BT Tower
(The Post Office Tower)

Prof Andy Sutton MBE

Linx125

19th November 2025

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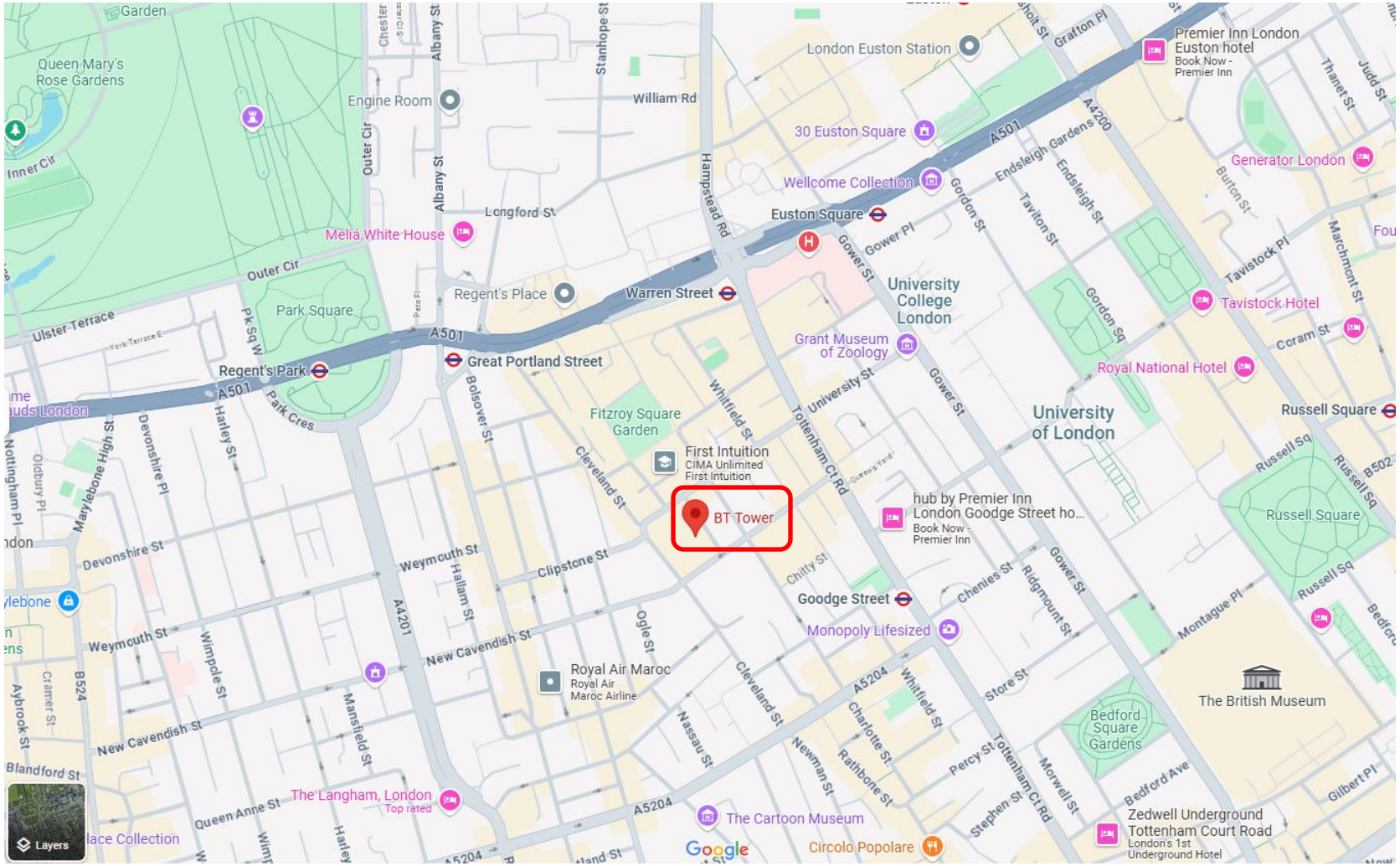
- The tower in films and television
- The end of an era, the tower is sold off…

Today’s BT Tower

Where exactly is BT Tower?



Source: Google Maps

Why such a tall tower in central London?

- In 1954 a system of microwave radio links was proposed to meet the expected growth of the long-distance telephone and television networks between London and the provinces

- The solution was a striking addition to London’s skyline

Background

- Two options were considered: the first was a ring of radio stations on the outskirts with broadband links extended to central London by cable; the second was a single radio station near the centre.

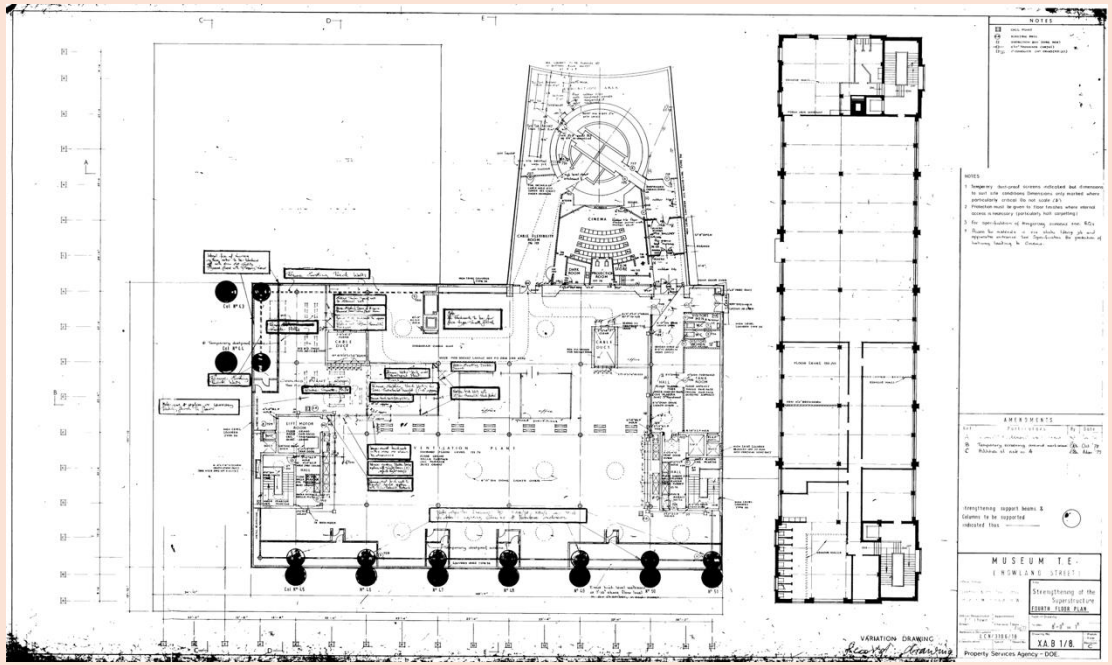
- A ring of stations would involve no special technical difficulties, but a central station would need a building with adequate ground clearance for the radio paths for the foreseeable future.

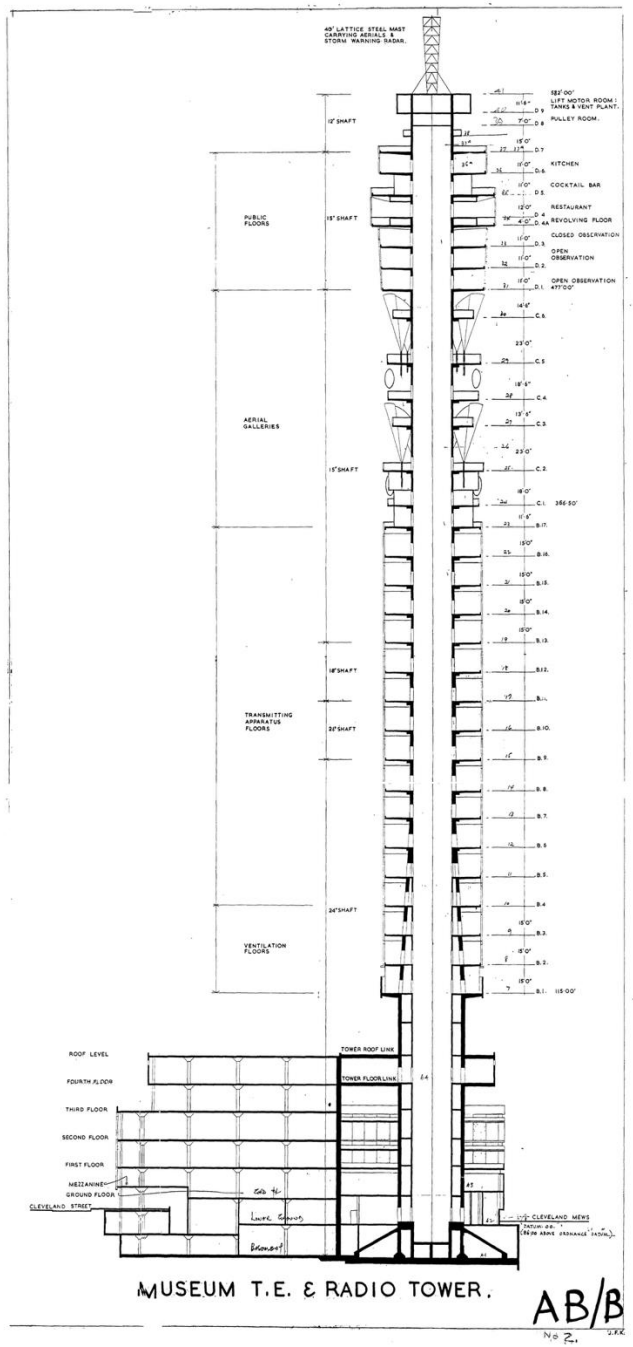
Image source: https://www.theguardian.com/business/gallery/2024/feb/21/bt-tower-sold-history-london-restaurant-in-pictures

Strategic decision…

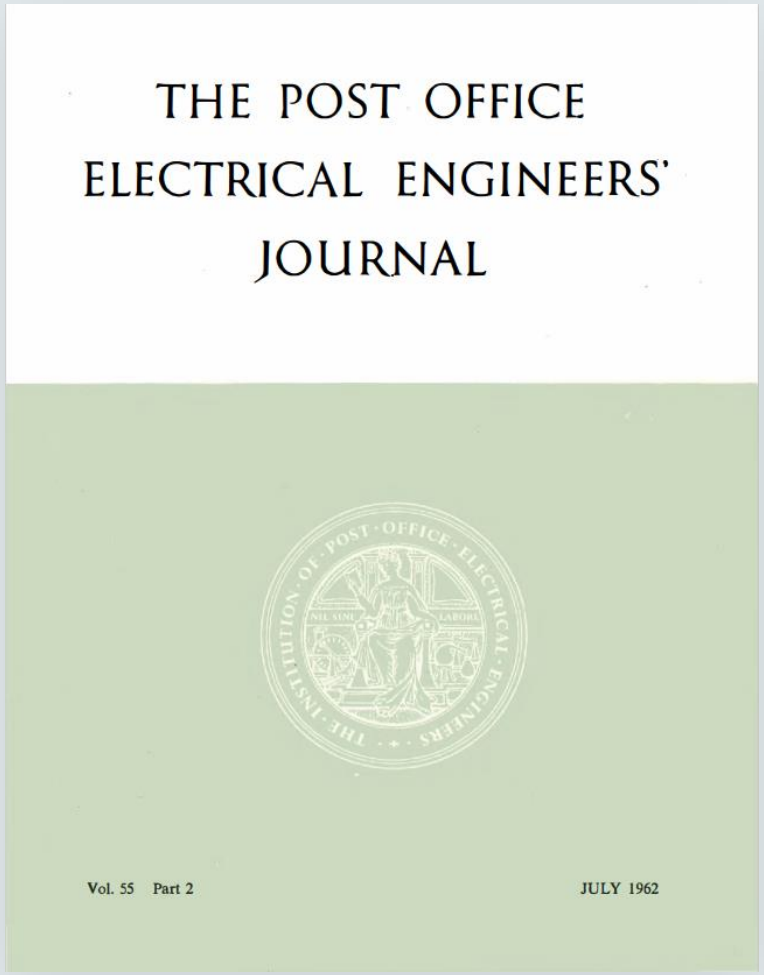
- The Royal Fine Art Commission objected to building a tower on the grounds it would obstruct the views of better buildings, but their objection was not sustained.
- The proposal for a high tower in central London was preferred, partly to avoid the traffic problems of cable laying but mainly because it would be impractical to find a number of suitable high-ground sites around London.
- Once the decision had been taken, finding a site did not present a serious problem: the museum telephone exchange in Howland Street was a focal point both for telecommunications systems and for the network of vision cables in London.
- Space was available for a tower in a yard of Cleveland Mews and the design and construction problems could be solved along with the extension of Museum telephone exchange.

Early engineering drawing of the exchange & tower





The Post Office Electrical Engineering Journal - Vol 55 Part 2 - July 1962



THE POST OFFICE
ELECTRICAL ENGINEERS' JOURNAL

Vol. 55 Part 2 JULY 1962

Museum Radio Tower

H. KNEE, E.R.D., A.M.I.E.E., and F. G. BALCOMBE, Assoc.I.E.E.†

U.D.C. 624.97:621.396.67

A tower 600 ft high is being built adjacent to Museum telephone exchange in London to support aerials for a number of microwave radio links to serve some of the principal trunk routes from London. The height of the tower was determined by the need to provide transmission paths clear of obstructions, such as other tall buildings, and the opportunity is being taken to provide public observation galleries together with a restaurant and refreshment bars near the top of the tower.

INTRODUCTION

A FAMILIAR landmark in the Tottenham Court Road area of London is the lattice radio tower situated on the rooftop of Museum telephone exchange. The number of aerials for new services it could accommodate is limited, and even the existing transmission paths are in danger of being obstructed by new tall buildings in the London area. A new permanent 600 ft-high radio tower, now under construction on an adjacent site and estimated to be ready for the installation of equipment by June 1963, is described below.

GENERAL CONSIDERATIONS

In 1954, consideration of the expected growth of the trunk telephone and television network between London and the provinces in the following 20 years led to a proposal for a system of broad-band microwave radio links as a means of providing a considerable part of that growth. The routes from London to Birmingham, Portsmouth, Bristol, Norwich, Brighton and Dover were cited as examples for which such a system would probably be suitable. Two possibilities were considered. Either a ring of radio stations could be built in the outskirts and the broad-band links extended to central London by cable, or a single radio station could be built near the centre. The use of a ring of stations would involve no special technical difficulties, but if a central station were chosen the rapid growth of tall buildings in and around the centre of London would make a specially tall building necessary to provide adequate ground and obstacle clearance for the radio paths in the directions required.

There are over 200 buildings, either existing or proposed, in the central area of London that have a height of 100 ft or more, and of these about 50 are, or will be, 200 ft or more high, 20 will be 300 ft or higher, and at least one, on the Albert Embankment, will rise to 400 ft. Obstructions near the straight line from a transmitter aerial to receiver aerial are not only capable of causing loss of received signal power but also generate unwanted reflected signals that give rise to unacceptable distortion of the signals being transmitted. The additional clearance that must be allowed depends on the radio frequency used, the position of the obstacle in the path and the prevailing atmospheric conditions. For example, if an obstruction exists midway between transmitting and receiving aerials 30 miles apart and working on a frequency of 2 Gc/s, the minimum clearance needed above the obstacle will vary with atmospheric conditions from 50–150 ft, approximately.

For a tower in central London the aerials need to be significantly higher than is usual in microwave-radio practice in which the aerials are normally mounted on a tower or mast some 50–300 ft high and the equipment is housed in an adjacent building after the manner of a cable repeater station, the equipment being connected to the aerials by waveguides or, occasionally, by cables. The waveguide, however, has its limitations; its transmission loss is significant, and its irregularities and imperfections all contribute to distortion in multi-channel systems by giving rise to echoes and so to intermodulation between channels. Therefore, with aerials at abnormal heights, the directly-associated radio equipment must also be housed aloft to limit the length of the feeder, and the tower then becomes a much more massive structure.

The proposal for a high tower in central London was preferred to the scheme for a ring of suburban stations, partly on cost, partly on the elimination of the traffic problem created by cable-laying, but not least on the impracticability of finding a number of suitable high-ground sites around London. The decision taken, the siting was no serious problem: Museum telephone exchange is the focal point both of the telecommunications system and of the network of vision cables in London, space was available for the tower in a yard off Cleveland Mews, and the design and constructional problems could be solved along with the pending extension to the Museum telephone exchange. With a tower on this site the aerial centres need to be some 375–470 ft above ground level according to route and frequency. Naturally, other sites were considered, and the planning

† Mr. Knee is in the Exchange Equipment and Accommodation Branch, and Mr. Balcombe is in the Inland Radio Planning and Provision Branch, E.-in-C.'s Office.

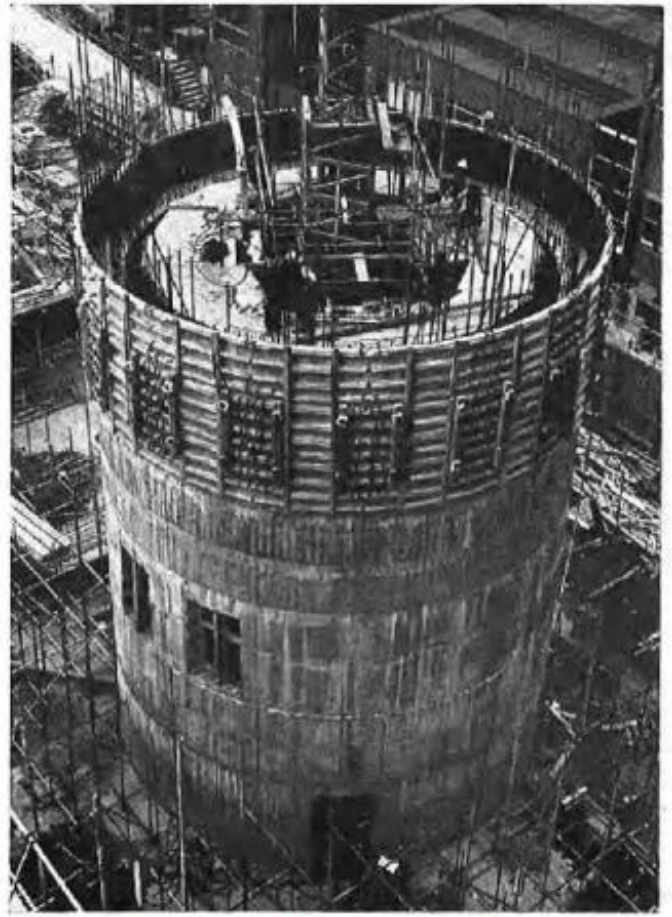
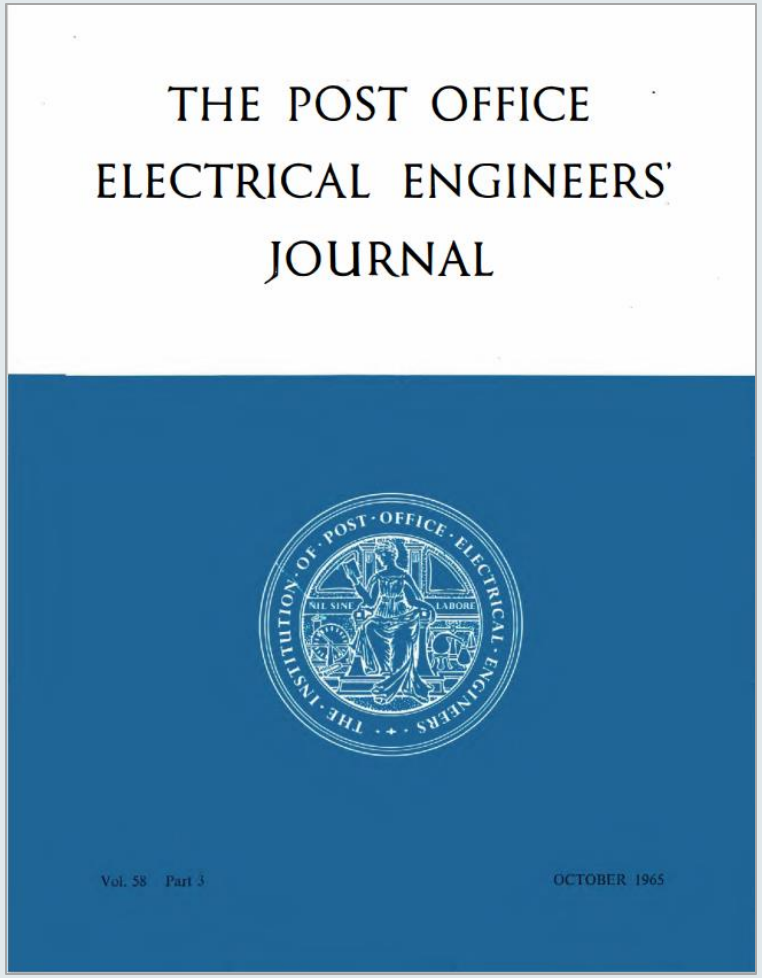


FIG. 3—PROGRESS OF TOWER BY MAY 1962

The Post Office Electrical Engineering Journal - Vol 58 Part 3 - October 1965



THE POST OFFICE
ELECTRICAL ENGINEERS' JOURNAL

Vol. 58 Part 3 OCTOBER 1965

Post Office Tower, London, and the United Kingdom Network of Microwave Links

D. G. JONES, B.Sc., A.C.G.I., A.M.I.E.E., and P. J. EDWARDS, A.M.I.E.E.†

U.D.C. 624.97:621.396.67:621.396.65

Microwave radio links are playing an increasingly important part in the provision of additional circuits for the Post Office telephone, television and data-transmission networks. The main features of such links are reviewed and, in particular, the functions and equipment of the London Post Office Tower, which will form the terminal station for many radio-relay links, are described.

INTRODUCTION

PROVIDING a new feature on the London skyline, the Post Office Tower (Fig. 1) will be the London terminal of a nation-wide trunk network of microwave radio-relay links carrying telephone, television and data traffic.

In the period since the second world war, the Post Office has provided a national network, composed partly of underground coaxial cables and partly of microwave radio-relay links, to serve the needs of the British Broadcasting Corporation (B.B.C.) and the Independent Television Authority (I.T.A.) 405-line monochrome television services.[1] The radio component of the network provides an aggregate length of 4,000 operational video-channel miles, and its London terminal is located adjacent to, and in the shadow of, the new tower. In the same period, steady developments in microwave techniques have enabled the Post Office to introduce the microwave radio link as a practical and economic alternative to the coaxial-cable link for long-distance transmission of multi-channel telephony.[2]

Rapid expansion and reconstruction of the radio component of the network is now being carried out to provide extensive new trunk telephone-circuit capacity to meet the demands arising from the increasing use of the telephone in the United Kingdom, stimulated by the spread of subscriber trunk dialling, and to meet the requirements of the B.B.C.'s new 625-line television service. A prime example of the expansion now under way is the replacement by the Post Office Tower of the existing radio terminal in London, which has neither the communication capacity required for future needs nor an adequate height.

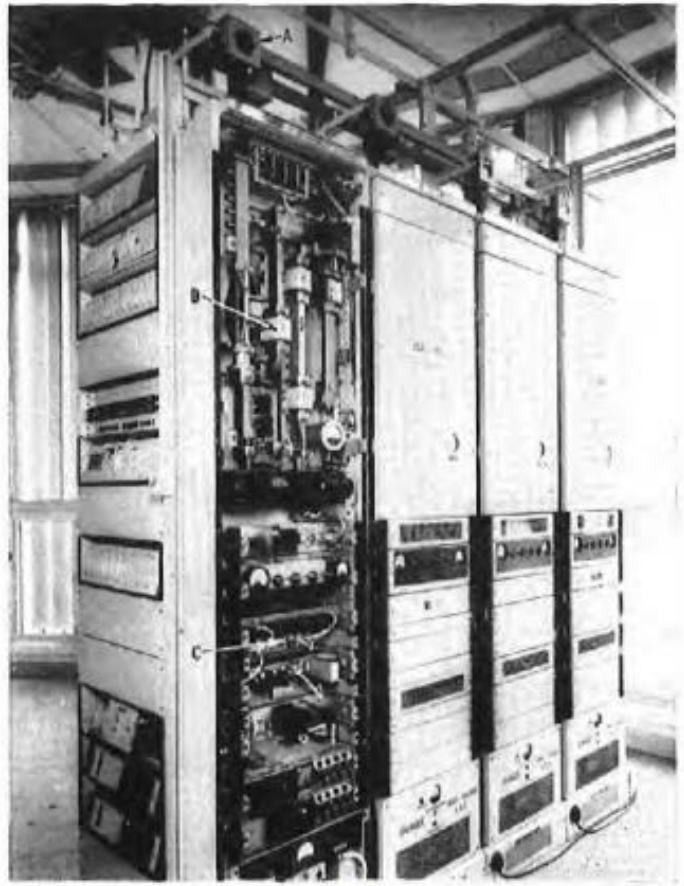
TRAFFIC TO BE CARRIED BY THE MICROWAVE NETWORK

By 1966 a trunk network of radio-relay links (Fig. 2), with aggregate route length of 2,000 miles and using 120 stations, will join together all main centres of population in the United Kingdom. The network will by that date provide about 4,500 operational broadband-channel miles for the transmission of multi-channel telephony, of which 1,800 miles will have a capacity of 960 telephone channels per broadband channel in a frequency-division-multiplex assembly of 4 kc/s channels in the baseband* frequency spectrum 60 kc/s–4·028 Mc/s,

†Inland Radio Planning and Provision Branch, E.-in-C.'s Office.

*The term baseband designates the band of frequencies transmitted by the radio link between its input and output terminals.

FIG. 1.—THE POST OFFICE TOWER



A.—Three-port ferrite circulator. B.—Ferrite isolator.
C.—Mop-up equalizer.

FIG. 9—MICROWAVE TRANSMITTERS AND RECEIVERS ON FLOOR B15

Rebuilding Britain after WW2...

Key dates and events

- Construction began in April 1961 and was completed in 1965
- The tower was designed by the Ministry of Public Works
- The main contractors were Peter Lind & Co Ltd
- The tower's foundations are sunk 174 ft into London clay
- The tower's revolving restaurant opened in 1966

- In 1966, Queen Elizabeth II visited the tower and had high tea with Tony Benn and Sir William Butlin
- In 2003, the tower was given Grade-II listed status
- In 2009, an LED screen was wrapped around the tower's 36th and 37th floors

The tower in 1970

Source: https://en.wikipedia.org/wiki/BT_Tower

The Post Office's microwave radio network of 1970

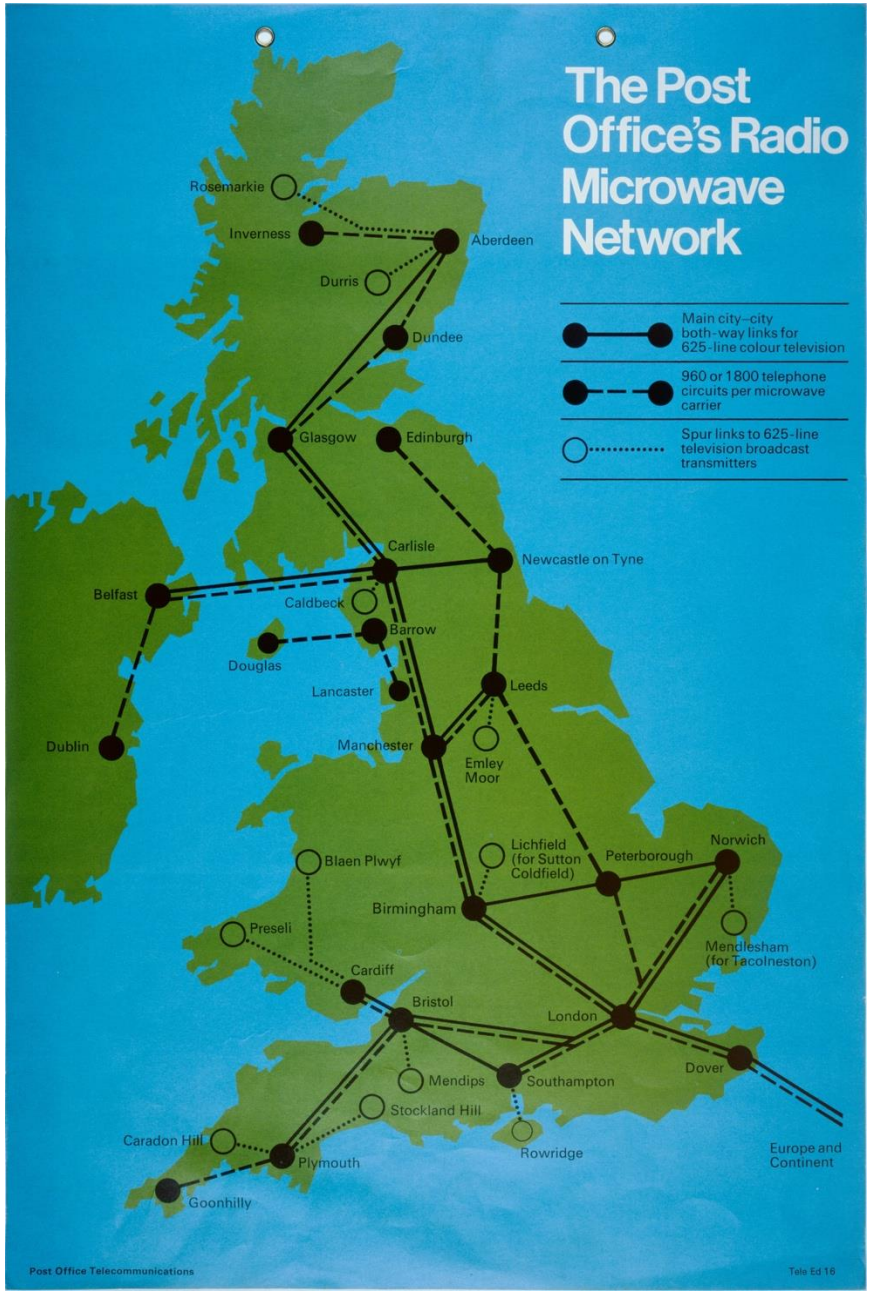
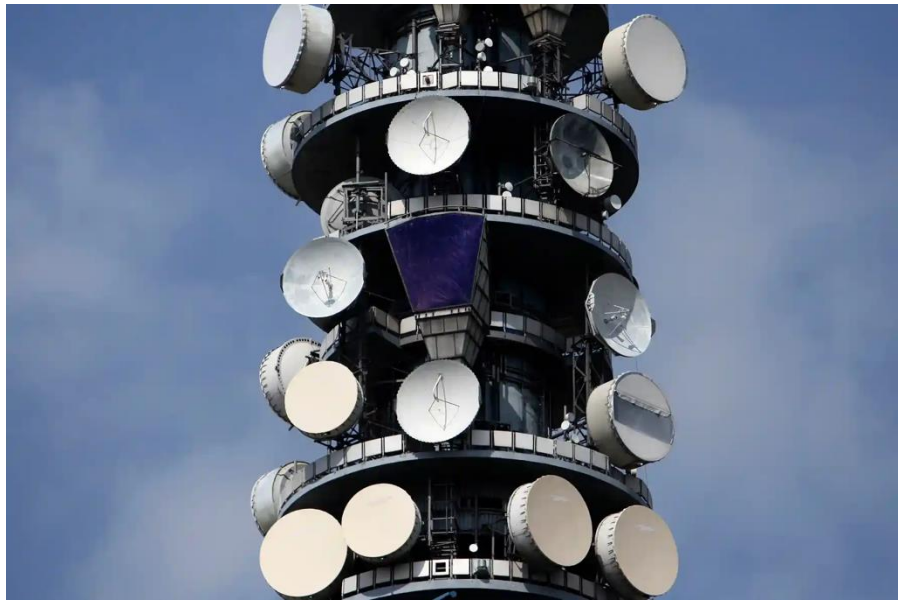
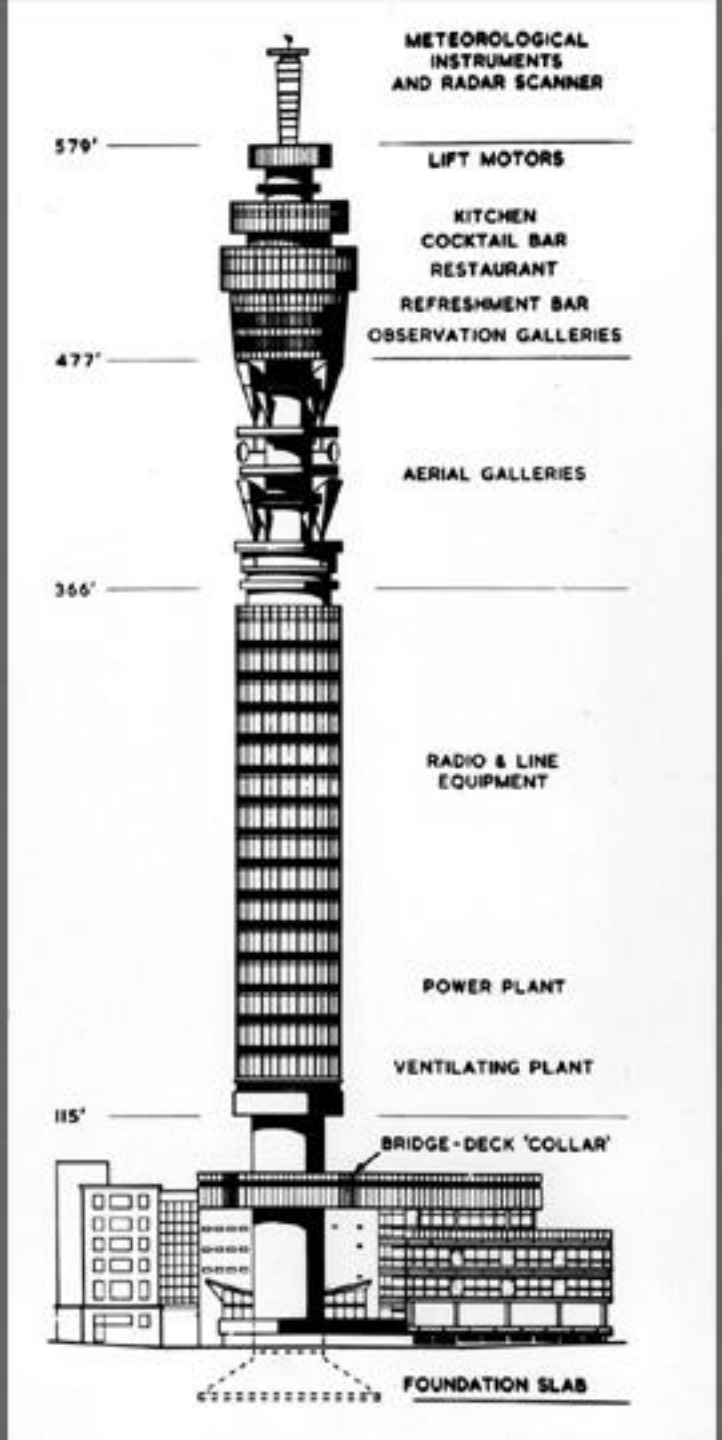


Image source: TCC 297/TELE ED 16, Courtesy of BT Group Archives

Floors of the Post Office Tower





Photos from January 2000

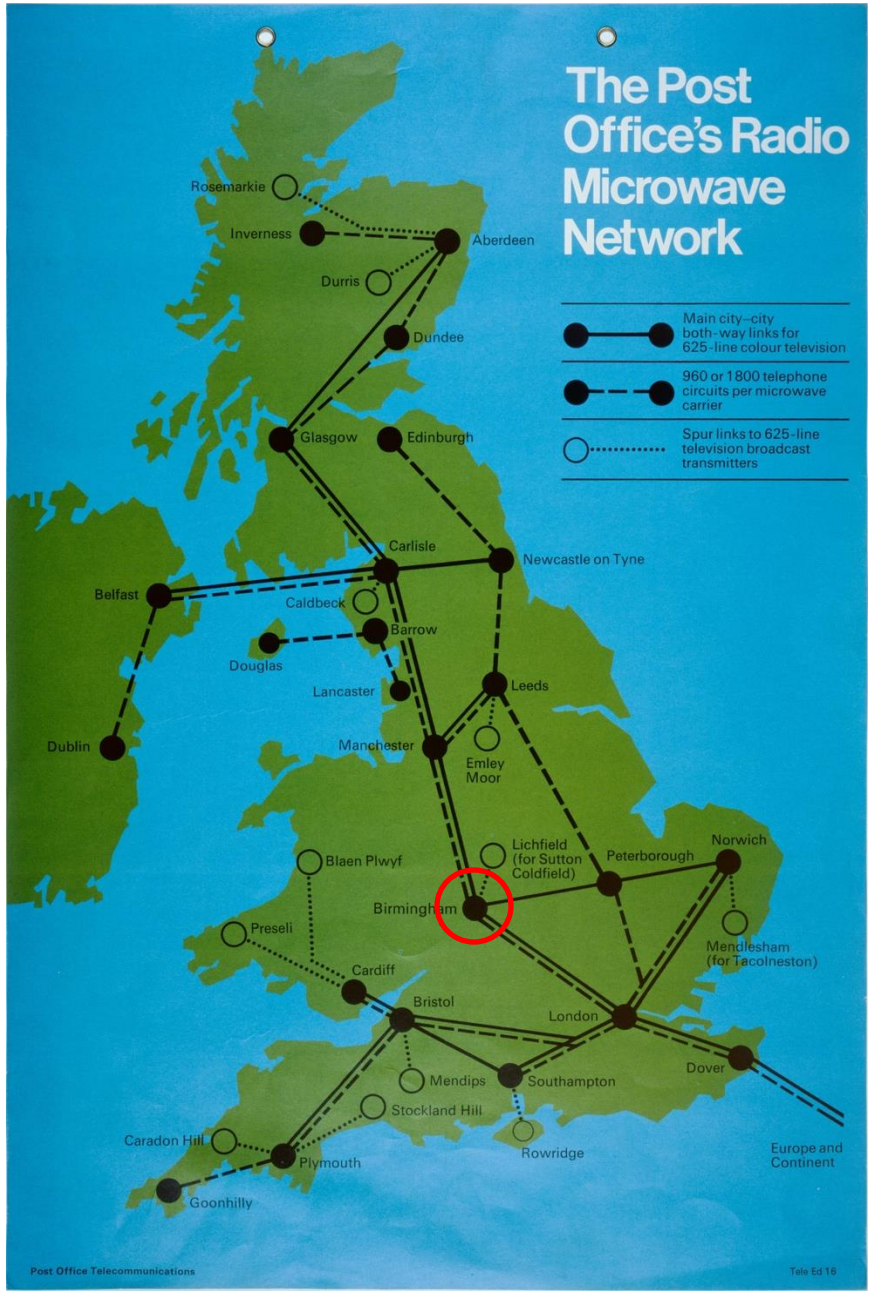


Image source: TCC 297/TELE ED 16, Courtesy of BT Group Archives

BT Tower Birmingham

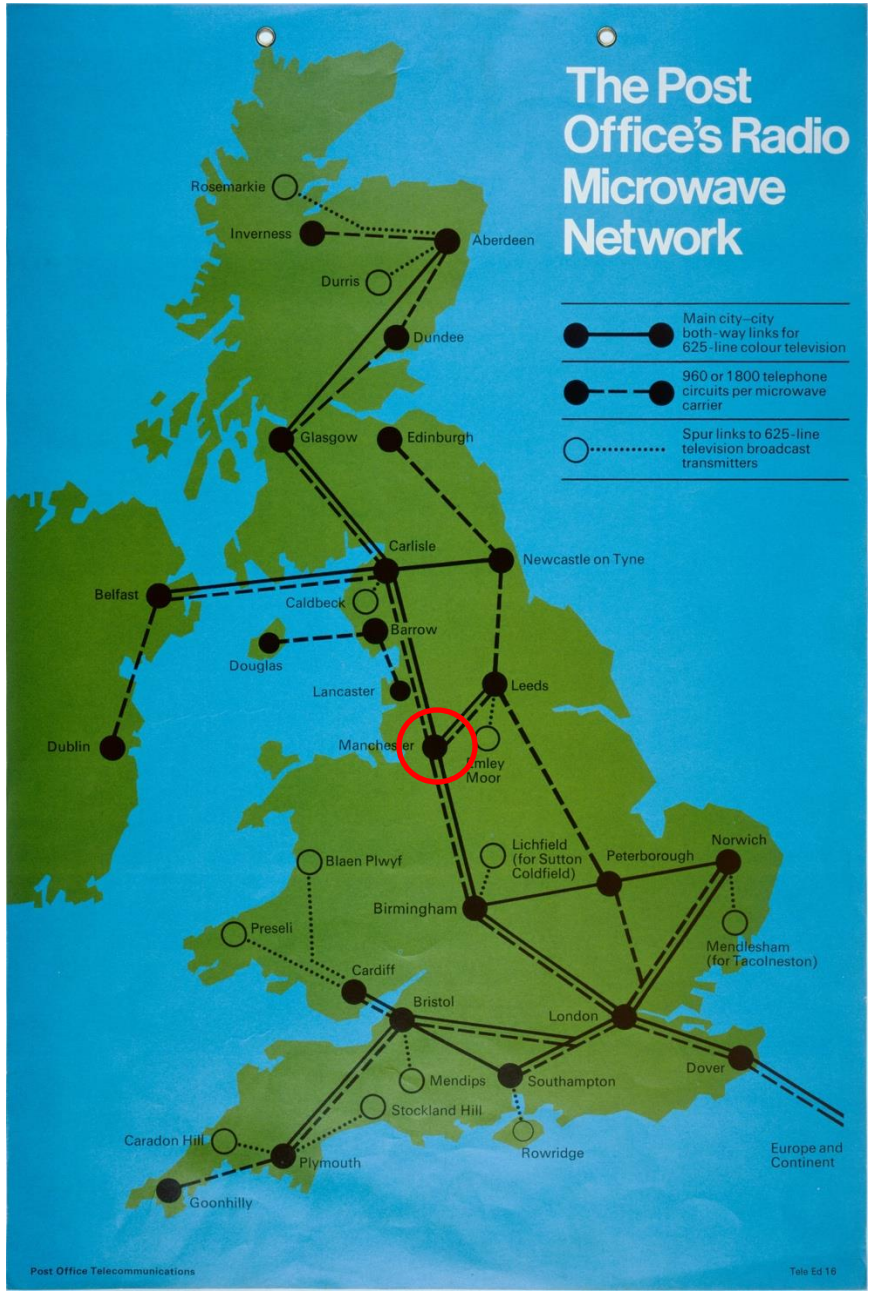
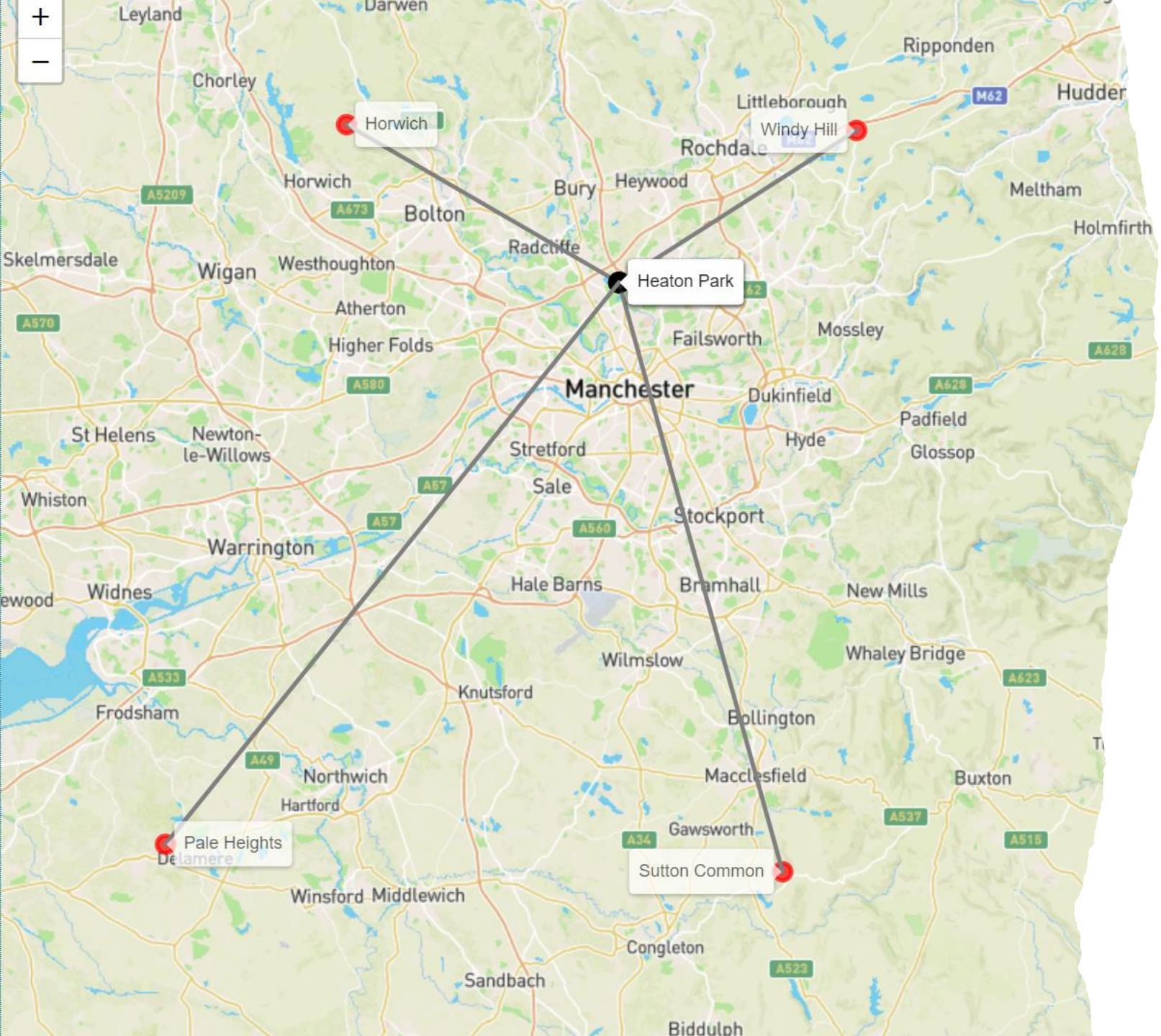


Image source: TCC 297/TELE ED 16, Courtesy of BT Group Archives

BT Heaton Park Radio Station, Manchester

Like many BT radio stations, Heaton Park is still operational however its purpose has changed as technology has evolved...



Heaton Park as a node within the wider national microwave radio network

Pale Heights, Delamere Forst

Photo taken 03 January 2011

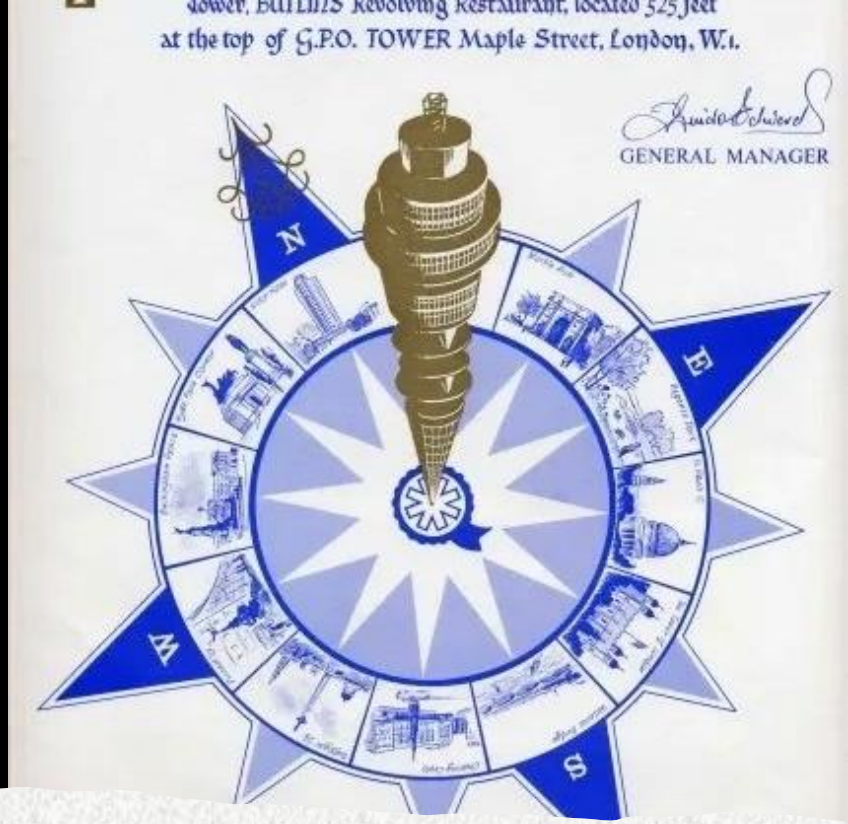
Windy Hill Radio Station

Photo taken 13 March 2017

Photo taken 08 September 2012

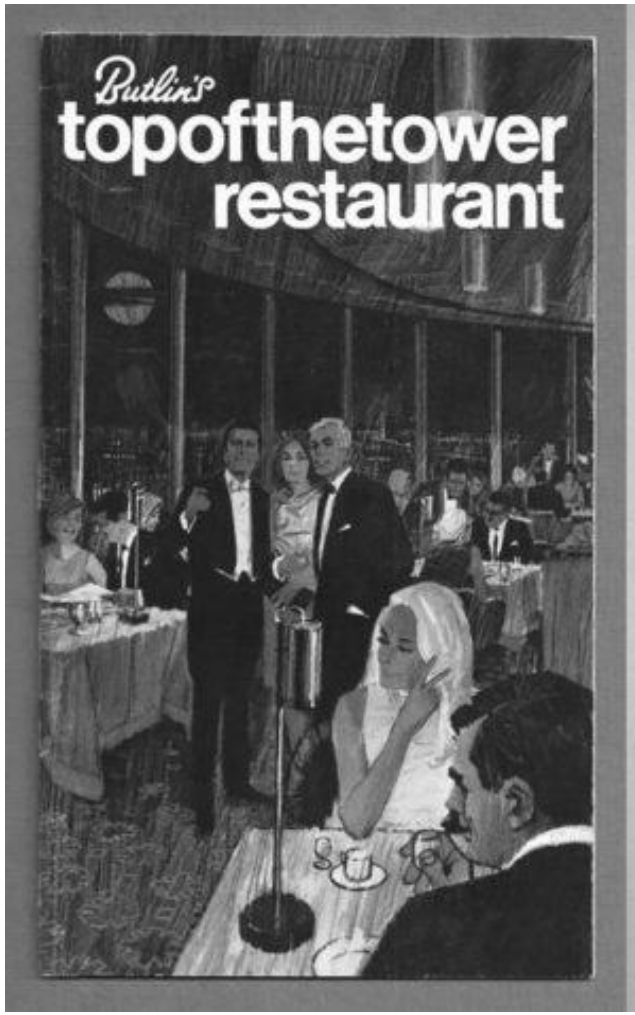
Beyond the technical operation, the tower had a popular secondary function

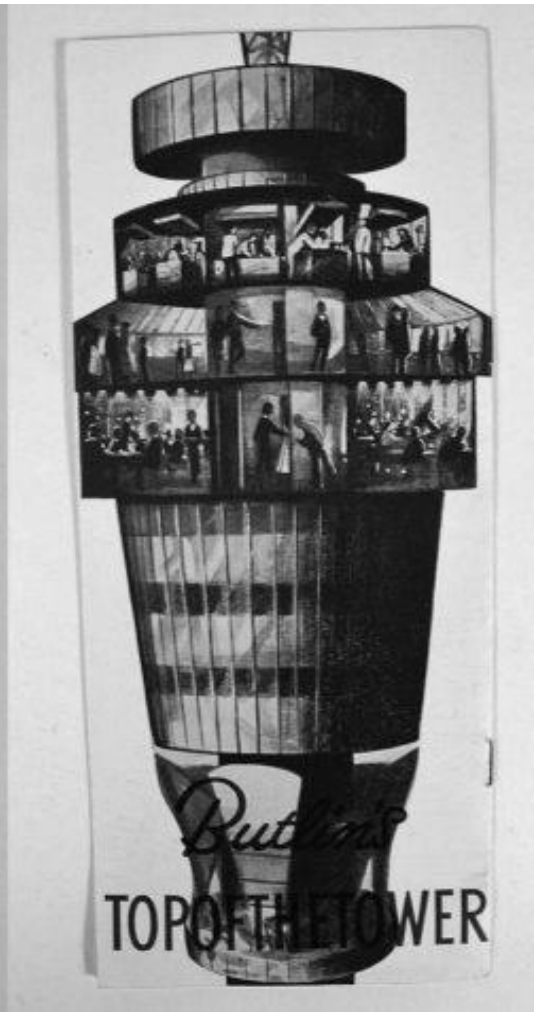
Enter Billy Butlin and his revolving restaurant, plus cocktail bar, plus viewing galleries…



Cocktails and fine dining at the top of the tower

Butlin’s Top of the Tower restaurant





An exclusive venue

The place to be...

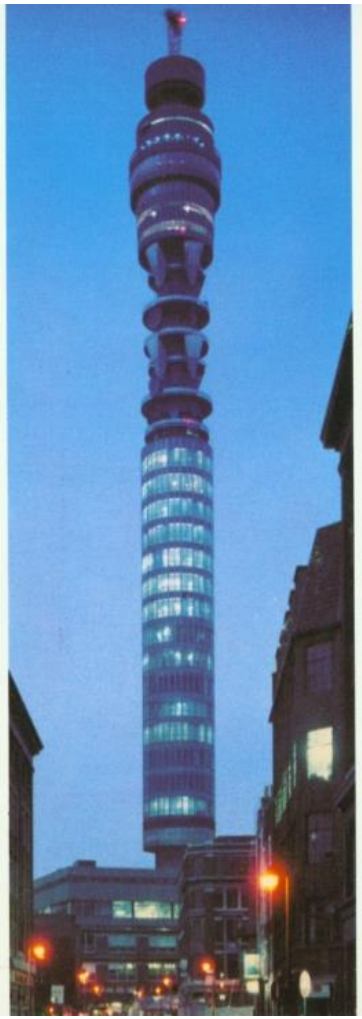
Exclusive dining…

The rich and famous...

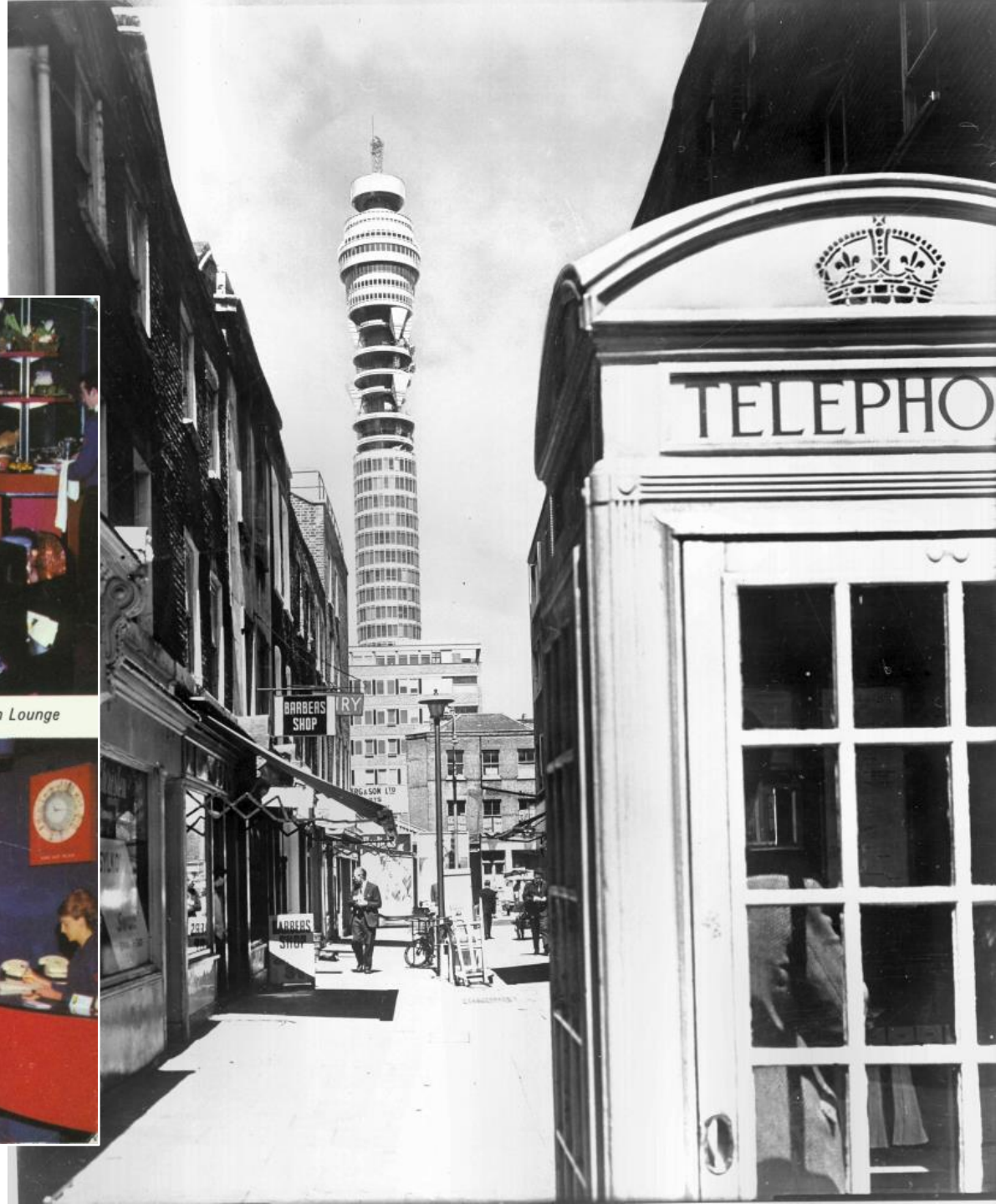
The Tower Tavern

Images and memorabilia

Revolving Restaurant and Cocktail Bar



Revolving Restaurant and Reception Lounge



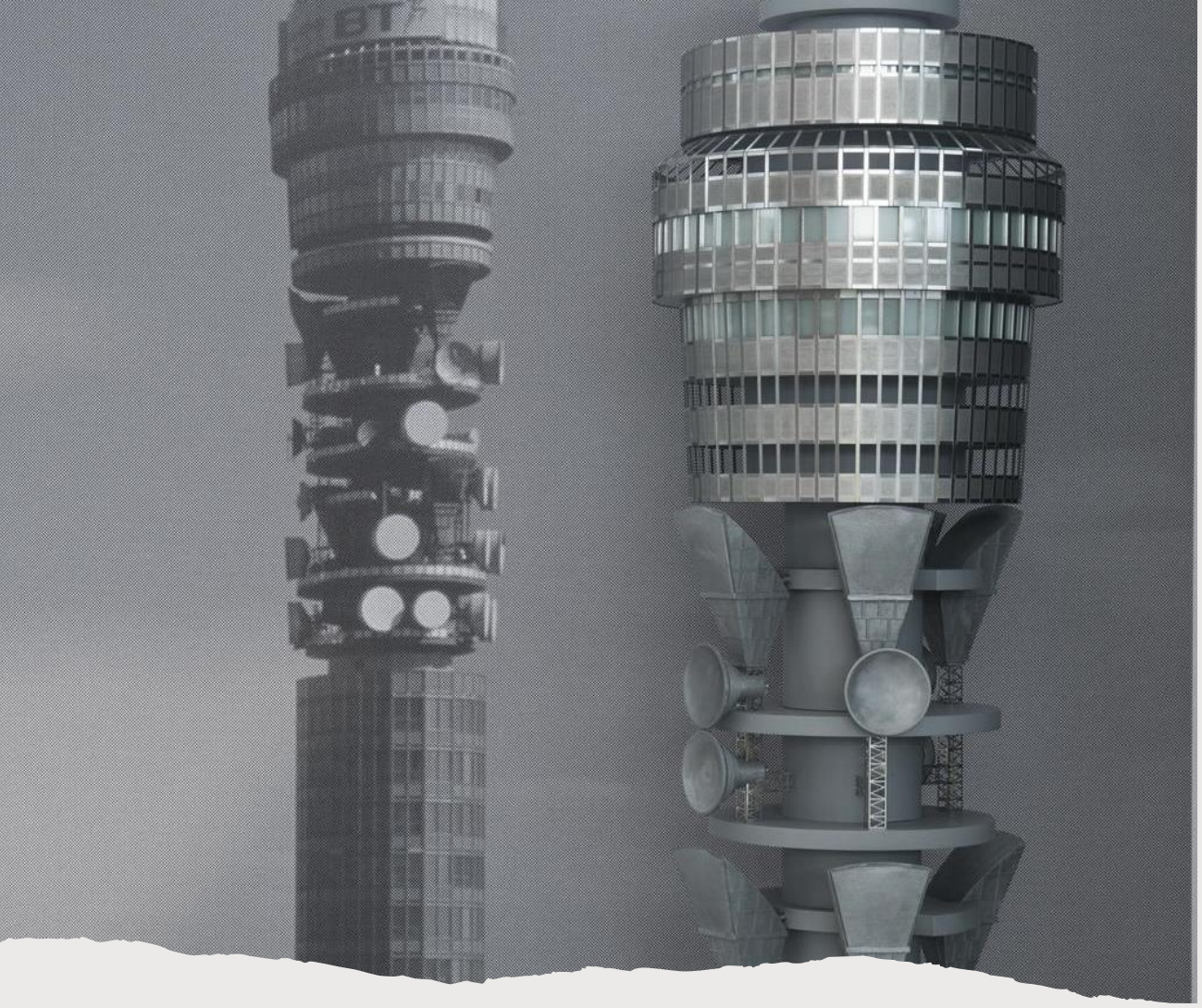
Memorabilia

Memorabilia - ash trays

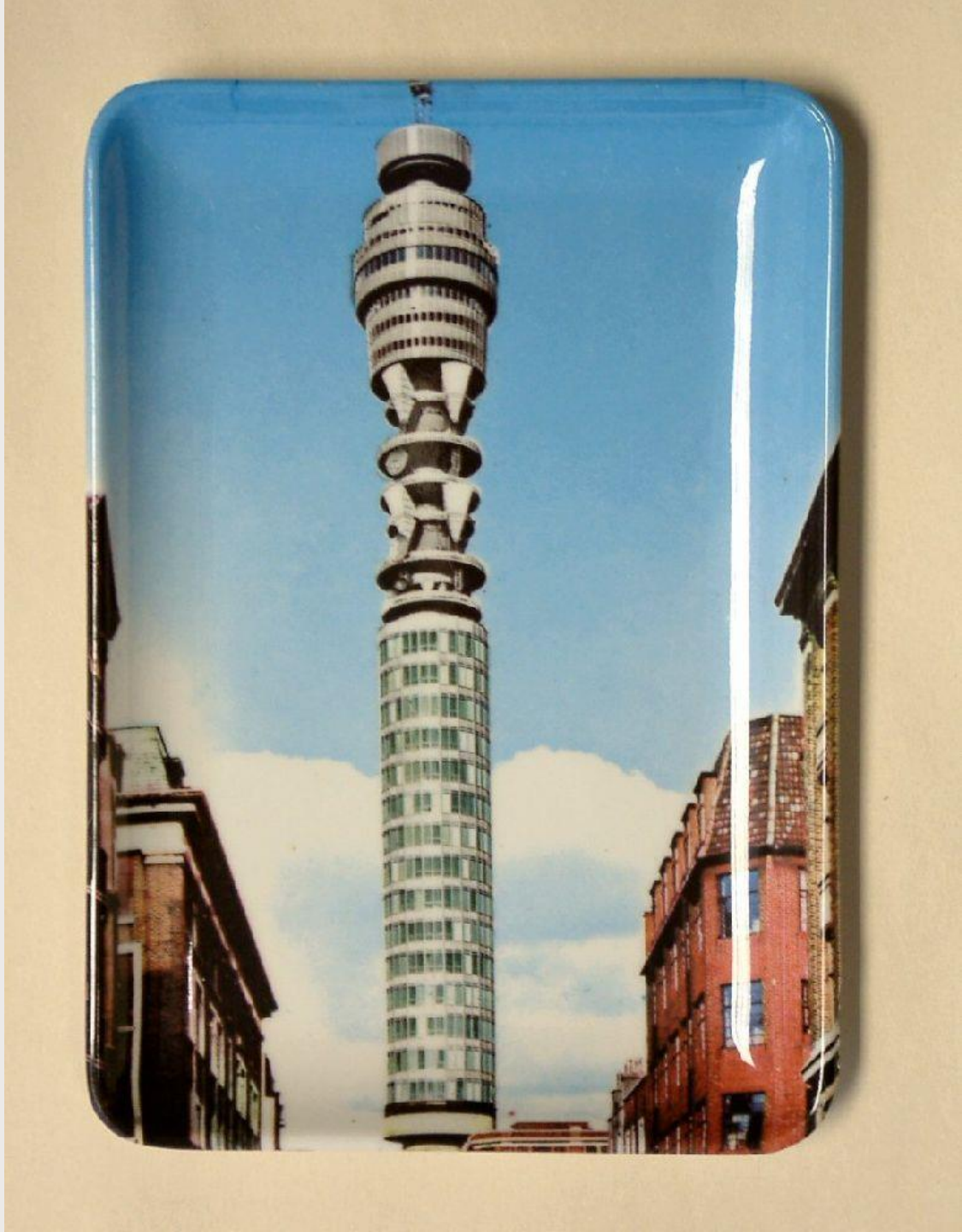
...and more memorabilia

Commemorative Coin

1965 (8 October): The tower is officially opened by Prime Minister Harold Wilson. Its microwave radio systems can handle 160,000 simultaneous telephone calls and up to 40 television channels



From models to tat (memorabilia)



Commemorative Stamps

The Postal Museum

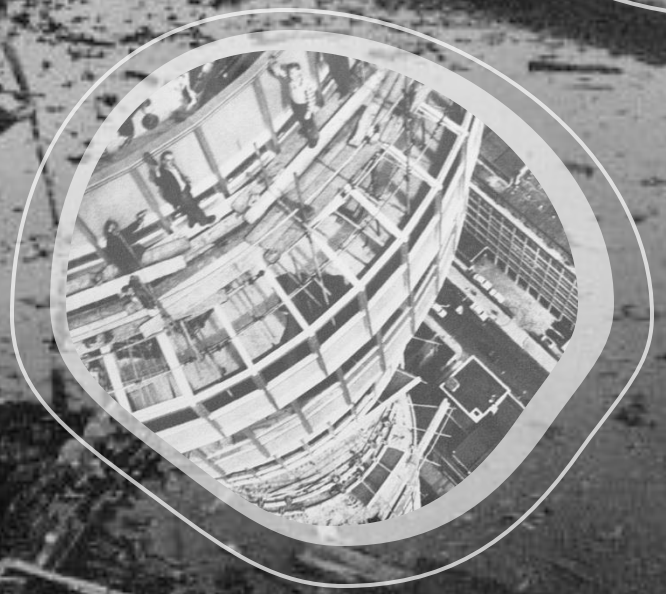
SPECIAL STAMP ISSUE

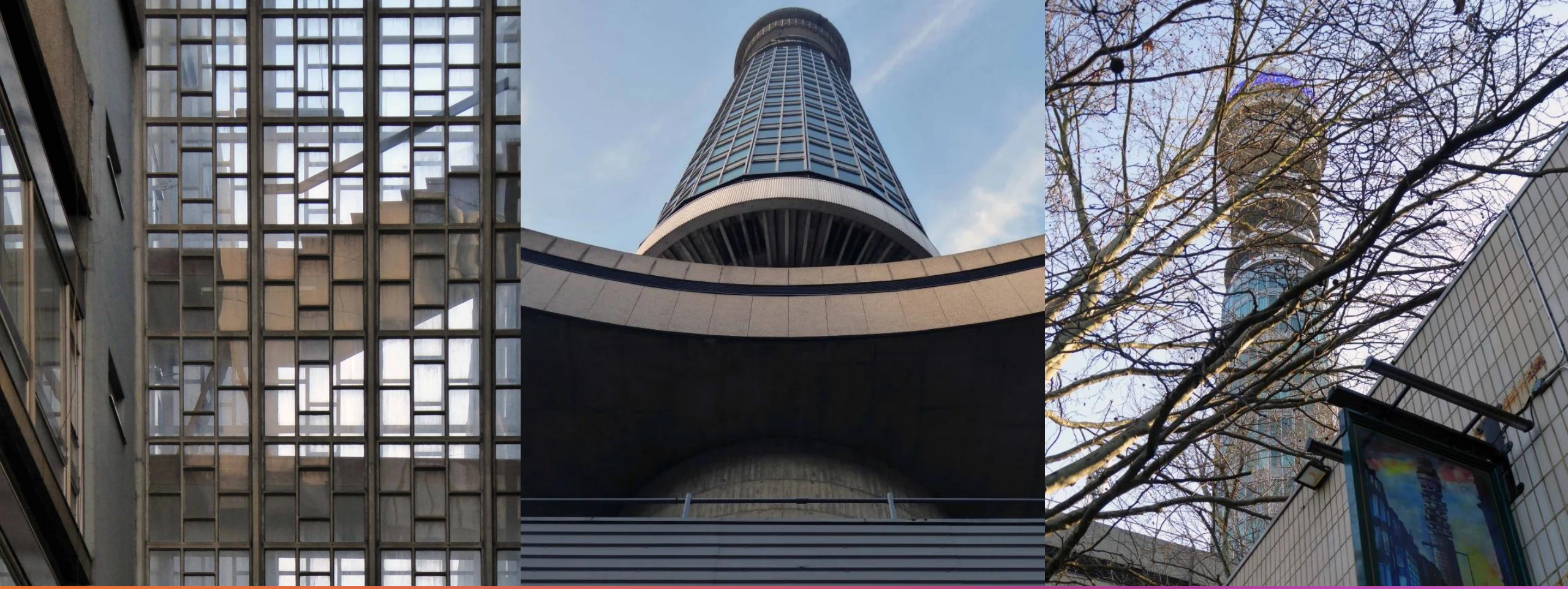
Opening of the Post Office Tower

Date of issue: 8 OCTOBER 1965

First day covers

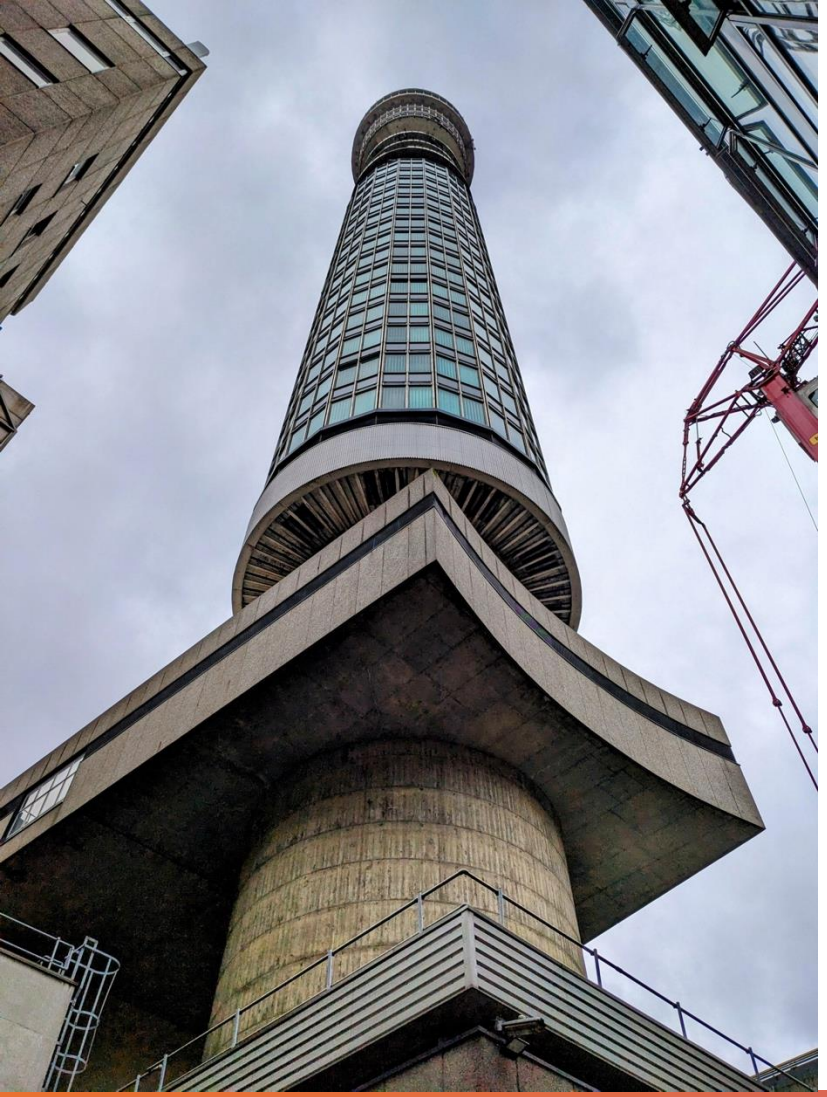
A bomb exploded in the ceiling of the men's toilets at the Top of the Tower restaurant at 04:30 on 31 October 1971





An architectural masterpiece in which form follows function…

The tower today...



The tower today, let’s head inside…

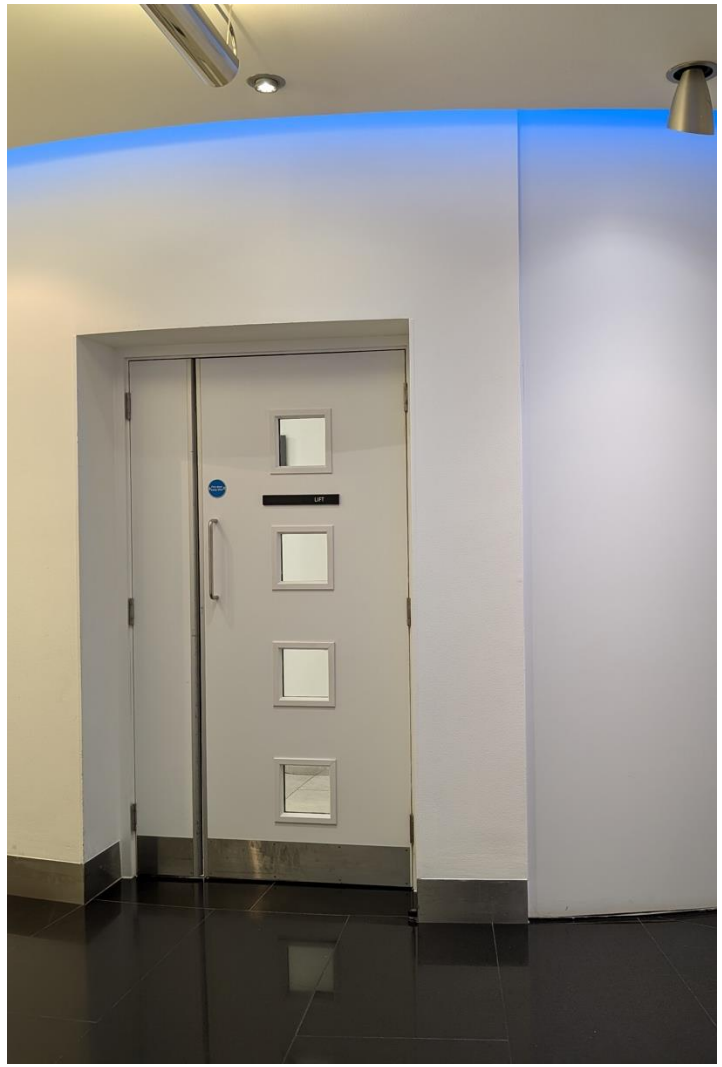
Airport style security leads to a truly unique experience

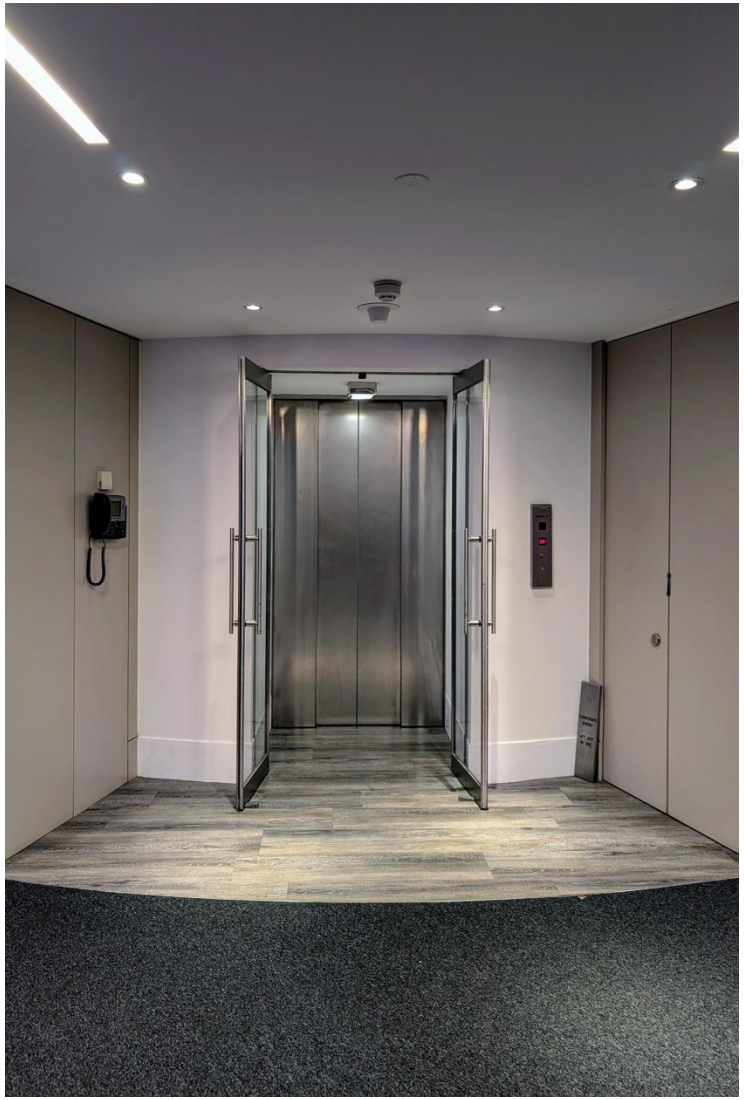
Photos taken during Maritime Innovation Week - November 2024


Looking towards the base of the tower
ENERGY
INDUSTRY
MOBILITY
DIGITAL
Surveillance and Smart Solutions
BT

An event’s space like no other…

Approaching the elevator to the 34th floor

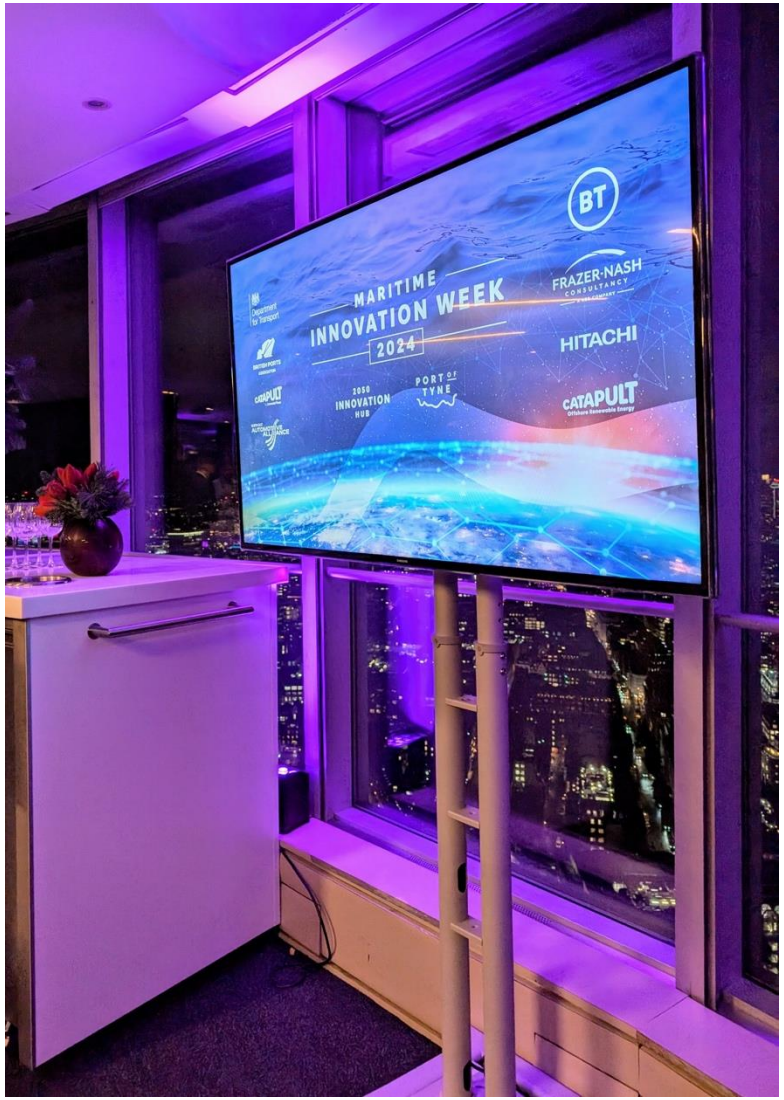


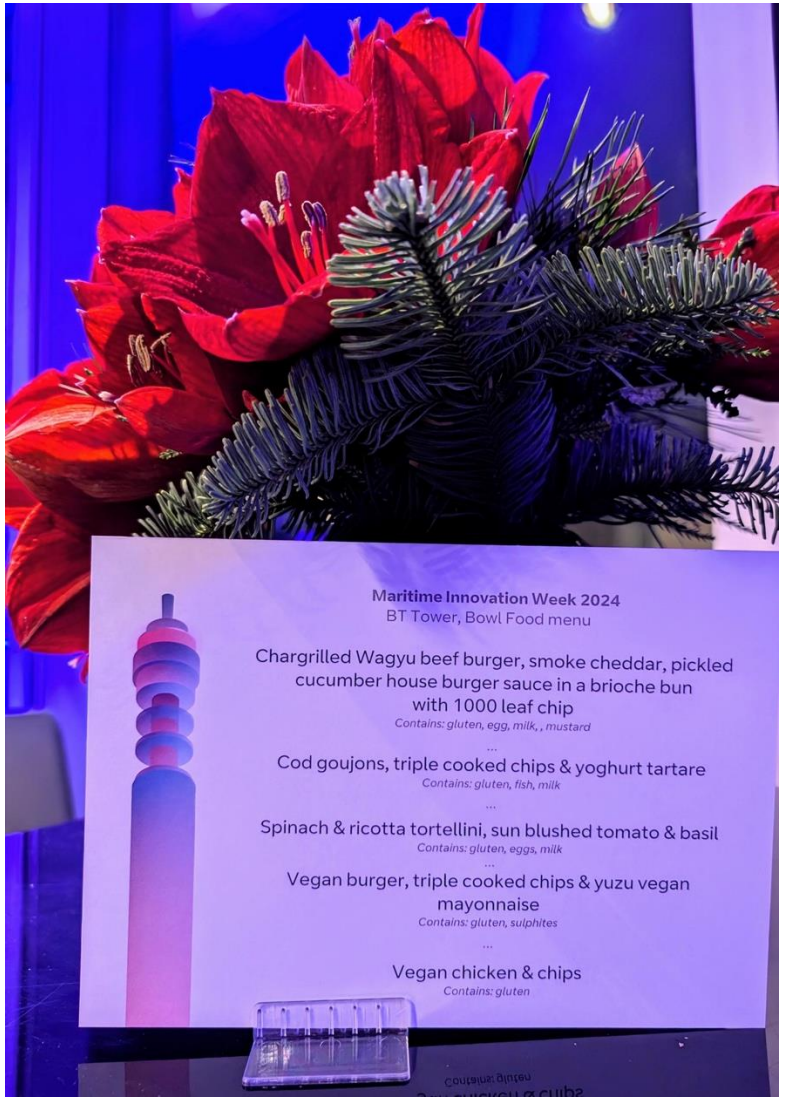


1400 Feet per Minute

Heading to the 34th floor, at speed…

Cocktail reception with canapés





The tower still has a full-service restaurant

A popular venue for team events

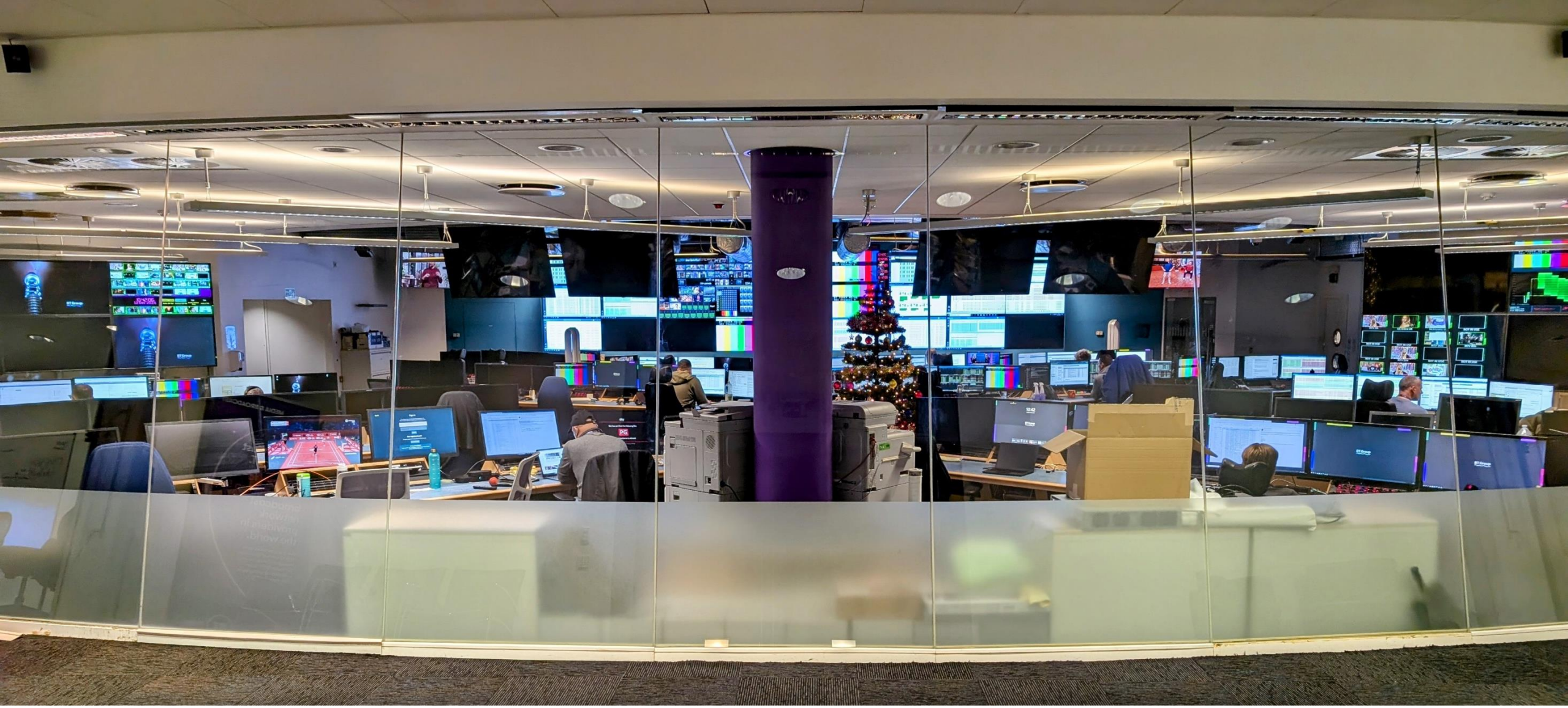
Keep your camera pressed to the glass, or…

Staff & guests' event at BT Tower - 02 August 2024

BT ArtBox calls on designers for a London-wide phonebox installation (16 February 2012) - London design week

The working side of BT Tower


BT
operational
areas in the
tower



The iconic concrete and glass circular BT Tower might be considered a piece of vintage architecture on the outside, but on the inside it plays host to a state of the art television facility.

BT tower and the media

Image source: https://x.com/goodiespodcast/status/1194207776735547392/photo/1

Artwork image source: https://www.redbubble.com/i/poster/Kitten-Kong-by-willHartnell1/42008697.LVTDI

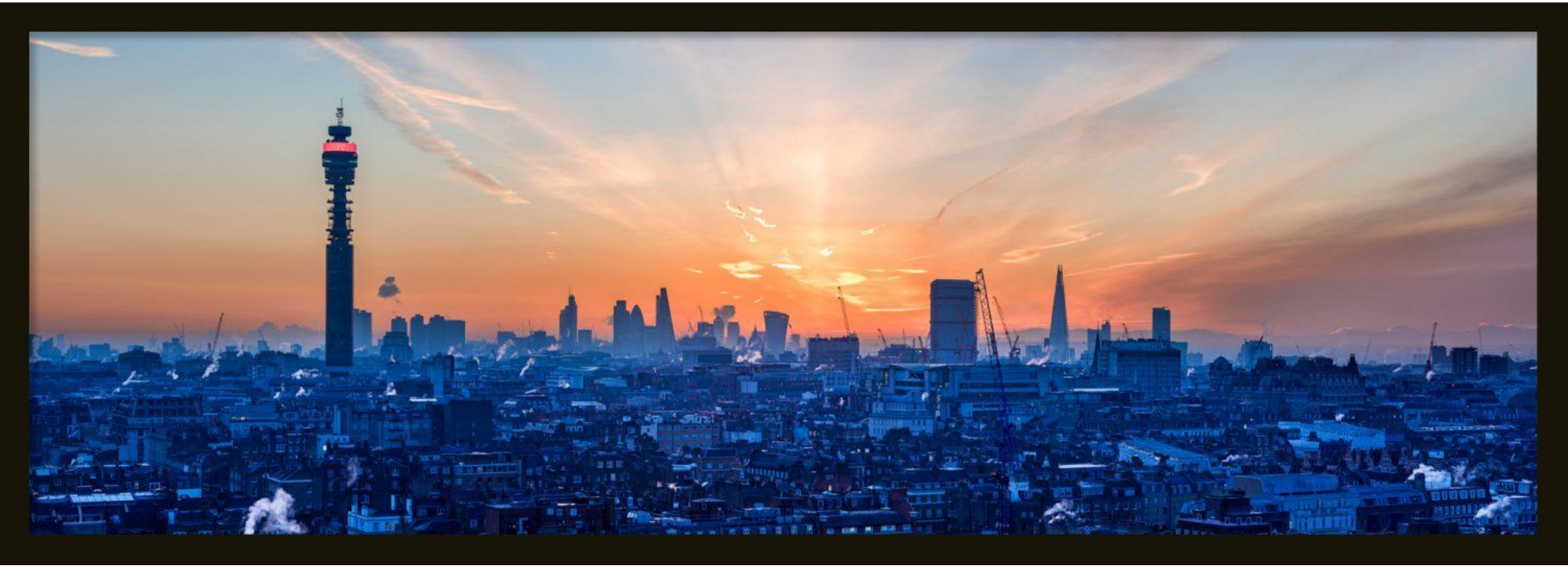
BT tower on TV and in movies

The Netflix series, Union, makes a big deal out of the BT Tower in Fitzrovia, London.

The agency's HQ is there in the movie, which is a lovely novelty for people who live in the UK.

Source: https://www.msn.com/en-gb/travel/news/action-packed-the-union-had-plenty-of-interesting-filming-locations-let-s-break-them-down/ar-AA1oXgyl

Artwork and modernism



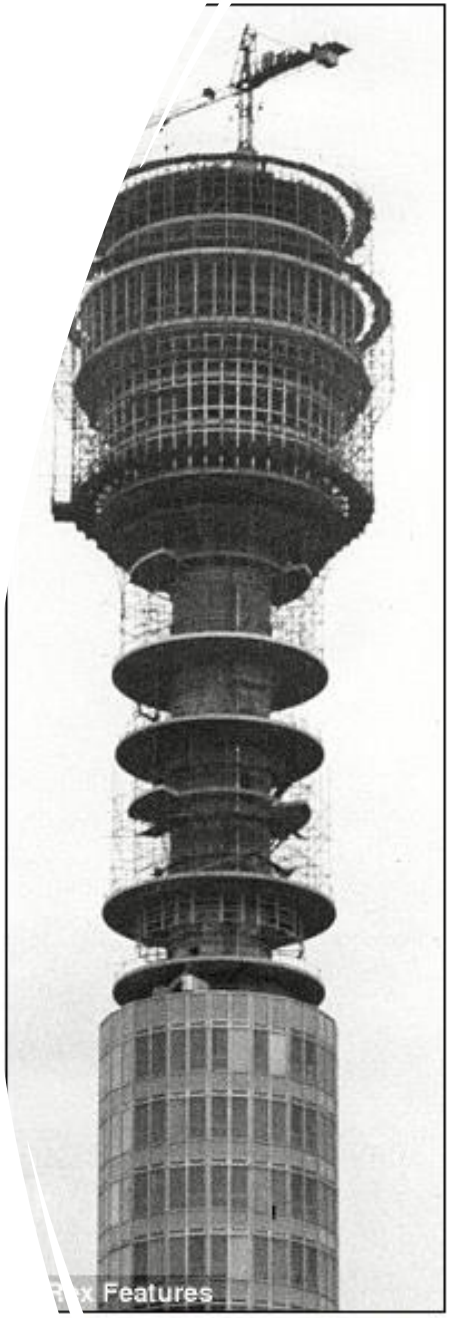
Source: https://www.adambutler.com/shop/london/london-panoramic-photographs/sunrise-with-the-bt-tower-and-marylebone/

Painting and prints

London 2012 merchanidise

National fibre optic cable rollout signals the end of trunk radio systems

The rise and fall of national microwave radio links



s icon: The tower takes
e in 1964

Bristling: The famous dishes in 2009

Slimmed down: The thinner tower in 2011

Source: https://www.dailymail.co.uk/news/article-2070608/BT-Tower-Last-satellite-dish-removed-iconic-building.html

The end of an era…

Source: https://www.standard.co.uk/news/london/bt-tower-sale-mcr-hotel-deal-london-skyline-b1140493.html

Summary

- BT Tower opened in 1965 and enabled national telecommunications and TV services
- The tower is 189 metres tall and weights 13,000 tonnes
- The Butlin’s run revolving restaurant operated between 1966 and 1980
- The ‘tower’ is currently one of the largest TV switching centres in Europe
- BT will vacate the tower and hand it over to MCR Hotels in a couple of years, for conversion to a hotel (with cocktail bar and restaurant)

Thanks for your attention, any questions?