

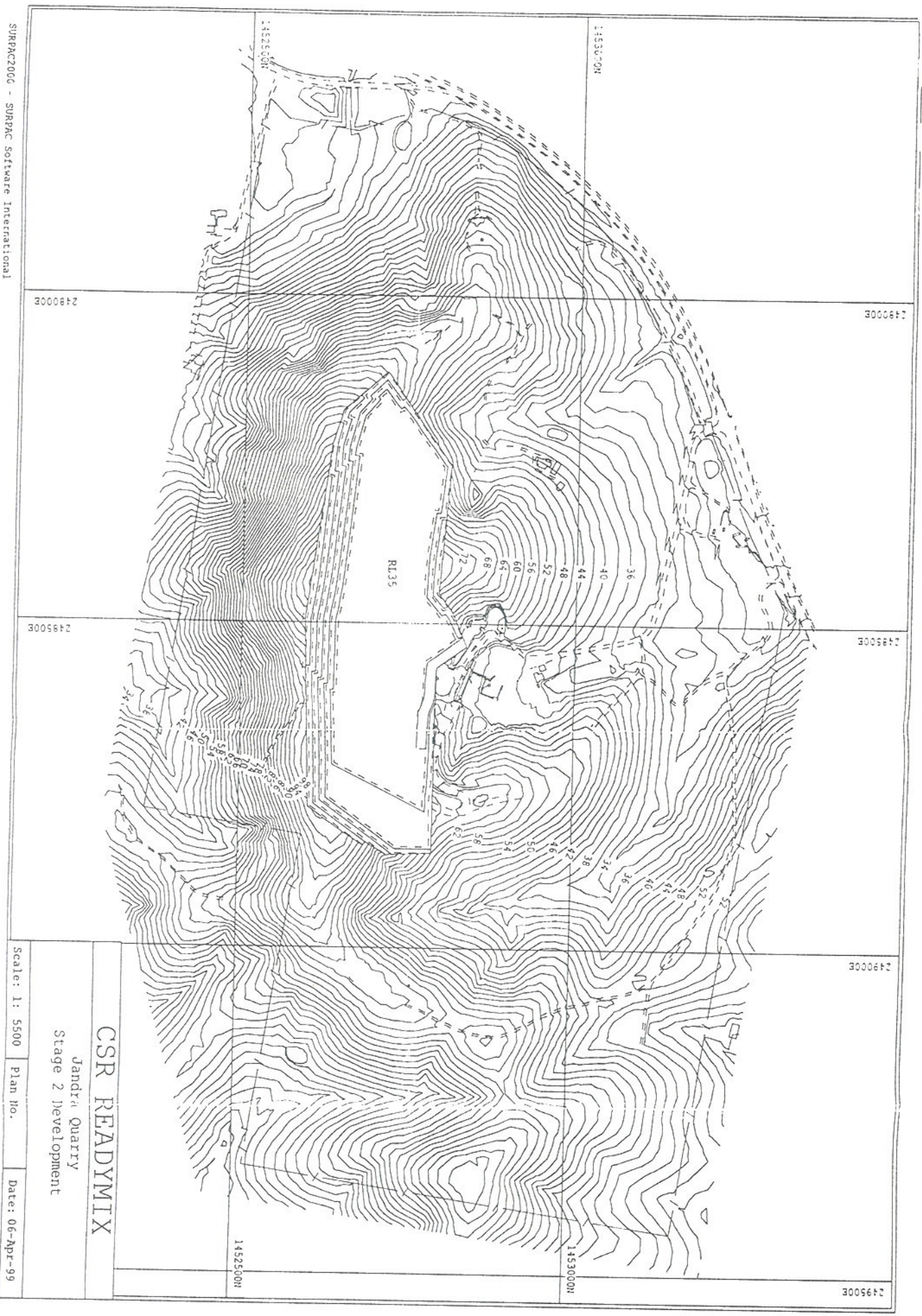
SURPAC2000 - SURPAC Software International



CSR READY MIX

Jandra Quarry
Stage 1 Development

Scale: 1: 5500 Plan No. Date: 26-Feb-99



CSR READYMIX

Jandra Quarry
Stage 2 Development

Scale: 1: 5500 Plan No. Date: 06-Apr-99





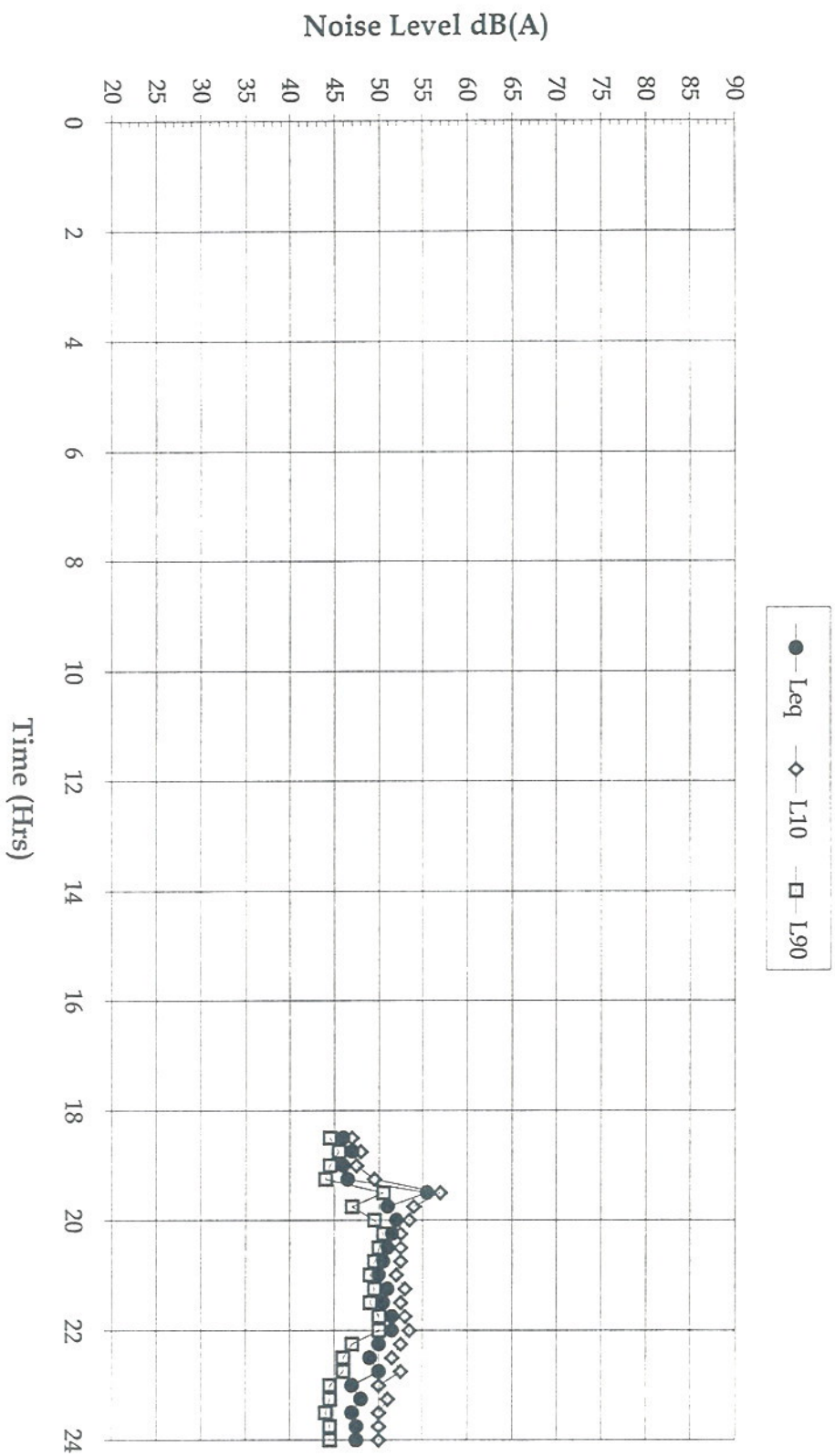
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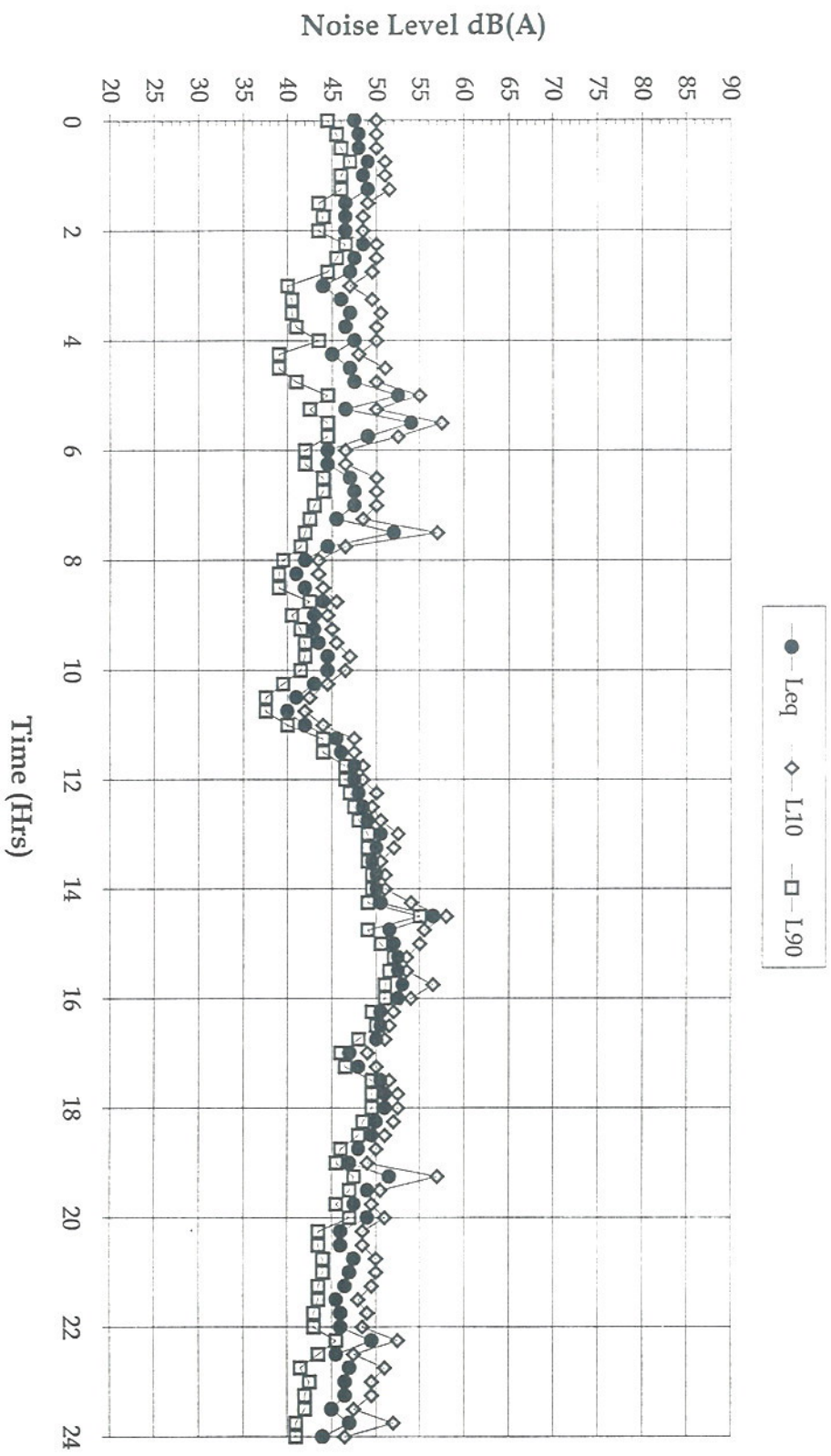
NOISE GRAPHS

Appendix B

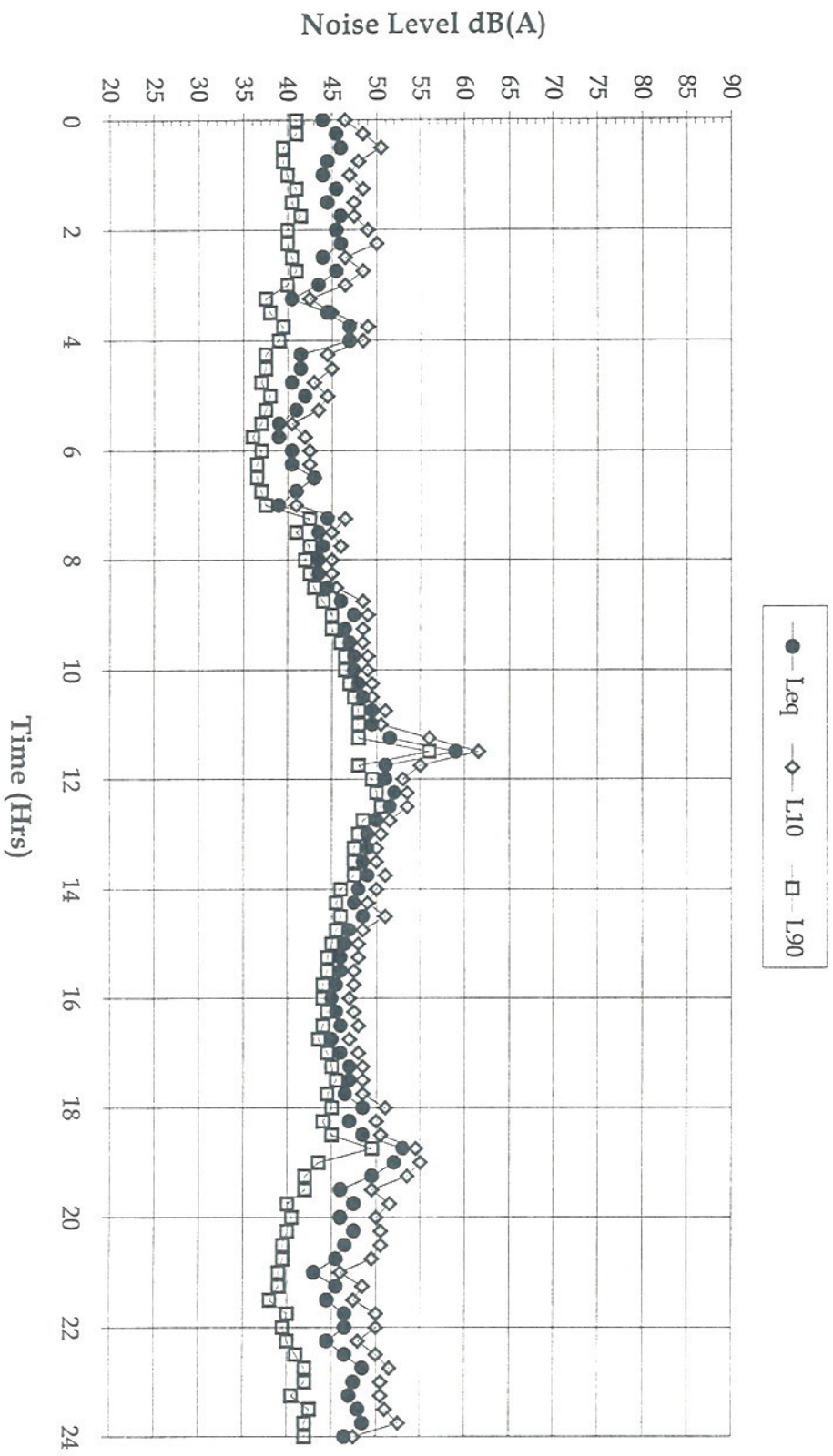
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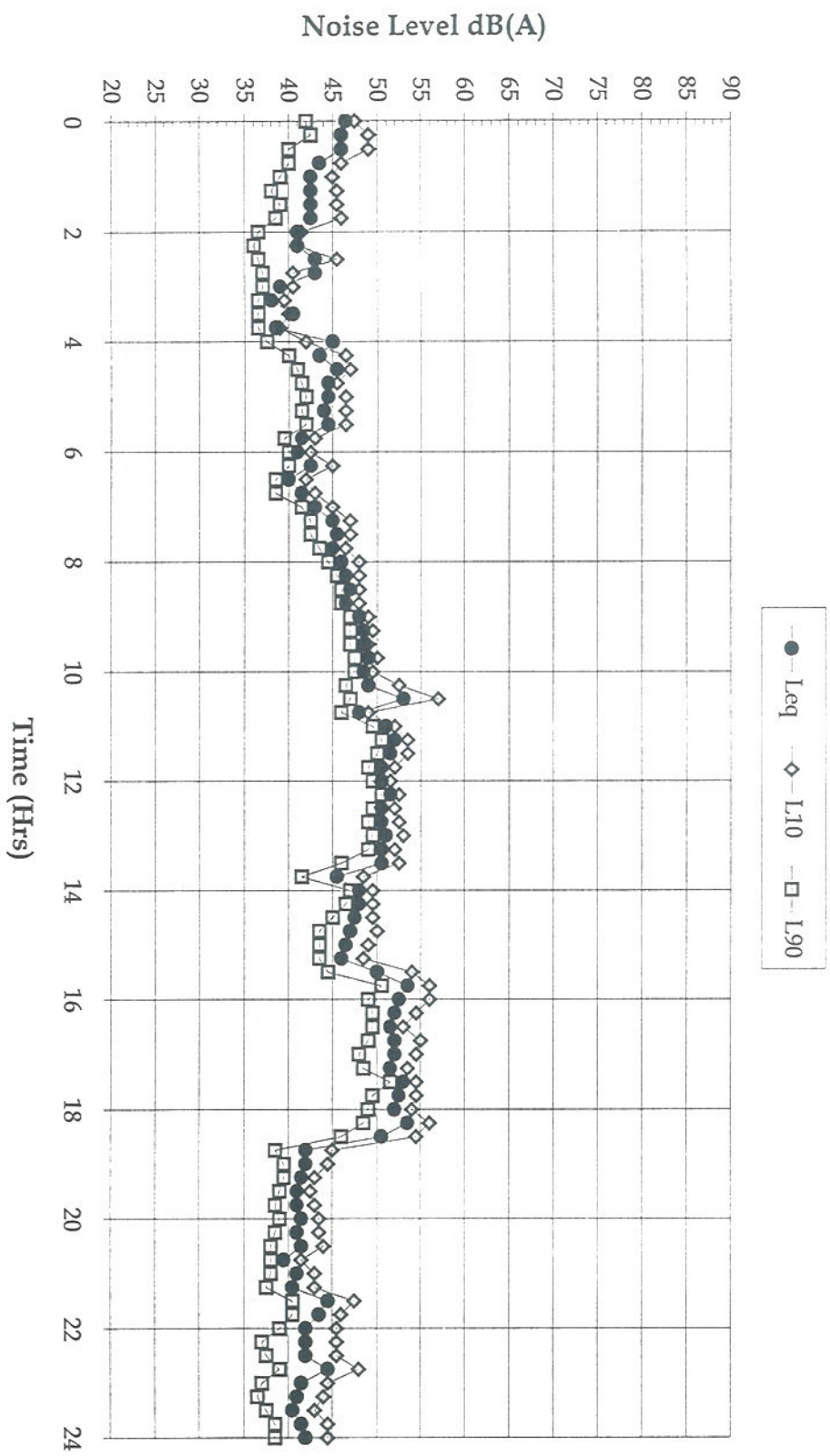
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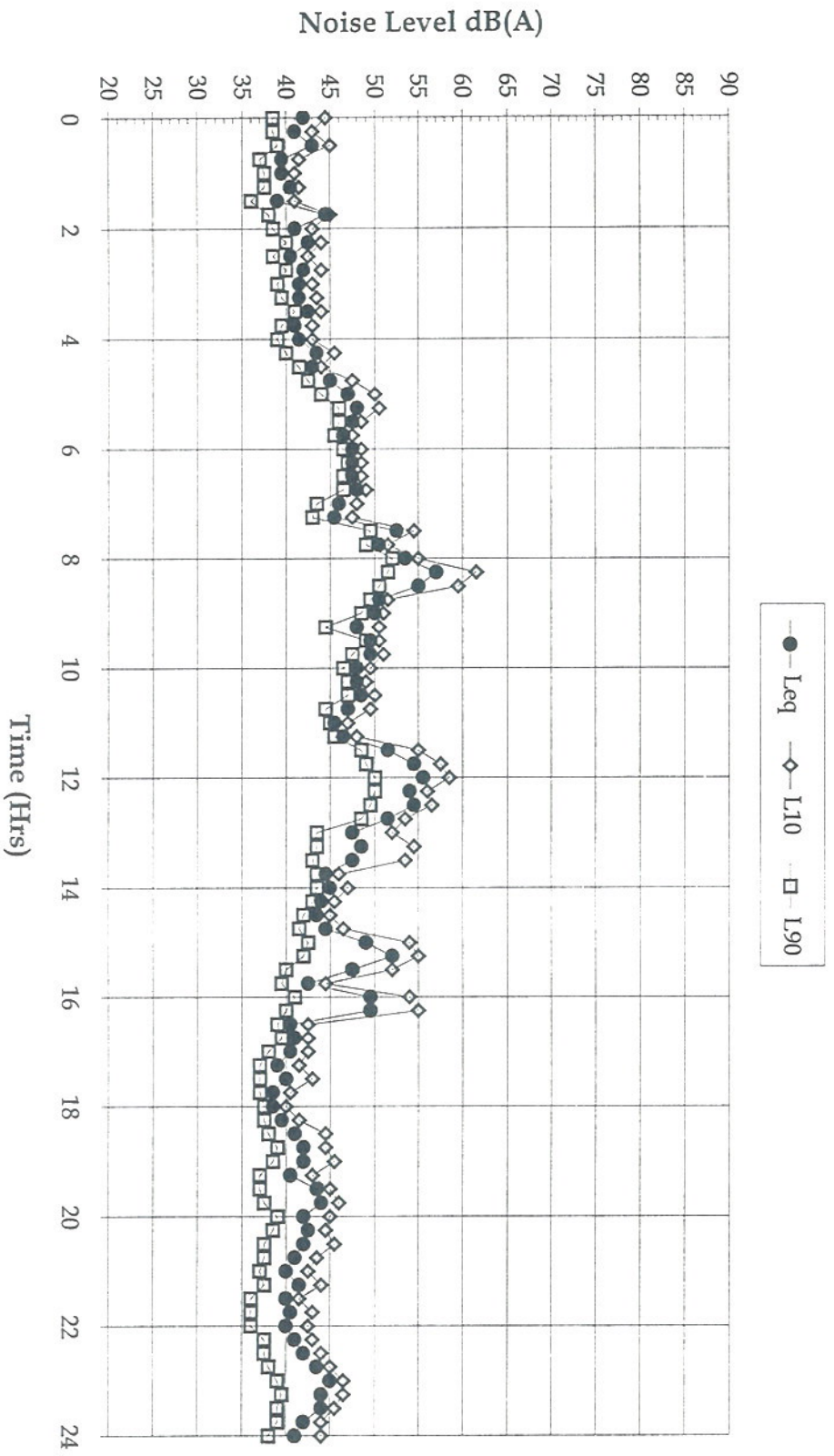
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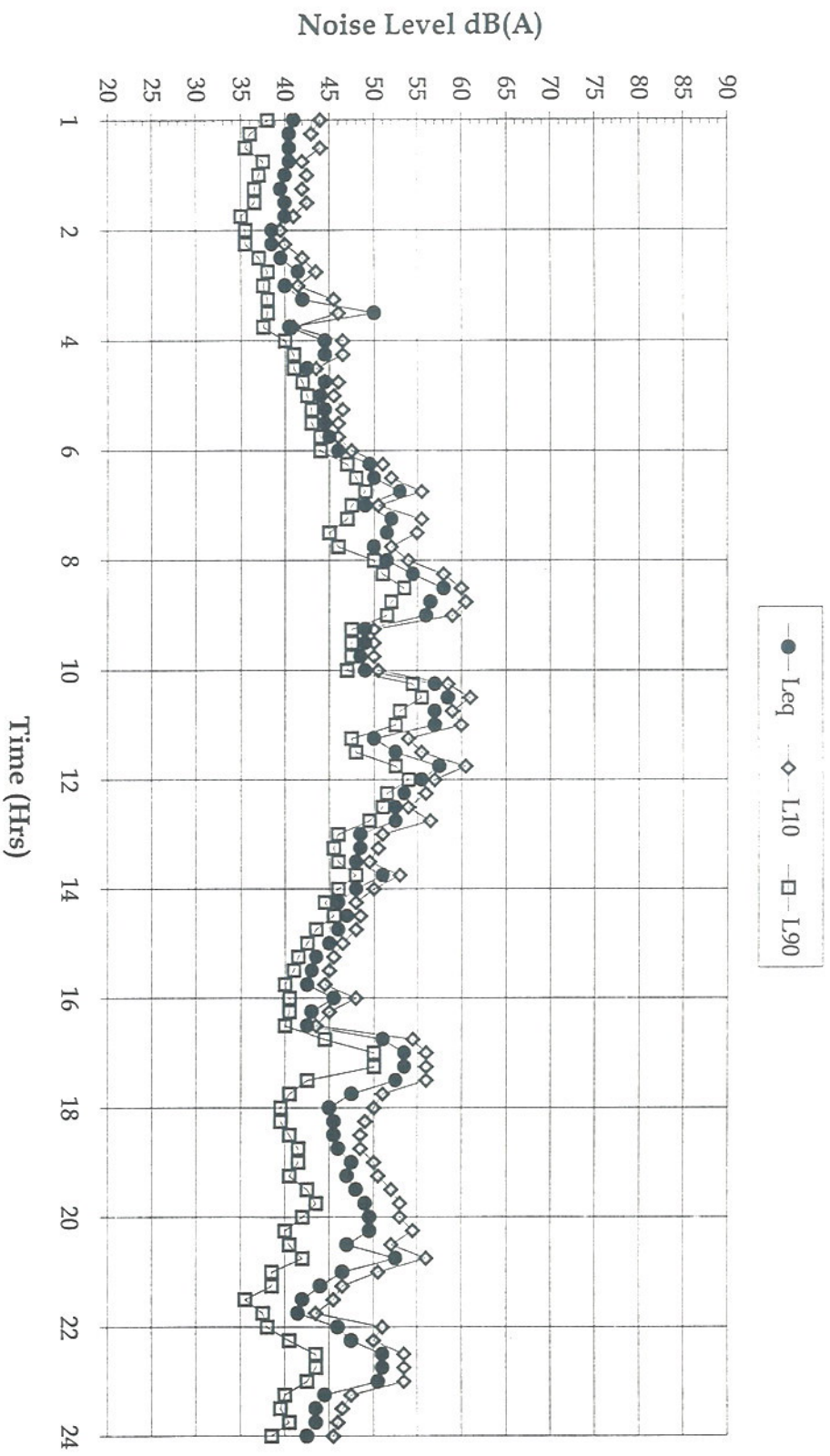
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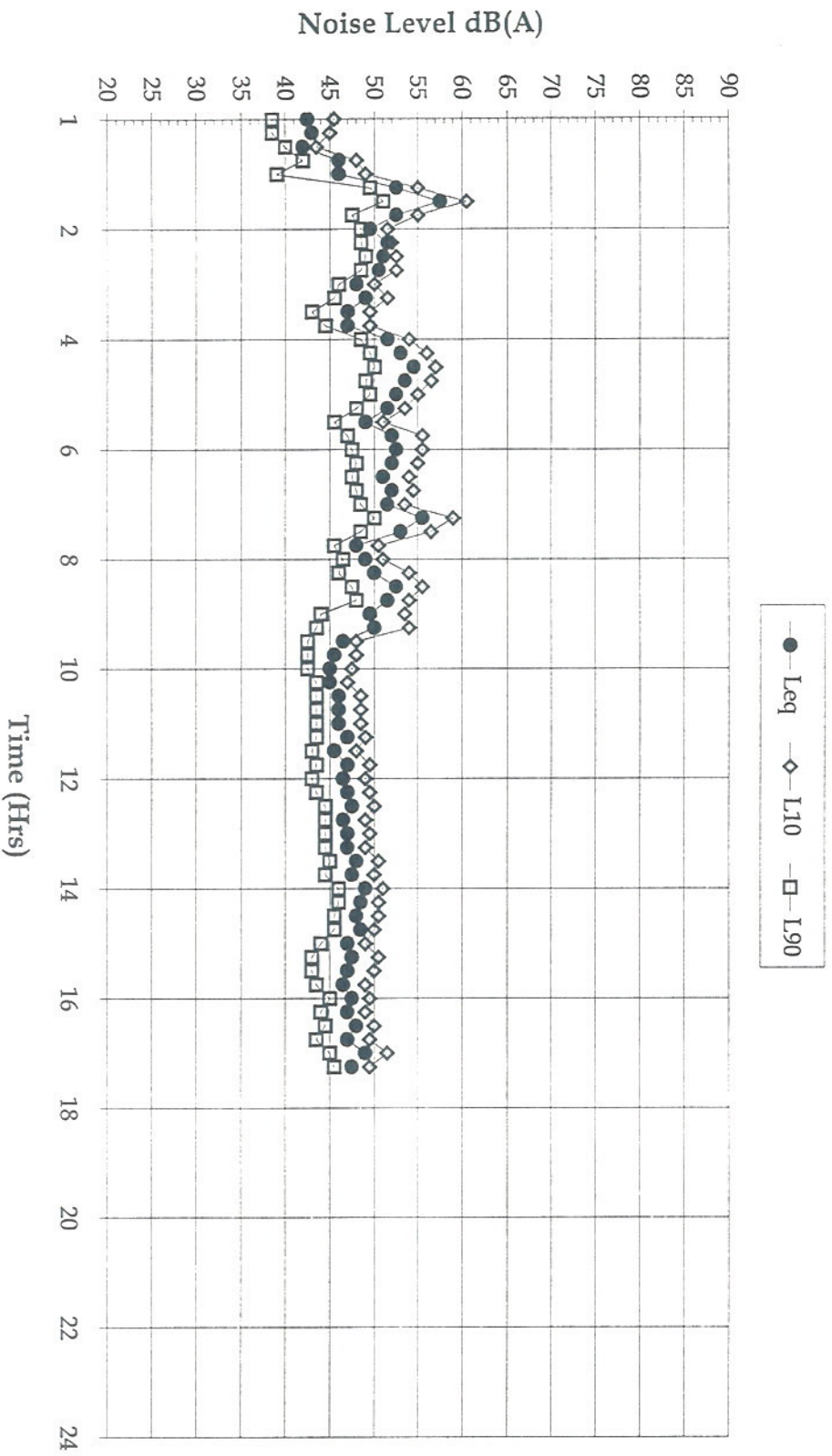
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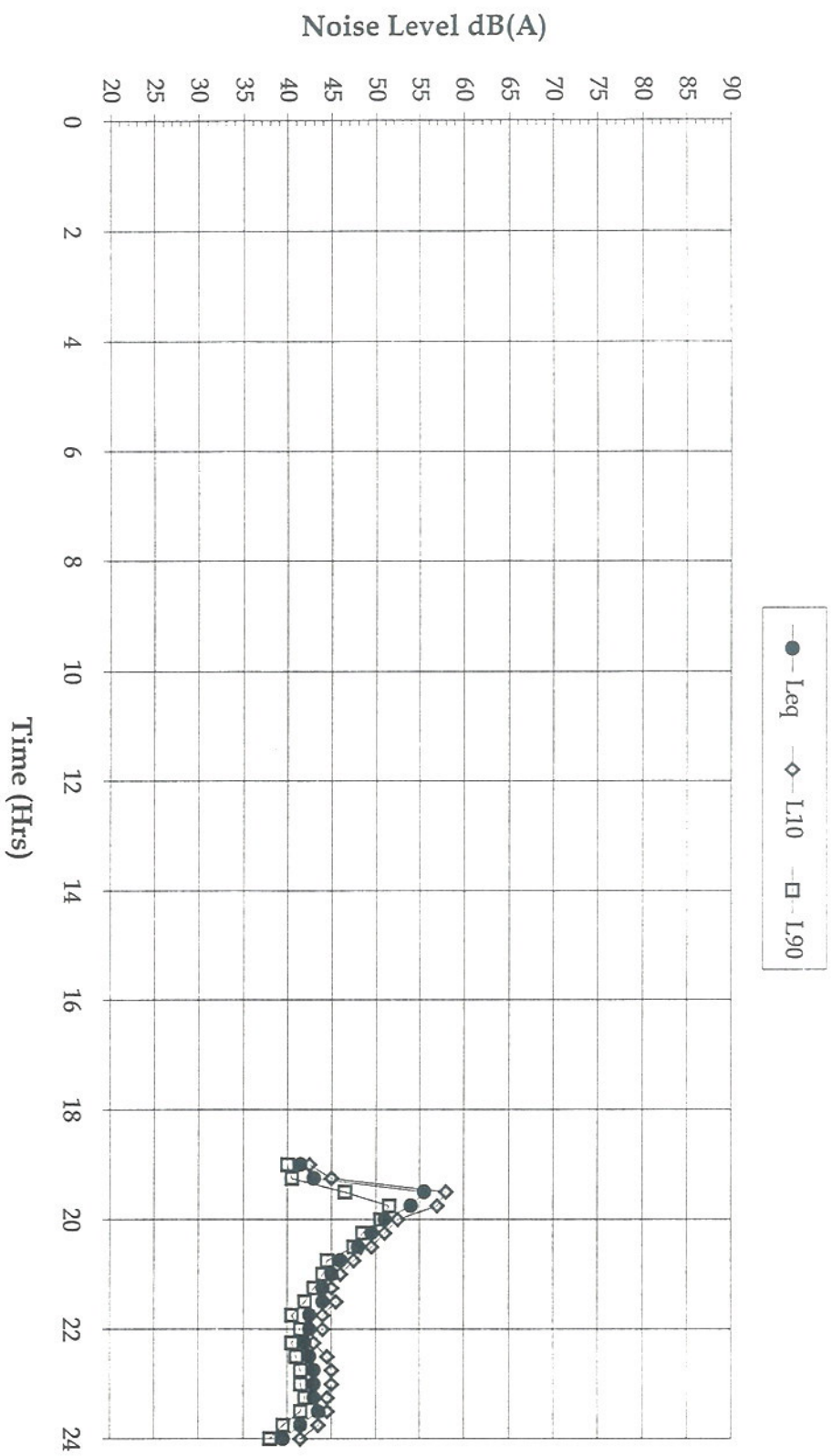
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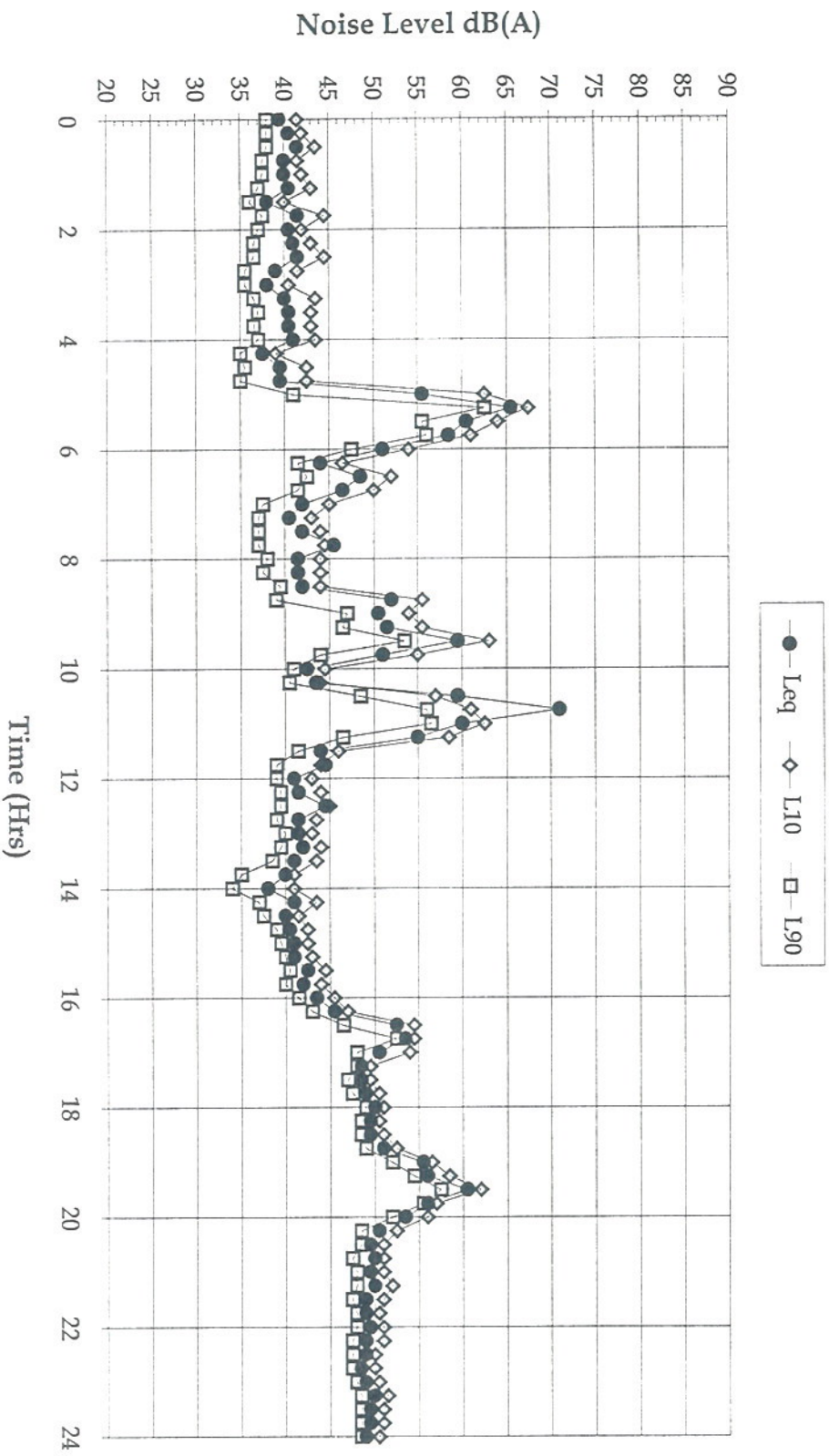
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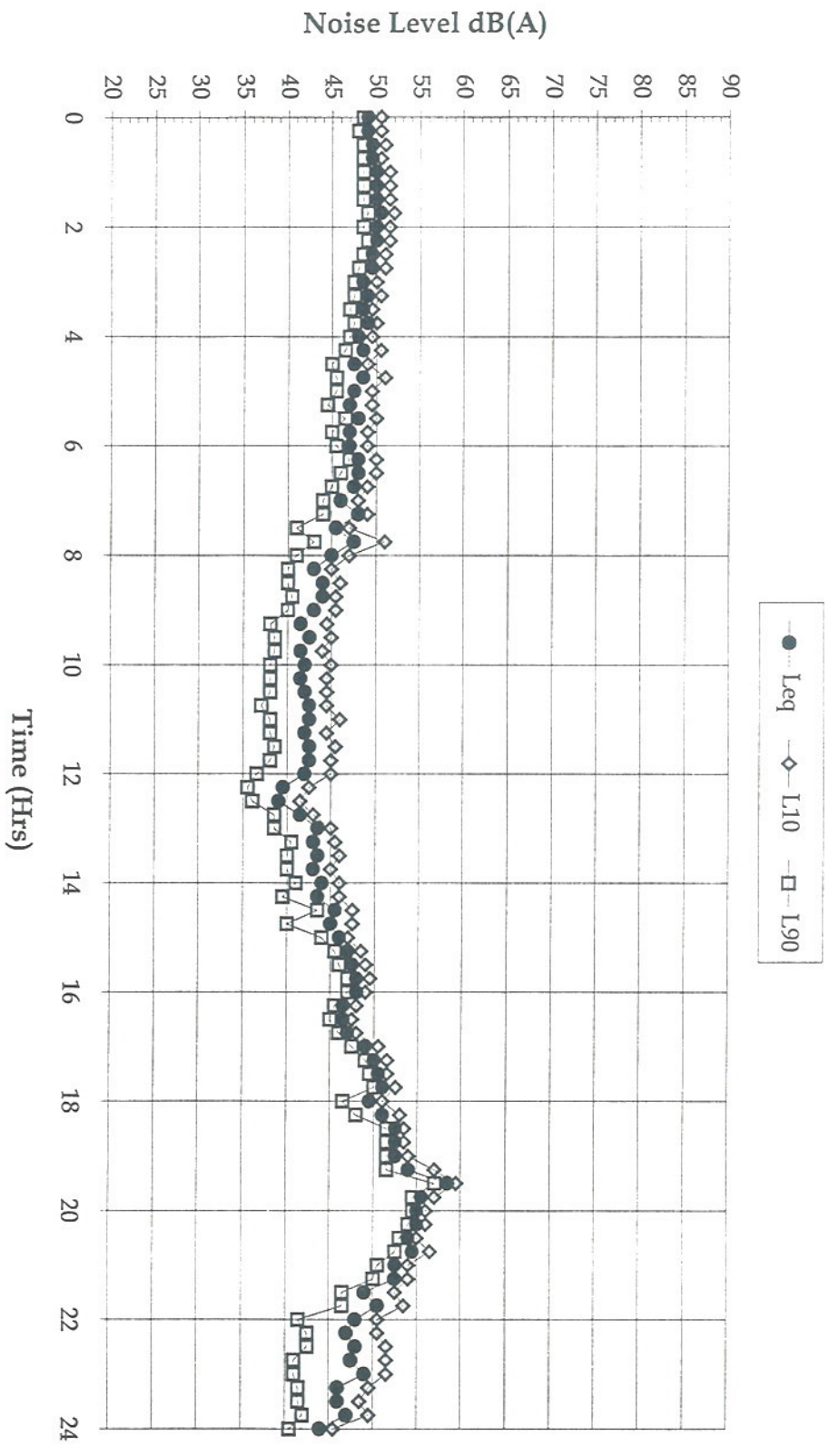
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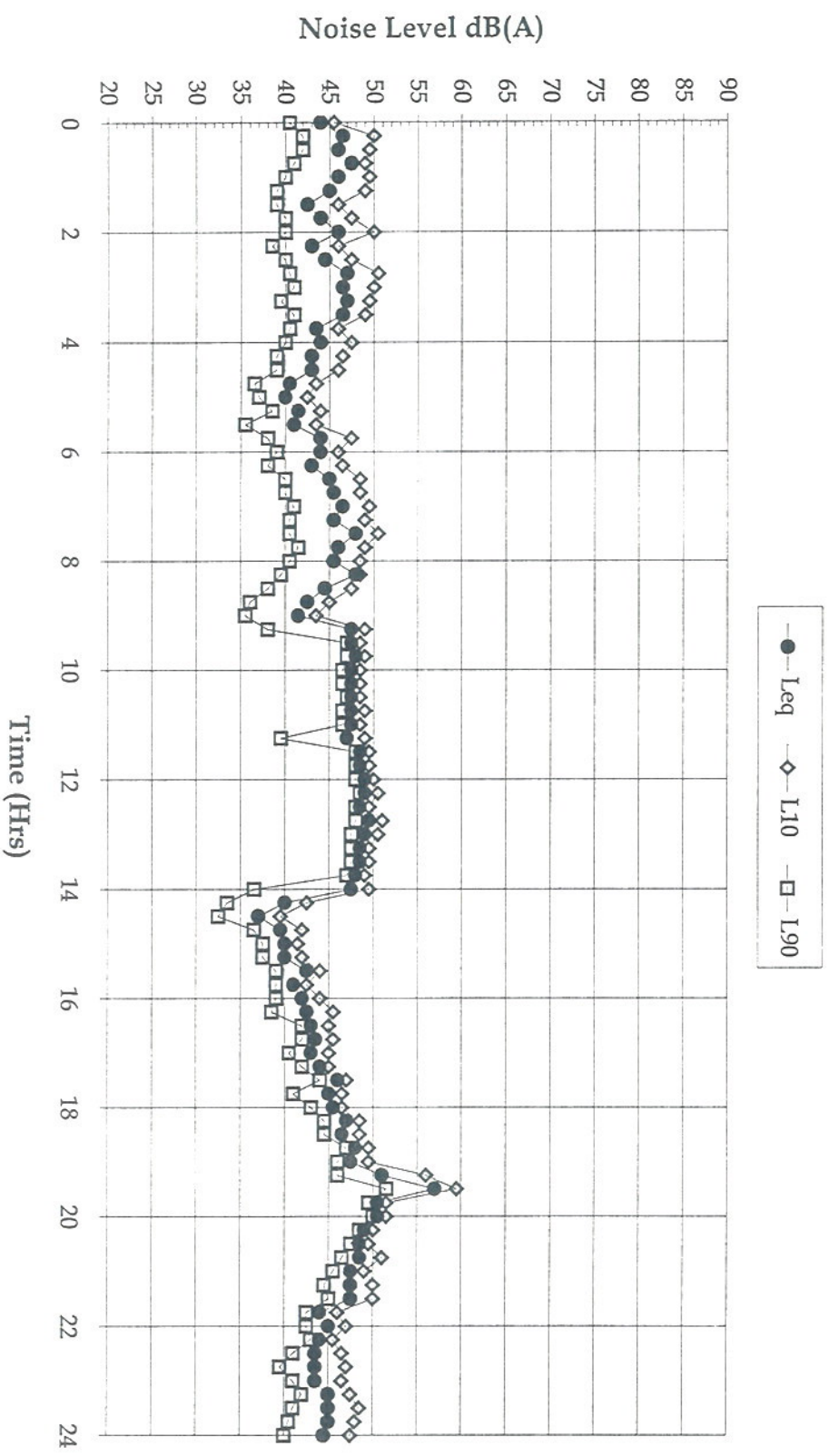
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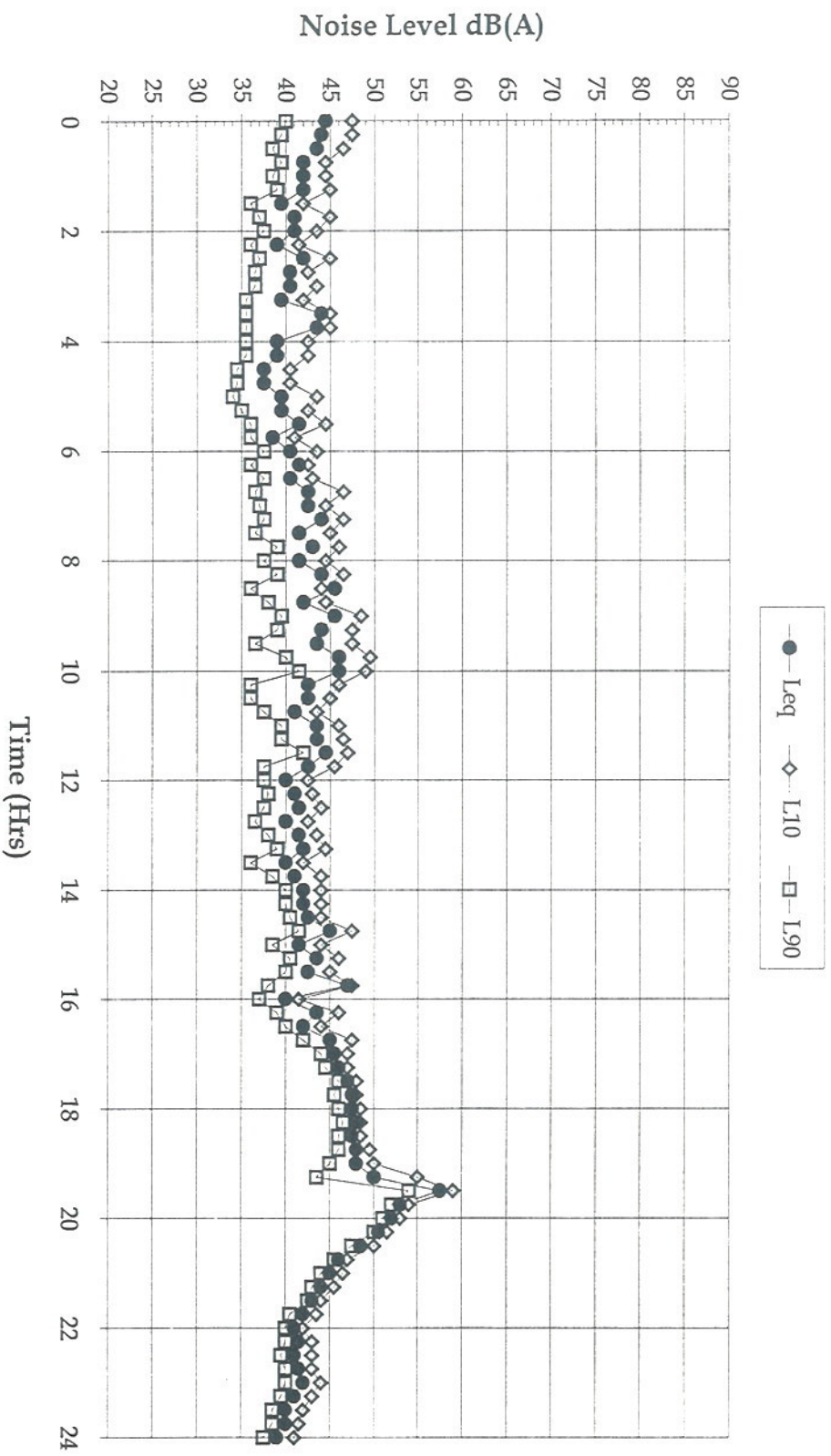
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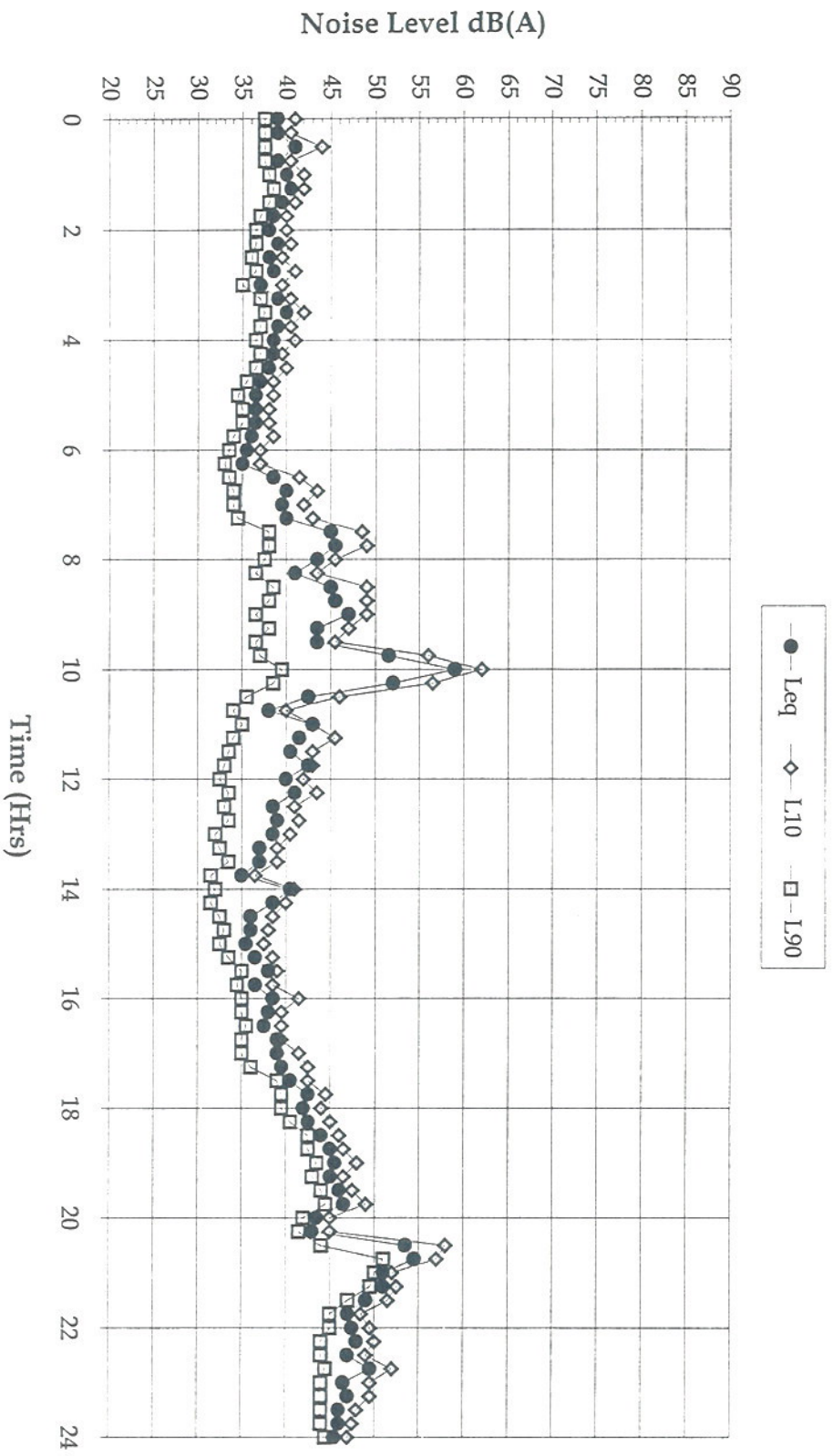
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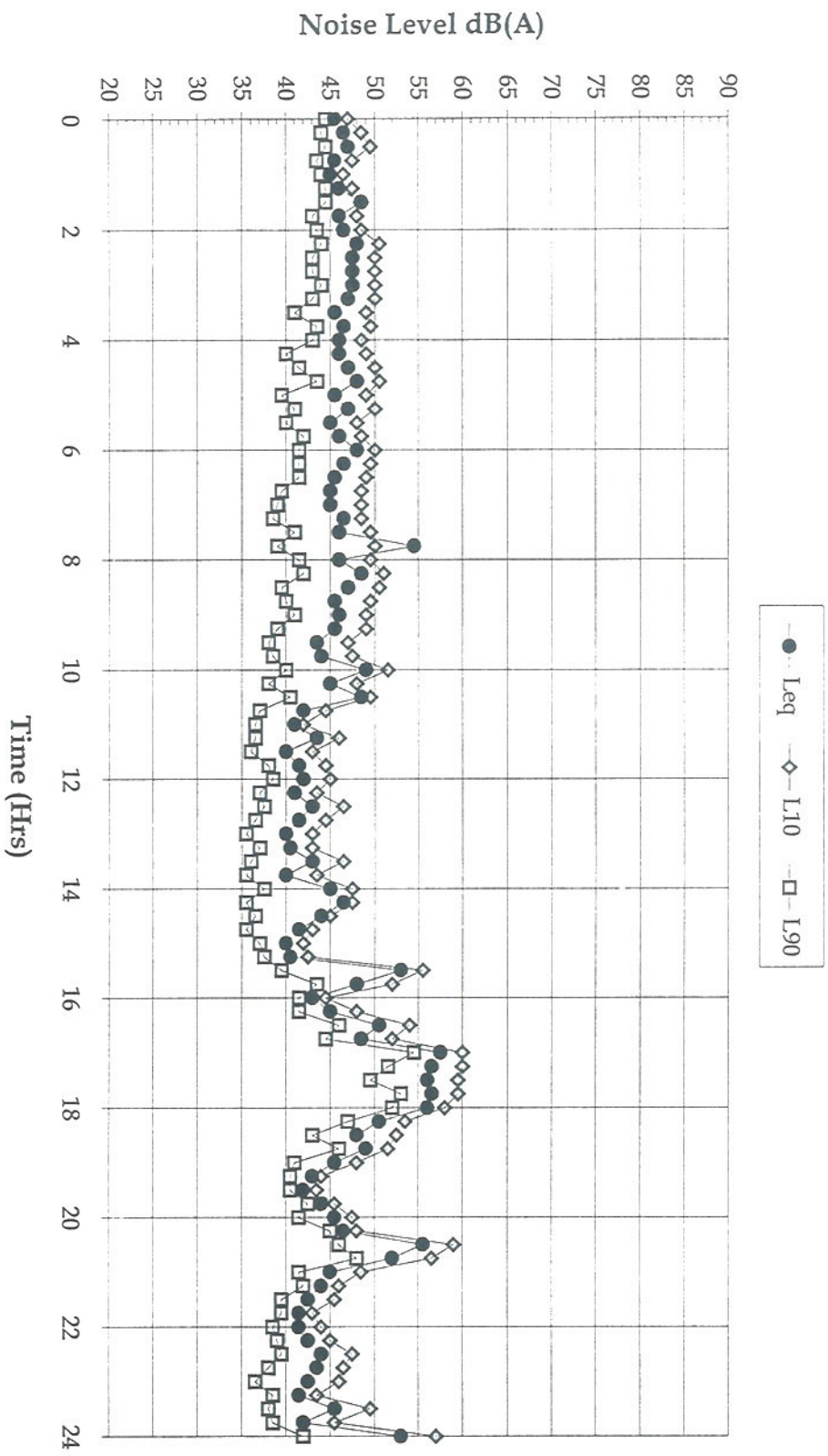
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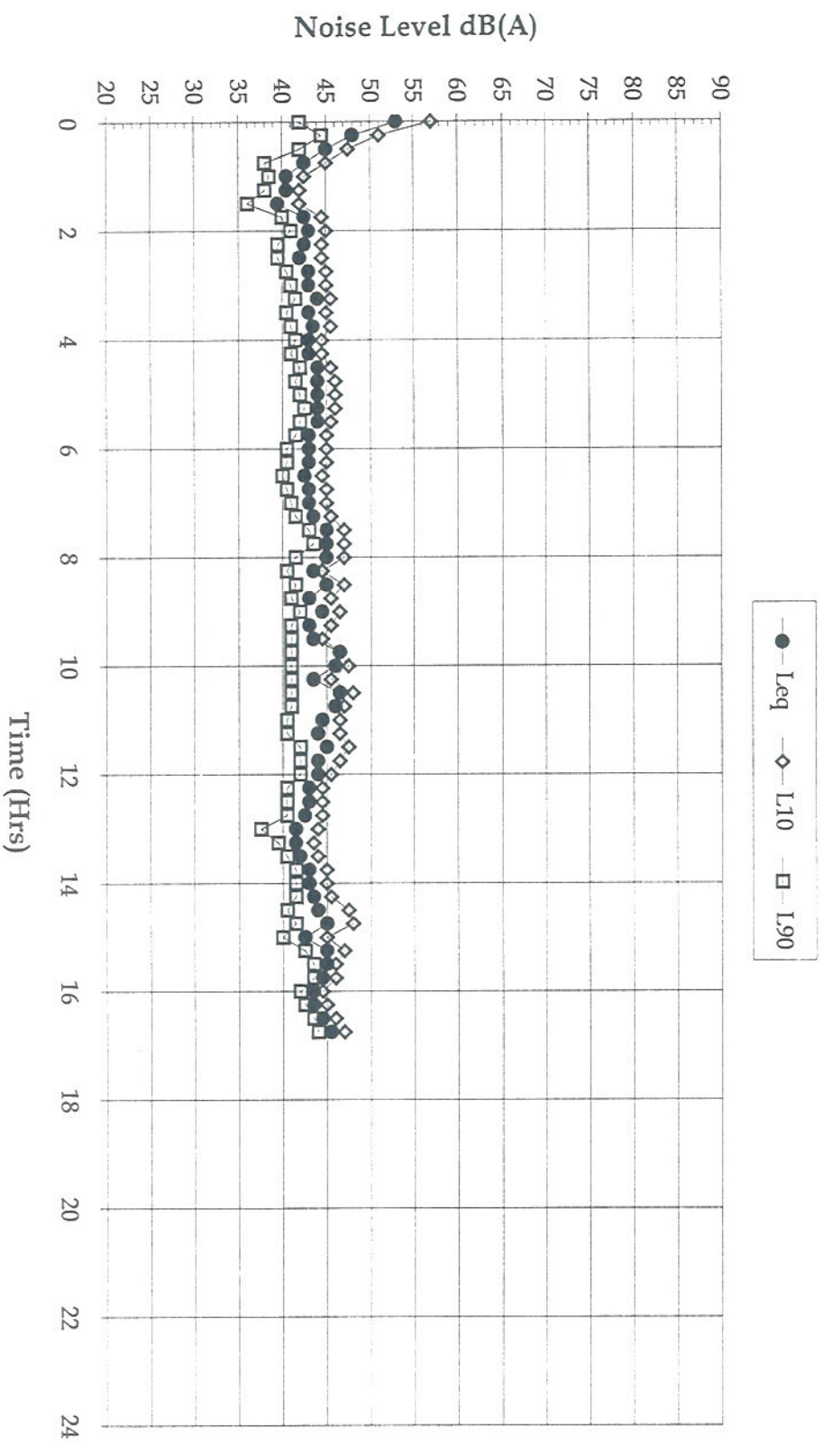
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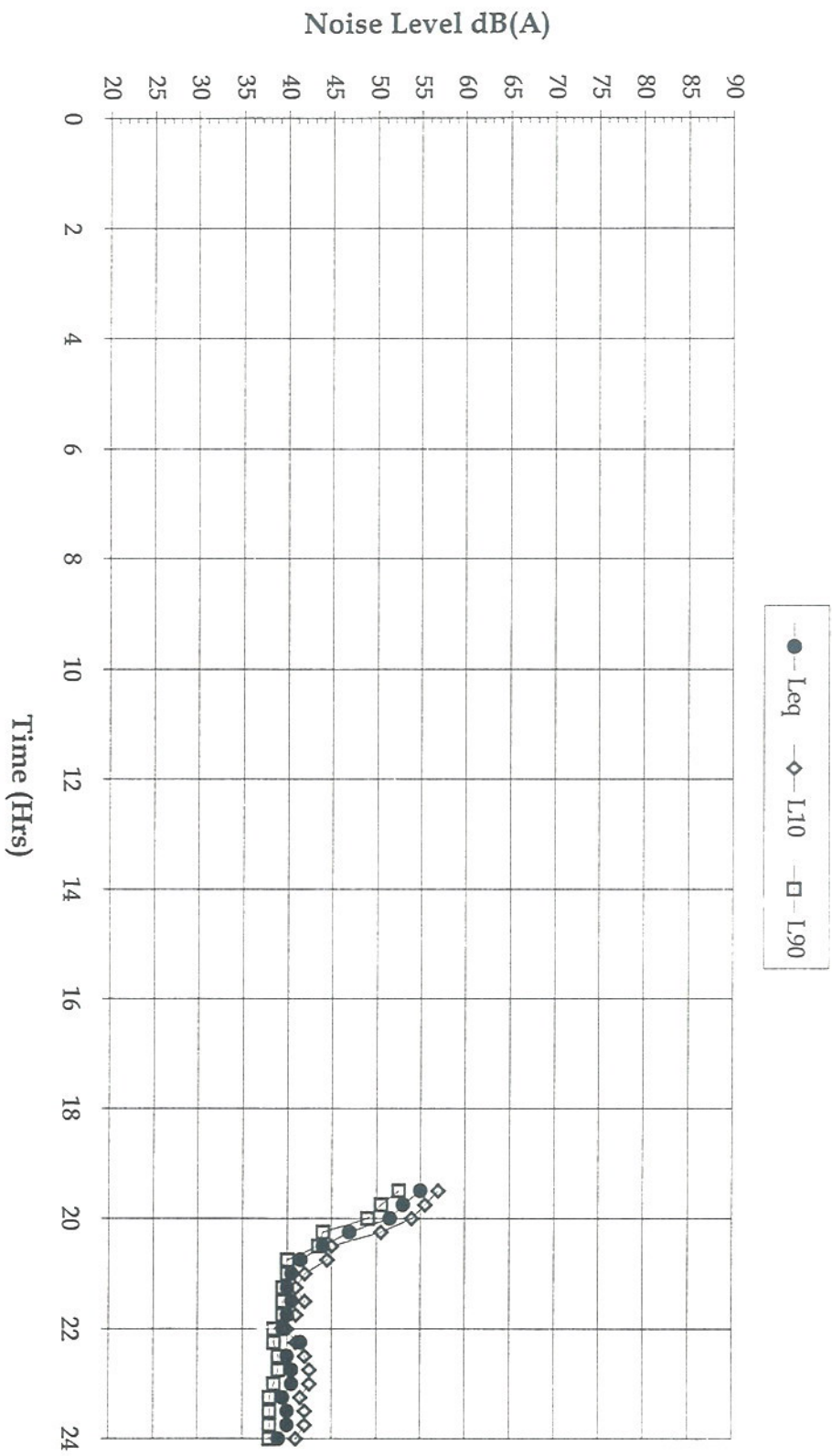
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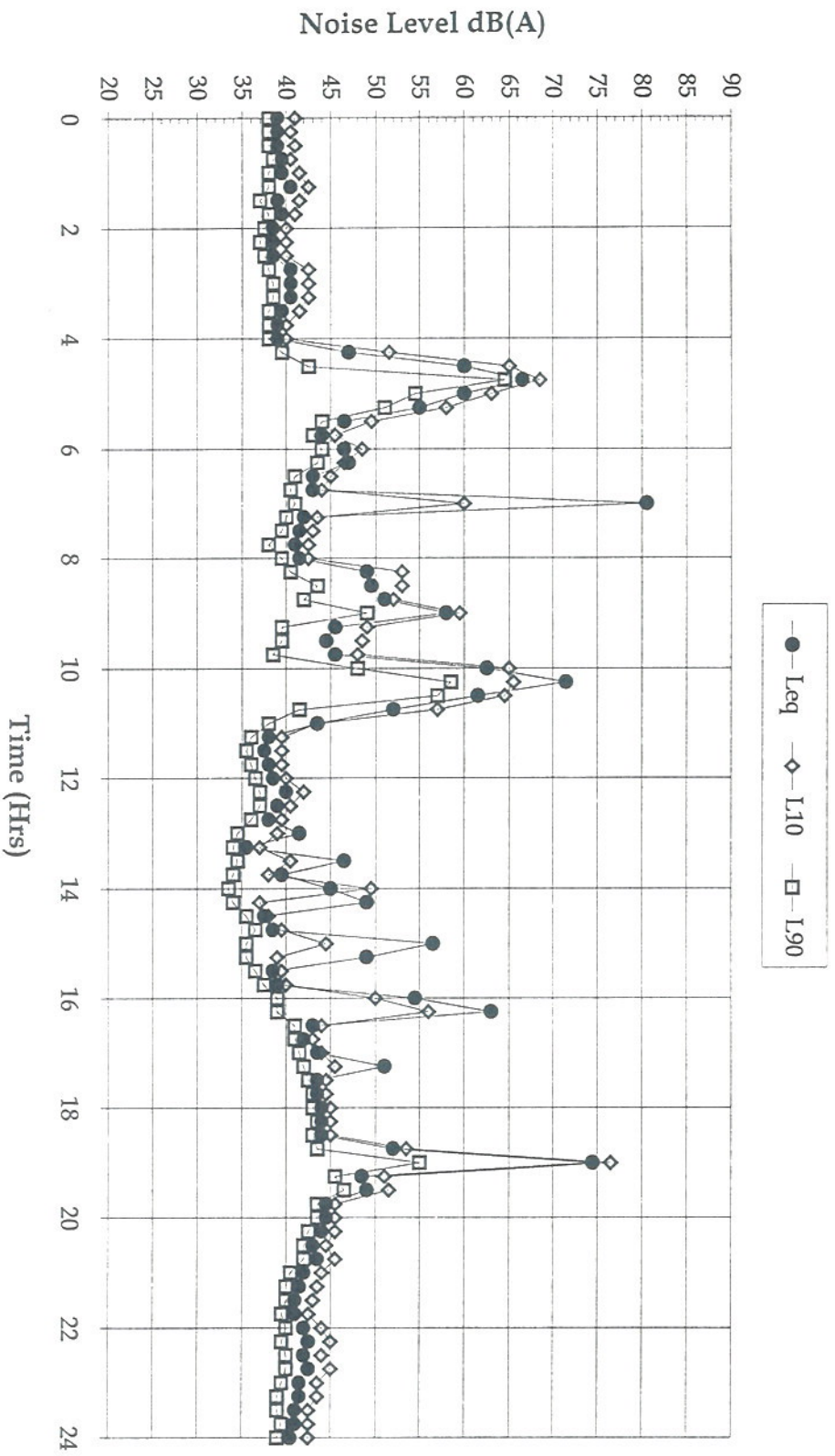
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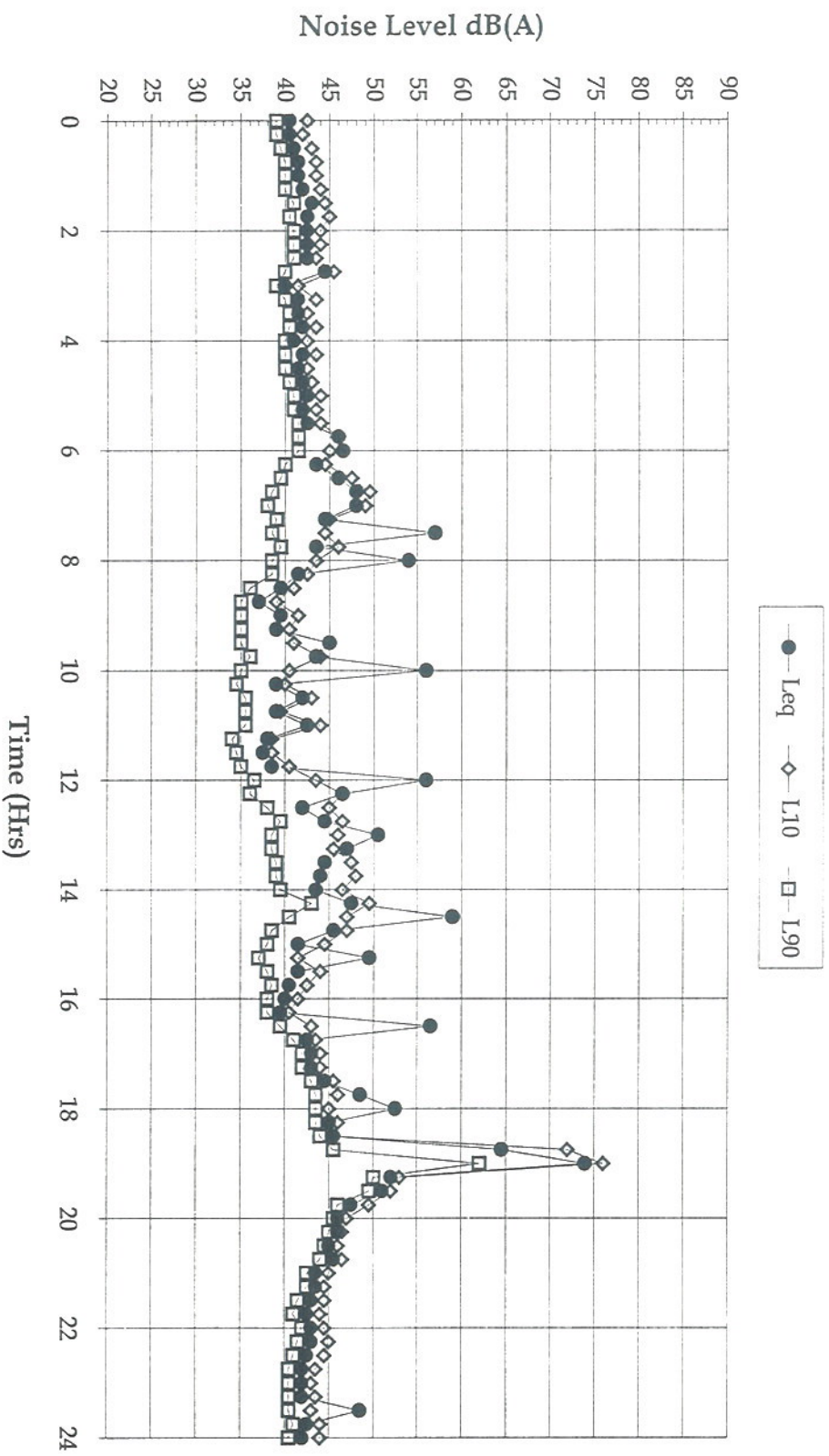
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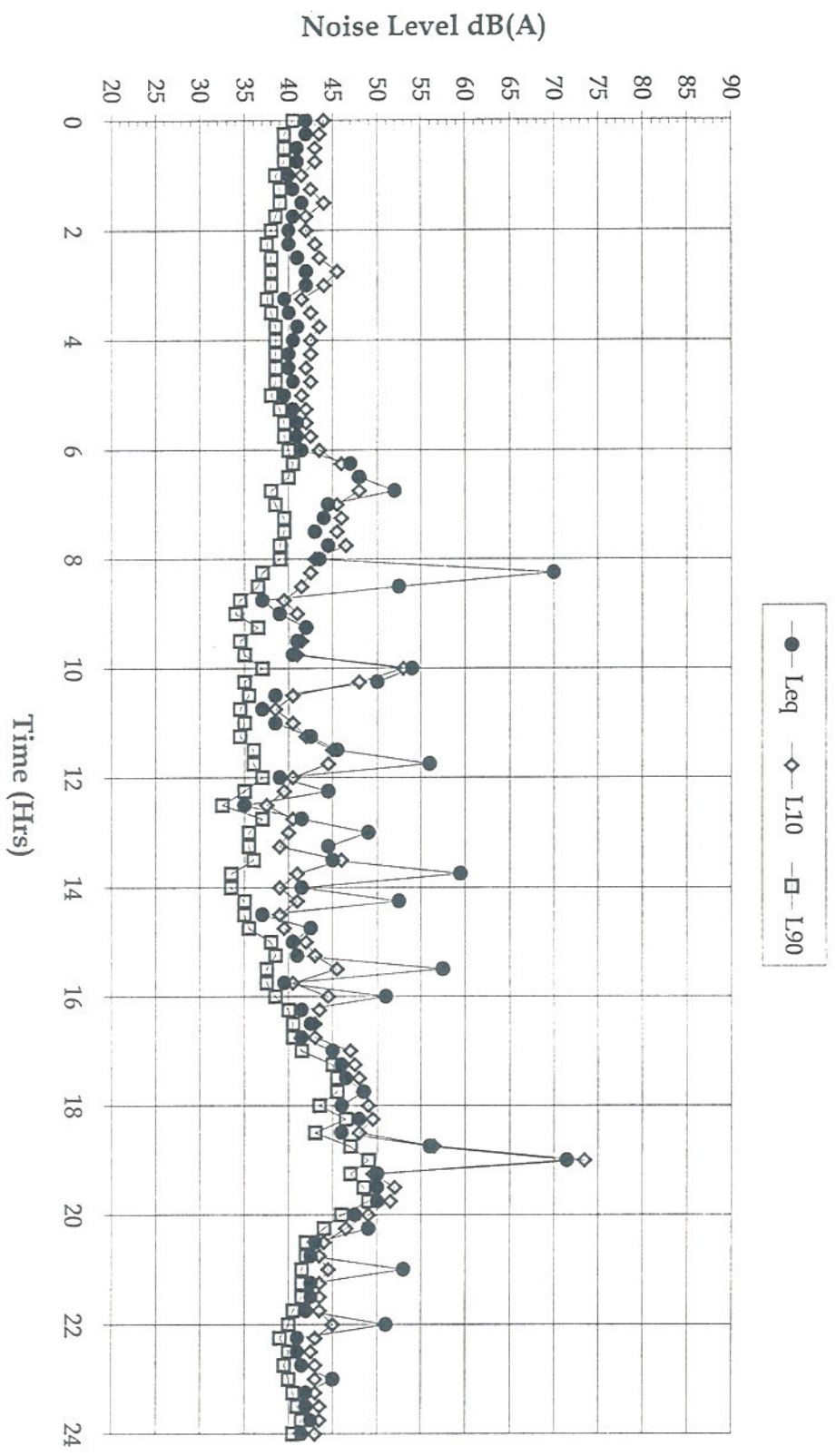
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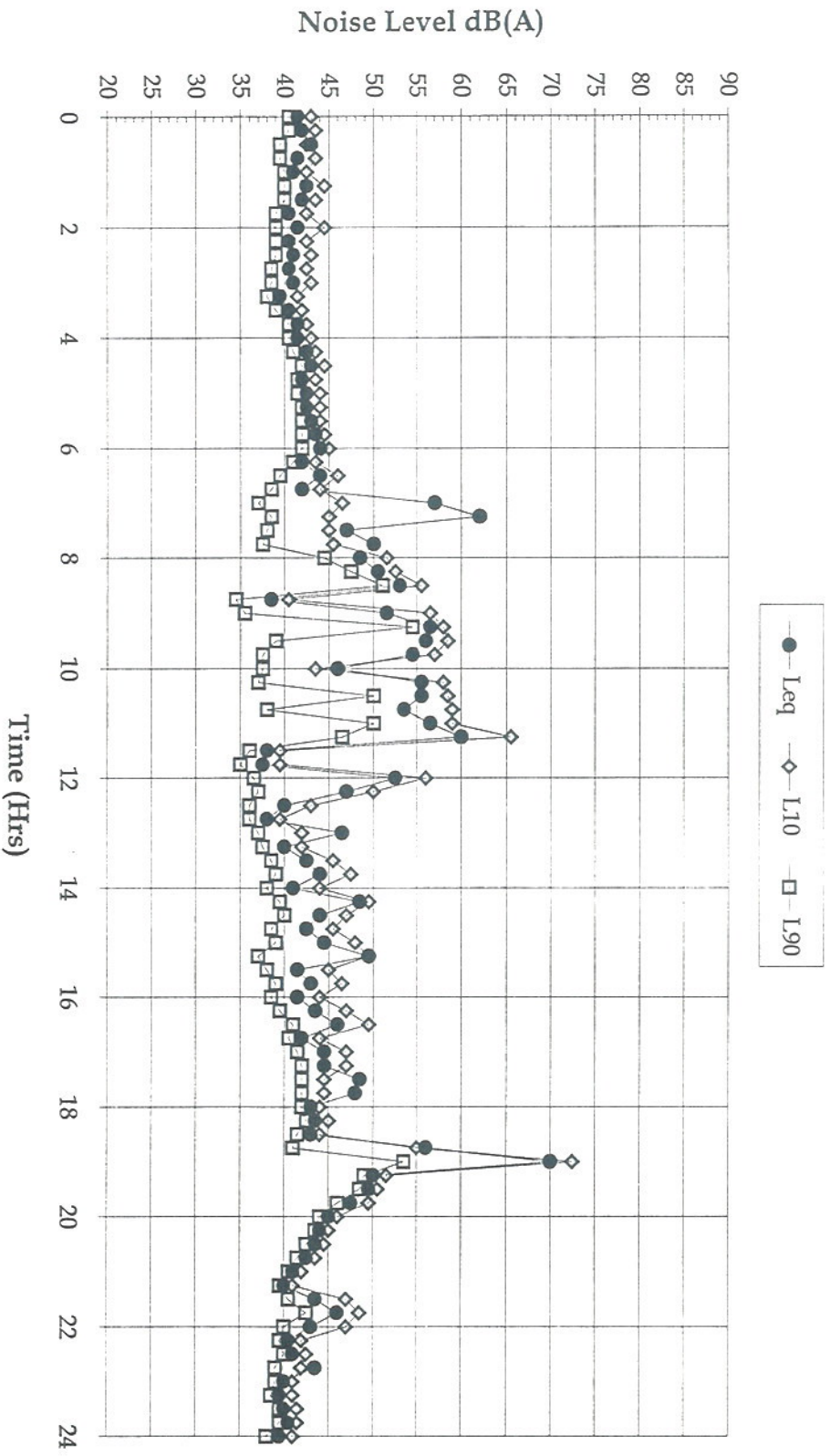
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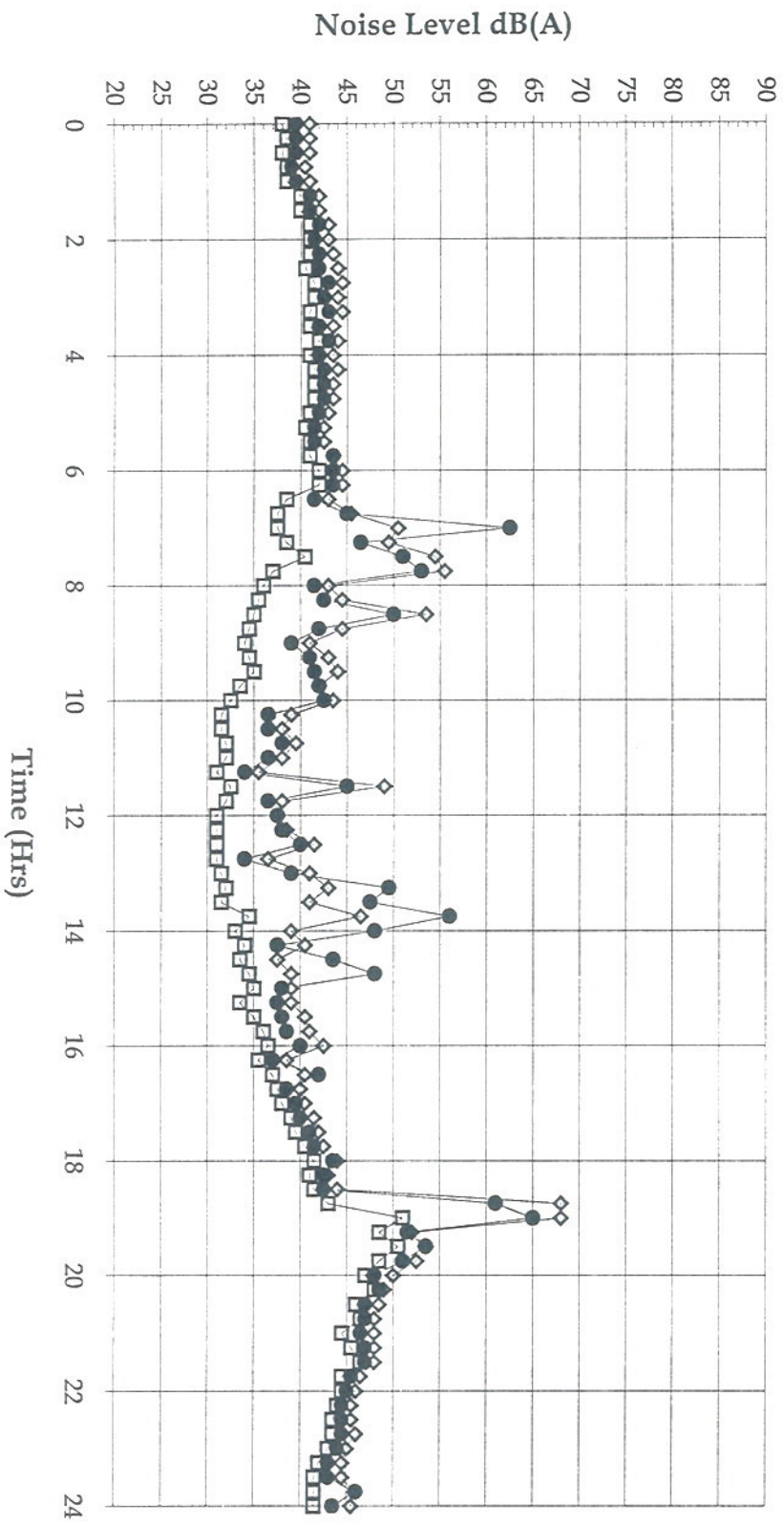
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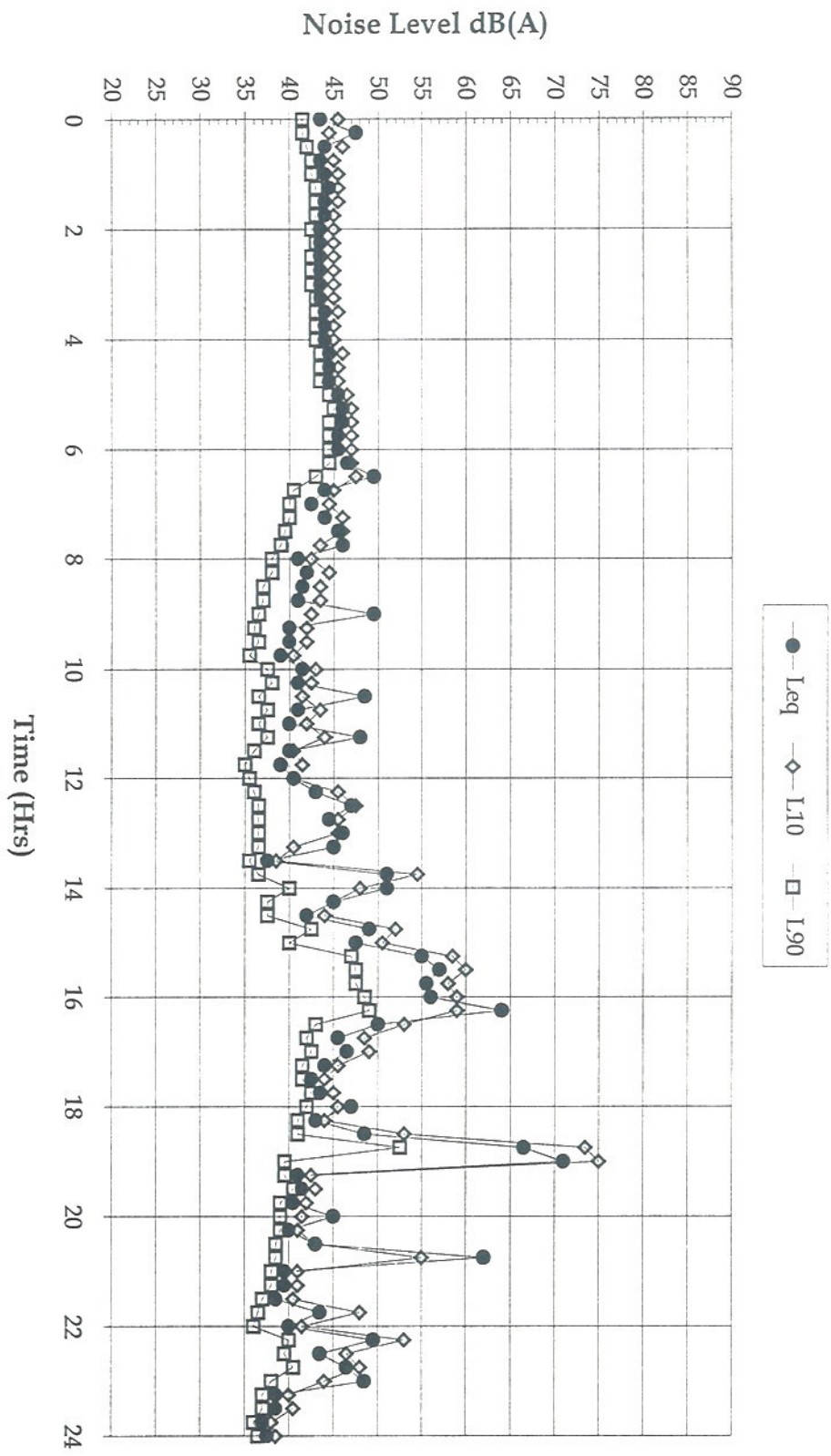
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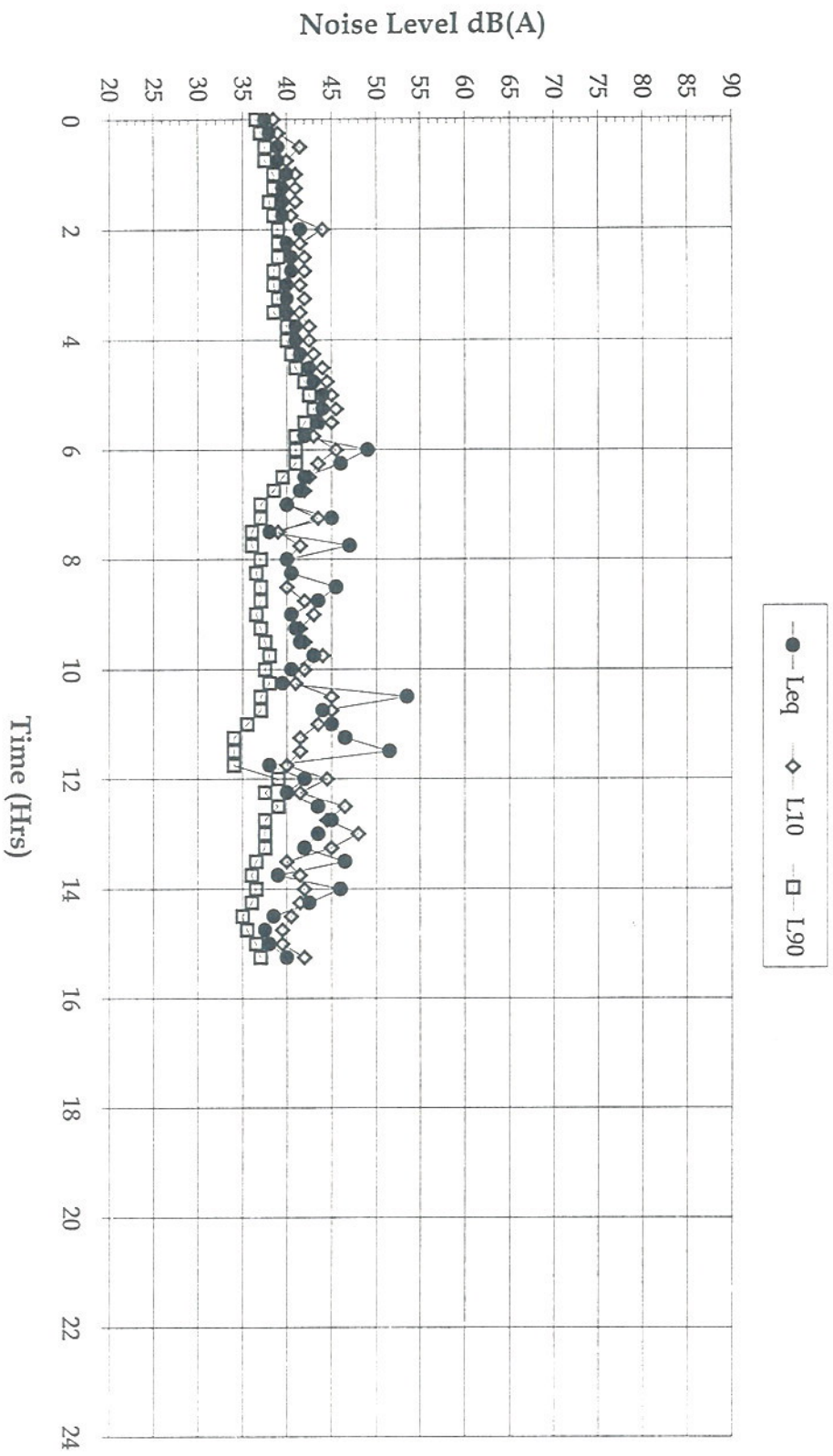
Jones
21 March 1999



Jones
22 March 1999



Jones
23 March 1999



ISG PLANT CO-ORDINATES

Appendix C

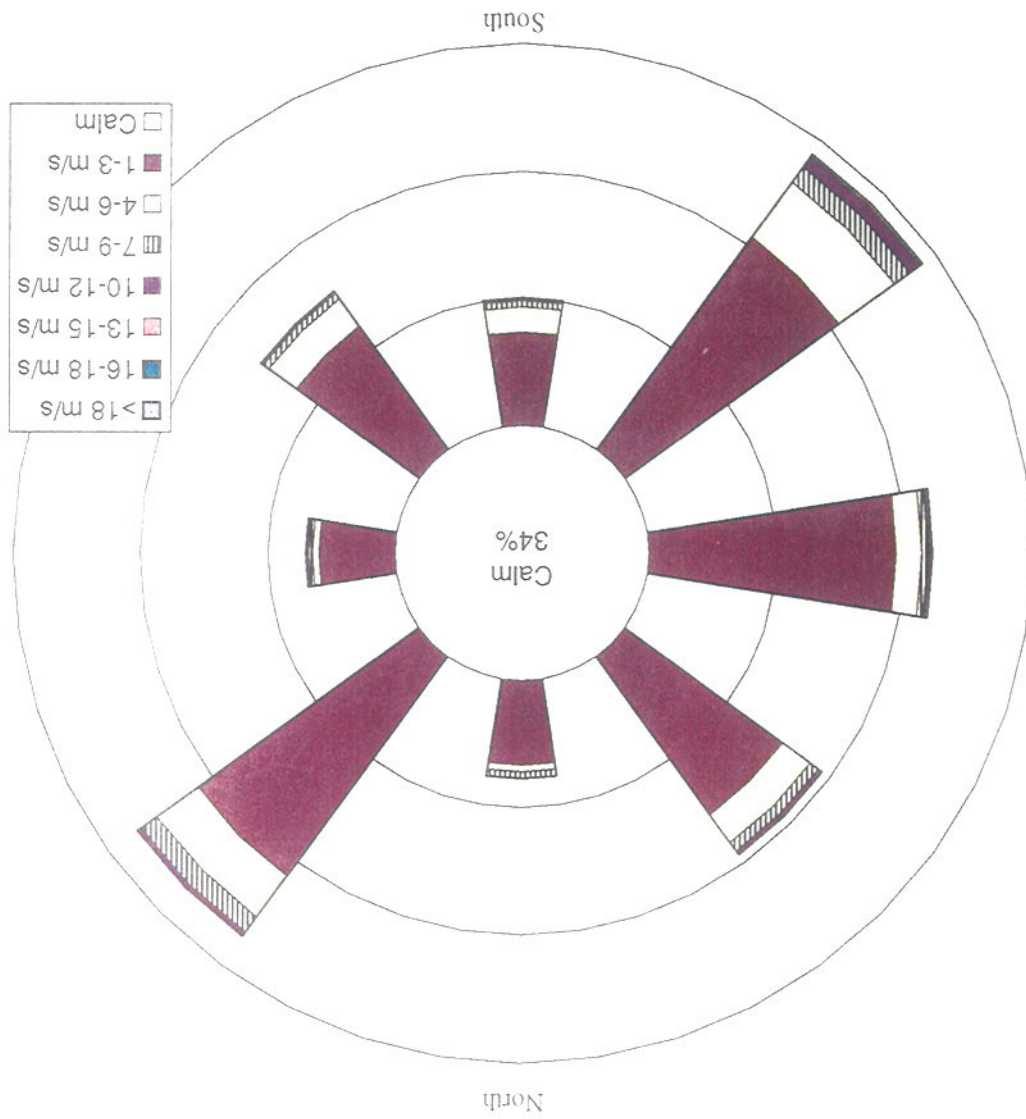
Table C.1 ISG PLANT LOCATIONS FOR NOISE MODELLING

id	Plant	Stage 0			Stage 1			Stage 3		
		x	y	z	x	y	z	x	y	z
1	D8 Dozer	248431	1452769	74	248195	1452640	84	249092	1452754	76
2	EX300	248444	1452728	74	248250	1452632	92	249089	1452734	76
3	966FEL	248453	1453109	34	248453	1453109	34	248453	1453109	34
4	D-rill	248467	1452727	62	248453	1452609	98	249055	1452691	62
5	980FEL	248496	1452690	72	248320	1452625	98	249022	1452667	62
6	Komatsu HD325	248537	1452688	72	248554	1452609	98	249049	1452760	62
7	Volvo 18t	248984	1452776	56	248640	1452690	42	248984	1452776	50
8	Crusher	248594	1452852	44	248594	1452852	44	248594	1452852	44
9	WA420 FEL	248625	1452984	42	248625	1452984	42	248625	1452984	42
10	Transport Truck	248570	1452930	42	248570	1452930	42	248570	1452930	42
11	Water Cart 18t	248566	1452719	66	248789	1452836	66	248608	1452897	43
12	Asphalt Plant	248445	1453094	34	248445	1453094	34	248445	1453094	34

WIND ROSES FOR TAREE AIRPORT

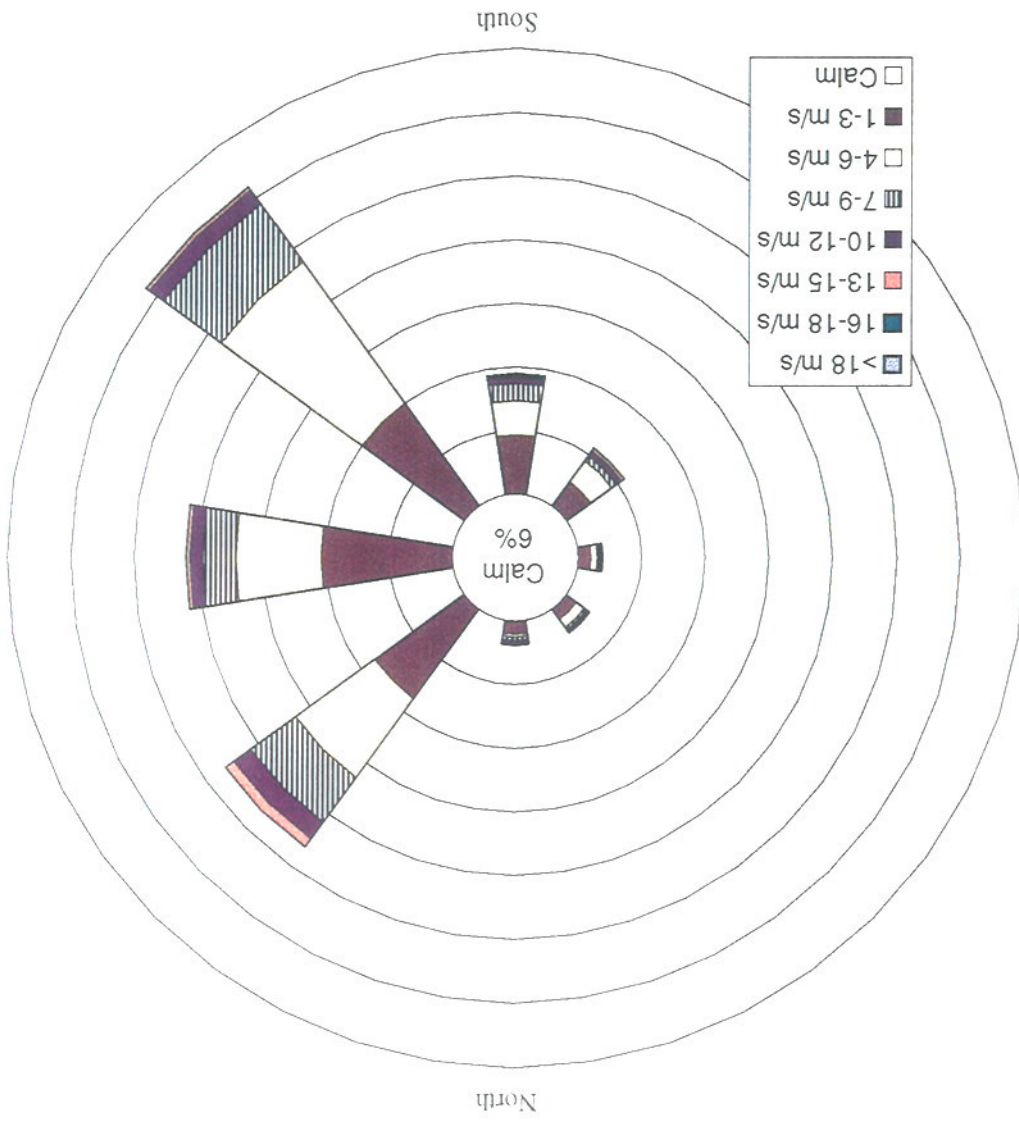
Appendix D

Windrose for Summer
9am



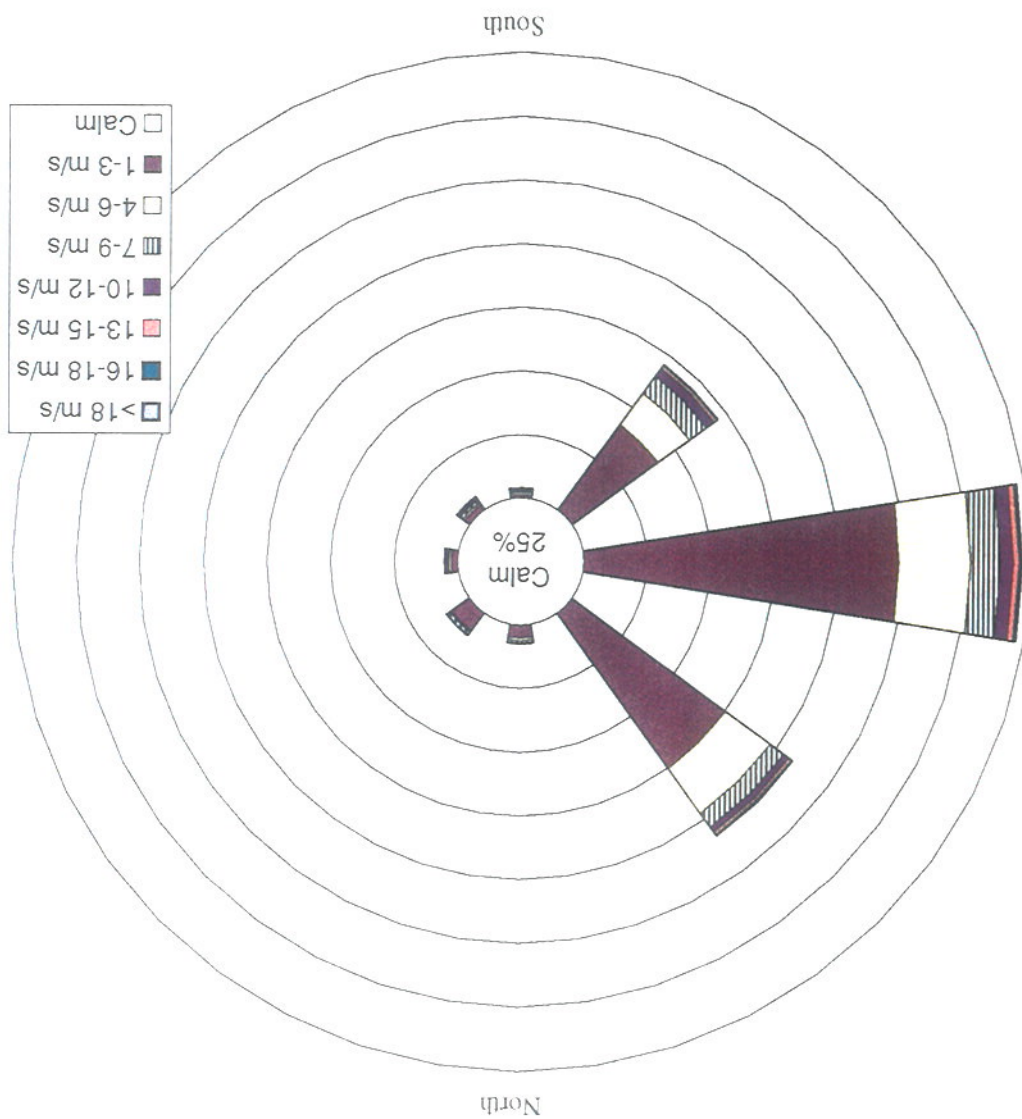
The segments of each arm represent the seven wind speed classes, with increasing windspeed from the centre outwards. The length of each arm represents the proportion of the total wind that blew from that direction. The value in the central circle represents the proportion of calm conditions. The circular grid represents a contour interval of five percent.

Windrose for Summer
3pm



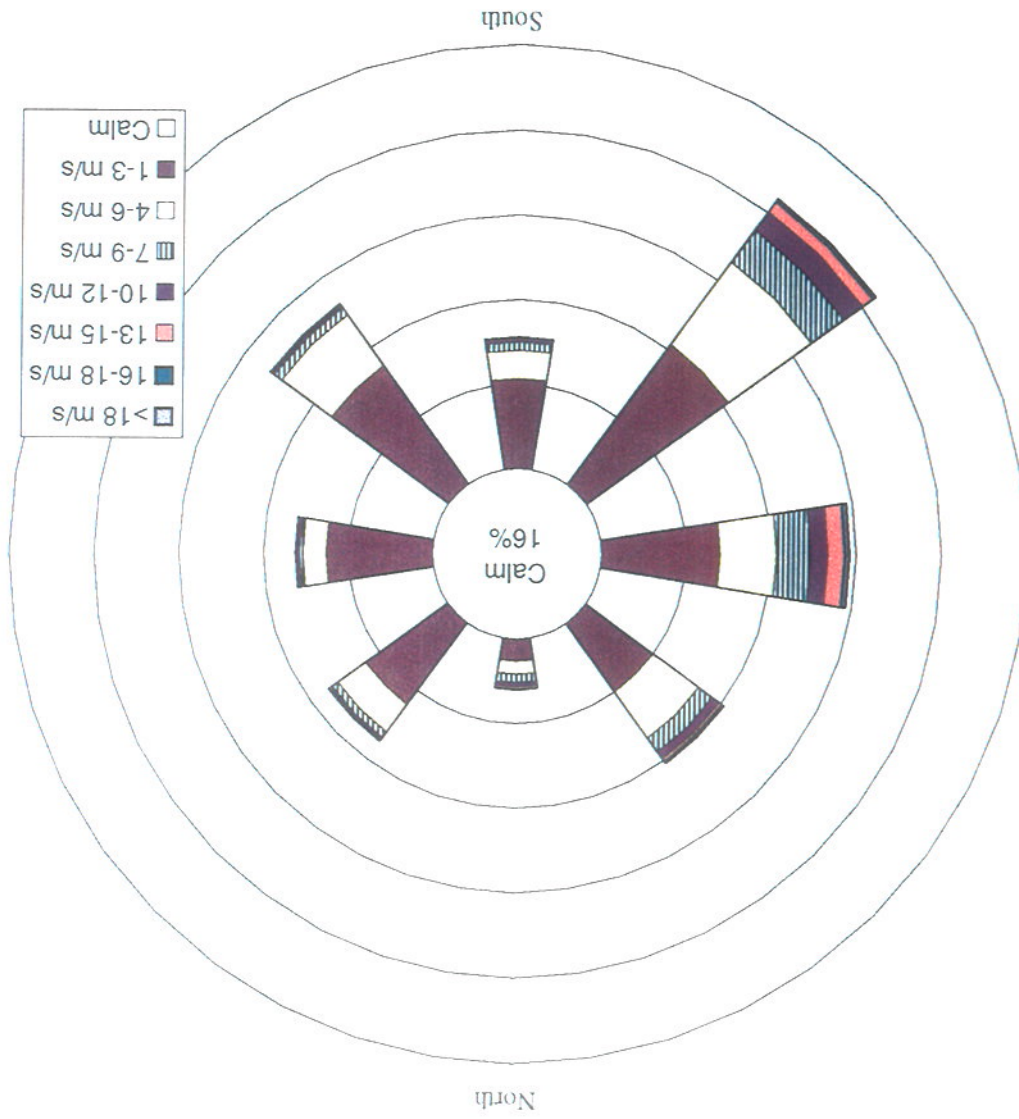
The segments of each arm represent the seven wind speed classes, with increasing windspeed from the centre outwards. The length of each arm represents the proportion of the total wind that blew from that direction. The value in the central circle represents the proportion of calm conditions. The circular grid represents a contour interval of five percent.

Windrose for Winter
9am



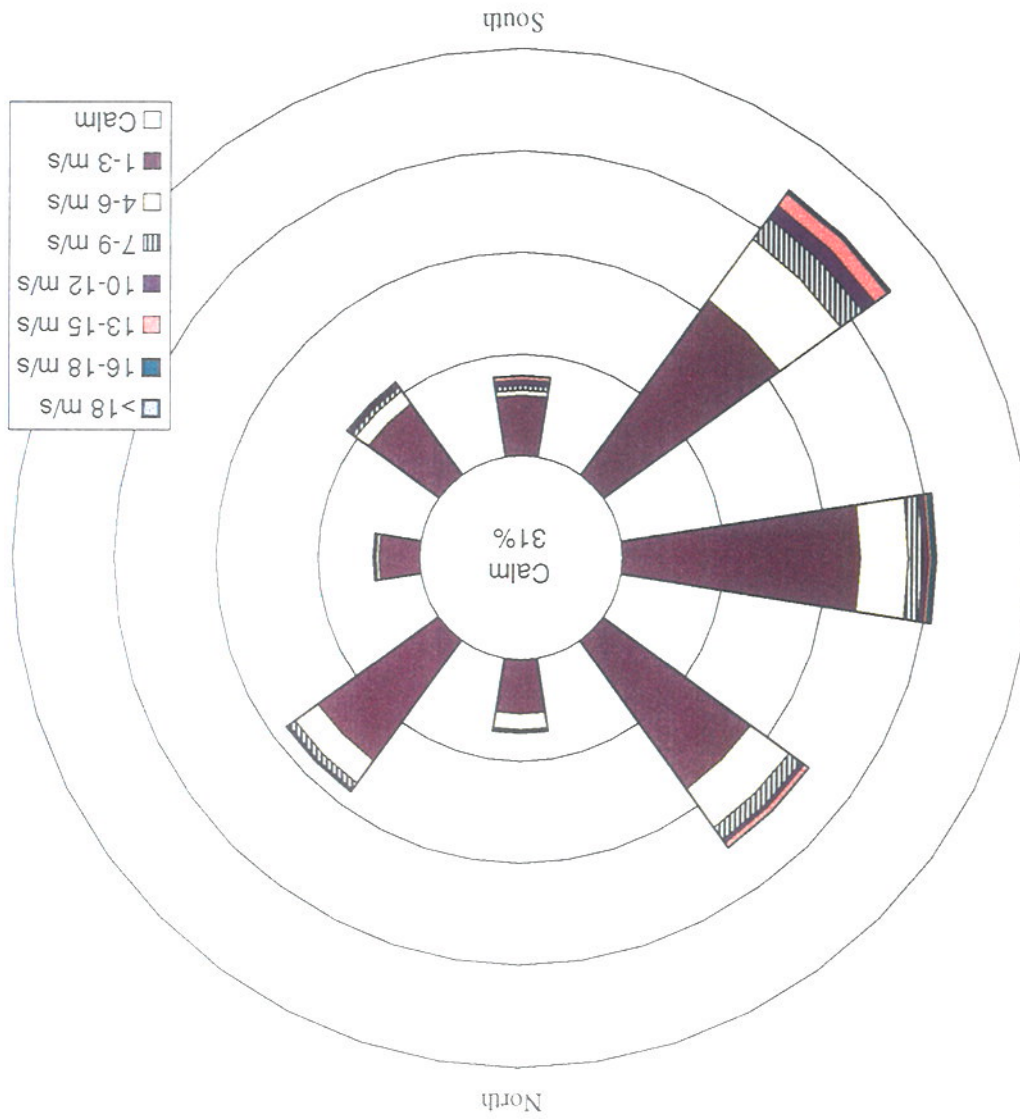
The segments of each arm represent the seven wind speed classes, with increasing windspeed from the centre outwards. The length of each arm represents the proportion of the total wind that blew from that direction. The value in the central circle represents the proportion of calm conditions. The circular grid represents a contour interval of five percent.

Windrose for Winter
3pm



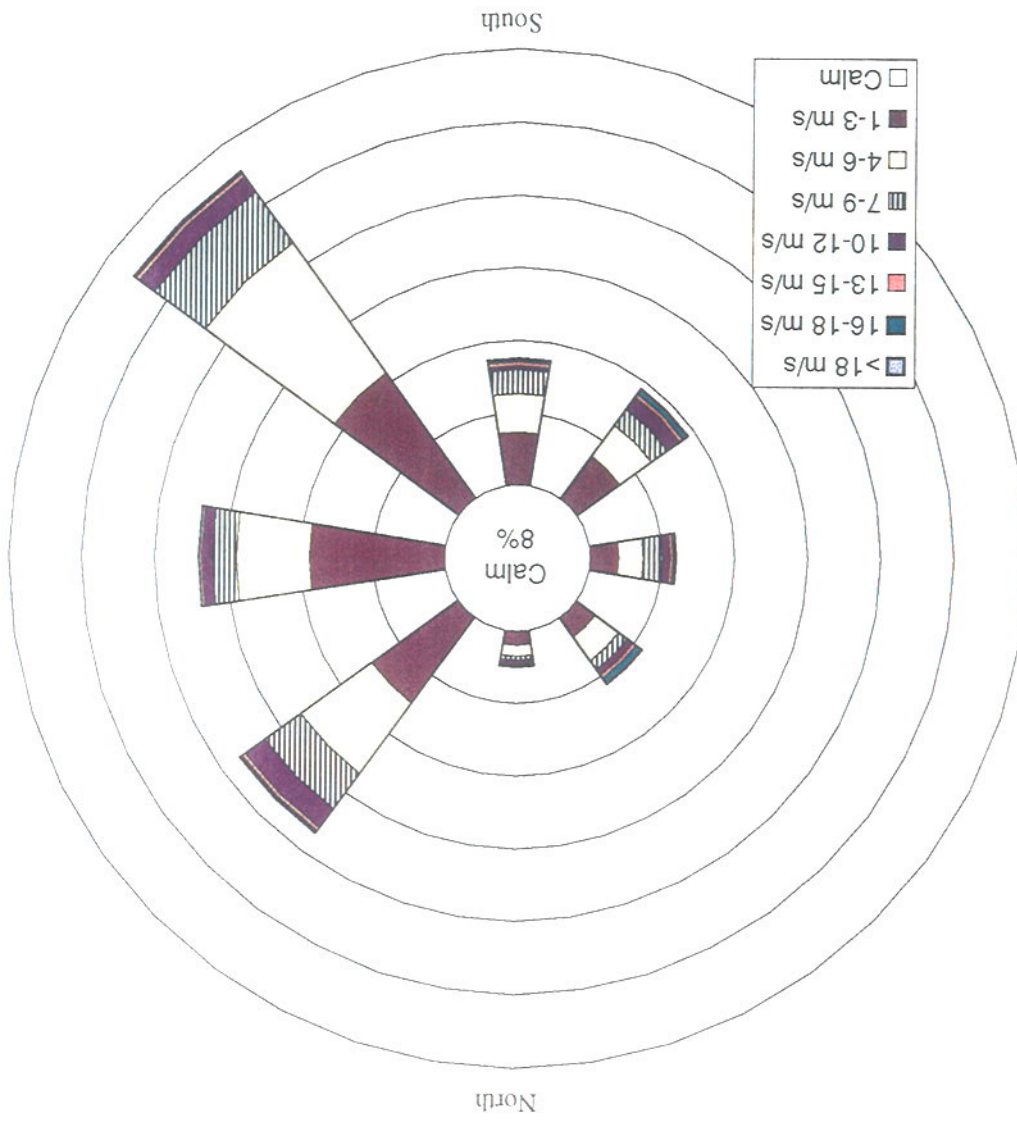
The segments of each arm represent the seven wind speed classes, with increasing windspeed from the centre outwards; The length of each arm represents the proportion of the total wind that blew from that direction. The value in the central circle represents the proportion of calm conditions. The circular grid represents a contour interval of five percent.

Windrose for Spring
9am



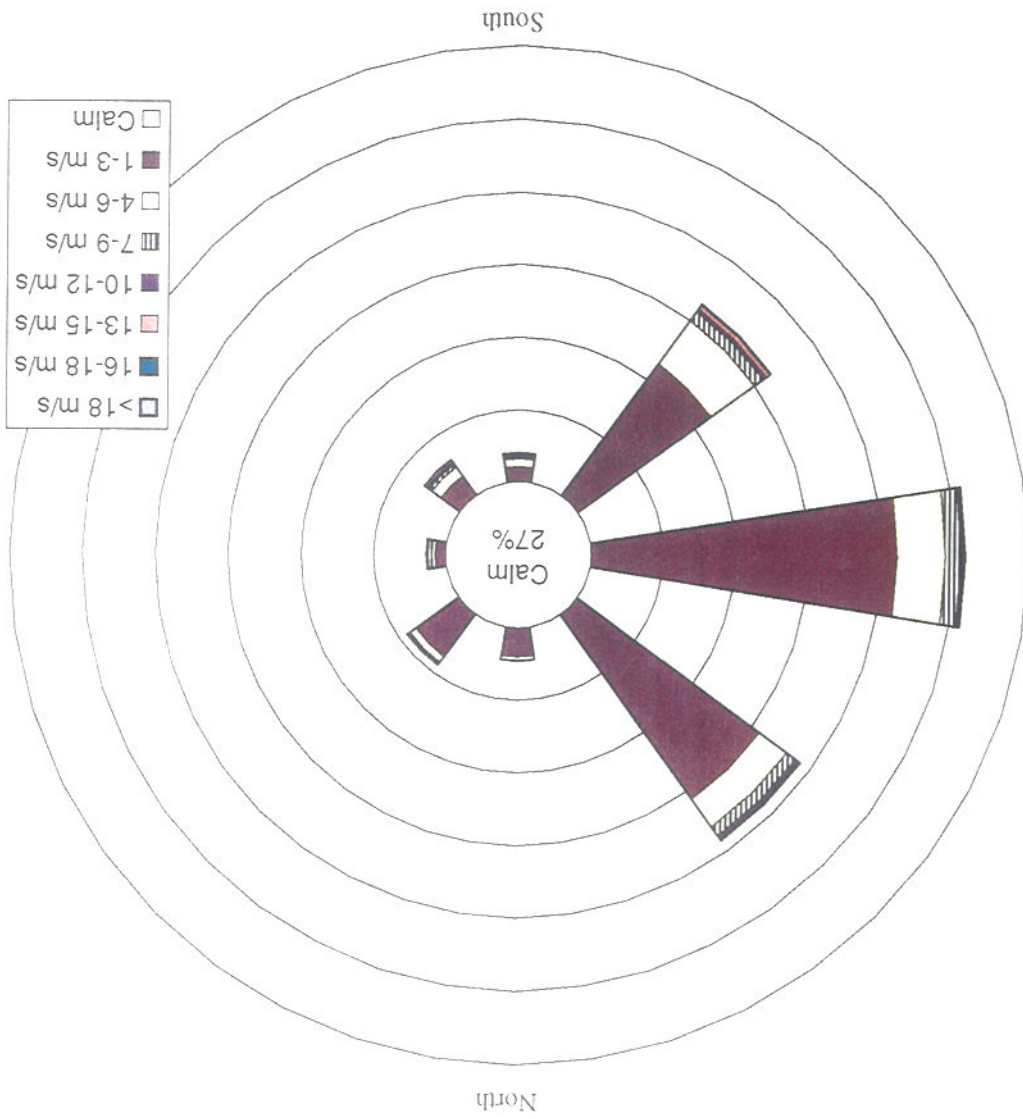
The segments of each arm represent the seven wind speed classes, with increasing windspeed from the centre outwards. The length of each arm represents the proportion of the total wind that blew from that direction. The value in the central circle represents the proportion of calm conditions. The circular grid represents a contour interval of five percent.

Windrose for Spring
3pm



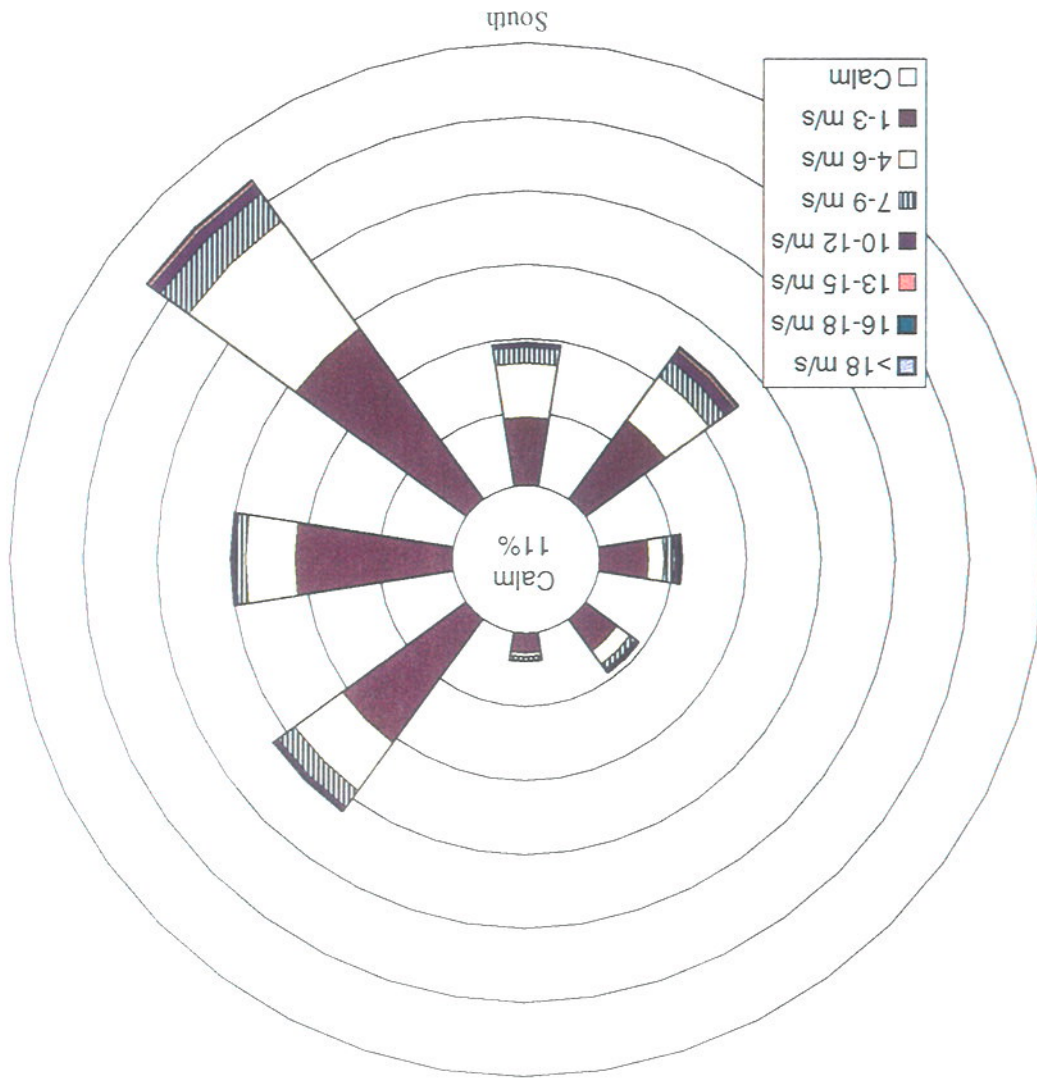
The segments of each arm represent the seven wind speed classes, with increasing windspeed from the centre outwards. The length of each arm represents the proportion of the total wind that blew from that direction. The value in the central circle represents the proportion of calm conditions. The circular grid represents a contour interval of five percent.

Windrose for Autumn
9am



The segments of each arm represent the seven wind speed classes, with increasing windspeed from the centre outwards. The length of each arm represents the proportion of the total wind that blew from that direction. The value in the central circle represents the proportion of calm conditions. The circular grid represents a contour interval of five percent.

Windrose for Autumn
3pm



The segments of each arm represent the seven wind speed classes, with increasing windspeed from the centre outwards. The length of each arm represents the proportion of the total wind that blew from that direction. The value in the central circle represents the proportion of calm conditions. The circular grid represents a contour interval of five percent.

BLAST MONITORING DATA

Appendix E

4 August, 1999
 ref: gtcobm3

The General Manager
 Greater Taree City Council
 PO Box 482
 TAREE NSW 2430

Attention: Graham Gardner
 Bruce Byatt

Dear Sir

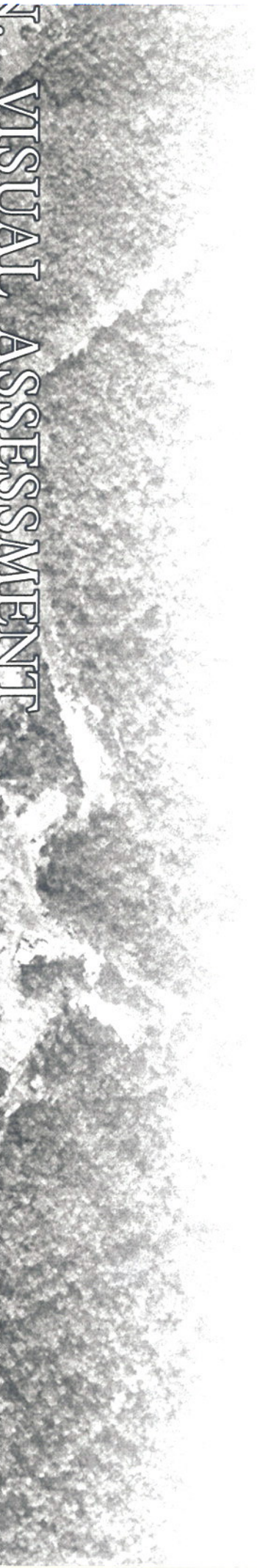
Re: Jandra Quarry - Blast Monitor Results

Please find below a summary of blast monitoring results for the Jandra Quarry for the period
 23/4/97 to 11/11/98

Date	No. of Blasts	Ground Vibration (max. = 5mm/sec)	Overpressure (max. = 115dB)
23/4/97	1	<0.9	<111.3
19/5/97	3	0.12 1.47 3.27	102.7 111.4 107.6
1/7/97	2	<3.78 <3.78	113.9 <104.5
25/7/97	3	2.24 3.35 <1.87	114.3 109.8 <94.8
25/8/97	1	<1.53	<110.5
28/8/97	1	2.35	109.1

Please note that the "<" figures in the above table mean that the vibration &/or noise level was lower than the stated figure i.e. the level set on the blast monitor was not triggered.

Date	No. of Blasts	Ground Vibration (max. = 5mm/sec)	Overpressure (max. = 115dB)
17/9/97	1	4.28	115.0
22/9/97	1	1.28	98.8
2/10/97	1	2.41	109.9
15/10/97	1	3.98	107.2
7/11/97	1	3.56	106.5
13/11/97	2	0.93	108.7
27/11/97	1	1.83	108.8
7/1/98	2	3.57	114.5
		2.31	113.4
3/2/98	1	2.57	113.9
30/3/98	1	3.0	109.0
6/4/98	1	3.26	112.2
1/5/98	1	3.17	111.0
25/5/98	1	2.65	112.2
9/6/98	1	0.84	106.1
16/7/98	1	<5.0	<115.0
24/9/98	1	0.31	114.1
28/9/98	1	3.26	109.4
11/11/98	1	0.19	104.4



JANDRA QUARRY EXTENSION



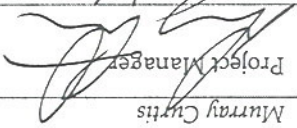
October 1999
698253RPT2 FINAL

For:
CSR CONSTRUCTION MATERIALS

Visual Assessment

JANDRA QUARRY
EXTENSION

ERM Mitchell McCotter Quality System

Prepared by: Murray Curtis
 Position: Project Manager
 Signed: 
 Date: 14/10/99

Approved by: Tony McNamara
 Position: Project Director
 Signed: _____
 Date: _____

This report was prepared in accordance with the scope of services set out in the contract between ERM Mitchell McCotter Pty Ltd ACN 002 773 248 (ERM(MM)) and the Client. To the best of our knowledge, the proposal presented herein accurately reflects the Client's intentions when the report was printed. However, the application of conditions of approval or impacts of unanticipated future events could modify the outcomes described in this document. In preparing the report, ERM(MM) used data, surveys, analyses, designs, plans and other information provided by the individuals and organisations referenced herein. While checks were undertaken to ensure that such materials were the correct and current versions of the materials provided, except as otherwise stated, ERM(MM) did not independently verify the accuracy or completeness of these information sources.

A. JANDRA QUARRY - VISUAL ASSESSMENT SITE PLAN
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INTRODUCTION

This report has been prepared for CSR Construction Materials as part of the Environmental Impact Statement for the proposed Jandra Quarry Extension.

1.1 OBJECTIVES

The objectives of the Visual Assessment are:

- to assess the impact of the proposed quarry extension on the landscape character of the locality;
- to assess the visual impacts of the proposed quarry extension from sensitive view points outside the quarry boundary and;
- to determine a landscape strategy which would help to mitigate significant impacts and to integrate the proposed quarry extension into the existing landscape.

1.2 SCOPE OF THIS PAPER

To assess the visual impact of the proposed extension to the Jandra Quarry this report will:

- Describe the existing quarry and the surrounding landscape.
- Describe the proposed extension to the quarry and the visual catchment from which the proposed quarry would be visible.
- Identify sensitive viewpoints to the proposed quarry extension which require detailed assessment or are representative of views from the surrounding area.

- Undertake a qualitative analysis using photographs of the existing site from the sensitive viewpoints. The visual change brought about by the quarry extension will be discussed for each viewpoint.
- Present mitigation measures to minimise the visual impacts of the proposed quarry extension.

PROJECT DESCRIPTION

Chapter 2

2.1 BACKGROUND

The Jandra Quarry was originally approved in 1985 with excavation commencing soon after. The visual exposure of the quarry to passing motorists was increased as a result of the realignment of the Pacific Highway in 1991. The realignment directed motorists views to the cut faces which have since been excavated close to their maximum capacity. Under the current conditions there is minimal reserve left to continue excavation.

The imminent closure of the CSR's Manning River Gravel extraction operation will further deplete the availability of the resource and associated jobs. The availability of good quality rock in an east / west direction from the current pit has the potential to serve the local market for at least a further 50 years.

2.2 EXISTING SITE AND SURROUNDS

2.2.1 Existing Quarry

The existing quarry is cut into the northern face of the hillside and extends from the highest point of the ridge line (elevation 115m) in a north easterly direction. The length of the quarry is approximately 440m and its width approximately 180m. The working face of the existing quarry is visible but quarry operations equipment and structures are not visible from surrounding areas.

2.2.2 Vegetation

The land immediately surrounding the quarry is extensively vegetated to the perimeter of the property. Beyond this to the south and east, areas of land have been cleared for farming purposes. Pockets of dense vegetation remain to the south-east and north of the subject site. Vegetation communities consist of indigenous species with upper and middle canopy trees and shrubs, and low level ground covers.

A number of residential houses are located in close proximity to the existing quarry within a radius of approximately 2km from the mine perimeter. Properties likely to be affected by the visual changes will be assessed to determine the likely visual impacts associated with the proposed quarry extension.

iii. Houses

A number of transmission easements occur on and around the subject site. Many of these easements have required the removal of vegetation to allow connections to surrounding properties.

ii. Transmission Easements

Other minor roads access surrounding properties and are typically of gravel construction. Some of these roads view toward the existing quarry. Immediately to the west of the site is the Pacific Highway. This road dissects the vegetation and is a significant man made element within the landscape. Motorists travelling in a south-westerly direction are exposed to the face of the existing quarry.

i. Roads

The surrounding landscape is extensively modified with cleared land associated with farming activities, the Pacific Highway and the existing quarry the main contributing factors. The extension of the quarry will encroach further on the remaining natural landscape, however this will present only a small proportion of change to the existing modified environment.

2.2.4 Man Made Structures

The surrounding topography is generally undulating with rolling hills and plains. To the north-west of the subject site is the fire lookout, which is at an elevation of 299m.

2.2.3 Topography

VISUAL ASSESSMENT METHODOLOGY

Chapter 3

3.1 GENERAL

The visual assessment aims to explain the visual impacts of the proposed quarry extension when viewed from specific viewpoints. In undertaking this assessment, qualitative techniques of description, photographs and sections to interpret the visual impacts of the proposed extension are used.

3.2 QUALITATIVE ANALYSIS

In undertaking the qualitative analysis, consideration has been given to the following factors:

- the existing landscape character and its sensitivity to change;
- modifications to the landscape due to the proposed quarry extension;
- assessment of impacts from sensitive viewpoints; and
- mitigation measures.

These components are further discussed below.

3.2.1 Landscape Character

The background setting and surrounding natural/built environment can help to absorb changes brought about by development. Alternatively, a development which contrasts significantly with the existing environment can make its integration more difficult.

The existing quarry is a dominant visual element within the landscape. The proposed quarry extension expands the current view. Generally those viewpoints

The proposed quarry extension would extend to the east and west of the existing pit. Stage 1 development involves the western quarry extension with the limit of extraction 400m from the highway. Work would commence on the upper benches to enable rehabilitation of the most visible faces as quickly as possible. Rehabilitation would primarily occur on the benches, which are located at 12m intervals. The second and third stages of excavations extend in an easterly direction to the eastern limit of extraction. The quarry does not breach the eastern most ridge line.

3.2.2 Modifications to the Landscape due to the Proposed Quarry Extension

As distance increases, the impacts associated with development decrease. The changes to the landscape resulting from the proposed quarry extension would become less visible at greater distances primarily due to the reduced angle of disturbance, but also due to the screening effect of surrounding vegetation.

iii. Distance

Developments are most visible from elevated positions. The topography can play an important role in determining the visibility of a development within the landscape, depending on elevation of viewpoints and their relationship with the proposed development, surrounding vegetation and structures. There are few vantage points which overlook large sections of the quarry.

ii. Topography

The land surrounding the existing quarry is variable in character. In some areas houses are located within dense vegetation and even though they are close to the quarry views to it are screened by foreground vegetation. Vegetation plays an important role in visual impacts associated with development. The height and density of vegetation can contribute to the visual quality of the landscape. It can also contribute to screening of visual impacts. Conversely the lack of vegetation may maximise views to a development from a particular viewpoint.

i. Vegetation

There are three major elements that affect the extent to which the proposed quarry extension would be viewed within the landscape. These are: that exist in close proximity to the proposed extension are most likely to be visually affected and are further investigated in this assessment.

Most people view changes to the landscape from major and secondary roads. Roads form part of the built environment. Generally views most valued by motorists are unique or picturesque settings. Views that are repetitive or uniform within the landscape are less valued.

iii. *Major Roads*

Recognised tourist destinations and lookouts are considered sensitive viewpoints. Changes to the landscape can potentially reduce the desirability to visit these areas. Alterations to the landscape should be integrated with the surrounding area to minimise negative visual impacts.

ii. *Tourist Lookouts and Destinations*

Major construction works that occur close to houses are a concern to residents. In part, this concern is based on the economic implications on property re-sale as well as effects on the quality of the surroundings for the residents. In general, distance is the main element reducing visual impact. Screening techniques using vegetation and earthworks can reduce visual impact.

i. *Residences*

- nearby houses/settlements;
- nearby tourist destinations; and
- the perspective of travellers on the Pacific Highway.

Within the context of this study, the proposed quarry extension has been assessed from a number of viewpoints that are considered sensitive. These include views to the proposed quarry from:
 The location and frequency of viewing are important considerations when assessing visual impact.

3.2.3 *Sensitive Viewpoints*

The excavation works would require the removal of a significant amount of existing vegetation covering the hillside. The degree of change and the relative visual impact are related to the surrounding land uses and the sensitivity of nearby viewpoints.

More specific mitigation measures would be recommended relating to sensitive viewpoints. These measures will be subject to the final form of the quarry and may include specific recommendations relating to vegetation retention and re-establishment, species selection, location and degree of earthworks and other techniques for amelioration of visual impacts.

□ Specific Measures for Mitigation

A mature or established landscape would help to integrate a development within the existing landscape. The use of advanced planting in association with mounding would be an effective tool to screen unsightly views.

□ Time

Foreground planting of grasses, ground covers and low shrubs and trees would help to reduce the immediate visual impact of the proposed quarry extension. Species should be drawn from those in the immediate area so that the landscape is integrated into the surrounding area.

Planting and mounding, especially when located closer to the observer, is an effective tool in screening or greatly reducing the visual impact of the proposed quarry extension.

□ Screening and Framing of Views

Construction activities would be undertaken to minimise the removal of existing vegetation wherever possible. Where it is necessary for clearing to occur replanting with species to reflect the existing character of the area would be undertaken. In areas of indigenous vegetation, care would be taken to replant using native seed stock collected from the locality. This method of planting would minimise maintenance requirements and would help to maintain habitat values. Planting would primarily occur on the quarry benches, which are approximately 6m wide.

□ Vegetation Removal and Replacement

There are a number of mitigation measures that would be recommended to ameliorate visual impacts associated with the proposed quarry extension. These may include:

3.2.4 Mitigation Measures

Major construction works in close proximity to houses are a major concern to residents. In part this concern is based upon the economic implications on property re-sale as well as effects on the quality of the surroundings for the residents. In general the main mitigating element affecting impact is distance. Screening, without detrimentally changing existing outlooks, can also mitigate visual impact.

4.2 RESIDENTIAL AREAS

The proposed quarry extension would expand operations in an easterly and westerly direction from the existing pit. Excavation would be primarily located on the northern face of the hill below the ridge line and would be no wider than the existing pit. In some areas however the southern face of the quarry would extend marginally over the ridge line a small distance. Excavation works would alter the ridge line of the hill when viewed from surrounding locations. In particular, viewing locations to the north-west and east of the ridge line have the potential to be visually impacted. Viewing locations to the south of the ridge line will experience only a minor change to the hill skyline. Existing vegetation will be maintained along the crest of the ridge protecting views of exposed quarry faces.

4.1 OVERVIEW

VISUAL ASSESSMENT

Of the residences situated on this hill, the Fatsias property is least affected by the proposed quarry extension.

The Fatsias property is located on the hillside directly east of the quarry property boundary. The residence is oriented in a southerly direction overlooking the ocean. It is positioned on the east side of a small ridge limiting views in a westerly direction toward the quarry. Surrounding the sides and rear of the residence is dense vegetation which further screens views in this direction, and focuses them on the ocean.

- a. Description
- i. Fatsias Property

Figure 4.1 – Aerial photo looking west showing the relationship of the houses to the existing quarry



Houses to the east of the site include the Jones, Groves and Fatsias properties, which are located on a prominent hill. The existing quarry is not visible from these properties.

4.2.1 Properties to the East

No mitigation measures are required.

c. Mitigation Measures

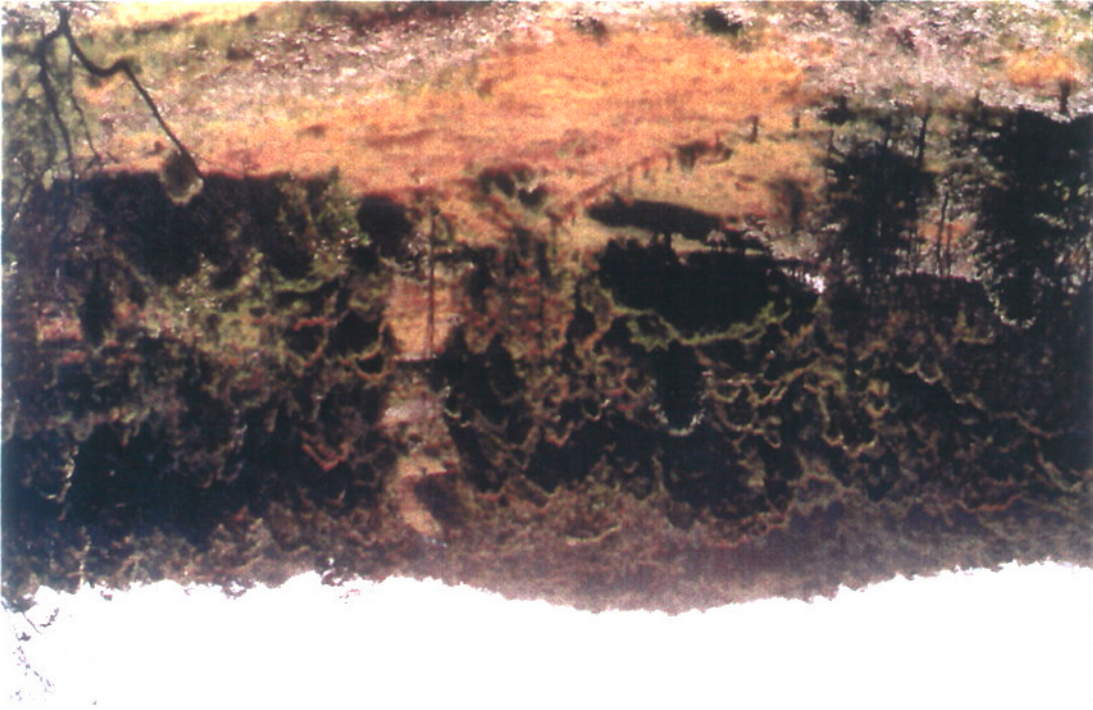
The visual impact of the proposed quarry extension will not visually impact on this property. Local variations in topography and existing vegetation screen views from the residence and surrounding land toward the quarry.

b. Landscape Effect

Figure 4.2 – Aerial photo of the Fatsens residence.



Figure 4.3 – View from the Jones property (southern boundary) looking along the transmission easement toward the existing quarry



Views to the existing quarry are not apparent from the property.

The Jones residence is a two storey dwelling located on the hill to the east of the Jandra site. The western boundary of the Jones property abuts the subject site. Due to its elevated position, the property allows expansive views over the surrounding landscape. Vegetation surrounds the residence forming an apron around its perimeter. The house is orientated with the main entry to the east. This orientation allows views over the surrounding landscape in the distance. At the rear of the house is a garage. An adjoining activity room and pool area extend in a northerly direction and are largely enclosed by existing vegetation.

- a. Description
- ii. Jones Property

Existing vegetation would be retained at the top of the cut face which would maintain the appearance of a vegetated ridge line when viewed from properties to the south and east.

The excavation works would be staged to minimise the exposure of the rock face when viewed from properties to the east. Stage 1 involves the excavation of the western extension of the quarry. By retaining the eastern land intact, the peak of the hill is effectively screened from view by an intervening ridge line. The excavation of the western portion of the quarry would be undertaken over a period of approximately eighteen years. The initial extraction would be located above a bench at RL98. Benches would be approximately 12m high and approximately 6m width. Revegetation of the benches with indigenous species would effectively screen the rock face prior to extension of the quarry to the east.

c. Mitigation Measures

The visual impact of the quarry extension is regarded as low from this viewing location.

The alignment of the proposed quarry extension would result in modification to the existing ridge line. These changes to the ridge line would potentially be visible from locations within the Jones property looking west. Due to the inclined angle of view to the proposed quarry, 5m of exposed rock face would be visible above the tree line. The distance separating the exposed quarry face from the Jones residence is approximately 1,250 metres. The apparent width of exposed rock face would be approximately 50m, affording a view angle of approximately 2 degrees.

b. Landscape Effect



Figure 4.4 - Sections AA and BB showing viewlines from Jones property for Stage 1 and final extractions respectively.

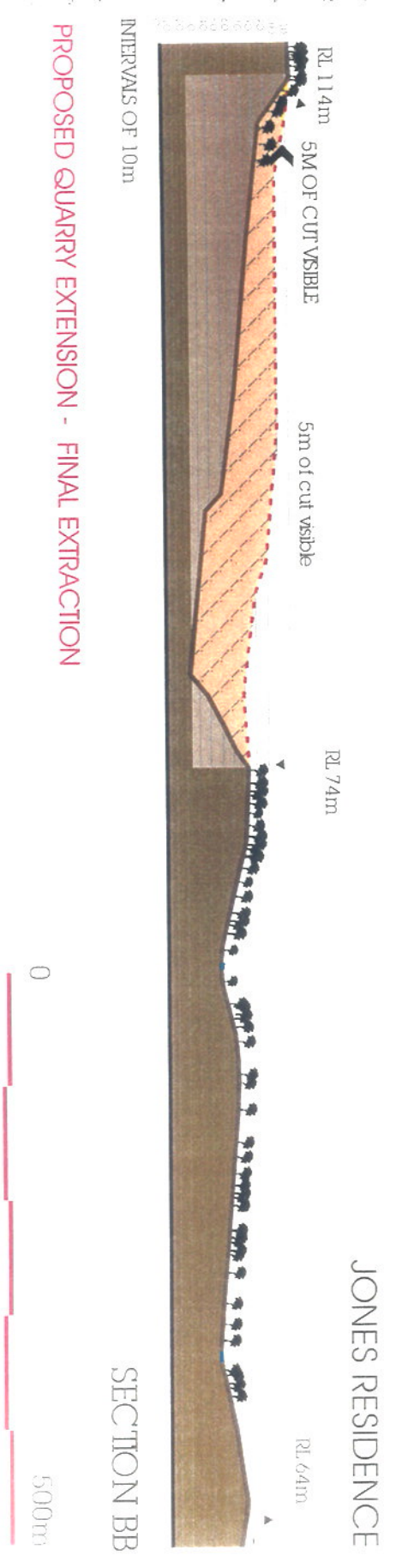
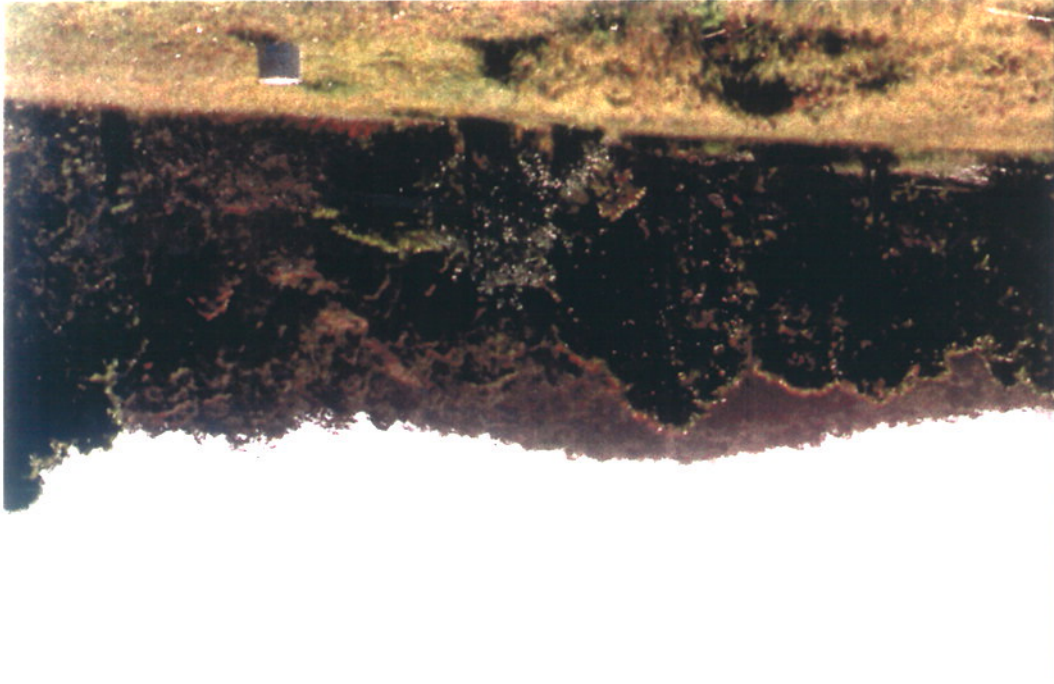


Figure 4.5 – View looking from Groves property toward Jandra Quarry.

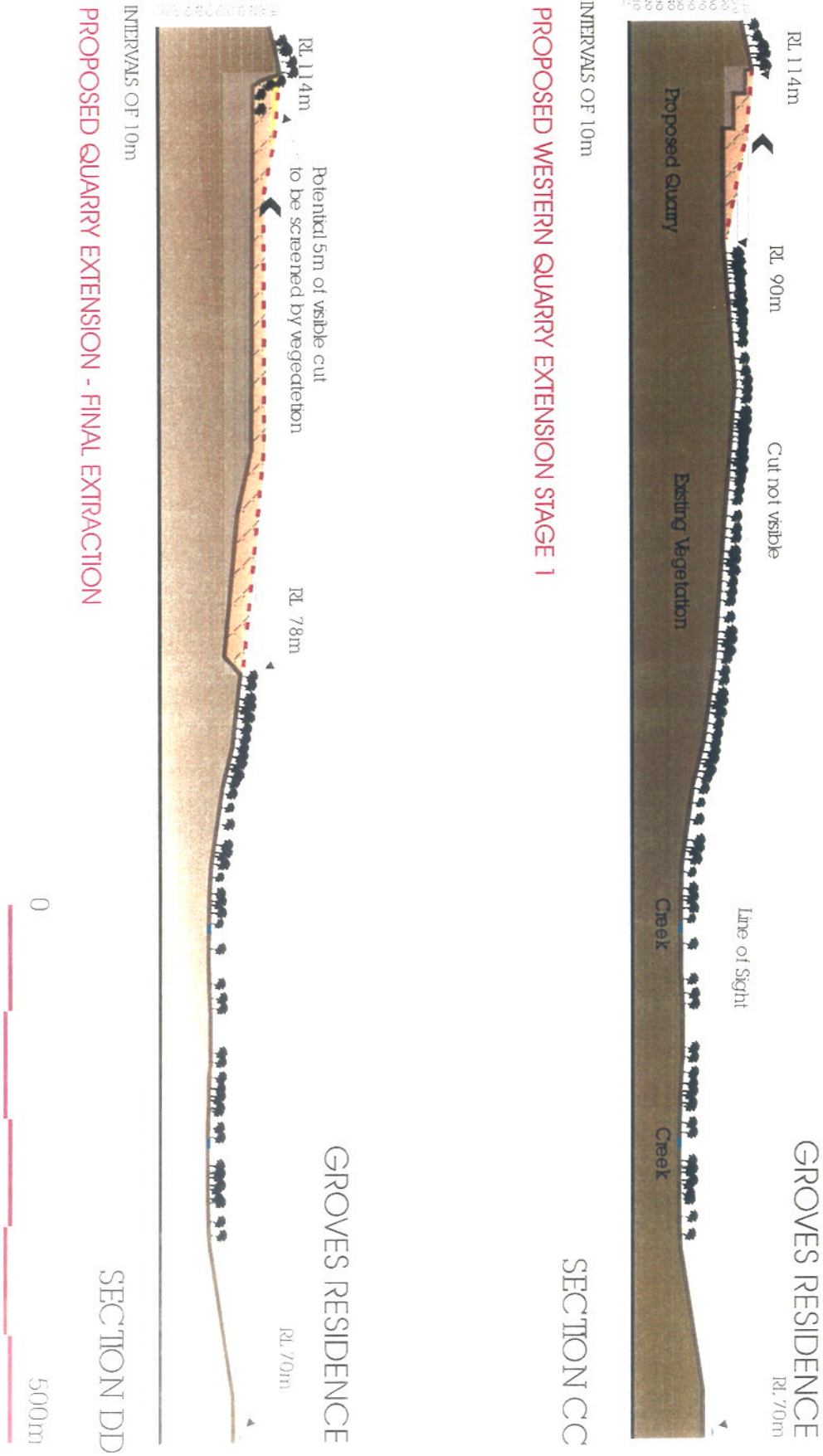


The Groves property is located on the hill to the east of the subject site. The residence is separated from the proposed quarry face by a distance of approximately 700m. On this land are two dwellings, one of which is under construction. Both dwellings are in close proximity, separated by only approximately 30m. The dwelling under construction is slightly more elevated and orientated in a more southerly direction. The residence occupied by the Groves is two storey and has been excavated into the hill. The front of the property is orientated to the north-east whilst the back of the house is cut into the hill with ground floor views blocked by the cut embankment. Of the houses located on this hill, the Groves residence is the most elevated at approximately 70m.

- a. Description
- iii. Groves Property

- b. Landscape Effect
- The proposed quarry extension will be potentially visible from the Groves residence with approximately 5m of cut face exposed at the highpoint of the ridge line. The width of exposed cut visible from the Groves residence is approximately 50m. Over a distance of approximately 1,200m the viewing angle is less than 5 degrees. In the context of the existing man modified environment the degree of visual impact is considered minimal.
- c. Mitigation Measures
- Mitigation measures are those previously described for the Jones residence.

Figure 4.6 – Section CC and DD illustrating view lines from Groves property Stage 1 and final extractions respectively



4.2.2 Properties to the North

i. Loveday Property

a. Description

Immediately to the north of subject site is the Loveday property. The house is situated within dense bushland which effectively contains all views to the immediate foreground. The residence is accessed by a road which connects with the Pacific Highway. Vegetation lines the access road also screening views to the quarry.

b. Development Effect

The proposed quarry extension will have no visual impact on the views currently experienced by the Lovedays.

c. Mitigation Measures

No mitigation measures are required for this property.



Figure 4.7 - Photo showing Loveday property surrounded by tall vegetation preventing views to the quarry



Figure 4.8 - Photo of surrounding vegetation which contain views to foreground

PROPOSED QUARRY EXTENSION

LOVEDAYS RESIDENCE

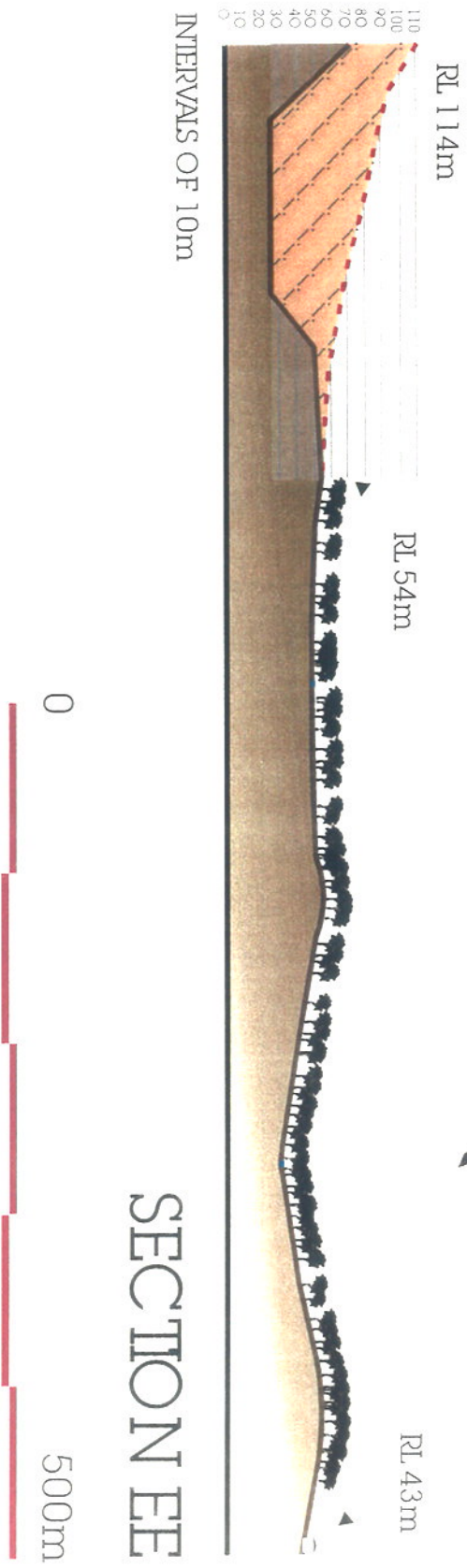
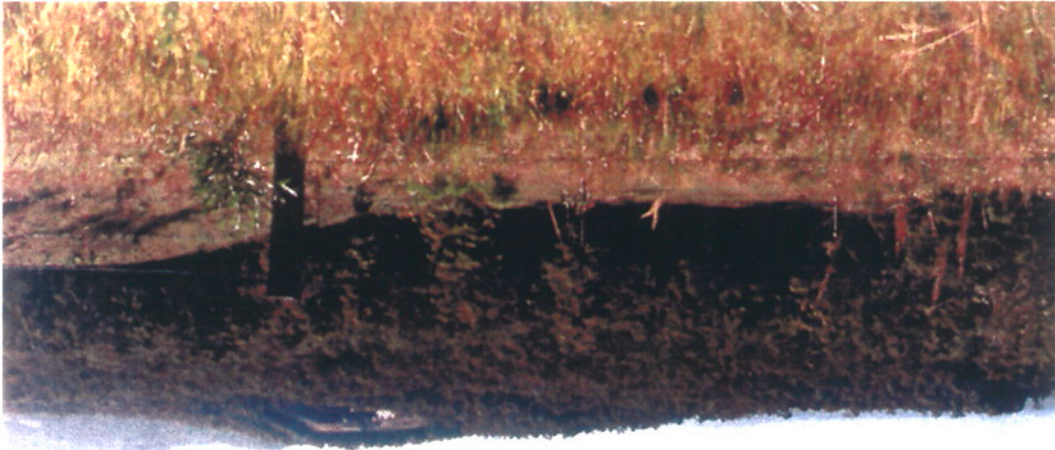


Figure 4.9 - Section EE illustrating view from Loveday property toward quarry

Views from the dwelling are filtered by foreground vegetation to the point where the quarry is barely visible.

Figure 4.10 – View looking to existing quarry from access road adjacent to the northern boundary of the Mowbray property



Further north-east of the site, lies the Mowbray property. This house is accessed via a dirt road connecting with the Pacific Highway. The dirt road runs parallel to the northern boundary of the property, and views to the existing quarry face.

- a. Description
- ii. Mowbray Property

Subject to consultation with Council and track users, the road reserve for the access track could be revegetated to reflect its original wooded condition. This will help direct views along the road, and screen views to the proposed quarry extension. Subject to consultation with the Mowbray's supplementing planting in the foreground of the residence, could screen any residual views to the quarry.

c. Mitigation Measures

From other parts of the property however, the quarry will remain visible. In particular, the access track to the north of the property affords views to the existing quarry. Due to the expansion of the quarry in an east west direction, the quarry face will become more visible. As this track services few properties and views to the quarry from passing motorists are relatively infrequent, its significance is regarded as low.

The proposed quarry extension will have a minimal visual impact when viewed from the Mowbray residence due to the existing foreground vegetation which will screen the quarry.

b. Development Effect

Figure 4.11 – Photo from Mowbray residence looking toward the quarry



The proposed quarry extension will not impact on the residences within the YALA property at the foot of the hill. The angle of view, and close proximity of vegetation on the northern property boundary will prevent views to the ridgeline. Further southwards, as the view angle to the ridgeline decreases, changes to the form of the ridgeline will become apparent as excavation works encroach onto the southern face of the hill. No cut faces will be exposed as they will be below the newly formed ridgeline.

b. Development Effect

Figure 4.12 – Aerial photograph looking in an easterly direction toward the southern site boundary and adjoining YALA property



Situated immediately to the south of the existing quarry are rural properties owned by Smith, YALA and Barnes. The YALA property is located closest to the southern boundary of the subject site. Located on the YALA property are two dwellings and associated farm buildings. Development consent has also been obtained for a two further dwellings on the property (YALA 3). Views from the existing and proposed buildings to the quarry are effectively screened due to the separating ridgeline which is heavily vegetated. The existing quarry operations are not visible from any of the properties as excavation works are restricted to the northern face of the hill below the ridgeline.

a. Description

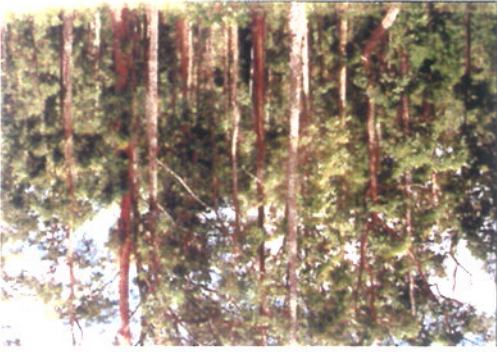
4.2.3 Properties to the South

Views to the hill are often filtered/screened by clumps of trees and individual plants located in the foreground. However, uninterrupted views to Jandra hill are possible from various locations within each of the properties.

Figure 4.13 – View looking toward Jandra Quarry from eastern verandah of Dubos residence



Figure 4.14 – View looking toward Jandra Quarry from eastern verandah of Middleton residence



West of the Pacific Highway are three rural properties including Dubos, Middleton and Stennett. These properties view toward the vegetated western face of the Jandra Hill. The Dubos property is located approximately in line with the ridge line. Middleton and Stennett properties are located further southward.

a. Description
4.2.4 Properties to the West

No mitigation measures are required.

c. Mitigation Measures

The modification of the hill ridge line will present a minor alteration to the existing skyline when viewed from properties and roads to the south. The new curvature of the ridge line will require as little as two metres being cut of the top of the ridge. As the cut does dissect the contours, the skyline will reflect the natural curvature of the hill. This alteration would be almost imperceptible.

Supplementary planting in the foreground of residences will screen views to the proposed quarry extension. In other locations where the views are more apparent due to clearing, it is proposed to supplement planting with indigenous species to filter views to the quarry. The extent of any planting would be determined following consultation with property owners.

c. Mitigation Measures

The proposed quarry extension will involve modification to the ridge line when viewed from properties to the west. This will result in a cut face being visible from specific locations within properties. The excavation of the northern face of the hill will expose the top 20m of face when viewed from the northern portion of the Dubos and Stennet property. This will be the worst scenario with lesser impacts visible from Middleton property. The width of the cut face exposed will be approximately 100m which equates to less than 4.76 degrees of the field of view. The majority of the cut face would be screened by the ridge line located in the foreground. Excavation will not be visible from the dwellings due to dense vegetation screening these views. However views to the quarry extension from other areas within the properties will be more apparent. As these areas are not frequented as regularly, and the degree of visual change is relatively small the impact is not significant.

b. Development Effect

Figure 4.15 - View looking toward Jandra Quarry from Dubos property

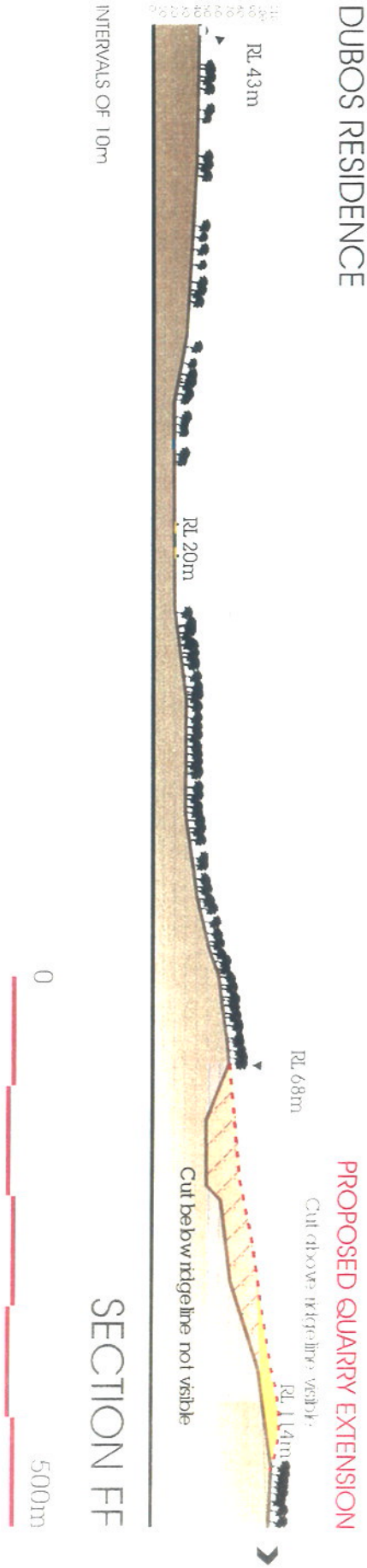


Figure 4.16 - View looking toward Jandra Quarry from Middleton property



The existing quarry is not visible from any these properties as excavation works are limited to the northern face of the ridge line.

Figure 4.17 - Section illustrating view line from Dubos at residential foreground properly cut above the ridgeline visible through vegetation



Most people view changes to the landscape from major and secondary roads. Roads form part of the modified environment. Generally views most valued by motorists are unique or picturesque settings. Views that are repetitive or uniform within the landscape are less valued.

i. Pacific Highway

a. Description

The Pacific Highway provides the major vehicle connection between Brisbane and Sydney. The road services both local vehicles and those travelling to more distant destinations for commercial and private purposes. The existing quarry is clearly evident from the highway when travelling in a south-westerly direction from Taree. The importance of this road as part of the major road network servicing the region, makes this viewpoint worthy of investigation in this assessment to determine the extent of the visual impacts associated with the quarry extension.

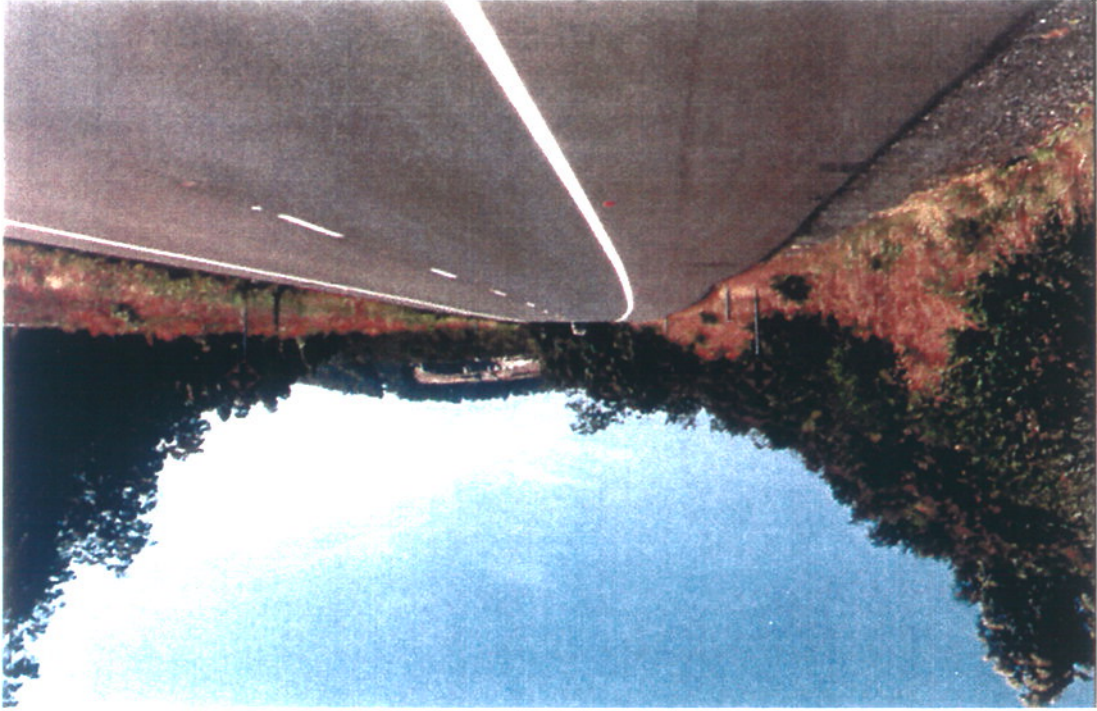


Figure 4.18 – Photo looking north from the Pacific Highway toward the existing quarry.

The Taree Lookout facility and fire tower is situated approximately 5km north-west from the quarry at an elevation of 299m. The location has 360 degree views of the surrounding region and include a wide diversity of land use activities including, farming, forest, urban development, quarries, ocean, easements and roads. When viewing south-east from the lookout, Jandra Quarry is visible in the distance. The quarry blends with the surrounding environment and appears as an area of cleared land for farming. In the context of the 360 degree panoramic views experienced from

- i. *Taree Lookout*
a. Description

4.4 TOURIST LOCATIONS

Planting of additional roadside vegetation on both sides of the existing highway would also help to screen views of the quarry. This planting should be located along the elevated roadside where views to the quarry are maximised. Planting within the median between carriageways north of Blackbutt Road intersection would reduce the visibility of the quarry during travel by approximately 50%. Planting in this area would be subject to approval by the RTA.

Progressive rehabilitation of upper benches will be undertaken to limit the extent of quarry visible at any time.

- c. Mitigation Measures

For local residents the visual change to the landscape is more apparent due to the increased frequency of viewing. However, contextually the expansion of the quarry would not alter the character of the existing view which is dominated by the existing quarry. Consequently the visual impact is not considered significant.

The proposed extension of the quarry will increase the exposure of the quarry face when viewed from vehicles travelling along the Pacific Highway in a southerly direction. This view is apparent for a brief period as vehicles round the crest of a hill and begin to descend into the valley towards the quarry entry. At the crest of the hill the road aligns with the quarry face before curving to redirect views in a south-westerly direction. As the road descends, motorists views are directed downwards and roadside vegetation contains foreground views. When travelling along the highway (at the speed limit) the quarry is visible for a period of approximately 25 seconds. In the context of any journey this exposure time is regarded as insignificant. The proposed quarry extension would increase this exposure time marginally.

- b. Landscape Effects

the lookout, the angle of disturbance is extremely minor and in no way dominates the views from this location. Preferred views would be in an easterly direction toward the ocean.



Figure 4.19 – View looking towards Jandra Quarry from the Taree Lookout.

b. Landscape Effect

The expansion of the quarry is expected to have a negligible visual impact from this viewpoint. The distance of the quarry from the quarry will allow the exposed rock faces to be absorbed within the landscape. Therefore visual impacts are regarded as low.

c. Mitigation Measures

No mitigation measures are required at this location

CONCLUSION

Chapter 5

5.1 CONCLUSION

The proposed quarry would significantly alter the existing landform due to excavation of the hillside in an easterly and westerly direction. The quarry expansion would be consistent with the existing dominant land use in this area. The visual changes associated with the proposed expansion would primarily be viewed by motorists travelling in a south-westerly direction from Taree, and a small number of nearby residents.

The visual impacts in relation to these viewpoints are minimal for the following reasons.

Motorists

- Motorists travelling along the existing highway currently experience views to the existing quarry. These views were considered acceptable when the highway was realigned in 1991 making the quarry working faces more visible. The expansion of the quarry is consistent with the existing dominant visual element in this area.

- Motorists would view the quarry for only a relatively small period within the context of a long journey.

Residential Properties

Views from nearby residential dwellings to the quarry expansion are either screened from view by existing foreground vegetation, or have the potential to be screened with additional planting. Properties that will experience visual impacts are summarised below.

Overall the proposed quarry extension would visually impact on very few properties. Strategies to reduce visual impacts through staging of works and mitigation measures would help to prevent significant visual intrusion when viewed from nearby residences.

The quarry extension would be visible from other areas within the properties however these views are less significant.

Views to the existing quarry from the Dubos, Middleton and Stennett residences are screened from view as excavation works are limited to the northern face of the ridge/line. The proposed quarry will remain screened from residences by existing foreground vegetation which would be supplemented in consultation with the landowner.

□ Properties to the West

The main views to the quarry are from the access road adjacent to the northern property boundary. These views can be largely screened by planting within the road reserve subject to consultation with council and affected land owners. From other parts of the property the quarry extension would be exposed however views from these areas to the quarry are less frequent.

Views from the Mowbray residence toward the existing quarry are currently screened by foreground vegetation. By supplementing this vegetation the quarry extension could also be effectively screened from view.

The Mowbray residence

□ Property to the North

The Jones and Groves properties will experience minimal changes to their existing views due to the proposed staging of the works. It is estimated that Stage 1 western excavation would continue over approximately 18 years. Rehabilitation of the uppermost areas by planting on benches would ensure that rock faces would not be exposed to view when the eastern excavation commenced. Consequently the vegetated distant views to the hillside would be maintained.

□ Properties to the East

JANDRA QUARRY VISUAL ASSESSMENT SITE PLAN

Appendix A

ARCHAEOLOGICAL ASSESSMENT



PROJ. NO. 102
DATE: 10/10/10
SHEET NO. 10



JANDRA QUARRY
EXTENSION

