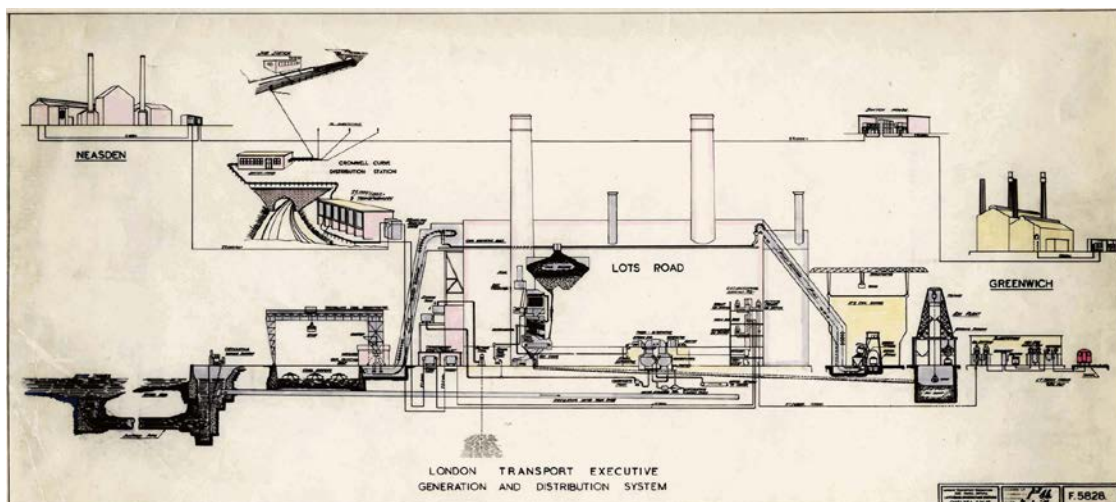


TfL Corporate Archives Research Guides

Research Guide No 30: Lots Road and Greenwich Power Stations

Lots Road

Lots Road Power Station was originally planned by the Brompton & Piccadilly Circus Railway (B&PCR) in 1897 on a site off of Chelsea Creek. It was to be designed by the American engineer James Russell Chapman. After the B&PCR came under the control of the Metropolitan District Railway (MDR) in 1898, the land was sold in 1901 to C.T. Yerkes' Metropolitan District Electric Traction Co. (MDETC), who built the station to power the District Railway. Construction started in 1902, it was completed in December 1904, with the Power Station opening the following February. Lots Road was claimed to be the largest power station ever built, measuring 453ft x 275ft at the time of construction. Coal was supplied by barge from a specially-constructed tidal basin at Chelsea Creek, and from the adjacent West London Railway.



The MDETC was a parent company of the MDR, Great Northern & Strand Railway (GN&S) and B&CPR. The MDETC was itself reconstituted in April 1902 as the

Underground Electric Railway of London Co Ltd (UERL). More can be found on the various predecessor companies of TfL in Research Guide No 10: Development of Organised Transportation in London. In July 1910 control of the Lots Road Power House Joint Committee passed to the UERL via the London Electric Railway.

For almost a century Lots Road supplied power to most of the Underground system and its ancillary equipment by means of eight turbo-generators. These supplied current at 11 kv AC, reducing at sub-stations to the operating current of 550-600v DC. Lots Road also supplied power for the London United Tramways and the London General Omnibus Company's Chiswick bus works.

The generating capacity was improved over the years, allowing some of the smaller power stations to be closed down. In 1953, 54% of the power generated for the Underground came from the power station. Conversion to oil-fuel was carried out in the 1960s and to gas-operation in 1976 but with the option of oil-firing if required.

Lots Road Power Station, as the oldest in Europe, closed in 2002 after a period of decline, with power for the Underground now being taken from the National Grid. The building is to be privately redeveloped as part of the Chelsea Waterfront, a luxurious development of flats, restaurants, cafes and shops within the former power station building.

Files of interest in the Archives include the following:

| Reference Number | Content |
|------------------|--|
| LT000487/008 | Proposed Reconstruction Programme, 14 Jan 1927 |
| LT000487/011 | Power Report, 25 Jan 1925 |
| LT000197/001 | Itinerary of Lots Road, Oct 1946 |
| LT000456/002 | Report on Lots Road (options for reconditioning), Feb 1926 |
| LT000232/137 | Memo to Executive dated 3 Apr 1951 on alleged grit and grit emission |
| LT000197/026 | Contract and specification for Complete Coal Handling Plant, Aug 1934 |
| LT001893/037 | 1965 booklet on Lots Road Generating Station, including details of the building's history including modernisation (late 1920s to 1932) and conversion from coal to oil (1960s) |

| Reference Number | Content |
|------------------|---|
| LT000199/072 | Memo of 2 Aug 1974 seeking approval to convert Lots Road to dual fuel supply (oil and gas) |
| LT000199/068 | Description of the generating station, Jan 1969 |
| LT000460/117/002 | Press Notice dated 20 Oct 1965 regarding opening of S tage 1 Modernisation |
| LT000204/068 | Interim description of Lots Road, circa 1965 |
| LT000211/027 | Investigation Report into security of fuel supplies for power generation – as at Mar 1977, the steam turbine generation units were in the process of being converted from heavy fuel oil to natural gas (with light fuel oil for standby) |
| LT000211/037 | Booklet dated Sep 1974 ‘Lots Road & Greenwich Generating S tations’ - Most recent modernisation started in 1963 involving the coal-fired equipment with oil-burning equipment and the demolition of 2 of the 4 chimneys |
| LT000205/009 | Formal inauguration ceremony of natural gas-powered generation, 4 Jun 1976 |
| LT000197/065 | Most useful file on power stations, their description & history. ‘Facts concerning London Underground’s Power House (Jun 1924). ‘Power Generation & Distribution’ – London Transport by JM Burgess – includes information on Power S tations. Lots Road Generating S tation description undated but circa Jun 1995 – first oil-fired boiler & turbine commissioned Jul 1965; completion of modernisation 1969; natural gas used from circa 1974. Description of Lots Road Aug 1978 – by this time supplied with dual-fuel equipment. ‘The Engineer’ (3 Feb 1905) – Description of Lots Road and electrification of the District Railway. Lots Road Generation S tation (paper written by Generation Engineer Jul 1990) – present plant installed between 1963-69 |
| LT000197/064 | Booklet dated Nov 1982 by Chief Electrical Engineer’s Department, a description of power station. Lots Road Generating S tation (London Transport Board booklet dated Apr 1966) |

| Reference Number | Content |
|------------------|---|
| LT001780/009 | 90 years of power – Lots Road History - contains history of site, initial plans, construction, description, railway electrification, problems, litigation, expansion, World War II, post-war plans, modernisation. Typewritten Description of Lots Road Generating Station dated Aug 1978 with revisions to May 1988. A further copy of the main document is in LT001896/040 |
| LT000261/1827 | London Underground memorandum dated 27 Oct 1992 to the London Underground Board – a private electricity generating company, Metropower Ltd, set up in Nov 1990 to study possibility of renewing plant at Lots Road and Greenwich but decided Jul 1992 not to proceed with these plans |
| LT000261/1487 | London Underground memorandum dated 11 Mar 1992 to the Finance Committee – 27 Mar 1990 London Underground Board authorised £2.8m to investigate re-equipping London Underground’s power stations (the Power Generation Project) |
| LT000261/1515 | Memorandum dated 8 Apr 1992 from Development Manager (Infrastructure) to Finance Committee seeking £219k for feasibility and design work for urgent safety works. Since 1986 it had been assumed that Lots Road and Greenwich would close in the early 1990s when the Future Power Supplies or the Metropower Projects would have been completed (Lots Road was scheduled to have closed in 1990, with Greenwich retained for emergency use only) |
| LT000518/040/005 | Metropower’s booklet explaining Metropower and its joint venture constituents (Scottish Power plc & Veba Kraftwerke AG) |
| LT000287/223 | Inauguration of gas-powered generation, 4 Jun 1976. Press notice 11 Feb 1976 stated that conversion due for completion in 12 months at Lots Rd and Greenwich, after which oil will be used only in emergency, with gas being the normal fuel |

Greenwich

Greenwich Power Station was designed by W E Riley (London County Council architect) and constructed partly by the council's own labour force to supply power for the LCC's tramways. It was opened in two stages (1906/1910) and was supplied with coal from Thames barges. With a design capacity of 34kMW, current was transmitted at 6600V alternating three-phase, reducing to 550V DC at sub-stations.

With the expansion of the Underground in the 1930s, Greenwich Power Station was increased in capacity (up to 140MW at 50 cycles) to take part of the railway load. In 1953, 27% of the power generated by the London Transport Executive came from Greenwich, including power for the trolleybus network.

Complaints were received from the Royal Observatory regarding smoke from the chimneys, which was obscuring their observations. As a result, the original two chimneys at the river end of the site (76m high) were reduced in height to 55m, as were the two remaining chimneys. These changes were made during 1970s modernisation work.

In 1972, by which time Greenwich was only supplying power for the Underground (in conjunction with Lots Road), the Power Station was converted to run on oil instead of coal, with gas-turbine engines for peak-loads. Oil is supplied only by road tanker. The generators have a total capacity of 117.6MW, generating at 11kv, which can be increased to 22kv if necessary. Today it is used as a stand-by power station for the Underground, via cables to Mile End, Aldgate and Stockwell. However, new plans for the Power Station were unveiled by Transport for London at the start of 2015. The plans involve installing up to six new gas engines in Greenwich Power Station's Old Turbine Hall. They will provide a steady source of reliable, low carbon power for London's tube as well as hot water and heating for nearby schools and homes.

Files of interest in the Archives include the following:

| Reference Number | Content |
|------------------|--|
| LT000533/004 | Consultant's report on alleged grit and dust nuisance and papers relating to a writ issued against London Passenger Transport Board, 10 May 1938 |
| LT000232/137 | Memorandum to Executive dated 3 Apr 1951 on alleged grit and grit emission and allied correspondence; Terms of Settlement of legal proceedings 23 Jan 1950; also similar papers for 1938; Conference notes on alleged grit and dust nuisance |

| Reference Number | Content |
|------------------|---|
| LT001893/036 | 1971 Booklet – Modernisation of Greenwich Generating Station including details of the building's history. Replacement in 1922 of last slow-speed reciprocating engines by steam turbine machinery. Replacement between 1969-72 (projected) of coal-fired steam-turbine generators by gas turbine generators (oil burning) |
| LT000211/068 | Memorandum to Executive dated 14 Feb 1974 stating: Greenwich was completely re-equipped during 1968-73, seeking approval to convert Greenwich to dual-fuel (gas and oil) operation. Final approval given by Greater London Council 2 Apr 1974 |
| LT000211/027 | Investigation Report into security of fuel supplies for power generation. As at March 1977, the gas turbine generation units were in the process of being converted from light fuel oil to natural gas (with light fuel oil for standby) |
| LT000211/037 | Booklet dated Sep 1974 'Lots Road & Greenwich Generating Stations' – details of modernisation works given but without dates |
| LT000199/047 | Generation from steam/coal ceased 8 Feb 1972 (from progress report 28 Apr 1974) |
| LT000197/065 | Historic Building Report dated May 1995 by Royal Commission on the Historical Monuments of England – work started 1969 to replace coal fired boilers and since 1972 the station had been equipped with gas turbine alternators burning oil, later converted to oil/gas dual firing. Detailed description of site. 'Power Generation & Distribution' – LT by JM Burgess – includes information on Power Stations |
| LT000197/065 | Supply & Distribution of Power – Installation of new plant (undated) |
| LT000197/064 | Booklet dated Nov 1982 by Chief Electrical Engineer's Department description of power station – by 1922 the original reciprocating steam engines had been replaced by steam turbines |

| Reference Number | Content |
|------------------|--|
| LT000261/1827 | London Underground Memorandum dated 27 Oct 1992 to the London Underground Board – a private electricity generating company, Metropower Ltd, was set up in Nov 1990 to study the possibility of renewing plant at Lots Rd and Greenwich but decided Jul 1992 not to proceed with these plans |
| LT000261/1487 | London Underground memorandum dated 11 Mar 1992 to the Finance Committee – 27 Mar 1990 London Underground Board authorised £2.8m to investigate re-equipping London Underground's power stations (the Power Generation Project) |
| LT000261/1515 | Memorandum dated 8 Apr 1992 from Development Manager (Infrastructure) to Finance Committee seeking £219k for feasibility and design work for urgent safety works.– Since 1986 it had been assumed that Lots Road and Greenwich would close in the early 1990s when the Future Power Supplies or the Metropower Projects would have been completed (Lots Road was scheduled to have closed in 1990, with Greenwich retained for emergency use only) |
| LT000518/040/005 | Metropower's booklet explaining Metropower and its joint venture constituents (Scottish Power plc & Veba Kraftwerke AG) |
| LT000197/015 | Booklet dated 24 May 1906 on opening of Greenwich, with technical details; also London County Council Tramways booklet dated May 1932, which details installation of new plant at Greenwich |
| LT000197/019 | Reprint from The Electrical Times 10 Nov 1932 on extension of Greenwich with British Thomson-Houston equipment |
| LT000121/276 | Conversion to dual-fuel (natural gas as well as oil) approved by the Executive 26 Feb 1974 subject to Greater London Council authorisation |
| LT000950/001 | London Transport Booklet – Modernisation of Greenwich Generating Station – by 1922 last of the slow-speed reciprocating engines replaced by steam-turbine machinery. Gas turbine alternators installed 1969-1972 in 4 stages |

| Reference Number | Content |
|------------------|---|
| LT000287/223 | Inauguration of gas-powered generation, 11 Feb 1976. Press notice 11 Feb 1976 stated that conversion due for completion in 12 months at Lots Road and Greenwich, after which oil will be used only in emergency, with gas being the normal fuel |
| LT000206/005 | Short typewritten history of Greenwich Power Station |
| LT000079/010 | Press Notice 11 Feb 1976 – First gas-powered turbine generators switched on (dual fuel - oil can be used if gas unavailable) |