

ELECTROMAGNETIC  
FIELDS (EMF) &  
ELECTROMAGNETIC  
INTERFERENCE (EMI)

**MARINUS**  
LINK

# What is Marinus Link?

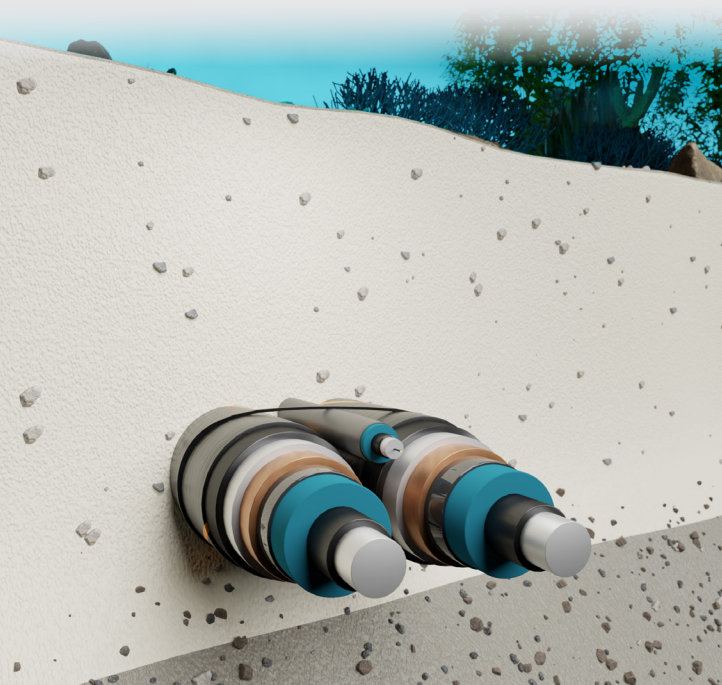
**Marinus Link is a proposed undersea and underground electricity and telecommunications interconnector between Tasmania and Victoria.**

It will further connect Tasmania to the National Electricity Market, comprising Queensland, New South Wales, ACT, Victoria, Tasmania and South Australia.

Marinus Link will comprise high voltage direct current (HVDC) cables, fibre-optic cables and converter stations in both Tasmania and Victoria.

Marinus Link will be about 345 kilometres long – 255 kilometres of undersea cables and 90 kilometres of underground cables.

It will have a 1500 megawatt capacity, equal to the power supply for 1.5 million Australian homes.



# Planning and approvals process

**Marinus Link is a complex project which must go through several environmental assessment and planning processes.**

Marinus Link is required to produce an Environmental Impact Statement (EIS) under Commonwealth legislation, an Environmental Effects Statement (EES) under Victorian legislation and a Development Application under Tasmanian legislation.

Marinus Link has done assessments to inform these documents and to understand potential project impacts and how they should be managed.

## What are EMF?

Electromagnetic Fields (EMF) are invisible, physical fields that surround electrical charges and exert forces on all charged particles and objects in the field.

EMF occur naturally in the environment, especially in the marine environment because of the earth's magnetic field. Electric fields are created by induction as seawater moves (tidal flows and currents) through the geomagnetic field. Weaker electric fields are created by living organisms as they move in the earth's geomagnetic field.

## What is EMI?

Electromagnetic Interference (EMI) occurs when something in an electric or magnetic field stops working properly because the field is too strong.

We did assessments to look at EMF and EMI associated with Marinus Link. These studies considered worst-case impacts to people, plants, animals and electrical equipment (known as sensitive receptors) from the subsea and land HVDC cables between the converter stations, as well as the converter stations in Tasmania and Victoria.

# Managing construction impacts

While some construction activities (such as heavy equipment, machinery and radios) have a potential to generate EMF or cause EMI, we do not expect this to be a risk during the construction of our project.

This is due mainly to the machinery operated and the distance of construction activities to possible sensitive receptors.

# Managing operation impacts

## Land HVDC cables:

- ◇ Assessments confirmed that there would be no sensitive electrical or electronic equipment or systems near the HVDC cables.
- ◇ Studies found that operation of the land cables will not impact human health, livestock, wildlife, or the normal functioning of radio-frequency identification (RFID) tags, other farm equipment or machinery along the cable route.
- ◇ The cables could have some impact on the behaviour of honeybees within 5 m of the cable trench and it is recommended that apiaries located within 5 m of the trench be relocated.
- ◇ For the terrestrial cables, Marinus Link's EMF is proposed to be below the international guidelines recommended by the International Commission of Non-Ionizing Radiation Protection, which have been adopted by the Australian Radiation Protection and Nuclear Safety Agency.

## Subsea HVDC cables:

- ◇ The cables in each circuit would be bundled together approx. 1.5 m below the seafloor of the Bass Strait trench section. This will reduce the EMF. The EMF would be strongest directly above the cables and decrease quickly at increasing distance from the cable.
- ◇ Studies indicate that EMF produced by submarine power cables similar to Marinus Link do not act as a physical barrier to migration activity, with species able to navigate past or away from the source and that behavioural changes resultant from generated EMF are not considered significant.
- ◇ The highest EMF levels occur at ground level when the cables transition at the shore crossings at Heybridge (Tasmania) and Waratah Bay (Victoria). This is because the cables would be unbundled and spaced apart along these sections.
- ◇ The HVDC cables may have some impact on the behaviour of species that live on the sea floor at the two shore crossings, but impact will be comparable with that of the existing Basslink cables.
- ◇ The 2016 operational impact assessment of Basslink identified no negative impacts on species that live on or near the seafloor.

## Proposed converter stations in Tasmania and Victoria:

- ◇ The maximum EMF strength outside the converter stations and transmission line easement were below the limit for generic household equipment (such as toasters and kettles).
- ◇ Assessments revealed there are no sensitive electrical, electronic equipment or systems that could be impacted by EMI from the converter stations.

# Management approaches

If the EMF and EMI levels are below the guidelines set by the Tasmanian, Victorian and Australian regulators (as applicable), the impact on sensitive receptors is considered acceptable.

We will develop the following to manage residual effects. These will include:

- ◇ **Environmental Performance Requirements (EPRs).**
- ◇ **Electromagnetic Compatibility (EMC) Management Plan(s):**
  - Prior to construction, prepare and implement an EMC Management Plan;
  - EMC Management Plan will also be developed for operation stages.

- ◇ **Electric and Magnetic Field Assessment:**

- Project-wide EMF assessment for all the new infrastructure, considering existing sensitive receptors and committed future developments within the study area;
- This will inform the EMC Management Plan.

- ◇ **EMI Assessment:**

- Project-wide EMI assessment for new infrastructure, considering existing sensitive receptors and committed future developments within the study area;
- This will inform the EMC Management Plan.

## What we've heard from the community

- ◇ **Farmers are concerned about the possibility of EMF interfering with electronic farm technology (e.g., livestock ear tags).**
- ◇ **Community members want assurance that EMF will not impact marine life (subsea and shore landing).**
- ◇ **Some community members are concerned about how EMF may impact the ecosystem more generally, including, plants, insects and animals.**



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## MORE INFORMATION

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