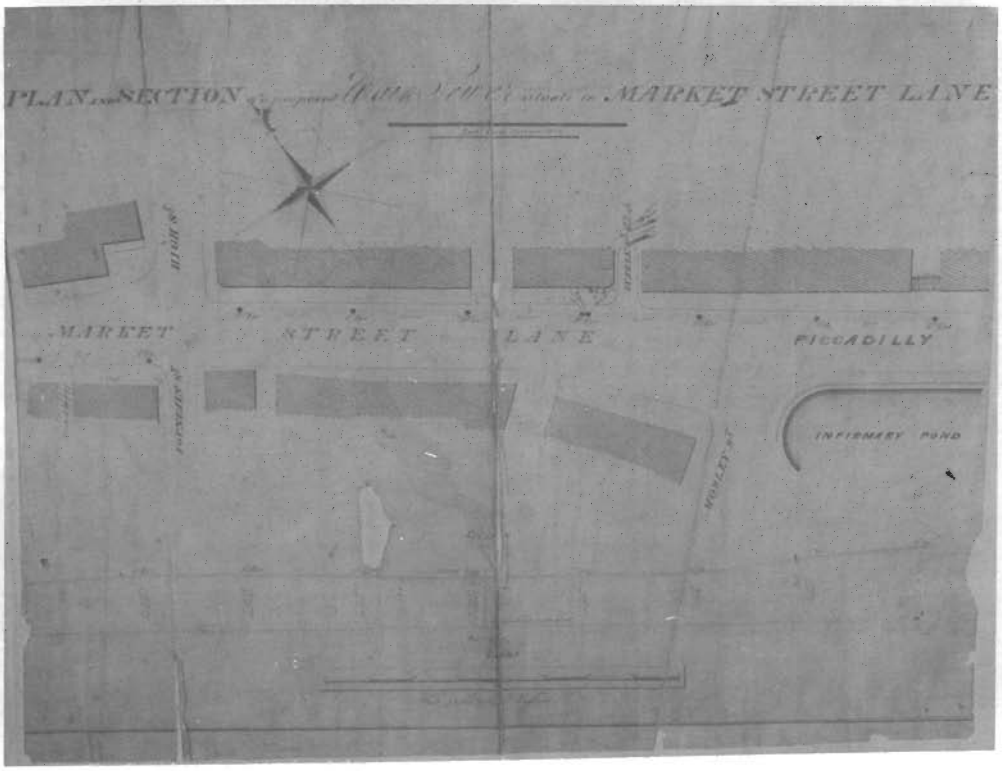


Fig.1: Line of main sewer on Market Street Lane, 1829.

MAPPING MANCHESTER'S SEWERS THE ENGINEERING ARCHIVES PROJECT

Shirley John and Philip Guest

The unique character of Manchester, Britain's first industrial society is now well established. However, the developments in its infrastructure, in which the sewerage system was particularly prominent, and its implications for improved public health, is less well known. The city centre and present inner city areas still rely to a large extent on the sewers constructed in the first half of the nineteenth century, and not surprisingly sewer rehabilitation is now a major activity.

Manchester City Council is extremely fortunate in still possessing many of the earliest sewer plans dating from the 1830s, although site investigation and research has revealed that a significant number of sewers were constructed prior to this date. Regrettably, records for this earlier period no longer exist, if, indeed, any were ever made. The earliest plan, showing a proposed sewer in Market Street Lane (the present Market Street), is dated 1829 (Fig.1).

At least 25,000 original drawings and other related documents survive in the archives of the City Engineer and Surveyor's Department, covering the period 1830 to the 1930s. It is believed that they have been stored in one of the towers in Manchester Town Hall since the late 1940s. The majority of the drawings fall into two categories: plans which are stored in large plan books, or alternatively roll drawings, which range in size from around two feet to 10 feet (0.6m — 3.0m) in length. The condition of the plans varies, depending on the type of paper utilized, but many are in a poor condition. The bulk of the plans are sewer-related, although they are of considerable historical worth in their own right. A significant number of drawings portray non-sewer information, such as architectural features of buildings, water courses and tramways.

The value of maps and plans to historians and researchers as a basis of historical information has long been recognized, but underground plans are rarely used as such a source. The archive represents a comprehensive record of one of the earliest extensive sewerage systems in Britain, and also gives a broad insight into the workings of the Department. Even the earliest, fairly basic sewer drawings generally show the name of the draughtsman, surveyor, and the contractor's signature (or, occasionally, an 'X' if the contractor was illiterate). Many show additional interesting information such as street layouts, building plans and occasionally names of building owners and occupants. The quality of the draughtsmanship of the majority of the drawings is excellent, and many are visually appealing, particularly where colour-wash techniques have been used.

A typical early plan is that of Clarence Street in Manchester (Fig.2), which shows a 24" x 18" 'U'-shaped brick sewer, covered with a flag top. This type of sewer was particularly common in Manchester until 1848, at which time the egg-shaped sewer became predominantly used. Also shown in the plan are the locations of 'blind-

eyes' or shafts — important information for present generation engineers, as these structures do not extend to the ground surface. Coincidentally, this sewer is currently being replaced as part of the sewer rehabilitation programme, since investigation work has revealed that it is structurally unsound.

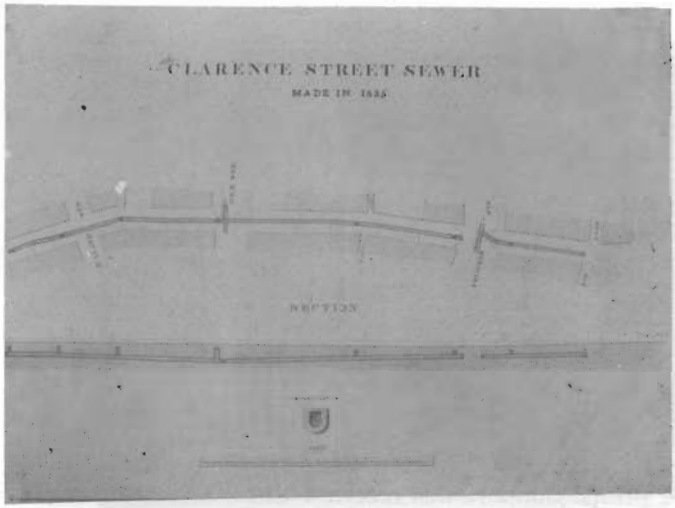


Fig.2: Clarence Street sewer, 1835.

A further example is that of Oxford Road in Manchester (Fig.3), which shows a large 72" x 38" barrel-shaped brick sewer. It was constructed in 1837, and originally discharged its contents directly into the River Medlock; this was commonplace in the nineteenth century, as the original purpose of the sewerage system was solely intended for the drainage of surface water. In the 1890s, an interceptor network was constructed to divert sewer flows away from natural watercourses, which had become polluted to an entirely unacceptable level. Indeed, poor river water quality is still a major current problem. An interesting feature of this comparatively simple drawing, is that the location and site of the former St. Peter's Church is also shown.

The plan of Church Road, Withington (Fig.4), typifies a sewer located within the suburbs and constructed at the end of the nineteenth century. The use of circular clayware pipes had become common in residential areas because of their comparative ease of construction and durability. The change of direction of flow along Church

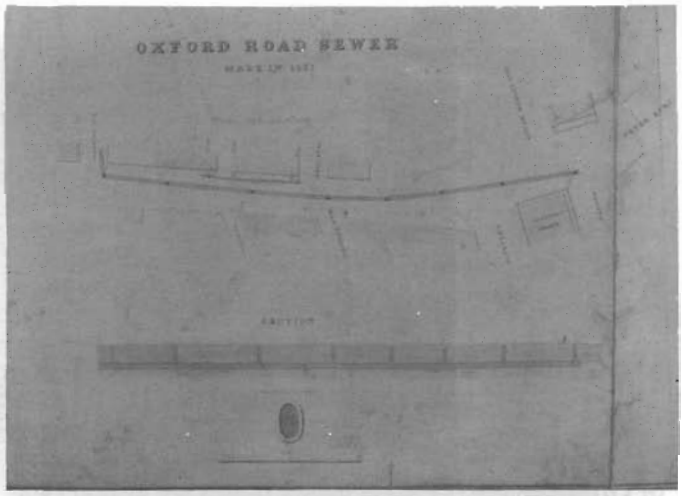


Fig.3: Oxford Road sewer, 1837.

Road reflects a more effective discharge route to the main network. Also clearly shown on the plan are the names of owners of adjacent properties, together with contract details.

Figures 5 and 6, drawn around the turn of the century, show the profusion of undergound services, such as sewers, electricity cables, and water mains, running along Cross Street, in front of Cross Street Chapel, demonstrating the potential damage that could be caused by the lack of knowledge of underground conditions, even in the early 1900s. The local historian will also find the details of the chapel of additional interest.

The Archive also holds a selection of maps which have not been indexed with sewer plans. There is a large collection

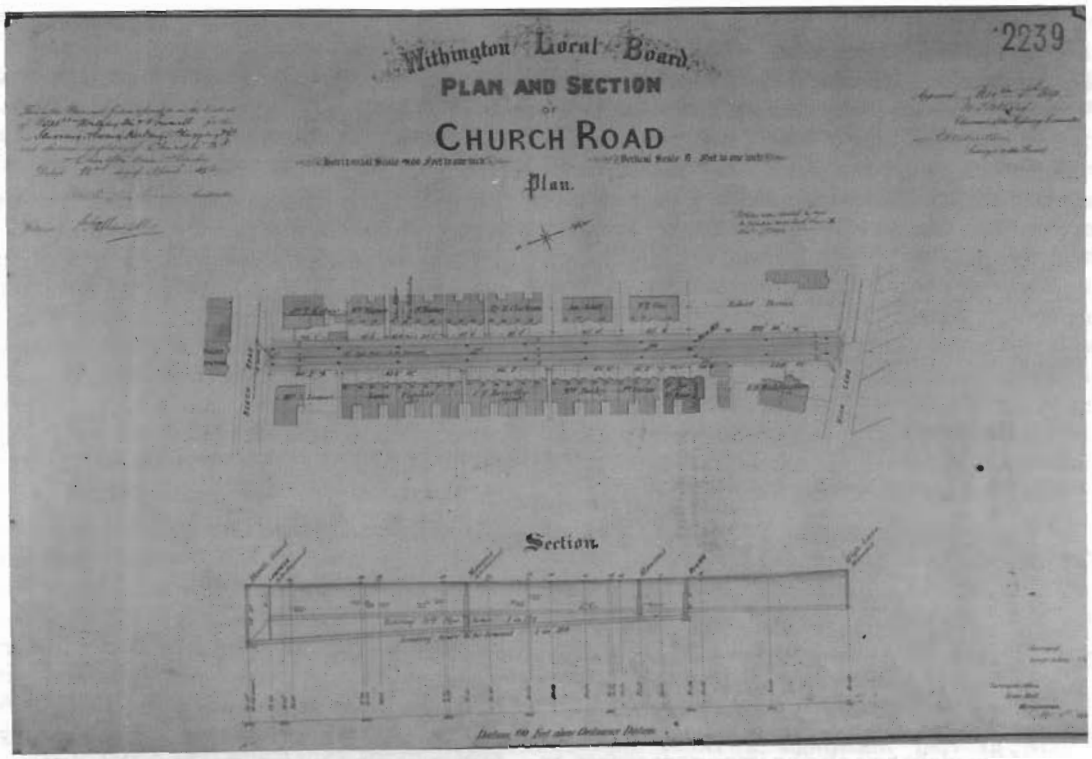
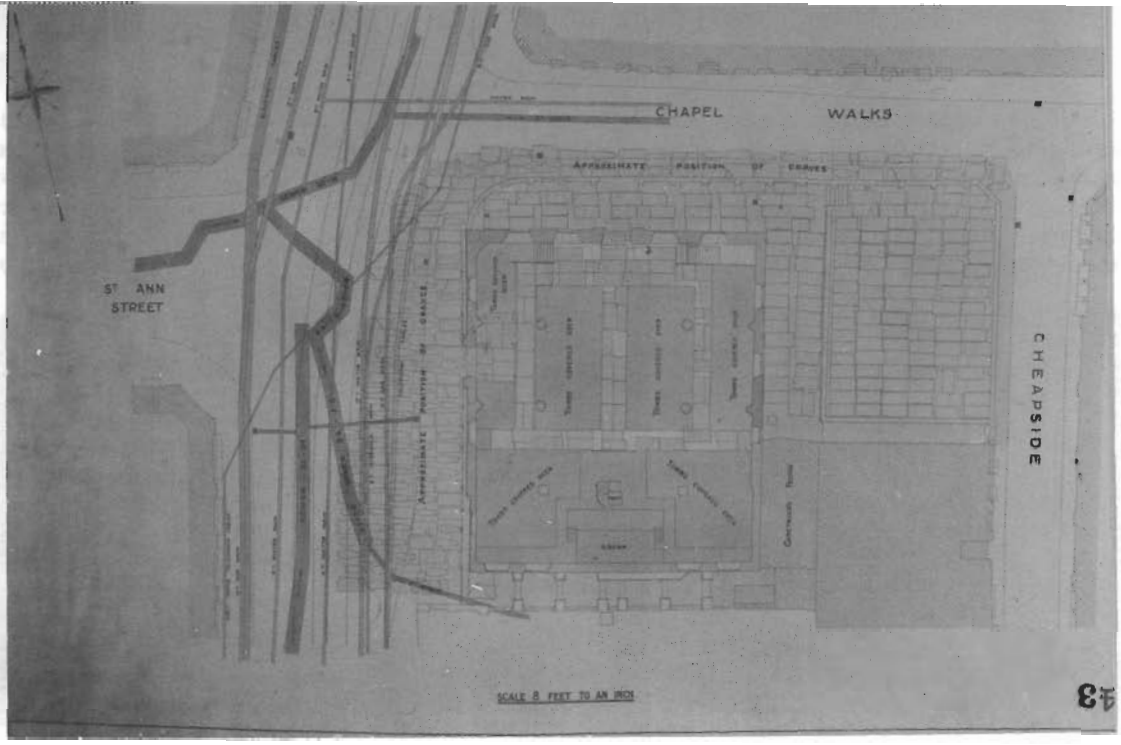


Fig.4: Church Road, Withington, 1890.



of Ordnance Survey maps dating from 1900 in 1/500 and 1/2500 series. Other maps show municipal wards and polling districts around 1915, and a variety of planning initiatives proposed in the 1930s.

Until two years ago, the only indexing system available within the City Engineer and Surveyor's Department for the retrieval of these records was in the form of various card indexes which reflected the fragmentary growth of the sewerage system, and based on the extension of the City boundaries into different townships. This system was complicated to use, and only a small number of individuals possessed the necessary historical and local knowledge to carry out a thorough search. As they retired or left the service of the Authority, so too the retrieval ability declined, such that by 1984 there was a danger that the Archive would seldom be referred to.

The complicated existing indexing system meant that it was never known for certain whether all of the relevant plans had been located, and overall as a source of information for research purposes, could hardly be described as conducive for use by members of the general public. Perhaps even more significantly, the information was becoming less accessible to the City Engineer and Surveyor's Department, which was its primary beneficiary. An additional problem was the poor storage conditions in which the plans were retained. The tower had no heating, poor lighting, and was extremely dirty (although the former two conditions were favourable to the storage of the plans). Pigeon feathers and deposits were also in evidence throughout the area. Roll plans were stored in 'cubby holes', which were frequently unlabelled, thus presenting an unreliable system for location and subsequent replacement. For these reasons, it was considered essential to implement an effective system for indexing and preserving the Archive.

In 1984, the Highways Committee to the City Council agreed that a proposal should be submitted to the Manpower Services Commission (MSC) for the cataloguing of the records. The project was to involve the cleaning, assessing and indexing of the drawings, followed by data entry into a computerized information retrieval system. This would permit the assessment and manipulation of basic data contained in the records. Microfilming of the plans was also an important aspect, to reduce handling, for rapid viewing and for the production of prints. Support was received from various historical societies and educational establishments and in the following summer, MSC agreed to sponsor the 'Engineering Archive Project', as it was entitled.

After detailed discussion regarding the type of computer database required to store the information, it was decided to adopt the PRIDE programme customised by the Computing Section of the City Council, and which runs on the Council's Honeywell Mainframe Computer. The database was designed to answer enquiries from the Main Drainage Section, the principal user, but also to satisfy more general enquiries both from other departments within the City Council and the public. A total of seventeen categories were selected, the most important being that of 'street name', as most sewers are located under a street. Three entries for 'street name' for each plan were allocated, enabling a plan with more than one street or sewer type to be recorded. Furthermore, if the street is renamed, both the present and original can be entered. Additional categories described the sewer in terms of 'shape', 'size' and 'length', while others such as 'date', 'contractor' and 'depth' related to its construction. A unique reference number was marked on each plan; this was essential for microfilming purposes.

Information not directly related to sewers but of potential wider historical relevance was organized in two ways. Firstly, the plans which appeared to be of obvious interest were allocated a specific category, viz. community, map or engineering interest. These may then be retrieved simply, together with an appropriate description. The second approach avoided any specific categorisation by allocating a general 'remarks' category. Thus, the cataloguers were able to enter directly any details which they considered merited specific mention. Examples included bridges, railways and statues.

It was decided to accommodate the project members in the tower itself. The City Council approved the financing of the refurbishment of this area, and it was cleaned and decorated, storage heating installed and improved lighting introduced, to create a satisfactory working environment. A computer terminal linked to the Mainframe Computer was also installed. A full-time co-ordinator and five cataloguers (one working full-time and four part-time) were employed to work on the project over a period of a year, under the supervision of the Main

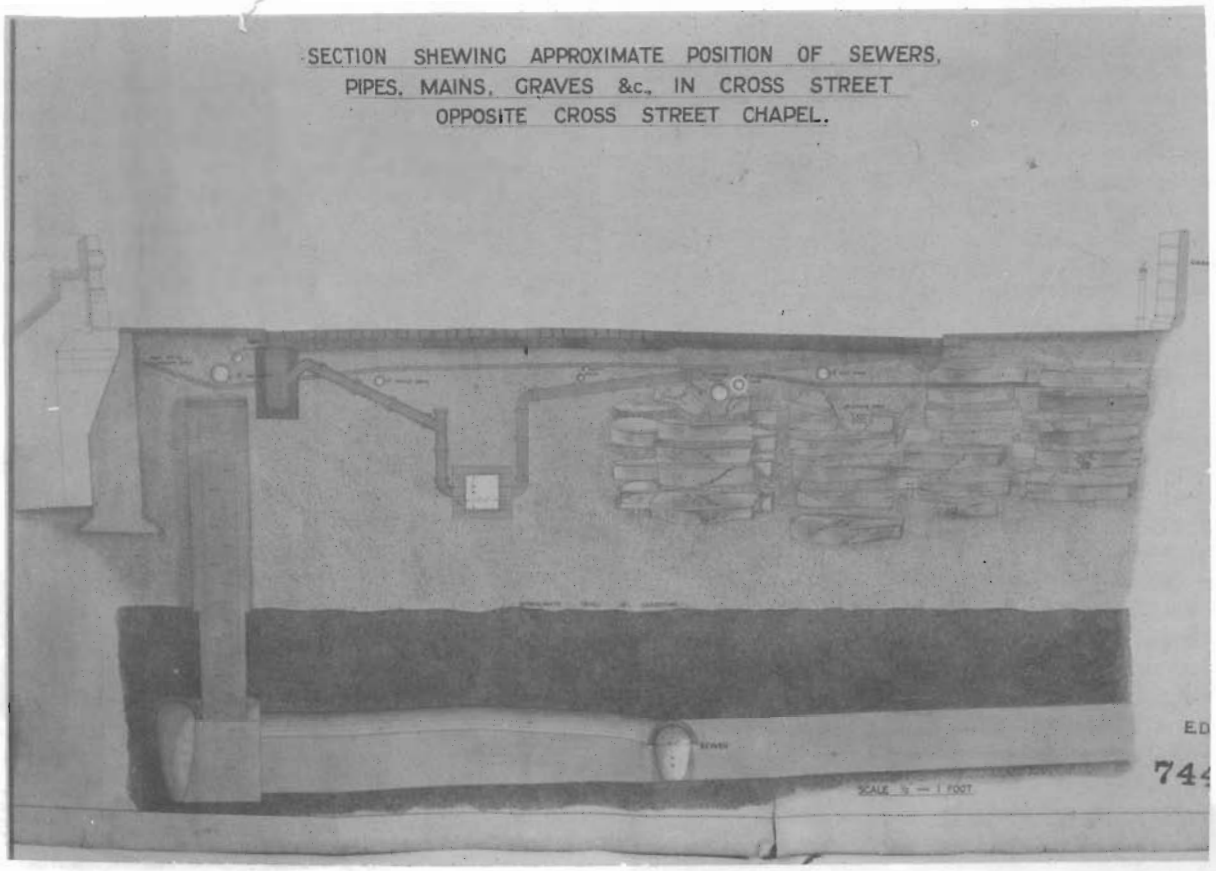


Fig.6: Section of Cross Street c.1890.

Drainage Section. Approximately 15,000 plans were identified as being essential for indexing.

The scheme commenced early in 1986, and continued until April 1987. The project proceeded remarkably well, although a few problems were encountered; several hundred plans had to be fumigated after they were discovered to be affected by mould/fungal spores. A heavy and prolonged downpour of rain, aggravated by a blocked gutter, caused a leak in a section of the roof of the tower, which soaked around one hundred plans. Fortunately, the problem was discovered early the following morning, and, on the advice of the Greater Manchester County Record Office, the plans were dried out.

The first drawings to be entered into the database were those contained in the plan books, a total of around 7,500, followed by the roll plans. Areas (such as Northern District, Central District, etc) were indexed as an entirety within these two groups. Consequently, it was possible to use the database for certain areas with accuracy within approximately six months of the commencement of the project. The Plan File Section of the City Engineer's Department also stores many thousands of plans covering many aspects of engineering work, dating from the 1920s to the present day. It is hoped that details of these plans (many of which have already been microfilmed) will also eventually be added to the Engineering Archives database in the future, ensuring a continuity of information from the earliest developments to the present day.

The plans are a rich and unique source of information for persons researching into the history of Manchester and already there have been a number of enquiries from teachers, students and social historians. Many enquiries are not specifically concerned with the sewerage system rather information associated with it. Several researchers have expressed an interest in the 'Duke's Tunnels', located around Castlefield and Piccadilly. A few sewerage plans have been located which show the final leg from near Minshull Street to 'Knowles Coal Yard' at Bank Top (now near Piccadilly Station Approach); other plans show the section near Castlefield.

In addition to sewer plans, the Archive contains a number of more general drawings. Most reflect some aspect of engineering in which the Department has been involved. A recent enquiry concerning air-raid shelter provision illustrates this. There are several plans which show the ready adaptation of buildings and other structures to offer some protection. The interior of the arches near Victoria Station were extensively modified, whilst a plan of Withington Town Hall shows details of living accommodation with a separate sealed area to allow decontamination. Information gleaned from the Archive has assisted researchers interested in a diverse range of topics. These included the spatial development of Chorlton, leisure facilities at Boggart Hole Clough and the charting of the course of Shooters Brook.

Microfilming of the plans is on-going, and it is anticipated that this work will have been completed by the summer of 1988. The Archive is already benefiting from the reduced handling and the computerised database is undoubtedly a dramatic improvement on the former system. As far as the authors are aware, the computerised cataloguing of this type of archival collection is unique, and it is satisfying that the results have been so illuminating. For further information, contact Shirley John, City Engineer and Surveyor's Department, Manchester City Council, telephone no: 234 4051.

Acknowledgements

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