
Manchester's Guardian Underground Telephone Exchange

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Introduction

Deep under the heart of Manchester city centre lies a large network of reinforced concrete tunnels known as the Guardian Underground Telephone Exchange (*GUTE*). It is an ageing relic from the beginning of the Cold War era, built with some degree of secrecy in the mid 1950s, but it still operates silently and largely unmanned as an infrastructural space facilitating the communications of those above. Surprisingly little information regarding the *GUTE* is readily accessible and the subterranean nature of the structure itself acts to entomb the reality of its shape and scale. A lack of concrete information has allowed facts to be supplanted by myths, fostering numerous (mis)perceptions of the same intangible space. The *GUTE* was conceived during a time of escalating international tensions in the early 1950s as a 'hardened' bunker to protect vital national communication links in the event of an atomic bomb attack upon Manchester. However, this defining characteristic of subterranean defence was never achieved because, even before construction was complete in 1958, advances in nuclear weapons yield and the accuracy of intercontinental ballistic missiles meant the tunnel design would be ineffective for protection of the telecommunications machinery and personnel working within. The bombproof tunnels still exist but the condition of nuclear confrontation does not.

Discussion of a possible 'nuclear bunker' beneath Manchester is one that has stirred interest amongst the public for decades.¹ Despite formal declassification from the secrecy imposed on the *GUTE* in 1968, there are still speculations and myths surrounding its supposed 'top-secret'

1] This might be read as part of the spectacle secrecy that has become evermore apparent in the past decade around military and state security, see Chris Perkins and Martin Dodge, 'Satellite imagery and the spectacle of secret spaces', *Geoforum*, 40 (2009), 546-60. More broadly there is a psychological fascination in the public imagination with what 'lurks' unseen in the subterranean realm; see Rosalind Williams, *Notes on the Underground* (Cambridge, MA, 2008).

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agenda. Such unsubstantiated theories are propagated, in part, by the mysterious 'disappearance' of web-based resources² and more recent expenditure on the physical security of known access points to a decommissioned underground telephone exchange. A formal written enquiry to BT in October 2011 from the authors in preparation for a public exhibition concerning a sanctioned visit to the *GUTE* went unanswered, as did an e-mail enquiry to facilities management company *SPIE Matthew Hall*, whose liveried vans have been observed in a street level secure compound known to serve the underground exchange complex. The last known visit by members of the public was made in 1997 by a group from the Manchester Civic Society and recorded in their newsletter in a tone understandably tinged with a certain air of mystery: 'Entering "somewhere in Piccadilly", we descended via four flights of stairs then a lift to the centre of the Earth.'³ This sustained secrecy does not, however, prevent the unfolding of the known and published facts.

In this article we seek to document the physical extent, architectural structure and operational history of the *GUTE* that we have been able to piece together from available public sources and reliable first hand accounts. As far as we are aware no official history of the *GUTE* has been published and there are only scant details in the records held at the British Telecom (BT) Archives⁴ and no detailed maps, design drawings or original construction plans of the tunnels or related surface building are currently publicly accessible. A range of historical photography and some amateur video of the *GUTE* is available and we draw upon a selection of this below and provide references to the sources. We have not visited the *GUTE*.

Cold War constructions, communications and civil defence

The way to win an atomic war is to make certain it never starts.
US Army General, Omar N. Bradley [1893-1981]

Whilst the Cold War did not involve any direct military exchanges

2] *Subterranea Britannica*, a membership society documenting the histories of underground structures used to have an informative web page on the *GUTE* which was replaced in 1999 by a link to a blog entry by *Mancubist* <www.mancubist.co.uk/2006/07/25/guardian-exchange-manchesters-cold-war-bunkers>, which is full of speculative commentary about the nature of the tunnels and in many respects only serves to reinforce the mythology. Other websites have been 'relocated' and are not retrievable using popular Internet search engines.

3] Peggy Kynaston, 'An undiscovered world beneath our feet', *Forum, the newsletter of the Manchester Civic Society*, December 1997. A transcribed version is available from <www.atomica.co.uk/guardian/forum.htm> [Accessed 18 August 2012].

4] Refs: Post 122/1049, 1050, 1051, Underground installations with regards to the Post Office Works Act 1959, parts 1-3,

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between the two super powers, it did provoke preparations for war on a massive scale, including huge investment in nuclear weapons technology and delivery systems. While aerial surveillance and covert espionage by both sides was intensively employed to acquire strategically advantageous information about the enemy's weapons systems and location of important facilities. It was unclear when, or where, the enemy would strike, leaving paranoid politicians and military chiefs operating in secrecy on the brink of perceived annihilation. The uncertainty of an attack meant that a large part of war preparations involved the construction of protected facilities and defensive systems.⁵ The result is a global array of specialised Cold War military structures, with distinctive architectural forms built at great expense. The most iconic of these structures is perhaps the least visible to public scrutiny – the underground command and control bunker.⁶

These structures included the expansion of an architectural typology built for defence, the majority of which were designed to listen (by means of surveillance) and monitor for an incoming attack, in order to create the temporal window needed to retaliate effectively. Soon after the end of the Second World War many of the UK's chain of radar stations had been decommissioned but with heightening tension by the early 1950s this situation was reversed, spurred on more so by the rapidity with which the Soviet Union had detonated its first atom bomb (August 1949).⁷ *Operation Rotor* sought to refurbish Britain's wartime radar and listening posts, and also involved the construction of a network of relatively small bunkers capable of withstanding the destructive effects of an atomic bomb in which the Royal Observer Corps could monitor radioactive fallout.⁸ Cold War defensive architecture was utilitarian in style and was driven in large part by the advances of the technology that it housed.

5] For a comprehensive survey of structures in the UK conducted by English Heritage, see Wayne D. Cocroft, R. J. C. Thomas, and P.S. Barnwell, *Cold War: Building for Nuclear Confrontation 1946-1989* (Swindon, 2003).

6] For reviews of the architectural form and some of the social meanings attached to such bunker spaces, see: Tom Vanderbilt, *Survival City: Adventures Among the Ruins of Atomic America* (New York, 2002); Nick Catford, *Cold War Bunkers* (Bradford-on-Avon, 2010); John Beck, 'Concrete ambivalence: Inside the bunker complex', *Cultural Politics*, 7 (2011) 79-102; Luke Bennett 'The bunker: metaphor, materiality and management', *Culture and Organization*, 17 (2011) 155-173.

7] Code named *First Lightning* the 20 kiloton explosion was roughly equivalent to that of the first US atomic bomb *Trinity*.

8] See Cocroft et al. (2003), pp. 84-123; Mark Dalton, *The Royal Observer Corps Underground Monitoring Posts* (Bradford-on-Avon, 2011); and also *Cold War Bunkers and Radar Stations* <www.thetimechamber.co.uk/Sites/Civil/Rotor.php>, [Accessed 5 January 2012].

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Despite the evident fear of annihilation amongst the public, the provision of protective underground spaces for the populace was not a priority of the governing classes. The popular conception that Manchester, as a major population centre, would have been a strategic target of nuclear attack was, in some senses, reinforced by the construction of the *GUTE*. However, simply by considering the types of functional space it contained, it is clear that this was not conceived as a shelter to provide any form of public provision in relation to civil defence. Although designed to withstand an atomic bomb blast, the *GUTE* was exclusively for the protection of communications equipment and the cadre of engineers required to keep it functioning, rather than to provide a nuclear bunker for politicians or public shelter. In contrast, in the USA a considerable amount of attention was lavished on giving the public the impression that they were being protected,⁹ signs at many locations across major American cities show buildings were adapted or allocated for public shelters. The level of protection offered by these typically urban examples would likely have been negligible and the signs were more a tool to convince the public of the plans to safeguard them, rather than prevent actual harm. Major expense was outlaid in Switzerland and the Scandinavian countries to provide extensive civilian fallout shelters.¹⁰ Evans explains that a major reason for the lack of similar constructions in the UK was down to cost, Britain had endured a shattered economy and a decade or more of severe post-war austerity. As an illustration of this, a letter from the Home Office to MP Mr Nicholas Scott stated that, 'the estimated cost of providing family concrete underground shelters to only 10 million homes, based on a design of which we have some knowledge, is between £60,000 million and £80,000 million'.¹¹ Moreover, targets for an attack could only be speculated upon and the real effects were uncertain early in the Cold War.¹² Evans, for example, quotes Air Marshal Sir Leslie Mayor, RAF

9] Dan Churney, 'Fallout Fever: Civil Defense shelters dotted area cities during the Cold War', 9 August 2008, <<http://mywebtimes.com/archives/ottawa/display.php?id=366305>> [Accessed 5 January 2012].

10] R.G Little, Pattak, P.B. and Schroeder, V.A. *Use of Underground Facilities to Protect Critical Infrastructures: Summary of a Workshop* (Washington DC, 1998) p.31.

11] Quoted in Peter Evans, 'The UK front' In: *The Royal United Services Institute for Defence Studies. Nuclear attack civil defence: aspects of civil defence in the nuclear age: a symposium* (Oxford, 1982), p.175. A copy is available from <<http://desastres.unanleon.edu.ni/pdf/2002/diciembre/pdf/eng/doc2517/doc2517-4a.pdf>>

12] The lethal impacts of radioactive fall-out, widespread and long lasting compared to the immediate bomb blast, became apparent to the upper echelons of the British Government in December 1954 with the distribution of the Strath Report ('*The Defence Implications of Fall-out from a Hydrogen Bomb*'). Cf. Robin Woolven, 'UK civil defence and nuclear weapons 1953-1959', *UK Nuclear History Working Paper No. 2* (2007), <www.mcis.soton.ac.uk/Site_Files/pdf/nuclear_history/Working_Paper_No_2.pdf>.

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(retired), Principle of the Home Defence College, at a NATO civil defence training seminar in 1977, '[t]he attack will be aimed at putting us quickly out of the reckoning by disabling the country militarily, politically and economically'.¹³ He went on to assert that the main targets would be knocked out, unable to administer self-aid. These targets would have to be discounted until, less damaged regions could recover and then come to their aid. If, as was likely, Manchester was considered a prime target, this could explain the reason for no visible effort at providing public shelter capability. The ability of the *GUTE* to remain functional during an attack would be vital in maintaining national communications; its purpose was not about the protection of the city populace or regional resilience. As such the civil defence could be summarised as follows:

In the absence of a shelter for the general populace, the accent has been put on retaining the means of regeneration. That implied a need for the survival of government. Thus the result has been on the protection of government, a policy that critics now compare with the lack of protection of the ordinary populace. 'Elitist', is the charge levelled at Britain's present Civil Defence policy.¹⁴

Instead of shelter provision and mass population evacuation, the alternative civil defence strategy was for the public to stay put and try to survive at home. Advice found in *Civil Defence Handbook No. 10*, published in 1963, directed householders to construct a fallout shelter or core within their own property.¹⁵ The ideal location for such a makeshift shelter was proposed as a room on the ground floor of the house, with as few outside facing walls as possible. It was advised that the inner core should be a lean-to structure, made from doors, or even to use the cupboard under the stairs. The walls of the core could be made thicker by the stacking of furniture and other items found around the house. Occupants were then to remain inside their shelters for up to fourteen days after a blast, in order to survive the worst effects of radioactive fallout.

Similar advice was still being propagated by the British Government decades later, exemplified in the *Protect and Survive* pamphlet, published in 1980 by Home Office, along with a series of short animated films intended to educate and advise the public on the

13] Evans (1982), p. 174.

14] Evans (1982), p.174-75.

15] See discussion in Tracy C. Davis, *Stages of Emergency: Cold War Nuclear Civil Defense* (Durham, North Carolina, 2007).

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prospect of nuclear confrontation¹⁶. They were part propaganda and partly the typical paternalistic attitude of the British State to its subjects.

If nuclear weapons are used on a large scale, those of us living in the country areas might be exposed to as great a risk as those in the towns. The radioactive dust, falling where the wind blows it, will bring the most widespread dangers of all. No part of the United Kingdom can be considered safe from both the direct effects of the weapons and the resultant fall-out.¹⁷

The naivety of such advice, the general public's misapprehension of the savage reality of nuclear war conditions and faith in such a plan for survival was epitomised in the 1986 film *When the Wind Blows*.¹⁸ This animated film was made during the Reagan era confrontation with the USSR, and in a grainy, gloomy tone, follows an elderly working class couple, through the process of constructing a shelter following government guidelines, surviving the actual attack and eventually succumbing to the effects of fallout. Two years earlier the BBC television drama *Threads* had been heavily criticised by the government for its excessively bleak – and realistic – portrayal of post-bomb survival.¹⁹

As the provision of public shelters did not make up part of the Britain's civil defence strategy, one could speculate that public knowledge of the presence and the scale of *GUTE* and other underground exchanges may have been considered to have the potential to induce public disquiet. Certainly, this danger was flagged in secret Cabinet Office discussions in September 1951 relating to newspaper stories about tunnelling activity in London, where it was noted: 'It would be embarrassing to the Government if the public got the impression that deep shelters were being constructed. Either the public would think that the Government were out to protect their own skins ... or ... assume that the shelters were intended for public use in the time of war and would be disappointed when they found they were not.'²⁰ It was overtly stipu-

16] A scanned copy of the pamphlet is available at <www.atomics.co.uk>. An example of the films produced is available at, <www.nationalarchives.gov.uk/films/1964to1979/film-page_warnings.htm>.

17] Home Office, *Protect and Survive* (HMSO, 1980), p.1.

18] Jimmy T. Murakami [Director], Raymond Briggs [Author], *When the Wind Blows* (Meltdown Productions, Film Four, 1986).

19] It was self-censored by the BBC following the criticism and not shown again on British television for nearly twenty years. See Toby Emden, *Ten to Midnight. The end of the world as we know it* (Stingray Books, 2007), p. 8; Sean O'Sullivan, 'No such things as society: Television and the apocalypse', in Lester D. Friedman, [ed] *Fires Were Started: British Cinema and Thatcherism* (London, 2006), pp. 223-242.

20] Note of meeting 6 September 1951 (GEN.379/1st Meeting). The National Archives, ref. CAB 21/3999.

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lated that any enquiries about tunnel construction should be met with the answer that the works were for mundane GPO purposes and at some point during the mid 1950s a 'D Notice' was applied to the whole underground telephone exchanges project to prevent any press reporting of their construction²¹. The Act of Parliament passed in 1959 to retrospectively authorise the tunnelling and place the exchanges on a legal footing, was deliberately blandly entitled as the Post Office Works Act,²² and when the bill was read in House of Lords it was set out that the works were mundane and 'used for essential Post Office purposes.'²³

The 1950s communications context

The primary role of the extensive complex of tunnels constructed beneath Manchester's city centre was to house a hardened telephone exchange and ancillary equipment to maintain key government and military communications in the event of a nuclear attack. The *GUTE* was one of three similar city centre installations constructed under conditions of some secrecy about its purpose and details on its size and depth;²⁴ the other two sites were in central London (exchange code-named *Kingsway*) and Birmingham (the *Anchor* exchange). Existing tunnels from the deep shelter programme enacted during the Second World War in London were extended in 1951 to house the *Kingsway* underground telephone exchange beneath High Holborn. Trunk lines carried communications north through exchanges at Birmingham and on to Manchester. *Anchor* exchange was constructed under the Newhall Street area of Birmingham city centre, close what is now Paradise Circus, with three access shafts and long cable tunnels running away from complex in a north-westerly and south-easterly directions to secondary surface exchanges.²⁵ The *GUTE* was similar in facilities

21] Letter by T.A. O'Brien, 25 February 1954. The National Archives, ref. CAB 21/3999.

22] Post Office Works Act, Ch. 43, Clause 7. 1959. BT Archives, ref. POST 122/1049.

23] House of Lords debate, 20 January 1959, Hansard vol. 213 cc563-6. Available from <<http://hansard.millbanksystems.com/lords/1959/jan/20/post-office-works-bill>>.

24] It was some decades later before speculative details became public, most particularly through books by Peter Laurie, *Beneath the City Streets* (London, 1970) and Duncan Campbell, *War Plan UK* (London, 1982). It was more formally documented by English Heritage in the 1990s, cf. Cocroft et al. (2003), pp 218-225.

25] Initial tunnelling works were reportedly explained with a cover story that it was for an underground railway to relieve city centre congestion; cf. Sebastian Ballard, 'Site Name: Birmingham Anchor Telephone Exchange', *Subterranea Britannica*, March 2003, <www.subbrit.org/rsg/sites/b/birmingham_anchor_exchange/index.html>. Some impression of the *Anchor* tunnels can be ascertained from a short BBC Midlands Today news report filmed in 1998, a copy can be viewed at <www.youtube.com/watch?v=28e35wmElCY>.

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Table 1. Keys events relating to GUTE and wider Cold War contexts. (Source: Compilation by the authors from various sources cited in the text.)

1945 [July 16]	Trinity, the test of the first atomic bomb in New Mexico
1949 [Aug. 29]	Soviet Union tests its first atomic bomb at Semipalatinsk in Kazakhstan
1952	Salford site [Islington St?] is purchased for access shaft to GUTE
1952 [Oct. 3]	Britain tests its first atomic bomb on the Montebello Islands, Western Australia
1953?	Breaking ground on GUTE shafts
1954 ... 1957	Major progress in tunnelling works on GUTE
1954 [Mar. 1]	Test of the first thermonuclear (hydrogen) bomb on Bikini atoll in the Pacific by the US
1958	Construction of GUTE structure is largely complete, equipment fit out
1958 [Dec. 7]	At 8.00am the GUTE opens to telephone traffic as trunk non-director exchange
1959	GUTE fully operational as an exchange after the installation of additional equipment
1959	Post Office Works Act passed to give Postmaster General the retrospective legal powers to maintain communications systems in deep excavations in London, Birmingham and Manchester
1967	Rutherford Exchange (in surface building), completed to provide space for new standard trunk dialling system
1968 [Oct. 21]	Declassification of GUTE (and the exchanges in London and Birmingham) by Postmaster-General Stonehouse's official announcement to Parliament. Removal of D-Notice meant that these 'secret' facilities could be reported in the press
1969 [Jan.]	Minor fire in GUTE reported
1972	Short 110 metre segment of new tunnelling finished to directly link recently completed Irwell House exchange building in Salford to the GUTE cable route
1970	Peter Laurie publishes his book <i>Beneath City Streets</i> , which provides some of first detailed public discussion of Cold War communications and civil defence facilities
1980 [Nov.]	Manchester declares itself to be the first British Nuclear Free City
1981	1981 British Telecommunications Act passed meaning that Post Office Telecommunications became a state-owned corporation independent of the Post Office
1983 [Mar. 22]	Manchester Evening News prints Michael Duffy's story about his tour of GUTE
1984	Privatisation of BT
1988	GUTE ceases to operate as a telephone exchange
1989 [Nov.]	Fall of the Berlin Wall signifies the collapse of the Communist block and end of the Cold War
1997	Members of Manchester Civic Society conducted an authorised visit to GUTE
1998 [July]	English Heritage photographer visits GUTE to document the tunnels and working spaces
2002	Stories in local press about GUTE and plans for BT sell off the tunnels for other use
2004 [Mar. 29]	Significant fire occurs in the Guardian exchange tunnels
2005	Access to GUTE by unauthorised 'explorers'
2007	Keith Warrender publishes his book <i>Underground Manchester</i> , spurring new interest in the GUTE

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layout to *Kingsway* but reportedly had the addition of a room allocated for the Civil Defence Corps.²⁶ The *GUTE* was also the smallest of the three exchanges providing accommodation for about 35 engineering maintenance staff, which compared to 140 in *Kingsway* and around 60 in *Anchor*.²⁷ *Anchor* and, especially, *Kingsway* are well-recorded and represented with contemporary photography and video readily available online, in contrast to the scant amount of information about *Guardian*.²⁸

Funding for the construction of the tunnels was made available from the North Atlantic Treaty Organization (NATO) as the exchanges were deemed vital infrastructure needed for strategic defence. It seems that similar deep underground telecommunications facilities in Bristol and Glasgow were initially planned during this period but never constructed.²⁹

Peter Laurie in his book *Beneath the City Streets* (1970) explained to a wider public that after a nuclear attack telecommunications would be vital to the ability of any form of organised government to function. For reasons of economy a hardened civil defence communication system was contained within the peacetime domestic trunk phone lines. This system could then switch use quickly in the event of an attack. As the former chairman of *Cable & Wireless* commented in 1947, '[a]n emergency circuit consists primarily of a switchable portion, normally in use for the public system, which can be connected quickly at two local ends'.³⁰ These lines were considered hardened by the fact the cables ran two to three feet underground and the connection points were linked by at least two separate routes. (In other cases cables were physically rerouted around potential targets.) Along the routes of the cables protected repeater (PR) stations were built, typically as semi-submerged, windowless concrete bunkers with independent emergency

26] Cocroft et al. (2003), p. 220. It is unclear whether this space was ever used for such a purpose.

27] Keith Warrender, *Below Manchester* (Timperley, Cheshire, 2009), p. 236.

28] Contemporary reporting includes: A *Sky News* report on the sale of *Kingsway*, posted online on 18 October 2008, <www.youtube.com/watch?v=dmSblwFurbI>. Graham Ruddick, 'Kingsway tunnels: See inside one of London's most unusual property [sic.]', *The Telegraph*, 23 January 2009.

<www.telegraph.co.uk/finance/4324339/Kingsway-Tunnels-See-inside-one-of-Londons-most-unusual-property.html> [Accessed 19 January 2012]. Mick Herron, 2009, 'What lies beneath', *Engineering & Technology*, 11 April, 90-91. It is also well documented online, cf. <www.subbrit.org.uk/rsg/sites/k/kingsway/>.

29] Nick J. McCamley, *Cold War Secret Nuclear Bunkers* (Barnsley, 2002), p. 230. According to Andrew Emmerson's research a panoply of schemes around British cities to provide more resilient telecommunications infrastructure was planned in the early 1950s. Most were never built due to budgetary restriction (see his article 'Communications in context: plans for protection', *Subterranea* 13 (2007), 34-41).

30] Laurie (1970); S. Angwin, 'Untitled', *Journal of the Institution of Electrical Engineers*, 94, 3, (1947), 7.

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power from generators.³¹ Further measures were taken to protect the main exchanges and terminals through which these lines passed. The safeguarding of such places was key to the protection of communications: 'The exchanges and the organisations they are to serve must be housed in well-protected places, because they are the ganglia of the thermonuclear bomb resistant brain. If they are damaged, the government creature is blind, deaf and dumb'.³²

Discussions took place in the early 1950s on the strategic necessity and financial feasibility of building a survival communications network to support national defence operations and essential governmental tasks in the event of an atomic war. This was envisioned as an additional layer of telecommunications infrastructure because the 'main long distance cable network ... terminates in, or passes through, the largest cities in the country, and depends for its operation on equipment located in these cities'. These cities would be prime targets and likely to be laid waste by Soviet bombs. According to a Cabinet Office briefing paper in 1956, which was classified as Top Secret, the Post Office had plans to mitigate this vulnerability by engineering new communications routes using three distinct schemes. Firstly, the *Skeleton* network, costing £3m, that was purposefully designed as a 'multiplicity of cables up and down the country which do not pass through the largest towns'. Secondly and more ambitious was the £9.2m *Backbone* scheme for 14 large microwave towers, each located about 34 miles apart, positioned in line-of-sight out in the countryside. This chain of antennas would 'meet the essential need for an alternative line of communication running from north to south of the country to carry circuits between the planned Seat of Government (and its standby), the various operational Headquarters of the Defence Services, the Regional Headquarters and other Government establishments.' A third layer, to supplement *Skeleton* and *Backbone*, were specific radio standby-to-line link to provide physically separate interconnect with key defence facilities.³³

It is unclear how much of these three layers of infrastructure were enacted, given the severe constraints on government spending. At least part of the *Backbone* scheme was built because the towers became part of the more general microwave communications network in the mid

31 Catford (2010), pp. 155-59; Andy Emmerson, 'Stockport protected repeater station', *Subterranea* 6 (2004) p.22-25.

32 Laurie (1970), p.149.

33 Details and quotes in this paragraph are taken from 'Backbone radio link and radio standby to line links for safeguarding vital communications', General Post Office, July 1956. The National Archives, ref. CAB 134/1207. A transcribed version of the document is available on <http://yourarchives.nationalarchives.gov.uk/index.php?title=Backbone_radio_link_and_radio_standby_to_line_links_for_safeguarding_vital_communications>.

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1960s and they remain prominent features in the landscape, despite the removal of the striking trapezoidal coned antennae.³⁴ Manchester was likely to have been connected into this network from the seventy-three metre tall concrete tower at Sutton Common, near Macclesfield and possibly via the prominent microwave antenna which opened in 1965 in Heaton Park, north of the city centre.³⁵

Mapping GUTE: Position, tunnel extents and core layout, and surface buildings

There are few public details on the siting decisions, layout or specific design of the tunnels for the *GUTE*. To the best of our knowledge no official maps of the tunnel extents or construction plans have been released into the public domain.³⁶ We have pieced together details and the following description is presented as only a provisional account of the size and structure of *GUTE*. The main part of the *Guardian Exchange* is estimated to be thirty-four metres below ground, (actual tunnel depths were deemed a key secret during construction and remain unclear) and comprises a core warren of habitable equipment tunnels under the Chinatown area of Manchester city centre with smaller cable tunnels, just over two metres in diameter, that double as emergency escape routes, extending out to two vertical shafts in Salford and one at Ardwick (Figure 1).

The overall plan form of the exchange tunnels does not appear to be an explicitly economic or efficient configuration. The strangely contorted layout of the large equipment tunnels and chosen routes for the cable tunnels is probably linked to local circumstances and happenstance in the 1950s – e.g. the availability of land and city centre access via bomb damaged buildings, and perhaps dictated by geological conditions and preferred tunnelling techniques at that time. Why position it at all under city centre given that its purpose was to survive an atomic attack? It can be speculated that the city centre siting *Guardian* tunnels was to provide protection to existing long distance north-south trunk telephone cables which came through the middle of Manchester (connecting at Dial House and York House exchanges). These cables had enhanced significance in the 1950s with the building of first telephone link across from North America to Britain (TAT-1 opened in

34] For further details see: Steve Fox and Richard Lamont, 'The Towers of Backbone', *Subterranea Britannica*, June 2003, <www.subbrit.org/rsg/features/backbone>.

35] 'Tower widens scope for TV and telephones', *The Guardian*, 9 October, 1965, p. 4.

36] A basic layout plan of core tunnels in relation to land ownership is provided as part of the Book of Reference that accompanies the Post Office Works Bill, November 1958. A copy is held at Manchester City Archives, ref. M626 / Crate 12 / 2. An outline plan of the exchange for 'safeguarding' is also held at BT Archives, Post 122/1049 Underground installations with regards to the Post Office Works Act 1959, part 1.

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1956) which would become the primary route of the so-called 'hotline' teletype service. *GUTE* was a trunk non-director telephone exchange and designed to keep traffic flowing at all costs because it was an essential link in the chain of Cold War communication between Washington and Moscow. Hence the justification of the high costs of underground construction which was met by NATO.³⁷

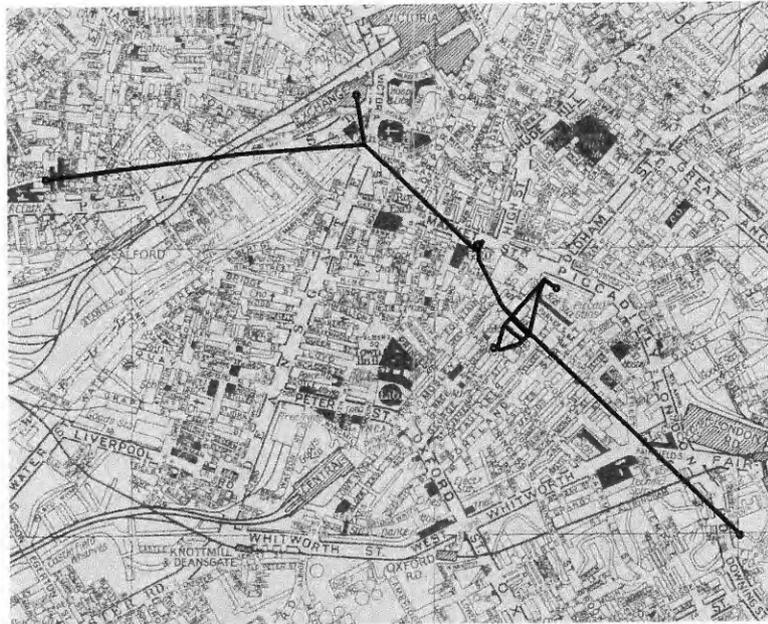


Figure 1. The extents of the *GUTE* tunnel network under Manchester city centre. (Source: Authors compilation. Map drawn by Graham Bowden, Cartography Unit, University of Manchester.)

Perhaps the best physical description of the *GUTE* as completed comes from a 1974 article in a technical journal reviewing construction, hence we quote it at length:

The recently completed Post Office communications tunnels join an existing network, provided in 1956, which extends across the two cities of Manchester and Salford. Cable tunnels run from Ardwick on the south side, pass beneath Deansgate, continue northwards under the River Irwell and westwards across Salford. They connect with a

37] Sydney P. Collins, 'Tunnelling under Manchester', *Tunnels & Tunnelling*, September 1974, p.30

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grid of large diameter tunnels under Piccadilly which house the telecommunications apparatus with its associated plant and support systems. The tunnels are basically horse-shoe shaped but vary considerably in size and detail, and as an indication of the scope of the accommodation, there were eight main types of tunnel cross section, each having two, three or four subdivisions. They were lined with plain concrete ranging from 10 to 36in nominal thickness except the ventilation tunnels which were constructed in 7ft diameter cast iron bolted rings running beneath the apparatus tunnels. The whole of the tunnel system lies between 100 and 200ft deep, entirely within Bunter sandstone which was very wet. The cable entry shafts in 12ft diameter bolted cast iron lining were sited on derelict plots near the cities' existing telephone exchanges. From each shaft ran a short spur 9ft 6in nominal diameter tunnel.³⁸

Underground and within the core tunnel complex there are two main levels connected at various points by stairs. Certain sections of the tunnels are of sufficient diameter to contain upper and lower levels, though smaller gauge tunnels also connect the upper and lower sections and the idea of two levels simply stacked on top of one another does not quite represent the true configuration of the subterranean spaces. On the main level of the exchange, in the largest and longest tunnel (known as A.T.8, 'apparatus tunnel'), were GPO engineers who would work to maintain the analogue telecommunications switching equipment (see **Figure 7** below for construction photograph of this tunnel).

For fresh water supply there was an artesian well within the tunnel complex, its exact location is difficult to ascertain from publicly available information, but it is recorded in the original Post Office records as being beneath 'Alexander Drew & Sons, 33 George St.' and that the 'surface land' was 'privately owned' and that the 'well [had been] sunk from tunnel level'.³⁹ (**Figure 2** indicates the likely location, marked by 'AW'.) Sewage and other foul materials were collected in a tank within the tunnel complex and periodically ejected under air pressure into the mains sewage system.⁴⁰ Air was drawn in by fans via intakes at Salford and Ardwick and was passed through a bank of filters to remove dust and dirt. This was not as efficient as it might have been and dirt was a constant threat to the mechanical operations which

38] 'Schedule I. Scheme 567a Shafts and Shaftheads to Deep Level Tunnels' marked kk.6.5.57. BT Archives, ref. POST 122/1049.

39] Pers. comms. 8 November 2012 from Malcolm Graham, Technical Officer, Level 1 Manager, *GUTE*, 1959-1988.

40] Pers. comms. 8 November 2012 from Malcolm Graham, Technical Officer, Level 1 Manager, *GUTE*, 1959-1988.

required routine and regular maintenance to keep equipment in working order.⁴¹

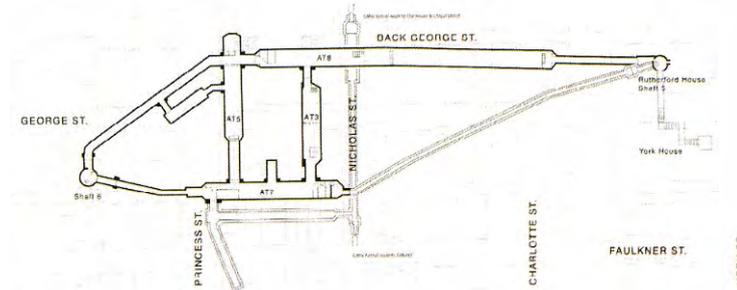


Figure 2. The layout of core GUTE tunnels in relation to surface street. The position of the pedestrian link to York House is uncertain and approximated. (Source: Author's plan. The compilation draws upon research by Nicholas Mitchell and the drawing provided in Wayne D. Ccroft, et al, *Cold War: Building for Nuclear Confrontation 1946-1989* (Swindon, 2003), p.164.)

In terms of the overt presence of the GUTE in the city, a scattering of anonymous surface buildings and architecturally unremarkable commercial premises, which provide access via deep shafts, are the only publicly visible evidence of the tunnels existence. The two main entrances in the city centre are located at 56 George Street (**Figure 3**) and within an office building on (New) York Street,⁴² known as York House. Steps from within York House led to a passage beneath George Street and into the basement of Rutherford House Telephone Exchange from where the original shaft head was accessed (**Figure 2**). York House is a typical Edwardian building of red brick with cream coloured faience banding and dressings. It was built at number twenty-six York Street as a telephone exchange in 1909 to designs prepared by L. Stokes and J.W. Beaumont.⁴³ The site was noted in 1957 as having a 'subway to telephone exchange, plus manhole in shafthead to be superseded by normal PO building';⁴⁴ one may assume that this 'normal' building is in fact Rutherford House.

41] Following Bruntwood's acquisition of a number of properties on York Street in 2008, the improvements to the public realm, their redevelopment of existing premises and construction of some new offices. York Street was renamed New York Street in 2008.

42] Clare Hartwell, *Manchester* (Penguin, 2001), p. 211. John J. Parkinson-Bailey, *Manchester: An Architectural History* (Manchester University Press, 2000), p. 344.

43] 'Schedule I. Scheme 567a Shafts and Shaftheads to Deep Level Tunnels' marked kk.6.5.57. BT Archives, ref. POST 122/1049.

44] Eamonn Canniffe and Tom Jefferies, *Manchester Architecture Guide* (Manchester, 1999), p. 95.

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Rutherford House was constructed in 1967 by the Ministry of Public Buildings and Works, as a telephone exchange, on the corner of George Street and New York Street.⁴⁵ The name is perhaps a reference to the nuclear era as Manchester scientist Ernest Rutherford is credited with being the first to 'split the atom' and discover protons in a series of experiments at the University of Manchester between 1913 and 1919.⁴⁶ Rutherford was also a prominent member of the Manchester Literary and Philosophical Society who had premises adjacent the site of the new telephone exchange and, it has been said, had GPO bosses amongst the membership. The suggestion is that the Lit. and Phil. considered Rutherford a 'natural philosopher' and that the adoption of the name satisfied the philosophical leanings of the Society and the technological aspect of telecommunications.⁴⁷ The original shaft head and vent tower have been enclosed within the service area of Rutherford House, the vent is similar in scale and appearance to that of 56 George Street (described below) and remains visible from above. The sites for both Rutherford House and the George Street compound had been bombed during the Second World War.⁴⁸ Their availability as construction sites and their proximity to the existing GPO exchange at York Street may have been one factor in determining the below ground organisation of the tunnels.

The shaft access building at 56 George Street is typically ministerial and reductively utilitarian in style. It is similar in appearance to an electricity sub station, but is surrounded by high walls and features a distinctive square ventilation tower (**Figure 3**). The mains electrical supply was routed via a small substation on the edge of the compound and augmented by battery supply which would come to life if the mains current was cut. For extended periods of power outage diesel generators down in the tunnels would provide the back up and the ventilation tower would allow the exhaust from the engines to escape.⁴⁹ The engines were periodically tested and the fire brigade given advance notification of such so as to prevent their attending any reports of a 'smoke coming from building on George Street'.⁵⁰ If this route for ventilation was

45] *Dictionary of National Biography*, <<http://www.oxforddnb.com/view/printable/35891>>.

46] Pers. comms. 5 June 2012 from former GPO / BT employee with direct knowledge of GUTE.

47] As evidenced by bomb damage maps held by Manchester City Archives, ref. GB127.MISC/1192.

48] Pers. comms. 8 November 2012 from Malcolm Graham, Technical Officer, Level 1 Manager, *GUTE*, 1959-1988.

49] Pers. comms. 8 November 2012 from Malcolm Graham, Technical Officer, Level 1 Manager, *GUTE*, 1959-1988.

50] Pers. comms. 8 November 2012 from Malcolm Graham, Technical Officer, Level 1 Manager, *GUTE*, 1959-1988.

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blocked the exhausts could also be directed along the Ardwick cable tunnel to Lockton Close shaft.⁵¹ According to Duncan Campbell's early public exposé of the *GUTE* at the start of the 1980s, the George Street shaft could be capped with a thirty-five ton concrete slab that would have been used to seal the entrance in case of an attack.⁵² From construction photographs the slab would appear to have slid into place on rails. Hydraulic lifting gear, on the inside, would allow staff to exit once it was deemed safe to do so. The shaft is also listed as having a 'staircase' inside⁵³ which were used by staff when the lifts were being

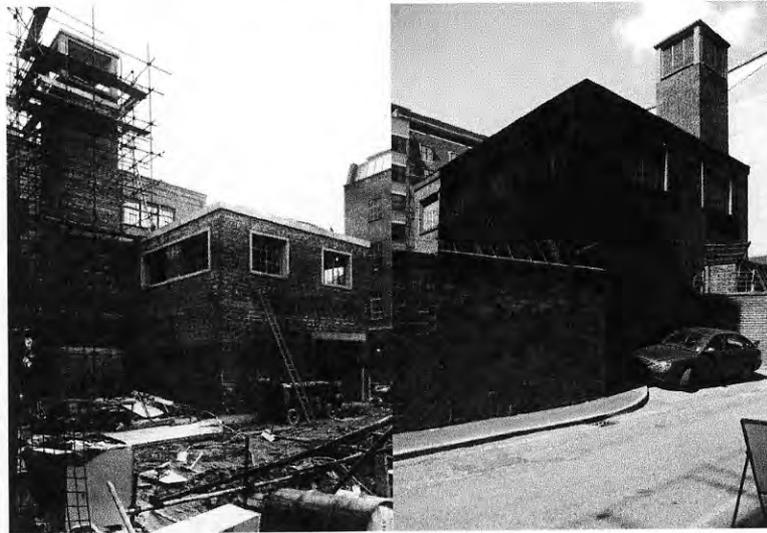


Figure 3. [image left] Original photograph documenting the construction of the service building at 56 George Street, Manchester, dated November 1960. Photograph taken inside the compound. The distinctive exhaust tower is nearly complete. (Source: Photograph by tunnel engineer Patrick Gough. Courtesy of George Coney.) [image right] A contemporary view of the utilitarian same building at the top of the main equipment lift shaft down to the GUTE. The compound now features significant physical perimeter security. Photograph taken from Back George Street (Source: Richard Brook).

51 Duncan Campbell, *War Plan UK: The Truth About Civil Defence in Britain* (London, 1982). A photograph available George Coney's Guardian website purports to show this at time of construction, <www.atomica.co.uk/guardian/construction.htm#slab>.

52 'Schedule I. Scheme 567a Shafts and Shaftheads to Deep Level Tunnels' marked kk.6.5.57. BT Archives, ref. POST 122/1049.

53 Pers. comms. 8 November 2012 from Malcolm Graham, Technical Officer, Level 1 Manager, *GUTE*, 1959-1988.

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serviced.⁵⁴ It is perhaps unsurprising to note that once the slab had been slid into place and the blast doors (situated at various points along the cable tunnels and at the base of each vertical shaft) closed, that the process for the intake and extract of air remained as it was. This should be considered in the context of the 'shelter and stay put' advice issued by central government and the general lack of knowledge, or publicly available information, concerning the mid to long term effects of high dosage radiation from nuclear weapons.

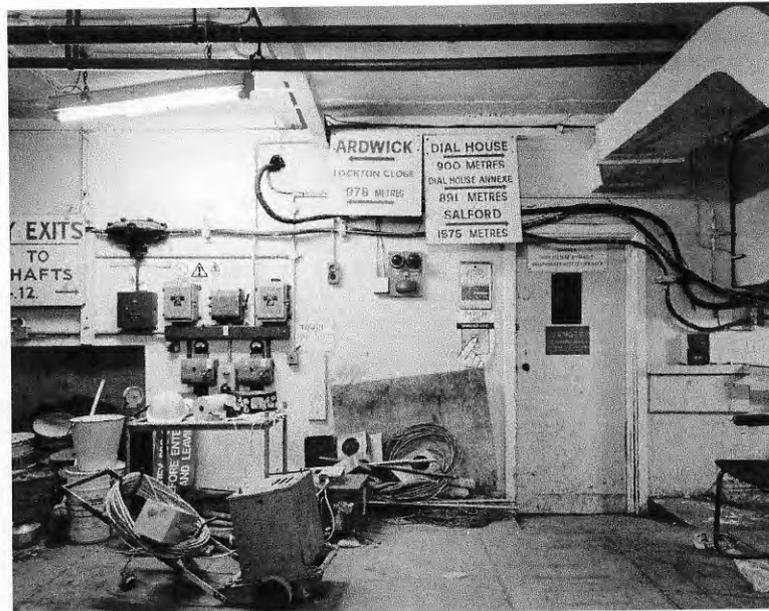


Figure 4. A July 1988 photograph of signage in the cable tunnel crossover indicating the scale of the distances to various exit shaft for GUTE. Ardwick 978 metres to the left and Dial House 900 metres, with Salford 1575 metres to the right. (Source: Tony Perry, *English Heritage*, ref. AA98/02434).

54] 'The top of the shaft had a narrow metal ladder fixed to the shaft wall which curved over at the top. When you're 12 it's not the easiest thing to just climb down there – there was no lighting then and you always ran the risk of your mates either leaving you or just dossing about and locking you in there. I was very wary of the ladder coming away and when you shone a torch down there, the stairs seemed to just drop down forever. It also seemed to drop down at a slight angle. There were light switches at the bottom of the shaft (and I mean it went down forever) and of course they didn't work. The shaft bottom had a thick steel door at the bottom (it was painted grey (I think) and it had louvres that were shut. It also had grilles to the sides'. Unverified comment posted by 'Tony-B' on weblog *Mancubist*, <www.mancubist.co.uk/2006/07/25/guardian-exchange-manchesters-cold-war-bunkers> [Accessed 12 November 2012].

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Two cable tunnels, themselves large enough people to walk through, run for a considerable distance from central core of exchange equipment under China Town (see **Figure 2** above; **Figure 4**). Available plans show these tunnels are running in straight lines and they end at shafts to the surface. They were marked by three nondescript small brick buildings located at Chapel Street and Islington Street, Salford and Lockton Close, Ardwick which provided routes for the telephone cables, air intakes for ventilation and emergency exits for *GUTE* workers (**Figure 5**). At the time of initial planning for the underground exchanges in the early 1950s it was likely conceived that these points would be outside the immediate blast zone of an atomic bomb. Unqualified accounts of mischievous adventures in the 1970s would suggest that these shafts are relatively narrow and provide access via ladders rather than steps.⁵⁵

All the surface buildings have been altered since their original construction and are significantly more 'secure' since the major tunnel fire in the *GUTE* of 2004 and burglary of 2005 (see below for a more detailed account of these incidents). These exits are connected by the aforementioned cable tunnels (also able to accommodate maintenance teams) which stem from the main complex and include an offshoot to Dial House, another former massive GPO telephone exchange located in Salford. Dial House, and its later extension Irwell House, are situated on Chapel Street, north of the River Irwell, both are currently little documented in terms of their architectural genesis. Dial House was built in the late 1920s, from a design by architect Richard Allison (1869-1958), to meet rapidly growing demand for telephony and is a strange amalgam of functional load bearing masonry and applied classical detail, most notably at its upper floors where a Romanesque portico has been added to cap the building.⁵⁶ At the time its height and imposing scale on the river front site provoked critical comment.⁵⁷ Irwell House, by comparison, is a purely functional modular concrete construction, much more explicitly of its period, it was built as an annexe to Dial some time in the late 1960s at a reported cost of £1m.⁵⁸

55] 'Manchester's new telephone exchange', *Manchester Guardian*, 13 December 1929, p.3. For an opinionated contemporary article concerning the aesthetic appearance of the building, see Jonathan Schofield, 'The good, the standard, the ugly: Dial House, Salford', *Manchester Confidential*, August 2012, <www.manchesterconfidential.co.uk/Culture/Architecture/> [Accessed 12 November 2012].

56 Charles H. Reilly, 'A new building in Salford', *Manchester Guardian*, 21 August 1928, p.10.

57] '£1M exchange', *Guardian*, 17 September 1969, p.20.

58] Collins, (1974), pp.30-33. It is this credible public account that provides the source of most of the description in this section.

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Figure 5. [image top left] The small surface building at the top of cable tunnel as originally constructed, Lockton Close, Ardwick, Manchester (Source: Courtesy of George Coney). [top right] The same location after being rebuilt and secured in 2005 (Source: Richard Brook). [lower left] The small surface building at the top on cable tunnel, Islington Street, Salford (Source: Courtesy of George Coney). [lower right] Additional security fencing installed around Islington Street access point. (Source: Richard Brook).

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Construction and operation of GUTE (1950s-1970s)

The construction of the *GUTE* is partially documented in a 1974 article in the professional magazine *Tunnels & Tunnelling*⁵⁹ and series of surviving photographs.⁶⁰ Some views of the surface works in 1955 are also available from the Manchester Local Image Collection. (Figure 6 below)⁶¹ Despite the scale of the works in the heart of the city nothing seems to have been reported in the newspapers, perhaps due to the D Notice covering the project.

The *GUTE* purportedly cost just over two million to construct, with £1.6m expended on the tunnelling works,⁶² undertaken primarily by the civil engineering contractor Edmund Nuttall, Sons & Co. Ltd.⁶³ The planning and design of tunnels was undertaken by Sir William Halcrow & Partners, who were leading engineering consultants of the time.⁶⁴ The client was the Office of Works, subsequently the Ministry for Public Buildings and Works (MPBW) and later the Property Services Agency (PSA) of the Department of the Environment. The installation was managed by the GPO, but the PSA continued to act for the GPO on building matters until 1985.⁶⁵

Surveys for the tunnel alignments were conducted at night between 2200 and 0600 hours, for secrecy and to minimise traffic vibrations to the theodolites. In order to achieve accuracy the centres of certain connecting tunnels adopted the lines of main thoroughfares above ground. (Figure 2 above) The first shafts for accessing the works were at George Street and at York Street (the sites of the remaining surface access building and Rutherford House respectively). These excavations were hazardous at the upper reaches as they were digging through rubble that had been bulldozed loosely into the basements of homed buildings. The higher parts of the shafts were thus lined with cast iron rings and then mass concrete at the lower levels.

59] Taken by Patrick Gough. Scanned digital copies are available from George Coney's website, <<http://atomica.co.uk/guardian/>>.

60] See <<http://images.manchester.gov.uk/>>, refs: m56364, m56369, m56370, m56371.

61] Comments by Mr. Stonehouse, Postmaster-General in *House of Commons* written answer, 21 October 1968. A version is available online at <http://hansard.millbanksystems.com/written_answers/1968/oct/21/underground-exchanges>.

62] Collins (1974), p.30.

63] They were responsible for many large tunnelling schemes in UK in last century including the Dartford and Mersey road tunnels. They were engineers for deep level London air raid shelters built in Second World War, along with the design of the *Kingsways* and *Anchor* underground exchanges in the 1950s. cf. <www.halcrow.com/Who-we-are/History/>.

64] Pers. comms. 5 June 2012 from a former GPO / BT employee with direct knowledge of GUTE.

65] Collins (1974), p.31.

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Figure 6. A view, captured in 1955, of the prominent headgear located at Piccadilly needed to winch men and materials to the GUTE tunnel workings. The façade of the exchange at York House, York Street, is to the left of the image. (Source: Photograph by A. Dawson, 1955. Courtesy of Manchester Archives and Local Studies, ref. m56369.)

Drilling the smaller cable spur tunnels out to Salford and Ardwick was said to be quite straightforward and proceeded at a rate of about 18ft per week.⁶⁶ (Figure 7) Spoil was removed by battery powered locomotives along several temporary tunnels, now filled in, and hoisted using electrically powered headgear. The tracks were subject to continuous maintenance due to the abrasive properties of the blasted sandstone. These routes also provided ventilation during the initial phase of construction in the mid 1950s, though this was far from adequate insofar as 'fumes from the explosives did not clear readily and it was always foggy during the week'.⁶⁷ According to original GPO records⁶⁸ there were seven surface work sites associated with GUTE construction including a large shaft and winding tower at Piccadilly (Figure 6), positioned on a vacant site where the Plaza would eventually be built.

66] Collins (1974), p.31

67] 'Schedule I. Scheme 567a Shafts and Shaftheads to Deep Level Tunnels' marked kk.6.5.57. BT Archives, ref. POST 122/1049.

68] 'Manchester trunk mechanisation', *Post Office Electrical Engineers Journal (POEEJ)*, 52 (April 1959), p.77, 78.

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Despite there only being seven sites on the schedule they are numbered 4, 5, 6, 7 and 11, 12, 13 which would suggest that there were other sites perhaps discounted during the land assembly and conveyance processes. The total number of known physical entry points is six; though there are likely other points of connection between the *GUTE* and the outside world – power, ventilation, sewer and pumping out water seepage, in addition signs in the tunnels themselves refer to shafts, 7, 4 and 12. (**Figure 2** above) It is likely that the site numbers were transferred to those allocated to the shafts and thus, Site 5, listed as ‘York St. and George St.’ became shaft 5.

A pilot tunnel was driven from the shafts to align with as many of the proposed sections as possible. Both this and the initial shaft excavations had problems with the ingress of water. However, as construction proceeded, the centrifugal pumps that were put in place began to work more and more efficiently until the only issues were presented where faults occurred in the rock. The cement and aggregates mixed to make the concrete were delivered in dry form to the concreting plant which was situated below ground. The storage of the dry materials at this level meant that they were subject to the absorption of moisture and the mix had to be closely monitored for its water content. The formwork for the concrete was struck and reset on the night shift and the pours took place during the day. The delivery pipes were variously formed from short lengths or were telescopic and either removed one by one or by a slow gradual withdrawal during the pouring process.

After several years of tunnelling, the major construction work on *GUTE* was completed in 1957 and the central underground spaces were fitted out with extensive telecommunications and supporting electrical equipment (**Figure 9**). As an operational exchange it came to life on the 7 December 1958 when the first traffic was received at 8am. The project was a major undertaking but apparently achieved to plan: ‘it is worthy of mention that the installation was completed within one week of the original target date of 1 December 1958, which was agreed in May 1956.’⁶⁹ In operational configuration the core Guardian exchange comprised an approximate rectangle of four large interconnected spaces, with one elongated tunnel (A.T.8) stretching for approximately 120 metres under Back George Street towards Rutherford House (**Figure 2** above). A.T.8 which was divided into two floors, the upper half of this, the main chamber, housed telecommunications equipment to handle traffic from 1,488 incoming circuits. It was here that the familiar perforated vertical face of the main distribution frame (MDF) and the repeated racks of electromechanical switches, aesthetic icons of mid-century communications, were situated.

69] POEEJ (1959), p. 77.

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Figure 7. Original photography documenting the construction of the GUTE, dated June 1955. Survey work in progress on one of the smaller cable tunnels. (Source: Photograph by tunnel engineer Patrick Gough. Courtesy of George Coney.)



Figure 8. Original photograph documenting the construction of the GUTE, dated March 1956. The scale of the main equipment tunnel is evident and this was eventually subdivided to create two working levels. The formwork for concreting in the main tunnels was steel, but the connecting points between the tunnels were made by specialist joiners from timber. (Source: Photograph by tunnel engineer Patrick Gough. Courtesy of George Coney.)

The M.D.F. comprises 45 verticals, and an unusual feature of the frame is the use of connexion strips in place of Protectors H.C. and Test where the circuits are wholly underground; this should reduce fault liability. The switching equipment, consisting of some 219 racks is arranged symmetrically around an I.D.F of 67 verticals, reducing cable runs to a minimum. All cable and wire is p.v.c insulated. ... The trunking scheme employs first, second and third switching stages, all selectors being of the motor-uniselector group-selector type.⁷⁰

The lower level A.T.8 was partitioned into series of rooms for the use of personnel. Images and descriptions of rooms on the lower level serve as a reminder of the exchange's possible uses during atomic attack. The rooms were a series of chambers off a narrow corridor. One of these chambers was a kind of 'war room', described in a newspaper article in 1983 to be small and to contain a wall-sized map of Britain.⁷¹ According

⁷⁰] Michael Duffy, 'The truth about Manchester's nuclear bunker', *Manchester Evening News*, 22 March 1983, pp. 32-33.

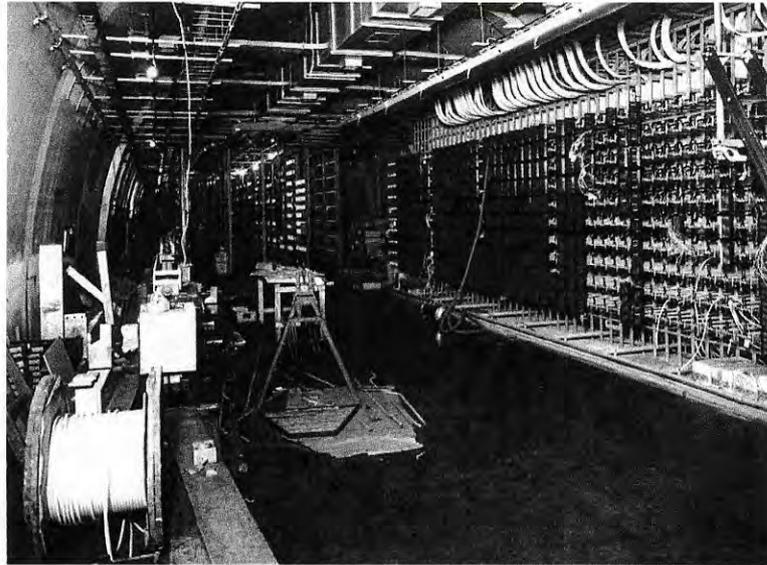
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Figure 9. View of racks of telecommunications equipments being installed in the top half of the main Apparatus Tunnel 8 in April 1958. (Source: Original photograph by tunnel engineer Patrick Gough. Scan courtesy of George Coney.)

to Keith Warrender's book this room also housed a safe containing instructions on how to operate the *GUTE* during an emergency.⁷² Other spaces included a first aid room, dining room, maintenance office, kitchen, male and female toilets and a cloakroom. Emergency food rations were reportedly refreshed around every sixteen months. A piano, pool table and a fish tank could be found in the recreation room and the piscine theme continued in the canteen, where Duffy observed an aquarium of tropical fish on his visit in 1983.⁷³ Mirrors on the walls are said to have been used to enhance the lighting and sense of space and emergency beds were also stored in the lower tunnel.⁷⁴

The other large interconnecting tunnels A.T. 3, 5 and 7 contained subsidiary equipment necessary for functional underground exchange,

71] Keith Warrender, *Below Manchester* (Timperley, Cheshire, 2009).

72] Duffy, 22 March 1983, pp.32-33.

73] Some sense of the condition of these rooms can be gained from 'hogshawrabbits' amateur video tour undertaken in 1996. See also the 1998 BBC Midlands Today news report inside *Anchor*, <www.youtube.com/watch?v=28e35wmElCY>.

74] 'Manchester trunk mechanisation', *Post Office Electrical Engineers Journal* (POEEJ), 52 (April 1959), p.77.

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along with supporting workspaces (see **Figure 2** above). The provision of electricity was elemental to GUTE operations and the 'power plant [was] of the "no-break" type incorporating a motor-alternator which, in the event of a mains failure, [was] run from a 240-volt battery until the prime-mover supply takes over. Three 279kW diesel-alternator sets provide a standby power supply in the event of mains failure. They incorporate[d] synchronizing gear so that the three sets can be run in parallel.'⁷⁵ It is known that two of the generators were manufactured by Crossley and were named *Jane* and *Marilyn*, apparently named after the 1950s icons Russell and Monroe. These were housed in upper floor of A.T.5 along with a third smaller, 'auto-start' electrical generator and associated switchgear and distribution-control cabinets. Connected to A.T.5 is a smaller side tunnel that served as the fuel store for the standby generators. A.T.3 contained electrical switchgear in the upper half and banks of lead acid batteries for emergency power in the lower floor. Lastly A.T.7 contained a substantial workshop area and technical stores, along with equipment associated with ventilation for the tunnel complex.

Beyond knowledge about the spaces and equipment there are no published details on the day-to-day operation of the exchange in 1960s, nor are there any photographs documenting the workers and activities in *GUTE*. Staffing was organised into three groupings of engineers according to responsibilities: automatic trunk switching, trunk test and repeater station, and lastly the 'power group' who maintained the tunnels. There is need for more research on the operational phase of the life of *GUTE*. The entire complex was distinctly functional not simply in the provision of the necessary equipment, but in the applied colour palette and material finishes of muted military beiges and greens, typical of 1950s Ministry of Works. The white light of the fluorescents seen in photographs and video has a stark quality befitting of the utilitarian nature of the spaces, but not very comforting or forgiving; as the staff levels were minimised in later years of operation it must have been particularly eerie to be the sole occupant of the tunnels.

In the warm summer months we were able to keep the temperature under control by chilling the air with a fridge plant as in was drawn into the complex and then again in the wintertime it was nice to be able to come in out of the cold due to the way in which the air could be recycled within the complex. ... I believe we all got on well for the most part – otherwise I would not have stayed down in the tunnel for 28 years!! There was a fully equipped workshop and many of the

75] Email message (undated) to George Coney from Malcolm Graham, Technical Officer, Level 1 Manager, *GUTE*, 1959-1988. Copy provided to the authors by George Coney.

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Power Engineers were very skilled men. If you needed expert advice on any DIY project, whether welding; plumbing; lathe skills; or any electrical matter, help and advice was always at hand. In my view it was a happy place in which to work.⁷⁶

While there is little detail on the operation of exchange through the 1960s and early 1970s there were several noteworthy events in relation to *GUTE* around the end of the decade. The most significant was the official announcement on 7 October 1968 by John Stonehouse, Postmaster General, of the existence of the *Guardian* tunnels. This act of declassification was reported in the *Guardian* newspaper under the headline, 'City kept ten-year telephone 'secret''⁷⁷. The occasion of Stonehouse's visit to Manchester was open a new surface exchange (we assume this was in Irwell House, adjacent to Dial House, Salford that was to augment *GUTE*). It is unclear why the D-Notice around the project was dropped at this time but mundane logic was expounded later that month in Parliamentary written answer by Stonehouse to a probing question from Frank Allaun then MP for Salford East and prominent anti-bomb campaigner:

The exchanges were provided as part of national civil defence planning and were consequently subject to a Defence Notice. Since the London "Kingsway", Birmingham "Anchor" and Manchester "Guardian" exchanges have now lost their defence significance, there is no longer any reason why knowledge of their existence should be withheld and this has now been released to the public.⁷⁸

Associated with the new telephone exchange was a short extension to the existing *Guardian* cable tunnel in Salford.⁷⁹ Built at the end of the 1960s it provided direct subterranean access into Irwell House but it seems its construction was not without incident. In January 1969 a fire occurred when workmen jointing cables accidentally set some petrol cans alight and firemen 'walked for more than a mile' to extinguish the

76] Michael Morris, 'City kept ten-year telephone secret', *The Guardian*, 8 October 1968, p.4. Similar newspaper articles appeared about *Anchor*, e.g. 'This is it - the hush hush never centre', *Birmingham Evening Mail*, 11 October 1968. While the *Kingsway* exchange was even the feature for 1 minute Pathe News report in 1968, 'Under London Trunk Telephone', <www.britishpathe.com/video/under-london-trunk-telephone/>.

77] Mr. Stonehouse, Postmaster-General, in House of Commons written answer, 21 October 1968. A version is available online at <http://hansard.millbanksystems.com/written_answers/1968/oct/21/underground-exchanges/>.

78] *Tunnels & Tunnelling*, Vol. 4(3), May 1972, p.200-201.

79] 'Fire alarm below ground', *The Guardian*, 4 January 1969, p.4.

blaze.⁸⁰ In the next year the problem was serious flooding which required significant pumping efforts to stem.⁸¹

GUTE in decline (1980s-2012)

The opening of Irwell House in Salford at the start of the 1970s provides a marker to the next phase of *GUTE* as its utility as major telephone exchange began to diminish. Through the 1980s there was rapid development in digital telecommunications, the existing switching and signal repeater equipment in the *GUTE* had undoubtedly come to the end of its operational life. The nature of the constrained tunnel location would also have mitigated against possibilities of large-scale upgrades and refurbishment.

Descriptions of the main working areas of the exchange tunnel are few and far between, Michael Duffy, a *Manchester Evening News* reporter paid a visit in 1983 in an attempt to dispel some of the mythology surrounding the installation. Duffy's article entitled 'The truth about Manchester's nuclear bunker'⁸² is a good example of a first hand account of the *GUTE* and also the enduring media interest in exposing secret sites. It should also be noted that the article was published six years before the fall of the Berlin Wall, generally marking the end of the Cold War and was written to engage readers of the newspaper. Duffy reported rumours claiming the tunnels were a nuclear shelter for the 'chosen few' during an attack, were reaching such a magnitude that the City Council had requested of Greater Manchester Council (GMC) that the exchange be opened as an emergency nuclear centre. (It is worth remembering there were renewed concerns about nuclear war in the early 1980s, prompted in part by the deployment American cruise missiles to bases in Britain as highlighted by the Greenham Common women's peace camp which started in 1981.) As Duffy recounted '...the Labour group on the GMC ruled that its leaders would refuse places offered to them in the Piccadilly Shelter'.⁸³ Although the *GUTE* was physically vulnerable to the nuclear attack and could not realistically have served as a civilian shelter, this appears to demonstrate a time when even the rumour of such was liable to engender resentment between the governing institutions and the general public.

80] 'Fight with flood 130 feet under city', *Manchester Evening News*, cited in Keith Warrender, *Underground Manchester* (Timperley, Cheshire, 2007).

81] Michael Duffy, 'The truth about Manchester's nuclear bunker', *Manchester Evening News*, 22 March 1983, pp. 32-33. Copy provided to the authors by George Coney.

82] Michael Duffy, 'Ready for the ultimate horror', *Manchester Evening News*, 8 April 1983, p.14.

83] Pers. comms. 5 June 2012 from a former GPO / BT employee with direct knowledge of *GUTE*.

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Duffy's newspaper account described the tunnels as 'an outdated product of the Cold War' and explained that the *GUTE* was not equipped to serve such a governmental function and was actually at risk of becoming obsolete for even basic telecommunications operations due to advances in digital exchange technology. According to a former BT Executive Officer, between 1973 and 1974 long term plans were prepared concerning digital operations for the next twenty years.⁸⁴ These directions included the decommissioning of the trunk unit in the *GUTE* and that the network be fully fibre-optic by 1991. Prior to his retirement in 1983, Roy Howard, then Planning Controller for BT, set about vigorously finding a new use for the *GUTE*, to no avail. He had considered that it may have had some value in advancing the Picc-Vic heavy rail tunnel project, but could not convince the Passenger Transport Executive (PTE) of such. The Greater Manchester Police were also approached to see if they had any 'Special Branch purposes' that would suit the site and the Greater Manchester Council (GMC) were averse to the associations with anything 'nuclear' as they were 'Working for a Nuclear Free City' at the time.⁸⁵ By his actions Howard had inadvertently stirred a hornets nest and measures were taken to publicise the fact that there was indeed no nuclear material or other atomic related activities within the complex. Howard retired in 1984 when the regional office closed, but high level interest in the disposal of the asset continued; BT Chairman (Sir) Ian Vallance is said to have walked the cable tunnel from Dial House to York House.⁸⁶

In 1996 there was an unauthorised weekend visit by a BT employee and his friend where a significant amount of amateur video filming of the main *GUTE* tunnels was shot. About one hour of the footage was originally made available on the Internet sometime in 2010 posted by user 'hogshawrabbits' on the website *YouTube*.⁸⁷ As far as we are aware this was the only publicly available film footage of the tunnels and exchange. It is handheld footage, which is at times poorly shot and with

84] Nuclear Free Local Authorities (NFLA) began in Manchester with a declaration of the City Council on 5 November 1980 to work to eliminate the threat of nuclear weapons. The City declared itself a 'Nuclear Free Zone' and called on other local governments in the North West of England to do the same. Cf <www.manchester.gov.uk/info/500002/council_policies_and_strategies/1130/nuclear_free_local_authorities/1>.

85] Pers. comms. 5 June 2012 from a former GPO / BT employee with direct knowledge of *GUTE*.

86] The original videos were removed and edited footage (with an approximate running time of twenty minutes) reappeared online early in 2012 only to be subsequently removed or made restricted access. At the time of writing copies of the videos could not be accessed, they were however downloaded and appeared as part of the *Infra_MANC* exhibition in February/March 2012 at CUBE Gallery, Portland Street, Manchester.

87] Peggy Kynaston, 'An undiscovered world beneath our feet', in *Forum. The newspaper of the Manchester Civic Society*, December 1997.

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only ambient lighting, but it does provide a fascinating detail on the size of different spaces of the *GUTE*, their condition and fittings in the mid 1990s. It also gives a good 'feel' for the *GUTE*. With careful study and listening to the audio commentary it is possible to trace out approximately the route these two visitors took around the exchange.

An authorised visit by the Manchester Civic Society in 1997 revealed more details concerning the working lives of the GPO personnel and described the accommodation and canteen rooms as 'very much Civil Service circa late 1960s'.⁸⁸ Shortly after this archaeologists and a professional photographer from English Heritage also conducted a photographic recording exercise for the National Monuments Record as part of their broader study of Cold War heritage sites.⁸⁹ While much of original telecommunications equipment seems to have been placed when the EH photographs were taken, the exchange had long since been decommissioned.

This pattern of opening-up the *GUTE*, with authorised access by journalists, urban conservationists and official archaeologists by the end of the 1990s would seem to indicate that the exchange had long since ceased to have a strategic national role and was no longer even serving a significant technical role for BT (except its use as a space for cabling beneath the city), or for anyone else, at that time and perhaps that the company was considering relinquishing its control of this piece of aging infrastructure. Permanent staffing underground ended at some point in late 1980s and shifted largely into a care and maintenance approach, with necessity to keep pumps working to prevent flooding. Indeed in spring 2002 stories in the local press, spurred in part by the release of original construction photographs taken by Patrick Gough⁹⁰, claimed that BT were 'looking to rent out some of the 25ft-wide sections of the underground kingdom and have started a massive refurbishment programme to ensure that the tunnels are safe for workers, or any company wishing to take the unique city space.'⁹¹ These speculative

88] Pers. comms. 23 January 2012 with Wayne Cocroft. A collection 26 of black and white photographs from this study of *GUTE*, taken by Tony Perry in July 1998, are publicly available from English Heritage, and currently accessible via their ViewFinder service, <<http://viewfinder.english-heritage.org.uk/>>, refs. AA98/02416 - 02441.

89] Scans of these photographs are available on George Coney's Guardian website, <<http://atomica.co.uk/guardian/>>.

90] Dianne Bourne, 'Going underground: Network of nuclear bunkers go up for rent', *Manchester Metro News*, 1 February 2002, p. 2-3. See also Dianne Bourne, 'World of tunnels: Patrick's snaps of nuclear bunkers', *Manchester Metro News*, 8 February 2002, p. 8-9. Copies provided to the authors by George Coney.

91] Although one could speculate that the tunnels may well have exceeded their operational design lifespan and their deteriorating conditions posing real difficulties for ongoing maintenance.

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plans for some kind of commercial re-use of the *GUTE* never come to anything and were likely completely quashed by the major fire in March 2004 that graphically highlighted the safety issues with people working in the tunnels, particularly in relation to evacuation. (BT has, however, subsequently tried to sell the *Kingsway* exchange tunnels in central London; see footnote 28 earlier.)

Now long redundant of its original function, and with the threat of nuclear war having receded into history, the *GUTE* could be perceived as merely a pointless subterranean void, nothing more than a curious architectural relic from the Cold War. This perception is not wholly true, as the tunnels continue to operate as a piece of vital infrastructure, allowing the information-age city to function. The underground network serves as an existing, secure space to install fibre-optic cables without forming new, deep and expensive excavations. This process allows the city to progress telecommunications advances with minimal disruption and greatly reduced financial costs. Communications infrastructure is integral to the smooth function of cities, and if anything such systems are becoming even more significant to facilitate everyday activities and enable places to operate on a global level serving to draw commercial validity to an urban area. There are no public details to document what is currently operational in the *GUTE* and it is only speculation that it remains a significant point of physical vulnerability for the region's digital network, hence BT's continued degree of secrecy and heightened security.

Aside from the inherent physical permanence of the *GUTE*,⁹² and its security from its subterranean position and constrained entry points, its function as a piece of infrastructure equates to cultural permanence through a widespread lack of technological comprehension (or even awareness) by the general public. Infrastructure, almost by definition, is about being invisible and ignored. Taking such underground systems for granted, assuming that such utilities are always 'on' and working, implies an image of permanence and stability. In contrast to this image of permanence and stability, systems of infrastructure are often delicately balanced, prone to failure, highlighting the vulnerability of urban processes that rely heavily upon them. Most infrastructures also require continuous monitoring (as failures have serious consequences) and careful maintenance by a small but highly skilled engineering labour force.

The cultural perception of the *GUTE* is partly based on how much people understand the operational system or what depends upon it. As

92] In a historical context for Manchester, see Roy Frost, *Electricity in Manchester* (1993). More generally, see Thomas P. Hughes, *Networks of Power: Electrification in Western Society 1880-1930* (Baltimore, 1983).

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with many complex technologies, the user relies only on the performance of the system, with little or no understanding of what makes up its constituent parts or how it works. (The enormous electricity system is the most archetypal case.)⁹³ Alongside the secrecy during construction of the *GUTE* and its first decade of operation, the telecommunication network has also become 'culturally' invisible as a piece of infrastructure. Sociologists of science, such as Susan Leigh Star, describe how one of the defining characteristics of technological systems, which achieve the cultural status of infrastructure, is that they become 'visible upon breakdown'.⁹⁴ *GUTE*'s reawakening through disruption was vividly realised in the 2004 Manchester 'phone crisis'. A fire on 29 March in part of the *GUTE* tunnel network caused damage to key cables and knocked out some 130,000 telephone lines⁹⁵ affecting many services that rely on the functioning of this infrastructure. The fire broke at 2.30am about 150m from the base of the York Street shaft,⁹⁶ (though reports were inaccurate in describing the access as via Rutherford House, the lack of information was evident as the news teams rushed to provide details the breaking story). Apparently fire alarms in the *GUTE* were not operable and apparently 'the fire service were not alerted until 3.28am, when a worker at a Chinese restaurant saw black smoke billowing out of a tunnel vent in George Street and rang 999'.⁹⁷

We know something of the circumstances of the fire from public court documents arising from subsequent legal action between the contractor and their insurer over liability.⁹⁸ It seems a quite substantial project had been ongoing to remove asbestos from the cable tunnels which has required construction of polythene screening in the tunnel crossover section, under the core of *GUTE*, to create a sealed work space.

93] Susan Star and Geoffrey Bowker, 'How to infrastructure', in Lievrouw, L.A. and Livingstone, S. (eds.) *Handbook of New Media: Social shaping and social consequences of ICTs* (London, 2006), p.231.

94] 'Fire cuts off 130,000 phone lines', *BBC News* online, 29 March 2004, <<http://news.bbc.co.uk/1/hi/england/manchester/3577799.stm>> [Accessed 12 January 2012].

95] 'Telephone chaos Day 6', *BBC News* online, 3 April 2004, <www.bbc.co.uk/manchester/have_your_say/2004/03/31/phones_day3.shtml> [Accessed 12 January 2012].

96] Neal Keeling, 'Alarm blunder' in phone lines blaze', *Manchester Evening News*, 9 April 2004, <http://menmedia.co.uk/manchestereveningnews/news/s/86/86872_alarm_blunder_in_phone_lines_blaze.html>.

97] 'Aspen Insurance UK Ltd and others V Pectel Ltd', *Queen's Bench Division (Commercial Court)*, [2008] EWHC 2804 (Comm). 2008 Folio 24, (Transcript). <www.bailii.org/ew/cases/EWHC/Comm/2008/2804.html>

98] *Ibid*, p.5.

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'It has been pleaded by BT that the cause of the fire was an electrical fault, the most likely source of ignition being an incendive fault associated with the fluorescent light fitting or with the cabling to that fitting. It has been alleged that in the course of the construction of the airlock the Defendant damaged the light fitting or the cable (by cutting or otherwise damaging it while cutting the plastic sheeting or adhesive tape used to construct the tight air seal). This caused electrical arcing or resistive heating to occur which gave rise to a risk of ignition over time. Further, the materials used by the Defendant ignited easily.'⁹⁹

This has clear resonance to the January 1969 fire in cable tunnel, said to have been caused by contractors. However the scale of damage seems to have been much larger in 2004 fire – BT was seeking £15 million in compensation from its contractors¹⁰⁰ – and the wider impact on telecommunications was significant. Companies as far away as Sweden, who had their websites physically hosted by Manchester providers, were affected and the nuanced complexity of the telecommunications system was highlighted by a street in Macclesfield where lines were out on one side of the road and working normally on the other.¹⁰¹ Failure of this system cost Manchester businesses approximately £4.5million a day,¹⁰² highlighting the continued technical relevance of the tunnels of the *GUTE* in the contemporary city. This is exemplar of the vulnerability that originates from the reliance of infrastructural networks on other uncontrollable networks and can result in countless ways in which failures may cascade. In the case of the Manchester 'phone crisis' parts of the emergency services were unable to take 999 calls or maintain communication with staff resulting in the deployment of extra units of police across the region. Many businesses struggled to operate without telecommunications and banks in the city were unable to process transactions, affecting wider financial systems.

The depth of reliance on infrastructure to the daily unfolding of contemporary urban life in industrialised countries and the disruption evident upon failure supposedly makes such networks possible targets for terrorist attack. A pervasive fear of a 'securocratic'¹⁰³ war has led to

99] Ibid, p.16.

100] Richard Tyler, 'BT fire brings chaos to Manchester', *The Telegraph*, 5 April 2004, <www.telegraph.co.uk/finance/yourbusiness/2882204/BT-fire-brings-chaos-to-Manchester.html> [Accessed 12 January 2012].

101] Bill Goodwin, 'Fire in BT cable tunnel paralyses Manchester business community', *Computer Weekly*, 5 April 2004, <www.computerweekly.com/news/2240055446/Fire-in-BT-cable-tunnel-paralyses-Manchester-business-community> [Accessed 12 January 2012].

102] Stephen Graham, *Disrupted Cities: When Infrastructure Fails* (London, 2010), p. 17.

103] Mike Slingsby, 'Raid on tunnel network sparked big terror alert', *Manchester Evening News*, 13 February 2007, <http://menmedia.co.uk/manchestereveningnews/news/s/236056_raid_on_tunnel_network_sparked_big_terror_alert_> [Accessed 12 January 2012].

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everyday failures of infrastructures to initially being interpreted as terrorism related. This theory manifested itself on 21 July 2005 when the *GUTE* was broken into on the same day as the failed bombing attempts on London. Police treated the break-in as a terrorist attack and deployed multiple units to the tunnels: 'Officers were tipped off after British Telecom received complaints about problems with phone lines in the city. It was discovered there had been a break-in at a small BT building in Islington Street, Salford.'¹⁰⁴ The forensic team reportedly found a discarded cigarette butt and subsequent DNA analysis provided evidence used to secure a conviction for theft against a 29 year old Salford man. Viewing the *GUTE* as a possible terrorist target likely explains part of the motive for the significantly improved security features around the tunnel exits (see **Figure 5** above).¹⁰⁵ Yet there is little or no evidence that terrorists have taken an active interest in targeting underground infrastructure – Hollywood movie plot scenarios and CIA security discourse aside.

In the centre of Manchester pedestrian connections to the *GUTE* have altered in response to the rationalisation of the BT estate. York House was sold off by BT and the connections to Rutherford House were sealed and secured, it now accommodates various companies in leasable office space. Rutherford House, the site of one of two central shafts to the Guardian Exchange, used to contain British Telecom offices and extensive telecommunications equipment. It became surplus to requirements and was sold off to Bruntwood in 2005 and renamed *The Exchange*.¹⁰⁶ From the upper ground floor and above it is now a commercial office building, following a refurbishment by Roger Stephenson Architects in 2008, the ground floor and basement are still used by BT. Evidence of physical connections to the underground exchange can be seen on the façade of the building where maintained signage indicates the position of service risers and suggests they are still active.¹⁰⁷

104] Some details of the changes are given in the planning application for Lockton Close shaft from April 2006, ref. 079156/FO/2006/N2. Available through the Public Access System, <<http://pa.manchester.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=IXNX7EBCK3000>>

105] <www.bruntwood.co.uk/Sites/Bruntwood/documents/building_brochures/The%20Exchange_brochure.pdf>. It is reported that BT have retained the freehold and have exclusive leasehold to the ground floor and basement levels.

106] In recent months this signage has been removed or obscured. It is not known by whom or with what purpose this action has occurred. 107] Michael Duffy, 'The truth about Manchester's nuclear bunker', *Manchester Evening News*, 22 March 1983, pp. 32-33.

107] Michael Duffy, 'The truth about Manchester's nuclear bunker', *Manchester Evening News*, 22 March 1983, pp. 32-33.

54 *Manchester's Guardian Underground Telephone Exchange***Conclusion - tunnel visions**

Whilst the *Manchester Evening News* journalist Michael Duffy mentioned the location and physical design of the *GUTE* was still important for communications in the city, and despite his efforts to dispel the growing folklore focused on nature of the tunnels, 'The bunker myth is now wearing a bit thin on the 20 strong band of engineers who man the exchange round the clock',¹⁰⁸ speculation persisted and urban legends have proliferated subsequently. Despite the real mundane nature of these dank tunnels, they have, over recent decades, and in an era of *X-Files* conspiracies and government cover-ups, acquired a certain mythology particularly amongst a subcultures concerned with infiltrating hidden and normally inaccessible spaces of the city. The vision of this unorthodox subculture, broadly known as 'Urban Explorers', revolves around inbred fascination with 'going where you're not supposed to go', mixed with a degree of adrenalin from the real risks of physical harm and potential legal consequences associated with accessing spaces like the *GUTE*.¹⁰⁹ As well as real world escapades this group expound their actions in online forums and photographic essays. There are individuals who claim to have made limited and unsanctioned forays down the *GUTE* and have produced photographs to corroborate their account.¹¹⁰ Other discourse includes

[108] For academic discussion on urban explorers, see Luke Bennett, 'Bunkerology case study in the theory and practice of urban exploration', *Environment and Planning D: Society and Space*, 2011, 29, pages 421-34; Bradley L. Garrett, 'Urban explorers: Quests for myth, mystery and meaning', *Geography Compass*, 2010, 4(10), pages 1448-61.

[109] For example 'Moose73's posting about 'BT Guardian Manchester' on the *28dayslater - The UK UE Urbex Urban Exploration Forums*, 5 January 2008, <<http://www.28dayslater.co.uk/forums/showthread.php?t=25365>> [Accessed 23 January 2012]. The original photographs in the forum posting are no longer visible, but the textual account remains. Richard Brook is also familiar with a credible first hand account of unsanctioned access to the cable tunnels in Ardwick and exit in Salford undertaken in 2001. One of the perpetrators, who now works for the civil service, was asked about this event and now refers to it as 'a misjudged student prank'.]

[110] With respect to the popular allure of 'hidden spaces' under the city, the Manchester Forums, initiated by local photographer Aidan O'Rourke, has a thread relating to underground Manchester which has received over 100,000 hits (in comparison to the second most popular thread on this forum has only 13,000), see <www.aidan.co.uk/forums/showthread.php?t=29> [Accessed 23 January 2012]. Local author Keith Warrender has published two books about the subterranean spaces of Manchester that have apparently sold thousands of copies (*Underground Manchester*, 2007; *Below Manchester*, 2009.) and Andrew Brooks curated a popular photography exhibition at Urbis entitled *Reality Hack: Hidden Manchester*, from December 2008 to July 2009. A number of local history guides offer underground walking tours, see review blog post by Mark Rainey, <<http://edifyingdiscourse.wordpress.com/2011/02/16/secrets-of-the-city-urbis-city-tours-guide/>>, 16 February 2011.

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one-upmanship concerning who has the most 'elite' knowledge about entry points, security protection or is able to present new source material for collective research purposes. This created version of the tunnels not only perceives them as some kind of holy grail of this particular subculture, it is also able to sustain a form of myth attached to a mundane piece of fifty year old infrastructure. Maybe the only way to finally put them to rest is to open a visitor centre and offer guided tours.¹¹¹

Acknowledgments

This article is a preliminary summary of *Guardian Underground Telephone Exchange* from publicly available sources. We acknowledge that there is more detail to excavate on the construction, operation and current state of the Guardian tunnels and we welcome further information. Our research was undertaken for the *Infra_MANC* exhibition (held in RIBA Hub / CUBE Gallery, February-March 2012) and drew, in parts, upon *Permanent Structure Redundant Programme: An enquiry into how the perception of the 'Guardian Underground Telephone Exchange'*, an unpublished dissertation submitted to the Manchester School of Architecture for the degree of Bachelor of Architecture by Nicholas J. Mitchell, 2010. We are grateful to Nicholas Mitchell for permission to use his work. We would also like to acknowledge George Coney for his openness in sharing his extensive digital collection of *GUTE* photographs and materials relating to the tunnels in response to a simple email sent by the authors. He pioneered public investigation of *GUTE* through his website cybertron <<http://atomica.co.uk/guardian/>>. Nick Catford and Richard Lamont (Subterranea Britannica), and Wayne Cocroft (English Heritage) provided prompt and positive responses to our 'underground' email queries. Helpful information and comments on the research were received from people with first hand experience of *GUTE* most especially Malcolm Graham.

Authors would welcome further details on the design, construction and operation of *GUTE*. Email: richard.brook@mmu.ac.uk or m.dodge@manchester.ac.uk