

THE CITY ENGINEER'S PLANS PROJECT

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The establishment, progress and successful completion of the City Engineer's Plans Project is described. The Project, located in the Archives section of the Council of the City of Sydney, required documentation, appraisal, microfilming and conservation programs to clear a backlog of approximately 25 000 items.

In 1986 the Archives Section of the Council of the City of Sydney commenced the conservation and microfilming of its building plans. The success and cost effectiveness of this project, which reduced the volume of plans, ensured the preservation of permanently valuable items and improved access through a microfilming program, exemplified the need to commence a similar project to deal with its collection of city engineer's plans.

The microfilming of City Engineer's Plans Project was approved by Council on 23 October 1989. The initial staffing proposal recommended the appointment of one archivist and one clerk/conservation assistant for a period of two years and as project archivist, I commenced duties on 5 March 1990.

The aims of the project were to:

1. Develop and implement a disposal schedule.
2. Investigate the extent of microfilmed plans and arrange further filming.
3. Identify and register plan series.
4. Undertake conservation of plans to be retained permanently.
5. Provide Council and the public with access to the plans.

The project was initially located at Jones Street, Ultimo, in a former wool warehouse which was used for off-site storage of some of Council's archives. The building came complete with an ample supply of rodents and rain leaks, and was alternatively freezing or stifling.

The plans were an overwhelming sight — approximately 25 000 occupying sixty plan cabinets as well as the tops of thirty cabinets piled high with innumerable filthy and unstable rolls. The cabinets sat

directly on the floor and many were very old and damaged. The drawers would not closed thus providing access to dust, dirt and mice, and some contained rust. Many of them were overfilled and difficulty of retrieval had resulted in damage to a considerable number of plans, particularly the outsized ones that had been folded, rolled and literally stuffed into drawers.

Environmental monitoring and control did not extend to the area where City engineer's plans were stored. To improve air circulation large fans were put at either end and later a dehumidifying unit was placed close to where several plans carrying live mould were found. In addition a thermohygrograph provided information on temperature and relative humidity fluctuation. The average relative humidity level in November 1990 was 58.8%, in December RH ranged from 48% to 75% and in January between 45% and 81%. Unlike other parts of the warehouse, the plan storage area was not subject to leaks and only four incidences of live mould were found and successfully treated.

The sharing of premises with the Conservation of Building Plans Project avoided the purchase of expensive conservation tools and equipment (see 'The Conservation of Building Plans Project'. A. McGing and A. Picot in *Archives and Manuscripts*, vol 16, no 2, November 1988).

The first few months of the project were spent becoming familiar with the collection and control systems, appraising some series of plans for immediate destruction to provide working space and identifying conservation problems. Larry Cahill, the City Engineer's Department plans custodian for twenty years, explained much of the current control system. His in-depth understanding of the plans' content and arrangement was of inestimable value.

The collection comprised two broad groups — the first (the majority) — was housed in drawers, assigned a CED (City Engineer's Department) number and fell into several identifiable series which were still being created and were accessible by a card index; the second group consisted of bundles that seemed to have accumulated almost by accident. This unidentified group included many duplicates and worthless items as well as some extremely interesting and historically valuable plans.

Each of these was appraised and disposed of:

- by registration as a Council Record Series by returning them to the Department when they contained current information;
- by donation to an appropriate institution (for example an early 20th century harbour wharfage plan to the Australian National Maritime Museum);
- or destruction.

Those plans now registered as series cover a variety of subjects and are some of Council's oldest (1840s) and most interesting records. They contain an absolute mine of information for researchers. Some examples are: [CRS 407] Plans of the Borough of Camperdown dating from 1868 which are some of the only surviving records of that Borough which became part of the City of Sydney in 1908; three series of garbage destructor plans drawn by Council and overseas engineering firms (1899-1927); sewerage and detail sheets showing the development and improvement of services in the city 1855-1921; original sketches of improvements to Hyde Park 1928-1932; and [CRS 518] Plan of the Riley Estate, 1844. Over thirty series of plans containing such unique and valuable information were registered in the course of the project.

To deal with the identified plans a great deal of time was spent in consultation with staff of the City Engineer's Department. Given their reluctance to destroy any type of record and in some cases their opposition to the transferral of plans to microfilm, much time was spent gaining their confidence, explaining that no Council record would be destroyed without first being microfilmed.

I did suggest that the department approve destruction of the collection of 14 000 linen drawings which, although the original drawings, did not reflect work as executed. The linen drawing was



Some of the sixty plan cabinets housing the City Engineer's plan collection.



The outsized plans — a special storage challenge!

copied onto paper — the 'office copy' — which contains all annotations, approval dates, signature and stamps, file references, etc. Despite the fact that the linens would not be used either for office or reference use, the CED staff were most vehement in their argument to retain them permanently. Microfilming 14 000 items was out of the question so this obsolete series now occupies six ten-drawer plan cabinets.

Disposal Schedule

In writing the schedule I aimed to provide the instrument by which — in the short term — the backlog of office copies held in archives could be reduced and — in the long term — establish a regular program of microfilming, destructions and transfers.

The CED control system provided the basis for the disposal schedule categories. As explained above from c. 1908 all plans were drawn onto linen, given a tracing number, copied onto paper stamped 'office copy' and given an 'office copy' number. This number consists of an alpha-numeric prefix, e.g. E1 denotes an engineer's road reconstruction plan, S6 is a survey proposal and so on. A consecutive number is then assigned to each new job and a sheet number is assigned for related drawings, e.g. the final number appears E1-23/5 or S6-6/2. The

disposal schedule categories therefore are subject-based according to plan type and reflect the Engineer Department's original arrangement.

The basic premise of the schedule was that all original drawings dated prior to 1900, all drawings with original construction details and all drawings that could not be adequately copied onto black and white microfilm would be kept permanently in their original format. This latter group comprised hundreds of items because they contained coloured lines of colour wash to identify services (gas, water, etc) or different colours were used to identify resurfaced areas from unsurfaced. Colour microfilming was considered, however, the possibility of fading and the added expense negated this option. Modern drawing techniques such as the use of ink patterns in place of colour wash will reduce this problem in future.

All other plans would be microfilmed then destroyed. The engineers agreed that plans held at Sydney City and South Sydney City Councils would have a current life of five years in their paper format. On an annual basis the department would arrange for appropriate plans (i.e. those older than five years) to be microfilmed, listed for destruction or transferred to archives. The existing annual register of plan numbers in the plans room would facilitate this annual destruction/transfer. By involving the Engineer's Department staff in this process they became more aware of the institutional role of the archives, i.e. it was not to be treated as a dumping ground for unregistered and unwanted plans.

After several draft schedules were discussed with CED staff and in particular with the plans custodian a final schedule was submitted for approval in November 1990 and subsequently approved unaltered.

Implementation of the schedule consisted of the following phases: sentencing, conservation, microfilming and destruction.

In order to facilitate the conservation and microfilming programs I had to sentence each plan in the collection. A form was designed which became the Microfilming and Destruction Register and in which each plan number was listed with its sentence (temporary or permanent). The forms were then passed to the conservation assistant who applied the appropriate level of conservation according to its sentence, noted the date of conservation and microfilm batch number. I used the forms again when the plans and microfilm were returned to check all items were returned and microfilm copies received.

Approximately 11 000 plans required sentencing. Whilst the schedule designates a retention period for each series of plans, peculiarities in plan drawing techniques necessitated individual appraisal. This was an essential and time consuming part of implementing the disposal schedule.

Conservation

One aim of the project was to undertake conservation of plans to be retained permanently. Westpac had provided a conservation training program for newly appointed conservation assistants to the Conservation of Building Plans Project and advice on all conservation matters. The conservation assistant appointed to the Engineer's Plans Project, Jane Bible, commenced this training under the guidance of Westpac staff in September 1990.

An interim report compiled by Jamie Elwing from Westpac identified major problems resulting from the way plans had been stored and the lack of environmental control. In addition the report identified the major problems associated with the physical properties of the plans. This report recommended we undertake a survey of the plans based on a 10% sample and write a report from the data collected — its function was to identify the most efficient approach to achieve the Project's conservation objectives. These objectives were: to apply necessary conservation treatment to temporary plans to facilitate microfilming and destruction and to apply appropriate conservation treatment of permanent plans to ensure their preservation and safe storage.

The Survey

The aims of the survey were to establish the number of plans, determine how many were temporary or permanent, assess their condition, size and specific conservation needs.

The survey established that the collection consisted of 24 580 items of which 2054 were original drawings on paper, 7518 were office copies, 14 338 were drawings on linen and the rest were blueprints, tracing paper, or drafting cloth. The majority measured approximately 1300 × 770 mm while 100 permanent plans were too large for cabinet drawers. The vast majority of plans were considered to be in 'OK' condition and required light to medium conservation. Of the original drawings on paper 178 were in poor condition and required extensive conservation. We also recorded if plans were backed or unbacked — 1264 original drawings on paper were cloth-backed. This high number immediately negated any possibility of removing or replacing the backings which is a difficult and time-consuming process.

Other statistics collected revealed that 12 095 plans required cleaning and over 4000 items required repairs to damaged edges and removal of adhesive.

Westpac had developed a set of 'work values' for conservation treatments, e.g. minor tear repairs required thirty minutes work, major repairs to damaged edges required sixty to ninety minutes and so on. We extrapolated the statistics and calculated the work value, e.g. 414 plans required minor adhesive removal at sixty minutes per plan = 414 hours. To apply the ideal level of conservation to temporary and

permanent plans 5080 hours were necessary to complete the work. Additional time for processing and documentation procedures brought the grand total to 6790 hours. Based on a thirty-five-hour week it would take a conservation assistant 193.88 weeks or forty-nine months to apply the ideal level of treatment to each item. This project had one conservation assistant for nineteen months.

A request for an additional conservation assistant was approved and Rae Dillon started in March 1991. Both Rae and Nicole Ellis, who replaced Jane Bible in June 1991, had previously worked on the Conservation of Building Plans Project and were therefore fully trained and extremely competent conservation assistants.

The Conservation Program

The next phase was to write a conservation program with modifications to the 'ideal' and to establish work targets that would enable us to complete all necessary conservation within the project's timeframe.

It was decided that temporary plans would receive the bare minimum treatment in preparation for microfilming — flattening, light cleaning and magic tape repairs to large tears, i.e. literally only a few minutes would be spent on each item. The permanent plans at the very least would be cleaned front and back, tears and damaged edges would be repaired using Japanese paper, heat set tissue and methyl cellulose paste and all adhesive tape would be removed. It was hoped these repairs could be limited to approximately sixty minutes per plan. Deacidification was out of the question because of time constraints so all plans would be stored interleaved with archive text in an attempt to prevent acid migration. Monthly target figures were established in order to closely monitor the project's success.

The following statistics showing the number of plans treated and microfilmed illustrate the achievements of the project team:

E1	Road Reconstruction plans —	temporary	2070
		permanent	1220
E3	Engineering and Survey plans —	temporary	3100
		permanent	348
E4	Lighting plans —	temporary	880
S6	Proposed Survey Work plans —	temporary	1051
		permanent	152
G3	Plans drawn for/by Government Departments —	temporary	950
		permanent	16
E1A	Adopted level plans all permanent, none microfilmed		300
		TOTAL	<u>10 087</u>
		TOTAL PERMANENT PLANS	<u>2036</u>

Microfilming

Another aim of the project was to investigate the extent of plans already microfilmed and then organise further filming.

In 1977 the CED had arranged for the filming of approximately 12 000 plans with the intention to then destroy the plans; however, the destructions were not carried out. Under the terms of the *Evidence (Reproductions) Act 1967* all microfilmed copies of records are required to carry a certification with the signature of an approved person stating that that person owned and controlled the record at the time of filming and that it is an approved copy. It was discovered that the microfilming done in 1977 by an outside firm did not carry such certification and these copies were therefore inadmissible as evidence in litigation. It was necessary to re-film all Council-drawn plans. Plans deposited with Council (as opposed to created by Council) fortunately did not require re-filming because Council would not be expected to produce an original of those plans and copies were held at the Land Titles Office. These plans were therefore temporary according to the disposal schedule and could be destroyed.

Under a cross-servicing agreement established in 1989 the Council of the City of South Sydney provided the Council of the City of Sydney with a reprographics service. Not only was this a huge cost saving, we were also assured of the Reprographic Officer's experience and expertise in microfilming plans, duplicating aperture cards and carrying out methylene blue and other tests. Also a fast turnaround was guaranteed.

Once the disposal schedule was approved the first batches of plans were sent for microfilming. Council carpenters constructed lightweight but durable timber trays to transport plans to and from South Sydney. Rather than sending plans in numerical order which would require constant equipment adjustments, the plans were divided into small, medium and large sizes to facilitate easier copying, i.e. the camera operator need only alter focal length three times.

Plans were microfilmed to Australian standards onto aperture cards. We were provided with one security master on silver halide film and three copies on diazo film for reference use in the archives and plans rooms of the Councils of Sydney and South Sydney. Each of the four aperture cards was returned stamped with the plan number and only required stamping with the CRS number.

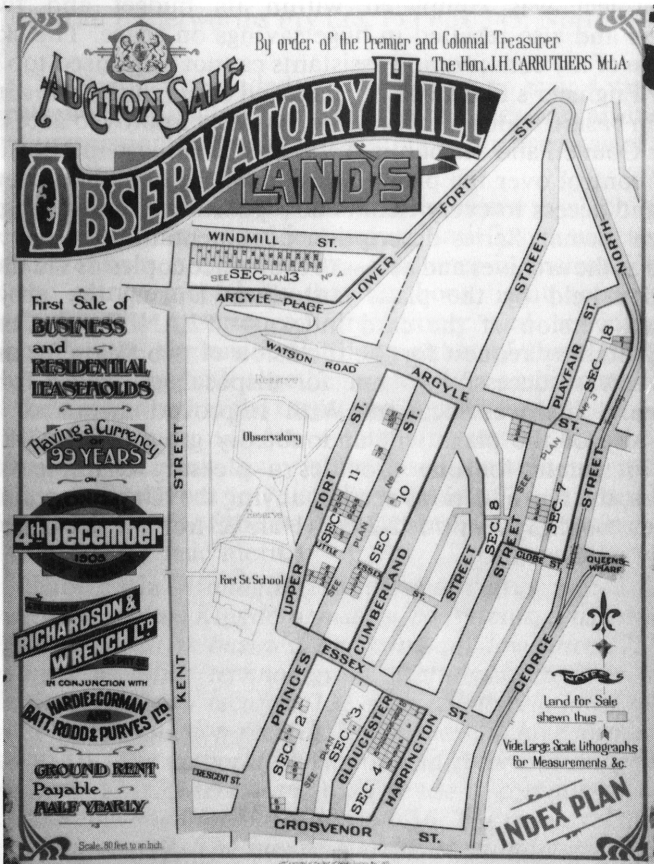
Storage

Storage options had to be considered that would maximise space usage, provide easy retrieval and cause least damage to plans. The Conservation of Building Plans Project had employed a vertical system whereby plans were encapsulated and attached to hanging strips. This method was unsuitable for the city engineer's plans collection; the

majority being very large and cloth-backed. Even if they had been encapsulated it was unlikely the hanging strips could support their weight. Many conservators are of the opinion that plans should only be encapsulated after being deacidified and the size and nature of the collection prevented us from deacidifying the plans. It was finally decided to purchase eighteen new ten-drawer horizontal plan cabinets to house the permanent engineering plans.

The drawers are lined with either Archive Text or two-ply conservation mount board, plans are interleaved with Archive Text and a sheet of mount board placed on top for weight and protection. A maximum of thirty plans was placed in each drawer.

The outside plans posed particular storage problems as some measured over two metres in length. These items were interleaved with



One of a decorative series of auction lithographs now registered as a Council Record Series.

Archive Text, rolled and stored in extra long custom-made boxes. Although not the ideal method as plans become misshapen when stored this way, it was the only option which would meet time and financial constraints.

During the course of the project the archives was moved from Jones Street, Ultimo, to Dunning Avenue, Rosebery. The plan storage area in the new warehouse at Rosebery is much cleaner and provides much improved access to the cabinets. Monitoring of this new environment also revealed considerable fluctuations in the temperature and relative humidity, fans and dehumidifiers were again put into operation to promote air circulation and reduce humidity.

Conclusion

The project was completed within its budget and two-year timeframe and also resulted in huge savings on space. The skill and dedication of my conservation assistants cannot be praised too highly. The City Engineer's Plans Project achieved all its short term aims and laid a firm basis for long term benefits, not least improved access to the plans for Council and the public. I was able to impose intellectual and physical control over the plan collection where none had previously existed and access to every item is now possible either in original or microfilm format. Series description documentation for all plans is available at the archives and access to the 'office copies' is via the street card index held by the plans custodian. During the project an automated version of the card index — PLANES — was being perfected and my request for the inclusion of two fields for archives references was successful — one for disposal; the other for series number and archives location. With improved means of access, research use of the plans will undoubtedly grow. The work of Dr Shirley Fitzgerald for one provides a pleasing example of their usefulness, the reproductions accompanying the 'Destructors' chapter of her new book *Sydney 1842-1992* (Hale & Iremonger, 1992) being especially noteworthy.