Essendon Incinerator

In the last years of Walter Burley Griffin's life in Australia, his involvement with the design and construction of municipal incinerators was surely his most important architectural commission. PETER NAVARETTI (see elsewhere in this issue for his family's role as architectural patrons) writes of one such installation in Essendon. He makes the point, however, that Griffin was not at the official opening. Were these buildings the work of Griffin or his partner, E.M. Nicholls?

View of West Elevation
Essendon Reverberatory Incinerator

During the 1920's Municipal Councils were becoming increasingly concerned both with the shortage of suitable waste lands within their boundaries for the tipping of garbage and household refuse, and also the growing public protest about the danger to health of Council tips. The horrors of the two epidemics which swept Melbourne after the Great War were still fresh in the minds of the citizens.

Gradually there was an awakening of consciousness by local authorities to the value of incineration as a means of disposing of garbage. At that time the popular methods of disposing of garbage were by dumping at sea or by burial to reclaim waste lands. Both these methods left much to be desired from a hygienic point of view and Councils, with the health of the people in mind, decided to build incinerator plants.

For some years there was a great deal of debate as to what should be done about the treating of Essendon's garbage. Aberfeldie residents strongly protested about the offensive smells from the tip which was cited as the breeding ground of rats, flies and disease.
In 1929, however, the Essendon Council decided that they should build a municipal incinerator. This decision was followed by a long and hard-fought battle from some ward councillors who had a preconceived idea of what an unsightly structure an incinerator could be, with its tall chimney belching out smoke and fumes.

None of the Councillors wanted an incinerator to be built in his Ward. Eventually, it was decided that the incinerator would be built in the Aberfeldie Ward adjacent to the old tip in Holmes Road.

The Essendon Gazette of 9 January 1930, reported that a three-unit incinerator plant was under construction in Holmes Road. The site, situated as it was in the midst of parks and surrounded by residential areas, demanded a building which would harmonise, as far as possible, with its surroundings. The design of a suitable building was made one of the requirements of the contract.

The successful tenderer was the Reverberatory Incinerator and Engineering Company of Melbourne. The managing director of this company, Mr. N. Leonard-Kanevsky, had commissioned Walter Burley Griffin in 1924 to design Leonard House at 44 Elizabeth Street, Melbourne, as his head office. In addition, Walter Burley Griffin had his Melbourne drawing office in Leonard House. It was therefore quite natural that Mr. Kanevsky should ask Griffin to design a building to house the incinerator plant, and at the same time provide a building of architectural merit that would be in keeping with a residential area and aesthetically satisfying to Council and ratepayers alike.

The first incinerator designed on the reverberatory principle was erected by the Reverberatory Incinerator and Engineering Company (RIECo) for Sandringham Council, and it proved so satisfactory that the plant was duplicated by the addition of another furnace. Plants were subsequently erected at Box Hill and Geelong, and evidence from these convinced Essendon Council to select this type of incinerator.

These reverberatory incinerators were invented by an Australian engineer, John Beadle, who lived in Ormond Road, Moonee Ponds in the City of Essendon. There were many unique features incorporated in the design of the incinerator for Essendon.

The plant was designed on two levels. Tipping from motor lorries took place at the upper delivery level into three concrete hoppers which gravitated the garbage to a controllable door. The rotation of a wheel on the lower level opened this door, allowing the required quantity of garbage to fall into a preliminary chamber. Hot air was forced into this chamber thus drying up and eliminating the excessive moisture which exists in most household refuse. Being now much more easily burnt, the dried garbage was thrust down through slotted bars into the furnace.

The temperature attained in the furnace varied between 1200 and 2000 degrees Fahrenheit, although 1500 degrees was sufficient for the destruction of garbage. The extra temperature ensured that the smoke and fumes, as well as the 'green gases' rising from the refuse on the drying hearth, were thoroughly consumed and rid of their noxious qualities in the furnace prior to their discharge as a 'thin film of clear vapour from the flue tower'.

This pollutant-free emission was achieved by deflecting or reverberating the hot gases of combustion over the material to be consumed and under the reverberatory arch which was at incandescent heat. Thus complete combustion of the mixed gases took place during their passage into the second chamber. The non-combustible contents of the garbage, being about 10%, remained as clinker to be subsequently used as municipal road ballast, fertilizer for Council's garden plantations or wheeled away in steel ash skips to a nearby fill.
Elevations
Essendon Reverberatory Incinerator
Contract Drawings (November, 1929)
The furnaces were electrically controlled and fired on crude oil. Electric suction fans not only prevented the 'green gases' from the garbage rising into the delivery space but also avoided the necessity for a high chimney stack. Each furnace-unit was capable of handling ten tons of garbage in an eight hour day, and was operated by one man.

The employees worked at a lower level which was separated from the garbage hoppers and assisted the garbage combustion process through a small port-hole in the furnace. Cleaning and removing the clinker was executed outside the building; the clinker being raked out into the special ash skips. The incinerator included a room with baths and tiled showers where the employees could wash after work. An office and staff cloak room were also provided.

On the afternoon of Thursday 31 July 1930, a large gathering of ratepayers, progress association officers and representatives of neighbouring municipalities assembled outside the incinerator building for the official opening by the Mayor, Cr. Arthur Fenton.

Cr. Fenton spoke of the opening of the incinerator as the passing of that objectionable and obsolete tip which for many years had been a source of annoyance to local residents. It had been a plague spot and breeding ground of flies and rats and gave off nauseous smoke and smells at all hours of the day and the night.

We are not an industrial suburb so we tried to find something which would be in keeping with the tone of the locality. How well we have succeeded, you can see for yourself. We believe this plant represents the last word as far as the sanitary destruction of garbage and the recovery of by-products is concerned. The actual operation of the plant is almost a white shirt and collar job.

Having been introduced by the Mayor, the managing director of R.I.E. Co., Mr. Leonard-Kanevsky, stated that the operating costs for handling and burning every ton of rubbish would be approximately three shillings and this was far cheaper and entirely more satisfactory than burying the rubbish in a tip. Mr. Leonard-Kanevsky had taken a great personal interest in the erection of the plant at Essendon as his company was desirous that the Essendon Incinerator would be the "show window" in Victoria for demonstrating the advantages of the R.I.E. Co. incinerators.

Cr. E.H. Kinnear, told the gathering that the Council ultimately decided to build the plant in his ward, and up till that day he had heard no dissent about the destructor being built where it was. Cr. Kinnear added that judging by the enthusiasm shown by the ratepayers that afternoon, and the fact that quite a number of modern villas were being built in the immediate vicinity of the plant, it showed that the ratepayers were entirely satisfied that there was nothing to fear in the way of offensive fumes or other nuisances, and he was now glad that such a beautiful asset of the Council was placed in his ward.

When pressed to speak, Cr. J.B. Hunt of Ascot Vale Ward, said that he had fought hard against having the incinerator placed in his ward, but after seeing the beautiful structure with its modern equipment, he would not have objected to it at all. He added that Council had made a wise choice in securing the best that money could buy and had shown sound business foresight, besides guaranteeing the ratepayers an effective means of destroying the garbage and raising the standard of health in the City.

At the conclusion of the speeches Mr. Leonard-Kanevsky presented the Mayor with a gold key to commemorate the occasion. The Mayor then opened the front door of the plant and declared the incinerator open.
Sections
Essendon Reverberatory Incinerator
Contract Drawings (November, 1829)
The adjoining reinforced concrete plant-store and workshop building, which was opened on the same day, housed municipal road-making plant, such as steam rollers, and tar and bitumen sprayers.

A new bitumen mixing plant had also been installed. A unique feature incorporated in the scheme was a by-pass, by which the flue gas from the incinerator could be used to heat the bitumen kettle. There was also a complete workshop fitted with lathes and other power machinery.

The cost of the workshop and plant store was £3,017 and the cost of the incinerator building and plant was £8,976. The total Council expenditure on the municipal depot amounted to £17,800.

The visitors were afterwards taken on a tour of inspection, conducted by Eric Nicholls, who was in partnership with Walter Burley Griffin and supervising architect for the construction of the incinerator.

Nicholls was in charge of Griffin's Melbourne office in those years whilst Griffin was in Sydney. It is understood from memories of those who worked in this office, that Griffin had conceived the basic design and that Nicholls had carried out the detailed design and, subsequently, the working drawings. Eric Nicholls' name appears on the contract drawings' title blocks as the architect whilst Clive Steele is billed as the consulting engineer.

The Essendon incinerator was the first to be built from Griffin's design in Victoria albeit not the first in Australia (the Kuring-gai municipal incinerator predates it by a mere month), hence it is considered that he would have maintained control of the incinerator's initial if not final design.

When the tour of inspection was over the Mayor invited the guests to 'partake of a cup of tea and maybe something a little stronger'. It was reported in the Essendon Gazette that full justice was done to the good things provided.

The proceedings lasted until 5.00 p.m. and the Gazette praised the City Fathers for doing their best to keep the City of Essendon to the fore.

Tests later confirmed the figures given by the Reverberatory Incinerator Company, as the actual burning capacity proved to be considerably in excess of the guaranteed capacity. The results showed that the residue was only about 7% original, compared with 30% residue usually obtained in cell-type plants of English manufacture.

The plant at Essendon was unique for that period in that it was completely Australian designed and Australian made.

So successful was the reverberatory type of incinerator, that the Reverberatory Incinerator and Engineering Company succeeded in installing every municipal incinerator in the Commonwealth, with the exception of two, for the next ten years. The association between Walter Burley Griffin and the Company which began with the Essendon Incinerator, continued until Griffin's death in 1937. During that time approximately fifteen incinerators had been constructed, each individually designed to suit the site and size of the incinerator plant required, and all to the design of Walter Burley Griffin.

REFERENCES

Design Patent lodged at the Patents Office, 22 July 1926.

1. Building, 9 January 1930.

2. Essendon Gazette, 9 January 1930.

7 August 1930.