

Navigating undersea cable repair

Submarine cables represent critical information infrastructure in the global economy. They form the backbone of international telecommunications networks that power global commerce, meeting 99% of all data transmission requirements.

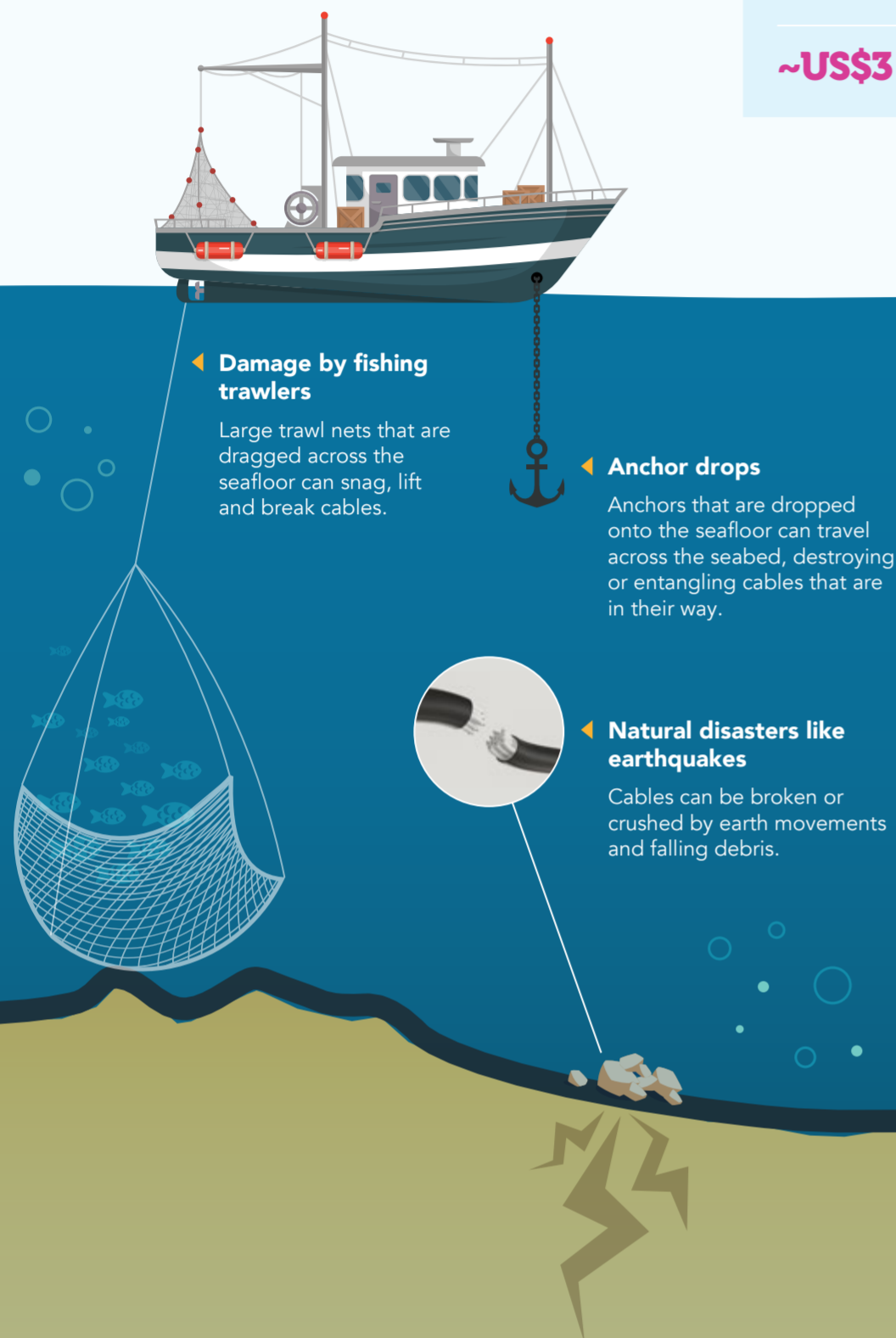
With this reliance on submarine cables for connectivity, the infrastructure has been designed to ensure a high level of efficiency. However, cable damage can be unpredictable and unpreventable, and is one of the biggest threats to the health of the global commerce ecosystem. Repairs to cut or severed cables must be carried out quickly, efficiently and cost-effectively to maintain business confidence and reduce disruption.

Common causes of cable faults

Impact¹

3 weeks of down time for repair.

~US\$3 million loss for each cable.



Two types of cable faults



Shunt faults

The copper sheath carrying electricity is exposed to water.

Fibre optic repeaters start to fail and data signals degrade.

How to locate the fault?

Power feed equipment is used to send known voltages to the other end of the cable.

Resulting voltage drop is measured to determine the location of the fault.



Optical faults

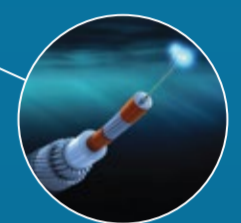
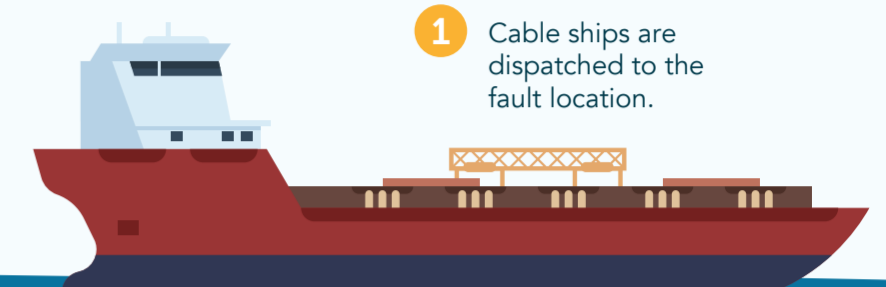
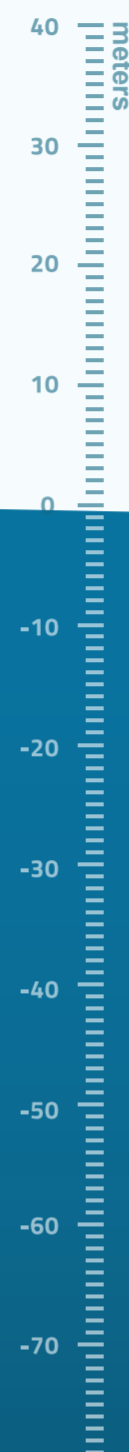
Cable fibres are crushed or broken

How to locate the fault?

An optical time delay refractometer sends a test pulse down the fibre.

Signals that are scattered back are measured to determine fault location.

Retrieval and repair



2 The damaged cable is retrieved from the seafloor using a grapnel to snag and pull it up to the surface.

3 Once on board, the damaged sections are removed.

4 New cable sections are spliced to reconnect the severed ends of the cable.

5 The cable is tested and lowered back to the sea floor after the fault is resolved.

¹ Design of a Transoceanic Cable Protection System, Technical report, December 2015

Singtel: Keeping the region online with speedy cable repairs

The cable maintenance and repair effort we undertake in the region ensures resilient, sustainable connectivity that is key to a thriving global economy and commerce.

Facts and figures

- A pioneer of some of the earliest submarine cable routes in this region, we have a long history of investment and expertise in servicing and repairing.
- Operating the most extensive submarine cable network in the region - 415,000 km, 25Tbps cable capacity and 60 cable landing points - with our robust and resilient connection in Asia, Trans-Pacific, Europe, and Oceania.
- Delivering fast, efficient and economical cable repairs with our two dedicated cable repair ships: **ASEAN Explorer** and **ASEAN Restorer**
- Responsible for 24/7 monitoring and maintenance of undersea cables in the region, and provides enhanced guard boat protection in cable-cut prone areas such as Indonesia's Port Merak and Shanghai.

Contact us