

Mapping Manchester

Cartographic Stories
of the City

Catalogue of the
public exhibition in
The John Rylands
Library, Manchester

25th June 2009 –
17th January 2010

Edited by Martin Dodge
and Chris Perkins



Mapping Manchester Cartographic Stories of the City

Exhibition catalogue edited by Martin Dodge and Chris Perkins
Geography, School of Environment and Development
The University of Manchester

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2009

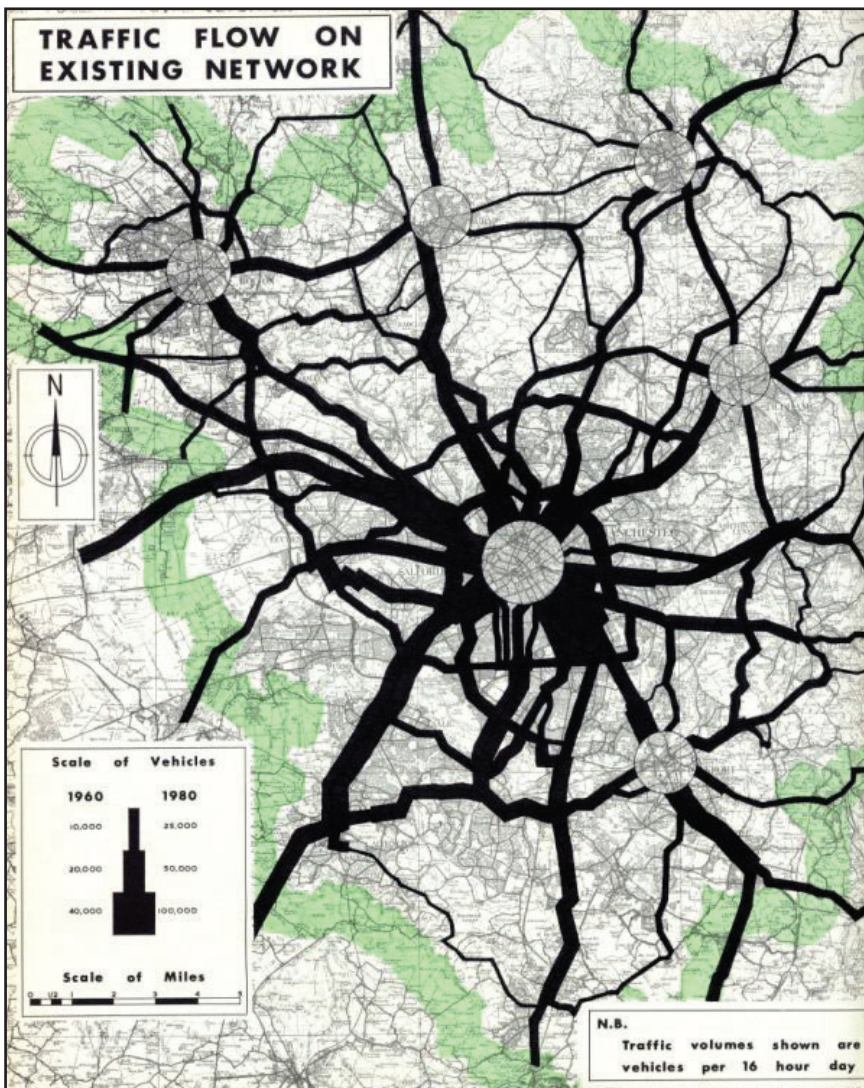
Exhibition opening, 24th June 2009.
Photography courtesy of Tinho da Cruz.



About the exhibition

This exhibition reveals some of the ways in which mapping is ingrained into urban life. It demonstrates how maps change over time in response to technology, society and economic imperatives, highlighting visually striking cartographic representations of Manchester.

Mapping Manchester showcases the wealth of cartographic treasures held by the University of Manchester and other institutions in the city, including generous loans of materials from the Manchester Archives and Local Studies Library. The maps exhibited are more than just 'pretty pictures' – they are powerful tools, instrumental to the development of contemporary Manchester, and can be read as rich stories of urban life. Over eighty different maps, plans, diagrams and photographs of the city – published over the last two hundred and fifty years – are on display. These range in date from the first large scale survey of the city published by William Green in 1794, to a 2008 statistical map of binge drinking hotspots across Manchester. A wide range of formats can be seen – from network diagrams, building plans and strip maps, to three-dimensional bird's-eye views, such as Heywood's iconic Victorian *Pictorial Map of Manchester* and digital animated mapping.



From SELNEC Highway Plan, 1962
(Courtesy of Chetham's Library)

Richard Bastow's map of housing, 1880s



Exhibition acknowledgements

Many items in the exhibition have been generously loaned by the Manchester Archives and Local Studies Library. We are most grateful to Helen Lowe and Michael Powell of these two institutions for their assistance with all our enquiries.

The exhibition would not have been possible without the graphical wizardry of Nick Scarle in the Cartographic Unit of the School of Environment and Development, University of Manchester.

We should also like to thank the following for all their help with other loans and for the production of exhibition materials: Andrew Taylor; Richard Brook, Manchester School of Architecture; Alex Singleton, University College, London; Richard Dean, Canalmaps Archive; Karl Hennermann and Nigel Lawson, University of Manchester; Simon Mabey and Charles Edwards, ARUP; Peter Davenport, Digital Archives; Jon Davies, ICP Framing Ltd; and Morag Robson, who has the keys to the map cabinets!

We are grateful to Rylands Library staff Donna Pope, Françoise Sullivan, Nina Main and Janet Woolwark for responding so helpfully to our assorted enquiries.

For varied and intellectual discussions formulating the exhibition we would like to acknowledge, in particular, Paul Hindle, Bob Barr, Terry Wyke and Brian Robson.

Lastly, thanks are also due to sterling work of Jacqui Fortnum and Jim Duff at Rylands Library, Deansgate for putting the exhibition together.

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Sponsors

The exhibition and the events programme has been generously supported by:

- Manchester Geomatics
- Manchester Geographical Society
- Laing O'Rourke
- ARUP
- John McAslan & Partners





The map makers

The story of the people behind map production is told here by contrasting an historical example of commercial cartography, alongside a contemporary equivalent.

The first large-scale mapping of Manchester was carried out by William Green, who surveyed the city towards the end of the 1780s. At this date map-making was an expensive and risky enterprise. It involved laborious surveying followed by the engraving of copper plates. Maps were printed from these and sold to a limited, wealthy, audience. Cartographers used whatever information they could acquire, sometimes through the wholesale copying of other people's maps and surveys. Commercial success for map-makers often depended less on accuracy and currency than on getting the map out to the market first.

Charles Laurent managed to get access to Green's survey, and issued a smaller scale map of Manchester before Green was able to publish his large-scale map. Yet in many respects Laurent's map can be regarded as an inferior design, albeit a more successful publication.

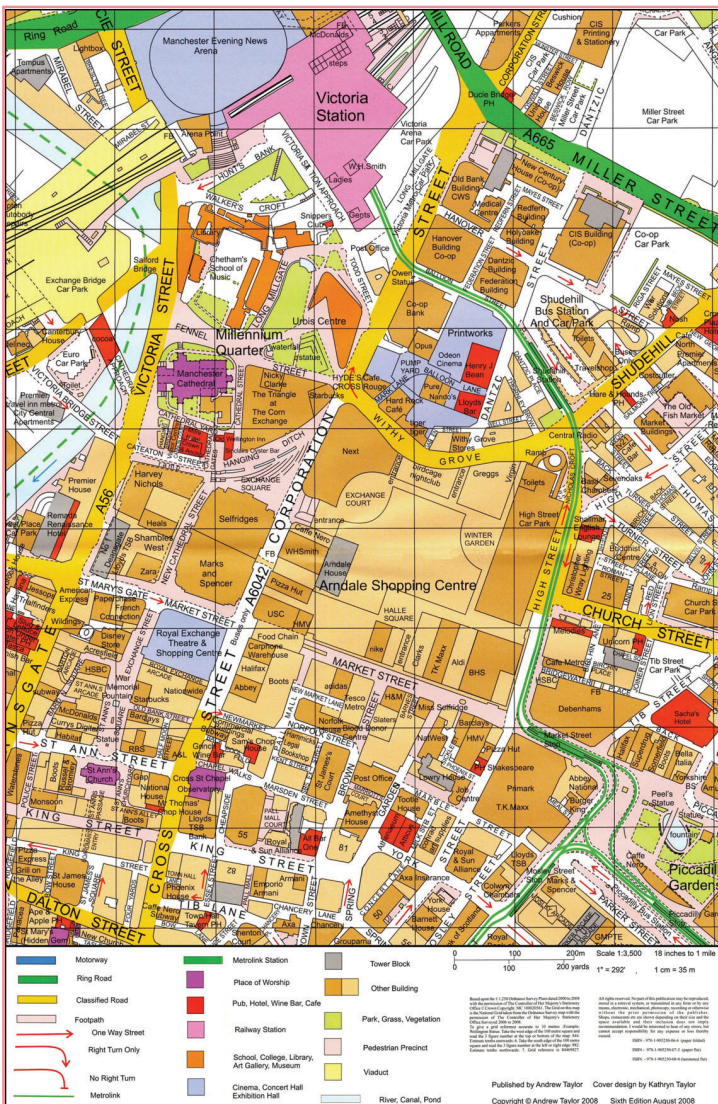




The map makers

Contemporary map-making relies upon different production technologies, but remains a risky commercial enterprise. The six different editions of Andrew Taylor's large-scale map of the city centre of Manchester has been produced to occupy a market niche not filled by the Ordnance Survey, or commercial rivals like Geographers' A-Z.

The basis for Taylor's maps is provided by large-scale Ordnance Survey plans. He supplements this 'raw' data with a rigorous ground survey, recording changing land use and business names. By focusing on the commercial core of the city, he can publish the map at a larger scale than commercial, street-finding alternatives, providing greater detail such as the location of Sam's Chop House on Back Pool Fold, or the waterfall in Millennium Square. Print runs are sufficient to sell out in two or three years, by which time a new revision has been undertaken by Taylor.'



Excerpt from Manchester City Centre, Andrew Taylor, Sixth Edition 2008

This detail highlights the commercial core of the city, with contrasting land-use indicated by a striking use of colour. (John Rylands University Library Map Collection)

The car and the city

The rapid expansion of car ownership since the 1950s has had a profound effect on Manchester. New routes have cut across the city and many roads have been widened and reconfigured. The planners responsible for these new highways have relied on a multitude of maps and models.

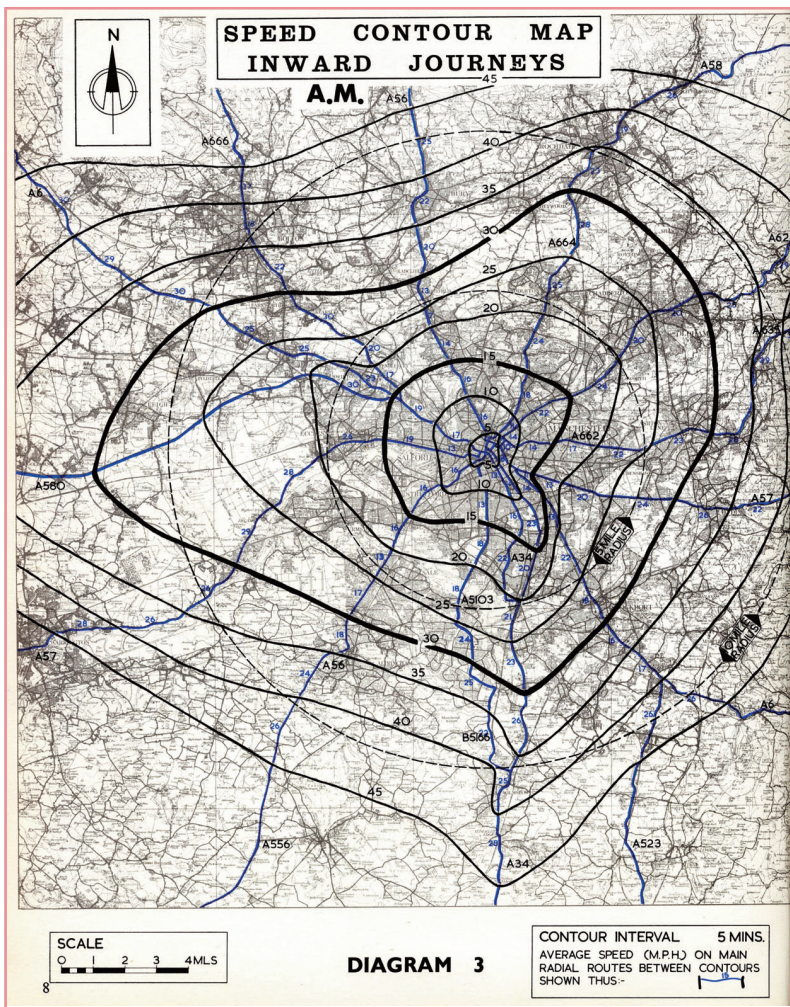
The map displayed here is the triumphal product of the South-East Lancashire and North-East Cheshire Area Highway Engineering Committee. The flagship representation of their 1962 Highway Plan set forth the need for numerous road building schemes deemed essential once funds became available. It symbolises the hopes of the early 1960s that visionary planning could, through scientific analysis, improve the functioning of roads and thus the efficiency of the city region. Much of this grand vision was never realised, although some key aspects of the inner and outer ring roads have come to pass, albeit in a the piecemeal fashion. What has become the M60 orbital motorway took until 2000 to realise.



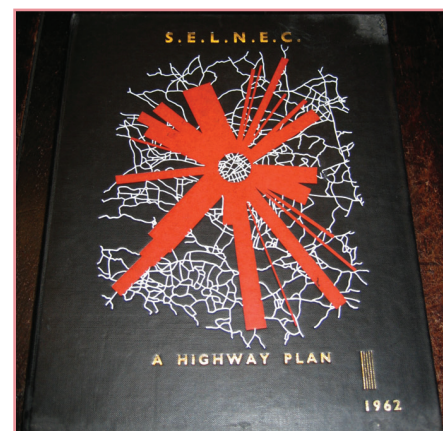
The car and the city

SELNEC's 1962 Highway Plan report distilled a range of statistics on the use of the road network in the region, using several distinct styles of thematic mapping to display and 'dramatise' the data. Maps are powerful visual tools which can be used to construct complex patterns into plausible and authoritative looking evidence. The examples reproduced here, both addressing the problems of immobility on Manchester's roads in the early 1960s.

The issue of road congestion on key routes was a focus of the SELNEC report and has become progressively more severe in subsequent decades. A bold scheme for a congestion charge to 'encourage' drivers off the roads was recently advanced by the Association of Greater Manchester Authorities as part of a package of transport investment. The schematic above, on the back of a promotional leaflet, tried to explain when and where drivers would be charged, along with other key elements of public transport provision. The referendum over the scheme provoked a vigorous campaign from supporters and opponents alike. The public across Greater Manchester voted strongly against the congestion charge in December 2008. It has been suggested that this rejection partly reflected the positioning of charging points. Taking the charging zone out as far as the M60 meant many key facilities and businesses, such as the Trafford Centre, fell within the zone.'



Isochronic map reproduced from *S.E.L.N.E.C. A Highway Plan, 1962*. Contours of equal travel times represent varying geographical patterns of access into Manchester for drivers commuting along trunk roads in the morning rush hour. (Courtesy of Chetham's Library)



This hefty report, with its dramatic black and red cover – quite atypical of anodyne transport studies – is packed with statistics, diagrams and maps. (Courtesy of Chetham's Library)

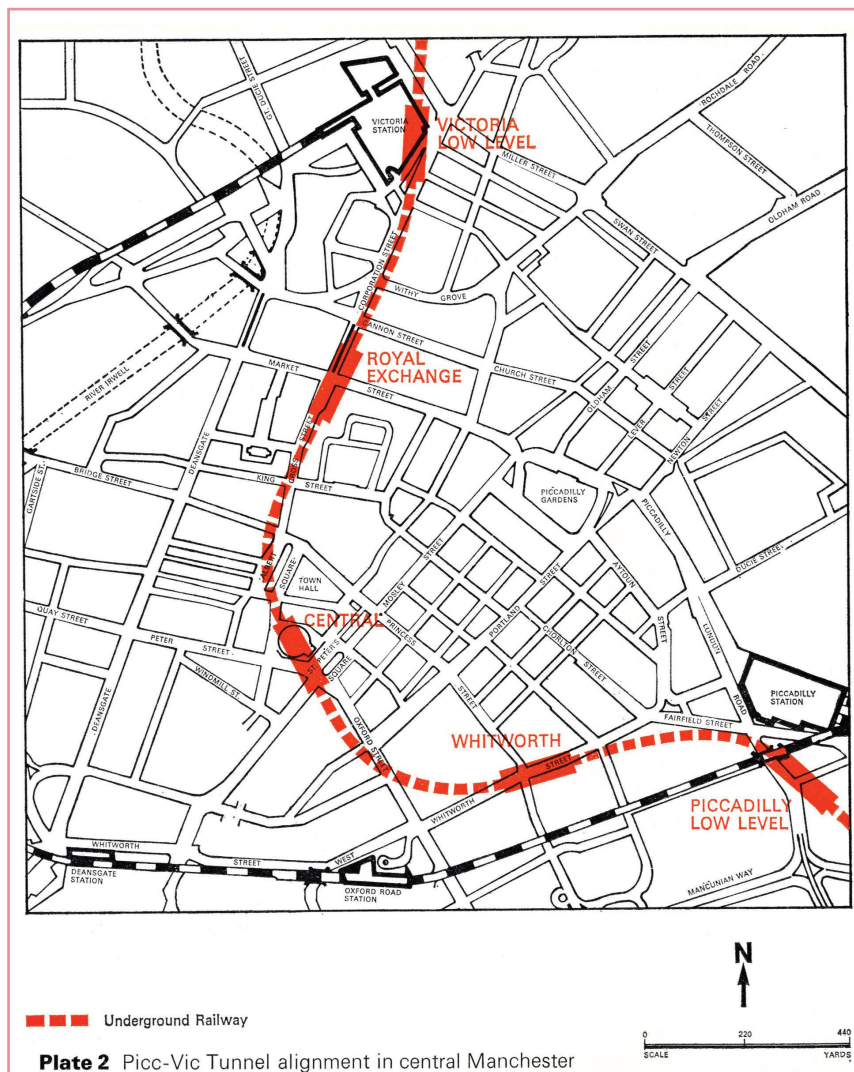
Public transport

Most people in Manchester move around the city using public transport. Changes in network patterns have been mapped out over the last century and a half. Some of these maps promote the effectiveness of bus, train and tram routes and stations across Manchester. Others emphasise a more practical use and are designed to help passengers find their way. Policy makers have also created mapping to help them monitor passenger numbers, travel times, and to plan where future lines need to be developed. Large-scale surveys of stations, tramways, or railway lines conducted at different times reveal a fascinating level of historical detail about the local significance of public transport to the city.



Contemporary mapping of public transport

Public transport continues to evolve in response to government policy, changing demands and available funding. Not all proposals come to fruition: Manchester still has no underground railway despite the various schemes put forward over the last hundred years. Bus routes proliferate across the city, and trams returned in the 1990s with Metrolink offering new connections into the city centre. Older networks survive amidst the forward planning. Mapping continues to promote the competitive advantage of the networks, chart their use and guide travellers across the city.



Reproduced from *The Picc-Vic Project*, Greater Manchester Council, 1975

The ambitious early 1970s plans for an underground link between Piccadilly and Victoria stations were never realised despite this mapping.

(John Rylands University Library, 711.7/G99)

City of industry

Manchester is a city of industry – a landscape of factories and warehouses developed over the last one hundred and sixty years. The changing fortunes of these industries have been captured in a range of different site plans, promotional displays and specialised maps.

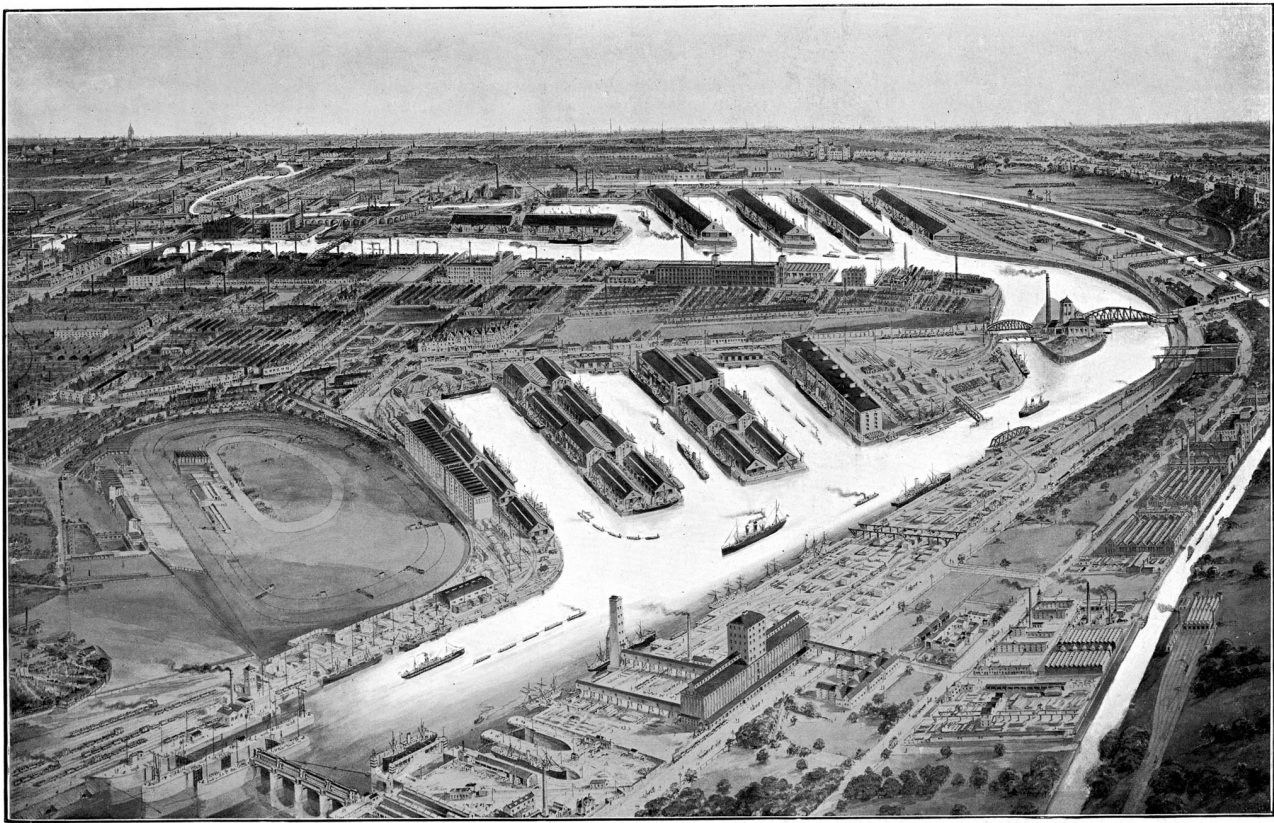
At the heart of the industrial metropolis lay the Manchester Docks and Trafford Park Industrial Estate. Developing from late 1890s as a zone for manufacturing industry, by the 1930s Trafford Park had grown into a sprawl of factories, warehouses and chemical plants – as laid out in the eye-catching promotional map on display in this case. The patches in green indicate available sites for new factories. The map also illustrates the importance of transportation – detailing systems of railways, roads and canals. The number of wharves and depots clearly illustrates that Manchester's commercial success depended as much on distribution as production.

Directly across the Manchester Ship Canal from Trafford Park lay the docks and warehouse complexes. This hub of commercial shipping is captured in the detailed nineteenth-century bird's-eye view. The old Manchester Racecourse is also clearly visible in this drawing. By 1905 it had been destroyed to make way for Dock No. 9. Also prominent in the foreground is the large grain store, shown in greater detail in the Goad plan.





PORT OF MANCHESTER.

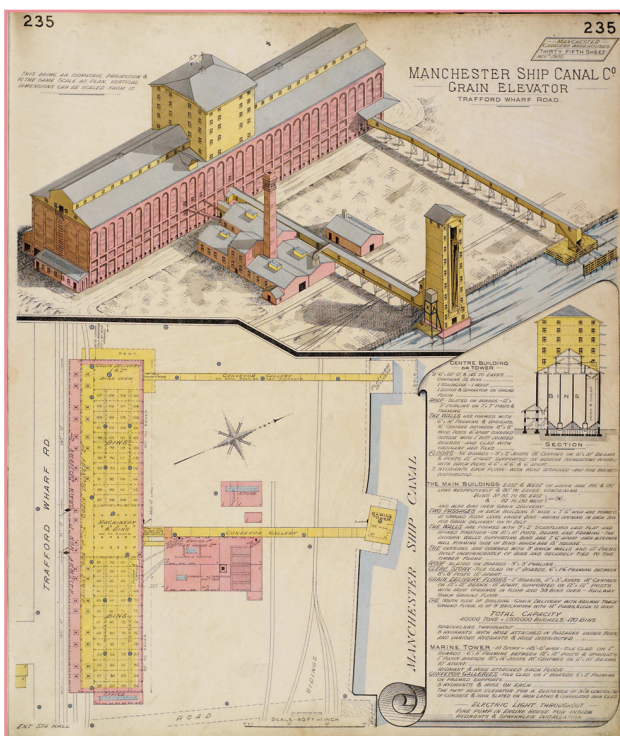


BIRD'S EYE VIEW OF THE MANCHESTER DOCKS.

HIND HOYLE & LIGHT, LTD. MANCHESTER.

REPRODUCED FOR THIS WORK BY SPECIAL PERMISSION OF THE SHIP CANAL COMPANY.

Reproduced from *Port of Manchester: Illustrated History of the Manchester Ship Canal, 1708-1901* (John Rylands University Library, OLD/6/21/4)



Goad plan of grain elevator and store, reproduced from *Manchester Carriers' Warehouses, Book 3, 1900* Chas Goad and company produced specialist mapping of commercial buildings and industrial sites for the purpose of fire insurance underwriting. The exceptionally detailed and frequently revised plans were the result of laborious surveying. In comparison to other maps, they are rich in contextual information – including details on construction materials. The grain storage building displayed here includes precise locations of fire hydrants and an indication of the uses of different floors of the building. (Courtesy of Digital Archives, www.digitalarchives.co.uk)

Wealth and poverty

Manchester's burst of population growth in the first half of the nineteenth century brought with it severe housing problems. By the 1840s the 'Shock City' became notorious for its slums.

Concerted efforts from social reformers to improve the housing of the poor can be seen in the cartographic results of their surveys. Richard Bastow's survey in the late 1880s mapped out the age of housing as part of a sanitary campaign, and in 1904 a report on housing conditions, produced by The Citizens' Association of Manchester, included a detailed map of housing quality. The areas of worst housing were shaded in dark colours, and the map shows a cluster which almost completely encircles the commercial core of the city.

From the mid-nineteenth century private estates of substantial suburban villas were constructed, away from the poverty and crime of the inner neighbourhoods, for the affluent beneficiaries of Manchester's industrial prosperity. An example of these developments can be seen in the sales map for the Oaks Estate, planned in 1843. In its bucolic design, individual houses are arranged in their own wooded grounds with curving driveways. The area of Oaks Estate is now occupied by the, not quite so elite, Owens Park student halls of residence of the University of Manchester!



Re-housing in Hulme

The story of social housing in Manchester is clearly illustrated by the inner city neighbourhood of Hulme, which has undergone a sequence of clearance and rebuilding programmes over the last eighty years or so. Starting in 1933 a wholesale scheme was enacted by the City Council to do away with back-to-back housing. The three areas shaded purple on the plan displayed here were to be cleared. The page from the schedule shown lists some of the properties to be demolished – setting out the property owners but generally not the residents who were to be affected.

Moving forward fifty years, Hulme underwent another round of wholesale housing renewal. This included the construction of four large multi-storey deck-access blocks known as the Crescents. In the layout plan the slender curving blocks are situated in parkland with playgrounds and pedestrian routes. In their 1965 briefing the architects drew inspirational parallels to the Georgian Crescents of Bath for the design.

The Hulme 5 Crescents soon turned into an archetype of public-housing failure, gaining a reputation for their poor construction and for a high level of crime. They were demolished in 1991-1992 and replaced by a new mix of smaller scale housing units and flats.



Folded map included with *Hulme 5 Redevelopment: Report on Design*, Hugh Wilson and Lewis Womersley, 1965 (Courtesy of Chetham's Library)

Mapping the future city

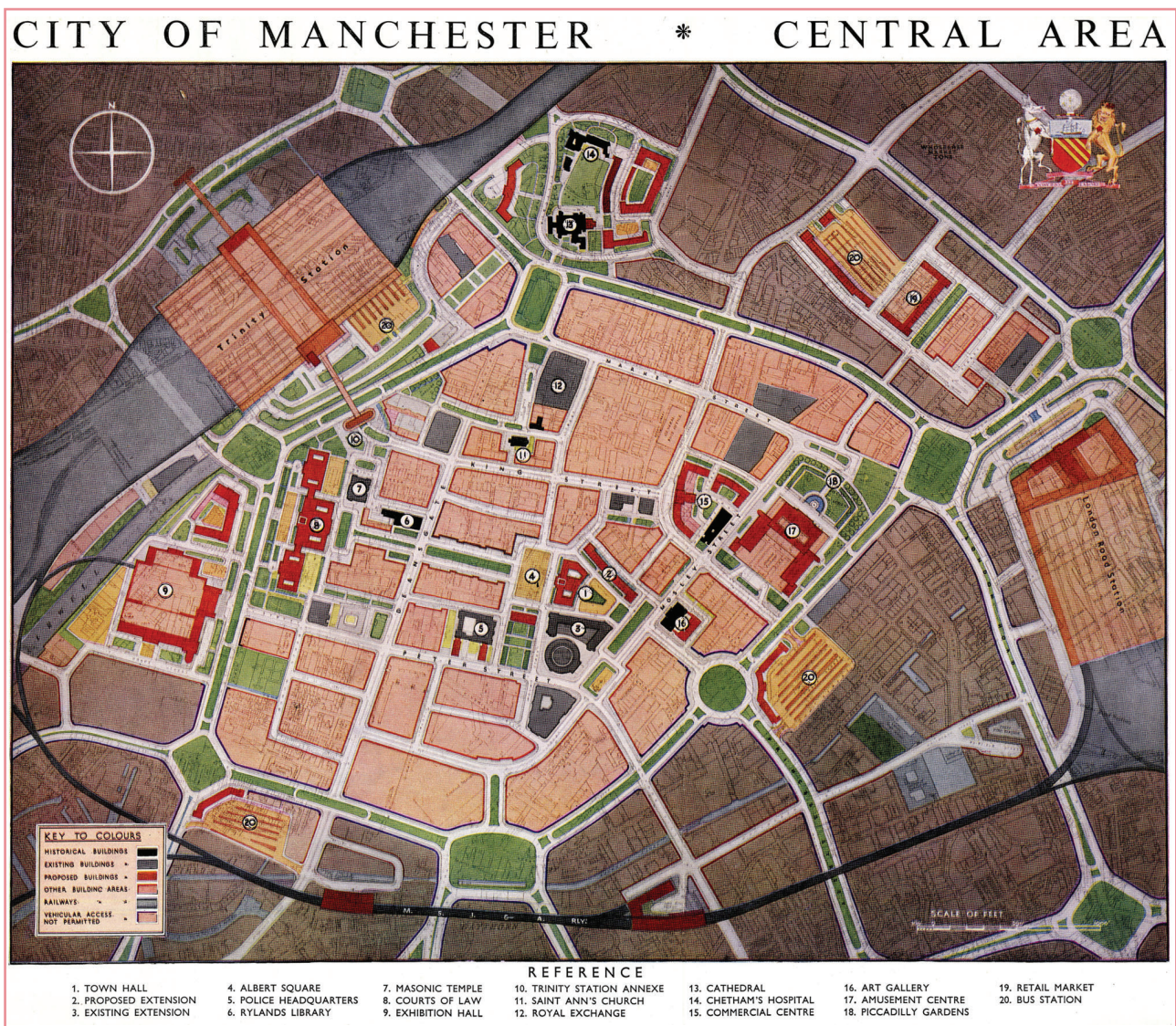
Maps allow possible futures to be made more tangible. Sometimes they help to plan an intended journey, but often the future they predict is never actually enacted. Many possible futures are mapped, but the images do not always reflect a reality – often they illustrate urban dreams. Planners, developers and architects have historically used schematic maps and building models to persuade policy makers and patrons. On display here are imagined futures for the city centre – contrasting an early nineteenth-century scheme for Piccadilly Gardens with the utopian dreams for a remodelled city, articulated in the City of Manchester Plan published after the Second World War.

The plans shown here depict grandiose proposals for a new Crescent along the northern side of the Piccadilly esplanade, proposed by William Fairbairn in 1836. The improvements were never made in this form – contrast the proposals map and perspective drawings with the excerpt from the OS Five Foot Plan of the city, published in the subsequent decade, which represents the actual layout of buildings at this time.



The 1945 Plan

The destruction of areas of Manchester during the Second World War gave planners the opportunity to imagine a very different city. Their dreams were literally mapped out in the monumental 1945 Plan. At the heart of Manchester the planners imagined swaths of wide roads encircling the centre along with bold modernist architecture. This would have made a very different city to that which actually evolved, piecemeal, over the next sixty-five years. Compare their imagined map and carefully constructed drawings of an orderly and utopian dream of a city with the more recent reconstruction of the gardens – mapped out and executed to make Piccadilly into the public gateway to the city for the Commonwealth Games in 2002.



Reproduced from Plate 72 *City of Manchester Plan*, prepared by the City Council, 1945

The central area of the Manchester imagined after the Second World War: note the huge roundabout and amusement centre next to a remodelled Piccadilly.

(John Rylands University Library, R91041)

Leisure and pleasure

Organised leisure activities, events, exhibitions and sporting facilities are commonly mapped in guide-books and programmes to inform and entice participants.

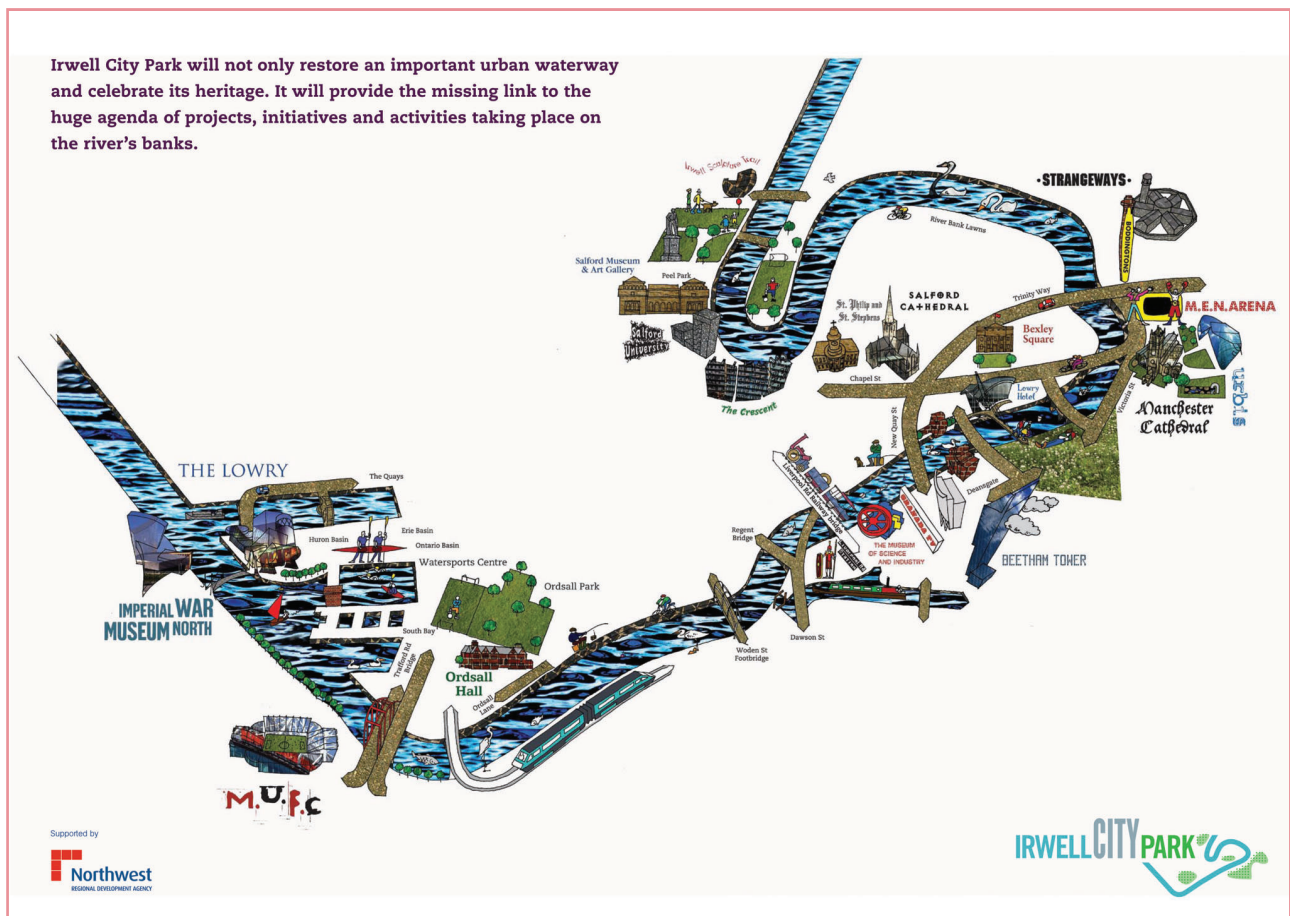
Here you can see an historical example of such mapping – an illustrated guide to the 1887 Manchester exhibition; a major event in celebration of the Royal Jubilee which was opened by the Prince of Wales. Purpose built exhibition grounds near Old Trafford included large pavilions showing the range of manufactured goods and arts of the city. The exhibition also displayed a model of the Ship Canal on the eve of its construction.



Outdoor leisure

Outdoor leisure activities such as walking and running are supported by specialist mapping. This Orienteering map has been designed and printed by enthusiasts for the sport. It depicts landscape features of particular interest to Orienteers, such as density of vegetation, which do not appear on Ordnance Survey or Internet maps.

Manchester has relatively few green open spaces in the city centre. To increase the opportunities for recreation there are multi-million pound plans to create a new linear park which will run for 8km along the River Irwell from Salford Quays down to The Meadows. Once realised this will create new continuous paths for walking and open up neglected parts of the river course for public enjoyment.



Promotional map for the new Irwell River park, 2008
(Courtesy of Salford City Council)

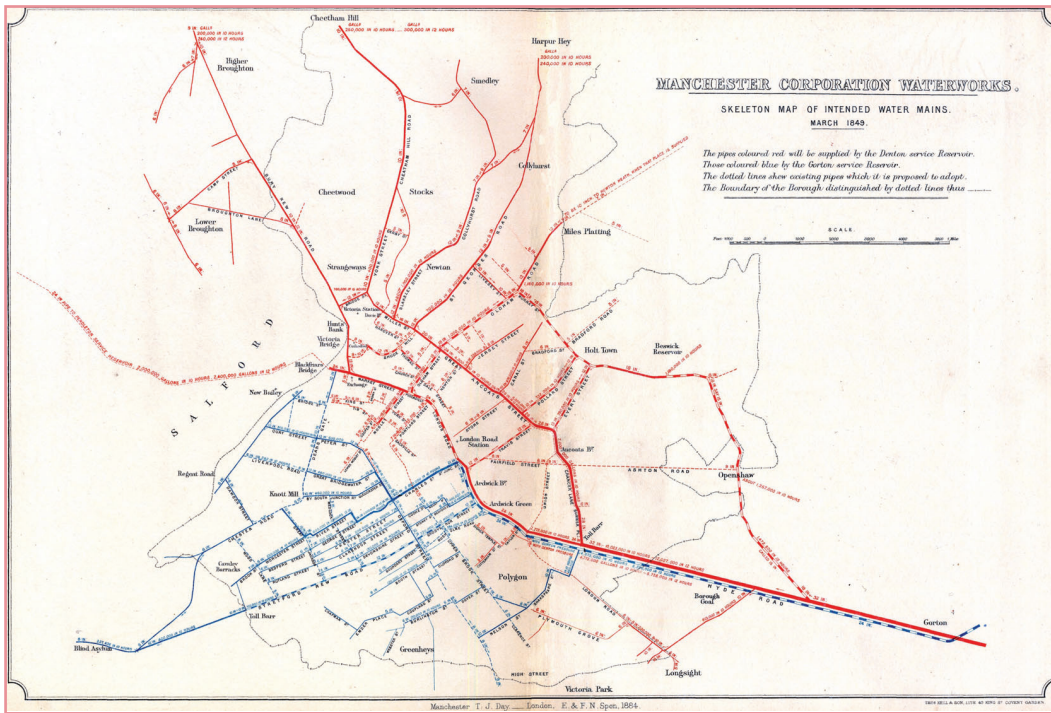
The hydraulic city

The ways in which engineers have harnessed water for economic gain and social well-being are illustrated in a range of maps of canals, waterworks and sewers.

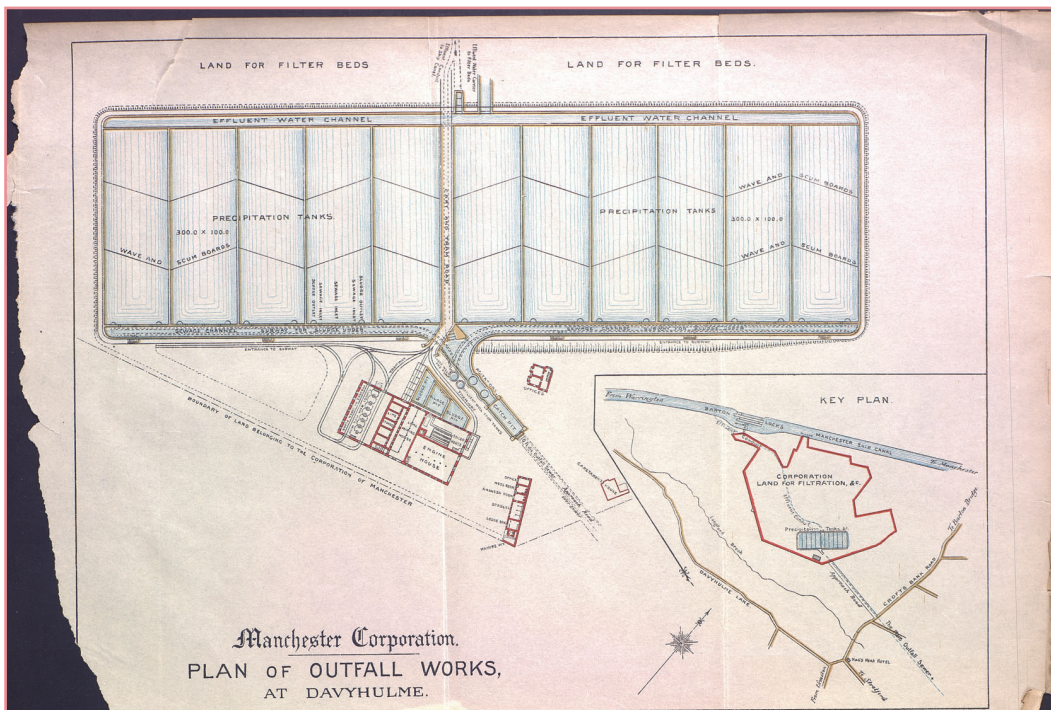
A defining infrastructure project, and the epitome of Victorian engineering arrogance, the Ship Canal transformed Manchester into a port city when it opened in 1894. The scheme took decades of wrangling and planning to reach fruition and the landscape view on display here shows the imagined route. It was used to galvanise public support for this hugely ambitious undertaking. The pastoral idyll implied here belies the vast scale of the engineering works required to realise this hydraulic dream.

A chain of large reservoirs built by the Manchester Corporation Waterworks in Longdendale valley between 1848 and 1877 still collects rain-water off the moors for the city. The schematic map of the system from 1881 ably demonstrates how the city began to reach out towards a wide hinterland stretching eighteen miles to the Woodhead reservoir. As displayed on the accompanying cross-sectional view, the system allows water to simply flow down hill under the power of gravity and so feed into the city.





Reproduced from John Frederic La Trobe Bateman's *History and Description of the Manchester Waterworks, 1884*. Arriving in the city the fresh water from the Longdendale reservoirs was distributed by network of new mains and pipes, hidden beneath the surface of streets but made visible in this map. (John Rylands University Library, 628.1/BAT)



Davyhulme sewage works
Victorian engineers also tackled the problem of what to do with waste-water. Collecting and processing sewage from a growing population required significant investment, including the construction of Davyhulme sewage works by Manchester Corporation on the banks of the Ship Canal. The intricacies of its filtering and treatment of sewage, are made real in delicate line work of this original engineering plan. (Courtesy of Manchester City Archives and Local Studies Library)

Bird's eye views of the city

Most maps depict the built environment in two-dimensions but Manchester, like all other cities, is a three-dimensional urban landscape with buildings of various heights. There has been a long history of trying to map out this third dimension to evoke a more realistic feeling of the city, more recognisable than the artificially flat map.

One approach has been to highlight individual buildings, often simulating an elevated viewpoint. These panoramic maps allow a considerable artistic licence. Some only highlight buildings that are deemed to be significant, for example John Heywood's map of the city. Others stress the corporate branding of Manchester as in the rich 'logoscape' on the rooftops of the Cityscape plan. Others alter the size of certain buildings, to highlight their civic importance, exemplified in the Victorian panorama drawn by H.W. Brewer, which exaggerates the size of the Town Hall. The artistic element often dominates in pre-industrial prospects, but also in bird's-eye view panoramas of the Victorian city.

A second tradition in three-dimensional mapping celebrates a much more scientific approach to the depiction of the built environment. Aerial photographs can depict a bird's-eye view with realism and precision, either as vertical images or as oblique views. When employed interactively these images create an even more powerful impression of reality displayed, even though their construction may be carefully orchestrated. ARUP's Digital Manchester model of the city is the latest attempt to render and animate the three-dimensional complexity of the city. This can be viewed on the exhibition PC screens.

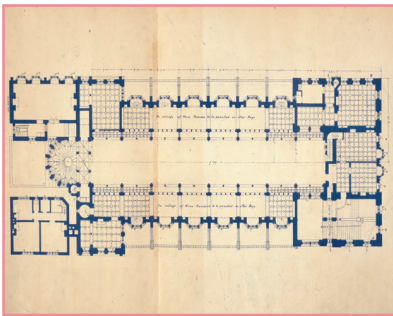




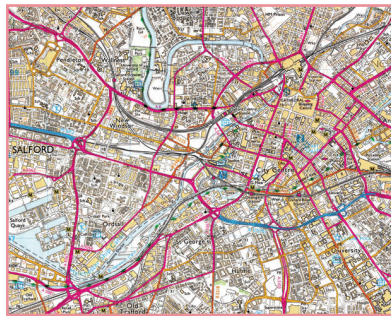
Reproduction of *A Bird's-Eye View of Manchester In 1889*
Drawn by H.W. Brewer and originally published as a foldout supplement to *The Graphic*, 8 November 1889.
(Courtesy of ICP Framing Ltd, Ashton under Lyne, www.icpframing.co.uk)

Mapping Manchester by cartographic scale

- Cartographers work by simplifying the world, reducing complexity to a known geometric scale in their maps
- At *large* scales much more *detailed* depictions of the city can be represented legibly in a map. The larger the scale the smaller the area of the city that can be seen: for a doubling of scale there is a consequent quadrupling of the detail that can be mapped, but only a quarter of the area can be covered
- There is a relationship between scale and what is termed cartographic 'generalization': smaller scale and less detailed maps have to generalize by representing reality more abstractly with simplified point, line and area symbols. So individual houses along a street are generalized on a 1:50,000 scale map as a grey block
- The most detailed maps appear to be most 'like' the world that they represent, but can never perfectly mimic the places and practices that they depict



Building scale, 1890
Reproduced from *Book of Plans and Elevations of the John Rylands Library*, original scale 1/8" to 1' (Rylands Library Archive)



Urban scale
Reproduced from *Ordnance Survey Manchester and Salford, Explorer Sheet 277*, original scale 1:25,000 (John Rylands University Library Map Collection)



Regional scale
Reproduced from *Ordnance Survey Travel Map, Sheet 4 North*, original scale 1:250,000 (John Rylands University Library Map Collection)



National Scale
Topographic map of the UK, original scale ca 1:3,500,000 (Reproduced from http://upload.wikimedia.org/wikipedia/commons/3/39/Topographic_Map_of_the_UK_-_English.png)



Continental Scale
Reproduced from *CIA Europe*, original scale 1:19,500,000 (John Rylands University Library Map Collection)

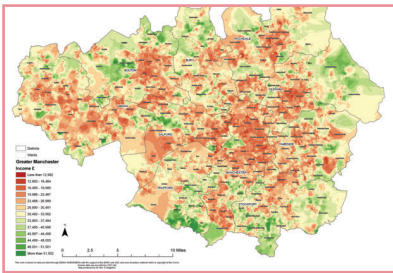


Global Scale
Reproduced from *CIA Physical Map of the World*, original scale 1:35,000,000 (John Rylands University Library Map Collection)

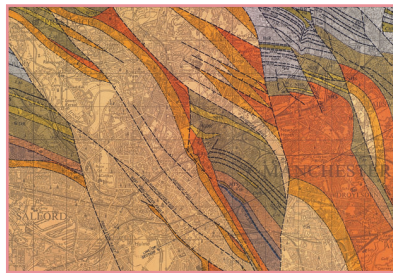


Mapping Manchester by cartographic theme

- Cartographers make propositions about particular aspects of the world: these propositions typically coalesce into maps that appear to concentrate upon distinct subjects or 'themes'
- Tightly focused propositions are represented in very different maps of the same area, that tell singular stories of the city
- Increasing specialization in the mapping industry means there has been an increasing diversity of mapped themes, reflecting the interests of the funding bodies, or a closely identified market demand. A military map of Manchester depicts a different city to a land use map, a map of income distribution, a noise map, a map of postcode boundaries, or a geological map
- Different 'thematic' map genres have emerged with strongly specialist market niches and very different 'looks'. Some themes are in such widespread use that they subconsciously become default views of space (e.g. the city in Britain is synonymous with the A-Z map)



Income distribution in Greater Manchester (Courtesy of Alex Singleton, CASA University College London)



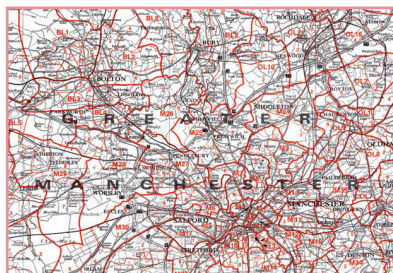
Excerpt from Geological Map of Manchester and Ashton Under Lyme, Solid Edition 1994, original scale 1:50,000 (John Rylands University Library Map Collection)



Noise Map of Manchester (Reproduced from <http://noisemapping.defra.gov.uk>)



Excerpt from Manchester Land Use, 1971, original scale 1:25,000 (John Rylands University Library Map Collection)



Excerpt from Postcode Map, original scale 1:100,000 (John Rylands University Library Map Collection)



Excerpt from Soviet Military Map of Manchester, original scale 1:25,000 (John Rylands University Library Map Collection)



Mapping Manchester through time

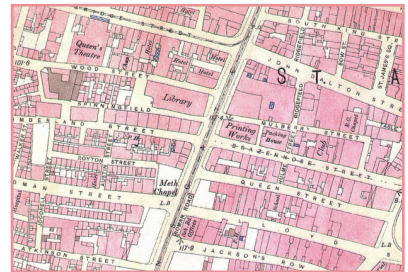
- Cartographers must freeze time depicting an ever-changing city at a specified date on their maps
- Yet maps are not instant snapshots, they emerge from a process in which survey, compilation, printing and publication dates may vary greatly, and where different parts of the same map may in fact have been compiled at significantly different dates
- Maps of the same place through time will vary as production technologies and designs change over time, reflecting but also partly constituting, the politics and aesthetic culture of different time periods
- Despite these problems maps are a valuable source for understanding how places evolve over time for, for example the changing built form around the Rylands Library shown here



1746
 Reproduced from *Casson and Berry's Plan of the Towns of Manchester and Salford* (Courtesy of Digital Archives, www.digitalarchives.co.uk)



1849
 Reproduced from *Ordnance Survey Five Foot Plan, Sheet 28*, original scale 1:1056 (John Rylands University Library Map Collection)



1889
 Reproduced from *Ordnance Survey, Sheet CIV-10*, original scale 1:2500 (John Rylands University Library Map Collection)



1908
 Reproduced from *Ordnance Survey, Sheet CIV-10*, original scale 1:2500 (John Rylands University Library Map Collection)



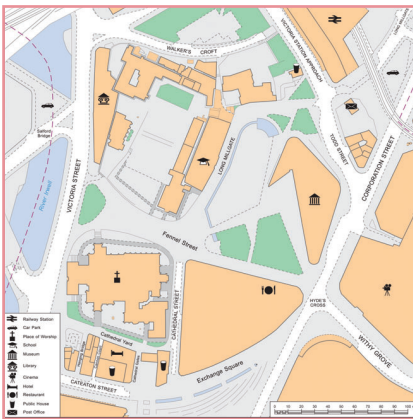
1958
 Reproduced from *Ordnance Survey National Grid Plan, Sheet SJ 8398*, original scale 1:2500 (John Rylands University Library Map Collection)



2006
 Reproduced from *Vertical aerial photograph of Manchester* (Courtesy of The GeoInformation Group and Landmap, <http://landmap.mimas.ac.uk>)

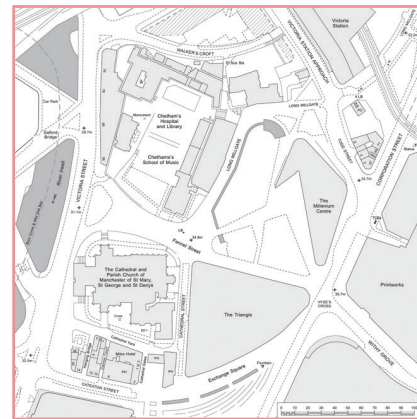
Mapping Manchester by changing cartographic design

- Cartographers are able to skilfully manipulate the design of a map to target it at different markets or clients
- The same place, at the same time and scale, can be represented in radically different ways simply by altering the design elements of the map
- Colours, fonts and lettering, line style, point symbolization and the degree of generalization can all be changed to affect a different impression, from a 'scientific' look to a 'playful' feel
- The holistic combination of these design elements is read by map users who are able to appreciate layout, visual structure, hierarchy and notions of figure and ground relationships. Everyone is able to recognise and appreciate a well designed map



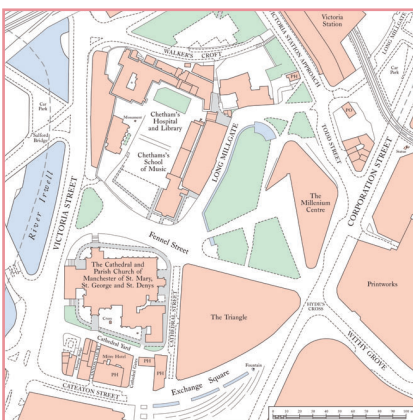
Point symbols to highlight attractions:

A standard road layout and building outlines but strips out all the text associated with the buildings. This is replaced by symbols depicting the building function. The map is clean and uncluttered. (Courtesy of Nick Scarle, based on Ordnance Survey Mastermap)



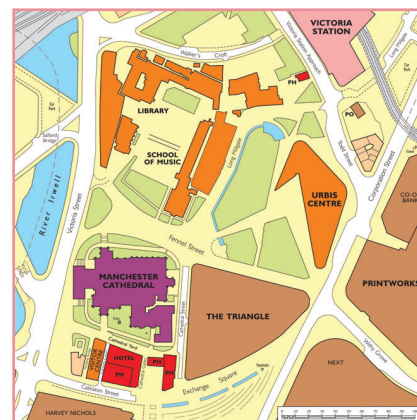
Detail and accuracy:

A black and white outline rendering of all roads, buildings and other features such as spot heights, giving an impression of accuracy and detail – at the expense of legibility and impact. The overall impression is one of noise and clutter. (Courtesy of Nick Scarle, based on Ordnance Survey Mastermap)



Heritage design:

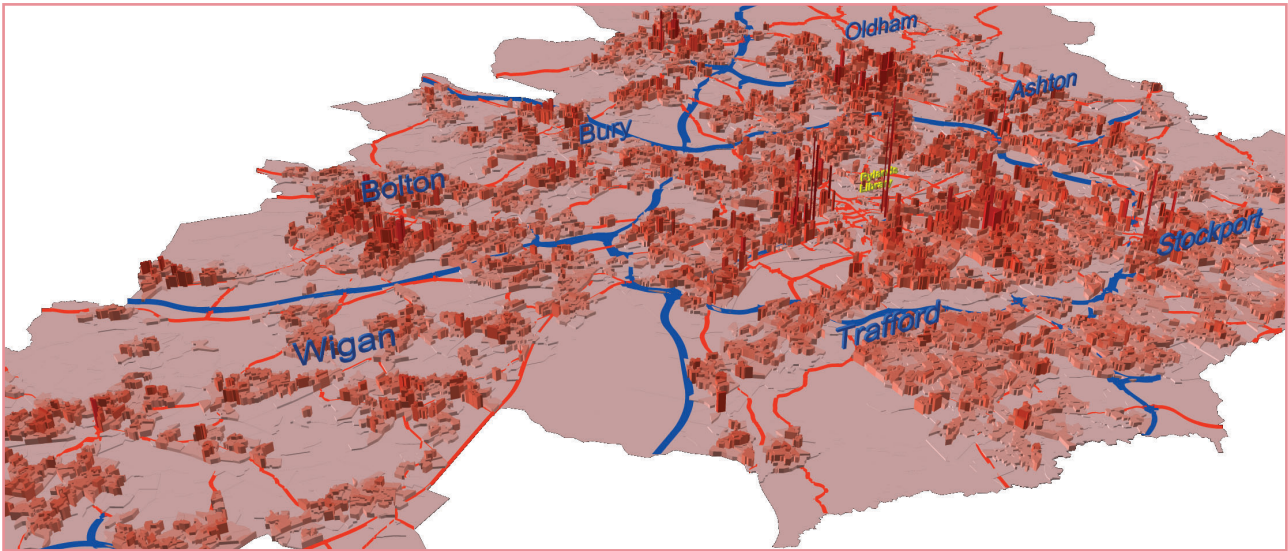
A re-creation of an old style map which uses pale colour washes to mimic hand-colouring and an old style serif font in larger size type, giving the impression of attention to detail as well as legibility and highlighting traditional values. (Courtesy of Nick Scarle, based on Ordnance Survey Mastermap)



Modern simplicity:

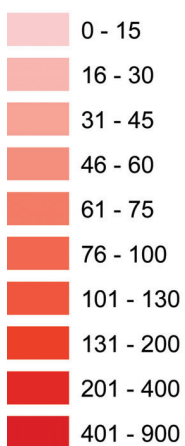
A modernistic version using bold colours for buildings (coded according to their function) and a modern humanist sans-serif font for immediate impact, with the aim of allowing a user to very quickly identify a destination. (Courtesy of Nick Scarle, based on Ordnance Survey Mastermap)

Population map for Greater Manchester



There are around 2.5 million people living in Greater Manchester. Mapping population distribution is one way to make sense of the complex social geographies of the region. In this model detailed census data has been used to calculate resident population density, which is then mapped as 'height'. The taller the area, the more people live there in a greater geographic concentration. When plotted, the result is a stepped-surface map that can be drawn in pseudo three-dimensional form. This can be animated by flying a virtual camera around it.

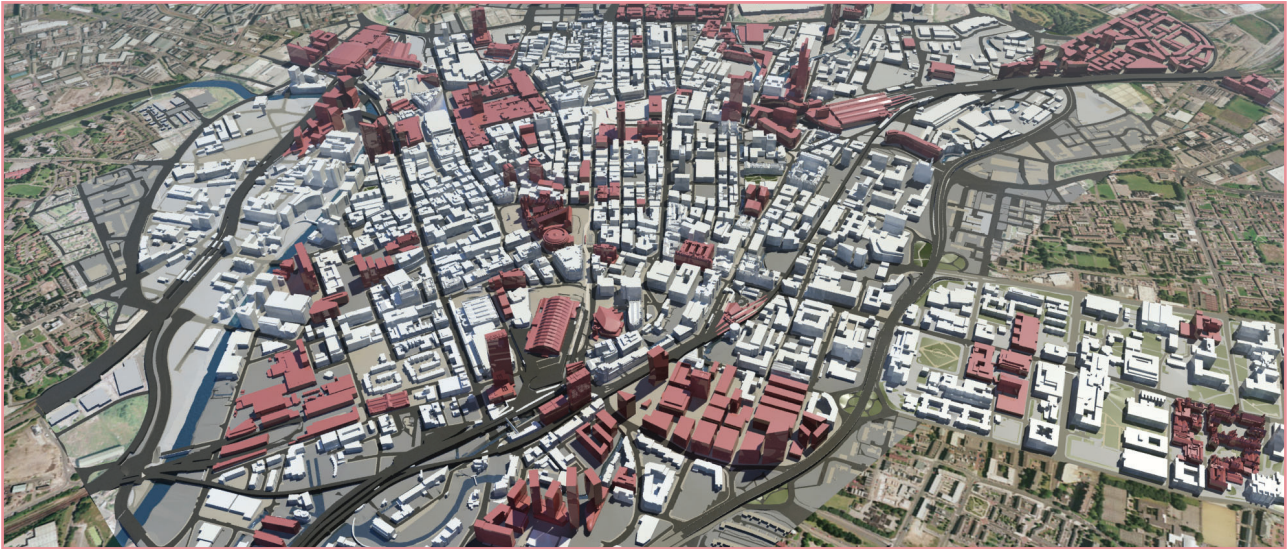
Colour coding is used to indicate different categories of residential population density according to the scale shown here. Darker reds represent areas with a higher number of residents (measured in people per square hectare). Geographical context is given by the addition of motorways and key roads.



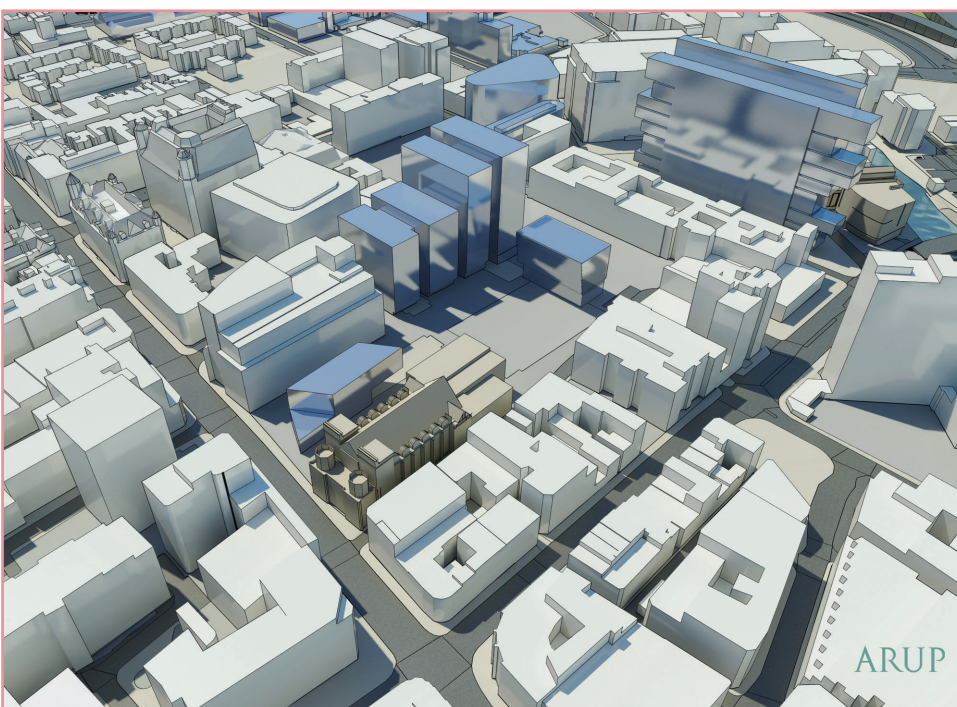
The pattern of varying residential population density across the region clearly picks out the core towns and some their sub-centres. The most prominent are Bolton, Oldham and Stockport. However, the real peaks of population are right in the city centre. The very highest population densities are typically single blocks of flats – the 'tallest' is a University of Manchester student hall of residence on Granby Row. The flattest areas have little resident population although this does not mean they are empty or undeveloped. Many are business areas, industrial sites and retail parks which have a large daily influx of people.

Data preparation and animation production by Karl Hennermann, School of Environment and Development, University of Manchester.
 (Sources of data: 2001 Census, Office for Nation Statistics; Output areas boundaries, UKBORDERS, <http://edina.ac.uk/ukborders/>; Ordnance Survey Strategi, <http://edina.ac.uk/digimap/>)

Virtual model of Manchester city centre



Understanding the complexities of the built form of cities is made easier by land-use maps, architectural plans, engineering schematics and new virtual models. Presented here is an animation of *Digital Manchester* – a detailed three-dimensional model of the city centre constructed by visualization experts at ARUP's Manchester office. Created in 2007 with the endorsement of City Council, the model covers some 400 hectares and contains over four and a half thousand individual buildings. The geometry of the model was created using airborne LIDAR, aerial photogrammetry and Ordnance Survey Mastermap data.



Digital Manchester is probably the most comprehensive virtual model of the city currently available. It has a large number of potential uses in terms of planning reviews, public communication and evaluating the visual impact of new buildings. The model can also be easily updated to accommodate the changing cityscape.

Animation of *Digital Manchester* courtesy of Simon Mabey and Charles Edwards, ARUP.

Piccadilly Gardens model



Model of Piccadilly Gardens design

Small scale physical models are a common way for architects and planners to represent the city. Over the years many models of Manchester city centre have been made to envision how new buildings and future street layouts might look. The projection of designs off a flat plan into solid, three-dimensional form can help people comprehend what they will be like in reality.

This model was made by ARUP to visualise the design for a radical rebuilding of Piccadilly Gardens to create a very different feel. The scheme was realised in time for 2002 Commonwealth Games.
(Courtesy of Charles Edwards of ARUP, Manchester)



Listing of exhibition items

Cabinet 1: The map makers

- Excerpt from Plan of Manchester and Salford, William Green, 1794
(*Courtesy of Digital Archives, www.digitalarchives.co.uk*)
- Excerpted cartouche from Plan of Manchester and Salford, William Green, 1794
(*Courtesy of Digital Archives, www.digitalarchives.co.uk*)
- Excerpt from Topographic Plan of Manchester and Salford, Charles Laurent, 1793
(*Courtesy of Digital Archives, www.digitalarchives.co.uk*)
- Manchester City Centre, 6 maps by Andrew Taylor, 1996 to 2008
(*Courtesy of Andrew Taylor*)
- Four photographs of Andrew Taylor surveying Manchester for revision of his map
(*Courtesy of Andrew Taylor*)
- Excerpt from Manchester City Centre, Andrew Taylor, Sixth Edition 2008
(*John Rylands University Library Map Collection*)

Cabinet 2: The car and the city

- Fold out map included with S.E.L.N.E.C. A Highway Plan, 1962
(*Courtesy of Chetham's Library*)
- Congestion charge diagram, undated
(*Courtesy of Richard Brook, Manchester School of Architecture*)
- Pro and anti congestion charge posters, undated
(<http://CleanAirNow.co.uk>; www.stopthecharge.co.uk)
- Proposed route of congestion charge and tolling points in Trafford
(*Greater Manchester Passenger Transport Executive, www.gmfuturetransport.co.uk*)
- Isochronic map reproduced from S.E.L.N.E.C. A Highway Plan, 1962
(*Courtesy of Chetham's Library*)
- Flowline map reproduced from S.E.L.N.E.C. A Highway Plan, 1962
(*Courtesy of Chetham's Library*)
- S.E.L.N.E.C. A Highway Plan, 1962
(*Courtesy of Chetham's Library*)

Cabinet 3: Public transport

- Time Zone Map, 1914
(*Courtesy of Manchester City Archives and Local Studies Library*)
- A Map of the City of Manchester in the Year of its First Civic Week, 1926
(*Courtesy of Manchester City Archives and Local Studies Library*)
- The Handy Penny Street and Tram Map, c.1920s
(*John Rylands University Library Map Collection*)
- London Road Station (now Piccadilly) shown on an excerpt from Ordnance Survey Manchester and Salford 1:1,056 Sheet 20, 1849
(*Courtesy of Digital Archives, www.digitalarchives.co.uk*)
- Map of proposed tunnel route and brochure cover reproduced from The Picc-Vic Project, Greater Manchester Council, 1975
(*John Rylands University Library, 711.7/G99*)

Listing continued

- Brochure cover reproduced from Metrolink: Light Rail in Greater Manchester, Greater Manchester Passenger Authority and Executive, 1991
(*John Rylands University Library, A205834*)
- Network statistic map reproduced from Transport Statistics: Greater Manchester, 2005
(*Greater Manchester Local Transport Plan, www.gmltp.co.uk*)
- Future transport networks
(*Greater Manchester Passenger Transport Executive, www.gmpte.com*)
- City-centre bus map, 2009
(*John Rylands University Library Map Collection*)

Cabinet 4: City of industry

- Promotional map of Trafford Park, 1936
(*Courtesy of Manchester City Archives and Local Studies Library*)
- Bird's eye view of the Manchester docks reproduced from Port of Manchester: Illustrated History of the Manchester Ship Canal, 1708-1901
(*John Rylands University Library, OLD/6/21/4*)
- Manchester from the Air, Jonathan C.K. Webb, 2007
(*Courtesy of Martin Dodge*)
- Trafford Park: Britain's Workshop and Storehouse, 1923
(*John Rylands University Library, OLD/6/21/5*)
- Goad plan of grain elevator and store, reproduced from Manchester Carriers' Warehouses, Book 3, 1900
(*Courtesy of Digital Archives, www.digitalarchives.co.uk*)

Cabinet 5: Wealth and poverty

- Housing conditions in Manchester & Salford : A report prepared for the Citizens' Association for the Improvement of the Unwholesome Dwellings and Surroundings of the People, T. R. Marr, 1904
(*Courtesy of Chetham's Library*)
- Excerpt from T.R. Marr's Housing Conditions in Manchester and Salford, 1904
(*Courtesy of Chetham's Library*)
- Sales map for the Oaks Estate, 1843
(*Courtesy of Manchester City Archives and Local Studies Library*)
- Richard Bastow's map of housing, 1880s
(*John Rylands University Library Map Collection*)
- Hulme slum clearance map, 1933
(*Courtesy of Manchester City Archives and Local Studies Library*)
- Excerpt from Report of the Housing and Public Health Committees on the Proposed Hulme Clearance Scheme and the Provision of Rehousing Accommodation for Persons to be Displaced in Connection Therewith, 1933
(*John Rylands University Library, 711.4/M44*)
- Folded map included with Hulme 5 Redevelopment: Report on Design, Hugh Wilson and Lewis Womersley, 1965
(*Courtesy of Chetham's Library*)



Listing continued

- Two illustrations reproduced from *Hulme 5 Redevelopment: Report on Design*, Hugh Wilson and Lewis Womersley, 1965
(*Courtesy of Chetham's Library*)
- Contemporary Hulme mapped by Ordnance Survey Landline, 2006
(*Courtesy of EDINA Digimap, www.edina.ac.uk*)

Cabinet 6: The moral city

- The distribution of public baths across in the city, 1918
(*Courtesy of Manchester City Archives and Local Studies Library*)
- Plan of Victoria Baths, 1902
(*Courtesy of Manchester City Archives and Local Studies Library*)
- Cholera map from *A Lecture On The Sanitary Condition Of Chorlton-On-Medlock*, John Hatton, 1854
(*John Rylands University Library, ISC11B,(3))*)
- Manchester Union Workhouse shown on an excerpt from Ordnance Survey Manchester and Salford 1:1,056 Sheet 23, 1848
(*Courtesy of Digital Archives, www.digitalarchives.co.uk*)
- Drink Map, 1889
(*Courtesy of Manchester Geographical Society*)
- Statistical map of binge drinking, reproduced from Manchester's 2nd State of the Wards Report, 2007/2008
(*Courtesy of the Manchester Partnership and Manchester City Council, www.manchesterpartnership.org.uk*)

Cabinet 7: Mapping the future city

- *Observations on Improvements of the Town of Manchester: Particularly as Regards the Importance of Blending in those Improvements, the Chaste and Beautiful, with the Ornamental and Useful*, 1836
(*John Rylands University Library, R151594*)
- Piccadilly Gardens area shown on an excerpt from Ordnance Survey Manchester and Salford 1:1,056 Sheet 29, 1849
(*Courtesy of Digital Archives, www.digitalarchives.co.uk*)
- Plan reproduced from *Observations on Improvements of the Town of Manchester: Particularly as Regards the Importance of Blending in those Improvements, the Chaste and Beautiful, with the Ornamental and Useful*, 1836
(*John Rylands University Library, R151594*)
- Drawings reproduced from *Observations on Improvements of the Town of Manchester: Particularly as Regards the Importance of Blending in those Improvements, the Chaste and Beautiful, with the Ornamental and Useful*, 1836
(*John Rylands University Library, R151594*)
- Map reproduced from Plate 72 *City of Manchester Plan*, prepared by the City Council, 1945
(*John Rylands University Library, R91041*)
- Piccadilly reproduced from Plate 83 *City of Manchester Plan*, prepared by the City Council, 1945
(*John Rylands University Library, R91041*)



Listing continued

- City of Manchester Plan, prepared by the City Council, 1945
(*John Rylands University Library, R91041*)
- Piccadilly Gardens in 2009 mapped by Ordnance Survey MasterMap
(*Courtesy of EDINA Digimap, www.edina.ac.uk*)

Cabinet 8: Leisure and pleasure

- Royal Jubilee Exhibition plan, 1887
(*Courtesy of Manchester City Archives and Local Studies Library*)
- Two images of the Royal Jubilee Exhibition reproduced from *The Graphic*, 7 May 1887
(*John Rylands University Library*)
- Orienteering map of Heaton Park, 1990
(*John Rylands University Library Map Collection*)
- Promotional map for the new Irwell River park, 2008
(*Courtesy of Salford City Council*)
- Belle Vue guide and crowds at the main entrance, c.1952
(*Courtesy of Chetham's Library*)
- Belle Vue guide and map, 1936
(*Courtesy of Chetham's Library*)
- Belle Vue guide and map, 1931
(*Courtesy of Chetham's Library*)
- Belle Vue guide and bird's-eye plan, 1899
(*Courtesy of Chetham's Library*)

Cabinet 9: The hydraulic city

- Longdendale Waterworks, 1881
(*Courtesy of Manchester City Archives and Local Studies Library*)
- Landscape view showing imagined route of the Manchester Ship Canal, 1883
(*Courtesy of Manchester Geographical Society*)
- Davyhulme sewage works plan, undated
(*Courtesy of Manchester City Archives and Local Studies Library*)
- Water mains plan reproduced from John Frederic La Trobe Bateman's *History and Description of the Manchester Waterworks*, 1884
(*John Rylands University Library, 628.1/BAT*)
- Flooding at Wilton Grove, Heywood, August 2004
(*Courtesy of Nigel Lawson, School of Environment and Development, University of Manchester*)
- *Manchester Its Message: A Souvenir of the Visit of the Overseas Delegates to the International Advertising Convention*, 1924
(*John Rylands University Library, OLDI6I21I3*)
- Manchester Ship Canal strip map, c. late 1950s
(*Courtesy of Richard Dean, Canalmaps Archive, www.canalmaps.net*)

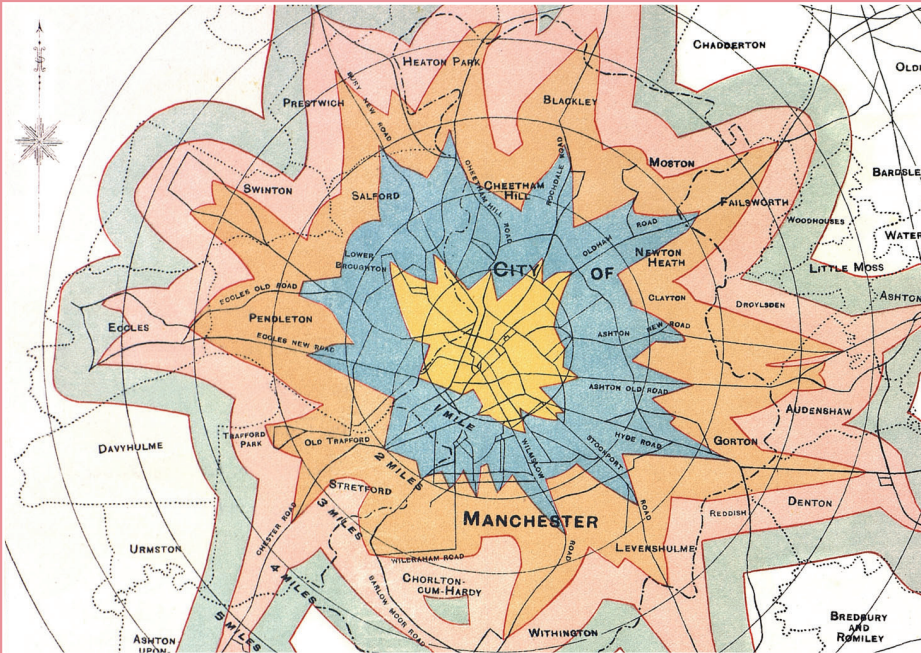


Listing continued

Cabinet 10: Bird's eye views of the city

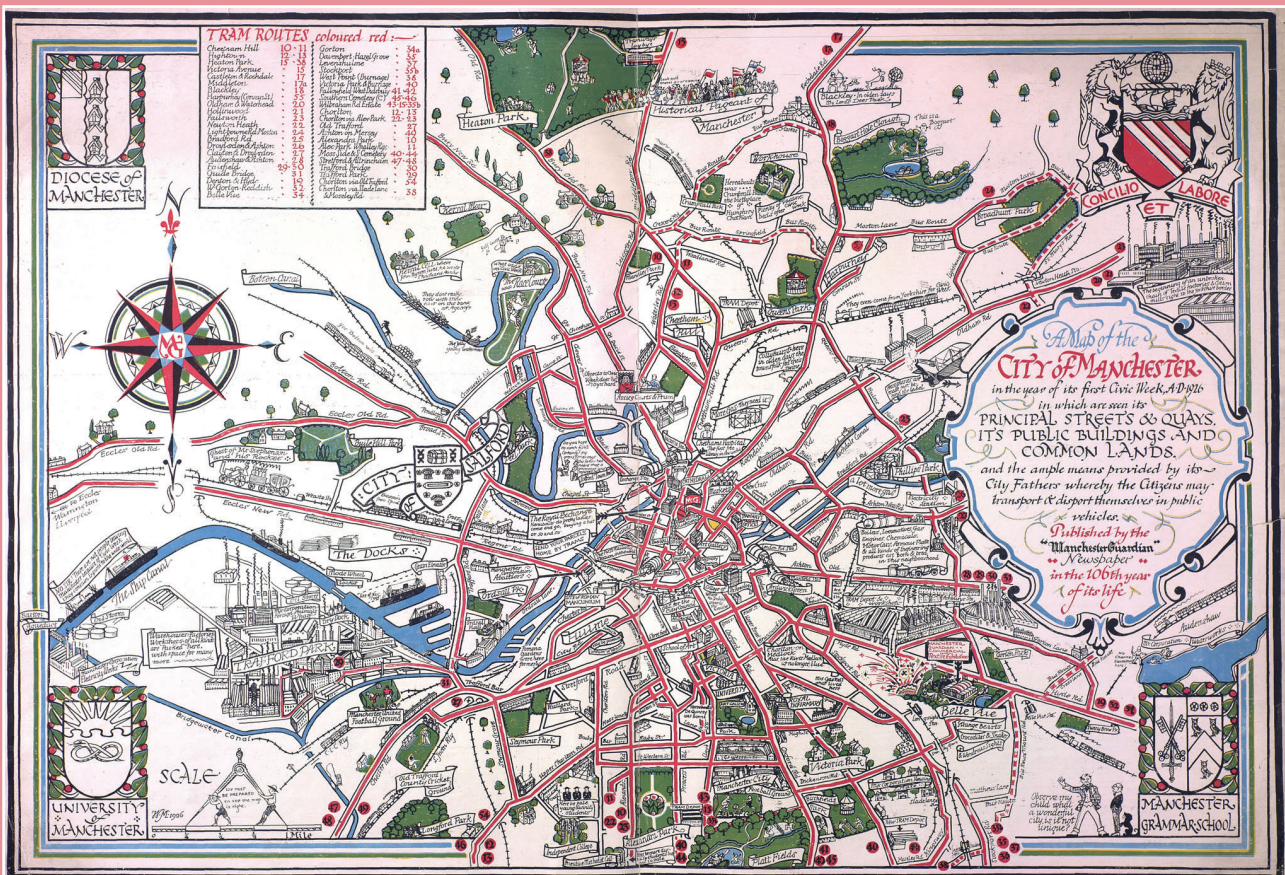
- Cityscape Map, 1994
(*John Rylands University Library Map Collection*)
- Reader's Digest City Walks, undated
(*John Rylands University Library Map Collection*)
- Manchester Mega Photo postcard, Aidan O'Rourke, www.aidan.co.uk, 2008
(*Courtesy of Martin Dodge*)
- Vertical aerial photograph of Manchester City Centre, 2006
(*Courtesy of The GeoInformation Group and Landmap, <http://landmap.mimas.ac.uk>*)
- Pictorial Map of Manchester and Salford, John Heywood, 1886
(*Courtesy of Chetham's Library*)
- Excerpt from Pictorial Map of Manchester and Salford, John Heywood, 1886
(*Courtesy of Chetham's Library*)
- Excerpt from of A Bird's-Eye View of Manchester In 1889
(*Courtesy of ICP Framing Ltd, Ashton under Lyne, www.icpframing.co.uk*)

Mapping Manchester



Time Zone Map, 1914

This map, produced as part of transport policy report, details how long it took to get by tram-car from different suburbs to Piccadilly or the Exchange. (Courtesy of Manchester City Archives and Local Studies Library)



A Map of the City of Manchester in the First Civic Week, 1926

This promotional map was published as a supplement to the Manchester Guardian, highlighting 'the ample means provided by the City Fathers by which the Citizens may transport and disport themselves in public vehicles'. (Courtesy of Manchester City Archives and Local Studies Library)