Broad Character: Communications
Character Type: Telecommunications
National Perspective

INTRODUCTION: DEFINING/DISTINGUISHING ATTRIBUTES

The Character Type Telecommunications includes the following Sub-type:

- Submarine telecommunications cable

This Character Type covers telecommunications infrastructure across coastal land, inter-tidal and marine zones. This includes historic telegraph stations and their associated cabling, and civic listening devices. Modern cables also transfer mass media such as the Internet and telephone systems.

'Submarine telecommunications cable' refers to cables or pipes laid beneath the sea to carry telecommunications. This is the most frequent function of submarine cabling, especially those covering long distances.

In general, modern telecommunications systems still require the use of submarine cables in addition to satellites. British Telecommunications plc is the principal body laying and operating submarine communications cables around England.

HISTORICAL PROCESSES; COMPONENTS, FEATURES AND VARIABILITY

In 1850, John Watkins Brett's Anglo-French Telegraph Company laid the first telecommunications line across the English Channel. It was a copper wire coated with gutta-percha, without any other protection. In 1851, a protected core, or true cable, was laid from a government hulk, the *Blazer*, which was towed across the Channel. In 1852, a cable laid by the Submarine Telegraph Company linked London to Paris for the first time. In 1853, England was linked to the Netherlands by a cable across the North Sea, from Orford Ness to The Hague (http://en.wikipedia.org/wiki/Submarine_communication_cable). The first transatlantic cable was laid in 1865-6 by the *SS Great Eastern*. The remote beach at Porthcurno in Cornwall became a major international submarine telegraph cable station in the late 19th century: the first cable was landed there in 1870, part of an early international link stretching from the UK to India.

The first submarine communications cables carried telegraphy (written communication) traffic. Later generations of cables carried first telephony (voice communication) traffic, and then data communications traffic. All modern cables use optical fibre technology to carry telephone traffic as well as Internet and private data traffic (http://en.wikipedia.org/wiki/Submarine_communication_cable).

The unprecedented popularity of the Internet and the development of e-commerce have brought about a considerable increase in global electronic data transmission over the last few years. As a consequence, the number of cables linking England with mainland Europe has grown considerably.

Generally speaking, cables are trenched to a depth of 40-90cm with rock-dumping used as a last resort to anchor cables. However, older redundant cables are more likely not to have been trenched (Department of Trade and Industry 2002a, b).

VALUES AND PERCEPTIONS

The presence of submarine telecommunications cables across the coastal and marine environment is very unlikely to be perceived by most who use them. Despite that, they play a vital role in enabling the volumes of rapid communication that transformed the world's social, economic and political lives initially during the latter half of the 19th century and again, at a revolutionary scale, at the end of the second millennium.

RESEARCH, AMENITY AND EDUCATION

The early telegraph station at Porthcurno, including the hut above the beach that received many of the cables, is now presented as a well-visited museum and visitor attraction. It is also widely perceived as a major part of Cornwall's current character: its contributions to global communications technology, in conjunction with the nearby satellite telecommunications station at Goonhilly Downs on the Lizard.

The need for submarine telecommunication cables and the logistics, practicalities and issues associated with their installation and maintenance would provide an interesting cross-curricular educational case-study, balancing those technical issues with their application in enabling Internet, telephone and other media access, opening up a varied range of educational and amenity tools accessible to the public.

Some surviving early cables in English waters offer insights into the early development of telecommunications in the 19th-20th centuries, an aspect that has received scant attention from maritime archaeologists.

Coastal and sea-floor works undertaken during cable-laying and or maintenance also offer opportunities to investigate material remains of the historic environment in those areas, adding to our knowledge and further refining future landscape/seascape characterisation. Palaeoenvironmental evidence has been unearthed during such works, uncovering deposits rich in pollen taxa and macrofossils that can further inform our knowledge of the evolution of marine transgressions and the previous character of the present sea-floor.

CONDITION AND FORCES FOR CHANGE

Cables are replaced fairly regularly as they reach the end of their functional lifespans or sometimes are damaged in their vulnerable sea-floor positions: although relatively uncommon, trawling and anchoring can cause breaks in cables (Fulford et al 1997). They also become obsolete as technology develops rapidly.

As with all offshore development, preliminary survey work, laying and maintenance of cables and the removal of disused cables will affect the character of the landscape/seascape. Preparatory investigation may involve intrusive survey of the sea-floor, exposing archaeological deposits, but also providing detailed knowledge of seabed conditions. Laying the cables involves burying them where they cross the foreshore and in shallow waters, intruding into earlier aspects of the historic environment there. In deeper waters, submersible ploughs running on tracks or skis and towed by surface vessels are used for trenching, laying cable, and subsequent inspections (see Fulford *et al* 1997).

RARITY AND VULNERABILITY

The laying of telecommunications cables is likely to increase as a result of the rapid growth in the global use of the Internet and the development of higher capacity fibre optic cables. However, the development of wireless technology may eventually lead to the redundancy of many of these cable routes.

PUBLISHED SOURCES

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Fulford M, Champion T, Long A, eds. 1997. *England's Coastal Heritage: A Survey for English Heritage and the RCHME. RCHME/EH Archaeological Report 15*. London: EH/RCHME

WEBSITES

http://en.wikipedia.org/wiki/Submarine_communication_cable