PUBLISHED BY AUTHORITY

Victoria Government Gazette

No. 27—Thursday, 26 March 1981

Environment Protection Act 1970 (No. 8056)

STATE ENVIRONMENT PROTECTION POLICY

At the Executive Council Chamber, Melbourne, the 13th day of January 1981.

PRESENT:
His Excellency the Governor of Victoria.
Mr. Smith
Mr. Jona
Mr. Ramsay

(CONTROL OF NOISE FROM COMMERCIAL INDUSTRIAL OR TRADE PREMISES WITHIN THE MELBOURNE METROPOLITAN AREA)

Whereas Section 16 of the *Environment Protection Act* 1970 provides that the Governor in Council may, on the recommendation of the Environment Protection Authority, declare the environment protection policy to be observed with respect to the environment generally or in any portion or portions of Victoria or with respect to any element or elements or segment or segments of the environment and

Whereas Section 17 (1) of the said Act provides that in and by any Order made under Section 16 the Governor in Council may, for securing the observance of State environment protection policy declared by the Order—

(*a*) classify any area or any segment or element of the environment in any area for the purpose of the Order;

(*b*) set aside any area or areas or any segment or segments of the environment within which the discharge, emission, or deposit of wastes is prohibited or restricted as specified in the Order;

(*c*) make rules to be observed for carrying any such prohibition or restriction into effect; and

(*d*) delegate to any protection agency such of the powers of the Authority as are necessary for securing the observance of the Order;

And whereas Section 18 of the said Act provides that State environment protection policy declared in any Order under Section 16 shall establish the basis for maintaining environmental quality sufficient to protect existing and anticipated beneficial uses in the area affected by the Order and in particular shall include in terms sufficiently clear to give an adequate basis for planning and licensing functions—

(*a*) the boundaries of any area affected;

(*b*) identification of the beneficial uses to be protected;

(*c*) selection of the environmental indicators to be employed to measure and define the environmental quality;

(*d*) a statement of the environmental quality objectives (where practicable); and

(*e*) the programme (if any) by which the stated environmental quality objectives are to be attained and maintained;

And whereas Section 47 of the said Act provides that the Authority may upon the receipt of a complaint issue a noise control notice to occupiers of certain classes of premises specified in this Order and in accordance with procedures contained in Section 47 of the said Act;

And whereas in accordance with Section 19 of the said Act the Authority caused the publication of its notice of intention to declare State environment protection policy in respect of the Control of Noise from Commercial Industrial or Trade Premises within the Melbourne Metropolitan Area in the *Age*, The *Sun*, The *Australian* and *The Herald newspapers on 2 April 1979, 9 April 1979 and 16 April 1979 and*

Whereas the Authority has now considered the information submitted by various persons and

Whereas more than two months have elapsed since the publication of the last notice published in the aforementioned newspapers;

Now therefore His Excellency the Governor of Victoria by and with the advice of the Executive Council thereof and on the recommendation of the Environment Protection Authority doth by this Order declare the following to be the State environment protection policy to be observed for the area referred to in the Order and with respect to the elements and segments of the environment referred to in the Order (that is to say):

STATE ENVIRONMENT PROTECTION POLICY NO. N-1
FEBRUARY 1981

1. This Order may be cited as the State Environment Protection Policy (Control of Noise from Commercial, Industrial or Trade Premises within the Melbourne Metropolitan Area) No. N-1 (hereinafter referred to as the Policy) and shall come into operation on Monday 4 May 1981.
2. For the purposes of Section 17 (1) (*a*) of the Act, the element of the environment to which the Policy applies is hereby classified as sound.
3. This Order is divided into parts as follows:-

Part I	—	Definitions
Part II	—	Boundaries of Area Affected
Part III	—	Beneficial Uses Protected and Premises of Application
Part IV	—	Excessive Noise for Existing Premises
Part V	—	Excessive Noise for Planned Premises
Part VI	—	Attainment Programme
Schedule 1	—	Procedure for determining the Permissible Noise Level
Schedule 2	—	Procedure for determining the Effective Noise Level
Schedule 3	—	Procedure for determining the Background Sound Level
Schedule 4	—	Equipment Requirements and Specifications

PART I — DEFINITIONS

4. In this Order, unless inconsistent with the context or subject matter:

"Act" means the *Environment Protection Act* 1970 (No. 8056) as amended.

"Authority" means the Environment Protection Authority constituted under the Act.

"Background Sound Level" for a Day, Evening or Night period means the arithmetic average of the L_{90} levels for each hour of that period for which the Commercial, Industrial or Trade Premises under investigation normally operates. The Background Sound Level shall include all noise sources except

noise from Commercial, Industrial or Trade Premises which is considered by a noise control officer to be intrusive at the point where the Background Sound Level is measured.

"Beneficial use" means a use of the environment or any element or segment of the environment which is conducive to public benefit, welfare, safety or health and which requires protection from the effects of emission of noise.

"Boundary Noise Level" means the maximum Effective Noise Level allowed at a point when Schedule 1 part 1.3 applies.

"Commercial, Industrial or Trade Premises" means any premises, including those occupied by a government, municipal, or statutory body, except those used exclusively for domestic purposes or primary production, or any street or road, including every carriageway, foot-path, reservation and traffic island on any street or road, or railway line (not being a siding, marshalling yard or maintenance depot).

"Completion date", as used in Table A in Schedule 1, means the scheduled completion date in relation to roads as specified in writing by a responsible officer of the responsible road authority.

"Day" means the time period between 0700 and 1800 hours.

"Effective Noise Level" means the L_{eq} when adjusted for character, duration and measurement position.

"Evening" means the time period between 1800 and 2200 hours.

"Existing Premises" means any Commercial, Industrial or Trade Premises which were lawfully used as such before the expiry of 12 calendar months from the date on which this Order is promulgated.

"Extraneous noise" means any noise which is not part of the noise emitted from the premises under consideration and includes, but is not restricted to, the effects of wind on trees and on the microphone diaphragm and noise from motor vehicles, aircraft, trains, trams and animals. Noise from motor vehicles operated on the premises under consideration shall also be included if such vehicles are not used for the handling or carrying of goods or materials related to the operation of the premises.

"L_{eq}" or *"Equivalent Continuous Sound Level"* means the (A)-weighted sound level of the same acoustic energy as the (A)—weighted time varying sound level when determined over the same period.

"L_{90} Level" means the (A)—weighted sound level which is exceeded for 90% of the time.

"Night" means the time period between 2200 and 0700 hours.

"Noise control officer" means noise control officer appointed under the Act.

"Noise Sensitive Area" means the land within the title boundaries of any piece of land on which is situated any of the following premises —

Apartment House
Dwelling (except Caretaker's House)
Residential Building

and means that part of the land within the title boundaries of any piece of land on which is situated any of the following premises and which is within a line 20 metres from the external walls of any dormitory, ward or bedroom of such premises —

Caretaker's House
General Hospital
Hotel
Institutional Home
Mental Institution
Motel
Reformative Institution
Tourist Establishment
Work Release Hostel
Youth Hostel

The above mentioned terms shall have the meanings which are ascribed to them in the Melbourne Metropolitan Planning Scheme Ordinance, as amended.

"Permissible Noise Level" means the maximum Effective Noise Level allowed at a point in a Noise Sensitive Area.

"Public holiday" means public holiday as published in the *Government Gazette* from time to time.

"Planned Premises" means any Commercial, Industrial or Trade Premises which is not an Existing Premises.

"Standby generator" means a generator of electrical power which may be connected to loads normally supplied with electricity by a supply authority and used and maintained only as an occasional alternative to mains supply.

"Zoning Permissible Noise Level" means the Permissible Noise Level calculated using the method set out in parts 1.1 and 1.2 of Schedule 1.

PART II — BOUNDARIES OF AREA AFFECTED

5 The Policy shall be observed within the area enclosed by the planning boundary as delineated in the Planning Scheme Map referred to in the Melbourne Metropolitan Planning Scheme and includes any area enclosed within that planning boundary as covered by any Melbourne Metropolitan Interim Development Order, as amended.

PART III — BENEFICIAL USES PROTECTED AND PREMISES OF APPLICATION

6. This Policy shall apply to Noise Sensitive Areas, and the beneficial uses made of such areas that may be affected by noise emitted from Commercial, Industrial or Trade Premises.

7. The Policy lays down criteria for the control of the level of noise emitted from Commercial, Industrial and Trade Premises and audible within a Noise Sensitive Area, provided that the following noises emitted from such premises shall not be included in the measurement of the Effective Noise Level:

Music
Noise from crowds
Noise from firearms
Noise from construction or demolition activities on building sites
Noise from sporting events excluding those events at racing tracks where motor vehicles are hired for use
Noise from audible intruder, emergency or safety alarms
Noise from aircraft except for ground maintenance activities

PART IV — EXCESSIVE NOISE FOR EXISTING PREMISES

8. For Existing Premises, the Effective Noise Level (measured in accordance with the provisions of Schedule 2) at any point in a Noise Sensitive Area shall not exceed the Permissible Noise Level (calculated in accordance with the provisions of Schedule 1) at the same point.

9. It is advised that, where a significant change of operation or expansion of operation occurs, the requirements of paragraph 11 should be achieved.

10. It is advised that, where equipment is to be replaced or new equipment installed which would affect the existing Effective Noise Level, the quietest equipment available should be used.

PART V — EXCESSIVE NOISE FOR PLANNED PREMISES

11. For Planned Premises, the Permissible Noise Levels required by paragraph 8 shall not be exceeded. However, it is advised that for these premises, the Effective Noise Level (measured in accordance with the provisions of Schedule 2) at any point in a Noise Sensitive Area should not exceed the Permissible Noise Level (calculated in accordance with the provisions of Schedule 1, part 1.2) at the same point.

PART VI — ATTAINMENT PROGRAMME

12. Where noise emissions from Commercial, Industrial or Trade Premises exceed the Permissible Noise Levels set out in the Policy, steps should be taken to reduce these levels to, or below, the Permissible Noise Levels.

13. In fixing the time for compliance with the requirements of the Policy, the Authority shall have regard to the nature, extent, difficulty or complexity of achieving the Permissible Noise Levels. The safety of persons or plant and the availability of technology to achieve the required reduction shall, among other things, be taken into account.

Future reductions, either staged or single, may in some cases be appropriate and may be related to developments in noise control technology which shall be reviewed periodically. As an interim measure, the Authority may approve proposals involving additions or alterations to affected premises at the cost of the occupier of the premises from which the noise emanates.

14. The levels set out in the Policy are maximum Permissible Noise Levels and reductions to lower levels are to be encouraged. It is the intention of this Policy that in the long term noise levels from Commercial, Industrial or Trade Premises within the Melbourne metropolitan area should be reduced to those referred to in paragraph 11.

15. In the implementation of this Policy, special attention should be given to the relevant Statements of Planning Policy and the development and implementation of such Statements of Planning Policy should give special attention to this Policy.

SCHEDULE 1

PROCEDURE FOR DETERMINING THE PERMISSIBLE NOISE LEVEL

1.1 Zoning Permissible Noise Levels for Existing Premises

1.1.1 The Melbourne Metropolitan Planning Scheme as set out in the Ordinance and the Planning Scheme Map or any Interim Development Order, as amended, shall be used.

1.1.2 Two concentric circles of diameter 140 metres and 400 metres shall be drawn to scale on the relevant map, centred on the measurement point in the Noise Sensitive Area.

1.1.3 The Planning Scheme or Interim Development Order Zonings within the circles shall be categorised as Type 1, Type 2 or Type 3 according to Table A.

1.1.4 New zonings not included in Table A shall be given the Type considered appropriate by the Authority.

1.1.5 The total area of each Type shall be determined for each circle.

1.1.6 The Influencing Factor (IF) shall be calculated as follows:

$$IF = \tfrac{1}{2}\,\frac{\text{(Area Type 3) + ½ (Area Type 2)}}{\text{(Area Type 1 + Area Type 2 + Area Type 3)}}$$ of the 140 m dia. circle

$$+\ \tfrac{1}{2}\,\frac{\text{(Area Type 3) + ½ (Area Type 2)}}{\text{(Area Type 1 + Area Type 2 + Area Type 3)}}$$ of the 400 m dia. circle

1.1.7 The Zoning Permissible Noise Level for the Day, Evening or Night period shall be determined from Figure 1.1.

1.1.8 The Permissible Noise Level for each period shall be the Zoning Permissible Noise Level unless part 1.4 of this Schedule "Exceptions for both Existing and Planned Premises" applies.

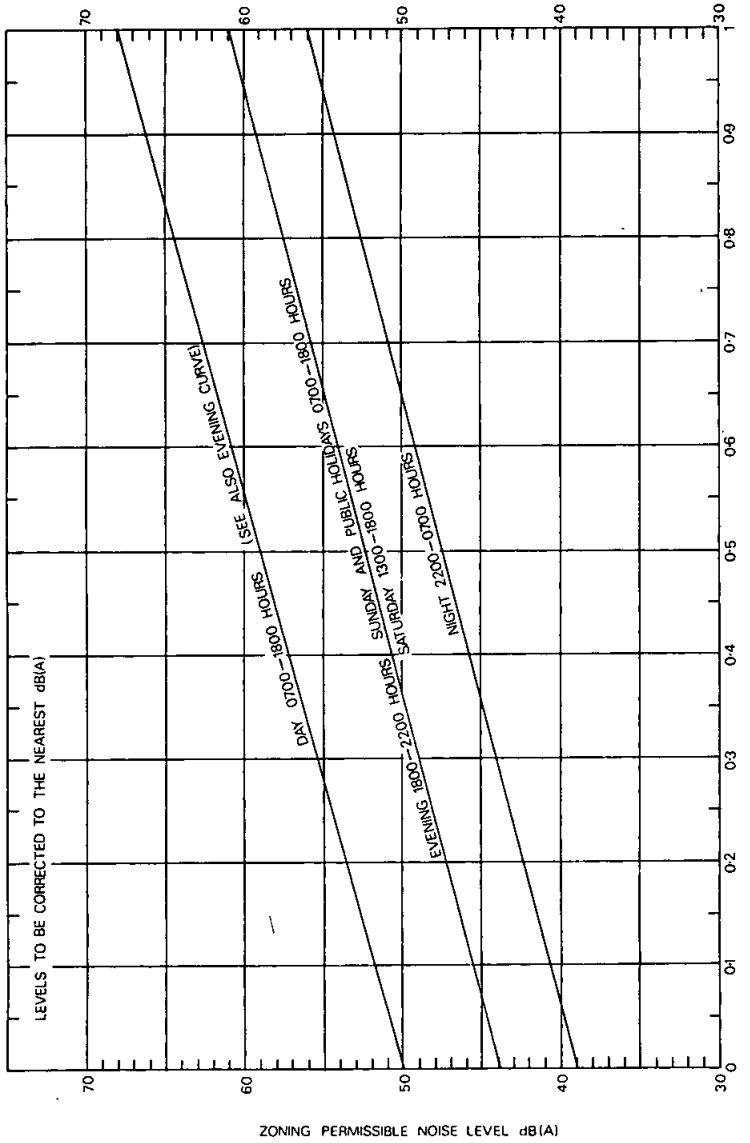


FIGURE 1.1 ZONING PERMISSIBLE NOISE LEVEL VERSUS INFLUENCING FACTOR

1.2 Zoning Permissible Noise Levels for Planned Premises

1.2.1 It is advised that the Zoning Permissible Noise Level for the Day period shall be 50 dB(A) (except Sunday and public holidays between 0700 and 1800 hours and Saturday between 1300 and 1800 hours for which the Evening Zoning Permissible Noise Level shall apply), for the Evening period shall be 44 dB(A) and for the Night period shall be 39 dB(A).

1.2.2 The Permissible Noise Level for each period shall be the Zoning Permissible Noise Level unless part 1.4 of this Schedule, "Exceptions for both Existing and Planned Premises" applies.

1.3 Boundary Noise Levels

1.3.1 Where, in the opinion of a noise control officer, at a measurement point in a Noise Sensitive Area two or more Commercial, Industrial or Trade Premises contribute significantly to an Effective Noise Level which exceeds a Permissible Noise Level at the same point, then Boundary Noise Levels may be specified at any point outside the contributing premises.

1.3.2 The Boundary Noise Levels specified for each premises shall be determined by a noise control officer so that the resultant Effective Noise Level from all contributing premises shall not exceed the Permissible Noise Level at any point in a Noise Sensitive Area when measured at that point. Boundary Noise Levels shall be subject to review on the completion of abatement programmes and in the event of major changes to existing plant or the introduction of new plant.

1.3.3 For any point where Boundary Noise Levels are specified then the Effective Noise Level measured at that point shall not exceed that Boundary Noise Level.

1.4 Exceptions for both Existing and Planned Premises

1.4.1 High Background Sound Levels

When the Zoning Permissible Noise Level for a point in a Noise Sensitive Area as calculated according to this Schedule for the Day period (except Sunday and public holidays between 0700 and 1800 hours and Saturday between 1300 and 1800 hours) is 6 dB(A) or less above the Background Sound Level for that period, then the Permissible Noise Level shall be equal to the Background Sound Level plus 6 dB(A). When the Zoning Permissible Noise Level for any other time period is 3 dB(A) or less above the Background Sound Level for that period then the Permissible Noise Level shall be equal to the Background Sound Level plus 3 dB(A).

1.4.2 Low Background Sound Levels

When the Zoning Permissible Noise Level for a point in a Noise Sensitive Area as calculated according to this Schedule for the Day period (except Sunday and public holidays between 0700 and 1800 hours and Saturday between 1300 and 1800 hours) is 13 dB(A) or more above the Background Sound Level for that period, the Permissible Noise Level shall be calculated from the following formula:

Permissible Noise Level = ½ (Zoning Permissible Noise Level + Background Sound Level) + 4.5 dB(A)

When the Zoning Permissible Noise Level for any other time period is 10 dB(A) or more above the Background Sound Level for that period, the Permissible Noise Level shall be calculated from the following formula:

Permissible Noise Level = ½ (Zoning Permissible Noise Level + Background Sound Level) + 3 dB(A)

1.4.3 When, in the opinion of the Authority a particularly quiet area should be preserved, the Permissible Noise Level shall be numerically equal to the Background Sound Level. Such areas may include, but are not restricted to, areas of large subdivisional size where traffic is absent and areas with particularly noise sensitive land uses.

1.4.4 Standby Generators

Where the noise source under consideration is a standby generator, the Permissible Noise Level shall be adjusted by + 10 dB(A) for the Day period (except Sunday and public holidays between 0700 and 1800 hours and Saturdays between 1300 and 1800 hours) and by + 5 dB(A) for all other periods.

TABLE A

The terms used in Table A shall have the same meaning as in the Melbourne Metropolitan Planning Scheme apart from the following exceptions and additions:

"Major Public Purpose Installation" shall mean any installation used for public purpose being a generating works, an electrical terminal station operating at a nominal voltage of not less than 220 kV, a garbage compaction works or a garbage incineration works.

"Minor Public Purpose Installation" shall mean any installation used for public purpose not being a Major Public Purpose Installation except for a sewage farm, retarding basin, reservoir, easement or the South Eastern Purification Plant.

"Sewage Farm" shall mean any sewage farm other than the South Eastern Purification Plant.

"South Eastern Purification Plant" shall mean that part of the Melbourne Metropolitan Board of Works reservation which is bounded by Worsley Road and a parallel line 1.2 km to the west of Worsley Road and Thompson Road and a parallel line 1.5 km to the north of Thompson Road, Bangholme.

ZONES OR RESERVATIONS	USE	TYPE
1. RURAL, VILLAGE, RESIDENTIAL, RESERVED LIVING AND TOWNSHIP A ZONES		
Rural		1
Village		1
Residential A		1
Residential A_1, A_2		1
Residential B		1
Residential C		1
Residential D		1
Special Residential No. 1		1
Reserved Living		1
Township A		1
2. INDUSTRIAL ZONES		
Light Industrial		2
Reserved Light Industrial		2
Restricted Light Industrial		2
General Industrial		3
Reserved General Industrial		3
Restricted General Industrial		3
Special Industrial		3
Reserved Special Industrial		3
Commercial and Industrial		2
Service Industrial		2
Extractive Industrial		3
Special Extractive A		3
Offensive Industrial		3
Dangerous Industrial		3
Garden Industrial		2

TABLE A continued

ZONES OR RESERVATIONS	USE	TYPE
3. BUSINESS AND OFFICE ZONES		
Central Business		2
District Business		2
Restricted Business		2
Office		2
Local Business		2
Service Business		2
4. SPECIAL USE, TRANSPORTATION, DEVELOPMENT AREA, STREAM AND FLOODWAY, CONSERVATION A AND SPECIAL CONSERVATION ZONES		
Transportation		2
Special Use	Special Use 1, 8, 8A, 11, 12, 13	1
	Special Use 2, 3, 5, 7, 9, 9A, 10	2
Development Area	As for Residential, Commercial and Industrial Zones as appropriate	—
Stream and Floodway		1
Conservation A		1
Special Conservation		1
5. CORRIDOR A, LANDSCAPE INTEREST A, GENERAL FARMING A AND INTENSIVE AGRICULTURE ZONES		
Corridor A		1
Landscape Interest A		1
General Farming A		1
Intensive Agriculture A		1
6. LOCAL AUTHORITY DEVELOPMENT ZONE		
Local Authority Development		1
7. PUBLIC OPEN SPACE, PUBLIC PURPOSE, CEMETERY AND CREMATORIUM, CIVIL AIRFIELD, RAILWAY OR WATERWAY RESERVATIONS		
Public Open Space—Existing		1
Public Open Space—Proposed		1
Public Purposes—Existing		
+ —Hospital	See Note 1	—
S — Primary School	Primary Schools	1
SS — Secondary School	Secondary Schools	1
TS — Technical School	Technical Schools	1
1 — Commonwealth Government	Offices, Minor Public Purpose Installations	2
	Major Public Purpose Installations	3
2 — Public Works Department	Offices, Minor Public Purpose Installations	2
	Major Public Purpose Installations	3
3 — Lands and Survey Department	Offices, Minor Public Purpose Installations	2
	Major Public Purpose Installations	3
4 — Agriculture Department	Offices, Minor Public Purpose Installations	2
	Major Public Purpose Installations	3
6 — Minerals and Energy Department	Offices, Minor Public Purpose Installations	2
	Major Public Purpese Installations	3
7 — Commonwealth Explosives Department	Offices, Minor Public Purpose Installations	2
	Major Public Purpose Installations	3
8 — Mental Hygiene Division	Offices, Minor Public Purpose Installations	2
	Major Public Purpose Installations	3
10 — Health Commission	Offices, Minor Public Purpose Installations	2
	Major Public Purpose Installations	3
11 — Education Department (other than schools)	Offices, Minor Public Purpose Installations	2
	Major Public Purpose Installations	3
12 — State Rivers and Water Supply Commission	Offices, Minor Public Purpose Installations	2
	Major Public Purpose Installations	3
13 — State Electricity Commission	Offices, Minor Public Purpose Installations	2
	Major Public Purpose Installations	3
14 — Gas and Fuel Corporation	Offices, Minor Public Purpose Installations	2
	Major Public Purpose Installations	3
15 — Country Roads Board	Offices, Minor Public Purpose Installations	2
	Major Public Purpose Installations	3
16 — Melbourne and Metropolitan Tramways Board	Offices, Minor Public Purpose Installations	2
	Major Public Purpose Installations	3
17 — Port of Melbourne Authority	Offices, Minor Public Purpose Installations	2
	Major Public Purpose Installations	3
18 — Melbourne and Metropolitan Board of Works	Offices, Minor Public Purpose Installations	2
	Major Public Purpose Installations, South Eastern Purification Plant	3
	Sewage Farm, Retarding Basin, Reservoir, Easement	1
19 — Local Government	Offices, Minor Public Purpose Installations	2
	Major Public Purpose Installations	3
20 — Other Public Uses	Offices, Minor Public Purpose Installations	2
	Major Public Purpose Installations	3
	Sewage Farm, Retarding Basin, Reservoir, Easement	1
21 — Social Welfare Department	Offices, Minor Public Purpose Installations	2
	Major Public Purpose Installations	3
Public Purposes—Proposed	See Note 2	—
Cemeteries and Crematoria		1

ZONES OR RESERVATIONS	USE	TYPE
Civil Airfields		2
Railways—Existing	See Note 3	—
Railways—Proposed	See Note 2	—
Waterways	See Note 4	—
8. ROAD RESERVATIONS		
Existing Main		3
Proposed Main	See Note 5	—
Existing Secondary		2
Proposed Secondary	See Note 6	—
Other Roads	Other roads shall take the Type of the zone as specified in the Planning Scheme See Sections1-5 of this Table	—
Proposed Widenings		
Main Roads	See Note 7	—
Secondary Roads	See Note 8	—

NOTE 1 Hospitals shall be Type 1 except those medical, surgical and maternity hospitals with more than 150 beds, which shall be Type 2.

NOTE 2 Where it is expected that the hospital, school, office, Major or Minor Public Purpose Installation, sewage farm, retarding basin, reservoir, easement, educational establishment, university or railway will be fully or partially operational within three years, then the zoning shall be the same as Public Purposes: Existing. However, where it is expected that the hospital, school, office, Major or Minor Public Purpose Installation, sewage farm, retarding basin, reservoir, easement, educational establishment or railway will not be fully or partially operational in three years then the zoning shall be Type 1.

NOTE 3 A railway shall be Type 2 except those railways enclosed by—
Market Street, Mason Street and Melbourne Road, Newport; Power Street and Kororoit Creek Road, Williamstown; Champion Road, North Williamstown—
Punt Road, Brunton Avenue, Jolimont Road, Wellington Parade South, East Melbourne; Wellington Parade South, Flinders Street, Spencer Street, Melbourne; LaTrobe Street, Adderley Street, Dudley Street, Railway Place, Laurens Street, West Melbourne; Laurens Street, Arden Street, North Melbourne; Arden Street (including a line joining both sections of Arden Street), Derby Street, Kensington Road, Kensington; Kensington Road, Dynon Road, Sims Street, Footscray Road, Footscray; Footscray Road, Johnson Street North, Johnson Street Bridge, Melbourne; Johnson Street Bridge, Montague Street, City Road, South Melbourne; Alexandra Avenue, Melbourne; Alexandra Avenue, South Yarra—
Geelong Road, Barkly Street, Footscray; Barkly Street, Ashley Street, Footscray West; South Road, Braybrook; Monash Street, Hampshire Road, Wright Street, Sunshine; Sunshine Road, Tottenham; Sunshine Road, Footscray West—
Hudsons Road, Hall Street, Melbourne Road, Blackshaws Road, Stephenson Street, Hudsons Road, Spotswood—
which shall be Type 3.

NOTE 4— (*a*) A waterway which has Type 1 areas on both sides or on either side shall be Type 1.

(*b*) A waterway which has Type 3 areas on both sides shall be Type 3.

(*c*) A waterway which has Type 2 areas on both sides or a Type 2 area on one side and a Type 3 area on the other side shall be Type 2.

NOTE 5— (*a*) A proposed main road, or part of a proposed main road, which has a completion date scheduled to occur within three years shall be Type 3.

(*b*) A proposed main road, or part of a proposed main road, which has a completion date which is not scheduled to occur within three years and which has Type 1 areas on both sides or on either side, shall be Type 1.

(*c*) A proposed main road, or part of a proposed main road, which has a completion date which is not scheduled to occur within three years and which has Type 3 areas on both sides, shall be Type 3.

(*d*) A proposed main road, or part of a proposed main road, which has a completion date which is not scheduled to occur within three years and which has Type 2 areas on both sides or a Type 2 area on one side and a Type 3 area on the other side, shall be Type 2.

NOTE 6— (*a*) A proposed secondary road, or part of a proposed secondary road, which has a completion date scheduled to occur within three years shall be Type 2.

(*b*) A proposed secondary road, or part of a proposed secondary road, which has a completion date which is not scheduled to occur within three years and which has Type 1 areas on both sides or on either side, shall be Type 1.

(*c*) A proposed secondary road, or part of a proposed secondary road,which has a completion date which is not scheduled to occur within three years and which has Type 3 areas on both sides, shall be Type 3.

(*d*) A proposed secondary road, or part of a proposed secondary road, which has a completion date which is not scheduled to occur within three years and which has Type 2 areas on both sides or a Type 2 area on one side and a Type 3 area on the other side, shall be Type 2.

NOTE 7— (*a*) A proposed widening or part of a widening to a main road which has a completion date which is scheduled to occur within three years shall be Type 3.

(*b*) A proposed widening or part of a widening to a main road which has a completion date which is not scheduled to occur within three years shall be the Type of the adjacent zone or reservation.

NOTE 8— (*a*) A proposed widening or part of a widening to a secondary road which has a completion date which is scheduled to occur within three years shall be Type 2.

(*b*) A proposed widening or part of a widening to a secondary road which has a completion date which is not scheduled to occur within three years shall be the Type of the adjacent zone or reservation.

SCHEDULE 2

PROCEDURE FOR DETERMINING THE EFFECTIVE NOISE LEVEL

To obtain the Effective Noise Level the L_{eq} shall be measured as set out in part 2.1 and adjusted where necessary as set out in part 2.2. Equipment shall conform to the requirements set out in Schedule 4 and shall be used in general accordance with the manufacturer's recommendations. Equipment shall be used in such a manner that the level being measured is 10 dB(A) or more above any residual equipment noise.

2.1 Determination of the L_{eq}

The L_{eq} shall be determined at a measurement point under the following conditions:

2.1.1 Measurement

(i) The measurement shall be taken out of doors, however where the measurement is taken in a Noise Sensitive Area and where this measurement would not represent the noise received in the area, the measurement may be taken indoors.

(ii) The microphone shall be at a height of between 1.2 and 1.5 metres above the ground or floor and no closer than 3.5 metres or 1.2 metres to any

other acoustically reflecting surface for out of doors and indoor measurements respectively. Where these conditions cannot be met, the measurement shall be taken at a point considered appropriate by a noise control officer.

(iii) The measurement shall be taken at such a position that a maximum Effective Noise Level will be obtained.

(iv) The measurement shall be made using a sound level meter set to the (A)—weighting response and a tape recorder.

(v) A reference signal shall be recorded at the beginning and end of any recording using a reference sound source and, where the sound level meter registers a discrepancy of greater than 1 dB between consecutive checks, the recording shall be considered invalid.

(vi) A recording of the noise under measurement shall be made over one continuous hour whether or not the noise was emitted for the full hour.

(vii) Where, in the opinion of a noise control officer, a measured L_{eq} may be significantly affected by wind direction or temperature inversion, the Effective Noise Level shall be the arithmetic average of three measurements of the Effective Noise Level taken at the same point on different days within a 30 day period.

2.1.2 Analysis

(i) The analysis shall be carried out using noise level analysing equipment as specified in Schedule 4 so that either an integrated L_{eq} or a statistical L_{eq} is determined.

(ii) The reference signal recorded at the beginning and end of the measurement shall not register a discrepancy of greater than 1 dB, otherwise the analysis shall be considered invalid.

(iii) The analysis shall be carried out for that part of the recording during which the noise control officer considers that the noise under measurement was being emitted but shall not include those intervals where extraneous noise was significant. The analysis equipment shall not integrate or sample over those intervals.

(iv) In determining an integrated L_{eq}:

(*a*) the instantaneous sampling rate shall be between 1 and 10 samples per second, if appropriate;

(*b*) the dynamic response shall be set to "Fast" or "Slow", if appropriate; and

(*c*) The L_{eq} shall be calculated from the following formula:

$$L_{eq} = 10 \log_{10} \frac{1}{T} \int_0^T \left(\frac{P(t)}{Po}\right)^2 dt$$

where T is the time interval of interest in seconds
P (t) is the time varying sound pressure in N/m^2
P_0 is the reference sound pressure, $2 \times 10^{-5} N/m^2$

(v) In determining a statistical L_{eq}:

(*a*) the instantaneous sampling rate shall be between 1 and 10 samples per second;

(*b*) the dynamic response characteristic shall be the "Fast" or "Slow" response; and

(*c*) the L_{eq} may be calculated from the following formula:

$$L_{eq} = 10 \log_{10} \frac{1}{N} \sum_{i=1}^{j} n_i \, 10^{L_i/10}$$

where N is the total number of samples = $N_1 + N_2 + N_3 \ldots\ldots$
j is the total number of classes
n_i is the number of samples in class i
L_i is the arithmetic average of the upper and lower bounds of class i. The difference between the upper and lower bounds shall be equal to or less than 2.5 dB(A).

2.2 Adjustments

Cumulative adjustments to the L_{eq} shall be made for noise character and measurement position to determine the Effective Noise Level according to the following formula:

$$\text{Effective Noise Level} = L_{eq} + A_{IND} + A_T + A_{IMP} + A_D + A_{INT}$$

2.2.1 Indoor Adjustment (A_{IND})

Indoor measurements should not be taken in unfurnished rooms, bathrooms, laundries or halls. The indoor measurement shall be adjusted to obtain the out of doors L_{eq}. Unless inappropriate, the following adjustments shall be used.

(i) Where the noise enters the room from a virtual free field and single glazed windows and/or air vents are the main noise paths, the windows which are the main noise paths shall be opened to the maximum extent during the measurement and the adjustment shall be calculated as follows:

$$\text{Adjustment} = -10 \log_{10} \Big(\text{antilog}_{10}(-0.1\,(ESTL_1 + Q_1 + 7 - 10 \log_{10} S_1)_{wall_1}) + \text{antilog}_{10}(-0.1\,(ESTL_2 + Q_2 + 7 - 10 \log_{10} S_2)_{wall_2}) + \text{etc.} \Big)$$

where $ESTL_1$, $ESTL_2$, etc. is the effective sound transmission loss for the main noise paths (windows and air vents) in $wall_1$, $wall_2$, etc. and is determined from Figure 2.1.

S_1, S_2, etc. is the total window and vent area for $wall_1$, $wall_2$, etc. in m^2.

Q_1, Q_2, etc. is the source orientation factor for the main noise paths (windows and air vents) in $wall_1$, $wall_2$, etc. and is determined from Table B and Figure 2.2.

(windows which are not the main noise paths shall be closed and no adjustment shall be calculated for them.)

(ii) Where the noise enters the room from a virtual reverberant sound field, all windows shall be closed during the measurement and the adjustment shall be 15 dB(A).

(iii) Where the noise is transmitted into a room through a solid wall (including vibration induced noise), all windows shall be closed during the measurement and the adjustment shall be 15dB(A).

(iv) Where mechanical ventilation is used and the main noise paths are non-openable single glazed windows, the adjustment shall be 20 dB(A).

(v) Where mechanical ventilation is used and the main noise paths are non-openable double glazed windows, the adjustment shall be 25 dB(A).

(vi) Where part 2.3 applies, the adjustment shall be 15 dB(A).

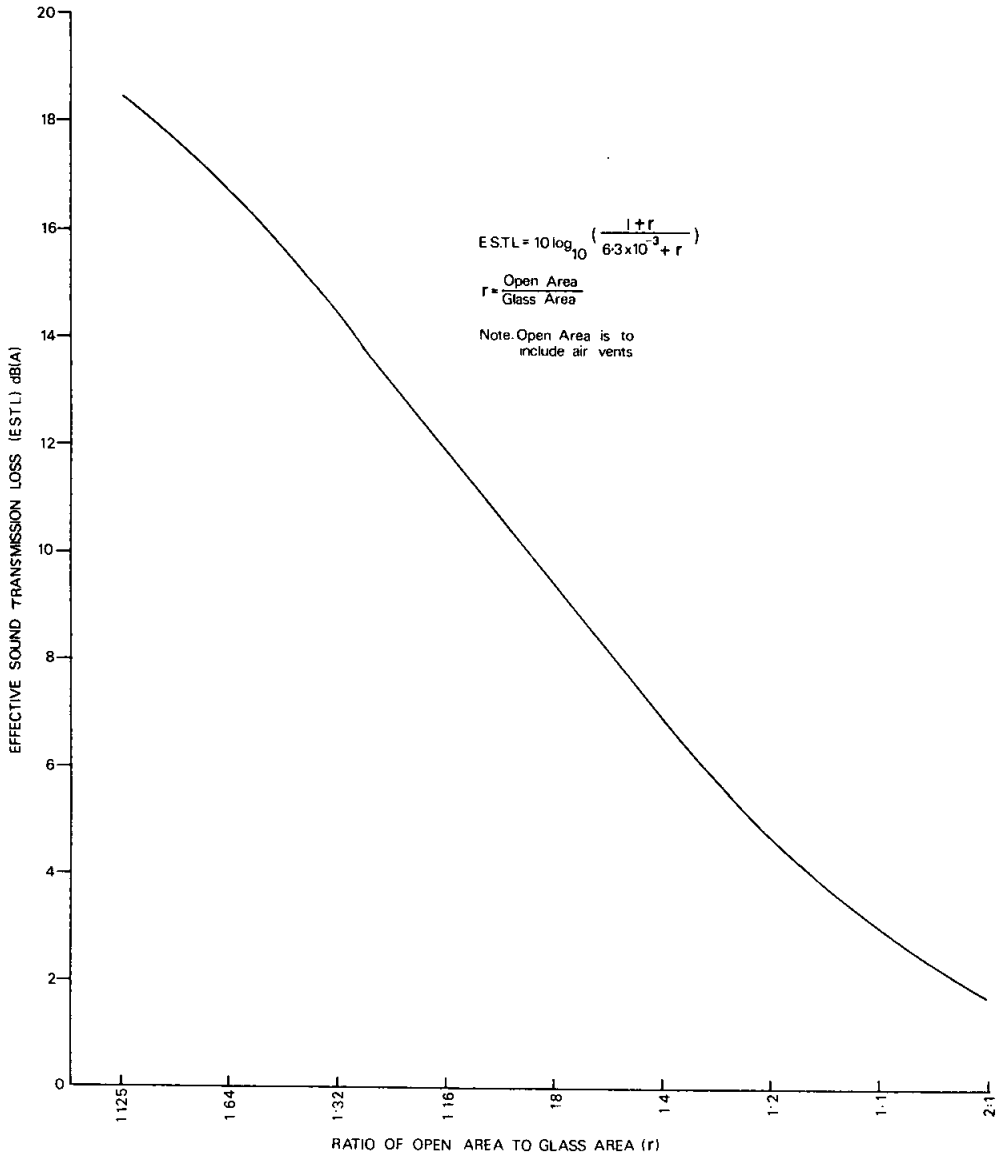


FIGURE 2.1 EFFECTIVE SOUND TRANSMISSION LOSS VERSUS RATIO OF OPEN AREA TO GLASS AREA

TABLE B

SOURCE ORIENTATION FACTOR (Q) OF THE MAIN NOISE PATHS IN A WALL

DEVIATION OF SOURCE FROM NORMAL (SEE FIG. 2.2)	SOURCE ORIENTATION FACTOR Q dB (A)
From 0° to < 25°	0
From 25° to < 45°	+ 1
From 45° to < 55°	+ 2
From 55° to < 65°	+ 3
From 65° to < 70°	+ 4
From 70° to < 75°	+ 5
From 75° to 90°	+ 6

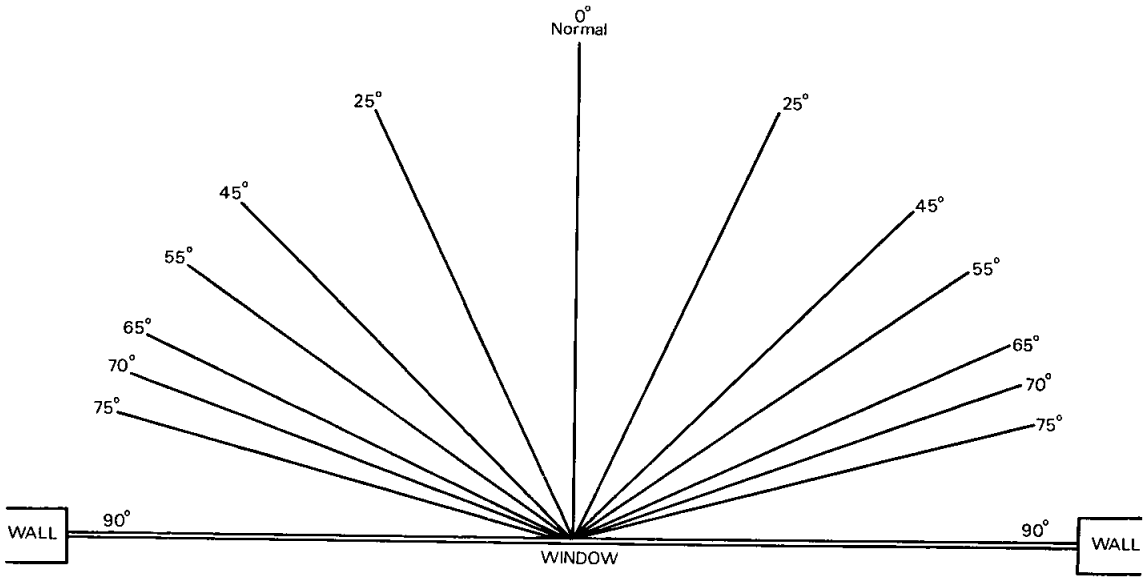


FIGURE 2.2 DEVIATION OF SOURCE FROM NORMAL

2.2.2 Tonal Adjustment (A_T)

When the noise emission is considered by a noise control officer to have a tonal character, an adjustment determined from the following method shall be used.

(i) Using the (A)-weighted recording, one-third octave analyses shall be carried out on several samples, each of which is representative of the tonal character of the noise. Each sample shall have a duration of at least one second and the whole of each sample shall be analysed in each one-third octave band.

(ii) The sum of the durations of the samples analysed shall be at least 24 seconds.

(iii) The level determined for each one-third octave band shall be the level which would have the same acoustic energy as the time-varying level when determined over the sample period.

(iv) Where it is suspected that for any sample a tone falls between two adjacent one-third octave bands, in order to achieve the maximum correction for the tone, the speed of the playback tape recorder shall be varied by up to ±13% of the specified speed.

(v) The one-third octave measuring equipment shall conform to the requirements set out in Schedule 4.

(vi) A tonal correction determined from Figure 2.3 shall be arithmetically added to each one-third octave band between the centre frequencies of 25 Hz and 16 kHz for which the sound level exceeds the arithmetic average of the two adjacent one-third octave band sound levels by more than 3 dB(A). Tonal corrections need not be applied to those bands for which the band level is 25 dB(A) or more below the highest band level.

(vii) The overall (A)-weighted sound level tonally corrected (L_{TC}) shall be calculated using the following formula:

$$L_{TC} = 10 \log_{10} \sum_{i=1}^{j} 10^{L_i/10}$$

where bands i to j are all the one-third octave bands.

(viii) The tonal adjustment for each sample shall be the arithmetic difference between L_{TC} and the uncorrected L_{eq} level for the sample.

(ix) The tonal adjustment shall be the arithmetic average of the tonal adjustments for all samples.

2.2.3 Impulse Adjustment (A_{IMP})

When the noise emission is considered by a noise control officer to be of impulsive character then an adjustment determined from the following method shall be used:

(i) Adjustment = L_{eq} (Impulse) - L_{eq} where the Equivalent Continuous Sound Level (Impulse) or L_{eq} (Impulse) is the statistical or integrated L_{eq} determined with a dynamic response of an Impulse function and is determined over the same interval or intervals as the L_{eq}.

(ii) The analysis shall be carried out using noise level analysing equipment as specified in Schedule 4 such that either an integrated L_{eq} (Impulse) or a statistical L_{eq} (Impulse) is determined.

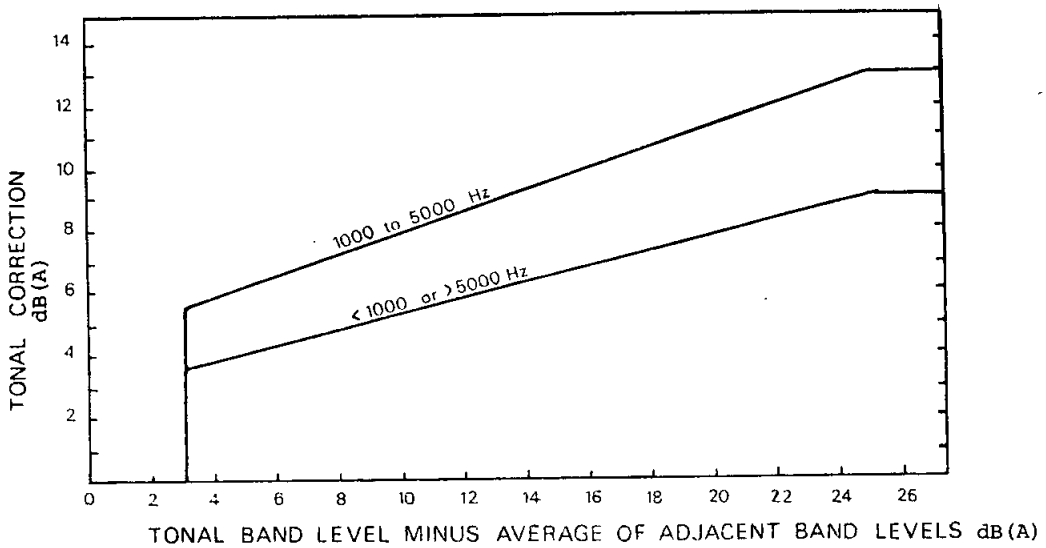


FIGURE 2.3 TONAL BAND CORRECTION

(iii) In determining an integrated L_{eq} (Impulse):

(*a*) the sampling rate shall be between 1 and 10 samples per second, if appropriate; and

(*b*) the dynamic response characteristic shall be the Impulse response.

(iv) In determining a statistical L_{eq}:

(*a*) the instantaneous sampling rate shall be between 1 and 10 samples per second:

(*b*) the dynamic response characteristic shall be the Impulse response; and

(*c*) the formula for calculating the L_{eq} (Impulse) shall be:

$$L_{eq}\ (\text{Impulse}) = 10 \log_{10} \frac{1}{N} \sum_{i=1}^{j} n_i 10^{L_i/10}$$

where N is the total number of samples
$= n_1 + n_2 + n_3 \ldots\ldots\ldots$
j is the total number of classes
n_i is the number of samples in class i
L_i is the arithmetic average of the upper and lower bounds of class i. The difference between the upper and lower bounds shall be equal to or less than 2.5 dB(A).

2.2.4 Duration Adjustment (A_D)

When the noise emission is not continuous over the one-hour measurement period, a duration adjustment based upon the total amount of time for which the noise was emitted over the hour (total on-time) shall be determined from Figure 2.4.

The total on-time shall include all intervals when the noise was emitted whether or not extraneous noise was significant within those intervals.

2.2.5 Intermittency Adjustment (A_{INT})

When the noise emission is considered by a noise control officer to be intermittent and the noise emission changes the sound level rapidly by more than 5 dB(A) on at least two occasions during the one-hour recording period because of a change in operation of any equipment or process, an adjustment of 3 dB(A) shall be applied. If the change in level is 10 dB(A) or more and occurs during the Night period then the adjustment shall be 5 dB(A)

2.3 Abatement at Premises in a Noise Sensitive Area

Where, in relation to paragraph 13, additions or alterations are made to premises in a Noise Sensitive Area, the Effective Noise Level shall be measured indoors and an indoor adjustment of 15 dB(A) shall be applied in all cases. Other adjustments shall be applied as appropriate. The Effective Noise Level (measured in accordance with the provisions of Schedule 2) shall not exceed the Permissible Noise Level (calculated in accordance with the provisions of Schedule 1) out of doors at any point within a line 20 metres from the external walls of the premises to which such additions or alterations have been made.

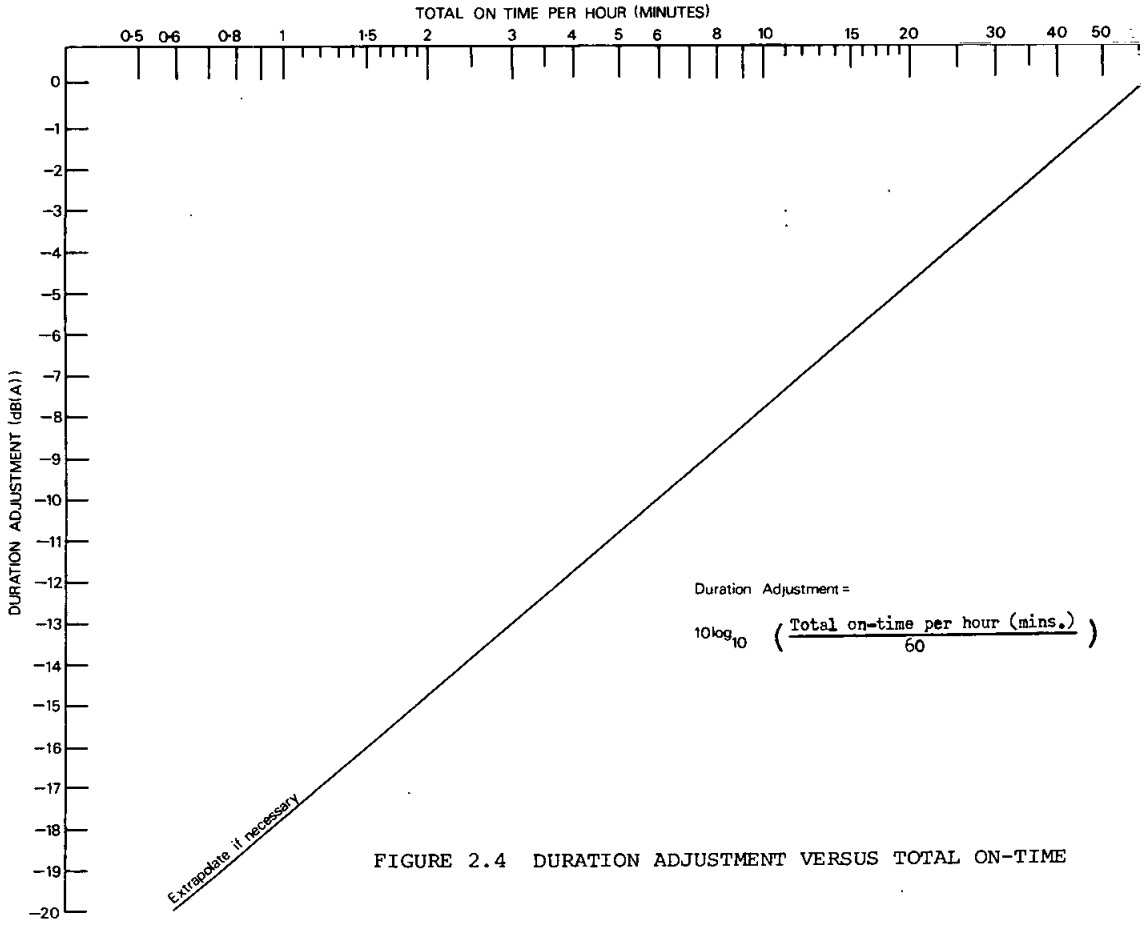


FIGURE 2.4 DURATION ADJUSTMENT VERSUS TOTAL ON-TIME

SCHEDULE 3

PROCEDURE FOR DETERMINING THE BACKGROUND SOUND LEVEL

3.1 The measurement shall be taken out of doors.

3.2 The microphone shall be at a height of between 1.2 and 1.5 metres above the ground and no closer than 3.5 metres to any other acoustically reflecting surface. Where these conditions cannot be met the measurement shall be taken at a point considered appropriate by a noise control officer.

3.3 The Background Sound Level shall be determined, where possible, at the point used in determining the Permissible Noise Level. Where the Background Sound Level cannot be measured at that point, it may be estimated at some other point considered by a noise control officer to be representative of the point of concern.

3.4 The Background Sound Level may be measured over an interval so that the L_{90} level obtained is considered by a noise control officer to represent the arithmetic average of the L_{90} levels of each hour of the period of concern.

3.5 The measurement shall be made using

(*a*) noise level monitoring equipment; or

(*b*) a tape recorder and a sound level meter set to (A)-weighting, the tape recording being analysed using a noise level analyser.

3.6 Equipment shall conform to the requirements set out in Schedule 4.

3.7 Equipment shall be checked with a reference sound source immediately before and after the measurement. Where the equipment registers a discrepancy of greater than 1 dB between consecutive checks, the measurement shall be considered invalid.

3.8 The measurement shall be considered invalid if made under unusual weather conditions.

SCHEDULE 4

EQUIPMENT REQUIREMENTS AND SPECIFICATIONS

4.1 Measurement and analysis equipment shall be calibrated at intervals not exceeding 12 months by a laboratory equipped for the purpose.

4.2 For the purpose of this Policy, "Fast" and "Slow" response shall include responses having dynamic characteristics which are identical to the "Fast" and "Slow" response as defined in Australian Standard 1259, Part 2 — 1976 except for the meter response or the output from the time constant circuit of the RMS detector having no overshoot.

4.3 Sound Level Meter

The sound level meter shall be a precision sound level meter conforming to the requirements of Australian Standard 1259, Part 2 — 1976.

4.4 Reference Sound Source (Closed Coupler Calibrator)

The reference sound source shall have an accuracy of ± 0.5 dB between 0 and 50°C. It is preferred that the reference sound source has a frequency of 1 kHz ± 2%.

4.5 Tape Recorder

The record and replay tape recorder(s) shall have the following specifications:

(*a*) Speed accuracy — within ± 0.5% of the specified speed.

(*b*) Tape slip — less than 0.2% difference in speed of the tape at the beginning and end of a spool.

(*c*) Wow and flutter — less than 0.12% peak to peak weighted (as per DIN 45 507).

(*d*) Frequency response — overall record and replay with reference to a 1 kHz signal recorded at - 20 dB referenced to 320 nWb/m; and replay only:
—from 80 Hz to 8 kHz: + 1 dB, — 1.5 dB
—from 40 Hz to 14 kHz: + 1 dB, — 3 dB.

(*e*) Signal to noise ratio — greater than 50 dB(A) referenced to 320 nWb/m for a 1 kHz tone.

(*f*) Distortion — less than 2% total harmonic distortion for a 1 kHz tone recorded at 320 nWb/m and replayed.

(*g*) Crosstalk (for multi-channel tape recorders only):
— at 1 kHz between channels: greater than 50 dB
— at 10 kHz between channels: greater than 40 dB

4.6 One-third Octave Measuring Equipment

The band pass filters shall conform to the requirements of Australian Standard Z41-1969, I.E.C. 225-1966, A.N.S.I. S1-11-1966 (Class III) or DIN 45 652.

4.7 Noise Level Analysing Equipment

(*a*) The equipment shall conform to the requirements of Australian Standard 1259, Part 2 — 1976 for L_{eq} or L_{90} measurements, or the Australian Standard 1259, Part 3 — 1976 for L_{eq} (Impulse) measurements. However, in either case Sections 5.3, 5.4, 5.5, 5.6, 5.8, 6, 9.1 and 9.2 of Australian Standard 1259, Part 2 — 1976 shall not apply.

(*b*) The "Linear" weighting shall have a flat frequency response between 20 Hz and 20 kHz with a tolerance of ± 1 dB.

4.8 Noise Level Monitoring Equipment

The noise level monitoring equipment shall conform to the requirements of Australian Standard 1259, Part 2 — 1976. The equipment shall be set to (A)-weighting "Fast" or "Slow" response and to any instantaneous sampling rate between 1 and 10 samples per second. The difference between the upper and lower bounds of each class shall be equal to or less than 2.5 dB(A).

And the Honourable William Vasey Houghton, Her Majesty's Minister for Conservation for the State of Victoria shall give the necessary directions herein accordingly.

Tom Forristal
Clerk of the Executive Council

EXPLANATORY NOTES TO THE
STATE ENVIRONMENT PROTECTION POLICY No. N-1

In March 1979 the Environment Protection Authority issued a draft State Environment Protection Policy entitled *Control of Noise from Commercial, Industrial or Trade Premises within the Melbourne Metropolitan Area*. Strong interest was displayed in the document and at the closing date for comment the Authority had received more than 100 written submissions.

While some changes have been made in the light of comments received, the basic approach taken in the draft was generally well received and is therefore carried through to this Policy, which has been declared under Section 16 of the *Environment Protection Act* 1970.

These explanatory notes are published to assist in the interpretation of the Policy and to clarify its major principles and objectives. In themselves the notes have no status other than that of explanatory material and in no way modify the contents of the Policy.

1. *RELATIONSHIP TO SECTION 47 OF THE ENVIRONMENT PROTECTION ACT*

The declaration of this Policy will enable Section 47 of the Environment Protection Act (as amended by the *Environment Protection (Noise Control) Act* 1978) to be implemented. Section 47 sets up a Noise Control Notice System which, unlike a licensing system, will apply only to those premises which come to the attention of the Authority as causing a noise problem. This Policy will be used as the basis for assessing noise emissions coming from Commercial, Industrial or Trade Premises and which are received in residential premises. Such assessment is necessary for the implementation of Section 47 of the Act.

Implementing Section 47 involves the following procedures. First of all, when it receives a complaint from someone affected by noise from Commercial, Industrial or Trade Premises, the EPA is authorised by the Act to serve a Preliminary Noise Control Notice on the occupier of the premises if it is found that the noise emanating from the premises exceeds the limits specified in State Environment Protection Policy. The recipient has 30 days to request a conference with the Authority to discuss the contents of the notice or offer objections.

Where no such request has been received, the Authority will serve a Noise Control Notice on the occupier. However, if a conference has been held, it will depend on the outcome of the conference whether a Noise Control Notice is to be served and, if so, whether it will differ from the Preliminary Noise Control Notice.

Following the service of a Noise Control Notice, the recipient is allowed a further period of 30 days to lodge an appeal with the Environment Protection Appeal Board against any of its requirements.

A Noise Control Notice may:

(*a*) specify maximum noise levels to be observed outside the premises, i.e. noise limits prescribed by Regulations or State Environment Protection Policy;

(*b*) impose conditions on the use of certain plant, machinery, equipment, vehicle or process in relation to the emission of noise; and in relation to (*a*) and (*b*)

(*c*) impose either general requirements or requirements to be fulfilled according to time or other circumstances.

In fixing the time for compliance with a Noise Control Notice, the Authority will take into account the nature, extent, difficulty or complexity of complying with the requirements.

The above procedures are shown in Flow Chart 3.

2. *AIMS*

The Policy is aimed at protecting Noise Sensitive Areas from intrusive noise emitted from Commercial, Industrial or Trade Premises.

Noise Sensitive Areas are basically domestic premises and other premises or parts of any premises where people sleep or carry out other normal domestic duties.

Commercial, Industrial or Trade Premises are any premises which are not used exclusively for either domestic purposes or primary production.

The assessment criteria in this Policy have been developed for the general range of noises emitted by industry and are not applicable to other types of noise. For this reason, the following noise sources are excluded from this Policy:

(*a*) music;

(*b*) noise from crowds;

(*c*) noise from firearms;

(*d*) noise from construction or demolition activities on building sites;

(*e*) noise from sporting events excluding those events at racetracks where motor vehicles are hired for use;

(*f*) noise from audible intruder, emergency or safety alarms; and

(*g*) noise from aircraft, except for ground maintenance activities.

Where appropriate and as results of further studies make it possible, it is the intention to develop separate Policies for noise sources not covered by this Policy.

3. *APPROACH*

The overall approach adopted in the Policy is similar to that in the draft Environment Protection Noise Control Policy: The City of Richmond (1973) and the Australian Standard AS1055-1978: Noise Assessment in Residential Areas.

However, the Policy is based on a zoning method rather than a Background Sound Level criterion and levels are set according to the type of area in which the person affected by noise resides. A sliding scale is used requiring industry in largely residential areas to meet more stringent requirements than those in industrialised areas. Conversely, people living in commercial or industrial areas may have to accept a noisier environment than those in a purely residential area.

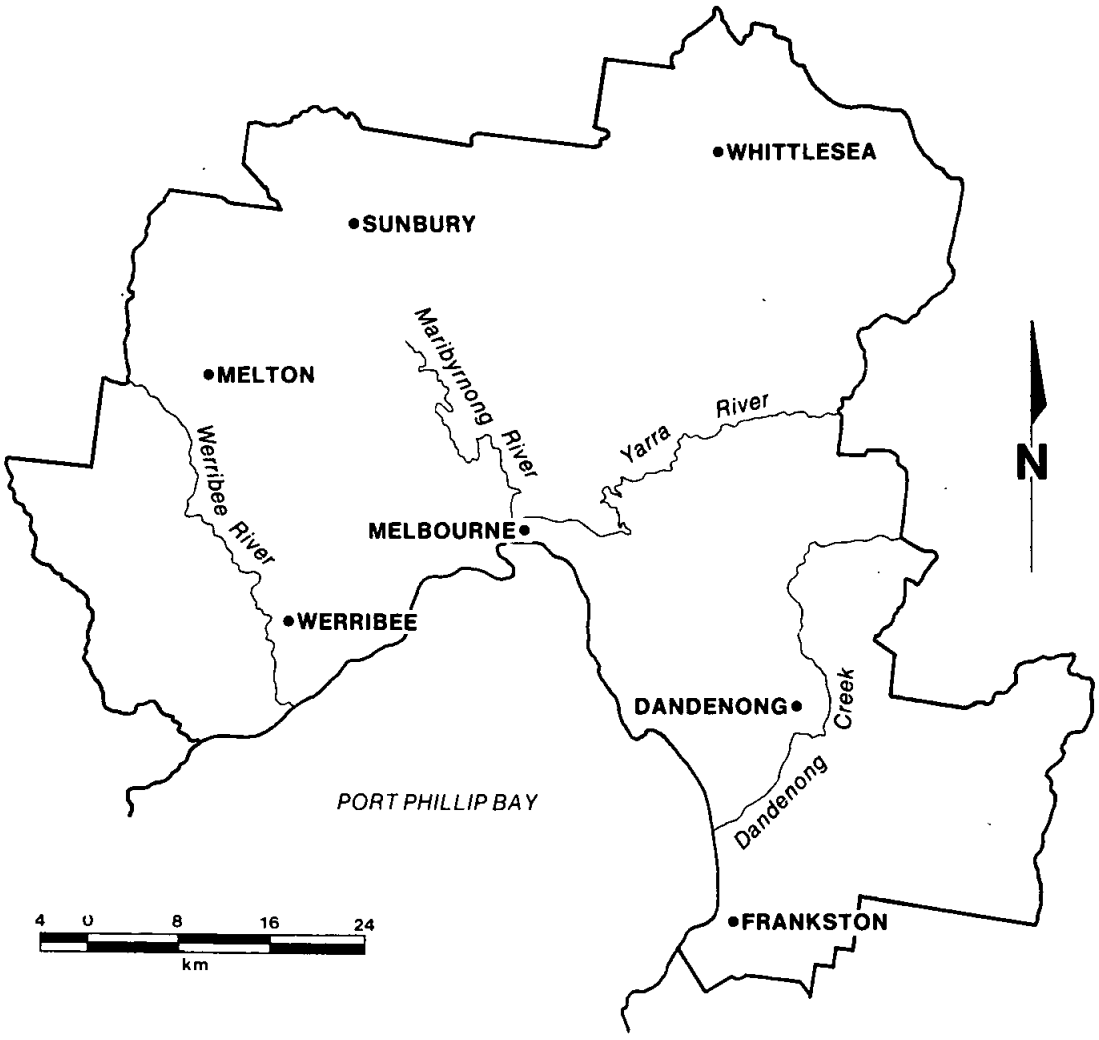
The Permissible Noise Levels in the Policy have been set according to this time schedule:

Day	Evening	Night
0700 — 1800 Hrs.	1800 — 2200 Hrs.	2200 — 0700 Hrs.

The acceptability of a sound depends to some extent on the background sound level. These time periods reflect the variation of the background sound level with time and acknowledge the fact that a person may react differently to noise at different times of the day.

Reactions to noise depend, not only on the noise level and time of day, but also on its characteristics. A section has been included in the Policy to take account of factors such as tones (e.g. hums or whines) or sudden changes in levels (e.g. hammering or thumping). Similarly, allowances are made for the duration of the noise and whether it turns on and off.

Under the provisions of the Act, noise measurements may only be made outside Commercial, Industrial or Trade Premises as defined in the Policy.



AREA OF APPLICATION

FIGURE 1.

4. *AREA OF APPLICATION*

This Policy applies to the area delineated in the Planning Scheme Map referred to in the Melbourne Metropolitan Planning Scheme, including areas covered by any Melbourne Metropolitan Interim Development Order. The approximate boundaries are shown on Figure 1 of these notes.

Although strictly applying only to this area, the Policy may be used as a guide to evaluate noise elsewhere.

5. *PERMISSIBLE NOISE LEVELS FOR EXISTING PREMISES*— Schedule 1

A Permissible Noise Level is the maximum acceptable noise level for the measurement point in a Noise Sensitive Area. The procedure for establishing Permissible Noise Levels is outlined in Flow Chart 1.

5.1 *Zoning Permissible Noise Level* (This should be calculated for the measurement point in all cases).

The concept of noise acceptability based on the type of area in which the Noise Sensitive Area exists has been embodied in a noise zoning system. The zoning system is an objective one which takes into consideration the proportion of industrial and commercial land use around the point in the Noise Sensitive Area which is receiving the noise.

To determine the Zoning Permissible Noise Level, two concentric circles of 400 metres and 140 metres diameter centred on the measurement point in the Noise Sensitive Area, are drawn to scale on the M.M.B.W. Planning Scheme Map for the area. The Planning Scheme land uses specified within the circles are categorised as Type 1, Type 2 and Type 3 (shown in Table A of Schedule 1 of the Policy), which are typically residential, commercial and light industrial, and general industrial use respectively. The relative amounts of Type 1, Type 2 and Type 3 areas within the circles are used to calculate the Influencing Factor (IF), which is a measure of the industrial land use in proximity to the measurement point. A low value IF would indicate the area is fairly residential, while a high value would indicate an industrialized area. The value of the IF is used to determine the Permissible Noise Level, which is therefore dependent on the "industrialization" of an area.

The Zoning Permissible Noise Level may be read from Figure 1.1 of the Policy by entering the graph along the Influencing Factor axis, intercepting the relevant Day, Evening or Night curve, and reading across from the intercept to the Zoning Permissible Noise Level axis.

An example is given in part 5.4 of these Notes.

5.2 *Boundary Noise Levels*

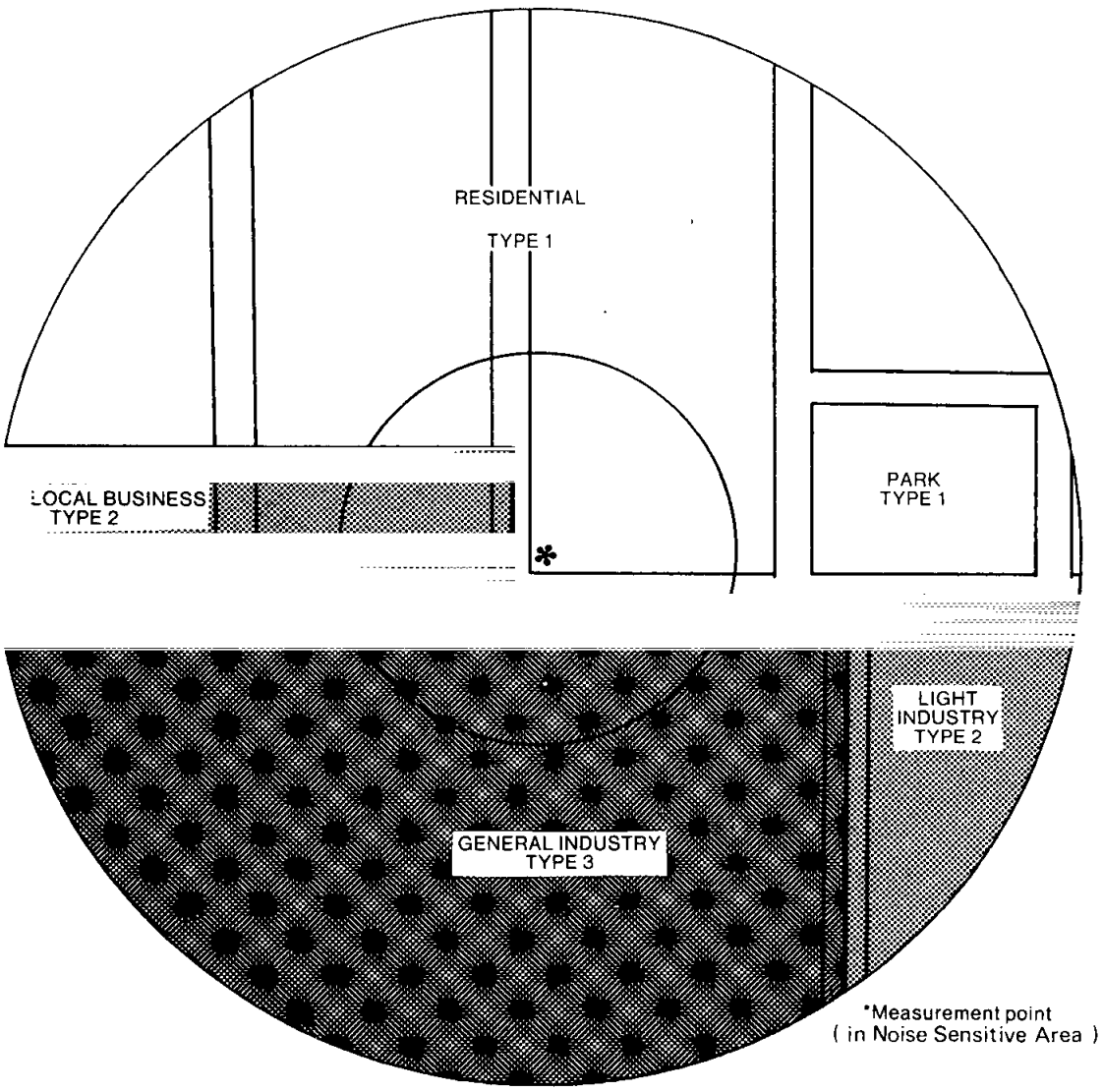
Levels measured at a Noise Sensitive Area can be due to the combined emissions of several premises. Should this be the case, Boundary Noise Levels which must be met by the premises emitting the noise may be set at points outside such premises. The Permissible Noise Levels would still be calculated for the Noise Sensitive Area and the aim of setting Boundary Noise Levels would be to achieve the Permissible Noise Level when the noise emissions from all contributing premises are combined.

5.3 *Background Sound Level* — Schedule 1

Some cases arise where the calculated Permissible Noise Level is not appropriate because a particularly noisy or quiet area exists.

Exceptions have been included in Section 1.4 of Schedule 1 of the Policy to arrive at a Permissible Noise Level based on the Background Sound Level, plus a margin. This procedure is to be followed for new or existing premises when the Zoning Permissible Noise Level is:

(*a*) 6 dB(A) or less above the Background Sound Level for the Day period (except Sunday, public holidays, and Saturday between 1300 and 1800 hours), or 3 dB(A) or less for any other time period;



AREAS: OUTER CIRCLE—TYPE 1=726 units TYPE 2=237 units TYPE 3=584 units
INNER CIRCLE—TYPE 1=88 units TYPE 2=38 units TYPE 3=75 units

FIGURE 2

(*b*) 13 dB(A) or more above the Background Sound Level for the Day period (except Sunday, public holidays, and Saturday between 1300 and 1800 hours), or 10 dB(A) or more for any other time period; or

(*c*) where, in the opinion of the Authority a particularly quiet area should be preserved. Such exceptional cases may include, but are not restricted to, areas of large sub-divisional size where traffic is absent or areas close to particularly noise sensitive land uses such as sanatoria.

Schedule 3 contains the method to be followed in measuring the Background Sound Level.

5.4 *Examples*

Example 1. Zoning Permissible Noise Level Procedure — Existing Premises.

Figure 2 shows a map of an area containing land zoned according to the MMBW Planning Scheme as Residential C, Local Business, Light Industry and General Industry. The area of the map is contained within a circle of 400 metres diameter, while a smaller circle of 140 metres diameter is also shown. Both circles are centred on the measurement point which is within a residential allotment (a Noise Sensitive Area). The different areas zoned on the map according to the MMBW Planning Scheme are categorised as Type 1, Type 2 or Type 3 according to Table A of the Policy. The total area for each Type is determined for both the 140 metre and the 400 metre circles using a Planimeter. Other methods of area measurement may be used; the Influencing Factor is not highly sensitive to errors in the measurement of the areas.

The Influencing Factor is calculated as follows:—

$$IF = \tfrac{1}{2} \frac{\text{(Area Type 3)} + \tfrac{1}{2}\text{(Area Type 2)}}{\text{(Area Type 1 + Area Type 2 + Area Type 3)}}$$

of 140 m dia. circle

$$+ \tfrac{1}{2} \frac{\text{(Area Type 3)} + \tfrac{1}{2}\text{(Area Type 2)}}{\text{(Area Type 1 + Area Type 2 + Area Type 3)}}$$

of 400 m dia. circle

$$= \tfrac{1}{2} \left(\frac{75 + \tfrac{1}{2}(38)}{88 + 38 + 75}\right) + \tfrac{1}{2} \left(\frac{584 + \tfrac{1}{2}(237)}{726 + 237 + 584}\right)$$

$$= 0.46$$

The Zoning Permissible Noise Level is determined for Day, Evening and Night periods from Figure 1.1 of the Policy. For an Influencing Factor of 0.46 the Zoning Permissible Noise Levels are as follows:

Day (0700—1800 Hours)	58 dB(A)
Evening (1800—2200 Hours)	52 dB(A)
Night (2200—0700 Hours)	47 dB(A)

As the Background Sound Levels for the area are significantly below the Zoning Permissible Noise Levels but not so low that the exception for low Background Sound Levels applies, the Permissible Noise Levels for the measurement point in the Noise Sensitive Area are the Zoning Permissible Noise Levels.

Example 2. High Background Sound Level Procedure — Existing Premises.

In the previous example the Permissible Noise Level is calculated for a measurement point in a Noise Sensitive Area that is not affected by high Background Sound Levels. If the Noise Sensitive Area shown in Figure 2 is affected by high Background Sound Levels, it will be necessary to determine the Permissible Noise Level from Schedule 1 and Section 1.4.1 of the Policy. This section is used when the Zoning Permissible Noise Level is 6 dB(A) or less above the Background Sound Level for daytime and 3 dB(A) or less for Evening and Night periods. In these cases the Permissible Noise Level shall be the Background Sound Level plus 6 dB(A) for the Day and 3 dB(A) for the Evening and Night periods.

The table below shows Background Sound Levels and Zoning Permissible Noise Levels for the measurement point shown in Figure 2 for Day, Evening and Night periods.

	Zoning Permissible Noise Level	Background Sound Level
Day (0700 — 1800 Hours)	58 dB(A)	60 dB(A)
Evening (1800 — 2200 Hours)	52 dB(A)	55 dB(A)
Night (2200 - 0700 Hours)	47 dB(A)	46 dB(A)

According to the Policy the Background Sound Levels in this example are high. Therefore, the Permissible Noise Levels for the measurement point are based on the Background Sound Levels plus adjustments for the Day, Evening and Night. The table below shows the Background Sound Levels, adjustments and the Permissible Noise Levels.

	Background Sound Level	Adjustment	Permissible Noise Level
Day (0700 — 1800 Hours)	60 dB(A)	+ 6 dB(A)	66 dB(A)
Evening (1800 — 2200 Hours)	55 dB(A)	+ 3 dB(A)	58 dB(A)
Night (2200 — 0700 Hours)	46 dB(A)	+ 3 dB(A)	49 dB(A)

6. *PERMISSIBLE NOISE LEVELS FOR PLANNED PREMISES*

The requirements previously listed for Existing Premises also apply to Planned Premises. However, the Authority advises that, unless the exceptions contained in Section 1.4 of Schedule 1 of the Policy apply, Planned Premises should be designed to achieve Effective Noise Levels of 50 dB(A), 44 dB(A) and 39 dB(A) for Day, Evening and Night periods respectively.

7. *EFFECTIVE NOISE LEVEL* —Schedule 2

The measured L_{eq} level is an energy average of the noise received at the microphone, measured at the Noise Sensitive Area. The Effective Noise Level is the L_{eq} so measured but adjusted if necessary for measurement position and characteristics in the noise. The adjustments for noise character are important as the L_{eq} measurement does not fully account for the additional annoyance value of, for example, hammering or humming sounds.

Adjustments for tonal content, impulsiveness, intermittency and duration are added to the L_{eq} level, but it should be noted that the duration adjustment is negative. All adjustments, except the intermittency adjustment, operate on a sliding scale. For example, a tone which is just perceptible would attract a small adjustment, while a prominent tone would necessitate a large one.

7.1 *Measurement and Analysis*

The measurement by the Authority shall be taken over a continuous one hour period according to the procedure set out in Schedule 2, using equipment conforming at least to the specifications in Schedule 4. However, an interested party may make an approximate measurement, using a general purpose meter or reading estimates of L_{eq} directly from a suitable instrument.

7.2 *Indoor Adjustment*

When possible, measurements should be taken out of doors. However, cases do arise where the measurement must be taken indoors. For such cases an adjustment is calculated and added to the indoor measured level to give an estimate of the outdoor L_{eq}.

7.3 *Tones*

The presence of tones in a noise creates additional annoyance. Section 2.2.2 of the Policy provides a sliding scale which results in an adjustment of between 1 and 7 dB(A) for most cases where a tone is present.

7.4 *Impulsiveness*

When a noise is of an impulsive character an adjustment is added, based on the difference between the "Fast" response and "Impulse" response of a sound level meter for the particular noise. A very impulsive noise would result in an adjustment of approximately 8 dB(A).

7.5 *Duration*

When the noise under consideration is not present for the full one-hour measurement period (for example, the noise may be going on and off during the hour), an adjustment is determined from Figure 2.4 of Schedule2.

7.6 *Intermittency*

An adjustment for intermittency may also be made if the level changes rapidly several times during the measurement period. This may result from a change in operation of some equipment or process.

8. *EXCESSIVE NOISE*

After all adjustments have been applied, the resulting number is the Effective Noise Level.

The Effective Noise Level for the measurement point in the Noise Sensitive Area should then be compared with the Permissible Noise Level for the same point (from Schedule 1). Action should be taken to reduce the Effective Noise Level if the Permissible Noise Level is exceeded.

9. *TYPICAL PERMISSIBLE NOISE LEVELS*

Below is an example of some typical Permissible Noise Levels for various land usage configurations.

Description of Area	Typical Permissible Noise Level Range dB(A)		
	DAY* 0700 — 1800 Hours	EVENING 1800 — 2200 Hours	NIGHT 2200 — 0700 Hours
Mainly residential area	50 — 54	44 — 48	39 — 43
Area with some commerce or industry	54 — 59	48 — 52	43 — 47
Commercial district or bordering an industrial area	59 — 63	52 — 57	47 — 52
Predominantly industrial area	63 — 68	57 — 61	52 — 56

*On Sundays and public holidays between 0700 and 1800 and on Saturdays between 1300 and 1800 hours the Evening Permissible Noise Levels apply.

10. *EQUIPMENT* — Schedule 4

To obtain accurate, repeatable results, it is essential that noise measuring and analysis equipment be calibrated regularly to ensure performance is within required limits. Schedule 4 sets out equipment requirements and specifications.

11. *FLOW CHARTS*

Two flow charts have been included to clarify the Policy procedures:

Flow Chart 1: Determination of the Permissible Noise Level for Existing and Planned Premises.

Flow Chart 2: Determination of Effective Noise Level.

12. *ATTAINMENT PROGRAMME*

It is the aim of the Authority to reduce noise levels received in all Noise Sensitive Areas from Commercial, Industrial or Trade Premises to those set out for purely residential areas. This may be achieved in the long term through the application of the levels recommended for Planned Premises and by the gradual replacement of equipment and processes in Existing Premises. In this context the co-operation of all organisations involved in the planning process is sought at its most effective time: the planning and design stage.

The Authority considers the Permissible Noise Levels contained in this Policy to be maximum limits and will encourage at all times the attainment of lower noise levels.

The feasibility and availability of effective noise control technology will be considered by the Authority in setting times for compliance.

13. *SOCIO-ECONOMIC EFFECTS*

The sliding scale of Permissible Noise Levels set out in the Policy is the result of a compromise between the ideal low levels desirable for any residence and the reality of the present socio-economic structure of Melbourne. The sliding scale of Permissible Noise Levels acknowledges the fact that levels normally expected for purely residential areas cannot generally be achieved close to industry. For those cases where noise control technology does not offer an immediate solution owing to the nature, extent, difficulty or complexity of the problems involved, a time scale for reduction may be applied.

The amount of money to be spent depends largely upon the degree of reduction needed and the size of the operation. However, it is not appropriate to engage in detailed cost-benefit analysis. Such analysis has been shown by many researchers and by many trying to put it into practice to be an inappropriate way of looking at the socio-economic effects of environmental noise controls. A report concerning cost-benefit analysis and noise control was published in May 1980 by the OECD Secretariat. It was prepared from submissions from member countries. The report concluded that cost-benefit analysis "has no practical application because no satisfactory way of estimating the money value of benefits has been achieved. This conclusion holds despite the enormous research efforts of recent years. Indeed, it is these very research efforts that have revealed exactly what has to be assumed in order to construe some of the money valuations obtained as measures of the benefit of noise abatement. We may note too that, even if these measures had validity, they are largely based on the idea of what a noise sufferer is willing to pay and not what he required in compensation. We have suggested that this violates a principle of fairness in that noise sufferers should be seen to enjoy natural rights to a clean and quiet environment."

It is the Authority's opinion that, overall, the cost to industry of achieving a reasonable standard of noise emissions will be small. While it is conceded that there may be large expenditure in particular instances, detailed consideration will be given in such cases to a time-scale for abatement, taking into account the availability of technology.

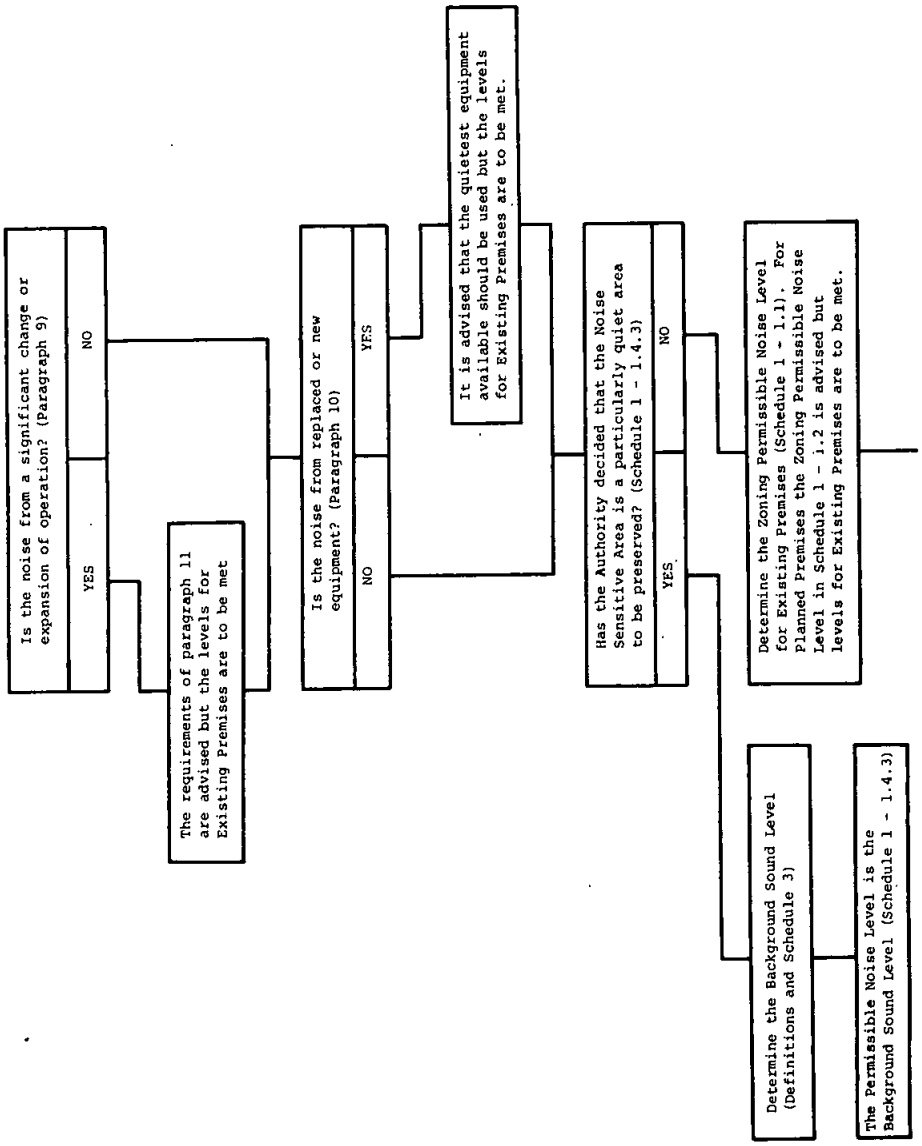
14. *GLOSSARY OF ACOUSTIC TERMS*

A complete *Glossary of Acoustic Terms* has been published by the Standards Association of Australia as Australian Standard 1633 — 1974 and should be referred to for precise definitions. The following is a glossary of some acoustic terms which appear in the Policy giving simple explanations that reflect the way in which the terms are used in that document.

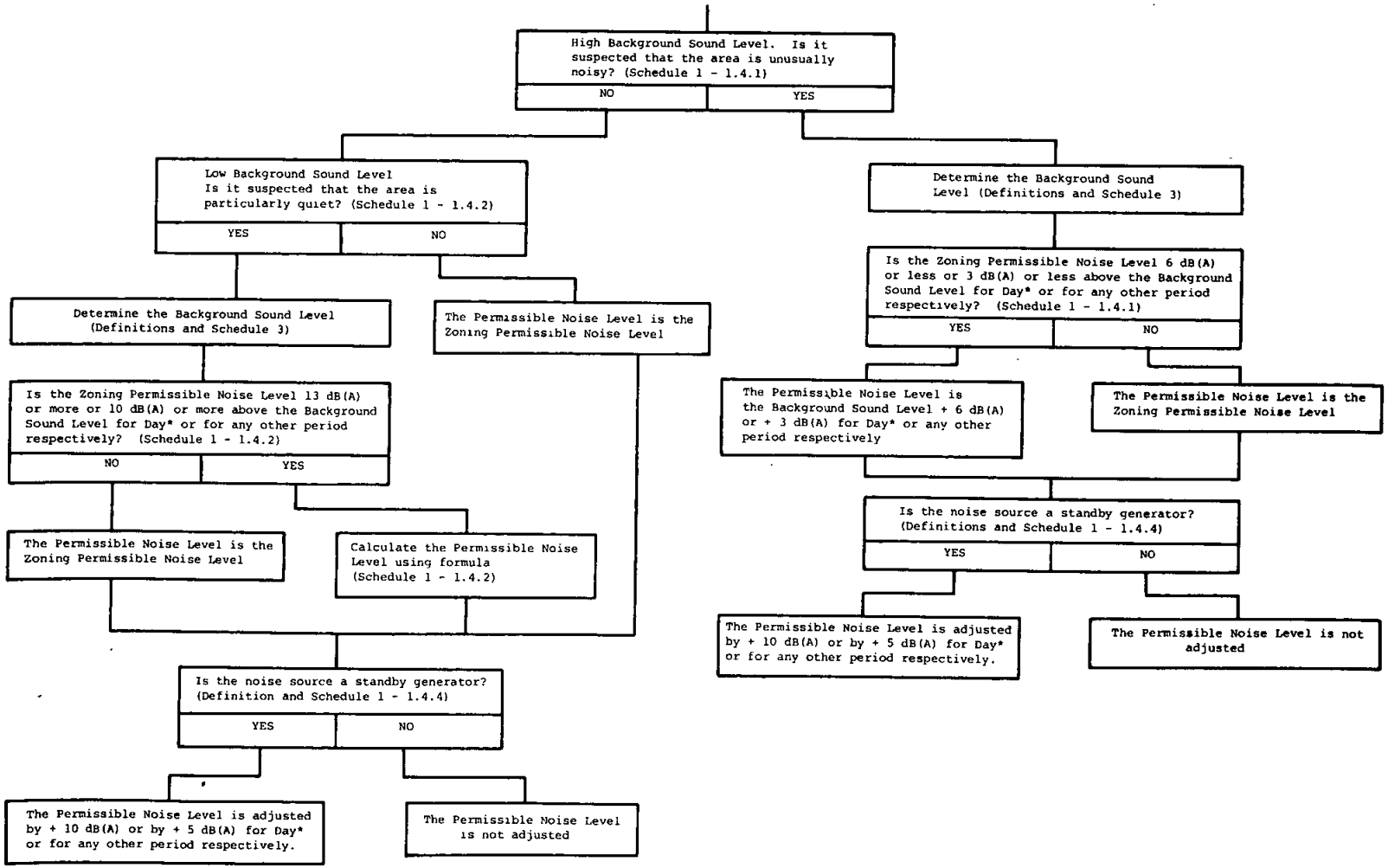
TERM	EXPLANATION
(A)-weighting	A response provided by an electronic circuit which modifies sound in such a way that the resulting level is similar to that perceived by the human ear.
Background Sound Level	Generally, the sound level in the absence of any intrusive noise as represented by the L_{90} unit. In this case the Background Sound Level includes all noise sources except noise from Commercial, Industrial or Trade Premises which is considered to be intrusive at the measurement point.
Decibel (dB)	A measure of sound. A logarithmic scale unit used in the comparison of sound powers or sound pressures in relation to reference sound powers or sound pressures.
Source Orientation Factor	That factor which allows for reduction in noise at a receiving point because of the orientation of the receiver to the noise source.
Equivalent Continuous Sound Level (L_{eq})	A measurement unit which takes into account all variations in noise level. (For a steady sound with small fluctuations, its value is close to the average sound pressure level.)
Free Sound Field	A sound field in which no significant reflections occur throughout the region of interest.
L_{90} Level	An (A)-weighted sound measurement unit often used for the measurement of background noise. It is that sound level which is exceeded for 90 per cent of a specified period of time.
Reverberant Sound Field	A sound field in which significant reflections occur throughout the region of interest.
Effective Sound Transmission Loss	That factor which allows for reduction in sound level at a receiving point owing to the transmission of the sound energy through structures.

FLOW CHART 1

Determination of the Permissible Noise Level for Existing or Planned Premises

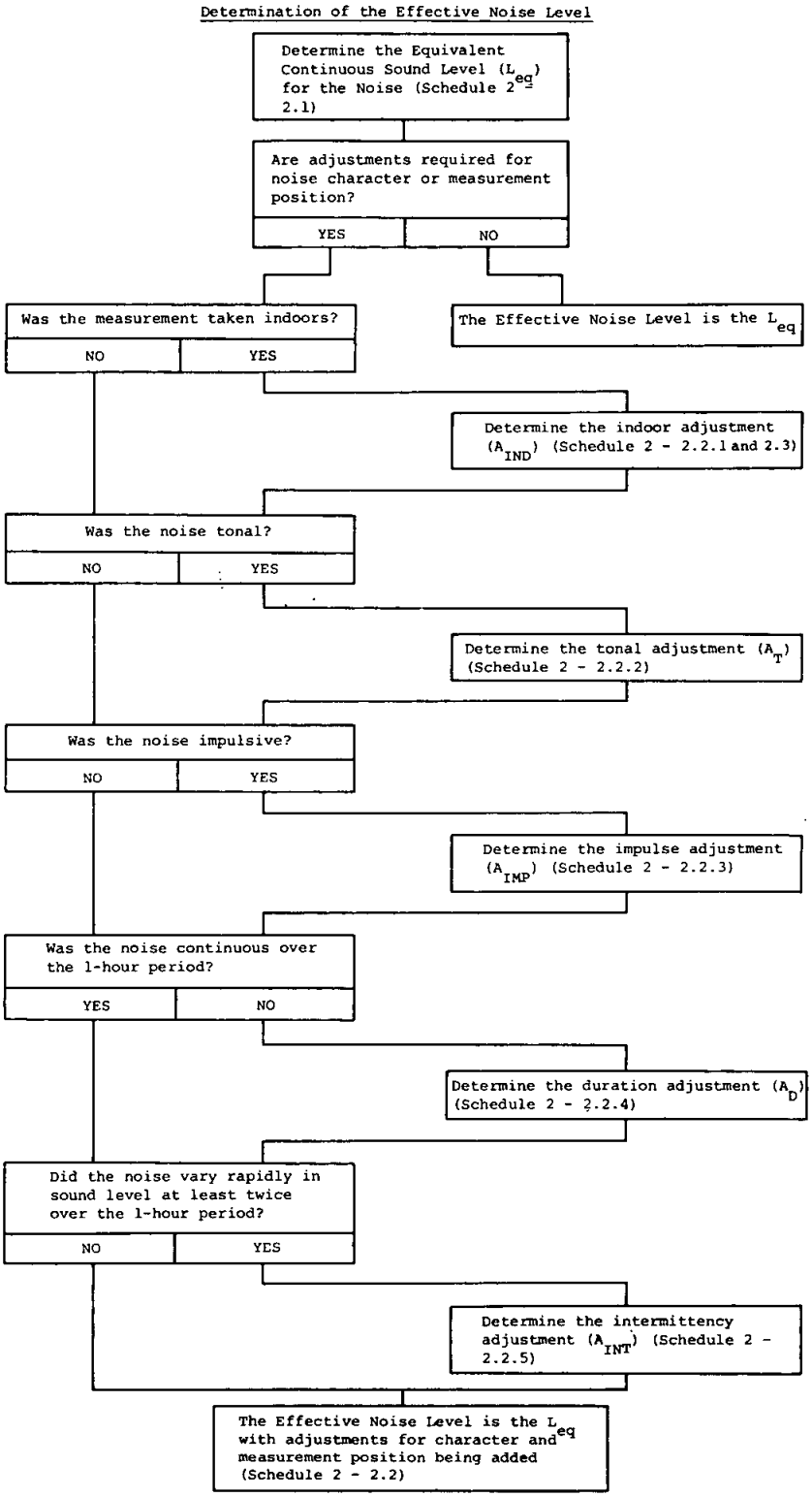


No. 27—31286/81—3

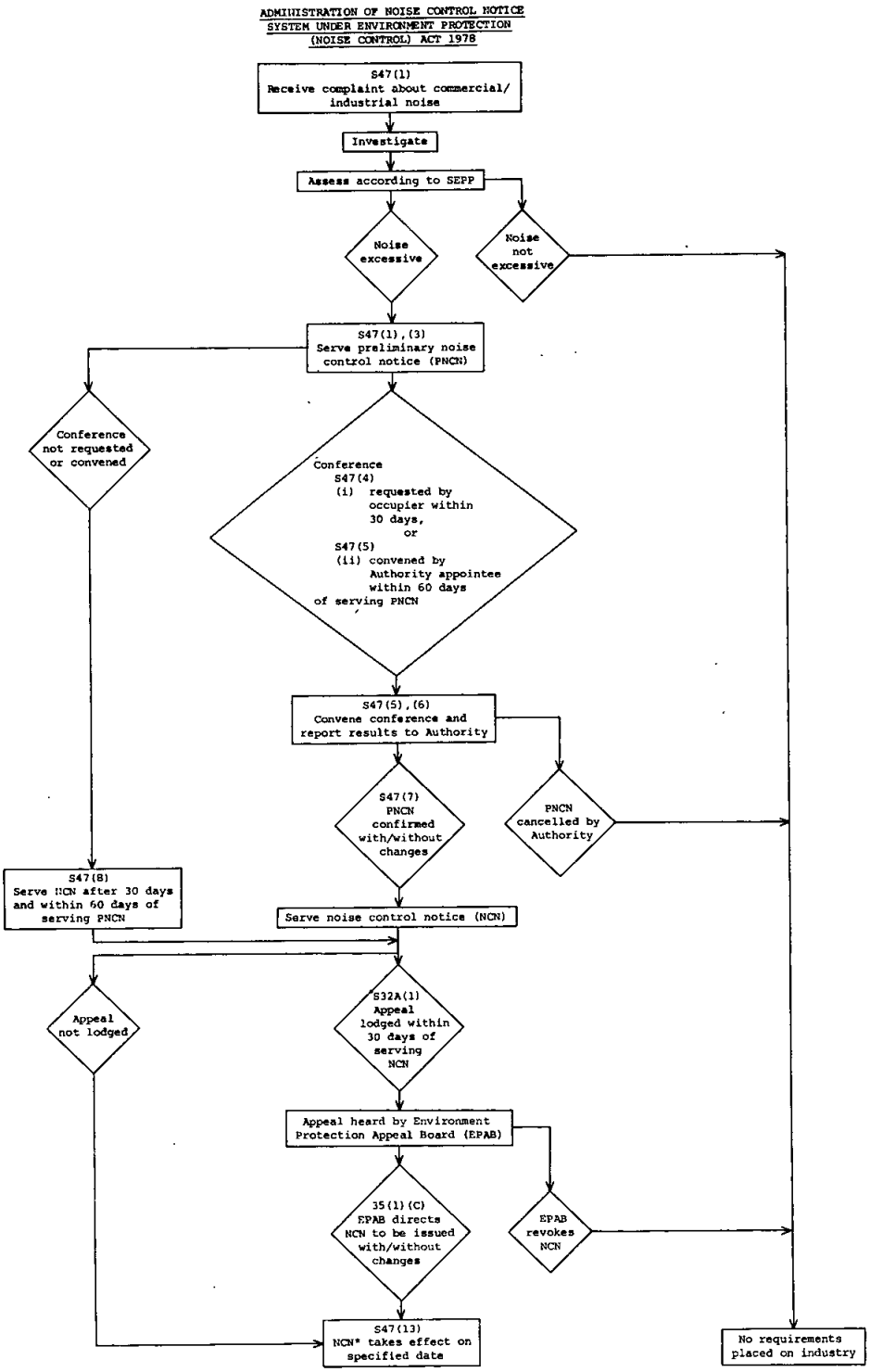


* Day does not include Sundays and public holidays, or Saturdays between 1300 and 1800 hours.

FLOW CHART 2


Determination of the Effective Noise Level
Determine the Equivalent Continuous Sound Level (L_{eq}) for the Noise (Schedule 2 - 2.1)
Are adjustments required for noise character or measurement position?
YES
NO
Was the measurement taken indoors?
NO
YES
The Effective Noise Level is the L_{eq}
Determine the indoor adjustment (A_{IND}) (Schedule 2 - 2.2.1 and 2.3)
Was the noise tonal?
NO
YES
Determine the tonal adjustment (A_T) (Schedule 2 - 2.2.2)
Was the noise impulsive?
NO
YES
Determine the impulse adjustment (A_{IMP}) (Schedule 2 - 2.2.3)
Was the noise continuous over the 1-hour period?
YES
NO
Determine the duration adjustment (A_D) (Schedule 2 - 2.2.4)
Did the noise vary rapidly in sound level at least twice over the 1-hour period?
NO
YES
Determine the intermittency adjustment (A_{INT}) (Schedule 2 - 2.2.5)
The Effective Noise Level is the L_{eq} with adjustments for character and measurement position being added (Schedule 2 - 2.2)

FLOW CHART 3



* Variations to NCN's can be served by the Authority and are subject to appeal.

By Authority F D Atkinson Government Printer Melbourne ISSN 0042–5095