

Helicopter dreaming: the unrealised plans for city centre heliports in the post-war period

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The “concept for a high-speed personal helicopter was an early expression of what would become in the years immediately after World War II an extremely popular vision of the future. To many observers, the helicopter seemed to promise wings for the city dwellers who might land atop their apartments or office buildings. Unfortunately, helicopters were – and remain – difficult to fly, relatively unsafe, noisy, and energy inefficient” (Corn and Horrigan, 1984, p. 100).

This paper considers a time in the middle of the twentieth century when the helicopter was a new and thoroughly exciting form of flying that held great promise to revolutionise urban transportation. The focus is on the development of plans to accommodate passenger helicopters effectively into British cities and, in the context of Birmingham and London, how the industry experts, property developers, architects and politicians worked to plan new heliport facilities in the city centre during the 1950s.

Helicopter travel concept and urbanism

The notion of flight via a rapidly rotating wing is old, perhaps in the minds of ancient Greek philosophers and dating back at least to Leonardo da Vinci in the fifteenth century with his now widely-known and intriguing sketch of a prototypical helicopter. Practical development had to wait, however, until the late 1930s when sufficiently light and powerful piston engines were available and allowed aircraft designers to go beyond autogyro planes to true helicopters, capable of vertical lift and forward flight, using the rotor blades alone. Despite more than half a century of subsequent technical adaptation and cultural assimilation, the helicopter remains a distinctive flying vehicle, still capable of eliciting response when seen in the skies. The sight – and sound – of a ‘copter hovering low overhead still stops people in their tracks.

The helicopter has some unique characteristics as a mode of transportation that have long promised – but not yet delivered – radical changes to urban form and structure. The key advantage over surface modes of transportation is the speed and ability to traverse *above* space. As Almy succinctly noted in 1996, “[t]he shortest distance between two points ... is a straight line which usually can be travelled only by flying via helicopter” (quoted in Cwerner, 2009, p, 226). As has become evident in the police chases screened on television, the helicopter can easily outpace even the fastest, most determined driver who is tied to road spaces. The promise to be able to rise above congested city streets is appealing, with perceived advantages for personal travel of rapidity, anonymity and security. The helicopter’s superiority over fixed-wing aircraft is its ability to take off and land vertically in a relatively small space and thereby offer the flexibility of point-to-point journeys. Here we see the helicopter’s fundamental

affordances: for rapid, direct personal travel that breaks apart the collective journey tied to trains on rails or airliners and long runways.

To make the most of the beneficial characteristics of helicopter flight, the aircraft requires its own dedicated spaces in the city to land safely, unload, park and refuel. These are known as heliports or helidromes and are distinct from simple helipads for landing.

“The helidrome is a cleared space, an absence of obstacles or structures that could hinder the aircraft. It is designed so that the helicopter is free to fly safely. It ranges from a green pasture to a flat roof, and it seems characterised by the absence of architecture rather than its presence” 9de Voogt, 2007, p. 8).

In some senses the heliport is the most notable physical feature of virtual flight in the urban landscape. There are, however, planning and architectural design challenges for inserting larger heliports effectively into complex and multi-functional urban fabric; although the helicopter seems to receive little coverage in the planning literature (but see Branch, 1964; Cwerner, 2009; Finch, 1966; de Voogt, 2007). While airports are almost invariably located on the edge of cities, at a distance from most of the population and in space open to the skies, heliports need to be centrally located to exploit the point-to-point rapidity of vertical flight. This logic of location makes the size of any proposed site for a heliport hard to justify in commercial terms on landing fees alone, and it is also bound up in the difficulty of ensuring that the pad has an unobstructed approach. The presence of a heliport in a populated area has been known to be associated with issues of noise disturbance and perceptions of operational safety (for what remain ‘specialised’ machines in the eyes of the public). The risks of helicopters flying, at relatively low levels, over cities was vividly highlighted by the January 2013 crash in London when the aircraft struck a construction crane which was shrouded in fog.

The nature of the heliport and its potential architectural realisation is little considered in academic literature, especially in relation to the lionised status of the airport, which has become emblematic for major cities connected into global network of flows and indeed compared to cities themselves (see Bouman, 1996; Kasarda and Lindsay, 2011; Koolhaas, 1995).

The heliport is often an afterthought and the helicopter remains a mechanical oddity, usually lacking the sleek aesthetics of the airliners or the luxury connotations of private jets. It has only a very marginal role in most of our lives. Despite the hopes of enthusiasts and entrepreneurs, the helicopter remains, stubbornly, a socially exclusive mode of transport, most evident in specialist tasks (particularly police surveillance and emergency response) and in niche environments (such as transporting workers to oil rigs and other inaccessible sites). Most people’s first-hand experience of a helicopter flight is as an occasional recreational outing.

Whilst the real practical application of the helicopter today is undoubtedly limited, the capacity to fly remains deeply appealing to ground-dwelling humans. Elemental to the fascination of the helicopter is that it seems to promise direct point-to-point *personal* flight. Such aerial travel was shown in the popular 1930s science fiction film *Things to Come* and was envisaged by Aldous Huxley in his prophetic 1932 novel *Brave New World*, where personal helicopters are owned by the élite to move above the social masses (Figure 1). More broadly, in the heady days of the American consumer boom and the ‘infinite future’ of post-war suburbanisation, some prophesied that helicopters,



Figure 1. This cover image of a French science magazine from 1946 is emblematic of the early imagination about what vertical flight might encompass (authors' collection.)

like the automobile, would come to find a place in every garage, enabling the successfully businessman to fly from his home in the country to the city office.

There are social consequences to the use of helicopters to overcome space. While we do not now have widespread, personal helicopter use – and certainly not the science-fiction fantasies of heli-car – the accessibility of private modes of flight has effects on the mobility of few and the rights of the many. The helicopter is fundamentally undemocratic. It has been, and remains, undoubtedly a transport tool for the privileged and its enables elites to be socially exclusive via the bypassing of the spaces of inequality that their actions help to create and to perpetuate. This is well illustrated in Saul Cwerner's analysis of the extensive use of personal helicopters in São Paulo,

Brazil. As he notes: “[i]t is true that helicopter travel perpetuates and, in some respect, symbolises, the social differences that are inscribed in architecture and urbanism” (Cwerner, 2009, p. 236). The dialectical nature of private exploitation of the common resource of the airspace above the city is well illustrated by the issue of noise disturbance. As was noted many decades ago: “[i]f large numbers of executives took to flying by helicopter in London, life would become unpleasant for many people working there” (Harding, 1966, p. 360). To benefit the few able to afford to fly above, one must penalise the many left below. Thus we should resist the inherently utopian rhetoric of the ‘freedom of the skies’ promulgated by the aviation industry by highlighting the capacity of the helicopter to engender inequality across urban space.

The post-war promise of routine helicopter travel

After the Second World War the helicopter quite rapidly emerged from being an experimental machine that was fundamentally precarious and often downright dangerous to even attempt to fly, to a more stable and airworthy mode of transport. As helicopters became reliable and capable, people saw that they could begin to plan appropriate services and schedules. As the British helicopter matured, with several competing aircraft manufacturers, it emerged, in the 1950s, as one of key icons of post-war futurism, promising the imminent reality of mass inter-city flight and all of its utopian possibilities.

Throughout the 1950s and early 1960s, plans were advanced in many British cities for the centrally-located heliports required to bring the new flying craft safely into the heart of commercial districts, and the appeal of rooftop landing pads was readily apparent in a significant number of proposals. As one MP noted in a Parliamentary debate on heliports in 1953:

“I believe that we are on the threshold of a helicopter age in Britain for internal passenger transport. ... The point that I wish to emphasise is that only by the erection of elevated stations in the centre of our principal cities can we gain the maximum benefit from all the time-saving potentialities of these brilliant little machines” (Nabarro, 1953).

Thinking about how best to handle helicopter landing sites in the post-war period followed several decades of speculation by urbanists on how the emergence of mass aeromobility, by dirigibles and propeller planes, could be integrated into the fabric of cities as an effective mode of transport for both local trips and long-distance travel. Rooftop heliports are reminiscent of earlier ideas to use of skyscrapers to tether and transport passengers on to the giant airships of the 1920s and 1930s. They also relate to earlier fanciful schemes for elevated landing strips between towers and platforms built above open spaces such as parks and rivers (see Bruegmann, 1996).

Much of the interest was focused on London, as the place with greatest demand for likely helicopter services. Through the 1950s, multiple schemes were proposed and developed for heliports in a wide array of locations across the centre of London. We have noted at least 15 different sites put forward with plausible proposals, including adding heli-decks on the roofs of all mainline rail stations, building landing platforms over various Thames bridges and above new wholesale markets. This forward-looking activity was partly in response to missives coming from the Ministry of Civil Transport to city authorities to prepare sites for helicopter services (see House of Commons, 1953). An official report of the Interdepartmental Helicopter Committee from 1951 concluded that “operation between the centres of towns and cities is essential and feasible. Operated in this way, the helicopter will offer a high

degree of public convenience and time saving advantages over all other forms of transport for distances between 50 and 300 miles” (Ministry of Civil Aviation, 1951, p. 13). In a commentary in the *Manchester Guardian* on the potential for regular helicopter flights between major British cities, the correspondent noted that

“... the convenience and economy of any such service will call for a city landing ground almost as centrally sited as the main railway stations. News that the siting of a Manchester helicopter station is shortly to be discussed with the specialists of the BEA [British European Airlines] ... gives further assurance that an appropriate space is likely to be earmarked against the needs of a new service from which the city could hardly be excluded” (*Manchester Guardian*, 1951, p. 6).

Of the more elaborate proposals advanced in the early 1950s, one was for a huge ‘helidrome’ to be built on stilts above Charing Cross train station¹ (Figure 2); another concerned heliport provision in relation to the large-scale development of the South Bank site after the closure of the Festival of Britain (*Flight Magazine*, 1952a, pp. 504-505). The idea was floated in favour of another rooftop solution placed upon Waterloo train station in 1953, although it was seen as more problematic being further from the river and in a more densely built-up area (*Flight Magazine*, 1953b, p. 573). Nearly a decade later, in 1961 the architect Charles Glover advanced a scheme to relocate the wholesale market from Covent Garden to a new building above the railway sides north of Kings Cross, which would have included a rooftop heliport (Rowntree, 1961, p. 5).² It is unclear how realistic or realisable the schemes for Waterloo, new Covent Garden market or Charing Cross stations were, and they may have been architectural dreams in a similar mould to the 1930s schemes for rooftop landing strips for aeroplanes in the middle of London.³

More serious consideration of the need for, and the siting of, a heliport in central London was undertaken by an official Ministry of Aviation expert panel in the late 1950s. Its findings were presented in 1961 in a substantial document, with supporting data and maps (Ministry of Aviation, 1961). The underlying thinking was summarised as following:

“[s]ince the helicopter’s appeal depends on saving time, the heliport should be brought as close as possible to the main source and destination of a substantial proportion of the traffic. ...it should not be much more than a quarter of an hour from Grosvenor Sq, and ideally, between the West End and the City (p. 4).

In its deliberations, the committee had formally evaluated nine different sites capable of handling routine helicopter services and they selected three as the most

¹ The scheme was apparently initially advanced by Norman Dodds MP in May 1951 based on design work by the architects Aslan and Freeman [cf. *Flight Magazine*, 1953a, p. 10] and was featured prominently in a double page spread in *The Illustrated London News* [1952, pp.170-171].

² Glover’s scheme is featured in a contemporaneous *Pathé News* report titled “Market Report”, an online copy of which is available at <www.britishpathe.com/video/market-report>.

³ In 1931 the architect Charles Glover advanced a fanciful idea for a massive wheel shaped airport actually constructed over and above existing buildings in Kings Cross area (*Illustrated London News*, 1931, pp.956-957). A few years later the municipal engineer Charles Frobisher proposed the notion of rotating steel decks high above the city for handling planes. He developed the idea sufficiently for it to be patented in July 1934 as “Improvements in and relating to elevated centrally pivoted rotating aerodromes or airport landing grounds” (ref. GB413773a).

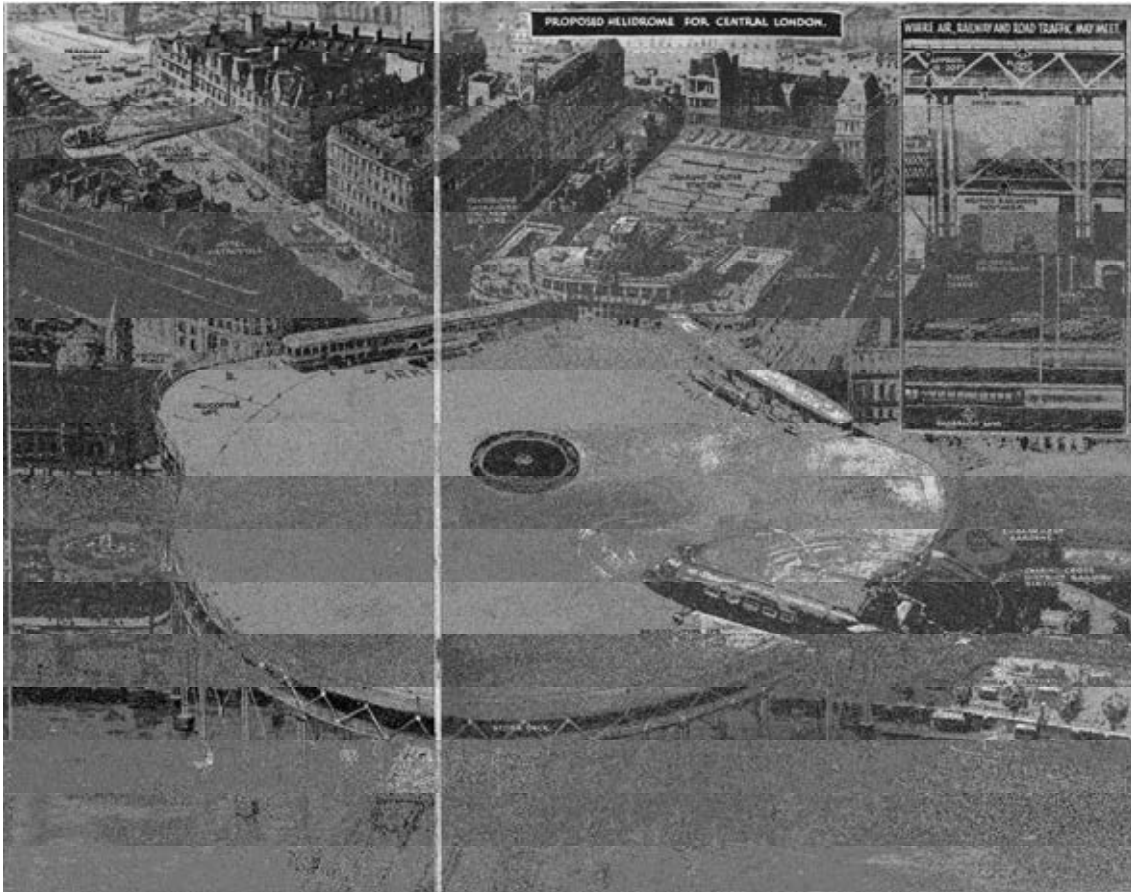


Figure 2. Publicity drawing of the proposed helidrome over Charing Cross station, comprising a 300ft plus square armour plated concrete pad raised about 100ft above the existing train tracks and spreading out across surrounding roads and ground structures. Below the main platform was to be a secondary deck for helicopter storage and maintenance. The helidrome position supposedly would allow for safe, unobstructed approach along the Thames (*Illustrated London News*, 2 February, 1953, pp. 170-171. Scanned copy courtesy of John Weedy, www.iln.org.uk).

viable: Nine Elms goods yard, Cannon Street Station and St. Katharine Docks. Each of these sites had a riverside aspect, as the Thames was seen to offer a safe corridor along the water. None of these sites were developed as a helicopter station. In the end a supposedly temporary helipad was erected as a platform cantilevered out over the River Thames at Battersea, opening in April 1959; it remains in operation⁴ (Figure 3). The 1961 report was probably the zenith for governmental discussion on the need for new large city-centre heliports, and the idea of wide-scale use of helicopters for civil transport began to recede from then onwards.

It is apparent that helipads on the top of buildings, while being conceived in later years, were not actually constructed; and are not common as perhaps is popularly imagined. The roofs of skyscrapers are not routinely dotted with the 'H' landing signs. This is due to the lack of demand and financial feasibility, perceived safety risks and security concerns [significantly enhanced post 9-11], along with pragmatic reasons in that many

⁴ Called London Heliport, <<http://www.londonheliport.co.uk/>>.



Figure 3. The Westland Heliport at Battersea shown in an explanatory drawing from its planning in the late 1950s (Helicopter Foundation International, historical archive, <<http://archives.rotor.com>>).

roofs are too small or oddly shaped, and that the space is often required for HVAC machinery and valuable telecommunications equipment. None of the tall buildings in any British city centre are equipped with a helipad available for general purpose travel to the best of our knowledge.

Perhaps the most iconic skyscraper helipad – celebrated in dramatic photographs of helicopters swooping into land – was located on the 60-storey Pan Am Building in midtown Manhattan, by Gropius and Belluschi (Figure 4).⁵ This is no longer in use and is forever known for an accident that occurred in 1977. The helipad had opened in 1965 and operated shuttle flights to nearby airports, but closed in 1968 as it was unprofitable (de Voogt, 2007, p. 44). The pad was reactivated for flights in February 1977 but in May that year a stationary helicopter suffered a mechanical failure in its landing gear, collapsed to the deck, and one of the rotor blades broke free. “Whirling like a gigantic boomerang the blade struck four people on the rooftop land pad, killing three instantly, then plunged over the skyscraper’s west parapet. ... One piece of blade continued to fall, whirling onto Madison Avenue and killing a woman walking on Madison and 43rd Street shortly after 5.30pm” (*The New York Times*, 1977, p. 1). The helipad was permanently closed after the incident.

⁵ See Clausen (2005) for details on the planning and architecture of this controversial building.

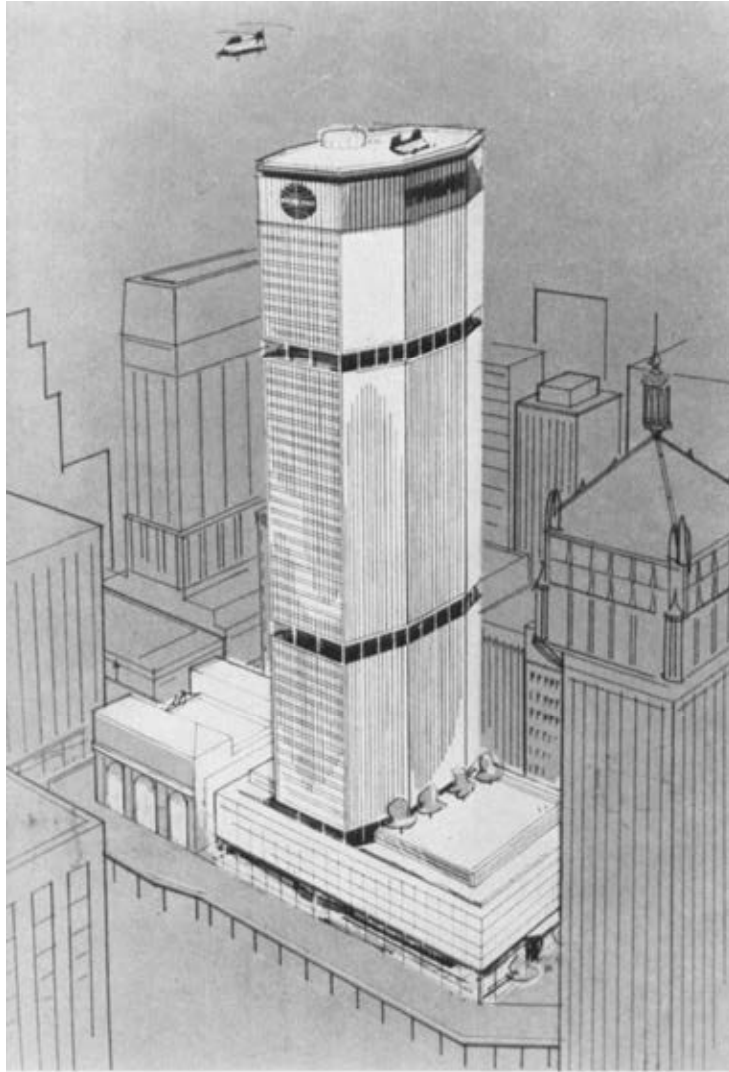


Figure 4. Design sketch for distinctive form the Pan Am building, illustrating its celebrated capability to handle helicopter landings on the flat roof deck (Baur, 1963, p. 96.)

Tentative steps toward passenger transport services

The major concern by end of the 1950s was not really the physical architecture to support helicopters, but the need to develop an economic model that would make regular passenger services profitable for airlines. While there was hope of putting together a plausible network of scheduled inter-city flights in the UK at the start of the 1950s (Figure 5), the financial justification proved more difficult due to the relatively small size and inefficiency of helicopters available at the time. There was considerable anticipation of the successful development of much larger twin-engine machines which would arguably permit safer operations over built-up areas and, crucially, have sufficient load-carrying capacity to lower the cost per passenger mile. In 1952 BEA's chief executive stated that its broad requirements for commercial viable services were for "a large multi-engined helicopter capable of cruising at not less than 150 mph and offering between 40-70 passenger seats by 1960" (*Flight Magazine*, 1952b, p.621).

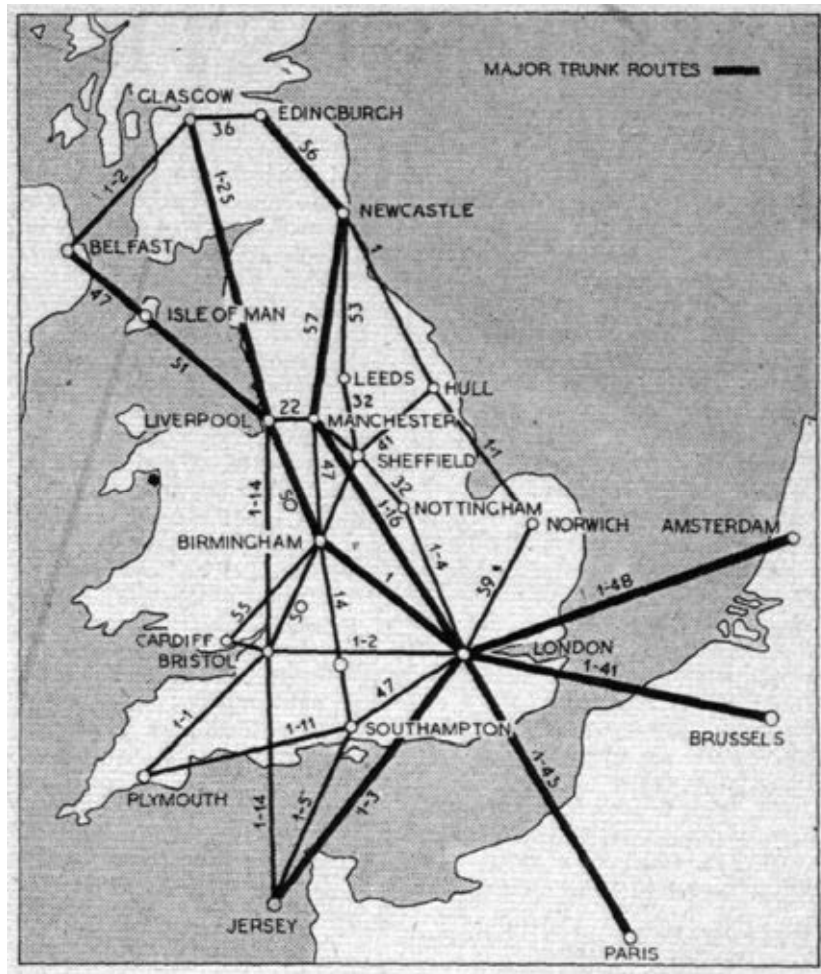


Figure 5. Outline network of inter-city helicopter services proposed at the start of the 1950s for an anticipated operation of large aircraft capable of carrying 48 passengers. The numbers on the route lines represented notional flight times assuming the helicopter flying at 160 mph (*Flight Magazine*, 1952b, p. 622).

Beginning in 1950, BEA undertook several long-distance trial services for paying passengers. The ambition was to see how helicopters could become more than personal air taxis, replacing private motorcars for *ad hoc* journeys and to develop scheduled services, like buses of the skies. The first experiment began on 1 June 1950, with a daily service between Liverpool and Cardiff, plus a request stop at Wrexham to collect any passengers that wished to join.⁶ The service operated for just under a year, and was used by only 819 passengers (*Flight Magazine*, 1952b, p. 621). The route of the second trial was a more obvious choice, flying between the two major centres of population in Britain. BEA commenced a service linking Birmingham and London in June 1951. There were three scheduled flights a day, with tickets costing £2 10s for a single, £4 10s return (*Flight Magazine*, 1951, p. 683). At the Birmingham end the helicopters operated from a dedicated site, built on a recreation ground, at Hay Mills, about three miles east of the city centre. Flights connected to Northolt Airport in the outer suburbs of West London and then onwards to Heathrow Airport. The Birmingham 'rotorstation' at Hay Mills was described thus: "[i]t had two asphalt touch-down points, a small wooden traffic building, and was the first special

⁶ There is a *Pathé News* report on this start of this service, see <www.britishpathe.com/video/helicopter-service/query/Speke>.

helicopter station used by B.E.A.” (*Flight Magazine*, 1956, p. 189) (Figure 6). It was a crude building and pragmatic facility, but it is worth remembering that in the early 1950s most airports were themselves much smaller in scale and less architecturally elaborate than we might imagine. It is less obvious why Hay Mills was selected as a site. The proposition of a suburban heliport seems nonsensical and it was only a couple of miles away from Birmingham’s existing airport at Elmdon. The location probably matched the ‘make-do’ circumstances of the time, contingent on available land that was vaguely suitable (i.e. council owned, flat and expansive, with open approaches, to safely handle these unfamiliar aircraft). The journey between Hay Mills and Northolt took about 70 minutes in small Westland-Sikorsky S-51 helicopters, which could only carry 3 or 4 passengers at a time. Despite positive press coverage of the opening of the service and enthusiastic support for, and patronage of, the service by Sir Gerald Nabarro, (‘maverick’) MP for Kidderminster, the flights stopped in April 1952 (House of Commons, 1952).⁷



Figure 6. Aerial image of the Hay Mills rotor station, probably 1951. The Sikorsky S-51 helicopter was manufactured under license in Britain by Westland and called the Dragonfly (Helicopter Foundation International, historical archive, <<http://archives.rotor.com>>).

These were trial services, required government subsidies to operate and were often under-used. They were also fundamentally ineffective in testing the *raison d’être* of the helicopter that it could take off from the centre of towns. Indeed this point was flagged in a short report in *The Times*, noting that the Birmingham-London service represented only “an intermediate stage between carrying passengers from airport to airport and the

⁷ Nabarro noted in his speech in the House of Commons debate on ‘Civil Aviation’, 16 July 1952: “If I may say so with due modesty, I think I am the only Member of the House of Commons who has been issued by the Vote Office with a helicopter voucher book for travel to and from my home in Birmingham.”

ultimate aim of direct services between city centres” (*The Times*, 1951, p. 4). From the reporting of these trials it would appear that their aim was to evaluate the machines and flight systems (navigation controls, autopilots, air traffic control) and not really about building a robust business case for inter-city routine helicopter services.

Our preliminary research suggests that once the flights out of Hay Mills ceased, there was no further progress in developing a centrally-located heliport in Birmingham in the 1950s. The Birmingham City Corporation was much less active in this regard than its counterparts in Liverpool and Manchester.⁸ There is reference to a heliport as part of speculative plans in the early 1960s for a £21m redevelopment for the then moribund Snow Hill railway station. The scheme was being advanced by City Wall Properties Ltd. with the intention “to develop the 20-acre site over and alongside Snow Hill station, which would be transformed into the most modern railway station in Europe with the hotels, sport stadium, heliport, offices, shops and flats above the tracks” (*The Guardian*, 1961, p. 4). This renewal project was not realised.

Fading hope for helicopter services

“For my part, I am convinced that the helicopter will be the bird of burden for domestic use in the future. However, I must emphasise the words ‘in the future’ because I do not believe that this is immediately round the corner” (Mr John Profumo, Parliamentary Secretary to the Ministry of Civil Aviation, House of Commons, 1953).

“All enquiries at any time seemed to lead to the conclusion that the commercial future of the heliport was always about twenty years in the future. They were operable for military or emergency purposes or for purposes with a high element of ‘social benefit’ but in terms of normally generated traffic for civilian purposes [whether pleasure or business trips] the costs were relatively high and operating precautions ... relatively severe” (Borg, 1966, p. 364).⁹

The above quotations are still applicable today. They present an account for the fact that the vision of routine, mass helicopter use failed to materialise and revolutionise urban travel. The future was never delivered. Nothing came of the schemes for city centre heliports in London, or major provincial cities, in the 1950s and, by the mid 1960s, the realistic prospects faded at a national scale for commercially viable inter-urban helicopter services.¹⁰ As a consequence, no major purpose-built city-centre heliports seem to have been constructed in any British cities, with the exception of the Battersea landing pad in London. Certainly, there are no spectacular landing decks on skyscrapers or the roofs of mainline railway stations!

While the helicopter disappeared from the urban transportation radar, commercial aviation has seen huge growth. Routine flying necessitates a ring of major airports around the periphery of London, alongside a number of substantial airports serving major cities in the Midlands and the North. In contemporary British cities, however, the

⁸ Discussion of heliport planning by Liverpool Corporation is given in *Flight Magazine*, 1954, p. 839 and Hough, 1955. A thorough examination of Manchester Corporation’s activities regarding heliport provision for the city is given in Brook and Dodge, 2012.

⁹ Neville Borg was appointed as Birmingham’s first Redevelopment Officer in 1952, and succeeded Sir Herbert Manzoni as City Engineer.

¹⁰ The only notable exception has been the extensive use of passenger helicopters in supplying the North Sea oil and gas industry.

role for helicopters remains marginal. So the nearest point for regular commercial helicopter operations to centre of London remains the Battersea landing pad. This provision still only supports flight services for a small number of élite travellers, pilot enthusiasts, pleasure trips for helicopter ‘experiences’ and the emergency services. The most visible presence of helicopters hovering over towns and cities in Britain are the police air support units and the occasional Air Ambulance service that can land at hospitals with trauma centres. The sound and sight of helicopters in the skies above the city still attracts attention as it indicates potential trouble and trauma in the streets below.

Acknowledgement

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¹¹ Note that articles cited from *Flight Magazine* are freely available online, at www.flightglobal.com/pdfarchive/index.html .

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