



Your ref: 109/142
Our ref: TPS/2534
Enquiries: Schemes Team

Chief Executive Officer
City of Cockburn
PO Box 1215
Bibra lake WA 6965

Transmission via electronic mail to: recordsrequests@cockburn.wa.gov.au

Dear Sir

TOWN PLANNING SCHEME NO. 3 - AMENDMENT NO. 142

I refer to your letter dated 21 July 2020 regarding Amendment No. 142.

The WAPC has considered the amendment and submitted its recommendation to the Minister in accordance with section 87(1) of the *Planning and Development Act 2005* (the Act).

The Minister has approved the amendment in accordance with section 87(2)(a) of the Act. In accordance with section 87(3) of the Act, the WAPC will cause the approved amendment to be published in the Government Gazette.

The WAPC has forwarded notice to the State Law Publisher (attached) and it is the local governments' responsibility to make arrangements for the payment of any publication costs. The local government is required under section 87(4B) of the Act, and regulation 64 of the *Planning and Development (Local Planning Schemes) Regulations 2015*, to publish the approved amendment, ensure that it is available to the public, and notify each person who made a submission.

For all payment and purchase order queries, please contact the State Law Publisher on (08) 6552 6012 or fax (08) 9321 7536. One signed set of the amending documents is returned for your records.

Please direct any queries about this matter to schemes@dplh.wa.gov.au.

Yours sincerely

Ms Sam Fagan
Secretary
Western Australian Planning Commission

18/09/2020

CITY OF COCKBURN	
DOC Set	
23 SEP 2020	
SUBJECT 109/142	
RETENTION 124.2.3 AS	
PROPERTY 2200366	
APP	
ACTION Donna D. Renzo	



Postal address: Locked Bag 2506 Perth WA 6001 Street address: 140 William Street Perth WA 6000 Tel: (08) 6551 8002
Fax: (08) 655 19001 Email: info@dplh.wa.gov.au Web: www.dplh.wa.gov.au

wa.gov.au

ABN 35 482 341 493

PLANNING AND DEVELOPMENT ACT 2005

APPROVED TOWN PLANNING SCHEME AMENDMENT

City of Cockburn

TOWN PLANNING SCHEME No. 3 - AMENDMENT No. 142

Ref: TPS/2534

It is hereby notified for public information, in accordance with section 87 of the *Planning and Development Act 2005* that the Minister for Planning approved the City of Cockburn Town Planning Scheme amendment on 16 September 2020 for the purpose of:

1. Inserting 'Additional Use 19' into Table 6 – Additional Uses, as follows:

TABLE 6			
No.	Description of Land	Restricted Use	Conditions
AU 19	Portion of Lot 9000 (No. 30) Plantagenet Crescent, Hamilton Hill	Club Premises	<ol style="list-style-type: none">1. Any application for development approval should be subject to review by the City of Cockburn Design Review Panel.2. Any application submitted to the Design Review Panel should be accompanied by a design brief which demonstrates how it is consistent with the design principles in State Planning Policy 7.0: Design of the Built Environment.3. When dealing with an application on which a recommendation has been made by the Design Review Panel, the decision-maker shall have due regard for that recommendation.4. Development should have an appropriate interface to adjacent residential areas and the public realm and be responsive to the character and context of the

			locality, in terms of height, bulk, scale, articulation and appearance.
--	--	--	---

2. Amending the Scheme map accordingly.

L HOWLETT
MAYOR

S CAIN
CHIEF EXECUTIVE OFFICER

TOWN PLANNING SCHEME NO. 3

AMENDMENT NO. 142

October 2019

**PLANNING AND DEVELOPMENT ACT, 2005
RESOLUTION TO AMEND A TOWN PLANNING SCHEME**

**CITY OF COCKBURN
TOWN PLANNING SCHEME NO 3
AMENDMENT NO. 142**

RESOLVED that the Council, in pursuance of Section 75 of the Planning and Development Act 2005, amend the City of Cockburn Town Planning Scheme No. 3 for the following purposes:

1. Inserting 'Additional Use 19' as follows:

TABLE 6			
No.	Description of Land	Additional Use	Conditions
AU 19	Portion of Lot 9000 (No. 30) Plantagenet Crescent, Hamilton Hill	Club Premises	Proposed development of the land is to address, amongst other things: a) An appropriate interface with adjacent residential development and the public realm, including an attractive and articulated frontage. b) Appropriate noise attenuation measures. c) The impact of traffic and parking. d) Landscaping to enhance the appearance of the site. e) Appropriate waste management measures, including access for waste vehicles and bin storage.

2. Amending the Scheme map accordingly.

Note the amendment referred to in resolution (1) above is a 'standard amendment' as it satisfies the following criteria of Regulation 34 of the Planning and Development (Local Planning Schemes) Regulations 2015:

- a) an amendment that does not result in any significant environmental, social, economic or governance impacts on land in the scheme area; and*
- b) any other amendment that is not a complex or basic amendment.*

Dated this 9th day of August 2018



CHIEF EXECUTIVE OFFICER

REPORT

- | | | |
|----|--------------------------------------|--|
| 1. | LOCAL AUTHORITY | City of Cockburn |
| 2. | DESCRIPTION OF TOWN PLANNING SCHEME: | Town Planning Scheme No. 3 |
| 3. | SERIAL NO. OF AMENDMENT: | Amendment No. 142 |
| 4. | PROPOSAL: | 'Additional Use' of 'Club Premises' for portion of Lot 9000 (No. 30) Plantagenet Crescent, Hamilton Hill |

AMENDMENT REPORT

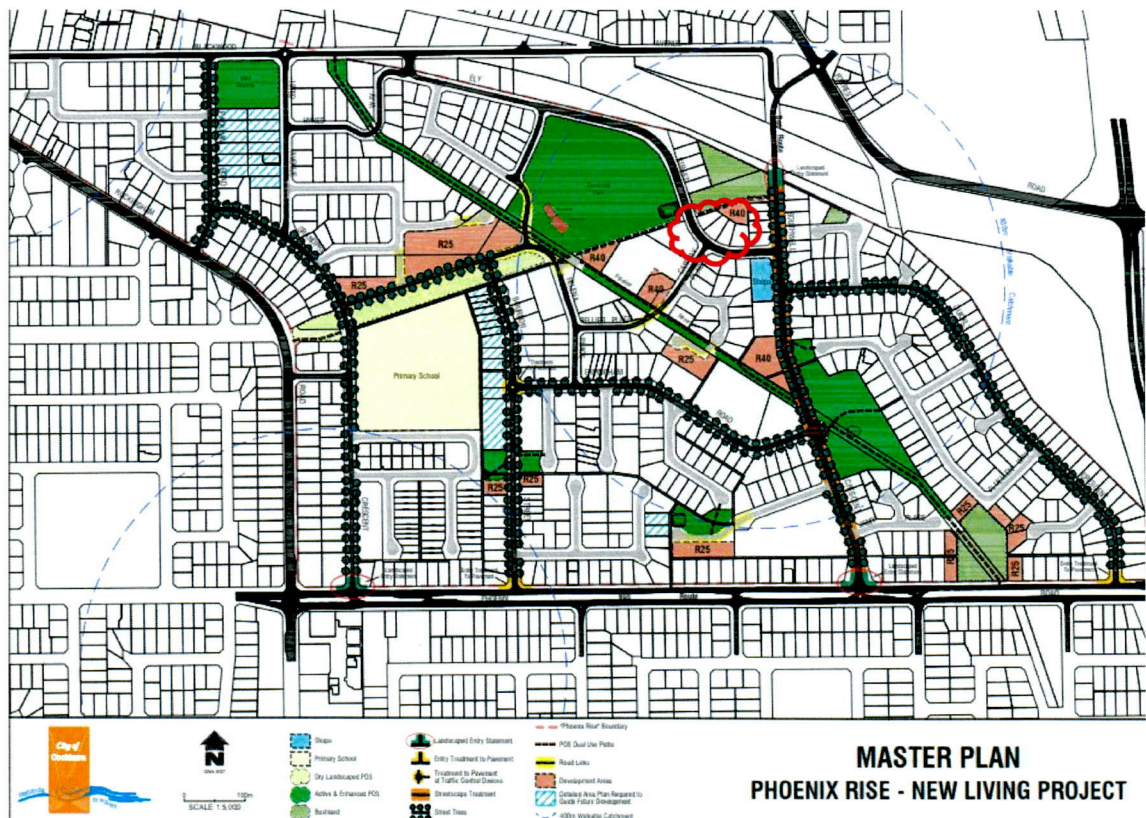
1.0 Introduction

The proposed Amendment seeks to include an 'Additional Use' of 'Club Premises' over a portion of Lot 9000 Plantagenet Crescent, Hamilton Hill to facilitate the development of club premises for the Portuguese Club of Western Australia.

2.0 Background

The Phoenix Rise Master Plan and the City of Cockburn Land Management Strategy identified the southeast corner of Lot 9000 (No. 30) Plantagenet Crescent, Hamilton Hill as land available for sale and development. The area overlooks the adjoining open space of Goodchild Park.

The Phoenix Rise Master Plan (Southwell New Living Project) was prepared and advertised in 2005, and adopted in 2006. The subject land is shown in the Master Plan below, and is zoned 'Residential' pursuant to the City of Cockburn Town Planning Scheme No. 3 ("the Scheme").



The Master Plan focuses on achieving the key objectives of increasing safety and revitalising the overall area, and had initially envisaged the subject land being redeveloped with a residential use.

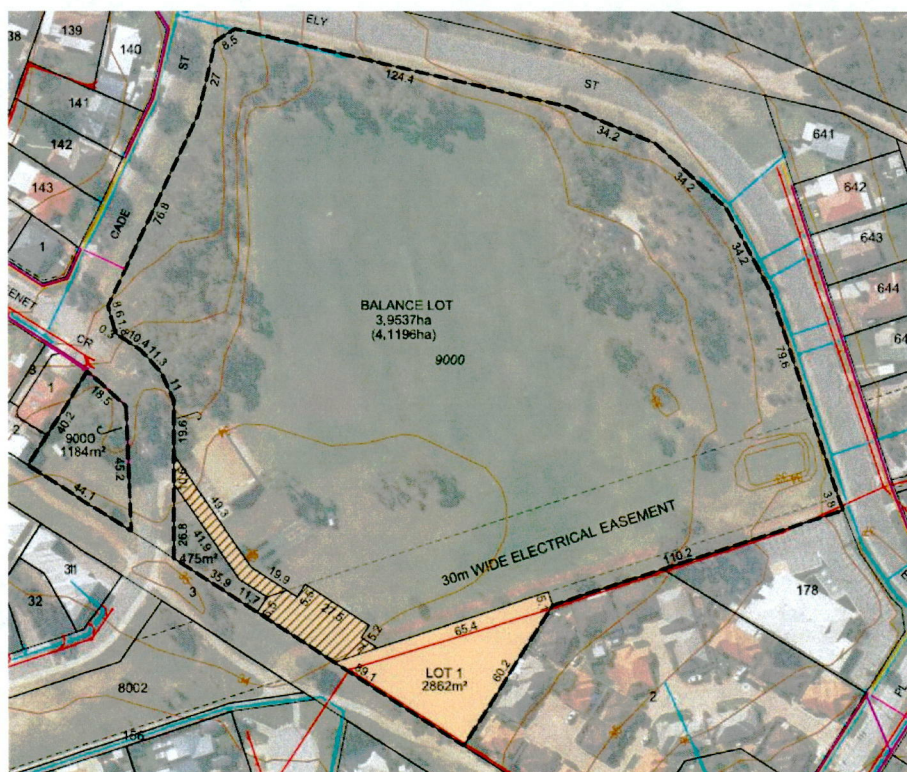
The WA Portuguese Club Inc. are seeking to relocate from the City of Fremantle to a site within the City of Cockburn.

The City is proposing to subdivide a 2,862sqm portion of Lot 9000 (No. 30) Plantagenet Crescent, Hamilton Hill, as shown in the image below, including a development area of 1,500sqm and the driveway and carpark being 1,362sqm (Lot 1).

The WA Portuguese Club Inc. has made an offer to the City to purchase Lot 1, plus a commitment to construct 25 car parking bays along the access way, which will be made available for public use with an easement in favour of the City. The WA Portuguese Club Inc. intends to develop a Club Premise on the land which will support both the Portuguese and broader community by providing a variety of club activities, social sport competitions and cultural events.

The City intends for the value of the land transaction to be reinvested into Goodchild Park and the Phoenix Rise Master Plan (Southwell Renewal) area.

Given the location of proposed Lot 1 immediately adjoining an active reserve/public open space, the WA Portuguese Club Inc. intend to re-establish a soccer club/academy with both junior and senior teams, and will liaise with the City's Recreation Services team to use Goodchild Park and the Goodchild Park clubrooms for soccer training and competition matches in conjunction with other sporting clubs.



The proposed land sale is consistent with the City's Land Management Strategy objectives and will support the City's Strategic Community, Sport and Recreation Facilities Plan to maximise the utilisation and multi-sport capacity of Goodchild Park.

3.0 Amendment Type

As per Part 5 of the Regulations, there several amendment types: basic, standard and complex. These are defined in Part 5, Division 1, Regulation 34.

Regulation 35(2) requires the local government to specify in their resolutions to prepare or adopt an amendment what type of amendment it is, as well as the explanation for forming that opinion.

This proposed amendment is considered to be a standard amendment, which Regulation 34 describes as:

standard amendment means any of the following amendments to a local planning scheme —

- c) an amendment relating to a zone or reserve that is consistent with the objectives identified in the scheme for that zone or reserve;*
- d) an amendment that is consistent with a local planning strategy for the scheme that has been endorsed by the Commission;*
- e) an amendment to the scheme so that it is consistent with a region planning scheme that applies to the scheme area, other than an amendment that is a basic amendment;*
- f) an amendment to the scheme map that is consistent with a structure plan, activity centre plan or local development plan that has been approved under the scheme for the land to which the amendment relates if the scheme does not currently include zones of all the types that are outlined in the plan;*
- g) an amendment that would have minimal impact on land in the scheme area that is not the subject of the amendment;*
- h) an amendment that does not result in any significant environmental, social, economic or governance impacts on land in the scheme area;*
- i) any other amendment that is not a complex or basic amendment.*

This proposed amendment satisfies the following:

- a) an amendment that does not result in any significant environmental, social, economic or governance impacts on land in the scheme area; and*
- b) any other amendment that is not a complex or basic amendment.*

4.0 Town Planning Context:

4.1 City of Cockburn Town Planning Scheme No. 3

The portion of Goodchild Park, Lot 9000 (No. 30) Plantagenet Crescent, Hamilton Hill to be purchased by the WA Portuguese Club Inc. is zoned 'Residential', with the access and car park area reserved 'Local Reserve – Parks and Recreation', pursuant to the City of Cockburn Town Planning Scheme No. 3 ("the Scheme").



4.2 Metropolitan Region Scheme

The subject land is zoned 'Urban' under the Metropolitan Region Scheme.

5.0 Proposal

The proposed Amendment seeks to include an 'Additional Use' of 'Club Premises' over the 'Residential' zoned portion of Lot 9000 (No. 30) Plantagenet Crescent, Hamilton Hill.

The proposed development of a clubhouse for the Portuguese Club is considered to fit the definition of 'Club Premises' in accordance with the Scheme, defined as: 'premises used by a legally constituted club or association or other body of persons united by a common interest.'

In accordance with clause 3.5 of the Scheme an 'Additional Use' is a land use that is permitted on a specific portion of land in addition to the uses already permissible in the zone that applies to the land. This is subject to the conditions set out in Table 6 of the Scheme with respect to that land. This zoning will prevent undesirable or unanticipated development from occurring, and will ensure development addresses the key issues.

An acoustic report has been undertaken which demonstrates that a future building on the subject land could comply with the Noise Regulations for the proposed hours of operations with appropriate mitigation measures.

A Traffic Impact Statement submitted with the proposal demonstrates that the road network will have sufficient capacity to accommodate the generated traffic from the proposed site. This is based on the fact that peak periods of the proposed site do not coincide with the peak periods of the road network, and the

weekend traffic volumes in the surrounding network are lower than the weekday volumes.

Proposed 'Additional Use' Conditions

The introduction of an 'Additional Use' into Table 6 of the Scheme provides the opportunity for appropriate conditions to be identified. Development of the proposed 'Club Premises' must then meet these conditions.

The subject land directly abuts residential development on the south eastern boundary. It is therefore imperative that development of the subject land does not negatively impact on the residential amenity of this land, considering noise, visual impacts and privacy issues. These matters are included in the proposed 'Additional Use' provisions.

To ensure that design of the built form is considered comprehensively provisions are proposed to be included in the 'Additional Use' provisions specifically requiring referral of the proposed building to the City of Cockburn's Design Review Panel and requiring due regard to be had to any recommendation.

The 'Additional Use' conditions also include a requirement for a design brief to be submitted to the City prior to the submission of a concept plan to the City of Cockburn Design Review Panel. The preparation of a design brief must demonstrate consideration of the 10 design principles set out in State Planning Policy 7.0 'Design of the Built Environment', including a number of site planning and user needs/built form considerations to ensure good quality development that responds to the local character and context.

The following conditions are proposed:

Proposed development of the land (with the exception of minor modifications to an existing approval) will be referred to the City of Cockburn Design Review Panel, and Council shall have due regard to the recommendations.

Prior to the submission of a concept plan to the City of Cockburn Design Review Panel, a design brief is to be prepared to the satisfaction of the City. A brief is to demonstrate consideration of the 10 design principles set out in State Planning Policy 7.0 'Design of the Built Environment', including but not limited to:

Site planning

- a. An appropriate interface with adjacent residential development and the public realm that considers height, bulk and scale, and responds to the surrounding residential setting, local character and context.
- b. Appropriate noise attenuation measures.
- c. Landscaping to enhance the appearance of the site by responding to the residential and park setting.
- d. Drainage to be contained onsite unless approved by the City of Cockburn.

User needs and built form considerations

- a. A list of desired functions for the site and details of how users will use the building.
- b. Discuss any important relationship between rooms/uses and consider the hierarchy of spaces with identifiable entries and clear wayfinding.
- c. The need for built form including building design, materials and articulation to be compatible with the surrounding residential setting.
- d. Identification of car parking numbers.
- e. Waste management measures, including access for waste vehicles and bin storage.
- f. Opportunities for Environmental Sustainable Design.
- g. Integration into the building of Crime Prevention Through Environmental Design ("CPTED") principles.

6.0 Conclusion

It is considered that the proposed Amendment to include an 'Additional Use' of 'Club Premises' over the 'Residential' zoned portion of Lot 9000 (No. 30) Plantagenet Crescent, Hamilton Hill will appropriately facilitate the development of the land for a club premises. The proposed conditions will ensure that development is site responsive and respects the amenity of adjacent residential properties.

POSTSCRIPT: Inclusion of Minister’s modifications

Modifications required by the Minister for Planning were outlined in correspondence dated 28 April 2020 sent to the City of Cockburn and are set out further below.

In carrying out these modifications, the Council resolution dates are not modified, although in this case there are changes to the proposed scheme text from what was set out originally in those Council decisions.

In the interests of posterity and to provide some clarity to persons who may compare the original recommendation and/or Council minutes to these documents and/or the amended version of Town Planning Scheme No. 3, below are the Minister modifications:

- 1. Inserting ‘Additional Use 19’ into Table 6 – Additional Uses, as follows:

TABLE 6			
No.	Description of Land	Restricted Use	Conditions
AU 19	Portion of Lot 9000 (No. 30) Plantagenet Crescent, Hamilton Hill	Club Premises	<div>1. Any applications for development approval should be subject to review by the City of Cockburn Design Review Panel.</div> <div>2. Any application submitted to the Design Review Panel should be accompanied by a design brief which demonstrates how it is consistent with the design principles in <i>State Planning Policy 7.0: Design of the Built Environment</i>.</div> <div>3. When dealing with an application on which a recommendation has been made by the Design Review Panel, the decision-maker shall have due regard for that recommendation.</div> <div>4. Development should have an appropriate interface to adjacent residential areas and the public realm and be responsive to the character and context of the locality, in terms of height, bulk, scale, articulation and appearance.</div>

**Planning and Development Act 2005
RESOLUTION TO AMEND LOCAL PLANNING SCHEME**

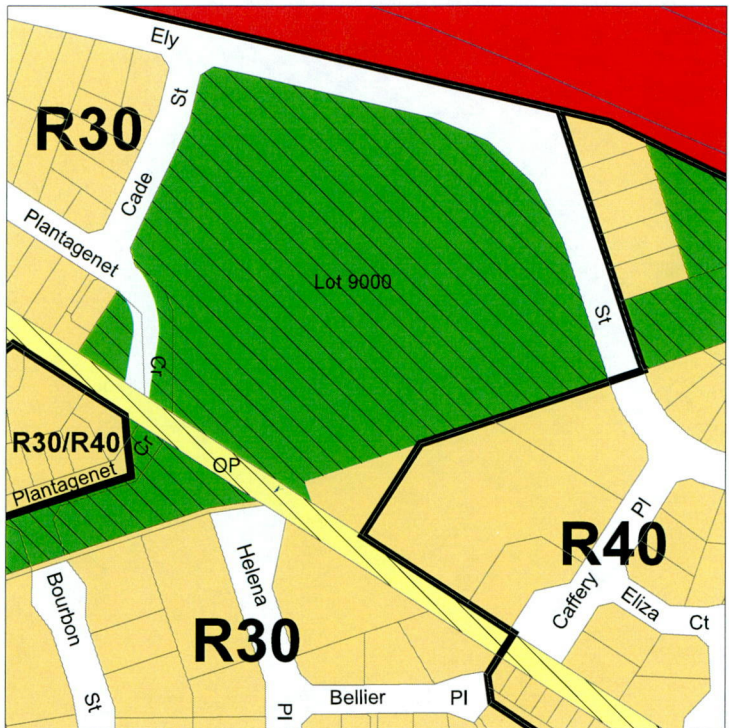
**CITY OF COCKBURN
TOWN PLANNING SCHEME NO 3
AMENDMENT NO. 142**

Resolved that the Local Government pursuant to section 75 of the Planning and Development Act 2005, amend the above Local Planning Scheme by:

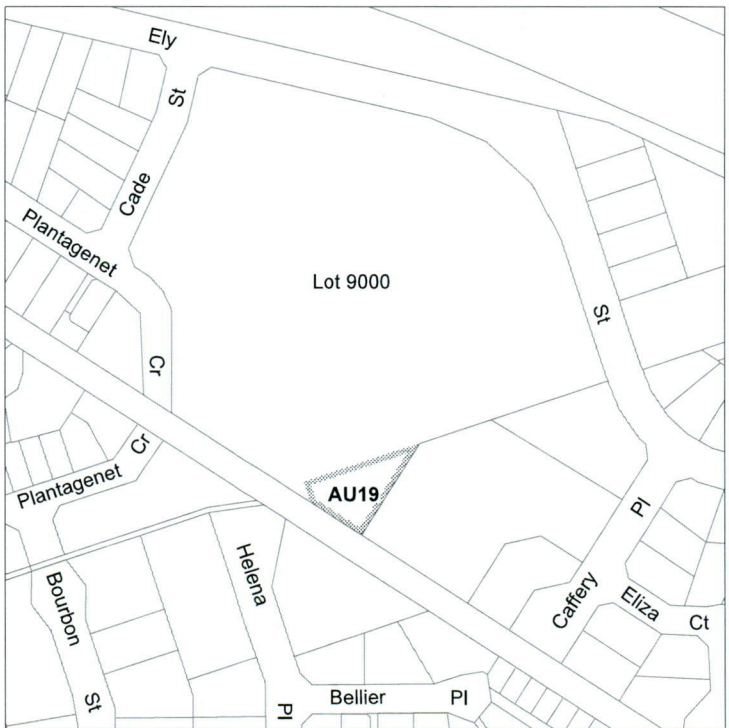
1. Inserting 'Additional Use 19' into Table 6 - Additional Uses, as follows:

TABLE 6			
No.	Description of Land	Restricted Use	Conditions
AU 19	Portion of Lot 9000 (No. 30) Plantagenet Crescent, Hamilton Hill	Club Premises	<ol style="list-style-type: none">1. Any application for development approval should be subject to review by the City of Cockburn Design Review Panel.2. Any application submitted to the Design Review Panel should be accompanied by a design brief which demonstrates how it is consistent with the design principles in State Planning Policy 7.0: Design of the Built Environment.3. When dealing with an application on which a recommendation has been made by the Design Review Panel, the decision-maker shall have due regard for that recommendation.4. Development should have an appropriate interface to adjacent residential areas and the public realm and be responsive to the character and context of the locality, in terms of height, bulk, scale, articulation and appearance.

2. Amending the Scheme map accordingly.



Current Scheme Map



Scheme Amendment Map

GENERAL

- R20 Residential Density Codes
- AU19 Additional Uses

REGION RESERVES

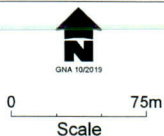
- Primary Regional Roads

LOCAL RESERVES

- Park & Recreation
- Local Road
- Public Purposes
DENOTED AS FOLLOWS:
OP - Oil Pipeline

ZONES

- Residential



Amendment No.142
Town Planning Scheme No.3

ADOPTION

Adopted by resolution of the Council of the City of Cockburn at the ordinary meeting of the Council held on 9th day of August 2018


MAYOR


CHIEF EXECUTIVE OFFICER

FINAL APPROVAL

Adopted for final approval by resolution of the City of Cockburn at the Meeting of the Council held on the 12th day of September 2019, and the Common Seal of the City of Cockburn was hereunto affixed by the authority of a resolution of the Council in the presence of:

(Seal)




MAYOR


CHIEF EXECUTIVE OFFICER

Recommended/Submitted for Final Approval

DELEGATED UNDER S.16 PLANNING
AND DEVELOPMENT ACT 2005

DATE 29 July 2020

It is hereby certified that this is a true copy of the Scheme/Amendment. Final Approval Granted was endorsed by the Minister for Planning on 16/9/2020

Certified by 

Officer of the Commission Duty authorised pursuant to Section 24 of the Planning and Development Act 2005 and Regulation 32(3) Scheme and Regulation 63(3) (Amendment) of the Planning and Development (Local Planning Scheme) Regulations 2015.

MINISTER FOR PLANNING
DATE

APPENDIX A – Transport Impact Statement



Transport Impact Statement

Project:	Lot 9000 (#30) Ely Street, Hamilton Hill Proposed Community Facility
Client:	WA Portuguese Club Inc
Author:	Keli Li
Version:	1
Document #	1812007-TIA-001

CONSULTING CIVIL AND TRAFFIC ENGINEERS
1 ST. FLOOR, 908 ALBANY HIGHWAY, EAST VICTORIA PARK WA 6101.
PHONE|+61 8 9355 1300
FACSIMILE| +61 8 9355 1922
EMAIL| admin@shawmac.com.au



Document Status

Version	Document Status	Prepared By	Reviewed By	Approved By	Date
1	Client Review	K Li	L Dawson	T Shaw	21/12/2018

© Shawmac Pty. Ltd. 2016 ABN 51 828 614 001

File Reference: Y:\Jobs Active 2018\T&T - Traffic and Parking\City of Cockburn_South Lake Hockey Facility_TIS_1805028\Report\CoC_Multi-purpose Hockey Facility_TIS_v2.docx



Contents

1.	Summary.....	1
2.	Introduction	2
2.1.	Background.....	2
2.2.	Site Location	2
2.3.	Reference Information	3
3.	Site Proposal.....	4
3.1.	Regional Context	4
3.2.	Land Use.....	4
3.3.	Parking.....	4
3.4.	Planning Framework	5
3.5.	Major Attractors and Generators of Traffic.....	5
4.	Existing Situation.....	6
4.1.	Existing Roads	6
4.2.	Road Hierarchy vs Actual Flows	7
4.3.	Changes to the Surrounding Network	7
5.	Transport Assessment	8
5.1.	Assessment Years	8
5.2.	Time Periods for Assessment	8
5.3.	Development Generation	8
5.4.	Distribution	9
5.5.	Impact on Roads	10
5.6.	Impact on Intersections	11
6.	Public Transport.....	12
6.1.	Existing Public Transport Services.....	12
7.	Pedestrian and Cycle Networks	13



7.1.	Existing Cycle and Pedestrian Networks and Facilities.....	13
8.	Parking.....	14
8.1.	Parking Provision.....	14
8.2.	Parking Layout.....	14
9.	Site Access	15
9.1.	Vehicle Accesses.....	15
9.2.	Service Vehicles	15
9.3.	Access Vehicle Sight Distance.....	15
9.4.	Access Pedestrian Sight Distance	16
10.	Site Specific or Safety Issues.....	17
10.1.	Crash History	17
11.	Conclusion	18
	Appendix A - Site Layout.....	19



Tables

Table 1 - Road Classification and Indicative Traffic Volumes	7
Table 2 - Predicted Weekday Trip Generation	8
Table 3 - Pre- and Post-Development Traffic Volumes	10
Table 4 - City of Cockburn Town Planning Scheme No. 3 Car Parking Requirements	14
Table 5 - AS 2890.1 Parking Bay Dimension Requirements	14

Figures

Figure 1 - Site Location	2
Figure 2 - Aerial View	3
Figure 3 - Regional Context.....	4
Figure 4 - Zoning Map - Extract from City of Cockburn TPS3	5
Figure 5 - Road Hierarchy	6
Figure 6 - Trip Distribution	9
Figure 7 - Public Transport Network.....	12
Figure 8 - Pedestrian and Cyclist Facilities.....	13
Figure 9 - Sight Distance Requirements.....	15
Figure 10 - AS 2890.1 Requirements for Pedestrian Sight Lines	16



1. Summary

Shawmac was commissioned to assess the impacts associated with parking, access and traffic generation from the proposed community facility (Portuguese Club) located at Lot 9000 (#30) Ely Street, Hamilton Hill.

This Transport Impact Statement has been prepared in accordance with the WAPC Transport Impact Assessment Guidelines for Developments: Volume 4 – Individual Developments (2016), for lodgement with the Development Application.

The following conclusions have been made in regards to the proposed development:

- The surrounding roads and intersections can accommodate the forecast increase in traffic from the proposed development;
- The supply of car parking spaces is considered adequate for the facility;
- As advised by the client, the parking layout will be compliant with AS2890.1 requirements;
- The available public transport services in the vicinity of the site are deemed adequate;
- The existing pedestrian/cyclist infrastructure in the vicinity of the site is considered to be adequate to facilitate the safe movement of pedestrians and cyclists to and from the proposed development.
- The location of the proposed access is considered acceptable and no adverse impacts and safety issues associated with the access are identified.

2. Introduction

2.1. Background

Shawmac has been commissioned to prepare a Transport Impact Statement to assess the potential traffic impacts, car parking and access issues associated with the proposed community facility (Portuguese Club) to be located at Lot 9000 (#30) Ely Street, Hamilton Hill, in the City of Cockburn. The Portuguese Club is an existing facility located at 2 Strang Street, Beaconsfield, that is relocating to the new location.

The subject site is located within Goodchild Park. Goodchild Park currently contains an existing oval and a sports club with a 12-bay carpark attached to the club house. The proposal is to develop the southern vacant portion of the lot to a community facility (Portuguese Club). Access to the new carpark will be via a drive-way extending from the existing club house carpark. The concept plan indicates a 25-bay carpark will be constructed adjacent to the new development. The existing carpark and the new carpark will be managed under a reciprocal framework (due to different peak periods expected between sports oval users and Portuguese Club visitors).

2.2. Site Location

The site is located as shown in **Figure 1**. An aerial view of the subject site is shown in **Figure 2**. The concept site plan of the development is attached in **Appendix A**.

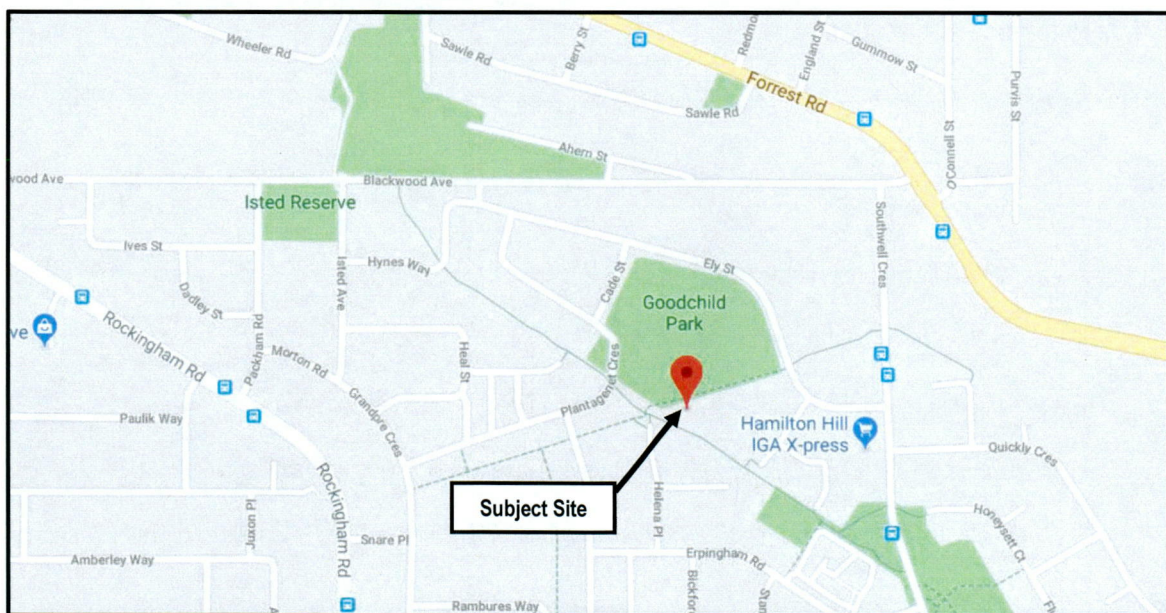


Figure 1 - Site Location

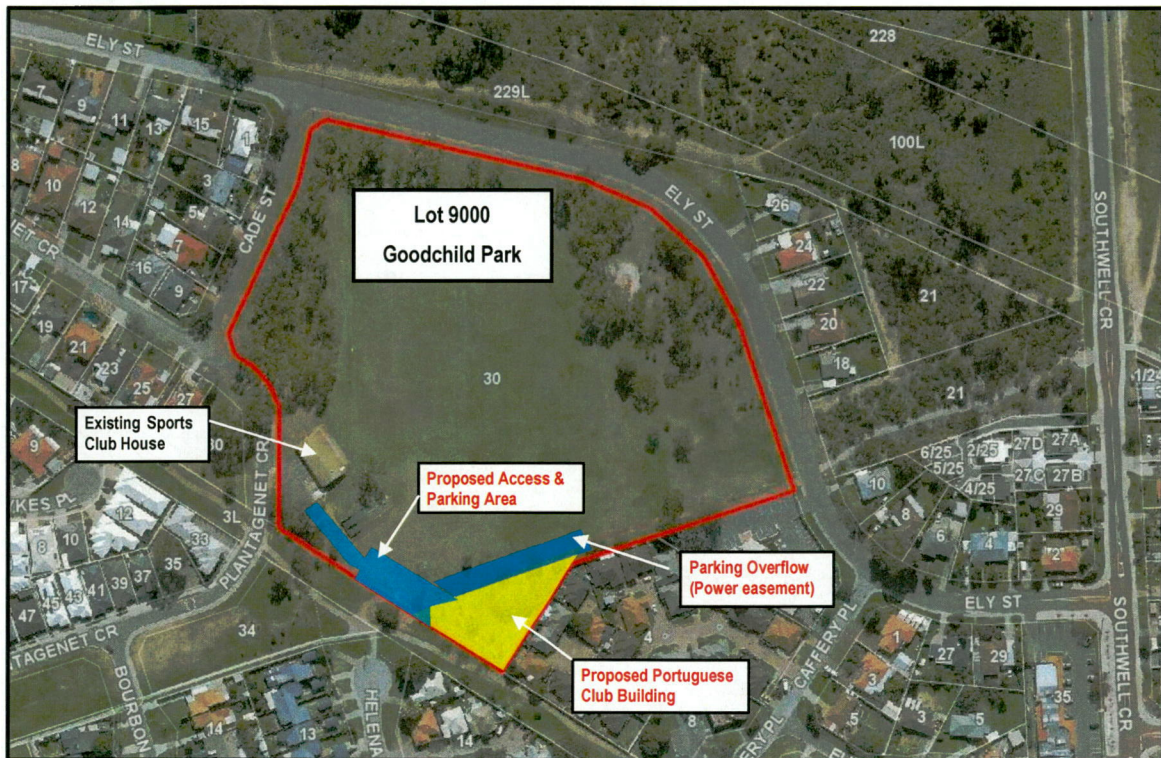


Figure 2 - Aerial View

2.3. Reference Information

In undertaking the study, the information listed below was referenced.

- WAPC Transport Impact Assessment Guidelines for Developments: Volume 5 – Individual Developments
- MRWA Functional Hierarchy Criteria;
- Livable Neighbourhoods Guidelines 2009;
- Australia Standard AS 2890.1-2004 Parking facilities - Off-street car parking
- Trip Generation 7th edition, 2003 - Institute of Transportation Engineers, Washington, USA;
- Guide to Traffic Generating Developments Version 2.2, October 2002 – Roads and Traffic Authority, New South Wales;
- City of Cockburn Town Planning Scheme No. 3

3. Site Proposal

3.1. Regional Context

The subject site is approximately 18 km from the Perth CBD. The developments adjacent to the site are primarily established residential dwellings. There is also a primary school located 400m southwest of the site. **Figure 3** shows the site location in a regional context.

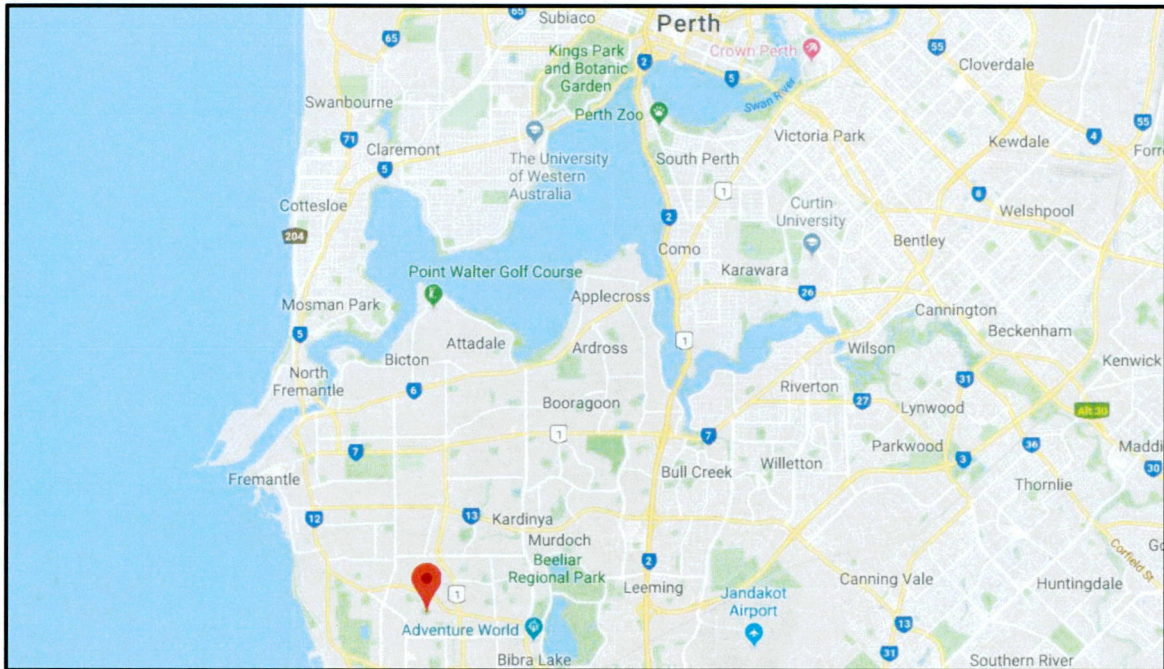


Figure 3 - Regional Context

3.2. Land Use

Lot 9000 Ely Street currently contains an existing oval and a club house with a 12-bay carpark attached to it. As per the concept plan two soccer fields will be marked on the existing oval.

The development proposal involves developing the site as a community facility. As advised by the client, the facility requires up to 5 employees to operate and the number of daily visitors is expected to be below 50 except on the days when the facility holds a monthly function night, when the facility is expected to accommodate up to 500 people.

3.3. Parking

A 25-bay carpark will be constructed to accommodate the daily parking demand. During the monthly function night, the client has advised that Western Power has permitted them to allow parking overflow onto the power easement east of the main parking area.

3.4. Planning Framework

The majority of Lot 9000 (Goodchild Park) Ely Street is zoned as "Parks and Recreation", the land proposed to be developed for the Portuguese Club is zoned "Residential". The surrounding lots are primarily zoned as "Residential".

It is understood that the reserved land for Primary Regional Roads (Red Hatching across the **Figure 4**) was planned for MRWA Roe 8 project, and according to the MRWA website construction of Roe 8 has been suspended. The City is not aware of change in zoning of the reserved land.

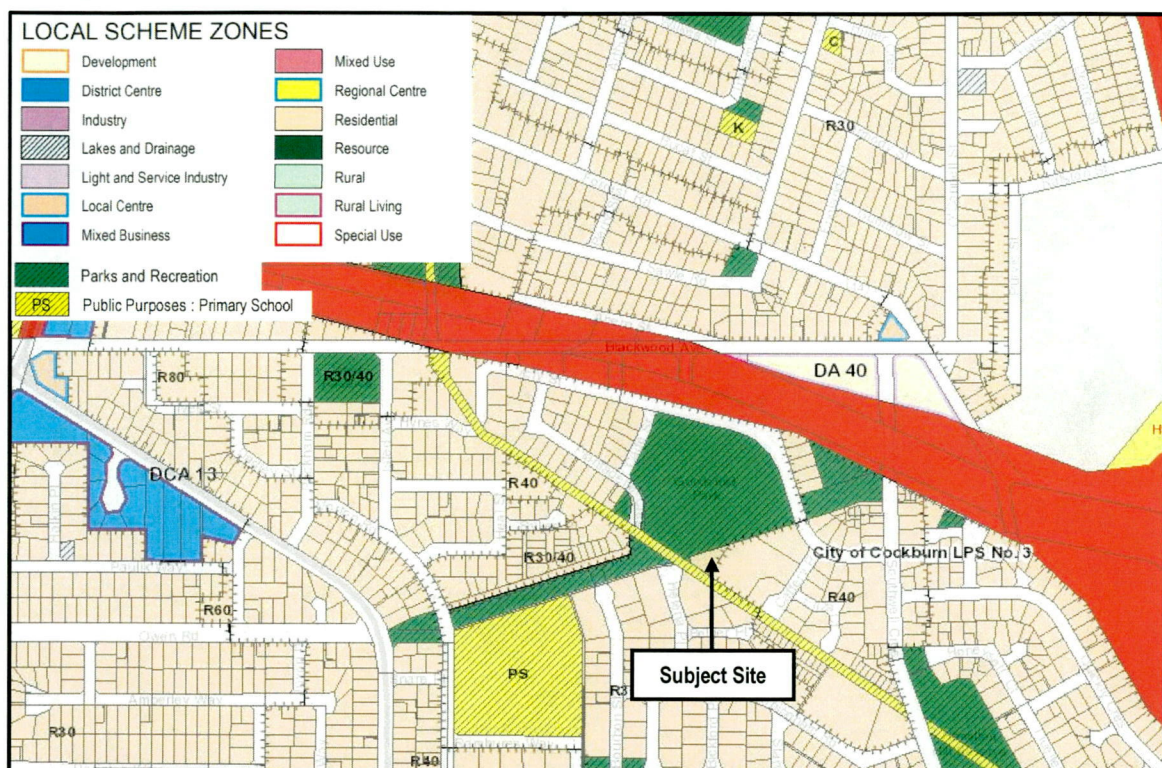


Figure 4 - Zoning Map - Extract from City of Cockburn TPS3

3.5. Major Attractors and Generators of Traffic

The development site is mainly a traffic attractor. The main generators/attractors expected to influence traffic flows are likely to be to and from local residential areas and local centres.

4. Existing Situation

4.1. Existing Roads

An extract of the Main Roads *Road Information Mapping* web tool is shown in **Figure 5** and shows the road hierarchy surrounding the site.



Figure 5 - Road Hierarchy

Ely Street

Ely Street is the northern and eastern boundary of Goodchild Park. Ely Street provides a short link between Blackwood Avenue to Plantagenet Crescent which provides vehicular access to the existing Lot 9000 carpark. Ely Street is a two-way, undivided carriageway. The kerb-to-kerb width on Ely Street is approximately 9.6m. In the vicinity of the site, pedestrian footpaths are available along the south side and western side (Goodchild Park side). Parking is unrestricted along both sides of Ely Street. Ely Street is classified as an Access Road under the MRWA Functional Road Hierarchy. Ely Street operates with a 50km/h speed limit.

Plantagenet Crescent

Plantagenet Crescent together with Cade Street (a short access road providing access to 5 residential properties) form the west boundary of Goodchild Park. Plantagenet Crescent is the only boundary road which provides vehicular access to the proposed community facility. Plantagenet Crescent is a two-way, single carriageway road with an approximate kerb-to-kerb width of 6.0m and is classified as an Access Road under the MRWA Functional Road Hierarchy. Plantagenet Crescent operate with a 50km/h speed limit.

Blackwood Avenue

Blackwood Avenue is located 350m north of the site. It is a Local Distributor road with Ely Street connecting from the south. Blackwood Avenue provides access to Carrington Street to the west and Forrest Road to the east. Blackwood Avenue operates with 50km/h speed limit.

Phoenix Road

Phoenix Road is a District Distributor A road located approximately 600m south of the site. The Plantagenet Crescent – Grandpre Crescent – Phoenix Road route provides access from the site to the nearest local centre (Phoenix Shopping Centre). Phoenix Road operates under a 70km/h speed limit.

4.2. Road Hierarchy vs Actual Flows

The latest daily traffic volumes of the surrounding roads were derived from and City of Cockburn intramap and MRWA Scats Data. Traffic data for Ely Street and Plantagenet Crescent are not available and are assumed to be 800 vehicles per day for the purpose of this assessment. **Table 1** compares existing traffic volumes with MRWA and Liveable Neighbourhood Guideline indicative traffic volumes based on road classifications.

Table 1 - Road Classification and Indicative Traffic Volumes

Road Name	Road Features	MRWA Classification / Indicative Daily Volume (vpd)	Liveable Neighbourhood Classification / Indicative Daily Volume (vpd)	Traffic Volume	Source
Ely Street - West of Plantagenet Cres	undivided single-carriageway	Access Road / Below 3,000	Access Street C / 3,000	800	Assumed
Plantagenet Crescent South of Site Access	undivided single-carriageway	Access Road / Below 3,000	Access Street C / 3,000	800	Assumed
Blackwood Avenue East of Ely St	undivided single-carriageway	Local Distributor / Below 6,000	Access Street C / 3,000	2,102	CoC (2018)
Phoenix Road south of Elderberry Dr	four-lane dual-carriageway	District Distributor A / Above 8,000	Integrator Arterial B / 15,000	12,225	MRWA SCATS (2018)

As shown, all roads are below their indicative traffic volumes ranges for their respective classifications.

4.3. Changes to the Surrounding Network

There are no known changes to the adjacent network that have the potential to affect the assessment.



5. Transport Assessment

5.1. Assessment Years

The Development is assessed on the proposed development year, assumed as 2020.

5.2. Time Periods for Assessment

It is anticipated that traffic attracted to the site will peak on weekend nights around 6:00-7:00 PM and be minimal during the weekday network peak. This assessment assumes the traffic volumes of surrounding roads during weekend nights between 6:00-7:00 is equivalent to 5% of their daily volume.

5.3. Development Generation

In order to estimate the impact of traffic generated by the proposed development reference was made to the Institute of Transportation Engineers "Trip Generation" 9th edition. No land use matches to a peak period of weekend 6:00-7:00 PM. This assessment assumes "1 inbound movement per 4 people accommodated" occurring during peak hour. Outbound movement has been excluded as visitors are expected to arrive prior to the event and leave over the course of the function night.

The trip generation has been determined for both daily and peak hour. Detailed explanations of the trip generation are summarised **Table 2**.

Table 2 - Predicted Weekday Trip Generation

Land Use	Units	Quantum	Trip Generation Rate		Estimated Generation		Source
			Daily	Peak	Daily	Peak	
Portuguese Club	People Accommodated	500	0.5	0.25	250	125	Assumed
Total (round-up)					250	125	

It is estimated that the proposed development will generate 250 vehicle movements during the day of function night with 125 movements during the hour prior to function start time.

5.4. Distribution

It is anticipated that the traffic will be attracted from and distributed to Blackwood Avenue, and Phoenix Road via local access roads. Based upon the existing traffic patterns in the area and spatial distribution of adjacent land uses, the following distribution for the developed site generated traffic has been assumed as listed below:

- 70% of site traffic is originating from and destined to Blackwood Avenue via Plantagenet Crescent and Ely Street, of which
 - 40% to and from the west; and
 - 30% to and from the east;
- 10% of site traffic is originating from and destined to the Southwell Crescent via Plantagenet Crescent and Ely Street.
- 20% of site traffic is originating from and destined to the Phoenix Road via Plantagenet Crescent and Grandpre Crescent.

The site-generated traffic is expected to be distributed as shown in **Figure 6**.

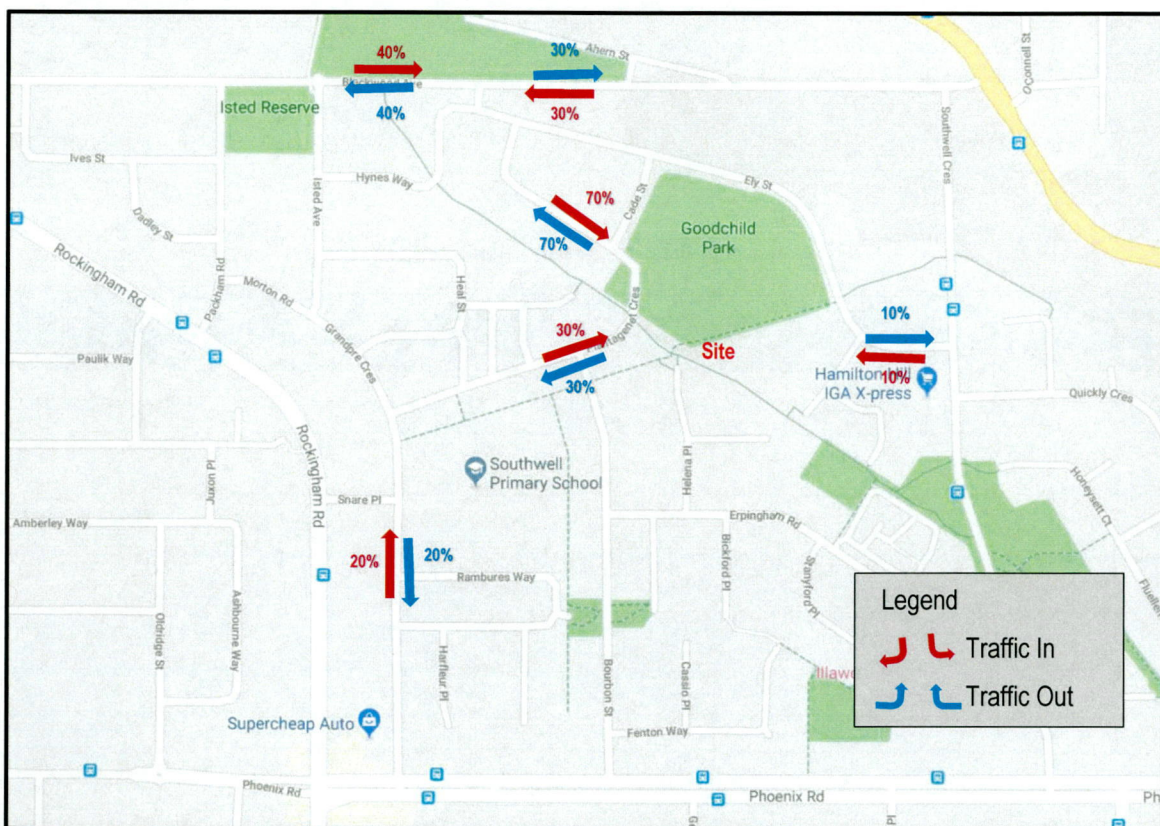


Figure 6 - Trip Distribution

The assignment of generated traffic onto the adjacent roads are shown in **Table 3**.

Table 3 - Pre- and Post-Development Traffic Volumes

Road	Time Period	Pre-development Volume	Increase	Post-development Volume
Plantagenet Crescent North of Site Access	Daily – No Function Night (vpd)	800	35	835
	Daily –Function Night (vpd)	800	175	975
	Function Night Peak (vph)	40	88	128
Ely Street West of Plantagenet Cres	Daily – No Function Night (vpd)	800	13	813
	Daily –Function Night (vpd)	800	13	813
	Function Night Peak (vph)	40	13	53
Blackwood Avenue East of Ely St	Daily – No Function Night (vpd)	2,102	38	2,140
	Daily –Function Night (vpd)	2,102	38	2,140
	Function Night Peak (vph)	105	38	143
Blackwood Avenue West of Ely St	Daily – No Function Night (vpd)	2,102	50	2,152
	Daily –Function Night (vpd)	2,102	50	2,152
	Function Night Peak (vph)	105	25	130
Phoenix Road South of Grandpre Cres	Daily – No Function Night (vpd)	13,335	25	13,360
	Daily –Function Night (vpd)	13,335	25	13,360
	Function Night Peak (vph)	667	25	692

5.5. Impact on Roads

The road network is considered to have sufficient capacity to accommodate the generated traffic from the proposed site, based on the following:

- The peak periods of the proposed site do not coincide with the peak periods of the road network (which are likely to occur during weekdays morning and afternoon commuting hours);
- The weekend traffic volumes in the surrounding network are lower than the weekday volumes;
- The site generated traffic is not considered significant to increase the daily traffic volume beyond the Liveable Neighbourhood indicative traffic volume.



5.6. Impact on Intersections

A general guide from WAPC Transport Impact Assessment Guideline indicates the following:

- An increase in traffic of less than 10% of capacity would not normally be likely to have a material impact on any particular section of road; and
- An intersection would generally be considered to be materially affected if flows on any leg increase by more than 10% or any individual movement by more than 20%.

Due to the relatively low additional traffic volumes added to the network, the surrounding intersections do not meet the warrant for a capacity analysis and are considered to have sufficient capacity to cater for the projected increase in traffic.

6. Public Transport

6.1. Existing Public Transport Services

Figure 7 summarises the public transport network adjacent to the site. The site is within 350m walking distance to the bus stops of Transperth service 531 which operates between Fremantle Train Station to Cockburn Central Station. Service frequency of service 531 is every 30 minutes during weekday peak, 1 hour off peak and during weekends. (Note: Bus 533 is no longer available from the stops on Southwell Crescent)

Despite only one bus service being accessible from the site during weekends, the predicted demand for public transport is not considered significant. The existing services are considered to be adequate.



Figure 7 - Public Transport Network

7. Pedestrian and Cycle Networks

7.1. Existing Cycle and Pedestrian Networks and Facilities

Pedestrian and cycle facilities in the general vicinity of the site are shown in **Figure 8**. Shared paths exist frequently within the road reserve of nearby roads and across public open spaces. The shared paths together with the “Good Riding Environment” roads as shown in **Figure 8**, provides excellent connectivity for pedestrians and cyclists to access between the site and the greater network.



Figure 8 - Pedestrian and Cyclist Facilities



8. Parking

8.1. Parking Provision

The City of Cockburn Town Planning Scheme No.3 (TPS3) sets out the car parking requirements as shown in **Table 4**. A comparison of the requirements and proposed parking provision indicates that the proposed parking supply is compliant.

Table 4 - City of Cockburn Town Planning Scheme No. 3 Car Parking Requirements

Land use	Parking Rate	Quantum	Parking Requirement	Parking Provision
Club Premises	1 per 50m ² Gross Lettable Area	1,888 m ²	38	38
		Total	38	38

The existing car bays for the sports club on Lot 9000 together with the proposed 25-bay carpark satisfies the minimum parking requirements. Considering the proposed development has a different peak periods to sports club, the proposed reciprocal parking framework is considered acceptable. (Note: Currently, sports oval visitors utilise street parking, the new carpark will provide capacity for people utilising the sports oval.)

8.2. Parking Layout

The bay dimensions for a Class 2 car parking facility according to AS2890.1 (Sports facilities/entertainment centres) are shown below in **Table 5**.

Table 5 - AS 2890.1 Parking Bay Dimension Requirements

Bay Details	Bay Dimension Required
Ninety-degree Bays	5.4 x 2.4 x 5.8m aisles.

The concept plan does not indicate parking dimensions, however, as indicated by the client, the parking layout will be in accordance AS 2890.1 requirements.

9. Site Access

9.1. Vehicle Accesses

Vehicular access to the new carpark will be via the existing access off the existing sports club house.

9.2. Service Vehicles

Waste collection will be managed via verge collection. Bins will be wheeled out onto Plantagenet Crescent. It is recommended that rubbish collection takes place outside of peak hours to reduce conflict. General deliveries can use car bays in the carpark.

9.3. Access Vehicle Sight Distance

Sight distance from the car park egress along Plantagenet Crescent is defined in Figure 3.2 of AS2890.1 which is reproduced in **Figure 9**. A desktop review concluded that minimum sight distance of is achieved from the crossover and satisfies the requirements.

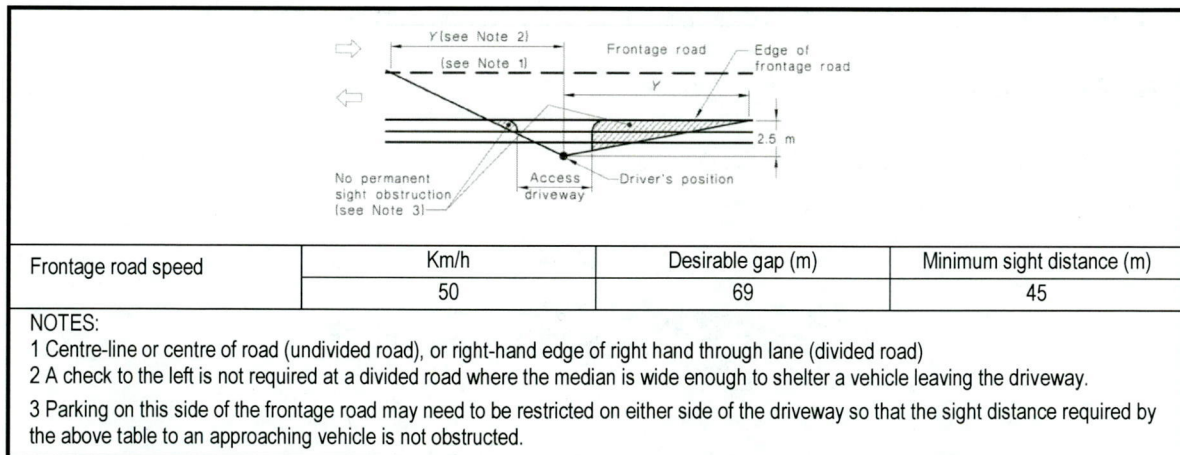


Figure 9 - Sight Distance Requirements

9.4. Access Pedestrian Sight Distance

The Australian Standard AS2890.1:2004 also provides details for sight lines and distances for pedestrian movements across an access to a car park. Those details are shown in the AS2890.1 Figure 3.3 extract on Figure 10.

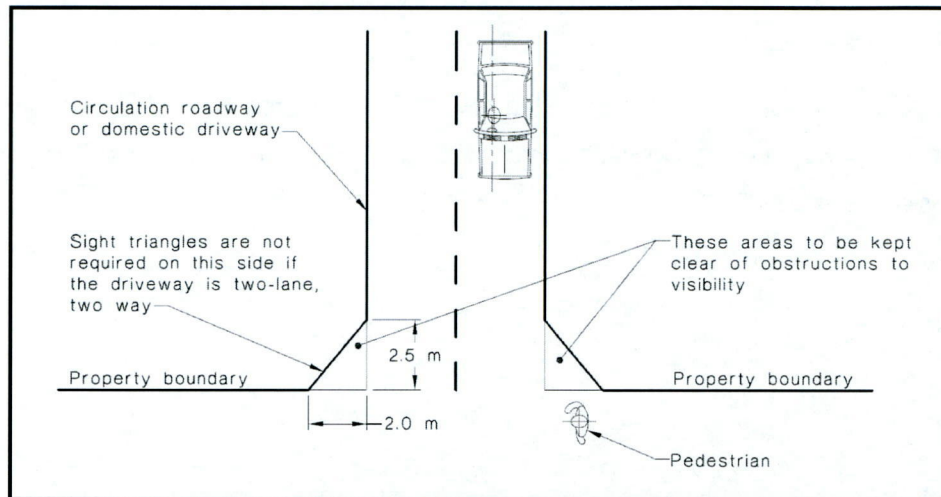


Figure 10 - AS 2890.1 Requirements for Pedestrian Sight Lines

The site plan does not indicate any sight line obstructions at the vehicular accesses. It can be concluded that sight distance at the egress ramp is acceptable.



10. Site Specific or Safety Issues

10.1. Crash History

Crash data for the Plantagenet Crescent between Ely Street and Grandpre Crescent were sourced from MRWA Crash Analysis Reporting System (CARS) for the 5-year period ending 31/12/2017 and the report indicated no crashes over the 5-year period.

As the proposed development is only predicted to generate a small number of vehicle movements and the development peak hours do not coincide with general road peak hours, it is unlikely to increase the crash risk to an unacceptable level of risk.

11. Conclusion

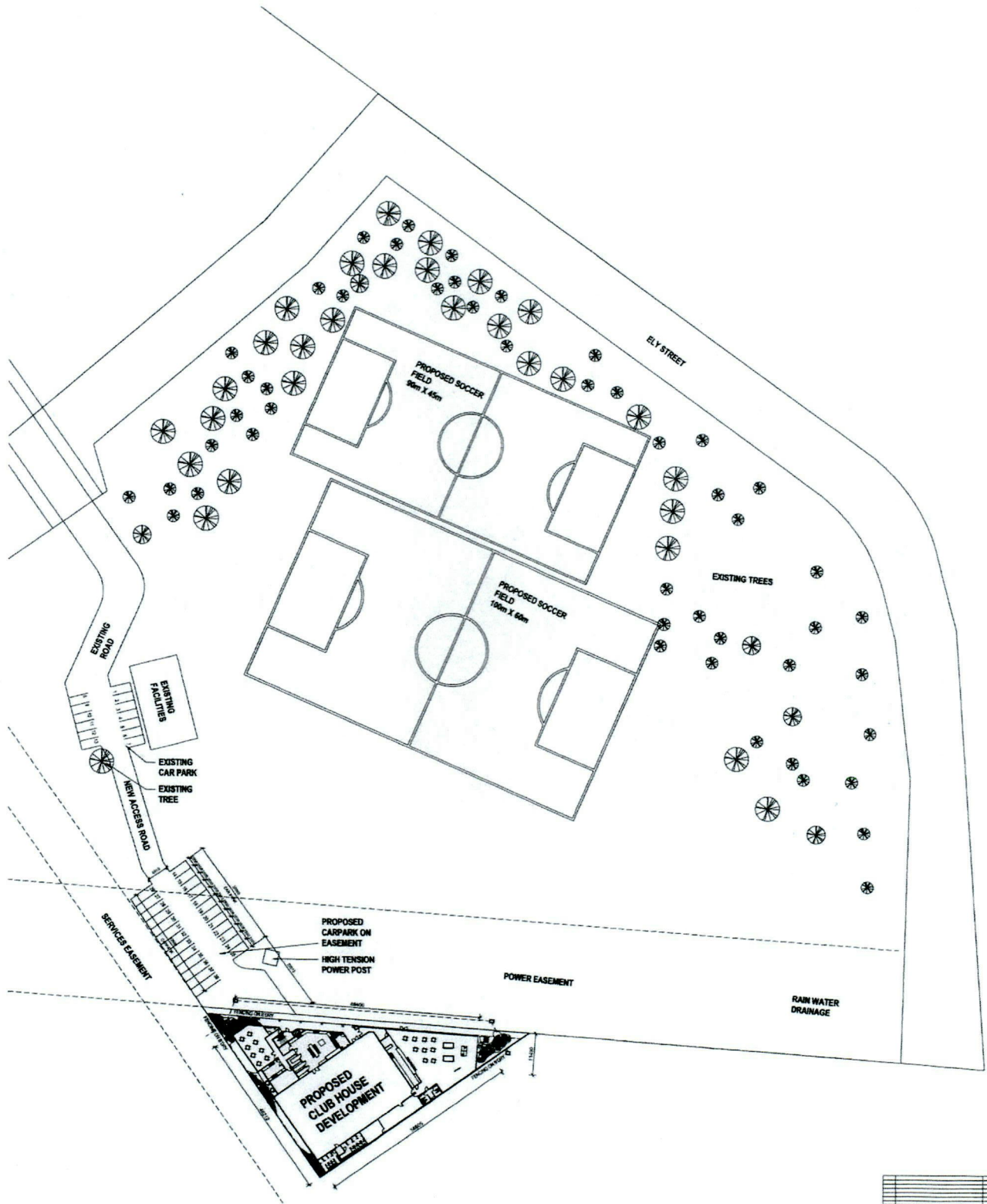
Based on the assessment of traffic generation it is predicted that there will be no unacceptable impact on the adjacent road segments.

With respect to the proposed community facility (Portuguese Club), the following is concluded;

- The surrounding roads and intersections can accommodate the forecast increase in traffic from the proposed development;
- The supply of car parking spaces is considered adequate for the facility;
- The parking and access layout is compliant with AS2890.1 requirements;
- The available public transport services in the vicinity of the site are deemed adequate;
- The existing pedestrian/cyclist infrastructure in the vicinity of the site is considered to be adequate to facilitate the safe movement of pedestrians and cyclists to and from the proposed development.
- The location of the proposed access is considered acceptable and no adverse impacts and safety issues associated with the access are identified.



Appendix A - Site Layout



SITE PLAN



PROJECT ADDRESS: 1000 CHILS RESERVE, COCKBURN WA	
SHEET TITLE: SITE PLAN	
DRAWN BY: AUSTREAN CONSTRUCTORS	

APPENDIX B – Environmental Noise Assessment



Lloyd George Acoustics

PO Box 717
Hillarys WA 6923
T: 9300 4188 F: 9300 4199
www.lgacoustics.com.au

Environmental Noise Assessment

**Proposed Community Club House,
Goodchild Park (#30 Plantagenet Crescent),
Hamilton Hill**

Reference: 18074541-01.docx

Prepared for:
Western Australian Portuguese Club Inc.



Report: 18074541-01.docx

<p>Lloyd George Acoustics Pty Ltd ABN: 79 125 812 544 PO Box 717 Hillarys WA 6923 T: 9300 4188 / 9401 7770 F: 9300 4199</p>				
Contacts	Daniel Lloyd	Terry George	Matt Moyle	Olivier Mallié
E:	daniel@lgacoustics.com.au	terry@lgacoustics.com.au	matt@lgacoustics.com.au	olivier@lgacoustics.com.au
M:	0439 032 844	0400 414 197	0412 611 330	0439 987 455

This report has been prepared in accordance with the scope of services described in the contract or agreement between Lloyd George Acoustics Pty Ltd and the Client. The report relies upon data, surveys, measurements and results taken at or under the particular times and conditions specified herein. Any findings, conclusions or recommendations only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client. Furthermore, the report has been prepared solely for use by the Client, and Lloyd George Acoustics Pty Ltd accepts no responsibility for its use by other parties.

Date:	Rev	Description	Prepared By	Verified
06-Dec-18	-	Issued to Client	Olivier Mallié	Terry George

Table of Contents

1	INTRODUCTION	1
2	CRITERIA	3
3	METHODOLOGY	7
3.1	Meteorological Information	7
3.2	Topographical Data	7
3.3	Ground Absorption	7
3.4	Building Construction	8
3.5	Source Sound Levels	8
4	RESULTS	10
5	ASSESSMENT	15
5.1	Social Event With Music	15
5.2	'Worst-case' Operations	17
5.3	Car Doors	19
6	CONCLUSIONS	20

List of Tables

Table 2-1 Adjustments Where Characteristics Cannot Be Removed	3
Table 2-2 Baseline Assigned Noise Levels	4
Table 2-3 Assigned Noise Levels	5
Table 3-1 Modelling Meteorological Conditions	7
Table 3-2 Source Noise Levels, dB	8
Table 4-1 Overall Predicted Noise Levels for Various Scenarios	10
Table 4-2 'Worst-case' Operations Predicted Noise Levels for Each Area	11
Table 5-1 Assessment of Social Event With Music Noise Levels	16
Table 5-2 Assessment of 'Worst-case' Operations Noise Levels	17
Table 5-3 Assessment of Car Door Closing Noise Levels	19

List of Figures

Figure 1-1 Project Locality (Aerial Imagery from City of Cockburn IntraMaps)	2
Figure 2-1 Sensitive Receiver Locations	6
Figure 4-1 Social Event in Hall (Music and People) Noise Contour Plot, dB L_{A10}	12
Figure 4-2 'Worst-case' Operations (Inc. Plant Noise) Contour Plot, dB L_{A10}	13
Figure 4-3 Car Door Closing Noise Contour Plot, dB L_{Amax}	14

Appendices

A	Development Plans and Elevations
B	Terminology

1 INTRODUCTION

The Western Australian Portuguese Club Inc. is proposing to build a Community Hall / Club House on the Goodchild Park land, located at #30 Plantagenet Crescent in Hamilton Hill - refer *Figure 1-1*.

The Community Hall is a double storey building comprising of a large main hall, a gymnasium, two cafes and a bar area, noting the building is reasonably enclosed with no alfresco areas or bi-fold doors or the like. In addition to normal operations, it is understood the main hall will be used for various social gatherings to include dancing and band music social events for up to 400 people on weekends. An additional 25 parking bays will be provided to supplement the existing car park.

It is understood that daytime operating hours will apply, except at the weekend when social events (music and dance) will be held from 6pm to midnight.

The premises are located within a residential area and therefore surrounded by residences, most of which are single storey buildings, with the exception of some properties along Plantagenet Crescent which are double storey.

Based on the above, this report presents the assessment's methodology of the following noise emissions from the proposed site against the *Environmental Protection (Noise) Regulations 1997*:

- Social Event in the main hall with up to 400 people and band music;
- Patron noise in ground and upper floor Cafe, noting all Cafe glazing is fixed;
- Patron noise in small bar area, noting all glazing is fixed with only a double door to access the bar area;
- Mechanical plant associated with the Hall (air-conditioning and exhaust fans); and,
- Car doors closing in the additional car parking area provided.

Appendix A shows the development plans this assessment was based on.

Appendix B contains a description of some of the terminology used throughout this report.



Figure 1-1 Project Locality (Aerial Imagery from City of Cockburn IntraMaps)

2 CRITERIA

Environmental noise in Western Australia is governed by the *Environmental Protection Act 1986*, through the *Environmental Protection (Noise) Regulations 1997* (the Regulations).

Regulation 7 defines the prescribed standard for noise emissions as follows:

“7. (1) Noise emitted from any premises or public place when received at other premises –

- (a) Must not cause or significantly contribute to, a level of noise which exceeds the assigned level in respect of noise received at premises of that kind; and
- (b) Must be free of –
 - i. tonality;
 - ii. impulsiveness; and
 - iii. modulation,
 when assessed under regulation 9”

A “...noise emission is taken to significantly contribute to a level of noise if the noise emission ... exceeds a value which is 5 dB below the assigned level...”

Tonality, impulsiveness and modulation are defined in Regulation 9. Noise is to be taken to be free of these characteristics if:

- (a) The characteristics cannot be reasonably and practicably removed by techniques other than attenuating the overall level of noise emission; and
- (b) The noise emission complies with the standard prescribed under regulation 7 after the adjustments of *Table 2-1* are made to the noise emission as measured at the point of reception.

Table 2-1 Adjustments Where Characteristics Cannot Be Removed

Where Noise Emission is Not Music			Where Noise Emission is Music	
Tonality	Modulation	Impulsiveness	No Impulsiveness	Impulsiveness
+ 5 dB	+ 5 dB	+ 10 dB	+ 10 dB	+ 15 dB

Note: The above are cumulative to a maximum of 15dB.

The baseline assigned levels (prescribed standards) are specified in Regulation 8 and are shown in *Table 2-2*.

Table 2-2 Baseline Assigned Noise Levels

Premises Receiving Noise	Time Of Day	Assigned Level (dB)		
		L _{A10}	L _{A1}	L _{Amax}
Noise sensitive premises: highly sensitive area ¹	0700 to 1900 hours Monday to Saturday (Day)	45 + influencing factor	55 + influencing factor	65 + influencing factor
	0900 to 1900 hours Sunday and public holidays (Sunday)	40 + influencing factor	50 + influencing factor	65 + influencing factor
	1900 to 2200 hours all days (Evening)	40 + influencing factor	50 + influencing factor	55 + influencing factor
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays (Night)	35 + influencing factor	45 + influencing factor	55 + influencing factor
Noise sensitive premises: any area other than highly sensitive area	All hours	60	75	80

1. *highly sensitive area* means that area (if any) of noise sensitive premises comprising —
 (a) a building, or a part of a building, on the premises that is used for a noise sensitive purpose; and
 (b) any other part of the premises within 15 metres of that building or that part of the building.

The locations of the closest receivers are shown on *Figure 2-1*. Based on the City of Cockburn town planning scheme No 3, it is noted there are no significant commercial or industrial premises within 450 metres of the receivers. In addition, based on Main Roads WA and City of Cockburn traffic data it is noted that there are no significant existing roads within 450 metres of the receivers.

Based on the above, the influencing factor at the closest receivers was determined to be 0 dB. It is noted that while the new Community Hall would be considered a commercial premises, it would raise the influencing factor by less than 0.5 dB and has therefore no impact on the estimate.

Table 2-3 shows the assigned noise levels. It is noted these assigned noise levels apply outside the receiving premises and at a point at least 3 metres away from any substantial reflecting surfaces. Where this could not be achieved due to the close proximity of existing buildings and fences, the noise emissions were assessed at a point within 1 metre of the building facade and a -2 dB adjustment was made to the predicted noise levels to account for reflected noise.

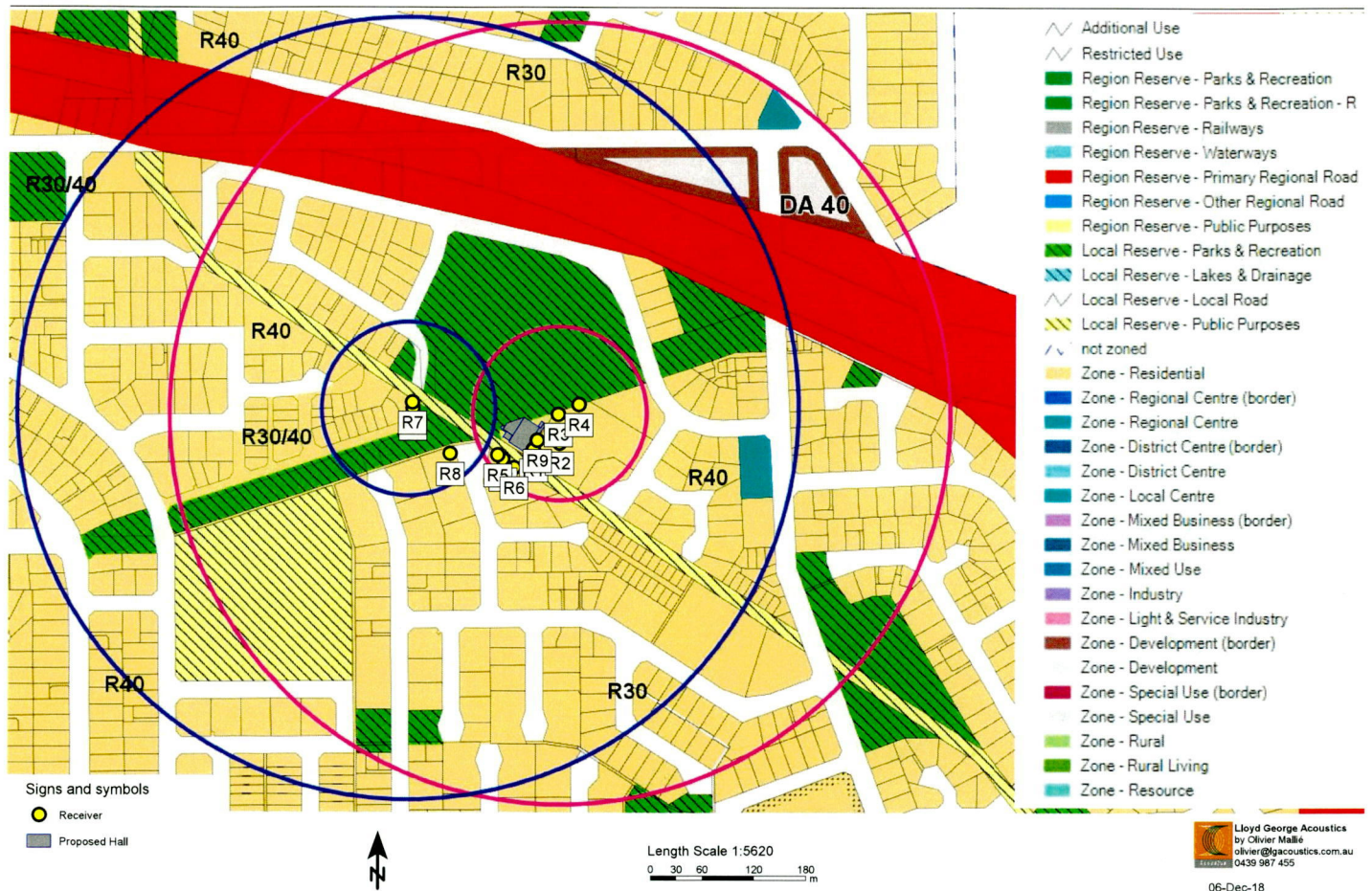
Table 2-3 Assigned Noise Levels

Premises Receiving Noise	Time Of Day	Assigned Level (dB)		
		L _{A10}	L _{A1}	L _{Amax}
All receivers: highly sensitive area ¹	0700 to 1900 hours Monday to Saturday (Day)	45	55	65
	0900 to 1900 hours Sunday and public holidays (Sunday)	40	50	65
	1900 to 2200 hours all days (Evening)	40	50	55
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays (Night)	35	45	55

1. *highly sensitive area* means that area (if any) of noise sensitive premises comprising —
- (a) a building, or a part of a building, on the premises that is used for a noise sensitive purpose; and
 - (b) any other part of the premises within 15 metres of that building or that part of the building.

Proposed Community Hall - Land Uses Map
Goodchild Park (#30 Plantagenet Crescent), Hamilton Hill

Figure 2-1



3 METHODOLOGY

Computer modelling has been used to predict noise levels at each nearby receiver. The software used was *SoundPLAN 8.1* with the ISO 9613 (ISO 17534 compliant) algorithms selected. These algorithms have been selected given the relatively short source-receiver distances, but since they include the influence of wind. Input data required in the model are:

- Meteorological Information;
- Topographical data;
- Ground Absorption; and
- Source sound power levels.

3.1 Meteorological Information

Meteorological information utilised is provided in *Table 3-1* and is considered to represent worst-case conditions for noise propagation. At wind speeds greater than those shown, sound propagation may be further enhanced, however background noise from the wind itself and from local vegetation is likely to be elevated and dominate the ambient noise levels.

Table 3-1 Modelling Meteorological Conditions

Parameter	Night (1900-0700)	Day (0700-1900)
Temperature (°C)	15	20
Humidity (%)	50	50
Wind Speed (m/s)	Up to 5 m/s	Up to 5 m/s
Wind Direction*	All	All

* Note that the modelling package used allows for all wind directions to be modelled simultaneously.

It is generally considered that compliance with the assigned noise levels needs to be demonstrated for 98% of the time, during the day and night periods, for the month of the year in which the worst-case weather conditions prevail. In most cases, the above conditions occur for more than 2% of the time and therefore must be satisfied.

3.2 Topographical Data

Topographical data already on file for the area in the form of 1 m contour lines was used, noting the topography is mostly flat between sources and receivers.

3.3 Ground Absorption

Ground absorption varies from a value of 0 to 1, with 0 being for an acoustically reflective ground (e.g. water or bitumen) and 1 for acoustically absorbent ground (e.g. grass). In this instance, a value of 0 has been used for the entire study area, with the exception of the Goodchild Park and easements, where a value of 0.5 was used e.g. wet soil/grass.

3.4 Building Construction

Based on the plans provided, the following construction and resulting acoustic performance of the external fabric were derived:

- External walls are 150 mm thick concrete tilt panels. The predicted acoustic rating of such construction is $R_w + C_{tr}$ of 50.
- Roof is solid concrete slab at least 200 mm thick and achieving at least $R_w + C_{tr}$ of 50.
- External glazing is 6 mm glass (monolithic/toughened), predicted to achieve $R_w + C_{tr}$ of at least 28. This rating was also assumed to apply to the bar area external door (D2).
- External emergency doors D1 and D5 are assumed solid core timber construction 35 mm thick minimum and fitted with perimeter seals e.g. Raven RP10/10Si, RP99Si and RP71. Acoustic rating is at least R_w 30.

Also included in the model were the boundary fences which were taken to be 2.1 metres high along the boundary with the easement and public open space, and 1.8 m between residences.

3.5 Source Sound Levels

The source sound levels used in the modelling are provided in *Table 3-2*.

Table 3-2 Source Noise Levels, dB

Description	Octave Band Centre Frequency (Hz)								Overall dB(A)
	63	125	250	500	1k	2k	4k	8k	
People gathering, 400 people	78	89	93	95	87	85	82	78	95
Seated Patrons in Cafe, per table	58	69	73	75	67	65	62	58	75
Standing Patrons in Bar, 200pax	75	86	90	92	84	82	79	75	92
Gymnasium, $L_{p,verb}$	96	86	77	68	60	53	55	56	75
Music Internal Noise Levels (Band Music), $L_{p,verb}$	100	86	82	83	80	75	74	71	85
Hall AC plant (Mitsubishi, 18 kW) each, L_p at 1m	76	73	72	69	64	60	55	51	70
Offices AC plant (Fujitsu, 7-8 kW, L_p at 1m	52	55	50	48	49	42	40	32	52
Toilet Exhaust Fan (on roof)	68	69	69	65	60	56	51	-	67
Kitchen Exhaust Fan (on roof)	73	79	80	72	74	69	67	54	78
Car Doors Closing (Sound Power, dB L_{max})	71	74	77	81	80	78	72	61	84

With regards to *Table 3-2*, please note the following:

- Music internal noise levels are based on typical amplified band music taken from similar projects, and are taken to apply at 1 m from an external wall and the ceiling i.e. noise levels near the stage band or at the centre of the room may be higher. Based on the internal sound pressure levels and the building elements properties (refer *Section 3.4*), the software then calculates the sound power levels of each element i.e. doors, glazing, walls, roof.
- For the group of people gathering within the hall, 400 people are assumed but only 50 % talking simultaneously at a level of 72 dB L_{Aw10} each. The gathering was modelled as an area source located 1.5 m above ground level within the Hall;
- For the Cafes, it was assumed that up to four people are seated at each table but only 50 % talk simultaneously at a level of 72 dB L_{Aw10} each.
- The Gymnasium internal noise levels are considered to be dominated by music within the space. The selected noise levels are at 1 m from the walls and ceiling, and were taken from file data for gyms.
- Car doors closing were modelled as point sources 1.0 m above ground level; and,
- The mechanical plant was assumed to comprise of one large capacity AC unit for the hall, one large capacity AC unit servicing both the Gymnasium and Bar area, and one small AC unit each for the Cafe areas and other rooms and offices within the building, and exhaust fans for the toilets and kitchen range hood. All were modelled at roof level and as point sources, with the AC plant located 1 m above roof level and the exhaust fans located 0.5 m above the roof.

4 RESULTS

The noise levels at the closest receivers were predicted for the following scenarios:

- Gathering of up to 400 people with live band music within the Main Hall (L_{10}). This scenario includes the Hall AC plant only and toilet exhausts noise e.g. night-time dance;
- 'Worst-case' operations which include noise emissions from the Cafes, Bar Area and the Gymnasium, as well as all mechanical plant e.g. full daytime operation, but Main Hall not used (L_{10});
- Car doors closing in the car park (L_{max}).

Table 4-1 presents a summary of the overall predicted noise levels at each receiver. The individual contribution of the music and patron noise, and air conditioning plant noise at each receiver is also presented in brackets where applicable. Table 4-2 then presents the noise levels from each area: Cafes, Bar and Gymnasium, as well as the mechanical plant noise contribution.

Figures 4-1 to 4-3 show the overall predicted noise levels as contour maps at ground level (1.5 m AGL) as well as the location of each receiver.

Table 4-1 Overall Predicted Noise Levels for Various Scenarios

Receiver	Facade Orientation	400pax in Hall ¹ With Music (and Mech. Plant), dB L_{A10}	'Worst-case' Operations ² dB L_{A10}	Car Doors dB L_{Amax}
R1	NW	42 (28)	40 (40)	17
R2	SW	33 (18)	36 (36)	16
R3	NE	27 (13)	35 (33)	31
R4	N	23 (8)	30 (28)	27
R5	N	24 (18)	29 (29)	34
R5	E	24 (17)	29 (29)	28
R6	N	26 (17)	28 (28)	29
R7	NE	26 (11)	31 (29)	35
R7 (Upper Floor)	NE	22 (10)	28 (26)	39
R7	SE	24 (10)	29 (27)	35
R7 (Upper Floor)	SE	22 (10)	28 (26)	39
R8	E	24 (14)	29 (29)	40
R9	NW	36 (32)	37 (37)	15

Notes:

1. Music and patrons noise level contribution shown in brackets.
2. Air conditioning plant noise contribution shown in brackets.

Table 4-2 'Worst-case' Operations Predicted Noise Levels for Each Area

Receiver	Facade Orientation	Bar	Gymnasium	Ground Floor Cafe	Upper Floor Cafe	Mechanical Plant
R1	NW	14	16	< 10	< 10	40
R2	SW	13	15	< 10	< 10	36
R3	NE	20	28	< 10	< 10	33
R4	N	14	23	< 10	< 10	28
R5	N	11	10	< 10	14	29
R5	E	11	10	< 10	13	29
R6	N	11	10	< 10	10	28
R7	NE	25	18	< 10	13	29
R7 (Upper Floor)	NE	23	16	< 10	12	26
R7	SE	24	17	< 10	12	27
R7 (Upper Floor)	SE	23	16	< 10	12	26
R8	E	15	12	< 10	15	29
R9	NW	16	17	< 10	< 10	37

It is noted that the external building fabric consists of concrete tilt panels and mostly fixed glazing. As such, noise breaking out from the various occupied areas e.g. Cafes, Gym and Bar, are somewhat mitigated. This is shown in the above results with the noise levels from the individual areas being significantly lower than that of the mechanical plant at all the receivers.

The only exception to the above would be the Gymnasium noise breaking out via the external glass facade. This is due to the overall area of glazing and the fact internal noise levels are dominated by music with a reasonable level of low frequency, resulting in noise levels similar to that of the mechanical plant at receiver R3.

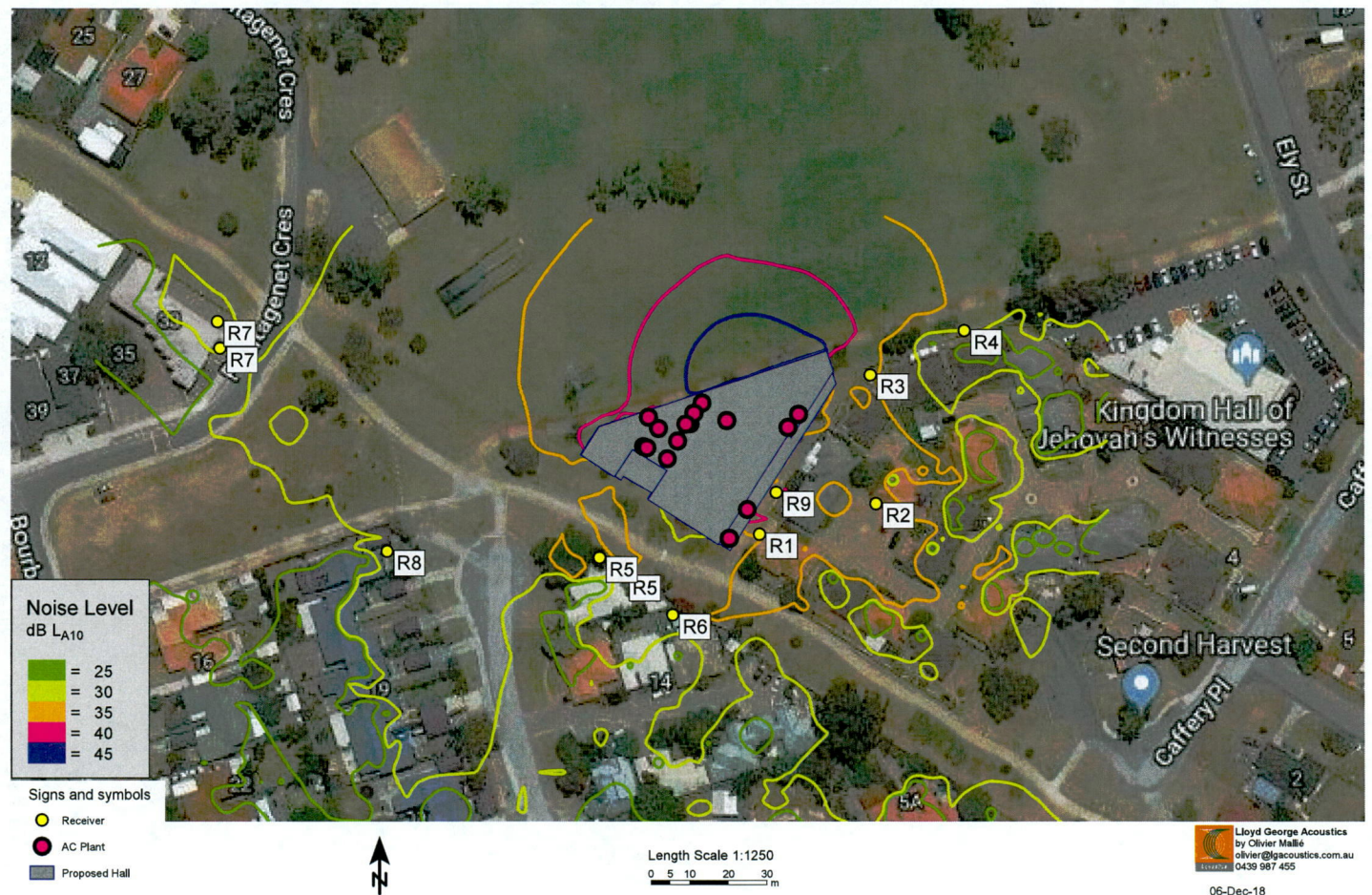
Proposed Community Hall - Social Event With Music and Dance
 Goodchild Park (#30 Plantagenet Crescent), Hamilton Hill

Figure 4-1



Proposed Community Hall - 'Worst-case' Operations (Cafes, Bar Area and Gymnasium Fully Occupied) Including Mechanical Plant
 Goodchild Park (#30 Plantagenet Crescent), Hamilton Hill

Figure 4-2



Proposed Community Hall - Car Doors Closing In Additional Parking Area
 Goodchild Park (#30 Plantagenet Crescent), Hamilton Hill

Figure 4-3



5 ASSESSMENT

5.1 Social Event With Music

It is proposed to hold such events on weekends between 6pm and midnight and therefore the most stringent assigned noise level is the night-time L_{A10} . For this scenario it is noted that mechanical plant associated with the Hall e.g. AC and toilet exhaust fans, were also assumed to operate between those times.

From the modelling, it is noted the contribution from music to the overall noise levels was also obtained, and this is shown in brackets in *Table 5-1*. As can be seen, although music forms part of the noise emissions, mechanical plant was found to dominate the overall noise levels at all receivers. As such, it was considered that music would only be potentially audible at a level of 25 dB(A) or higher, which in this case occurs at receivers R1 and R9. At these receivers, the predicted music noise level was adjusted by +10 dB (refer *Section 2*) and then combined to the mechanical plant level. At all other receivers, where mechanical plant noise dominates, tonality is likely to be present in the noise emissions and therefore a +5 dB adjustment (refer *Section 2*) was made to the overall level.

Table 5-1 below assesses the noise levels at each location, and shows that exceedences are predicted at the closest receivers R1, R2 and R9.

At receiver R1, the toilet exhaust fans dominate the overall noise levels followed by the AC unit on the roof. It is noted that should music noise be considered in isolation, it would exceed the night-time assigned noise level due to the +10 dB adjustment. At receiver R9, the closest toilet exhaust fan dominate the overall noise levels however, music noise breaking out from the eastern walls e.g. wall behind the stage and the upper halves of the eastern walls, is also significant. As with receiver R1, the music noise alone would not comply with the night-time assigned noise level.

Based on the above, noise controls to the exhaust fans, Main Hall AC plant and the Main Hall eastern walls are required to achieve compliance at night-time. At receiver R2, the AC plant and exhaust fans dominate and therefore implementing noise controls to the mechanical plant would mitigate noise levels at R2 to compliance.

Table 5-1 Assessment of Social Event With Music Noise Levels

Receiver	Assigned Noise Level ¹ dB L _{A10}	Predicted Noise Level ² dB L _{A10}	Adjusted Noise Level ³ dB L _{A10}	Calculated Exceedance
R1	35	42 (28)	43 (41+38)	7 dB
R2	35	33 (18)	38	3 dB
R3	35	28 (13)	33	Complies
R4	35	23 (8)	28	Complies
R5	35	24 (18)	29	Complies
R5	35	24 (17)	29	Complies
R6	35	26 (17)	31	Complies
R7	35	26 (11)	31	Complies
R7 (Upper Floor)	35	22 (10)	27	Complies
R7	35	24 (10)	29	Complies
R7 (Upper Floor)	35	22 (10)	27	Complies
R8	35	24 (14)	29	Complies
R9	NW	36 (32)	43 (34+42)	7 dB

Notes:

1. The assigned noise level is as defined in Table 2-3.
2. From Table 4-1 with the contribution of music in brackets.
3. Adjustments of + 10 dB for music and +5 dB for tonality applied where applicable.

In relation to the mechanical plant, details are not known at this stage and therefore the following is to be considered during detailed design:

- Main Hall AC plant to be selected so as to achieve an overall sound power level of 70 dB(A) or less at night-time e.g. plant can operate in a 'silent mode';
- Main Hall toilets exhaust system to consist of above ceiling fan(s) with silencer(s) and be fully ducted to the roof;
- Select fans which can operate at variable speed; and,
- Use of local noise barriers around the plant.

With regards to the music noise break out, the following would be required to achieve compliance at all times:

- Provide a discontinuous dry wall construction to the east walls comprising of a single layer of 13 mm plasterboard on steel stud frame, with the stud frame offset from the wall by at least 20 mm and the cavity filled with minimum 75 mm thick insulation with density of 14 kg/m³. This additional dry wall is not technically required on the sections of the wall separating the Hall to other rooms e.g. hall toilets at ground level or storage room;
- Minimise low frequency noise and no subwoofer to be used within the Main Hall; and,
- Speakers in the Main Hall should not be mechanically fixed to the soffit or external walls and self-supporting system or resilient mounting should be used instead.

It is noted that internal acoustics considerations to minimise reverberant levels do not form part of this scope and should be addressed during detailed design to ensure reverberant levels within the Main Hall are controlled. This may also result in lower internal noise levels within the Hall and therefore the above requirements may also be reviewed.

5.2 ‘Worst-case’ Operations

This scenario represents the noise emissions from the Community Hall at full occupancy, which also means that all mechanical plant is operating e.g. kitchen exhaust fan, toilets exhausts and the ACs for various spaces. This could be considered a conservative assessment as it is unlikely that all spaces: ground floor and upper floor Cafes, the Bar and the Gymnasium would be used at full capacity simultaneously.

This scenario is expected to occur during the daytime only e.g. typical Sunday morning/afternoon i.e. open from 9am on Sunday morning and until 10pm on any day. As such, the most critical assigned noise level is the L_{A10} for the Sunday daytime and weekday evening time of 40 dB.

In the evening, it is possible for annoying characteristics such as tonality to be present in the noise emissions at the closest receivers and therefore a +5 dB adjustment was made (refer Section 2).

Table 5-2 below assesses the noise levels at each location, and shows that exceedences are predicted at the closest receivers R1 and R2.

Table 5-2 Assessment of ‘Worst-case’ Operations Noise Levels

Receiver	Assigned Noise Level ¹ dB L _{A10}	Predicted Noise Level ² dB L _{A10}	Adjusted Noise Level ³ dB L _{A10}	Calculated Exceedance
R1	40	40 (40)	45	5 dB
R2	40	36 (36)	41	1 dB
R3	40	35 (33)	40	Complies
R4	40	30 (28)	35	Complies
R5	40	29 (29)	34	Complies
R5	40	29 (29)	34	Complies

Receiver	Assigned Noise Level ¹ dB L _{A10}	Predicted Noise Level ² dB L _{A10}	Adjusted Noise Level ³ dB L _{A10}	Calculated Exceedance
R6	40	28 (28)	33	Complies
R7	40	31 (29)	36	Complies
R7 (Upper Floor)	40	28 (26)	33	Complies
R7	40	29 (27)	34	Complies
R7 (Upper Floor)	40	28 (26)	33	Complies
R8	40	29 (29)	34	Complies

Notes:

1. The assigned noise level is as defined in Table 2-3.
2. From Table 4-1.
3. Predicted noise adjusted by +5 dB for tonality.

As with the case of the weekend Social Events, the noise levels at all receivers are dominated by mechanical plant. At this stage the details of the mechanical plant are not known and therefore the following is to be considered during detailed design:

- Select quietest plant reasonably available;
- Select AC units which can operate with a 'Low' or 'quiet' mode at night-time i.e. before 9am on Sunday, noting that noise reductions of up to 7 dB can be achieved with such modes of operations depending on the type of unit;
- Select fans which can operate at variable speed;
- Design exhaust systems so that fan silencers or duct attenuators can be used, and orient duct outlets away from receivers; and
- Use of local noise barriers around the plant.

It is noted the noise contribution from the individual areas e.g. Cafes, Bar and Gymnasium, were also predicted (refer Table 4-2). From the results it can be seen that the noise emissions from the Cafes and Bar area are predicted to be below 25 dB(A). As such, and depending on the mechanical plant design, both Cafes could open at night-time i.e. before 9am on a Sunday and public holidays.

However, the Gym noise emissions are higher with predicted levels of 28 dB L_{A10} at receiver R3. As the Gym noise emissions consist of music, the predicted level should be adjusted by +10 dB (refer Section 2). This results in an assessable level of 38 dB L_{A10}, which would exceed the night-time assigned noise level. As such, music within the Gym should be turned off if the Gym is used at night-time.

5.3 Car Doors

Given the Social Events occur past 7 pm, the most stringent applicable assigned noise level is the night-time / evening time L_{Amax} , which is the same for both time periods i.e. from 7pm on any day (refer Table 2-3).

At such time, it is likely for impulsiveness to be present in the noise emissions and therefore a +10 dB adjustment was made to the predicted levels.

Table 5-3 below assesses the noise levels at each location.

Table 5-3 Assessment of Car Door Closing Noise Levels

Receiver	Assigned Noise Level ¹ dB L_{A10}	Predicted Noise Level ² dB L_{A10}	Adjusted Noise Level ³ dB L_{A10}	Calculated Exceedance
R1	55	17	27	Complies
R2	55	16	26	Complies
R3	55	31	41	Complies
R4	55	27	37	Complies
R5	55	34	44	Complies
R5	55	28	38	Complies
R6	55	29	39	Complies
R7	55	35	45	Complies
R7 (Upper Floor)	55	39	49	Complies
R7	55	35	45	Complies
R7 (Upper Floor)	55	39	49	Complies
R8	55	40	50	Complies

Notes:

1. The assigned noise level is as defined in Table 2-3.
2. From Table 4-1.
3. Predicted noise adjusted by + 10 dB for impulsiveness.

Based on the above it can be seen that car doors closing noise will comply with the assigned noise level at all receivers at all times.

6 CONCLUSIONS

The assessment carried out demonstrates that noise emissions associated with the proposed Community Hall, including the Cafes, Bar area and Gymnasium, to be located at Goodchild Park at #30 Plantagenet Crescent in Hamilton Hill, can comply with the Regulations for the proposed hours of operations, provided the noise breakout from the Main Hall, and the noise emissions from the mechanical plant are mitigated as described in *Section 5*.

As details of the mechanical plant are not yet known, this assessment was based on various assumptions in relation to the plant location and noise levels. The noise emissions from the mechanical plant are therefore to be reviewed during detailed design to ensure compliance with the Regulations can be achieved. The following are generic considerations to assist with initial design and plant selection:

- Main Hall AC plant to be selected so as to achieve an overall sound power level of 70 dB(A) or less at night-time e.g. plant can operate in a 'silent mode';
- Main Hall toilets exhaust system to consist of above ceiling fan(s) with silencer(s) and be fully ducted to the roof;
- All plant to be selected to be the quietest reasonably available;
- Select AC units which can operate with a 'Low' or 'quiet' mode at night-time, noting that noise reductions of up to 7 dB can be achieved with such modes of operations depending on the type of unit;
- Select fans which can operate at variable speed; and,
- Install noise barriers around the plant.

With regards to the music noise break out, the following would be required to achieve compliance at all times:

- Provide a discontinuous dry wall construction to the east walls comprising of a single layer of 13 mm plasterboard on steel stud frame, with the stud frame offset from the wall by at least 20 mm and the cavity filled with minimum 75 mm thick insulation with density of 14 kg/m³. This additional dry wall is not technically required on the sections of the wall separating the Hall to other rooms e.g. hall toilets at ground level or storage room;
- Minimise low frequency noise and no subwoofer to be used within the Main Hall; and,
- Speakers in the Main Hall should not be mechanically fixed to the soffit or external walls and

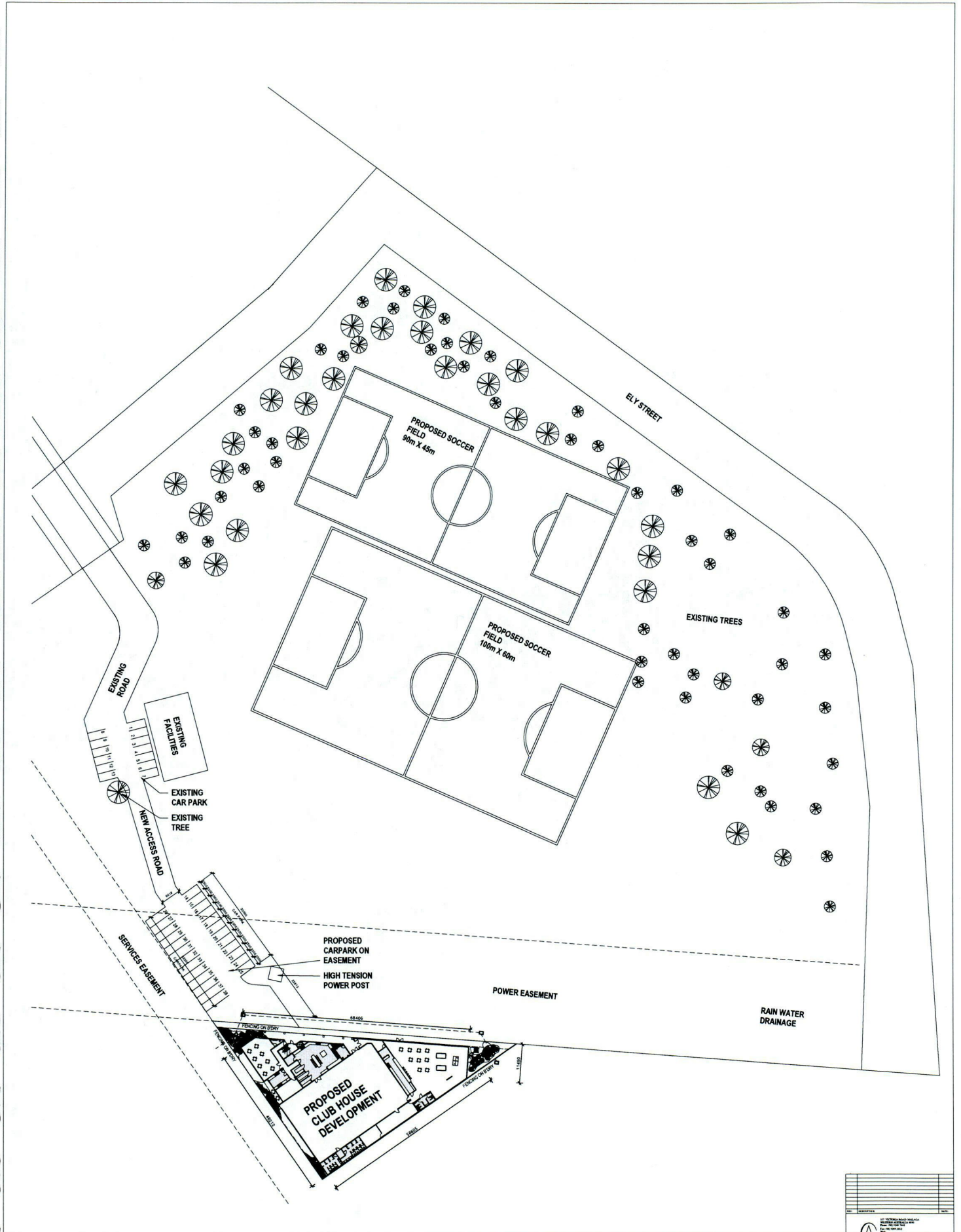
Finally, in addition to the above, the following best practices should also be implemented:

- The stage in the Main Hall is to be constructed so as to be mechanically isolated from the external walls to minimise structure borne noise;
- Acoustical treatments to within the Main Hall are likely required to control reverberant noise. This should be reviewed during detailed design;
- The entry door to the Bar area is to be kept closed after 10pm i.e. door fitted with self-closing mechanism;
- Low level ambient music only should be played in the Bar area; and,

- Large groups of people are not to congregate in the car park after 10pm. Patrons attending the site should be reminded of being mindful of the neighbouring residents and signs could also be located around the car parks to that effect.

Appendix A

Development Plans and Elevations

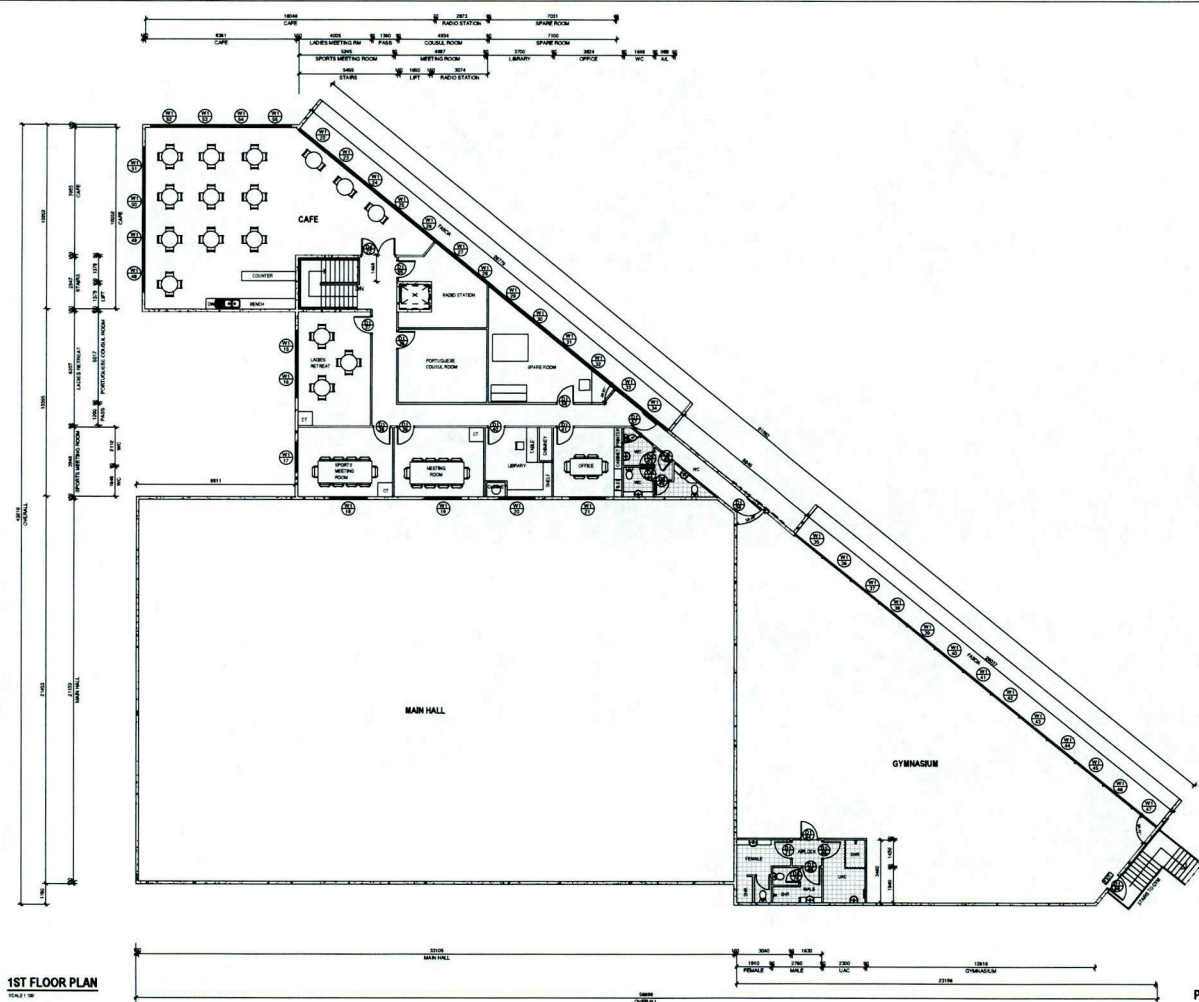


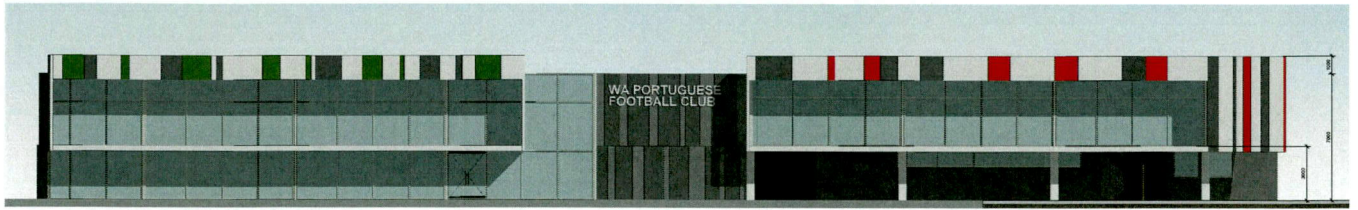
SITE PLAN
SCALE 1:500



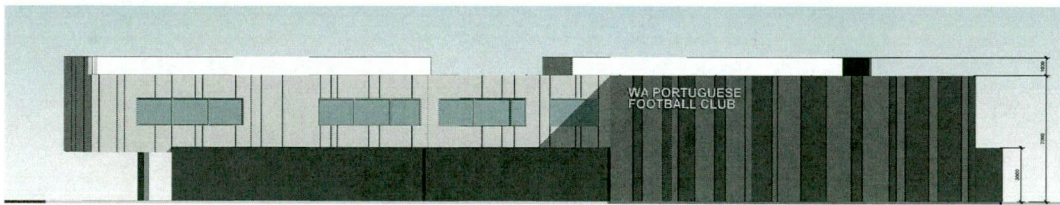
PRELIMINARY COPY

AUSTPEAK	
WA PORTADUESE CLUB INC.	
PROJECT ADDRESS: 5000 CHILD RESERVE, COCKBURN WA	
SHEET TITLE: SITE PLAN	
DRAWN BY: AUSTPEAK CONSTRUCTIONS	
APPROVAL	
DATE: JUNE 2018	SCALE: 1:500
A101	-





VIEW ON "A" FROM POS
SCALE 1:100



SIDE VIEW FROM LANEWAY
SCALE 1:100



3D ARTIST IMPRESSION



3D VIEW

PROJECT NAME	WA PORTUGUESE CLUB INC.
PROJECT ADDRESS	5000 OLD RESERVE, COCKBURN WA
SHEET TITLE	ELEVATIONS
DRAWN BY	ALISTEER CONSTRUCTIONS
APPROVAL	
DATE	JUNE 2018
BY	
AS01	

PRELIMINARY COPY

Appendix B

Terminology

The following is an explanation of the terminology used throughout this report.

Decibel (dB)

The decibel is the unit that describes the sound pressure and sound power levels of a noise source. It is a logarithmic scale referenced to the threshold of hearing.

A-Weighting

An A-weighted noise level has been filtered in such a way as to represent the way in which the human ear perceives sound. This weighting reflects the fact that the human ear is not as sensitive to lower frequencies as it is to higher frequencies. An A-weighted sound level is described as L_A dB.

Sound Power Level (L_w)

Under normal conditions, a given sound source will radiate the same amount of energy, irrespective of its surroundings, being the sound power level. This is similar to a 1kW electric heater always radiating 1kW of heat. The sound power level of a noise source cannot be directly measured using a sound level meter but is calculated based on measured sound pressure levels at known distances. Noise modelling incorporates source sound power levels as part of the input data.

Sound Pressure Level (L_p)

The sound pressure level of a noise source is dependent upon its surroundings, being influenced by distance, ground absorption, topography, meteorological conditions etc and is what the human ear actually hears. Using the electric heater analogy above, the heat will vary depending upon where the heater is located, just as the sound pressure level will vary depending on the surroundings. Noise modelling predicts the sound pressure level from the sound power levels taking into account ground absorption, barrier effects, distance etc.

L_{ASlow}

This is the noise level in decibels, obtained using the A frequency weighting and the S (Slow) time weighting as specified in IEC 61672-1:2002. Unless assessing modulation, all measurements use the slow time weighting characteristic.

$L_{A Fast}$

This is the noise level in decibels, obtained using the A frequency weighting and the F (Fast) time weighting as specified in IEC 61672-1:2002. This is used when assessing the presence of modulation only.

L_{APeak}

This is the greatest absolute instantaneous sound pressure in decibels using the A frequency weighting as specified in IEC 61672-1:2002.

L_{Amax}

An L_{Amax} level is the maximum A-weighted noise level during a particular measurement.

L_{A1}

An L_{A1} level is the A-weighted noise level which is exceeded for one percent of the measurement period and is considered to represent the average of the maximum noise levels measured.

L_{A10}

An L_{A10} level is the A-weighted noise level which is exceeded for 10 percent of the measurement period and is considered to represent the "intrusive" noise level.

L_{Aeq}

The equivalent steady state A-weighted sound level ("equal energy") in decibels which, in a specified time period, contains the same acoustic energy as the time-varying level during the same period. It is considered to represent the "average" noise level.

L_{A90}

An L_{A90} level is the A-weighted noise level which is exceeded for 90 percent of the measurement period and is considered to represent the "background" noise level.

One-Third-Octave Band

Means a band of frequencies spanning one-third of an octave and having a centre frequency between 25 Hz and 20 000 Hz inclusive.

L_{Amax} assigned level

Means an assigned level which, measured as a $L_{A\ Slow}$ value, is not to be exceeded at any time.

L_{A1} assigned level

Means an assigned level which, measured as a $L_{A\ Slow}$ value, is not to be exceeded for more than 1% of the representative assessment period.

L_{A10} assigned level

Means an assigned level which, measured as a $L_{A\ Slow}$ value, is not to be exceeded for more than 10% of the representative assessment period.

Tonal Noise

A tonal noise source can be described as a source that has a distinctive noise emission in one or more frequencies. An example would be whining or droning. The quantitative definition of tonality is:

the presence in the noise emission of tonal characteristics where the difference between -

- (a) the A-weighted sound pressure level in any one-third octave band; and
- (b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3 dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as $L_{A\ Slow}$ levels.

This is relatively common in most noise sources.

Modulating Noise

A modulating source is regular, cyclic and audible and is present for at least 10% of the measurement period. The quantitative definition of modulation is:

a variation in the emission of noise that —

- (a) is more than 3 dB $L_{A\ Fast}$ or is more than 3 dB $L_{A\ Fast}$ in any one-third octave band;
- (b) is present for at least 10% of the representative.

Impulsive Noise

An impulsive noise source has a short-term banging, clunking or explosive sound. The quantitative definition of impulsiveness is:

a variation in the emission of a noise where the difference between $L_{A \text{ peak}}$ and $L_{A \text{ Max slow}}$ is more than 15 dB when determined for a single representative event;

Major Road

Is a road with an estimated average daily traffic count of more than 15,000 vehicles.

Secondary / Minor Road

Is a road with an estimated average daily traffic count of between 6,000 and 15,000 vehicles.

Influencing Factor (IF)

$$= \frac{1}{10} (\% \text{ Type A}_{100} + \% \text{ Type A}_{450}) + \frac{1}{20} (\% \text{ Type B}_{100} + \% \text{ Type B}_{450})$$

where :

% Type A₁₀₀ = the percentage of industrial land within
a 100m radius of the premises receiving the noise

%TypeA₄₅₀ = the percentage of industrial land within
a 450m radius of the premises receiving the noise

% Type B₁₀₀ = the percentage of commercial land within
a 100m radius of the premises receiving the noise

%TypeB₄₅₀ = the percentage of commercial land within
a 450m radius of the premises receiving the noise

+ Traffic Factor (maximum of 6 dB)

= 2 for each secondary road within 100m

= 2 for each major road within 450m

= 6 for each major road within 100m

Representative Assessment Period

Means a period of time not less than 15 minutes, and not exceeding four hours, determined by an inspector or authorised person to be appropriate for the assessment of a noise emission, having regard to the type and nature of the noise emission.

Background Noise

Background noise or residual noise is the noise level from sources other than the source of concern. When measuring environmental noise, residual sound is often a problem. One reason is that regulations often require that the noise from different types of sources be dealt with separately. This separation, e.g. of traffic noise from industrial noise, is often difficult to accomplish in practice. Another reason is that the measurements are normally carried out outdoors. Wind-induced noise, directly on the microphone and indirectly on trees, buildings, etc., may also affect the result. The character of these noise sources can make it difficult or even impossible to carry out any corrections.

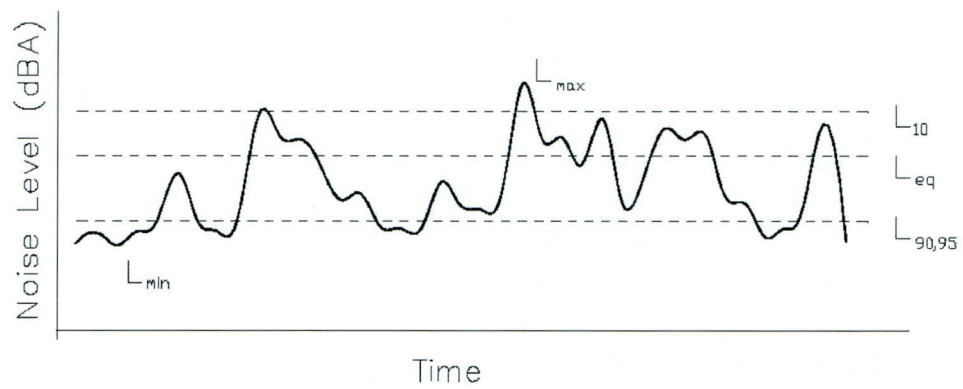
Ambient Noise

Means the level of noise from all sources, including background noise from near and far and the source of interest.

Specific Noise

Relates to the component of the ambient noise that is of interest. This can be referred to as the noise of concern or the noise of interest.

Chart of Noise Level Descriptors



Typical Noise Levels

