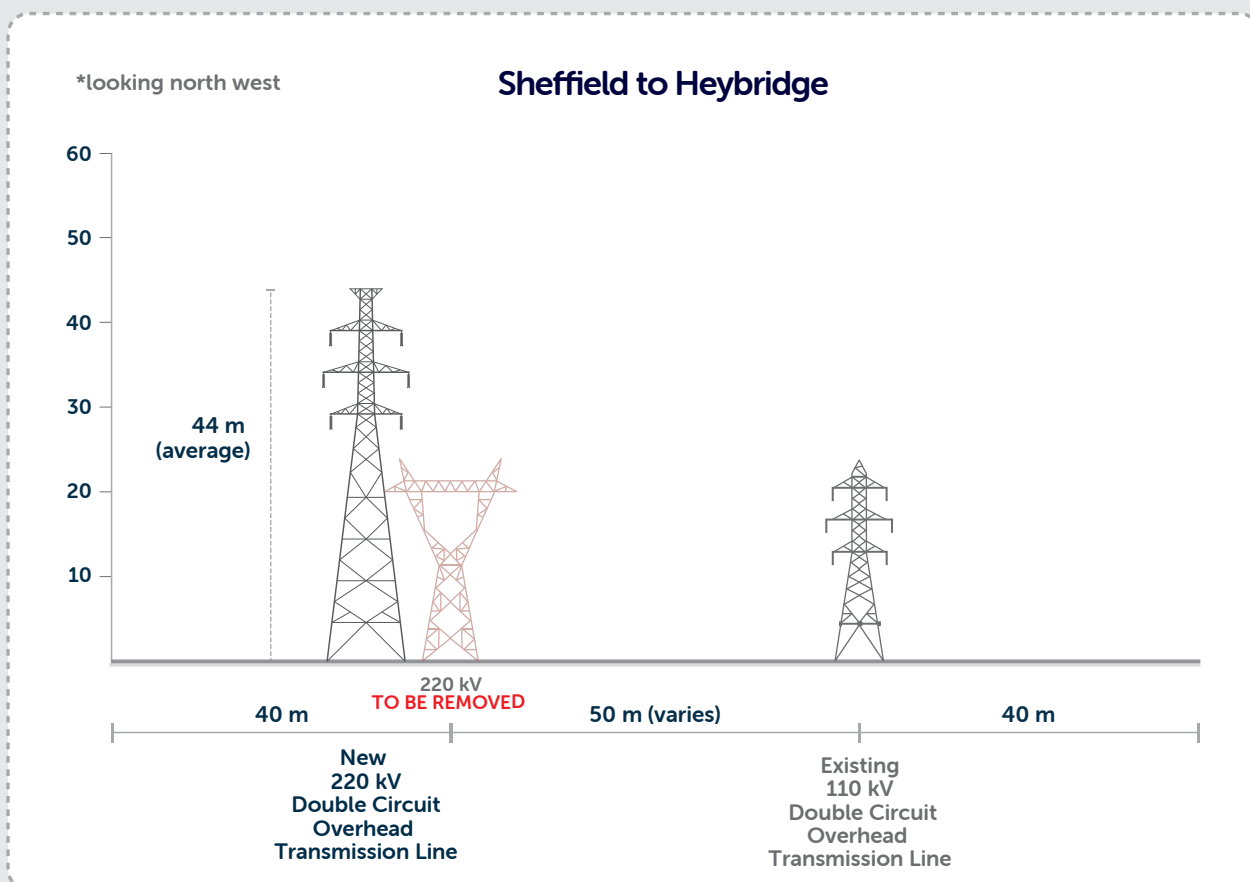
Between Palmerston and Sheffield a new double circuit 220 kV transmission line is proposed to be constructed adjacent to the existing single circuit 220 kV transmission line on the northeast side. This will require widening the existing easement by approximately 20 metres. The new line will be approximately 80 kilometres long and will involve approximately 180 new towers.

*looking north west

Palmerston to Sheffield



Between Sheffield and Heybridge a new double circuit 220 kV transmission line is proposed to be built within the existing easement. The new double circuit transmission line will replace the existing single circuit 220 kV overhead transmission line. The proposed development does not require the easement to be widened. The new line is approximately 47 kilometres long and will involve approximately 100 new towers.



What will the **towers look like?**

The proposed transmission towers will be steel lattice towers and have a ground level footprint of between 8 to 12 metres squared. They will require up to 50 metres squared for construction activity. They will range from 50 to 60 metres in height. Tower placement and heights have not been determined and will be further defined in consultation with landowners

and in accordance with results from ground surveys and required safety clearances.

The visual impact of these developments will be carefully considered as part of the landscape and visual impact assessment process for this section of the North West Transmission Developments.



How are the new towers different from the **existing towers**?

The design and height of the towers used for the proposed developments reflect the network's ability to support an increase in capacity.

The proposed developments will increase capacity to approximately 2000 MW between Palmerston and Sheffield and 1600 MW between Sheffield and Heybridge.

While the new towers will be taller than those on the existing transmission lines between Palmerston, to Heybridge transmission line, there will be fewer towers required.

This is because the increase in height allows for a greater span, or distance, between each tower without compromising on the distance required between the ground and the lowest power conductors.

To accommodate the increased capacity each tower will carry 12 lines – 6 on each side over 3 levels. These high capacity conductors result in a reduction in transmission losses, electromagnetic field and corona noise.

Double circuit steel lattice towers are required to safely accommodate the weight of the high capacity conductors.

Did you know?

Corona noise is the audible noise emitted from high voltage transmission lines.

High capacity conductors are high-capacity, high-efficiency cables that support transmission where greater energy supply is required.



How was the **route selected?**

TasNetworks' has followed a consistent and rigorous route selection process to identify the proposed transmission line route between Palmerston, Sheffield and Heybridge. The diagram below sets out each of the steps involved in this route selection process.

Route selection process



What connection is required?

Route selection starts by considering connection and strategic transmission network planning requirements to identify what augmentation or new transmission infrastructure is required, and where it is to be located (i.e. the start and end points for route selection). TasNetworks identified that changes will be required for the Tasmanian electricity transmission network to increase network capacity and ensure the power system can accommodate the future renewable energy and storage developments proposed for the region, including Marinus Link. These changes include upgrades to transmission lines between Palmerston, Sheffield and Heybridge.

What is proposed to be built?

The next step of the route selection process is to understand what needs to be built (i.e. the technical specifications for the transmission infrastructure). In this instance, the following is required:

- Palmerston to Sheffield - a new double circuit 220 kV transmission line running parallel and 30 metres north east of the existing transmission line; and
- Sheffield to Heybridge - replace the existing single circuit 220 kV transmission line in this corridor with a new double circuit 220 kV transmission line.

What values exist in the area of interest?

Physical, biological, socioeconomic environment and landscape and scenic values identified in the area potentially affected by upgrades to the transmission lines include:

- mountain ranges and undulating plateaus dissected by deeply incised rivers and creeks;
- cleared land, high quality agricultural land, land used for plantation forestry with some tracts and patches of native vegetation including

threatened vegetation communities, flora and fauna species;

- small rural communities and major towns with communities deriving their livelihoods mainly from agriculture, forestry and tourism.
- coastal development is expanding inland and rural residential subdivisions and small landholdings are key features;
- Aboriginal heritage sites and historic cultural heritage places are known to occur in the area of interest; and
- scenic road corridors and scenic management areas identified in local planning schemes.

How do the existing values inform route selection?

The existing physical, biological and socioeconomic values constrain route options but also provide opportunities, particularly those created by existing linear infrastructure and existing electricity transmission easements.

Existing infrastructure corridors are considered first when planning new transmission developments. Where there is an existing corridor in the geographic area requiring transmission development, and where the values and uses are compatible, these present as prudent and feasible options.

For the Palmerston to Sheffield and Sheffield to Heybridge route, existing transmission easements provide significant opportunities for re-use or slight widening of existing easements to accommodate the new proposed transmission lines. Preliminary investigations indicate other identified values and uses do not pose significant constraints.

Identify and evaluate prudent and feasible corridors

The existing Palmerston to Sheffield transmission corridor provides opportunities for co-location of the new 220 kV transmission line with easement widening. The existing 80m wide easement will need to be widened by approximately 20m.

Similarly, the existing Sheffield to Heybridge corridor provides opportunities for co-location. With some minor exceptions, sufficient space exists within the existing easements to accommodate the new transmission lines.

Location of the proposed transmission line between Palmerston and Sheffield

The new transmission line between Palmerston and Sheffield will be built on the north east side of the existing transmission line.

Desktop ecological and cultural heritage surveys and a review of existing public and private infrastructure

indicate that the north east side is likely to be least constrained, and will facilitate connection at the Sheffield end. These findings will be confirmed through field surveys and consultation with landowners before a final decision is made.

Location of the proposed transmission line between Sheffield and Heybridge

The new transmission line between Sheffield and Heybridge will be built on the south west side of the existing transmission line, noting the proposed removal of the existing single circuit 220 kV line for this section. Desktop ecological and cultural heritage surveys and a review of existing public and private infrastructure indicate that the south west side is likely to be least constrained and will facilitate connection of Marinus Link to the Tasmanian transmission network. These findings will be confirmed through field surveys and consultation with landowners before a final decision is made.

When will the developments take place?

The proposed North West Transmission Developments and Marinus Link will only progress to construction once necessary approvals are in place, together with appropriate funding, ownership and pricing arrangements. These developments will follow land use planning and environment approvals processes at local, state and Commonwealth levels and is subject to a rigorous and regulated economic cost-benefit analysis.

The timing and staging of the proposed North West Transmission Developments will be influenced by the progress of new renewable energy generation and storage projects, and of

Marinus Link. TasNetworks' analysis indicates the transmission developments in North West Tasmania required to support Marinus Link could be in service from the mid to late 2020s.

The Australian Energy Market Operator's 2020 Integrated System Plan recommends work on Marinus Link continue so that the project can be 'shovel ready' by 2023-24, and able to be in service from the late 2020's. The detailed timing will continue to be monitored ahead of any investment decision.

How can I find out more?



We will be meeting with landowners, Councils, the community and other key stakeholders over the coming months to discuss the planned developments between Palmerston and Heybridge.

We are committed to communicating on the North West Transmission Developments in a transparent, respectful, and timely manner, in addition to working with the community to realise the benefits these proposed developments can deliver for the north west of Tasmania.

To learn about the proposed North West Transmission Developments and Marinus Link please

visit: tasnetworks.com.au

email: projectmarinus@tasnetworks.com.au

call: **1300 127 777**





tasnetworks.com.au