Saturdays by a staff of 700 postmen. In the central city area three deliveries are made daily on week-days and once on Saturdays by a staff of 120 postmen. Telegram delivery services are provided by messenger staff employed at the various city and suburban post offices. The establishment of new post offices in any area is governed by population increases, and usually involve raising the status of an existing office from non-official to official as circumstances warrant, and by provision of new post office buildings.

Telephone Services: The metropolitan area is at present served by 86 telephone exchanges, 80% of which are automatic and the remainder manually operated. It is planned to convert all exchanges to automatic working within the next five years.

There were 200,475 subscribers' exchange lines connected in the metropolitan area at December 31st, 1952, while miscellaneous lines such as extensions, fire and burglar alarms and private lines numbered 23,130. Equipment now installed in the existing exchanges is capable of serving approximately 240,000 lines and is housed in buildings with a total capacity of 357,000 lines. The Postmaster-General's Department estimates that it will be necessary to provide for 367,000 exchange lines by 1962 and 482,500 by 1972 to meet Melbourne's requirements.

Map 42 shows the existing exchange network in the metropolitan area and the proposed additions to meet the anticipated future needs.

Table 59 shows the telephone density changes which have taken place in Melbourne during the past 40 years. In arriving at the 1952 figures, the number of waiting applicants was taken as being connected.

An average of 13,500 new services a year are being connected in the metropolitan area, and one of the Department's greatest problems is assessing the likely telephone density for particular areas.

Even if the telephone density factor does not rise much above the 1952 figure, the housing of equipment to meet future needs will require additional telephone exchange buildings and in some instances the extension of existing buildings. The provision of permanent new buildings has been a difficult problem since the war, and it has been necessary to use temporary buildings such as army huts and prefabricated buildings in order to expedite the connection of telephone services.

Plant installations in the metropolitan area total 4,400 underground duct miles and 1,137,000 wire miles. Additional construction is being provided at the rate of 350 duct miles and 101,000 wire miles a year in cable, while 1,500 aerial wire miles are also being erected in the outer suburbs. New areas require reticulation systems involving installation of multi-duct conduits and individual cables containing up to 1,800 pairs of wires.

Basic Problems and Future Proposals: A large number of the main duct or conduit systems was installed in the roadways many years ago when vehicular traffic on roads was light. These conditions have changed over the years and to minimise danger to both the public and P.M.G. workmen, it has now been found necessary to transfer the conduits from the road to the footpaths. This is being done whenever possible. All the main city outlets have conduits in the roadways and because of the greatly increased traffic, P.M.G. workmen are now forced to "stagger" their working hours so that the movement of the traffic is not disrupted. In planning new routes for conduits, the Department is avoiding main arterial roads where possible.

Use of underground footpath space often presents serious problems at exchanges from which large groups of subscribers' and junction cables lead out. The diameters of the ducts required to carry cables vary between 3" and 4", with nests of 30/40 ducts, and space requirements are consider-It follows, therefore, that the practicability of able. installing manholes on the footpaths is controlled by the size of the manhole. These are usually 10 feet long by 6 feet wide by 7 feet deep, in which workmen are required to carry out the jointing of cables and other work. On junction routes where loading coils must be installed on cables to provide better quality transmission, the dimensions of the manholes may be increased by several feet in each direction, depending on the number of loading coils required on a particular cable. Because of the presence of other underground services such as water and drainage, it might be necessary as Melbourne develops to provide small suitable buildings adjacent to the main conduit routes to house these loading coils, much like the State Electricity Commission's transformer stations.

In the central city area the Department already has more than two miles of large tunnels under the city centre. Minor extensions are in hand, but to meet the development which is likely to occur in the future major extensions will be required.

Additions to the two main postal buildings in the city, the General Post Office in Spencer Street and the Central Post Office in Elizabeth Street, are major works which cannot be long delayed. Additional floor space is required in both these buildings to house expanding postal facilities and office staffs. Plans are now being prepared for linking the General Post Office building in Spencer Street with the

	Table 59	
TELEPHONE	DENSITY,	1912-1952

Year	Telephones per 100 persons	
1912	3.0	
1922	4.7	
1932	6.6	
1942	11.0	
1952	15.9	



Spencer Street Railway Station by connection under Spencer Street to expedite transit of mail matter by the railways. A second tunnel may also be required between the General Post Office and the Elizabeth Street Post Office for moving mail between the two buildings.

## DISPOSAL OF GARBAGE

Under the Victorian Health Act each municipal council in the metropolitan area is responsible for the collection and/ disposal of garbage from its particular district. Such garbage can be disposed of only in places approved by the Health Department.

At present almost 90% of Melbourne's garbage is disposed of by tipping at approved location's such as disused quarries or pits, eroded creek beds and low-lying land in need of reclamation. The remaining 10% is burned in municipal incinerators. The total weight of refuse disposed of annually in the metropolitan area is approximately 360,000 tons or almost six hundredweight per person. The general tendency of recent years has been for tipping to increase in relation to other methods of disposal. Only two municipalities in the Melbourne metropolitan area rely entirely on incinerators, two others burn portion of their refuse, and another is building an incinerator. The remaining 37 municipalities rely substantially on tipping. Scientifically controlled tipping and covering with soil is not only the most economical means of disposing of garbage, but is generally considered to be the most desirable from a community viewpoint. It can be the means of reclaiming valuable areas for recreation grounds, park lands or other purposes, and can result in the gradual removal of unsightly, disused quarry holes.

In some municipalities quarry holes adjacent to fully developed areas will take hundreds of years to fill, while other municipalities have few or no suitable places for tipping within or near their own boundaries. Some of these have arranged for tipping in nearby municipalities, while others have installed incinerators. Some municipalities are investigating bacteriological treatment.

The net cost of disposal by the three methods outlined is estimated at present as follows:

Incineration	13 – a ton
Tipping	3/- ,, ,,
Bacteriological treatment	3/3 ,, ,,

The cost of collection and transport has a big influence on the total cost of disposal and strongly influences the choice of method for a particular area. In fully built-up areas the horse-drawn dray is still found to be the most economical means of collection. However, its range is limited, and when distances of more than a mile or so are involved, it becomes more economical to use motor transport. Factors not directly connected with the cost sometimes influence the choice of method in some residential suburbs. The difficulty of finding a suitable site for a destructor or a bacteriological process plant may result in a decision to haul refuse a considerable distance to a tip.

Facilities for Future Disposal: There are enough quarry holes, pits and areas requiring reclamation in the metropolitan area to meet all the tipping requirements of Melbourne for at least 100 years. Some suburban areas which are distant from suitable tipping facilities will no doubt continue to find the incinerator more convenient, while the economic possibilities of bacteriological process plants may result in the installation of some of these units in the future. However, the great bulk of refuse will probably continue to be disposed of by means of tipping for reasons already mentioned.

The chief problems are:

- (a) Adequate policing of tipping for health reasons.
- (b) Avoidance of undesirable traffic generation to and from tipping areas.
- (c) Establishment of priorities for filling disused quarry holes to ensure that those areas most desirable from a community viewpoint are reclaimed as soon as possible.

Map 43 shows the capacity of existing facilities for the disposal of refuse in each municipality of Melbourne.

## COST OF SERVICES

In considering the costs of installing services in Melbourne, it is necessary to take into account the variations in the type of ground throughout the metropolitan area. An estimate, therefore, has been made of the cost of servicing houses in each of the three major geological formations found in the area, namely:

- (a) The basaltic clay and rock of the western and northern suburbs.
- (b) The silurian clay and reef of the north-eastern and eastern suburbs.

(c) The tertiary sands and sandy clays of the south-eastern and southern suburbs.

Table 60 shows the estimated average cost for a dwelling for each service in these three formations. These costs include the main distributing or collecting lines, reticulation lines and work within the property up to the dwelling. They do not include works independent of the location' of the properties, such as headworks, disposal works and work within the dwelling.

## *Table 60* AVERAGE COST OF INSTALLING UTILITY SERVICES IN MELBOURNE

(Estimated cost per dwelling at March, 1952)

Service	Geological Formation			
	Volcanic	Silurian	Tertiary	
	£	£	£	
Water	65	55	50	
Sewerage	210	160	120	
Gas	70	70	50	
Electricity	50	50	50	
Telephone	50	50	50	
Total	£445	£385	£320	

The figures show an average difference in cost of  $\pounds 125$  between the tertiary formations of the south and south-east and the more difficult volcanic ground of the west and north-east.

In addition to these figures, in the volcanic areas the cost of private street construction is substantially greater and there is some extra cost in the dwelling itself. When locating residential areas, all these costs must be taken into account and balanced against other factors, such as transport, in assessing the total cost to the community. It is interesting to note that in many areas the community is called upon to spend a far greater amount in providing utility services for a new dwelling than the actual price paid for the unimproved land. This emphasises the need for planned development.