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21 December 2015

OUR REF: 4942

The General Manager
Lake Macquarie City Council
Box 1906
HRMC NSW 2310

ATTENTION: Chris Dwyer

Dear Chris,

RE: DA\1657\2015 – HEALTH SERVICES FACILITY LOT 100 DP 1141495
1A DUDLEY ROAD, CHARLESTOWN NSW 2290

1. INTRODUCTION AND BACKGROUND

We refer to your letter dated 19 November 2015 and request for additional information. The purpose of this letter is to outline how we have addressed each of your comments, or indicate how we will address comments as part of additional information to be provided separately. For clarity we have addressed each of the comments in the order set out in your letter. The letter has been informed by advice from specialists including the architect.

2. BUILDING HEIGHT

The proposed development provides for long-term health improvements of the Lake Macquarie and broader population. The development will provide for management of mental health through a purpose built facility and as such a long-term view has been considered for the building design and future operations. This long-term view requires a building that exceeds the current permissible building heights that are considered unreasonable and unnecessary for this site.

Council will shortly receive an application to amend the Lake Macquarie Local Environmental Plan 2014 (LEP) to provide higher permissible building heights for the site. The objective of the planning proposal is to amend the Height of Buildings Map in the LEP. The planning proposal will seek to amend existing Height of Buildings Map to a Maximum Building Height of 30 metres, or as agreed with Council.

The intended outcome of the proposal is to permit future health related activities at the site in accordance with the needs of the community. The current development application has been submitted prior to the request to amend maximum permissible building height as mental health is a significant issue in the community and a dedicated facility is required as soon as possible.

The current maximum permissible building heights are unreasonable and unnecessary for this site as it has been owned by NSW Hunter New England Health for many years, has been used as a health facility for many years and a long-term view of the opportunities of the site is required. The site provides opportunity for a dedicated mental health facility to service Lake Macquarie and the broader Hunter

community and a building design that meets the needs of the community is critical rather than being unreasonable constrained by a building height development standard.

The design has considered the following:

- proposed building consists of a basement carpark and two storeys of dedicated mental health facilities
- upper portions of the building (above the maximum 8.5 metre building height) consists of services such as air conditioning and lift over run. The building is architecturally designed and will use materials in keeping with the location and suitable to a modern health facility
- provision of under croft car park allows secure parking for Fleet vehicles without need for chain mesh fencing
- clinically a 2 storey building allows for clear staff / patient separation zones without elongating
- the multi storey also allows for integration of two clinical teams (upstairs) whilst maintaining separated zones clinically down stairs
- there are medium term plans to develop the site as a health precinct and it is unreasonable to limit that opportunity by an unnecessary development standard
- a proposed future community health building to the south will allow integration of both Clinical and Staff Spaces more in keeping with similar clinical settings (e.g. Raymond Terrace HealthOne) that are efficient to operate
- Wansey Building is an existing Multi-storey building that continues to provide health care for the community.

When viewed from a broader perspective of providing a dedicated health facility that will meet the needs of visitors and staff in the long-term it is unreasonable to limit that opportunity with a building height development standard of 8.5 metres.

3. FLORA AND FAUNA

Additional information (letter dated 2 December 2015) in relation to flora and fauna is provided in Attachment 1. In relation to minimum survey effort requirements Firebird ecoSultants Pty Ltd state trapping and spotlighting occurred with no gliders found in any traps or through spotlighting. Furthermore, the only hollow bearing tree onsite was occupied by at least two Brushtail Possums. The letter states site in question is essentially cut off from the corridor to the south for Squirrel Gliders, which prefer a gliding distance of less than 35m between canopy trees.

In relation to Koala habitat indirect searches for evidence of Koala included searches for scats and scratches on tree trunks, particularly targeting primary browse species. No evidence of Koala was found within the site and no individuals were observed. A review of the Atlas of NSW Wildlife also shows 4 records of Koalas with a 5km radius and given the urban landscape of the Charlestown area it is considered unlikely that the species occurs on site.

As a result the site is not considered to constitute core Koala habitat under SEPP 44 and no further provisions of the SEPP 44 apply.

The letter confirms that the proposal will not impact on squirrel gliders or Koalas.

4. ARBORIST

An Arborist Report is being prepared and will come separately.

5. ACOUSTIC

A Noise Impact Assessment has been prepared by Muller Acoustic Consulting (Attachment 2). The assessment quantified noise levels from operation, construction and road intrusion. The results of the assessment demonstrate that operational noise levels would satisfy the relevant PSNLs based on the current designs.

Construction noise associated with the facility has the potential to exceed relevant criteria at several receivers, although it is noted that the closest receiver (C3) is accommodation associated with the Wansley Centre and may not be occupied during the day assessment period. Notwithstanding, reasonable and feasible noise management and control measures have been included in this NIA for consideration. Additionally, where rolling of the carpark is being completed, careful selection of the size of the roller should be made taking into consideration human comfort and vibration damage criteria.

Road noise intrusion associated with the project is expected to satisfy relevant internal criteria. Based on the noise impact assessment results, there would be no noise related issues which would prevent Council approving the use of the land for the proposed facility. Additionally, the results of the assessment show compliance with the relative road noise guideline. Accordingly, no ameliorative measures would be required. Notwithstanding, it is recommended that during construction, noise control and management measures provided in the report are adopted to minimise impacts on the surrounding community.

Recommendations have been provided during construction as follows:

- toolbox and induction of personnel prior to shift to discuss nose control measures that may be implemented to reduce noise emissions to surround receivers
- training (of employees to quieter work practices)
- equipment which is used intermittently is to be shut down when not in use
- building condition surveys
- scheduling of work (i.e. when residents are not present)
- all plant should be shut-down when not in use. Plant to be parked / started at farthest point from relevant assessment locations
- operating plant in a conservative manner (no over-revving)
- selection of the quietest suitable machinery available for each activity
- avoidance of noisy plant / machinery working simultaneously where practicable;
- notify residences in advance of work;
- where possible, all plant are to utilise a broad band reverse alarm in lieu of the traditional hi frequency type reverse alarm;
- minimising the need for reversing or movement alarms;
- conduct noise monitoring throughout the proposal work; and
- undertake letter box drops to notify receivers of potential work.

To minimise vibration impacts during rolling activities, it is recommended that roller selection takes into account relevant offset distances to receivers to achieve both the human comfort and structural damage criteria.

6. TRAFFIC AND TRANSPORTATION

Additional information on traffic and transportation is provided in Attachment 3 and below.

Staffing

The building will be occupied by two teams, Child and Adolescent Mental Health Service (CAMHS) and Lake Macquarie Mental Health Service (LMMHS).

Their Staffing level is:

- CAMHS 12.0 FTE of which 1.5 FTE is Clerical / Reception
- LMMHS 45.0 FTE of which 3.5 FTE is Clerical / Reception

For these two items:

LMMHS

- 8 FTE's are shift workers and cover day / afternoon shift, 7 days per week. i.e. there are only 2 persons maximum from this pool in the building at any one time.
- 8 FTE's are based at the Mater Hospital Inpatient Mental Health Unit and commence work at the Mater each day and split their time approximately equally between the two facilities.
- LMMHS has a significant outreach program where staff spend their day in the community or at other facilities. An outreach component is required due to the unreliability of the appointment based system for their clients. To resource this:
    - 2 nursing staff do the East Lake Macquarie Area
    - 2 nursing staff do the West Lake Macquarie Area
- Allied Health Team (psychologists, occupational therapists) looks after both the East and West Lake Macquarie Area.
- Rehabilitation Team (nurses, psychologists, and occupational therapists) looks after both the East and West Lake Macquarie Area.
- Outreach programs, as well as home visits, include specific clinics that are run at Toronto and in Morisset.
- Outreach Teams (generally in pairs for security) arrive at the facility for an 8am start each day, leave and operate in the community for the day and return at the completion of their day. There are 15-20 staff engaged in outreach at any point in time.

CAMHS

- Of the 12 FTE's, 1.5 are clerical and 10.5 are clinical.
- This team does not undertake any outreach programs and see children and adolescents in the facility.

Interview Rooms

CAMHS

- A recent audit of the use of the existing interview rooms showed a weekly average of 16 interviews booked in per day. Of these 12 per day only showed up, with the first interviews able to commence from 9:00am.

LMMHS

- The usage for the adult team is an average of 40 interviews booked in per day. Of these only 75% showed up, with the first interviews able to commence from 9:00am.

Group Room

- This room is used 1-2 times per week (max 12 people) from 9:00 – 11:00am. At other times the room is used for LMMHS & CAMHS team meetings and 'Telehealth' and video conferencing.

Vehicle Parking Provision

The facility is a community health facility and therefore not treated as a medical centre. A significant number of patients catch public transport as they previously did when the centre was based in Smith Street, Charlestown. The car park calculations based on a community facility are correct.

Car Parking Areas and Structures

The dimensions indicated on the drawings to prepare the Traffic Assessment Report indicated compliance with AS2890.1 – 2004. The drawings have been subsequently amended to address Council's concerns regarding obstructions within the parking spaces and the pedestrian crossings have been removed.

Vehicle Access

The existing "KEEP CLEAR" pavement markings on Dudley Road adjacent to James Street enables vehicles to turn right into the northern access even peak queues on Dudley Road extended past James Street.

The width of road available on Dudley Road is sufficient to enable southbound vehicles to pass a vehicle turning right into the existing southern access already servicing the Wansey Centre.

B.J. Bradley (Attachment 3) states "I can see no justifiable reason to widen the western side of Dudley Road between the Wansey Centre access and the Pacific Highway based on the additional traffic likely to be generated by the proposed development".

Servicing Areas

The proposed community mental health facility will have minimal delivery of supplies. Any supplies would be via courier style vans only. A designated loading area is unnecessary.

OnSite Bicycle Facilities

Bike racks are available for both staff and visitors. Staff racks to be located in basement car park.

Road Designs, Pedestrians and Cyclists

Widening of Dudley Road between the existing Wansey Centre access and the Pacific Highway is not justifiable based on the likely low traffic generation associated with the community mental health facility compared with the existing traffic volumes on Dudley Road.

There is a paved footpaths along the eastern side of Dudley Road south of the Pacific Highway with a bus stop located on the western side of Dudley Road just north of James Street and on the eastern side of Dudley Road just south of James Street.

The proposed Charlestown community mental health facility will provide a paved footpath to the western side of the building and there is no need to extend a footpath along the western side of Dudley Road between the northern access and the Wansey Centre access.

7. LANDSCAPE ARCHITECTURE

Building Siting

The building is deliberately faces towards the west. This fits with the longer term master plan to develop the site and have a Health precinct facing into the block. Changing the entry point will isolate the facility from future developments.

The outdoor screen area is a therapy space and has been designed to meet the needs of the patients using the area. Access is controlled by staff and the wall height is to provide a component of privacy / confidentiality. It is clinically located correctly and is a functional space.

Streetscape Design

Rainwater tanks are appropriately located and accessible for maintenance purposes. Screening of the tanks can be incorporated if required.

8. DISABLED ACCESS

An Access for People with Disabilities Assessment Report is provided in Attachment 4. The report identifies the level of compliance of access for people with disabilities with the current version of the Building Code of Australia and relevant legislation. Section 4.1 (of Attachment 4) considers accessibility requirements of the Building Code of Australia specifically Part D3, F2.4, and referenced standard AS1428.1-2009 - Design for access and mobility Part 1: General requirements for access - New building work.

The report concludes the proposed development has demonstrated a degree of accessibility. The drawings indicate that access to and within the building can be readily achieved.

The following areas/matters however have been identified as being able to satisfy the performance requirements of the BCA through the formulation of an alternative solution

Building Code of Australia matters

Clause D3.2:

With regard to compliance with the following requirement:

> An accessway must be provided to a building required to be
>
> accessible—
>
> (i). from the main points of a pedestrian entry at the allotment boundary

An alternative solution is being formulated by an accredited access consultant which will demonstrate that the proposed development satisfies the relevant performance requirements of the BCA.

Clause F2.4:

With regard to compliance with the following requirements:

> Unisex sanitary compartments must be provided on every storey containing sanitary facilities and where a storey has more than 1 bank of sanitary compartments, at not less than 50% of these banks in accordance with AS1428.1-2009.
>
> In addition to the unisex sanitary compartment, each bank of toilets must be provided with a sanitary compartment suitable for a person with an ambulant disability in accordance with AS 1428.1 and must be provided for use by males and females.

An alternative solution is to be formulated by an accredited access consultant which will demonstrate that the proposed development satisfies the relevant performance requirements of the BCA.

9. CRIME PREVENTION

The proposal has been formulated having regard to the principles of Crime Prevention through Environmental Design (CPTED). The four principles that are central to CPTED are the following:

- Surveillance – The attractiveness of crime targets can be reduced by providing opportunities for effective surveillance, both natural and technical. From a design perspective, "deterrence" can be achieved by the following:
  - Clear sightlines between public and private places
  - Effective lighting of public places
  - Landscaping that makes places attractive, but does not provide offenders with a place to hide or entrap victims.
- Access Control – Physical and symbolic barriers can be used to attract, channel or restrict the movement of people. They minimise opportunities for crime and increase the effort required to commit crime. Effective access controls can be achieved by creating:

- Landscapes and physical locations that channel and group pedestrians into target areas.
- Public spaces which attract, rather than discourage people from gathering.
- Restricted access to internal areas or high-risk areas (like car parks or other rarely visited areas). This is often achieved through the use of physical barriers.

- Territorial Reinforcement/Ownership – Community ownership of public spaces sends positive signals. People are more likely to visit, and feel comfortable in, places which feel owned and cared for. Community ownership also increases the likelihood that people who witness crime will respond to it quickly. Territorial reinforcement can be achieved through:
  - Design that encourages people to gather in public space and to feel some responsibility for its use and condition.
  - Design with clear transitions and boundaries between public and private space.
  - Clear design cues on who is to use space and what it is to be used for.
- Space and activity management - Involves the control, supervision, and care of space. All space, even well planned and well-designed areas need to be effectively used and maintained to maximise community safety. Places that are infrequently used are commonly abused. Space and activity management strategies are an important means of developing and maintaining *natural* community control. Space and activity management objectives can be achieved by:
  - Ensuring that management and staff are aware of their obligations under the Work, Health & Safety Act & Regulations and fire safety.
  - Designing spaces according to its intended use. This will ensure spaces are well-utilised and that the community will become natural guardians of the space.

Provided below is an assessment of the proposed development against the CPTED principles:

CPTED Principle	Proposed Development
Surveillance	The proposed development satisfies the principle of providing natural surveillance in the following ways: 1. The external vehicle entries provide clear lines of sight between public (Dudley Road) and semi-public (internal access roads and Wansey Centre) spaces. 2. The main building entry is oriented toward the central site area as opposed to being oriented toward Dudley Road. There is a clear line of sight between the internal access roads / Wansey Centre / Wansey Accommodation and the main building entry. There is a clear line of sight between Dudley Road and the eastern building façade. The building's orientation fits with the longer term master plan to develop the site and have a Health precinct facing into the block. Changing the entry point will isolate the facility from future developments. 3. Appropriate use of lighting for each component of the development (basement parking area, walkways, entry etc) maximises casual surveillance and limits concealment opportunities. 4. Areas adjoining pathways should be illuminated to avoid opportunities for concealment / entrapment

CPTED Principle	Proposed Development
	5. Continuous, even lighting should be provided within the basement parking area. White ceilings and walls in car parks greatly help to reflect light. 6. Security lighting should not illuminate observers or vantage points. In the case of factories and commercial applications, observers are more likely to be passing motorists and pedestrians outside the building. In this instance, lights should be directed towards buildings. 7. Lighting should meet minimum Australia and New Zealand Lighting Standards. Lighting objectives relevant to crime and fear reduction are outlined in Australian lighting standard AS/NZS 1158 for public streets, car parks and pedestrian areas. This and other standards specify the types and quantities of lighting that can be used in different applications. From crime prevention perspective, enclosed fire exits and corridors and require bright, even lighting. 8. Landscaping around the external entries and pathways should be maintained to prevent concealment opportunities and diminish the effectiveness of lighting. 9. Upper level windows provide additional natural surveillance opportunities to all areas of the site.
Access Control	The proposed development satisfies the principle of providing access control in the following ways: 1. The security of occupants is maintained by retaining clearly visible, easily identifiable entry to the site. 2. The basement car parking entry has a secure entry (access controlled using gate and key pad entry / intercom) with direct access to the upper levels of the buildings using security controlled lift services and stairs. 3. Pedestrian access around the site will be controlled to ensure it is legible, clearly defined, well-lit and visible to others. 4. Other aspects of the site will be subject of access control measures, such as the outdoor screen area (therapy space) and has been designed to meet the needs of the patients using the area. Access is controlled by staff and the wall height is to provide a component of privacy / confidentiality. It is clinically located correctly and is a functional space. Access control measures relate to the secure use of the space for staff and patients as opposed to mitigating the risk of crime.
Territorial	The proposed development satisfies the principle of providing

CPTED Principle	Proposed Development
Reinforcement/Ownership	territorial reinforcement in the following ways: 1. The paving and landscaping treatments provide a clear and positive interface with the public domain at street level. The layout of internal spaces at ground level, glazing and main entry activity will ensure a good level of passive surveillance. 2. Use of gates and other security measures (such as swipe card / pin code / key access) provide clear distinction between public and private spaces. 3. Generally, people recognise areas that are well used and cared for, and those that are not. Public and private areas displaying strong ownership (territorial) cues are less likely to be improperly used than those that don't. Maintenance regimes that promptly repair damage and maintain landscaping in the public / semi-public areas of the site will ensure provide. Existing site management and maintenance plans should be expanded to incorporate the new facility. 4. Signs should provide clear directions or instruction.
Space Management	The proposed development encourages the proper use of common spaces such as parking and pedestrian areas. The use of lighting, surface treatments and signage will clearly delineate the path of travel and define how the space is intended to be used (i.e. a path of travel between public and private spaces). For the parking areas the use of lighting and signage will ensure the space is used effectively in accordance with its intended use through the clear definition of public and private spaces. Ongoing maintenance of landscaping, lighting and signage will also ensure spaces continue to be used as they are intended.

10. EROSION AND SEDIMENT CONTROL

MPC Consulting Engineers have provided a response to Council's request for a Soil and Water Management Plan by stating "Civil engineering drawings marked C01, C02, C03 and C04 issued for DA on 17 August 2015 comply with DCP 2014 for Soil and Water Management" (Attachment 5).

11. CONCLUSION

This letter addresses additional information requested by Council. We also request a meeting with Council to discuss some of the details of the letter and any other information that Council may require as part of assessing the application.

If you require further information please do not hesitate to contact me on (02) 4942 5441.

Yours sincerely,

de Witt Consulting

Mark Maund
Town Planner

Emma Mason
Town Planner

Attachments

1 – Flora and Fauna
2 – Acoustic
3 – Traffic and Transport
4 – Access Report
5 – Erosion and Sediment

Attachment 1
Flora and Fauna

Firebird ecoSultants Pty Ltd
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PO Box 354, Newcastle NSW 2300
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2 December 2015

LAKE MACQUARIE CITY COUNCIL
C/- PRINCIPAL DEVELOPMENT PLANNER
PO BOX 1906
HUNTER REGIONAL MAIL CENTRE, NSW, 2310

ATTENTION: CHRIS DWYER

Dear Chris,

RE: PROPOSED COMMUNITY MENTAL HEALTH FACILITY
1A DUDLEY ROAD CHARLESTOWN (LOT 100 DP1141495)

Please find herewith a response in relation to your Lake Macquarie City Council (LMCC) dated 19 November 2015 requesting further ecological information.

Council comments are in ***italics*** with the response provided underneath.

Squirrel Glider

The ecological assessment meets the required minimum survey effort within the Lake Macquarie Flora and Fauna Survey Guideline, with the exception of impacts associated with squirrel glider Petaurus norfolcensis.

Information demonstrating compliance with the Draft Lake Macquarie Squirrel Glider Planning and Management Guidelines, in relation to survey effort, is requested.

Information is also requested regarding connectivity to adjacent habitat patches (i.e. measurements of height and distance between canopy trees) to determine if the site is viably connected for squirrel glider to other patches of habitat in the local area. This information is required to justify the argument that although the site is mapped as a 'corridor narrowed to less than 200m' in Council's Native Vegetation and Corridor Map (2011), the site has only tenuous links to other native vegetation patches and is at an end point of a series of non-connecting corridors.

Compliance under Draft Lake Macquarie Squirrel Glider Planning and Management Guidelines

Trapping was conducted by Firecbird ecoSultants Pty Ltd from the 30/9/2015 for the duration of five nights. This trapping targeted small/medium arboreal mammals through the placement of 20 Elliott traps at heights of 5 metres or greater on a mixture of eucalyptus at random locations. These traps were baited with a mixture of oats, peanut butter and honey rolled into small balls. The trap and tree trunk were also sprayed with a sugar solution to help attract nectariverous fauna. Elliott traps were checked for fauna every morning before temperatures started to climb. The trees were resprayed every morning with the sugar solution. No gliders were found within any of the traps within the site.

Spotlighting surveys were conducted on the 27/5/2015 and 28/5/2015 by Nicholas Alexander of Firebird ecoSultants. Arboreal fauna sighted were the Common Ringtail Possum (*Pseudocheirus peregrinus*) and Common Brushtail Possum (*Trichosurus vulpecula*). No gliders were observed within the site.

Winter flowering eucalypts were restricted to three Spotted Gums (*Corymbia maculata*) found adjacent to a carpark in the south of the site. These Spotted Gums were found to be less than 20 years old and most likely were planted as part of landscaping activities. While the Hill Banksia (*Banksia spinulosa* var. *collina*), a potential food source, was found to be present within the site, much of the understory is managed and mowed, and therefore its extent is limited to isolated plants in the unmanaged areas in the south west of the site.

Only 1 hollow bearing tree was observed within the site during surveys. This hollow, a termites nest on a stringybark, was at the time occupied by at least two Brushtail Possums.

Site Connectivity and Corridors

The site has been mapped as corridor narrowed to less than 200m in Council's Native Vegetation and Corridor Map (2011). The site is situated at the end of a corridor and is bordered by main roads to the north, east and west (Pacific Hwy and Dudley Rd). The corridor in question, which runs south between the Pacific Hwy and a residential area is connected by a Rehabilitation Urban Corridor which is evidenced by a 95m gap between canopy trees. This corridor is an area where fauna movement has been interrupted by urban land, but may be enhanced by revegetation and tree planting. As rehabilitation in this area is highly unlikely, the site in question is essentially cut off from the corridor to the south for Squirrel Gliders, which prefer a gliding distance of less than 35m between canopy trees. Canopy trees at either end of the Rehabilitation Urban Corridor are represented by mature Smooth-barked Apples (*Angophora costata*) at heights of 15-20m.

Fig 1. Northern end of Rehabilitation Urban Corridor/ south east corner of site.

Fig 2. Southern end of Rehabilitation Urban Corridor (95m to the south)

Two small areas of Partially Cleared Remnant Native Vegetation occur to the north (across Pacific Hwy) and east (across Dudley Rd). It is unlikely that these areas would offer habitat for Squirrel Gliders, due to their small size (0.1ha and 0.7ha respectively) and lack of connectivity to anything beyond the subject site.

SEPP 44 – Koala Habitat Protection

One of the dominant canopy tree species on the site, the broad leaved scribbly gum Eucalyptus haemastoma is listed on Schedule 2 of SEPP 44 as a feed tree species, and it is considered that the site is potential koala habitat in accordance with Clause 7 of the SEPP.

For Council to establish whether or not the land is a core koala habitat, an assessment of koala habitat at the site in accordance with the provisions of SEPP 44 is required in accordance with Clause 8 of the SEPP. Such assessment shall be undertaken in accordance with the Guidelines under the SEPP, by a person with appropriate qualifications and experience in biological science and fauna survey and management.

Consideration under SEPP 44 – 'Koala Habitat Protection'

Clauses 7 and 8 of the State Environmental Planning Policy 44 – 'Koala Habitat Protection' identify the land to which this policy applies. The land is contained with Lake Macquarie LGA (which is listed under Schedule 1) and is greater than 1 hectare in size (as per clause 6(c)) and therefore the SEPP applies to the site and proposed development.

First Consideration – Is the Land 'Potential Koala Habitat'?

Schedule 2 of State Environmental Planning Policy (SEPP) No. 44 – 'Koala Habitat Protection' lists 10 tree species that are considered indicators of 'Potential Koala Habitat'. The presence of any of the species listed on a site proposed for development triggers the requirement for an assessment for 'Potential Koala Habitat'. SEPP 44 defines potential Koala Habitat as:

"areas of native vegetation where the trees of the types listed in Schedule 2 constitute at least 15% of the total number of trees in the upper or lower strata of the tree component".

One species of eucalypt listed in Schedule 2 of SEPP 44 occurs within the site, being Broad-leaved Scribbly Gum (*Eucalyptus haemastoma*). The density of this species would represent at least 15% of the total number of trees in the upper strata therefore, the site is considered to constitute 'Potential Koala Habitat' as defined by the SEPP.

Second Consideration – Is the Land 'Core Koala Habitat'

SEPP 44 defines core Koala habitat as:

"an area of land with a resident population of Koalas, evidenced by attributes such as breeding females (that is, females with young) and recent sightings of and historical records of a population."

Indirect searches for evidence of Koala included searches for scats and scratches on tree trunks, particularly targeting primary browse species. No evidence of Koala was found within the site and no individuals were observed. A review of the Atlas of NSW Wildlife also shows 4 records of Koalas with a 5km radius and given the urban landscape of the Charlestown area it is considered unlikely that the species occurs on site.

As a result the site is not considered to constitute core Koala habitat under SEPP 44 and no further provisions of the SEPP 44 apply.

Yours faithfully
Firebird ecoSultants

Nicholas Alexander B..Sc., M.Ant.Sci

Ecologist / Bushfire Planner

Attachment 2
Acoustic

Noise Impact Assessment

Charlestown Community Mental Health Facility, Charlestown NSW.

Prepared for : Hunter New England Local Health District

December 2015

Muller Acoustic Consulting

Document Information

Noise Impact Assessment

Charlestown Community Mental Health Facility, Charlestown, NSW

Prepared for: NSW Health – Hunter New England Local Health District

Locked Bag 1

New Lambton NSW 2305

Prepared by: Muller Acoustic Consulting Pty Ltd

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Document ID	Status	Date	Prepared	Signed
MAC150208RP1	Final	15 December 2015	Oliver Muller	

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1 Introduction

Muller Acoustic Consulting Pty Ltd (MAC) has been commissioned by NSW Health – Hunter New England Local Health District to prepare a noise impact assessment (NIA) for a proposed Community Mental Health Facility (the 'facility') to be established at Lot 10 Dudley Road, Charlestown, NSW.

The assessment has been prepared to quantify noise emissions from the facility to surrounding commercial and residential receivers. The NIA has quantified potential operational and, construction noise emissions from the facility as well as road noise intrusion to the facility. Furthermore, where required, the assessment provides reasonable and feasible noise mitigation and management measures.

The assessment has been undertaken in accordance with the following documents :

- Environment Protection Authority (EPA) 2000, NSW Industrial Noise Policy (INP);
- Department of Environment and Climate Change (DECC) 2009, Interim Construction Noise Guideline (ICNG);
- Australian Standard AS 2436-2010 Guide to Noise Control on Construction, Maintenance and Demolition Sites;
- Department of Planning (DPI) 2008, Development Near Rail Corridors and Busy Roads – Interim Guideline;
- Standards Australia AS 1055.1:1997 - Acoustics - Description and measurement of environmental noise - General Procedures; and
- Standards Australia AS 2107:2000 - Acoustics - Recommended design sound levels and reverberation times for building interiors (AS2107).

A glossary of terms, definitions and abbreviations used in this report is provided in Appendix A.

1.1 Background

The proposed facility will provide long-term mental health assistance to the community. Proposed ingress and egress will be via one of two existing driveways on the eastern side of the site. Site plans (Appendix B) show details of the proposed development including location of the proposed building, site layout and access.

The proposed facility is a two storey building with a basement carpark. The maximum building height is approximately 9.7 metres to the parapet. Building materials include concrete beams and column, concrete blockwork, metal screening and aluminium panel cladding. In addition, an at grade carpark will be provided south of the building and accessed from the drive opposite Tiral Street.

Landscaping will be provided to minimise visual impact and will include the entry to the basement carpark and in front of the at grade carpark.

The operating hours of the facility will be from 8am to 5pm Monday to Sunday. Some staff will utilise the building until 11pm at night, however no visitors will attend the building after 5pm. The basement carpark provides a secure and safe parking area for staff at night. The facility will operate as follows:

- Maximum staff in the building at any time will be around 45 (from a total staff of approximately 70 people).
- Monday - Friday shift will start at 8am with appointments occurring between 9am – 3pm (approximately 10-12 per hour in total or about 72 per day).
- Some staff work 2 x shifts 7 days per week (up till 11pm) (about 12 staff of the 70 would be involved in shift work) with no visitors after 5pm.
- Visitors predominantly attend individual interviews of 30-60 minutes between 9am -3pm
- Group interviews involving around 10-15 patients (approximately once per week for about 2 hours).

Acoustically significant sources associated with the facility are primarily associated with mechanical ventilation and patient/staff car movements within the car parking areas.

The proposal incorporates an internal lift, see site plans Rodd & Hay Associates Pty Ltd, 2015 (Appendix B). The lift and associated motors are not situated on external façades of the building. Therefore, noise emissions associated with the lift and motor have not been included in this assessment as they are considered acoustically insignificant.

1.2 Receiver Review

The proposal will be situated at Lot 10 Dudley Road, Charlestown, NSW. Receivers in the locality surrounding the proposal are primarily residential and commercial. Figure 1 provides a locality plan identifying the position of receivers in relation to the proposal. The receiver addresses, MGA(56) coordinates and approximate distance to the project are summarised in Table 1. For assessment purposes the Wansley Centre and accommodation facility have been assessed as hospital wards in accordance with the INP. Additionally, this assessment has included a hypothetical receiver positon to represent the future residential/senior's living proposal planned for 27 Tiral Street.

Table 1 Receiver Locations

Receivers	Address	Type	Easting	Northing	Approximate Distance to Proposal (m)[1]
		Residential			
R1	8 Dudley Road	Residence	378060	6351445	68
R2	12 Dudley Road	Residence	378069	6351419	45
R3	1 Dudley Road	Residence	378098	6351259	96
R4	2A Tiral Street	Residence	378135	6351274	107
R5	27 Tiral Street	Future Seniors/Residence	378105	6351352	48
		Commercial			
C1	Lot 10 Dudley Road	Ambulance Control Centre	378008	6351413	43
C2	Lot 10 Dudley Road	Hospital ward	378019	6351303	50
C3	Lot 10 Dudley Road	Hospital Accommodation	378056	6351294	52

Note 1: Approximate distance from receiver to nearest façade of facility.

FIGURE 1 - LOCALITY PLAN

PROPOSED COMMUNITY AND MENTAL HEALTH FACILITY

0 50m

MAC
Muller Acoustic Consulting

2 Noise Policy and Guidelines

2.1 Operational Noise

The EPA released the NSW INP in January 2000. The INP provides a process for establishing noise criteria for consents and licences enabling the EPA to regulate noise emissions from scheduled premises under the Protection of the Environment Operations Act 1997.

The specific policy objectives of the INP are:

- to establish noise criteria that would protect the community from excessive intrusive noise and preserve amenity for specific land uses;
- to use the criteria as the basis for deriving project specific noise levels;
- to promote uniform methods to predict, quantify and assess noise impacts, including a procedure for evaluating meteorological effects;
- to outline a range of mitigation measures that could be used to minimise noise impacts;
- to provide a formal process to guide the determination of feasible and reasonable noise limits for consents or licences that reconcile noise impacts with the economic, social and environmental considerations of developments; and
- to carry out functions relating to the prevention, minimisation and control of noise from premises scheduled under the Act.

2.1.1 Assessing Intrusiveness

The intrusiveness criterion essentially means that the equivalent continuous noise level (LA_{eq}) from the proposal should not be more than 5dB above the existing rating background level (RBL) in any assessment period. Therefore, when assessing intrusiveness, the background noise needs to be measured.

2.1.2 Assessing Amenity

The amenity assessment is based on noise criteria relevant to a specific land use or locality. The criteria relate only to limiting cumulative or combined levels of industrial noise in a locality. Where existing industrial noise approaches the criterion value, then noise levels from proposed industries need meet the amenity criteria so that cumulative noise or 'industrial-creep' is minimised. The amenity assessment methodology takes into consideration areas of high traffic noise when assessing ambient industrial noise.

Private residences and other sensitive receivers potentially affected by the proposal are safeguarded by the EPA's suburban amenity category as per Table 2.1 of the INP. Table 2.1 of the INP for residential receivers is reproduced in Table 2.

Table 2 Receiver Locations – Assessing Amenity

Type of Receiver	Indicative Noise Amenity Area	Period	Recommended LAeq(Period) Noise Level, dBA	
			Acceptable	Recommended Max
Residential	Suburban	Day	55	60
		Evening	45	50
		Night	40	45
Commercial Premises	All	When in use	65	70
Hospital ward (external)	Noisiest 1-hour period	N/A	50	55

Note : Monday – Saturday Daytime 7am to 6pm; Evening 6pm to 10pm; Night-time 10pm to 7am. On Sundays and Public Holidays, Daytime 8am to 6pm; Evening 6pm to 10pm; Night-time 10pm-8am.

2.2 Construction Noise

The ICNG sets out procedures to identify and address the impacts of construction noise on residences and other sensitive land uses. This section provides a summary of noise objectives that are applicable to the assessment.

The ICNG provides two methodologies for the assessment of construction noise emissions:

- Quantitative, which is suited to major construction projects with typical durations of more than three weeks; and
- Qualitative, which is suited to short term infrastructure maintenance (<three weeks).

The methodology for a quantitative assessment requires a more complex approach, involving noise predictions from construction activities to the nearest relevant assessment locations.

The qualitative assessment methodology is a more simplified approach that relies on noise management strategies. This study has adopted a quantitative assessment approach and includes identification of potentially affected receivers, description of activities involved in the project, derivation of the construction noise criteria, quantification of potential noise impacts at receivers and, provides management and mitigation recommendations.

Table 3 summaries the ICNG recommended standard hours for construction.

Table 3 Recommended Standard Hours for Construction

Daytime	Preferred Construction Hours
Normal construction	Monday to Friday - 7am to 6pm
	Saturdays - 8am to 1pm
	Sundays or Public Holidays - No construction

These recommended hours do not apply in the event of direction from police, or other relevant authorities, for safety reasons or where required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm.

2.2.1 Construction Noise Management Levels

Table 4 reproduces the ICNG management levels for residential receivers. The construction noise criteria are the sum of the management level and relevant rating background level (RBL) for each specific assessment period.

Table 4 ICNG Residential Management Levels		
Time of Day	Management Level LAeq (15min)[1]	How to Apply
Recommended standard hours: Monday to Friday 7am to 6pm Saturday 8am to 1pm No work on Sundays or public holidays.	Noise affected RBL + 10dB.	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured LAeq(15min) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected 75dBA.	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: • times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences. • if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside recommended standard hours.	Noise affected RBL + 5dB.	A strong justification would typically be required for works outside the recommended standard hours. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable practices have been applied and noise is more than 5dBA above the noise affected level, the proponent should negotiate with the community. For guidance on negotiating agreements see section 7.2.2.

Note 1: The Rating Background Level (RBL) is an overall single figure background level representing each assessment period over the whole monitoring period. The RBL is used to determine the construction noise criteria for noise assessment purposes and is the median of the ABL's.

Table 5 presents the construction noise criteria for non-residential receivers in close proximity to the facility in accordance with Section 4.1.2 and 4.13 of the ICNG.

Table 5 ICNG Residential Management Levels – Other than residences

Land Use	Management Level LAeq (15min)
Offices, retail outlets	70 (external)
Hospital Wards an operating theatres	45 (internal)

2.3 Road Noise Intrusion

2.3.1 Development Near Rail Corridors and Busy Roads – Interim Guidelines

Guidance for the specification of internal noise levels of habitable rooms within hospitals is prescribed in Department of Planning's (DoP) Development near Rail Corridors and Busy Roads – Interim Guidelines (2008) ('the guideline').

The guideline outlines internal criterion levels as per Clause 102 (Road) of the State Environmental Planning Policy (SEPP) for Infrastructure (Infrastructure SEPP). Section 3 reproduces relevant criteria pertaining to road noise intrusion to the facility and are established with reference to the guideline.

2.4 Vibration Assessment Guidelines

2.4.1 Structural Damage Criteria

For structural damage, vibration should be assessed at the foundation of a building or structure. In the absence of an Australian Standard, German Standard DIN 4150 - Part 3: 1999 provides the strictest guideline levels of vibration velocity for evaluating the effects of vibration in structures. The limits presented in this standard are generally recognised to be conservative.

The DIN 4150 values (maximum levels measured in any direction at the foundation, or maximum levels measured in (x) or (y) horizontal directions, in the plane of the uppermost floor), are summarised in Table 6 and shown graphically in Figure 2 in the case of foundation levels. For residential and commercial type structures, the standard recommends safe limits as low as 5mm/s and 20mm/s respectively. These limits increase with frequency values above 10Hz as shown in Figure 2.

Table 6 Structural Damage Guideline

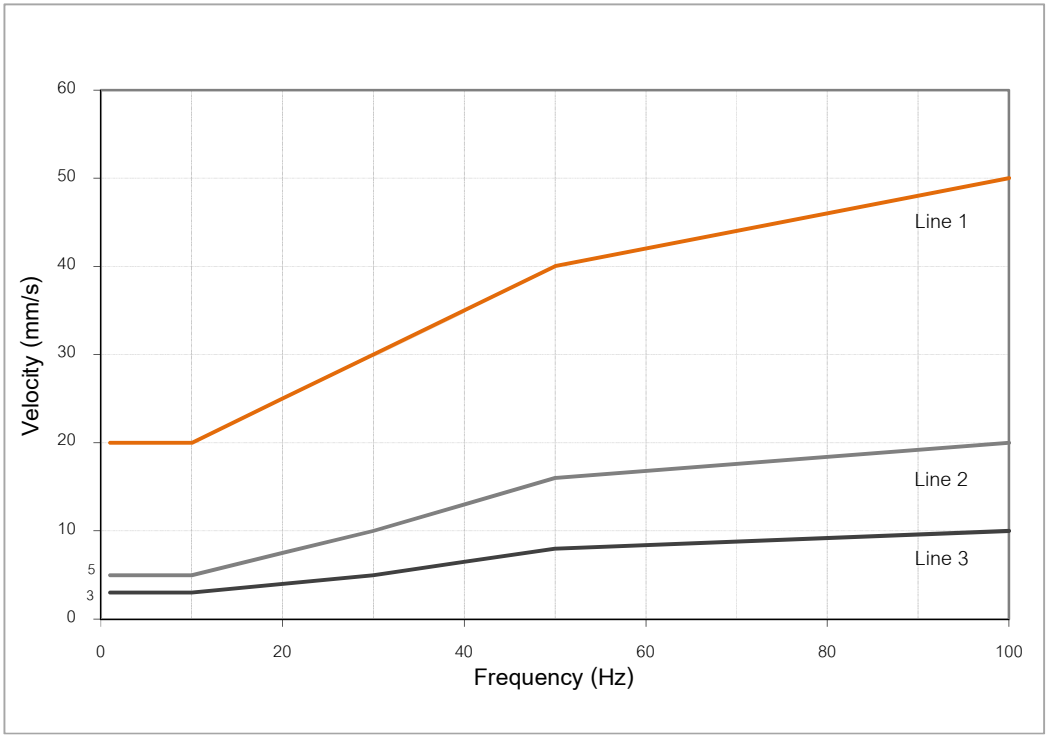
Line*	Type of Structure	Vibration Velocity in mm/s			
		At Foundation at a Frequency of			Plane of Floor of Uppermost Storey
		Less than 10Hz	10Hz to 50 Hz	50Hz to 100Hz	All Frequencies
1	Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
2	Dwellings and buildings of similar design and/or use	5	5 to 15	5 to 20	15
3	Structures that because of their particular sensitivity to vibration do not correspond to those listed in Lines 1 or 2 and have intrinsic value (e.g. buildings that are under a preservation order)	3	3 to 8	8 to 10	8

These levels are “safe limits”, for which damage due to vibration effects is unlikely to occur. “Damage” is defined in DIN 4150 to include even minor non-structural effects such as superficial cracking in cement render, the enlargement of cracks already present, and the separation of partitions or intermediate walls from load bearing walls.

Should such damage be observed without vibration levels exceeding the “safe limits” then it is likely to be attributable to other causes. DIN 4150 also states that when vibration levels higher than the “safe limits” are present, it does not necessarily follow that damage will occur.

As indicated by the criteria from DIN 4150 in Table 6, high frequency vibration has less potential to cause damage than lower frequencies. Furthermore, the “point source” nature of vibration from excavation and construction equipment causes the vibratory disturbances to arrive at different parts of nearby large structures in an out-of-phase manner, thereby reducing its potential to excite in-phase motion of the low order modes of vibration in such structures.

Figure 2 – DIN4150 Structural Vibration Safe Limits



2.4.2 Human Comfort – Assessing Vibration a Technical Guideline

Humans are far more sensitive to vibration than is commonly realised and may detect vibration levels which are well below levels that may cause damage to buildings or structures. Assessing vibration: a technical guideline was published in February of 2006 by the DECC and is based on guidelines contained in BS 6472 – 1992, Evaluation of human exposure to vibration in buildings (1-80Hz) and provides guidance on assessing vibration against human comfort.

The guideline presents preferred and maximum vibration values for use in assessing human responses to vibration and provides recommendations for measurement and evaluation techniques. At vibration values below the preferred values, there is a low probability of adverse comment or disturbance to building occupants. Where all feasible and reasonable mitigation measures have been applied and vibration values are still beyond the maximum value, it is recommended the operator negotiate directly with the affected community.

The guideline defines three vibration types and provides direction for assessing and evaluating the applicable criteria. Table 2.1 of the guideline provides examples of the three vibration types and has been reproduced in Table 7.

Table 7 Examples of types of vibration (from Table 2.1 of the guideline)		
Continuous Vibration	Impulsive Vibration	Intermittent Vibration
Machinery, steady road traffic, continuous construction activity (such as tunnel boring machinery)	Infrequent: Activities that create up to three distinct vibration events in an assessment period, e.g. occasional dropping of heavy equipment, occasional loading and unloading. Blasting is assessed using ANZECC (1990)	Trains, intermittent nearby construction activity, passing heavy vehicles, forging machines, impact pile driving, jack hammers. Where the number of vibration events in an assessment period is three or fewer these would be assessed against impulsive vibration criteria.

Continuous Vibration

Appendix C of the guideline outlines acceptable criteria for human exposure to continuous vibration (1-80Hz), the criteria are dependent on both the time of activity (usually daytime or night-time) and the occupied place being assessed. Table 8 reproduces the preferred and maximum criteria relating to measured peak velocity.

Table 8 Criteria for Exposure to Continuous Vibration

Place	Time	Peak Velocity (mm/s)[1, 2]	
		Preferred	Maximum
Critical working Areas (e.g. hospital operating theatres, precision laboratories)	Day or Night	0.14	0.28
Residences	Day	0.28	0.56
	Night	0.20	0.40
Offices	Day or Night	0.56	1.1
Workshops	Day or Night	1.1	2.2

Note 1: rms velocity (mm/s) and vibration velocity value (dB re 10^{-9} mm/s)

Note 2: values given for most critical frequency >8Hz assuming sinusoidal motion.

Intermittent Vibration

Intermittent vibration (as defined in Section 2.1 of the guideline) is assessed using the vibration dose concept which relates to vibration magnitude and exposure time.

Intermittent vibration is representative of activities such as impact hammering, rolling or general excavation work (such as an excavator tracking).

Section 2.4 of the Guideline provides acceptable values for intermittent vibration in terms of vibration dose values (VDV) which requires the measurement of the overall weighted rms (root mean square)

acceleration levels over the frequency range 1 Hz to 80 Hz. To calculate VDV the following formula (refer section 2.4.1 of the guideline) was used:

$$VDV = \left[\int_0^T a^4(t)dt \right]^{0.25}$$

Where VDV is the vibration dose value in $m/s^{1.75}$, a (t) is the frequency-weighted rms of acceleration in m/s^2 and T is the total period of the day (in seconds) during which vibration may occur.

The Acceptable Vibration Dose Values (VDV) for Intermittent Vibration is reproduced in Table 9.

Table 9 Acceptable Vibration Dose Values (VDV) for Intermittent Vibration ($m/s^{1.75}$)

Location	Daytime		Night-time	
	Preferred Value, $m/s^{1.75}$	Maximum Value, $m/s^{1.75}$	Preferred Value, $m/s^{1.75}$	Maximum Value, $m/s^{1.75}$
Critical Areas	0.10	0.20	0.10	0.20
Residences	0.20	0.4	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

Note: Daytime is 7am to 10pm and Night-time is 10pm to 7am

Note: These criteria are indicative only, and there may be a need to assess intermittent values against continuous or impulsive criteria for critical areas.

There is a low probability of adverse comment or disturbance to building occupants at vibration values below the preferred values. Adverse comment or complaints may be expected if vibration values approach the maximum values. The Guideline states that activities should be designed to meet the preferred values where an area is not already exposed to vibration.

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3 Project Specific Noise Criteria

3.1 Background Noise Environment

To quantify the existing background noise environment of the area, unattended noise logging was conducted at Lot 10 Dudley Road, Charlestown, NSW. The selected monitoring location is shown in Figure 1. The unattended noise survey was conducted in general accordance with the procedures described in Australian Standard AS 1055-1997, "Acoustics - Description and Measurement of Environmental Noise".

The measurements were carried out using Svantek Type 1, 977 noise analyser from Monday 23 November 2015 to Tuesday 1 December 2015. Observations on-site identified the surrounding locality was typical of a suburban environment, with wind, birds and intermittent traffic noise audible. Calibration of all instrumentation was checked prior to and following measurements. Drift in calibration did not exceed ±0.5dBA. All equipment carried appropriate and current NATA (or manufacturer) calibration certificates.

Data affected by adverse meteorological conditions have been excluded from the results in accordance with methodologies provided in Chapter 3 of the INP. Residential receivers situated in the area have been classified under the EPA's suburban amenity category. This criterion is used in conjunction with the intrusiveness criteria to determine the limiting criteria. The results of long-term unattended noise monitoring are provided in Table 10. The noise monitoring charts for the background logging assessment are provided in Appendix C.

Table 10 Background Noise Monitoring Summary

Monitoring Location	Period[1]	Measured Background Noise Level (LA_{90}), RBL, dBA	Measured LAeq, dBA
L1	Day	50	58
	Evening	49	58
	Night	36	52

Note 1: Monday to Saturday: Day 7am to 6pm; Evening 6pm to 10pm; Night 10pm to 7am. On Sundays and Public Holidays, Daytime 8am to 6pm; Evening 6pm to 10pm; Night-time 10pm-8am.

Note: excludes periods of wind or rain affected data, meteorological data obtained from the Bureau of Meteorology Nobbys Pilot Station.

3.2 Operational Noise Criteria

The operational noise emission criteria for the facility have been set in accordance with the INP. The intrusiveness and amenity design criteria have been set, based on unattended logging measurements. The Project Specific Noise Level (PSNL) (project criteria) is the lower of the intrusive or amenity criteria.

The PSNLs for the proposal are presented in Table 11.

Table 11 Project Specific Noise Criteria, dBA $LA_{eq(15min)}$ *(re 20uPa)*

Receiver Location	Period	RBL	Intrusiveness Criteria $LA_{eq(15min)}$, dBA	Amenity Criterion $LA_{eq(period)}$,dBA	PSNL, dBA
All Residential Receivers	Day	50	55	55	55
	Evening	49	54	48[1]	48
	Night	36	41	42[1]	41
Commercial Premises	When in use	N/A	N/A	65	65
Hospital ward (external)	Noisiest 1-hour period	N/A	N/A	50	50

Note 1: ANL is LAeq(period), traffic.

3.3 Construction Noise Criteria

Criteria have been developed for nearby residential receivers for standard hours and OOH construction activities. Table 12 provides a summary of the project construction noise criteria. It is noted that only standard hours of construction are anticipated for the facility. Notwithstanding, for completeness, OOH criteria are also provided.

Table 12 Construction Noise Criteria Summary

Location	Assessment Period	RBL, dBA	Criteria LAeq(15min) dBA
Residential Receivers	Day (Standard hours)	50	60
	Evening (Period 1)	49	54
	Night (Period 2)	36	41
Offices, retail outlets	When in use	N/A	70 (external)
Hospital Wards an operating theatres	When in use	N/A	55 (external)[1]

Note 1: For consistency, this level has been adjusted to provide an external noise criteria and assumes 10dB noise reduction for a partially opened window.

3.4 Road Noise Criteria

As per the guideline and AS2107 an internal road noise intrusion criterion of 35dBA has been adopted for this assessment.

4 Noise Assessment Methodology

4.1 Operational Noise Modelling Methodology

Brüel and Kjær Predictor Type 7810 (Version 11.00) noise modelling software was used to assess potential noise impacts associated with the proposal. A three-dimensional digital terrain map giving all relevant topographic information was used in the modelling process.

The model calculation method used to predict noise levels was in accordance with ISO 9613-1 'Acoustics - Attenuation of sound during propagation outdoors. Part 1: Calculation of the absorption of sound by the atmosphere' and ISO 9613-2 'Acoustics - Attenuation of sound during propagation outdoors. Part 2: General method of calculation'.

The model incorporated three-dimensional digitised ground contours, the proposed building as derived from proposed site plans provided by Rodd & Hay Associates Pty Ltd, 2015 (See Appendix B), any proposed barriers and the surrounding land base topography. Where relevant, modifying factors in accordance with Section 4 of the INP have been applied to calculations.

4.2 Operational Noise Assessment Methodology

Table 13 presents the sound power level for each noise source modelled in this assessment. It is noted that sound power levels were sourced from manufacturer's specifications or from the MAC database. Mechanical plant was placed at the northern and southern facades of the facility representing a worst case and most exposed situation. On-site vehicles were placed within the external southern car park to represent patients visiting the facility during daytime hours. The model adopted approximately 10 sources representing 50% occupancy of car parking spaces and another two vehicles entering/parking. This is considered conservative as it is unlikely that 50% of car parking spaces would be used within a fifteen-minute period. For the day, evening and night assessment periods, six staff vehicles were modelled at the underground parking entry point representing approximately 50% of staff leaving in one fifteen-minute period.

Table 13 Acoustically Significant Sources - Sound Power Levels *(re 10-12 Watts)*

Item and number modelled per 15 minutes	Sound Power Level, LAeq(15min) dBA
Mechanical/Cooling plant (x6)	65
Southern Car Park - Car idle and start up or drive off (x12)[1]	73
Underground car park north exit - Car idle and start up or drive off (x6)	73

Note 1: For patients and day only.

4.3 Construction Noise Assessment Methodology

Construction activities with the potential to generate a noise impacts on nearby receivers have formed the basis of this assessment and include:

- Activity 1 – Vegetation Clearing / Excavations
- Activity 2 – Building construction
- Activity 3 – Southern Car Park Establishment

Proposed equipment to be used to construct the facility are listed in Table 14 along with each items sound power level (SWL). It is noted that sound power levels for plant assessed in this report were sourced from the MAC database. For each activity, all sources were assessed as operating simultaneously in the centre of each activity location.

It is noted that not all potential plant or plant combinations used during future construction may have been captured in this assessment. Notwithstanding, substitution of similar items of equipment would result in an equivalent total fleet SWL. Therefore, results are considered representative of future construction noise emissions.

Table 14 Acoustically Significant Sources - Sound Power Levels

Item	SWL	Activity		
		1	2	3
Construction noise assessment (LAeq(15min)), dBA				
Loader, backhoe, excavator, stabiliser, skid steer, grader	108	✓	✓	
Rollers (20-30t)	110	✓		✓
Tipper truck	103	✓	✓	✓
Delivery trucks	91		✓	✓
Chainsaw	103	✓		
Hand tools	96	✓	✓	
Bitumen sprayer, aggregate spreader	106			✓
Service truck with tray mounted crane	95		✓	
Total Fleet Sound Power Level		**113**	**110**	**112**

5 Results

5.1 Operational Noise Results

Table 15 presents the predictions of noise emissions from mechanical plant and the facilities car park. Predictions indicate that the operational noise criteria for the facility would be satisfied for all assessment periods as patients will be receiving treatment at this time.

Table 15 Predicted Operational Noise Levels, dBA $LA_{eq(15min)}$

Receiver	Period	Predicted LAeq(15minute) noise levels, dBA	PSNL
Residential Receivers			
R1	Day	36	55
	Evening	34	48
	Night	34	41
R2	Day	39	55
	Evening	37	48
	Night	37	41
R3	Day	39	55
	Evening	<30	48
	Night	<30	41
R4	Day	35	55
	Evening	<30	48
	Night	<30	41
R5	Day	38	55
	Evening	<30	48
	Night	<30	41
Commercial Receivers			
C1	When in use	40	65
C2	Noisiest 1-hour period	37	50
C3	Noisiest 1-hour period	46	50

5.2 Construction Noise Results

Predictions have quantified levels from each nominated construction activity, operating at representative offset distances to each receiver for standard (day) construction periods.

Table 16 presents the results of activities for the daytime assessment period (ie Standard Hours) including the predicted $LA_{eq(15min)}$ construction level and criteria exceedance levels. It is noted that C3 is likely to be unoccupied during the day assessment period as patients will be receiving treatment at this time.

Table 16 Construction Noise Results Summary, $LA_{eq(15min)}$, Standard Periods

Receivers	Predicted LAeq dBA	RBL	LAeq Criteria dBA	Maximum Criteria Exceedance dBA
Activity 1 – Vegetation Clearing / Excavations				
R1	62	50	60	2
R2	65	50	60	5
R3	59	50	60	Nil
R4	58	50	60	Nil
R5	65	50	60	5
C1	65	N/A	70	Nil
C2	66	N/A	70	Nil
C3	65	N/A	55	10
Activity 2 – Building construction				
R1	58	50	60	Nil
R2	61	50	60	1
R3	56	50	60	Nil
R4	54	50	60	Nil
R5	62	50	60	2
C1	62	N/A	70	Nil
C2	62	N/A	70	Nil
C3	62	N/A	55	7
Activity 3 – Southern Car Park Establishment				
R1	57	50	60	Nil
R2	59	50	60	Nil
R3	64	50	60	4
R4	62	50	60	2
R5	67	50	60	7
C1	59	N/A	70	Nil
C2	68	N/A	70	Nil
C3	76	N/A	55	21

5.3 Road Noise Intrusion Results

Noise logging was conducted in the vicinity of the proposed north east façade of the facility to quantify existing road traffic noise levels. The results of the noise logging have been used to quantify internal noise levels within future interview rooms at the facility.

Table 17 presents the measured road traffic noise levels at the façade of the facility along with predicted internal noise levels. The internal noise calculations assume a minimum Weighted Sound Reduction of RW24 for 4mm monolithic glass. It is understood that the medical centre's glazing schedule consists of up to 6mm laminated glass. Therefore, results presented in Table 17 should be considered as overly conservative. Noise calculations demonstrate that the internal noise criteria would be satisfied assuming facility windows consist of a minimum 4mm monolithic glass.

Table 17 Road Noise Intrusion Summary

Monitoring Location	Period[1]	Measured LAeq, dBA	Calculated Internal Noise Level, dBA	Internal Criteria, dBA
L1	Day	58	34	35
	Evening	58	34	35
	Night	52	28	35

Note 1: Monday to Saturday: Day 7am to 6pm; Evening 6pm to 10pm; Night 10pm to 7am. On Sundays and Public Holidays, Daytime 8am to 6pm; Evening 6pm to 10pm; Night-time 10pm-8am.

5.4 Vibration Assessment Results

The major potential sources of construction vibration include vibrating rollers or impact hammers. Equipment and plant have the potential to operate at a minimum offset distance of 15m from the nearest receiver (C3) when work occurs within the southern car park area.

Peak levels of vibration from rolling typically occurs as the roller stops to change direction and a resonance is created as the roller (and vibrator) is stationary. Vibrating rollers typically generate vibration emissions between 10 to 50Hz. Therefore, the relevant vibration criteria for rolling is between 5mm/s and 15 mm/s for standard type building structures.

Table 18 provides safe working distances for the use of various sized vibratory rollers to nearby receivers.

Table 18 Safe Working Distances for Vibratory Rollers (m)

Roller Size	Minimum Offset Distance DIN 4150 criteria (m)[2]	Minimum Offset Distance Human comfort criteria (m)[1]
Vibratory Roller Less than 1.25 t	3	15 to 20
Vibratory Roller 1 to 2 t	5	20
Vibratory Roller 2 to 4 t	6	40
Vibratory Roller 4 to 6 t	12	100
Vibratory Roller 7 to 11 t	25	100
Vibratory Roller 12 t and over	25	100

Note 1: Source, Table 3 of the NSW Government, Transport Construction Authority (TCA) 2012, Construction Noise Strategy (CNS)

Note 2: Source, ARRB Special Report No.11, Ground Vibrations: Damaging Effects to Buildings.

6 Recommendations

6.1 Construction Recommendations

The results of the noise assessment demonstrate that levels during standard hours construction periods may impact several receivers, with exceedances ranging from 1dB to 21dB above criteria. It is noted that the exceedance of 21dB is for C3, which is the accommodation associated with the Wansley Centre. It is noted that this receiver would likely be unoccupied during the day assessment period while patients are receiving treatment.

Construction noise levels are predicted to remain below the highly noise affected criteria of 75dBA LAeq(15min) at all assessed receivers with the exception of C3. It may be feasible to implement mobile noise screens (which can achieve noise reductions of up to 8dBA), optimise the positioning of plant and equipment to minimise line of site to receivers or substitute noisy equipment in order to reduce the noise impact at nearby receivers.

Furthermore, the implementation of several management practices are provided for consideration and may include but are not limited to:

- Toolbox and induction of personnel prior to shift to discuss noise control measures that may be implemented to reduce noise emissions to surrounding receivers;
- Training (of employees to conduct quieter work practices);
- Equipment which is used intermittently is to be shut down when not in use;
- Building condition surveys;
- Scheduling of work (ie when residents are not present);
- All plant should be shut-down when not in use. Plant to be parked / started at farthest point from relevant assessment locations;
- Operating plant in a conservative manner (no over-revving);
- Selection of the quietest suitable machinery available for each activity;
- Avoidance of noisy plant / machinery working simultaneously where practicable;
- Notify residences in advance of work;
- Where possible, all plant are to utilise a broad band reverse alarm in lieu of the traditional hi frequency type reverse alarm;
- Minimising the need for reversing or movement alarms;

- Conduct noise monitoring throughout the proposal work; and
- Undertake letter box drops to notify receivers of potential work.

To minimise vibration impacts during rolling activities, it is recommended that roller selection takes into account relevant offset distances to receivers to achieve both the human comfort and structural damage criteria.

7 Conclusion

MAC has completed a noise assessment for the Community Mental Health Facility (the 'facility') to be established at Lot 10 Dudley Road, Charlestown, NSW.

The assessment quantified noise levels from operation, construction and road intrusion. The results of the assessment demonstrate that operational noise levels would satisfy the relevant PSNLs based on the current designs.

Construction noise associated with the facility has the potential to exceed relevant criteria at several receivers, although it is noted that the closest receiver (C3) is accommodation associated with the Wansley Centre and may not be occupied during the day assessment period. Notwithstanding, reasonable and feasible noise management and control measures have been included in this NIA for consideration. Additionally, where rolling of the carpark is being completed, careful selection of the size of the roller should be made taking into consideration human comfort and vibration damage criteria.

Road noise intrusion associated with the project is expected to satisfy relevant internal criteria.

Based the noise impact assessment results, there would be no noise related issues which would prevent Council approving the use of the land for the proposed facility. Additionally, the results of the assessment show compliance with the relative road noise guideline. Accordingly, no ameliorative measures would be required. Notwithstanding, it is recommended that during construction, noise control and management measures provided in this report are adopted to minimise impacts on the surrounding community.

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Appendix A - Glossary of Terms

A number of technical terms have been used in this report and are explained in the following table.

Glossary of Terms

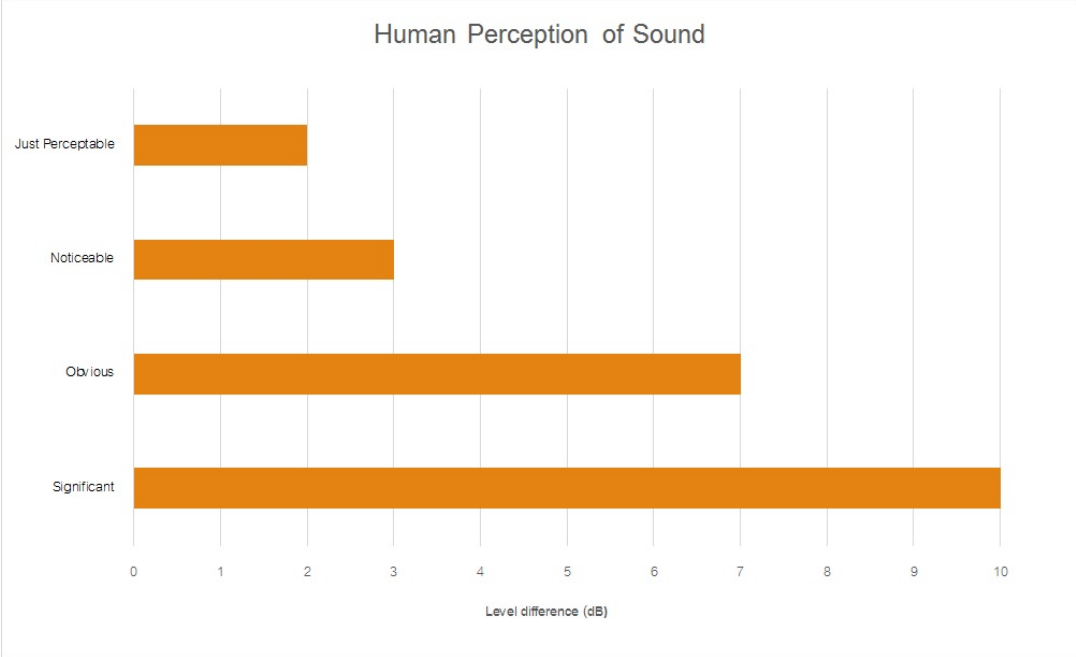
Term	Description
1/3 Octave	Single octave bands divided into three parts
Octave	A division of the frequency range into bands, the upper frequency limit of each band being twice the lower frequency limit.
ABL	Assessment Background Level (ABL) is defined in the INP as a single figure background level for each assessment period (day, evening and night). It is the tenth percentile of the measured L90 statistical noise levels.
Ambient Noise	The noise associated with a given environment. Typically a composite of sounds from many sources located both near and far where no particular sound is dominant.
A Weighting	A standard weighting of the audible frequencies designed to reflect the response of the human ear to noise.
dBA	Noise is measured in units called decibels (dB). There are several scales for describing noise, the most common being the 'A-weighted' scale. This attempts to closely approximate the frequency response of the human ear.
dB(Z), dB(L)	Decibels Linear or decibels Z-weighted.
Hertz (Hz)	The measure of frequency of sound wave oscillations per second - 1 oscillation per second equals 1 hertz.
LA10	A noise level which is exceeded 10 % of the time. It is approximately equivalent to the average of maximum noise levels.
LA90	Commonly referred to as the background noise, this is the level exceeded 90 % of the time.
LAeq	The summation of noise over a selected period of time. It is the energy average noise from a source, and is the equivalent continuous sound pressure level over a given period.
LAmax	The maximum root mean squared (rms) sound pressure level received at the microphone during a measuring interval.
RBL	The Rating Background Level (RBL) is an overall single figure background level representing each assessment period over the whole monitoring period. The RBL is used to determine the intrusiveness criteria for noise assessment purposes and is the median of the ABL's.
Sound power level (LW)	This is a measure of the total power radiated by a source. The sound power of a source is a fundamental location of the source and is independent of the surrounding environment. Or a measure of the energy emitted from a source as sound and is given by : = 10.log10 (W/Wo) Where : W is the sound power in watts and Wo is the sound reference power at 10-12 watts.

Table A2 provides a list of common noise sources and their typical sound level.

Table A2 Common Noise Sources and Their Typical Sound Pressure Levels (SPL), dBA

Source	Typical Sound Level
Threshold of pain	140
Jet engine	130
Hydraulic hammer	120
Chainsaw	110
Industrial workshop	100
Lawn-mower (operator position)	90
Heavy traffic (footpath)	80
Elevated speech	70
Typical conversation	60
Ambient suburban environment	40
Ambient rural environment	30
Bedroom (night with windows closed)	20
Threshold of hearing	0

Figure A1 – Human Perception of Sound



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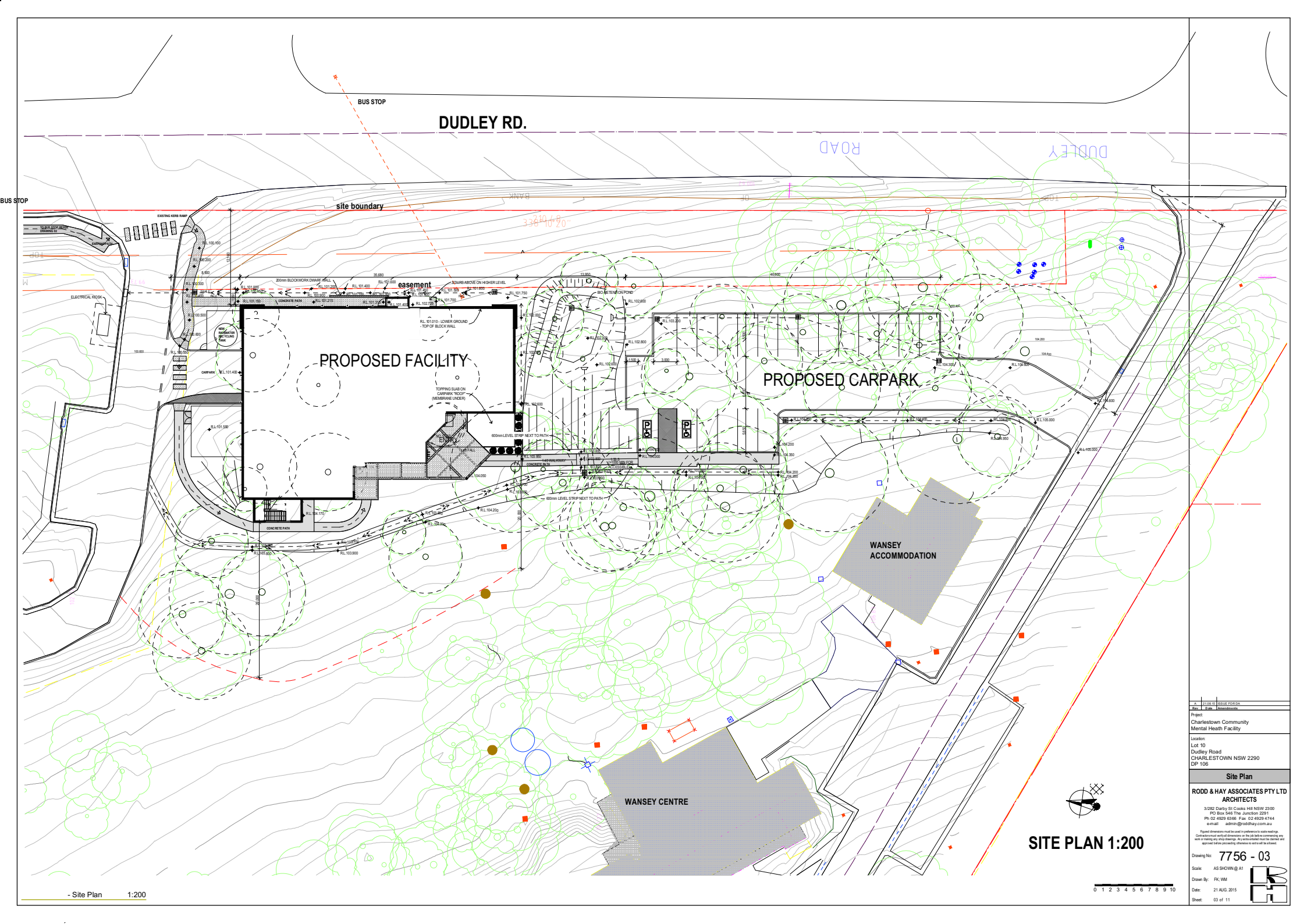
Appendix B - Site Plans



Rev.	Date	Amendments
A	21.08.15	ISSUE FOR DA

Project:
Charlestown Community
Mental Heath Facility

Location:
Lot 10
Dudley Road
CHARLESTOWN NSW 2290
DP 106

Site Plan

RODD & HAY ASSOCIATES PTY LTD
ARCHITECTS
3/282 Darby St Cooks Hill NSW 2300
PO Box 546 The Junction 2291
Ph 02 4929 6366 Fax 02 4929 4744
e-mail admin@roddhay.com.au

Drawing No: 7756 - 03
Scale: AS SHOWN @ A1
Drawn By: FK; WM
Date: 21 AUG. 2015
Sheet: 03 of 11

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Appendix C - Noise Logging Charts

Measured Ambient Noise Levels

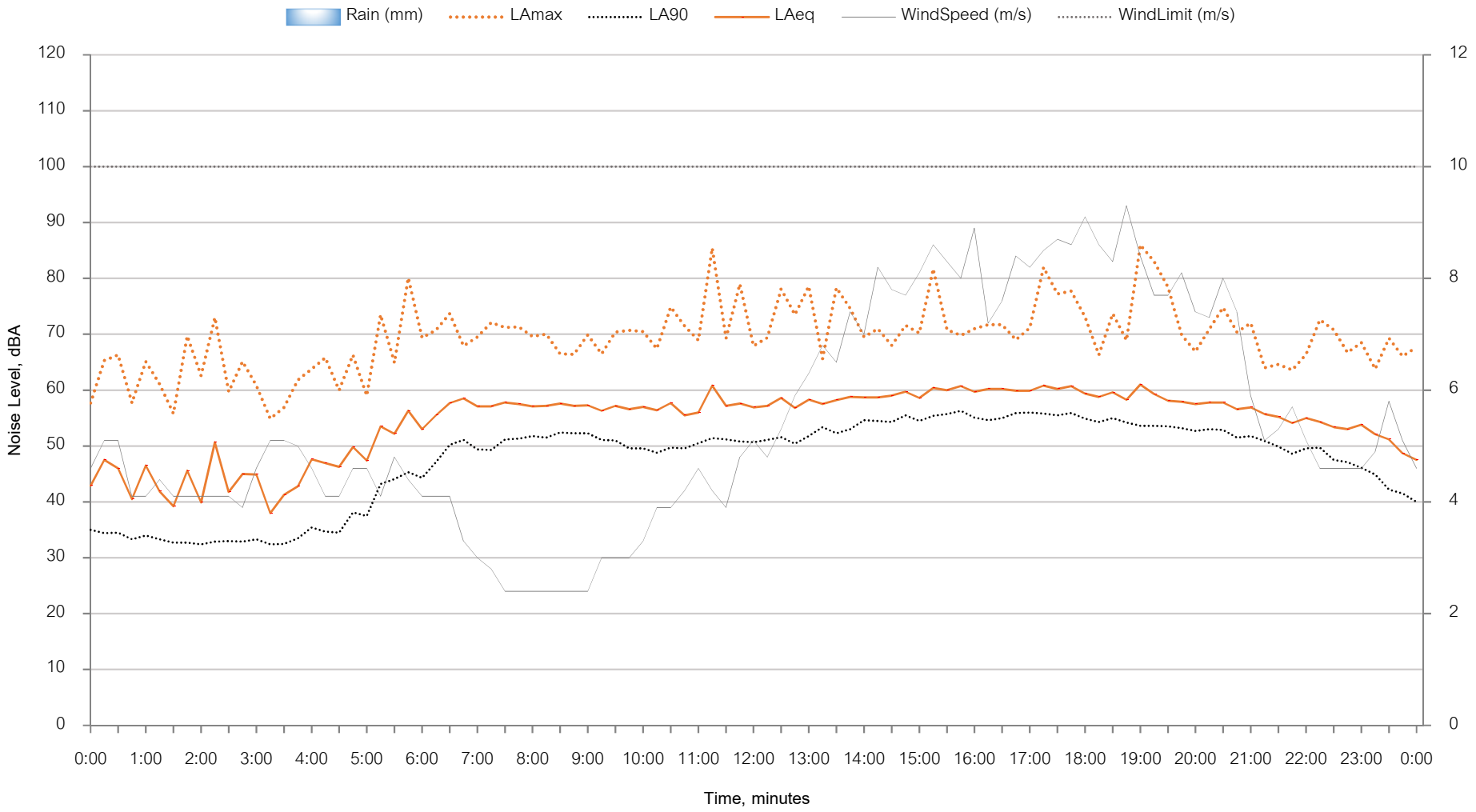
Logger 1 - 1A Dudley Road Charlestown

Monday, 23-11-15

Measured Ambient Noise Levels

Logger 1 - 1A Dudley Road Charlestown

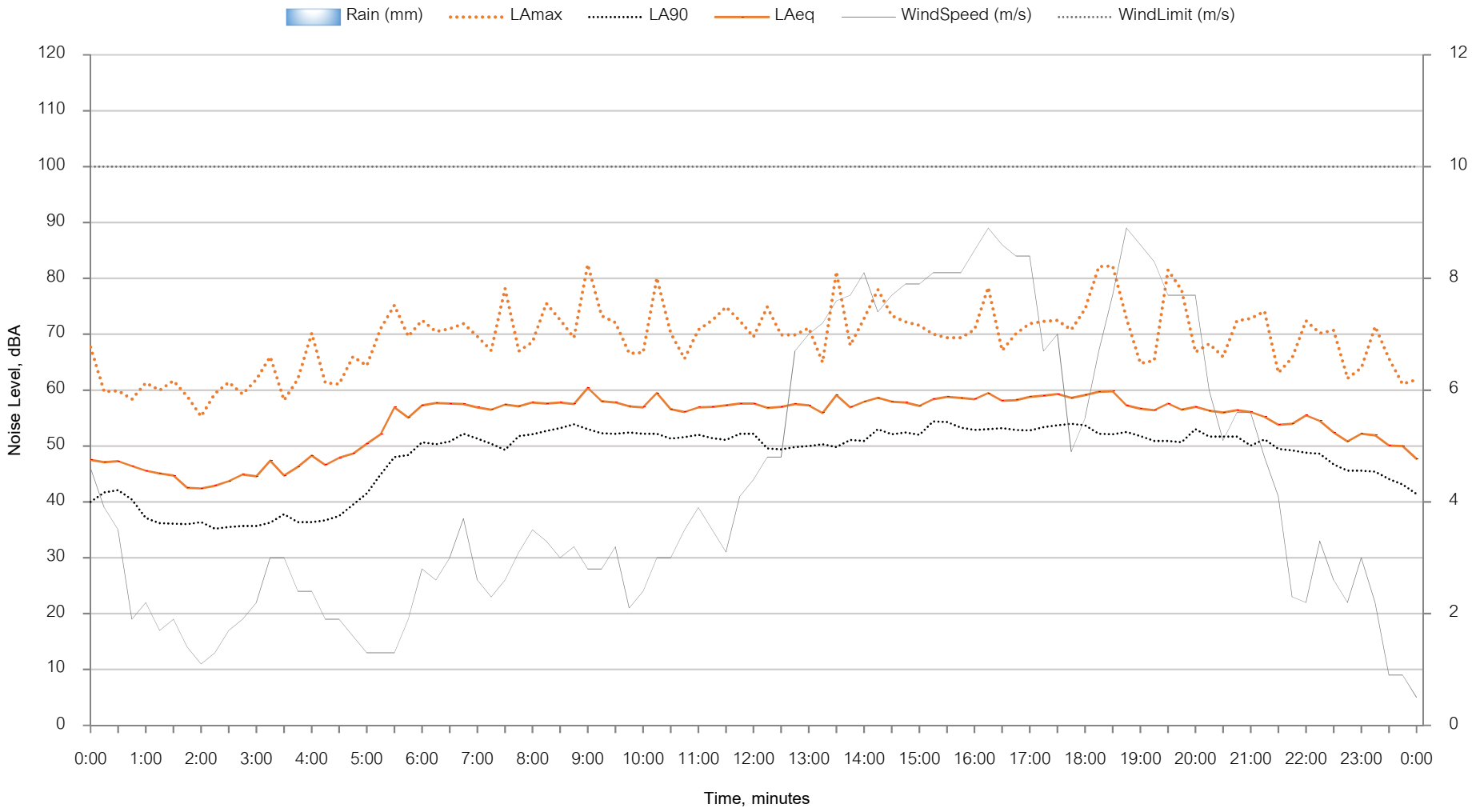
Tuesday, 24-11-15



Measured Ambient Noise Levels

Logger 1 - 1A Dudley Road Charlestown

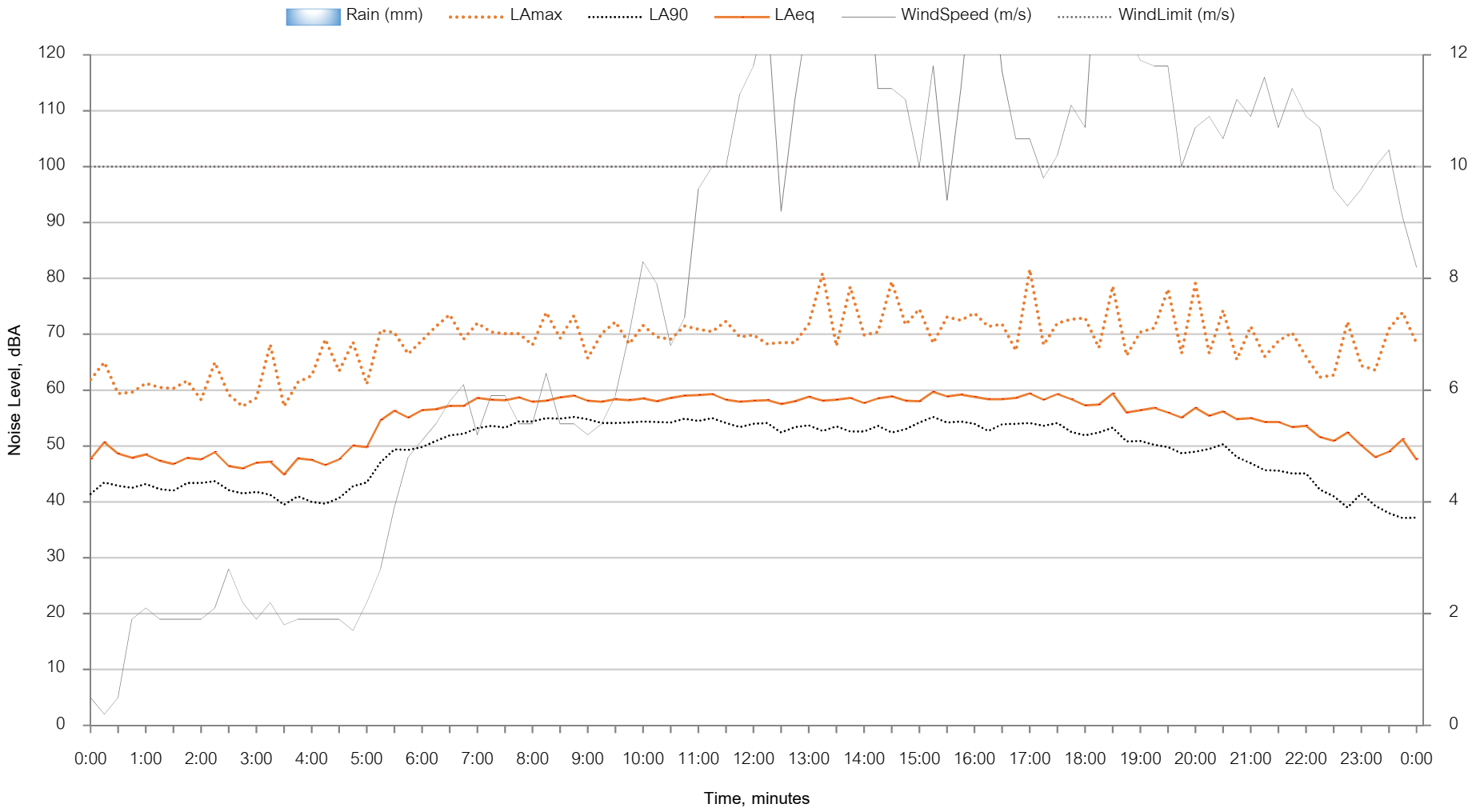
Wednesday, 25-11-15



Measured Ambient Noise Levels

Logger 1 - 1A Dudley Road Charlestown

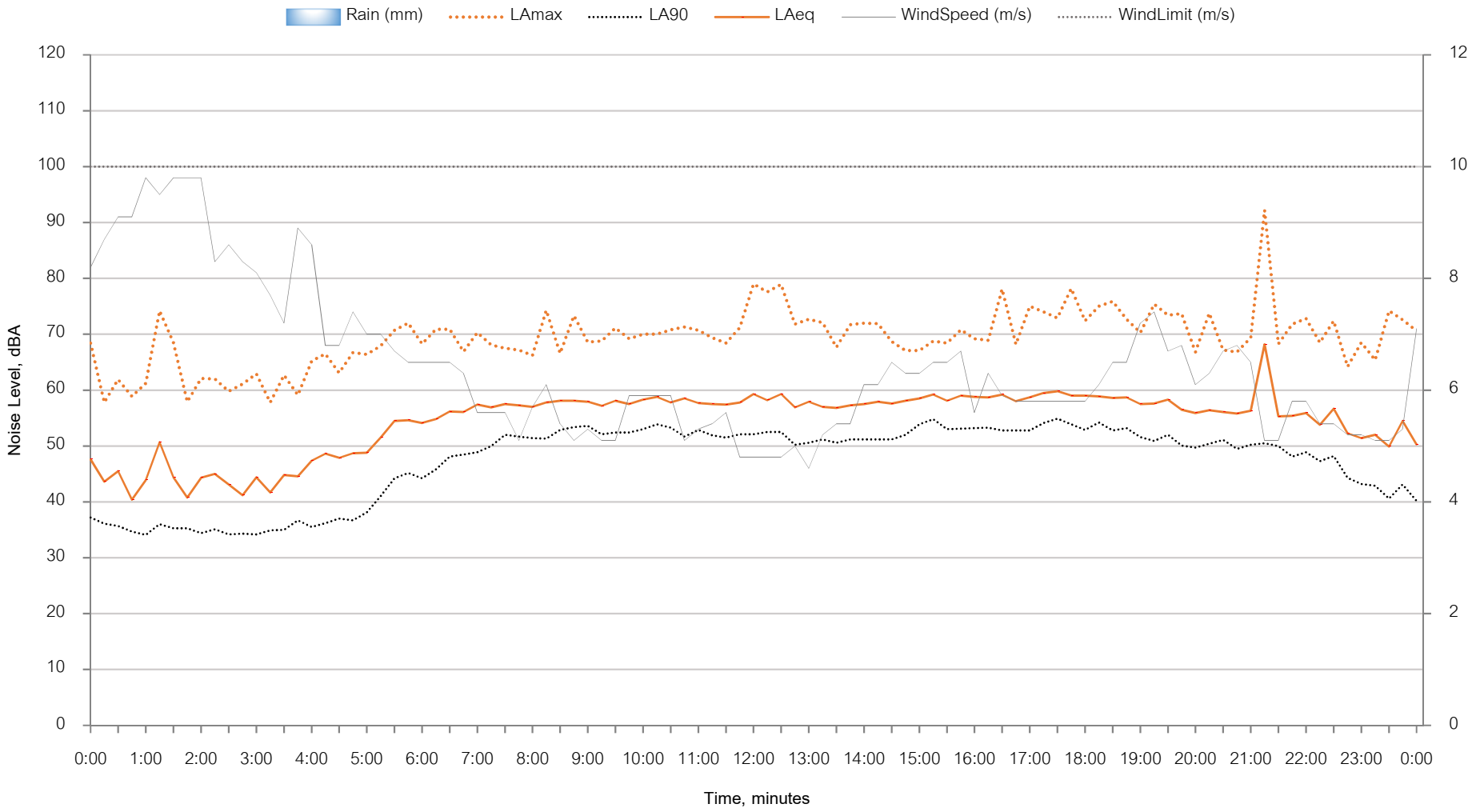
Thursday, 26-11-15



Measured Ambient Noise Levels

Logger 1 - 1A Dudley Road Charlestown

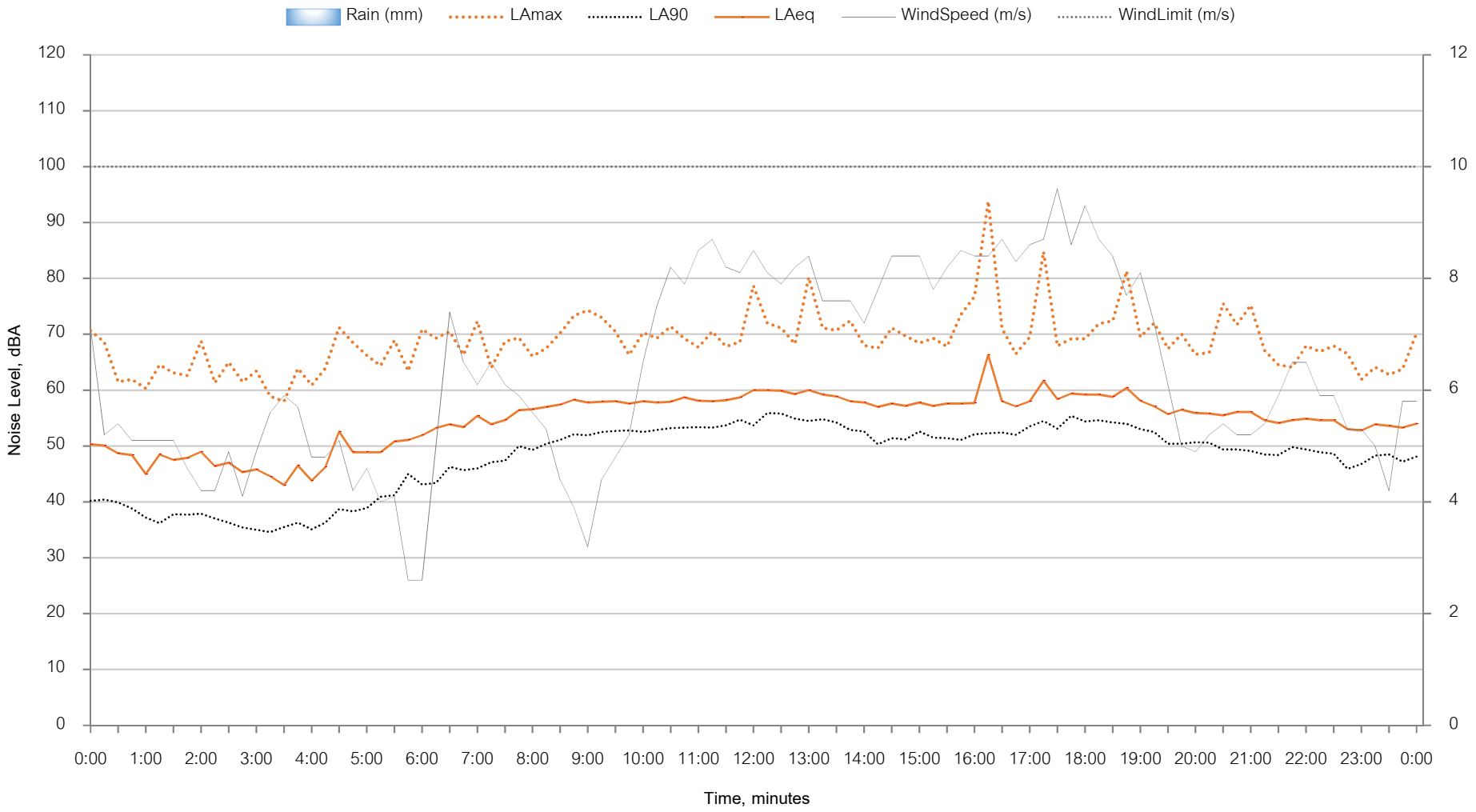
Friday, 27-11-15



Measured Ambient Noise Levels

Logger 1 - 1A Dudley Road Charlestown

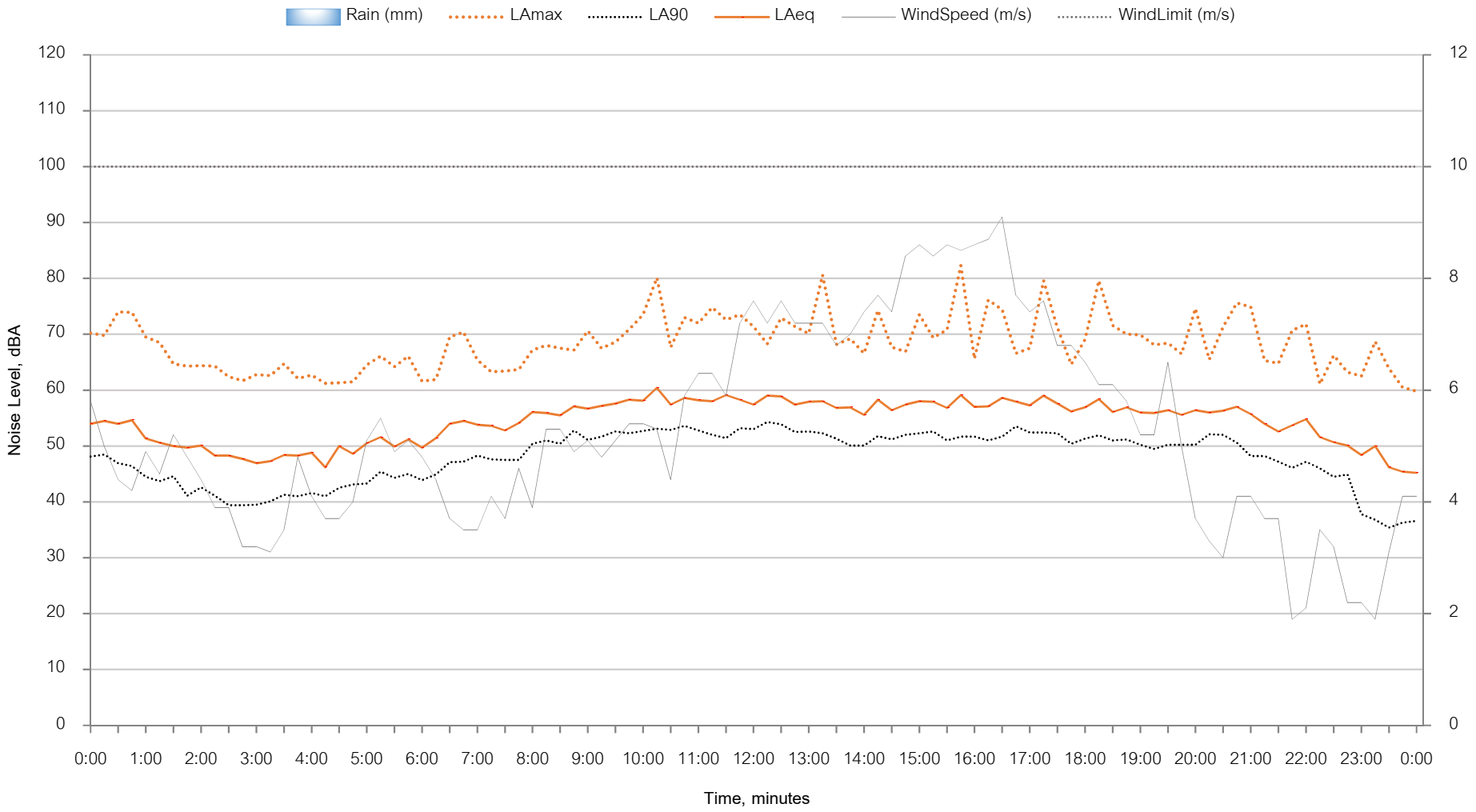
Saturday, 28-11-15



Measured Ambient Noise Levels

Logger 1 - 1A Dudley Road Charlestown

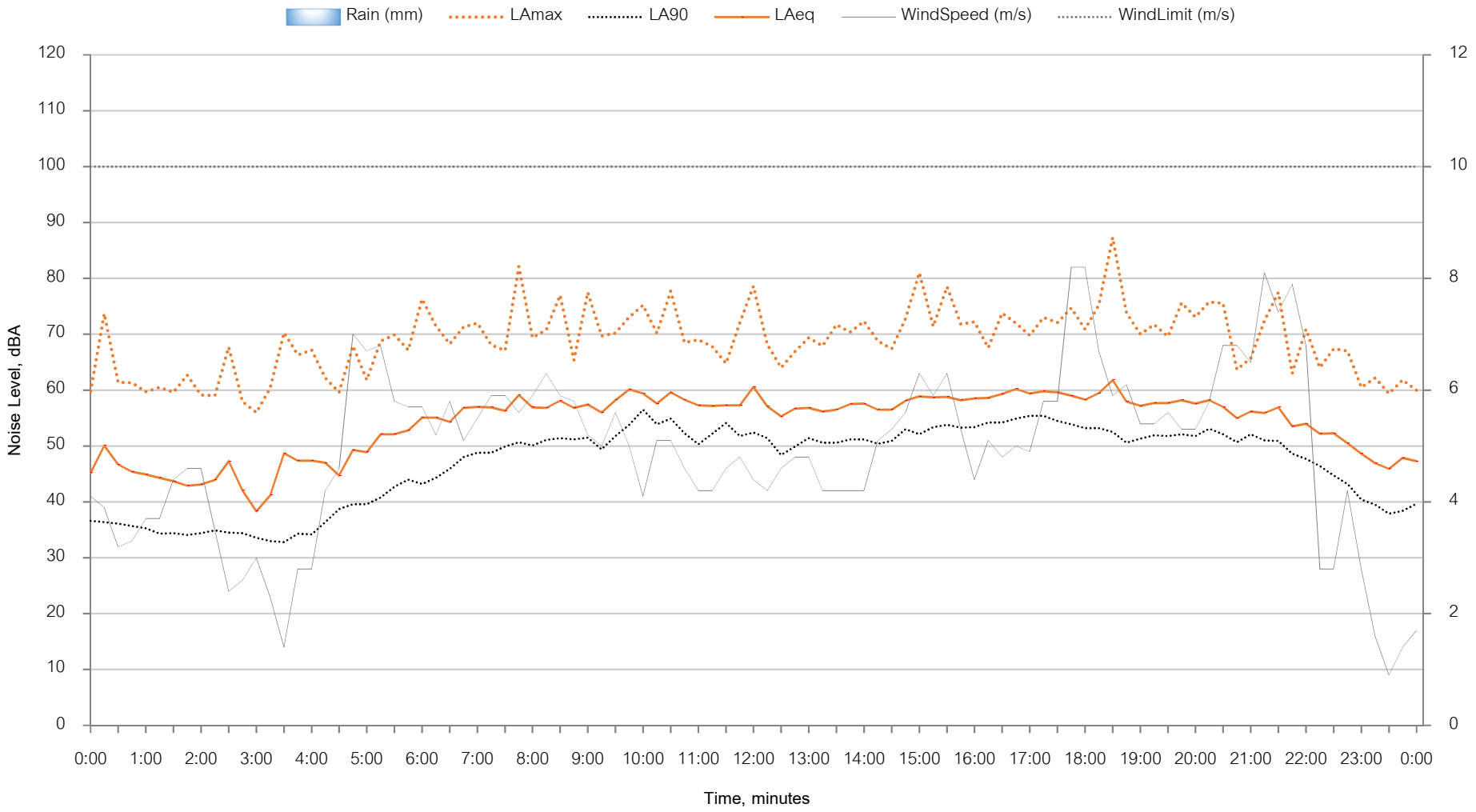
Sunday, 29-11-15



Measured Ambient Noise Levels

Logger 1 - 1A Dudley Road Charlestown

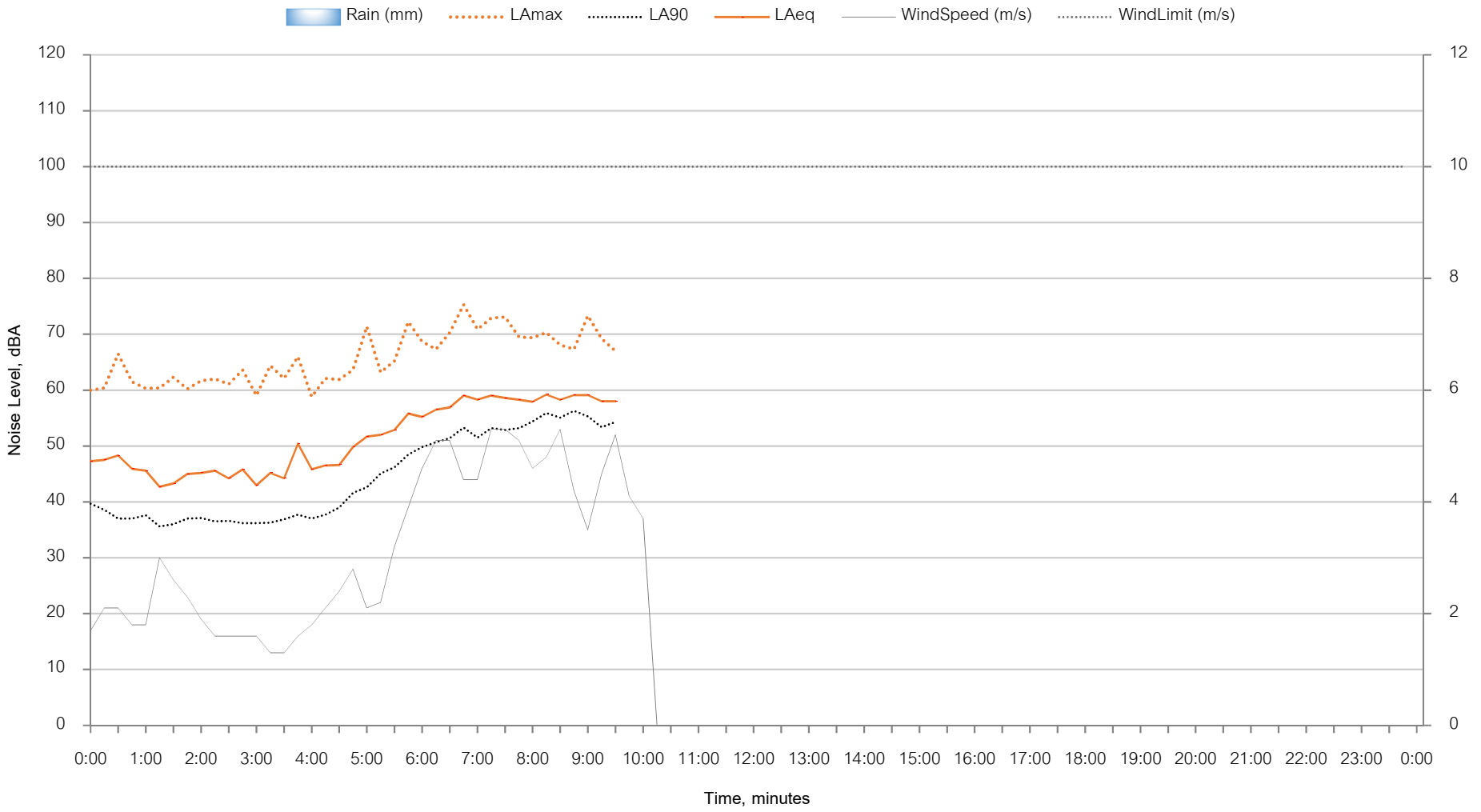
Monday, 30-11-15



Measured Ambient Noise Levels

Logger 1 - 1A Dudley Road Charlestown

Tuesday, 01-12-15



Muller Acoustic Consulting Pty Ltd
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www.mulleracoustic.com

MAC
Muller Acoustic Consulting

Attachment 3
Traffic and Transport

B J Bradley & Associates
Consulting Traffic Engineers

ABN: 13 427 931 356
P O Box 2030
GATESHEAD NSW 2290
Telephone and fax 02 49485212 (B)
Mobile 0412 490 859
Email bjbradle@tpg.com.au

18 December 2015

The General Manager
Lake Macquarie City Council
P O Box 1906
Hunter Region Mail Centre NSW 2310

Attention: Chris Dwyer

Re: Proposed Charlestown Community Mental Health Facility, Dudley Road, Charlestown.

Dear Mr Dwyer

I refer to Council's request for further information regarding the operation of the subject development and possible impacts on traffic and parking.

My responses to the traffic-related issues in Council's letter dated 19 November 2015 are as follows:

Peak Vehicle Trips

The proposed development consists of two discrete facilities:

- The Child and Adolescent Mental Health service (CAMHS) and
- The Lake Macquarie Mental Health Service (LMMHS)

The CHMHS caters for children and juveniles and the LMMHS caters for adults.

The traffic generation rates in the Traffic Assessment Report dated 9 October were based on staffing details were provided by the Hunter New England Local Health District, as follows:

> CAMHS has up to 12 full-time employees in total. That includes 1 ½ employees for clerical / reception functions
>
> LMMHS has up to 45 full-time employees. That includes 3 ½ employees for clerical / reception functions

Eight (8) of the LMMHS employees start work at the Mater Hospital Inpatient Mental Health Unit and will split their work hours between the two centres.

Eight (8) of the LMMHS employees are shift workers. These employees do work day shifts and afternoon shifts and there will only be up to 2 in the new building at Charlestown at any one time.

The Charlestown Community Mental Health Facility will operate an outreach program where usually 2 nursing staff attend to each client's needs for security reasons and operate in the East Lake Macquarie and West Lake Macquarie areas.

This service is crucial based on existing similar Mental Health Facilities as many patients regularly fail to attend appointments and require the outreach service.

An Allied Health Team (Psychologists, Occupational Therapists) will be responsible for patients in the East and West Lake Macquarie Area and will regularly be in the field.

A Rehabilitation Team (Nurses, Psychologists, and Occupational Therapists) looks after both the East and West Lake Macquarie Area and will regularly be in the field.

Further details of the operation of the interview rooms for the CAMHS facility and also the LMMHS will be provided by other consultants and the HNELHD based on actual operational data.

Based on the projected number of staff likely to be in the new Charlestown Community Mental Health Facility at any one time, particularly arriving and departing in the weekday peak periods, I believe the traffic generation of 14 trips in the morning and afternoon peak periods is a reasonable assessment of the operation of the Facility.

Car Parking Areas and Structures

The dimensions indicatyed on the drawings presented to me to prepare the Traffic Assessment Report indicated compliance with AS2890.1 – 2004. The drawings have been subsequently amended to address Council's concerns regarding obstructions within the parking spaces and the pedestrian crossings have been removed.

Vehicle Access

The existing "KEEP CLEAR" pavement markings on Dudley Road adjacent to James Street enables vehicles to turn right into the northern access even peak queues on Dudley Road extended past James Street.

The width of road available on Dudley Road is sufficient to enable southbound vehicles to pass a vehicle turning right into the existing southern access already servicing the Wansey Centre.

I can see no justifiable reason to widen the western side of Dudley Road between the Wansey Centre access and the Pacific Highway based on the additional traffic likely to be generated by the proposed development.

Servicing Areas

The proposed Charlestown Community Mental Health Facility will have minimal delivery of supplies. Any supplies would be via courier style vans only. A designated loading area is in my opinion unnecessary.

On-Site Bicycle Facilities.

It is understood that bicycle racks will be provided for both staff and visitors. It is highly unlikely that visitors would arrive by bicycle. Staff bicycle racks will be located in basement car park.

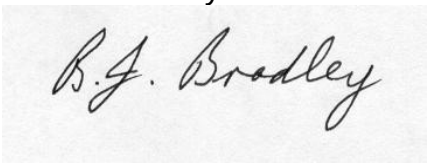
Road Design, Pedestrians and Cyclists, Public Transport

As mentioned above, I do not agree that widening of Dudley Road between the existing Wansey Centre access and the Pacific Highway is justifiable based on the likely low traffic generation associated with the Charlestown Community Mental Health Facility compared with the existing traffic volumes on Dudley Road.

There is a paved footpaths along the eastern side of Dudley Road south of the Pacific Highway with a bus stop located on the western side of Dudley Road just north of James Street and on the eastern side of Dudley Road just south of James Street.

The proposed Charlestown Community Mental Health Facility will provide a paved footpath to the western side of the building and there is no need to extend a footpath along the western side of Dudley Road between the northern access and the Wansey Centre access.

Yours sincerely



B J Bradley BE (Civil) Grad Dip Man MIE Aust

Attachment 4
Access Report

PLANNING
BUILDING
HERITAGE
URBAN DESIGN

CITY PLAN SERVICES

ACCESS FOR PEOPLE WITH DISABILITIES ASSESSMENT REPORT

Project:	COMMUNITY MENTAL HEALTH FACILITY DUDLEY STREET, CHARLESTOWN

Client: Rodd & Hay Associates
Report: 154406RA
Date: 17/12/2015

357 MANN STREET | GOSFORD NSW 2250 | TEL +61 2 4322 7035 | FAX +61 2 4325 4903 | WWW.CITYPLAN.COM.AU
ABN 50 103 185 431

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Report Revision History
Report No: 154406R

Revision	Date Issued	Comment	Prepared By	Verified By
01	30/11/15	Draft for comment	Kendall Clydsdale MPIA MAIBS *GradDipBldgSurvy, GradCertDevAssmt, DipBldgSurvy*	Bill Nettleton MAIBS *GradDipAppSci(Build)*
02	15/12/15	Final	Kendall Clydsdale MPIA MAIBS *GradDipBldgSurvy, GradCertDevAssmt, DipBldgSurvy*	Bill Nettleton MAIBS *GradDipAppSci(Build)*

1.0 INTRODUCTION

1.1 General

This Accessibility Report serves as an assessment of the proposed Charlestown Mental Health Facility.

1.2 Purpose of the Report

This report has been prepared, on behalf of Rod Hay & Associates, to identify the level of compliance of access for people with disabilities with the current version of the Building Code of Australia and relevant legislation.

1.3 Report Basis

This report is based on:

i. Architectural plans prepared by Rodd & Hay Associates as listed in Schedule 1
ii. The Building Code of Australia 2015, inclusive of NSW variations (See Note 1).
iii. AS1428.1-2009 - Design for access and mobility Part 1: General requirements for access - New building work.
iv. Disability (Access to Premises – Building) Standards 2010.
v. Environmental Planning and Assessment Act 1979.
vi. Environmental Planning and Assessment Regulation 2000.

Notes (1) Building Code of Australia (BCA) 2015 was adopted in NSW on 1 May 2015. The amendment of the BCA in force at the date of lodgement is the version called up by Clause 98 of the Environmental Planning & Assessment Regulation 2000 for the purpose of the building design. Therefore comments may be subject to changes to comply with updated versions of the Building Code of Australia.

1.4 Exclusions & Limitations

This report has been prepared based on the following limitations and exclusions;

i. Structural design or design of the building, and
ii. The inherent derived fire-resistance ratings of any existing structural elements of the building (unless specifically referred to); and
iii. The design basis and/or operating capabilities of any existing or proposed electrical, mechanical, hydraulic or fire protection services, and
iv. This report does not consider heritage significance, and
v. This report does not include or imply compliance with;
    a) Demolition Standards not referred to by the BCA;
    b) Occupational Health & Safety Act;
    c) Construction Safety Act;
    d) Requirements of other Regulatory Authorities including, but not limited to, Telstra, Hunter Water, Electricity Supply Authority, WorkCover, TR&MS, Council and the Like; and
    e) Requirements of Planning legislation, and
    f) Any conditions of Development Consent.

vi. This report does verify compliance with the Disability Discrimination Act.
vii. The use of this report is limited to its intended purposes and shall not be relied upon by any other party.

2.0 DISABILITY DISCRIMINATION ACT 1992 (DDA)

All organisations have a responsibility, under the *Disability Discrimination Act 1992 Cth* (DDA), to provide equitable, dignified access to goods and services and to premises used by the public. The DDA endeavours to provide protection against unfair and unfavourable treatment for people with a disability in Australia.

The objects the DDA are as follows:

1. to eliminate, as far as possible, discrimination against persons on the ground of disability in the areas of:
    a. work, accommodation, education, access to premises, clubs and sport; and
    b. the provision of goods, facilities, services and land; and
    c. existing laws; and
    d. the administration of Commonwealth laws and programs; and
2. To ensure, as far as practicable, that persons with disabilities have the same rights to equality before the law as the rest of the community; and
3. To promote recognition and acceptance within the community of the principle that persons with disabilities have the same fundamental rights as the rest of the community.

A Disability, in relation to a person, means:

- total or partial loss of the person's bodily or mental functions; or
- total or partial loss of a part of the body; or
- the presence in the body of organisms causing disease or illness; or
- the presence in the body of organisms capable of causing disease or illness; or
- the malfunction, malformation or disfigurement of a part of the person's body; or
- a disorder or malfunction that results in the person learning differently from a person without the disorder or malfunction; or
- a disorder, illness or disease that affects a person's thought processes, perception of reality, emotions or judgment or that results in disturbed behaviour;
- to avoid doubt, a ***disability*** that is otherwise covered by this definition includes behaviour that is a symptom or manifestation of the disability.

The Act supports the principle that people with a disability have the same fundamental rights as the rest of the community. When a person with a disability wants to utilise premises including all buildings, outdoor spaces, car parking areas, pathways and facilities it's a requirement to provide equitable & dignified access. It is worth mentioning that the DDA is case law based, in that its not prescriptive legislation and it does not contain construction standards or performance standards and it's a complaints based Act which allows a complaint to be lodged which is then assessed and determined by the courts as the whether there are grounds of discrimination. *The Disability (Access to Premises - Buildings) Standards 2010* as discussed below is created under the DDA, however the case based law principle of the DDA Act remains the same.

Section 23 of the DDA Act required access to premises and that its unlawful for a person to discriminate against another person on the ground of the other person's disability, by either of the following:

(a) by refusing to allow the other person access to, or the use of, any premises that the public or a section of the public is entitled or allowed to enter or use (whether for payment or not); or
(b) in the terms or conditions on which the first-mentioned person is prepared to allow the other person access to, or the use of, any such premises; or
(c) in relation to the provision of means of access to such premises; or
(d) by refusing to allow the other person the use of any facilities in such premises that the public or a section of the public is entitled or allowed to use (whether for payment or not); or
(e) in the terms or conditions on which the first-mentioned person is prepared to allow the other person the use of any such facilities; or
(f) by requiring the other person to leave such premises or cease to use such facilities.

Section 24 of the DDA Act also required access to goods, services and facilities and its unlawful for a person who provides goods or services or makes facilities available, to discriminate against another person on the ground of the other person's disability:

(a) by refusing to provide the other person with those goods or services or to make those facilities available to the other person; or
(b) in the terms or conditions on which the first-mentioned person provides the other person with those goods or services or makes those facilities available to the other person; or
(c) in the manner in which the first-mentioned person provides the other person with those goods or services or makes those facilities available to the other person.

3.0 DISABILITY (ACCESS TO PREMISES – BUILDING) STANDARDS 2010

On the 1st May 2011 the Disability (Access to Premises - Buildings) Standards 2010 known as 'The Premises Standard', was introduced to bring the DDA into line with the updated Building Code of Australia (BCA 2011). Prior to 01.05.2011, where a building was designed and constructed to comply with the BCA, there was no guarantee or assurance that the building complied with the DDA.

The Premises Standard applies to all 'new buildings' and in certain circumstances existing buildings undergoing upgrade works. The Premises Standards aim is to provide certainty for the building industry in relation to meeting the requirements for access to new building, being compliance with the DDA. The Premises Standard generally aligns with the BCA and provides specific prescriptive requirements and prescribes compliance with a range of Australian Standards relating to access and associated matters. This is to say that if a building is designed and constructed under the current BCA and the Premises Standard it means there is a greater level of assurance that you have met the requirements with the DDA

The Building Code of Australia, in conjunction with the DDA applies to all new buildings new, building works to existing buildings and buildings undergoing significant refurbishment or alteration.

The objective of the premises standard is to ensure that dignified, equitable, cost effective and reasonably achievable access to buildings, and facilities and service within buildings, is provided for people with a disability.

The Premises Standard applies when an application for approval of building work (Construction Certificate) is made on or after 1 May 2011.

The requirements for upgrading access are limited to the area of new work and the ‘affected part’. The 'affected part' provisions for existing buildings require the provision of a compliant accessible path of travel from the principal public entrance to the new or modified part of an existing building.

Access upgrades are not required outside the area of the new work. The provisions of the DDA continue to apply to those areas of the building outside the area of the new work. Concessions from the 'affected part' upgrade provisions also apply where the applicant for the works is a lessee in a multi tenanted / leased premises.

In the case of the building the subject of this report, the whole building is ‘new building’ as defined and as such the Premises Standard applies.

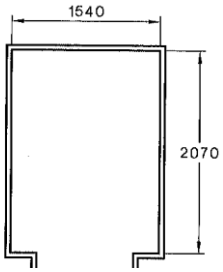
4.0 ACCESS AND FACILITIES FOR PEOPLE WITH A DISABILITY

4.1 Assessment Methodology

This assessment considers the accessibility requirements of the Building Code of Australia specifically Part D3, F2.4, and referenced standard AS1428.1-2009 - Design for access and mobility Part 1: General requirements for access - New building work.

4.2 Access for People with a Disability (BCA - Part D3)

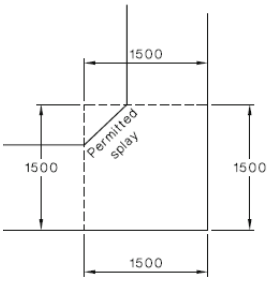
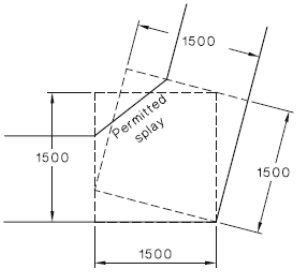
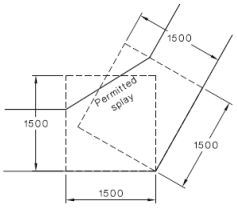
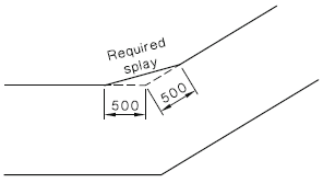
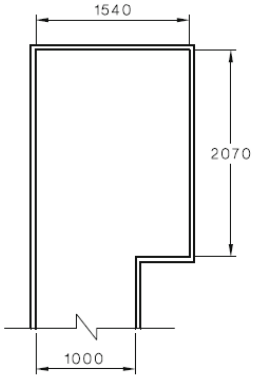
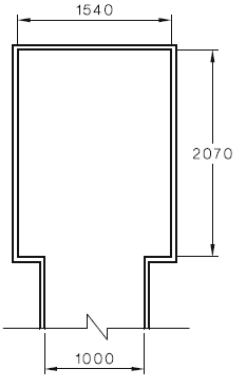
BCA Clause	Title	Requirements - Assessment and Comment	Status
D3.1	General building access requirements	The building must be accessible as follows: • Class 5 portions (ground floor and first floor) – To and within all areas. • Class 7a portion (Lower ground) – to and within the level if it is to contain accessible parking spaces. Construction documentation will demonstrate compliance.	The proposed building will comply
D3.2	Access to buildings	An accessway must be provided to a building required to be accessible— i. from the main points of a pedestrian entry at the allotment boundary; and ii. from another accessible building connected by a pedestrian link; and iii. from any required accessible carparking space on the allotment. In a building required to be accessible, an accessway must be provided through the principal pedestrian entrance (except for pedestrian entrances serving only areas exempted by D3.4), i. through not less than 50% of all pedestrian entrances including the principal pedestrian entrance; and ii. in a building with a total floor area more than 500m^2, a pedestrian entrance which is not accessible must not be located more than 50 m from an accessible pedestrian entrance, Where a pedestrian entrance required to be accessible has multiple doorways— i. if the pedestrian entrance consists of not more than 3 doorways — not less than 1 of those doorways must be accessible; and ii. if a pedestrian entrance consists of more than 3 doorways, not less than 50% of those doorways must be accessible. Where a doorway on an access way has multiple leaves, (except an automatic opening door) one of those leaves must have a clear opening width of not less than 850 mm in accordance with AS 1428.1-2009. Construction documentation will demonstrate compliance with the above and an alternative solution as detailed in the status column.	The proposed building will comply with the performance requirements of the BCA through the formulation of an alternative solution with regard to access from the main points of pedestrian entry at the allotment boundary

BCA Clause	Title	Requirements - Assessment and Comment	Status
D3.3	Parts of building to be accessible	Every ramp and stairway (except for ramps and stairways in areas exempted by D3.4) must comply with— i. for a ramp, except a fire-isolated ramp, clause 10 of AS 1428.1; and ii. for a stairway, except a fire-isolated stairway, clause 11 of AS 1428.1; and iii. for a fire-isolated stairway, clause 11.1(f) and (g) of AS 1428.1-2009. Every passenger lift must comply with E3.6; and Accessways must have— i. passing spaces complying with AS 1428.1 at maximum 20 m intervals on those parts of an accessway where a direct line of sight is not available; and ii. turning spaces complying with AS 1428.1— (A) within 2 m of the end of accessways where it is not possible to continue travelling along the accessway; and (B) at maximum 20 m intervals along the accessway; and  An intersection of accessways satisfies the spatial requirements for a passing and turning space; and A passing space may serve as a turning space. In addition to the above, Clause 7.4.1(a) of AS 1428.1 does not apply and is replaced with 'the pile height or pile thickness shall not exceed 11 mm and the carpet backing thickness shall not exceed 4 mm'; and The carpet pile height or pile thickness dimension, carpet backing thickness dimension and their combined dimension shown in figure 8 of AS 1428.1 do not apply and are replaced with 11 mm, 4 mm and 15 mm respectively. Construction documentation will demonstrate compliance.	The proposed building will comply See 6.5 below for additional details.
D3.4	Exemptions	The following areas are not required to be accessible: (a) An area where access would be inappropriate because of the particular purpose for which the area is used. (b) An area that would pose a health or safety risk for people with a disability. (c) Any path of travel providing access only to an area exempted by (a) or (b).	Note – advisory clause. See comments regarding exempt areas in relevant clauses below.
D3.5	Car parking	Accessible carparking spaces are required and must comply with AS/NZS 2890.6-2009. Construction documentation will demonstrate compliance.	The proposed building will comply

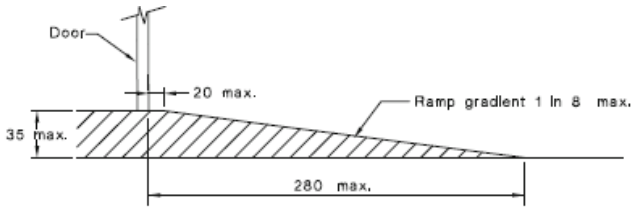
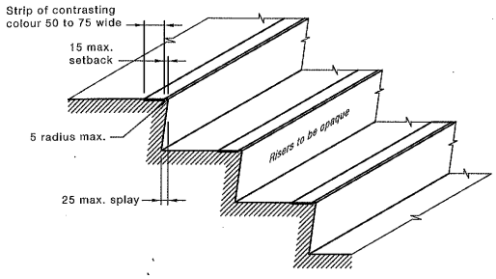
BCA Clause	Title	Requirements - Assessment and Comment	Status
D3.6	Signage	Braille and tactile signage complying with Specification D3.6 and incorporating the international symbol of access or deafness, as appropriate, in accordance with AS 1428.1 must identify each sanitary facility. Each doorway required to be provided with an exit sign under E4.5 must be identified with "EXIT" and "LEVEL" followed by the floor level number. Signage in accordance with AS 1428.1 must be provided for accessible unisex sanitary facilities to identify if the facility is suitable for left or right handed use. Signage to identify an ambulant accessible sanitary facility in accordance with AS 1428.1 must be located on the door of the facility. Where a pedestrian entrance is not accessible, directional signage incorporating the international symbol of access, in accordance with AS 1428.1 must be provided to direct a person to the location of the nearest accessible pedestrian entrance. Where a bank of sanitary facilities is not provided with an accessible unisex sanitary facility, directional signage incorporating the international symbol of access in accordance with AS 1428.1 must be placed at the location of the sanitary facilities that are not accessible, to direct a person to the location of the nearest accessible unisex sanitary facility. Construction documentation will demonstrate compliance.	The proposed building will comply
D3.7	Hearing augmentation	N/A	N/A
D3.8	Tactile indicators	Tactile ground surface indicators are required to be provided to warn people who are blind or have a vision impairment that they are approaching— • a stairway, other than a fire-isolated stairway; and • a ramp other than a fire-isolated ramp, step ramp, kerb ramp or swimming pool ramp; and • in the absence of a suitable barrier— (A) an overhead obstruction less than 2 m above floor level, other than a doorway; and (B) an accessway meeting a vehicular way adjacent to any pedestrian entrance to a building, excluding a pedestrian entrance serving an area referred to in D3.4, if there is no kerb or kerb ramp at that point, except for areas exempted by D3.4. Tactile ground surface indicators required are required to comply with sections 1 and 2 of AS/NZS 1428.4.1. Construction documentation will demonstrate compliance.	The proposed building will comply
D3.9	Wheelchair seating spaces in Class 9b assembly buildings	N/A	N/A
D3.10	Swimming Pools	N/A	N/A

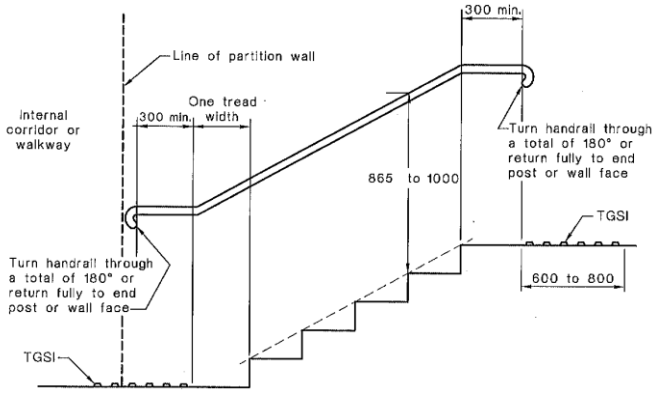
BCA Clause	Title	Requirements - Assessment and Comment	Status
D3.11	Ramps	A series of connected ramps must not have a combined vertical rise of more than 3.6 m and a landing for a step ramp must not overlap a landing for another step ramp or ramp.	The proposed building complies
D3.12	Glazing on an accessway	On an accessway, where there is no chair rail, handrail or transom, all frameless or fully glazed doors, sidelights and any glazing capable of being mistaken for a doorway or opening, must be clearly marked in accordance with AS 1428.1-2009. Construction documentation will demonstrate compliance.	The proposed building will comply
F2.4	Facilities for people with disabilities	Unisex sanitary compartments must be provided on every storey containing sanitary facilities and where a storey has more than 1 bank of sanitary compartments, at not less than 50% of these banks in accordance with AS1428.1-2009. In addition to the unisex sanitary compartment, each bank of toilets must be provided with a sanitary compartment suitable for a person with an ambulant disability in accordance with AS 1428.1 and must be provided for use by males and females. An accessible unisex sanitary compartment must contain a closet pan, washbasin, shelf or bench top and adequate means of disposal of sanitary towels. The circulation spaces, fixtures and fittings of all accessible sanitary facilities provided in accordance with Table F2.4(a) and Table F2.4(b) must comply with the requirements of AS 1428.1; and Access to unisex sanitary facility must be located so that it can be entered without crossing an area reserved for one sex only. Where two or more of each type of accessible unisex sanitary facility are provided, the number of left and right handed mirror image facilities must be provided as evenly as possible, Notes: Where male sanitary facilities are provided at a separate location to female sanitary facilities, accessible unisex sanitary facilities are only required at one of those locations. Construction documentation will demonstrate compliance with the above and an alternative solution as detailed in the status column.	The proposed building will comply with the performance requirements of the BCA through the formulation of an alternative solution with regard to location of accessible facilities and the provision of ambulant facilities.

4.3 Design for Access and mobility - AS1428.1-2009

1428.1 clause	Title	Assessment and Comment	Status
6.4	Passing space for wheelchairs	A minimum width of 1800mm for 2000mm long should be provided for passing spaces for 2 wheelchairs (See BCA D3.3 requirements above – **applies where no direct line of sight**). Construction documentation will demonstrate compliance.	The proposed building will comply
6.5	Circulation space for wheelchair turn	The space required for a wheelchair to make a 60° to 90° turn shall have a gradient no steeper than 1 in 40 and shall be not less than 1500 mm wide and 1500 mm long in the direction of travel. The space may be splayed across the internal corner.   Where the angle of turn is 30° to less than 60° and the width of the path of travel is less than 1200 mm, a splay of at least 500 mm × 500 mm shall be made on the internal corner.   Accessways are required to have a turning spaces complying with AS 1428.1-2009 within 2 m of the end of accessways where it is not possible to continue travelling along the accessway and at maximum 20 m intervals along the accessway.   Construction documentation will demonstrate compliance with the above and an alternative solution as detailed in the status column.	The proposed building will comply

1428.1 clause	Title	Assessment and Comment	Status
6.6	Visual indicators on glazing	Decals on an accessway glazing must have a contrasting line of not less than 75mm with the lower edge of the contrasting line located between 900mm and 1000mm above the plane of the finished floor level. The contrasting strip must be a minimum of 30%. Construction documentation will demonstrate compliance.	The proposed building will comply
7.2	Floor and ground surfaces	Abutment of surfaces are required to have a smooth transition. Construction documentation will demonstrate compliance.	The proposed building will comply
7.4	Soft floor coverings	Carpets and matts are required to comply with the requirements of this clause with the exemption of Clause 7.4.1(a) which does not apply and is replaced with 'the pile height or pile thickness shall not exceed 11 mm and the carpet backing thickness shall not exceed 4 mm the carpet pile height or pile thickness dimension, carpet backing thickness dimension and their combined dimension shown in figure 8 of AS1428.1 do not apply and are replaced with 11 mm, 4 mm and 15 mm respectively as outlined by D3.3 of the BCA. Construction documentation will demonstrate compliance.	The proposed building will comply
7.5	Grates	Openings in any grates within and/or adjacent to the building (such as stormwater sump grates and the like) which are within accessible areas or on an accessible path of travel, are not to exceed 13mm in diameter. Construction documentation will demonstrate compliance.	The proposed building will comply
8	Signage	Signage is required to be installed through the development in accordance with this clause (see **Appendix A**) Construction documentation will demonstrate compliance.	The proposed building will comply
9	Tactile ground surface indicators	Tactile ground surface indicators are required to comply with AS/NZS 1428.4.1-2009. Construction documentation should demonstrate compliance.	The proposed building will comply
10.2	Walkways	A walkway is defined as: *Any surface on a continuous accessible path of travel with a gradient not steeper than 1 in 20.* Walkways are required to be provided in accordance with the requirements of this clause (see **Appendix B**) Construction documentation will demonstrate compliance.	The proposed building will comply
10.3	Ramps	Ramps are required to be provided in accordance with the requirements of this clause. Ramps are to be provided with kerb and handrails on both sides of the ramp. (See **Appendix C**) Construction documentation will demonstrate compliance.	The proposed building will comply
10.4	Curved walkways, ramps and landings	N/A	N/A

1428.1 clause	Title	Assessment and Comment	Status
10.5	Threshold ramps	Any proposed threshold is required to comply with the requirements of this clause.  Construction documentation will demonstrate compliance.	The proposed building will comply
10.6	Step ramps	The CAMHS Outdoor Area is to be provided with a step ramp complying with this clause if the step down is greater than 35mm. Otherwise a threshold ramp can be utilised. Construction documentation will demonstrate compliance.	The proposed building will comply
10.7	Kerb ramps	Kerb ramps are to be constructed in accordance with the requirements of this clause. Construction documentation will demonstrate compliance.	The proposed building will comply
10.8	Landings	The length of a landing must be not less than 1200mm or 1500mm with a change of direction of more than 90^0. Construction documentation will demonstrate compliance.	The proposed building will comply
11.1	Stairways	Stairs are required to comply with the requirements of this clause. Generally stairways are required to have opaque risers and contrasting nosings with a contrasting strip not less than 50mm and not more than 75mm set back a maximum of 15mm from the front of the nosing. Where the contrasting strip is not set back from the front of the nosing then the area of contrast must not extend down the riser by more than 10mm. This level of detail is not currently documented on the plans.  Construction documentation will demonstrate compliance.	The proposed building will comply

1428.1 clause	Title	Assessment and Comment	Status
11.2	Stairway handrails	Handrails are required to be installed on both sides of stairs in accordance with the requirements of this clause. Generally handrails should be positioned between 865mm to 1m, extend 300mm plus the length of one tread at the bottom of each stair and 300mm at the top of each stair.  Construction documentation will demonstrate compliance.	The proposed building will comply
12	Handrails	Handrails are required to comply with the requirements of this clause and generally handrails must be circular or elliptical handrails with a cross-section of between 30mm to 50mm with a clearance of a minimum 50mm maintained between the handrails and an adjacent wall surface. Construction documentation will demonstrate compliance.	The proposed building will comply
13.1	Doorway luminance contrast	A minimum luminance contrast of 30% must be provided between the following; • door leaf and door jamb; • door leaf and adjacent wall; • architrave and wall; • door leaf and architrave or door jamb and adjacent wall. The minimum width of the luminance contrast is 50mm. Construction documentation will demonstrate compliance.	The proposed building will comply
13.2	Clear opening of doorways	All doors (unless the door, gate or the like provides access to areas exempt from being accessible under D3.4 of the BCA) must have a clear unobstructed width of 850mm at minimum. Construction documentation will demonstrate compliance.	The proposed building will comply
13.3	Circulation spaces at doorways	Circulation spaces are required to be provided on both sides of every door, gate entryway on the accessible path of travel (unless the door, gate or the like provide access to areas exempt from being accessible under D3.4 of the BCA). **See Appendix D** for door circulation space requirements. Construction documentation will demonstrate compliance.	The proposed building will comply
13.4	Distance between successive doorways	The distance between doorways in vestibules, air locks and other similarly enclosed spaces shall be not less than 1450 mm. Where the doors encroach into space, the distance shall be not less than 1450 mm plus the door leaf width. Construction documentation will demonstrate compliance.	The proposed building will comply

1428.1 clause	Title	Assessment and Comment	Status
13.5	Door controls	Door handles are to comply with the requirements of this clause. Generally door handles should allow the door to be unlocked and opened with one hand, be located between 900mm and 1100m above the floor, the handle must be such that the hand of a person will not slip from the handle and the clearance between the handle and door face shall not be less than 35mm and more than 45mm. Construction documentation will demonstrate compliance.	The proposed building will comply
14	Switches and general purpose outlets	All switches and controls on an accessible path of travel shall be located not less than 900 mm nor more than 1100 mm above the plane of the finished floor and not less than 500 mm from internal corners. General purpose outlets shall be located not less than 600 mm nor more than 1100 mm above the plane of the finished floor and not less than 500 mm from internal corners. Construction documentation will demonstrate compliance.	The proposed building will comply
15	Sanitary facilities	Disable unisex toilet facilities should be designed in accordance with the requirements of this provision. Construction documentation will demonstrate compliance.	The proposed building is capable of complying
16	Ambulant sanitary facilities	A male and female ambulant toilet is required to be provided within each bank of toilets.	Please refer to F2.4 above
17	Grabrails	Grabrails are required to comply with the requirements of this provision. Construction documentation will demonstrate compliance.	The proposed building will comply
18	Assembly Buildings	N/A	N/A

5.0 CONCLUSION

In general, the proposed development has demonstrated a degree of accessibility. The drawings indicate that access to and within the building can be readily achieved.

The following areas/matters however have been identified as being able to satisfy the performance requirements of the BCA through the formulation of an alternative solution

Building Code of Australia matters

Clause D3.2:

With regard to compliance with the following requirement:

An accessway must be provided to a building required to be accessible—

(i). from the main points of a pedestrian entry at the allotment boundary

An alternative solution is being formulated by an accredited access consultant which will demonstrate that the proposed development satisfies the relevant performance requirements of the BCA.

Clause F2.4:
With regard to compliance with the following requirements:

Unisex sanitary compartments must be provided on every storey containing sanitary facilities and where a storey has more than 1 bank of sanitary compartments, at not less than 50% of these banks in accordance with AS1428.1-2009.

In addition to the unisex sanitary compartment, each bank of toilets must be provided with a sanitary compartment suitable for a person with an ambulant disability in accordance with AS 1428.1 and must be provided for use by males and females.

An alternative solution is to be formulated by an accredited access consultant which will demonstrate that the proposed development satisfies the relevant performance requirements of the BCA.

Prepared by:

Kendall Clydsdale
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Reviewed and verified by:

Bill Nettleton
Executive Director

Schedule 1:

Assessed plans prepared by Rod Hay & Associates:

Plan Title	Drawing No	Revision	Date
Cover Sheet	7756-01	-	21.08.15
Location	7756-02	A	21.08.15
Site Plan	7756-03	A	21.08.15
Lower Ground Floor	7756-04	A	21.08.15
Ground Floor	7756-05	A	21.08.15
First Floor	7756-06	A	21.08.15
Elevations	7756-07	A	21.08.15
Elevations	7756-08	A	21.08.15

APPENDIX A - SIGNAGE

8 SIGNAGE

8.1 Form of signs

The BCA contains requirements for Braille and tactile signage in Specification D3.6.

Where signs are required, the form of signs shall be as follows:

(a) Where required, raised tactile and/or Braille signage shall be provided as follows:

(i) Sanitary facilities shall be identified with the following:

(A) Raised and visual versions of the international symbol of access.

(B) Raised and visual versions of the male and female symbols.

(C) Raised text that shall be in title case (e.g. Male Toilet).

NOTE: Title case has the first letter of each word capitalized and the rest are lower case. Short articles, prepositions and conjunctions are not capitalized.

(D) Braille that fully describes the visual information displayed by symbols and raised text.

NOTES:

1 For example, a sign for a male accessible toilet will include the words Male Toilet as visual, raised text and Braille as well as the raised visual male symbol.

2 An example of a sign is given in Figure 9(a).

(ii) Signs for unisex accessible facilities shall be provided with the letters LH or RH to indicate a left-hand or right-hand side transfer onto the WC pan. The minimum font size shall be 20 mm san serif.

NOTES:

1 An example of right-hand side (RH) transfer is shown on Figure 9(a).

2 Helvetica and Arial are san serif fonts.

(iii) Entry doors to airlocks serving areas containing sanitary facilities shall be identified by the use of raised text and Braille, together with raised and visual symbols identifying each sanitary facility within.

NOTES:

1 One symbol for each facility need only be used.

2 Where the facilities for male and female are separate, a dividing line should be placed between each symbol.

(b) Elements of a sign shall be set out singularly, or in a modular form.

NOTE: Examples of modular form are shown in Figures 9(a), 9(d), 9(e) and 9(f).

(c) Elements of a sign shall be arranged horizontally or vertically and shall include raised text and Braille, together with raised and visual symbols. Where words are used, they shall be displayed horizontally.

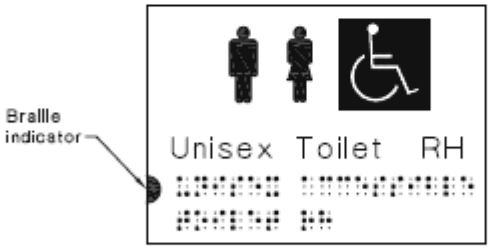
NOTE: Other symbols may be used in association with the text.

(d) Facilities shall be identified by the use of raised text, Braille, and symbols if required. The identification shall be between 1200 mm and 1600 mm above finished floor levels.

(e) A sanitary compartment for people with ambulant disabilities shall be identified in accordance with Figure 9(c).

Braille shall be Unified English Braille (UEB), Grade 1, uncontracted, and shall be in accordance with the technical specifications set out by the Australian Braille Authority (ABA). Braille numerals shall be preceded by a Braille numerical sign.

The International Symbol of Access and the International Symbol for Deafness (see Clause 8.2.2) may be used without raised explanatory text such as 'accessible' or 'hearing loop installed'.



(a) Example of identification sign for a unisex accessible toilet with a right–hand (RH) transfer

NOTES:

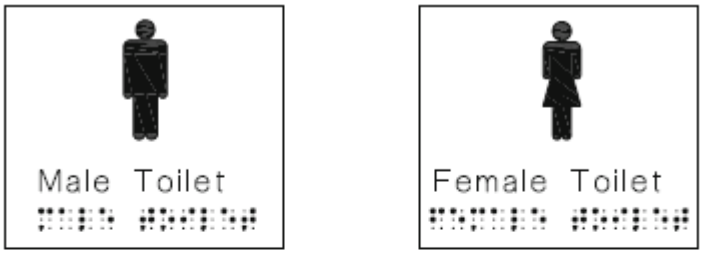
1 The Braille indicator is only used where there are multiple lines of text. It indicates the location of the first line of Braille.

2 Visual message: The sign displays a unisex accessible toilet with right-hand (RH) transfer.

3 Minimum required raised tactile message: 'Unisex Toilet RH' in raised tactile print and symbols.

4 Minimum required Braille message: 'Unisex accessible toilet RH' for right-hand transfer.

FIGURE 9 (in part) MODULAR FORM OF SIGNS

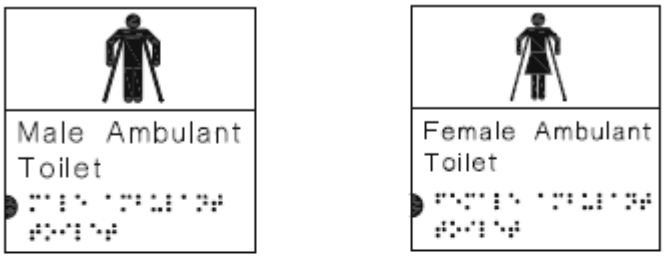


(b) Example of identification signs for male and female toilets

NOTES:

1 Visual message: The signs display male toilet and female toilet.
2 Minimum required raised tactile message: 'Male Toilet', 'Female Toilet' in raised tactile print and symbols.
3 Minimum required Braille message: 'Male Toilet', 'Female Toilet'.

FIGURE 9 (in part) MODULAR FORM OF SIGNS

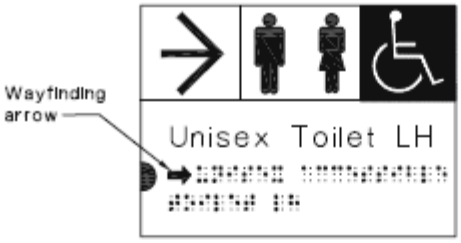


(c) Example of identification signs for ambulant accessible male and female toilets

NOTES:

1 Visual message: The signs display ambulant accessible male and female toilets.
2 Minimum required raised tactile message: 'Ambulant Male Toilet', 'Ambulant Female Toilet' in raised tactile print and symbols.
3 Minimum required Braille message: 'Male Ambulant Toilet', 'Female Ambulant Toilet'.

FIGURE 9 (in part) MODULAR FORM OF SIGNS



(d) Example of wayfinding sign to a unisex accessible toilet with left-hand (LH) transfer

NOTES:

1 Visual message: The sign displays the direction to a unisex accessible toilet with left-hand (LH) transfer.
2 Minimum required tactile message: 'Unisex Toilet LH' with raised tactile wayfinding arrow, print and symbols.
3 Minimum required Braille message: 'Unisex accessible toilet LH' with a wayfinding arrow of Braille cell proportion.

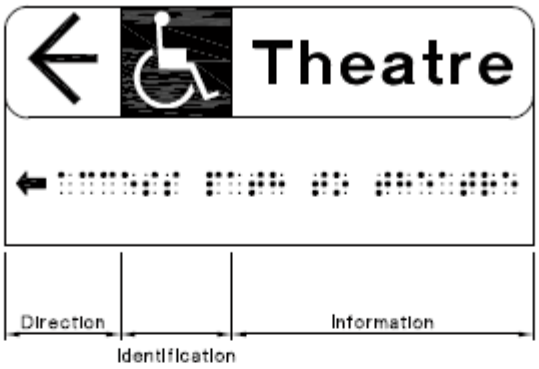
FIGURE 9 (in part) MODULAR FORM OF SIGNS

(e) Example of wayfinding sign to a unisex accessible toilet

NOTES:

1 Visual message: The sign displays an accessible path of travel using a lift to level 3 to a unisex accessible toilet.
2 Minimum required tactile message: 'Unisex Toilet Level 3' with raised tactile symbols and print.
3 Minimum required Braille message: 'Unisex accessible toilet on Level 3' with a wayfinding arrow of Braille cell proportion.

FIGURE 9 (in part) MODULAR FORM OF SIGNS



(f) Example of wayfinding sign to identify facilities for persons with mobility disabilities

NOTES:

1 Visual message: The sign displays the direction of an accessible path of travel to a theatre.

2 Minimum required tactile message: Raised tactile wayfinding arrow, print and symbols.

3 Minimum required Braille message: 'Access path to theatre' with a wayfinding arrow of Braille cell proportion.

FIGURE 9 (in part) MODULAR FORM OF SIGNS

8.2 Symbols indicating access for people with disabilities

8.2.1 *International symbol of access*

The form of the international symbol of access shall be as follows:

(a) The symbol of access shall consist of two elements: a stylized figure in a wheelchair pointing to the right on a plain square background.

(b) The proportional layout of the symbol of access shall be in accordance with Figure 10.

(c) The colour of the Figure shall be white on a blue background in accordance with Figure 11. The blue shall be B21, ultramarine, of AS 2700, or similar.

(d) For signs indicating the direction to a facility, an arrow shall be used in combination with the international symbol of access.

NOTE: Signs identifying a facility may be used either with or without directional arrows.

NOTE: The grid is for positional purposes only.

FIGURE 10 PROPORTIONAL LAYOUT FOR INTERNATIONAL SYMBOL OF ACCESS

FIGURE 11 COLOUR CONTRAST FOR SYMBOL OF ACCESS

8.2.2 *International symbol for deafness*

The form of the international symbol for deafness shall be as follows:

(a) The symbol for deafness shall consist of two elements: a stylized ear and diagonal slash on a plain square background.

(b) The proportional layout of the symbol for deafness shall be in accordance with Figure 12.

(c) The colour of the symbol shall be white on a blue background. The blue shall be B21, ultramarine, of AS 2700, or similar.

APPENDIX B - WALKWAYS

10 WALKWAYS, RAMPS AND LANDINGS

10.1 General

Walkways, ramps and landings that are provided on a continuous accessible path of travel shall be as follows:

(a) Sharp transitions shall be provided between the planes of landings and ramps, as shown in Figure 14.

(b) Landings shall be provided at all changes in direction in accordance with Clause 10.8.

(c) Landing or circulation space shall be provided at every doorway, gate, or similar opening.

(d) For walkways and landings having gradients in the direction of travel shallower than 1 in 33, a camber or crossfall shall be provided for shedding of water and shall be no steeper than 1 in 40, except that bitumen surfaces shall have a camber or crossfall no steeper than 1 in 33.

NOTE: For requirements for ground surfaces, see Clause 7.

NOTE: A summary of requirements for walkways, ramps and landings is provided in Appendix C.

10.2 Walkways

Walkways shall comply with the following:

(a) The floor or ground surface abutting the sides of the walkway shall provide a firm and level surface of a different material to that of the walkway at the same level of the walkway, follow the grade of the walkway and extend horizontally for a minimum of 600 mm unless one of the following is provided:

(i) Kerb in accordance with Figure 18.

(ii) Kerb rail and handrail in accordance with Figure 19.

(iii) A wall not less than 450 mm in height.

(b) Walkways shall be provided with landings, as specified in Clause 10.8, at intervals not exceeding the following:

(i) For walkway gradients of 1 in 33, at intervals no greater than 25 m.

(ii) For walkway gradients of 1 in 20, at intervals no greater than 15 m.

(iii) For walkway gradients between 1 in 20 to 1 in 33, at intervals that shall be obtained by linear interpolation.

For walkways shallower than 1 in 33, no landings are required.

The intervals specified above may be increased by 30% where at least one side of a walkway is bounded by—

(A) a kerb or kerb rail as specified in Clause 10.3(j) and a handrail as specified in Clause 12; or

(B) a wall and a handrail as specified in Clause 12.

APPENDIX C - RAMPS

10.3 Ramps

Ramps shall comply with the following:

(a) The maximum gradient of a ramp exceeding 1900 mm in length shall be 1 in 14.

(b) The gradient of a ramp shall be constant throughout its length with a maximum allowable tolerance of 3% provided no section of the ramp is steeper than 1 in 14.

(c) Ramps shall be provided with landings, as specified in Clause 10.8, at the bottom and at the top of the ramp and at intervals not exceeding the following:

(i) For ramp gradients of 1 in 14, at intervals not greater than 9 m.

(ii) For ramp gradients steeper than 1 in 20, at intervals not greater than 15 m.

(iii) For ramp gradients between 1 in 14 and steeper than 1 in 20, at intervals that shall be obtained by linear interpolation.

(d) Where ramps are constructed with a change in direction, the angle of approach shall create a 90° angle to the line of transition between the ramp surface and the landing surface, as shown in Figure 13.

(e) Ramps shall have a handrail complying with Clause 12 on each side of the ramp, as shown in Figure 14.

NOTE: Figures 15(A) and 15(B) show examples of suitable ramp handrail terminations.

(f) Where the intersection is at the property boundary, the ramp shall be set back by a minimum of 900 mm so that the handrail (complying with Clause 12) and TGSIs do not protrude into the transverse path, as shown in Figure 16.

TGSIs shall be installed in accordance with AS 1428.4.1.

(g) Where the intersection is at an internal corridor, the ramp shall be set back by a minimum of 400 mm so that the handrail complying with Clause 12 does not protrude into the transverse path of travel as shown in Figure 17.

(h) The handrail shall extend a minimum of 300 mm horizontally past the transition point at the top and bottom of the ramp except where the inner handrail is continuous at an intermediate landing.

(i) Ramps and intermediate landings shall have kerbs or kerb rails on both sides that comply with the following:

(i) The minimum height above the finished floor shall be 65 mm.

(ii) The height of the top of the kerb or kerb rail shall not be within the range 75 mm to 150 mm above the finished floor, as shown in Figure 18.

(iii) There shall be no longitudinal gap or slot greater than 20 mm in the kerb or kerb rail within the range 75 mm to 150 mm above the finished floor.

NOTES:

1 For details on kerbs and kerb rails, see Figure 18.

2 For location of kerb or kerb rail, see Figure 19.

3 Examples of kerb rail configuration are shown in Appendix A.

(j) Kerbs or kerb rails shall—

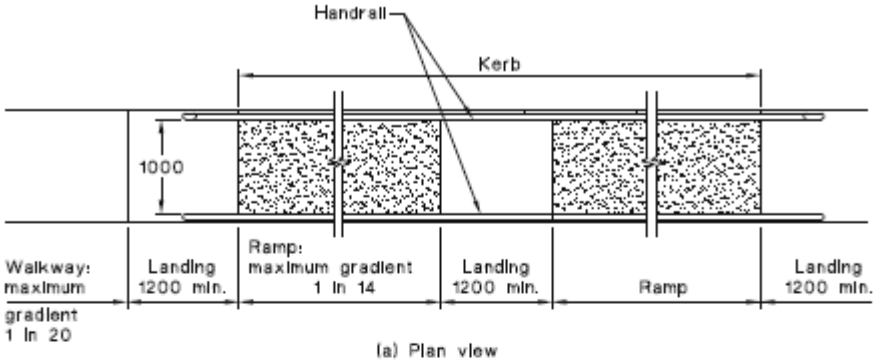
(i) be located so that the ramp-side face is either flush with the ramp-side face of the handrail or no greater than 100 mm away from the ramp-side face of the handrail, as shown in Figure 19;

(ii) where the handrail is supported on a vertical post, the height of the top of the kerb or kerb rail shall be not less than 150 mm above the finished floor, as shown in Figures 19(a), 19(b) or 19(c); and

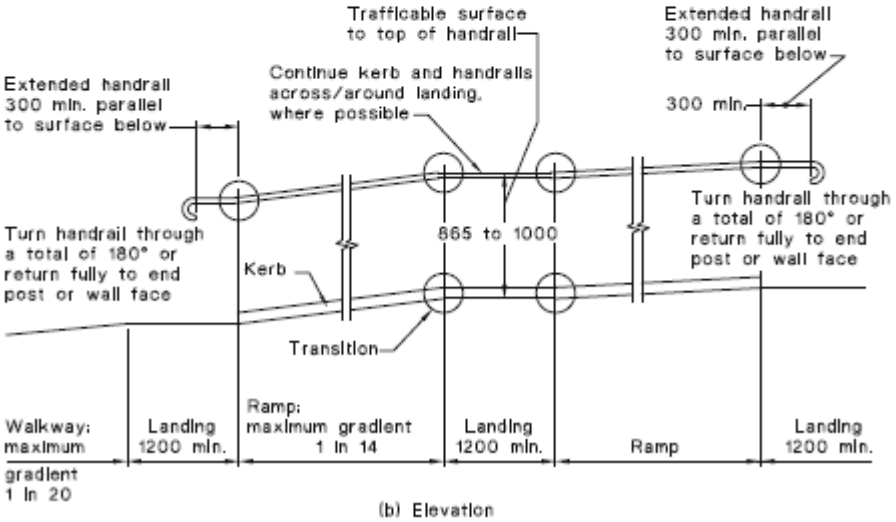
(iii) where the kerb is at a height of 65 mm to 75 mm, the support posts shall be set back a minimum of 200 mm from the face of the kerb or kerb rail, as shown in Figure 19(d).

DIMENSIONS IN MILLIMETRES

FIGURE 13 ANGLE OF APPROACH BETWEEN RAMP AND LANDING



(a) Plan view



(b) Elevation

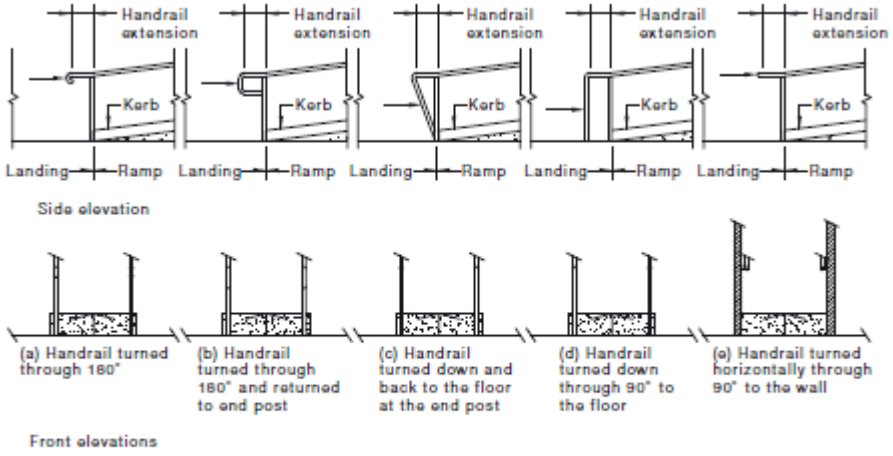
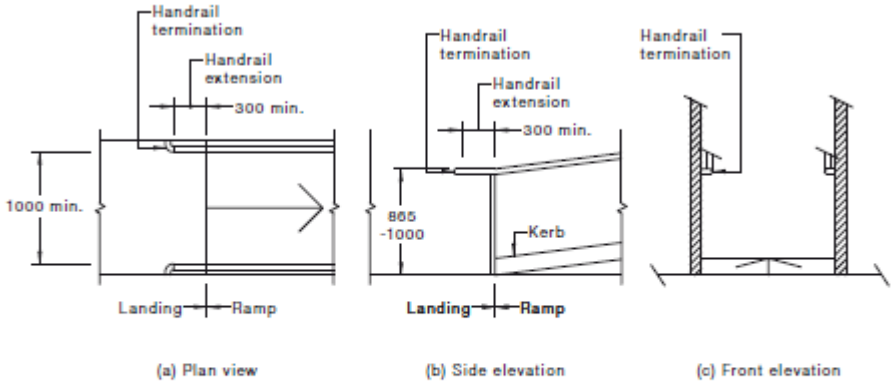
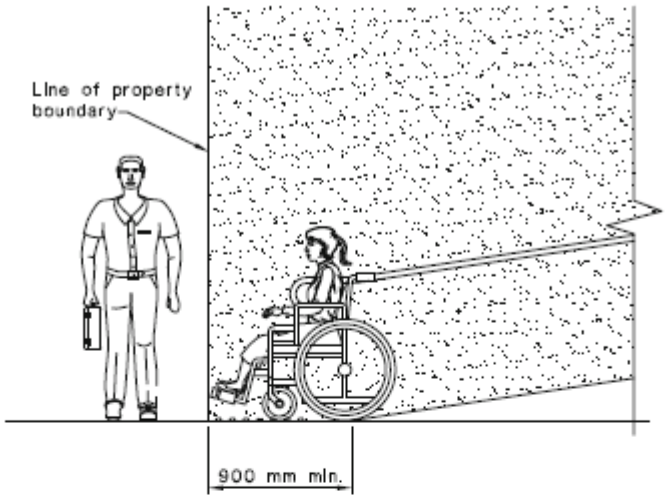


FIGURE 15(A) RAMP HANDRAILS—EXAMPLES OF HANDRAIL TERMINATIONS

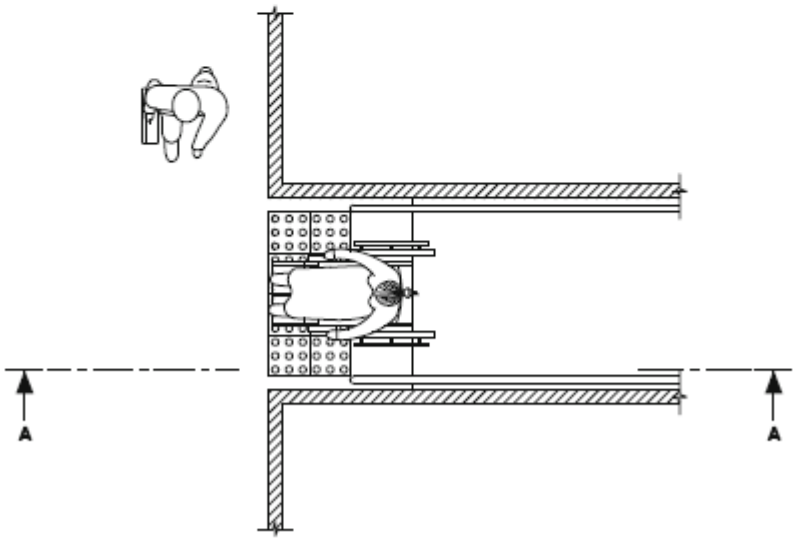


DIMENSIONS IN MILLIMETRES

FIGURE 15(B) RAMP HANDRAILS—DETAIL FOR HANDRAILS TERMINATED BY TURNING HORIZONTALLY THROUGH 90° TO THE WALL

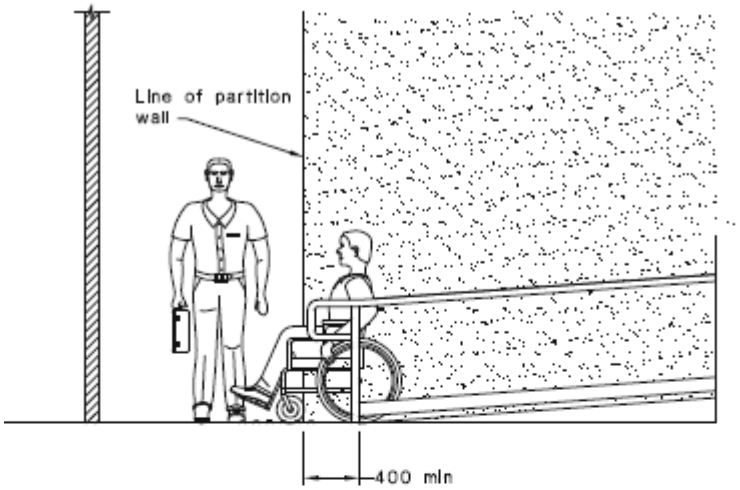


SECTIONAL ELEVATION A-A

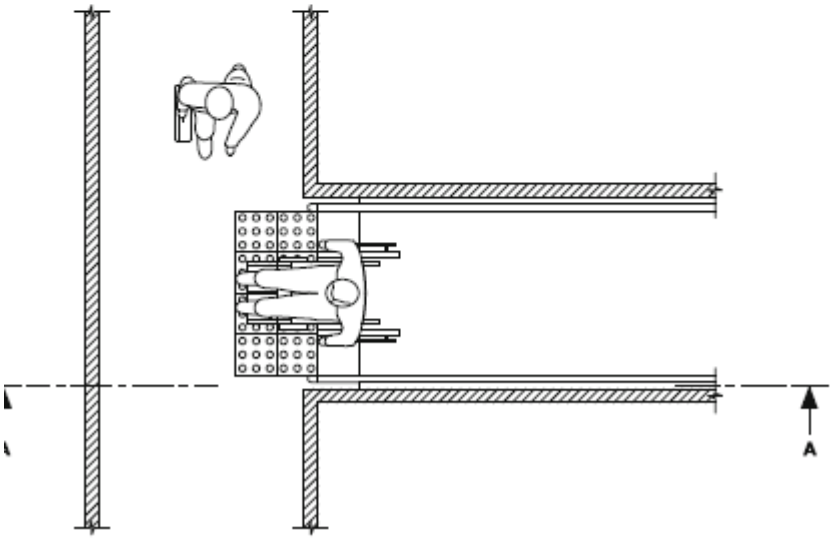


Plan

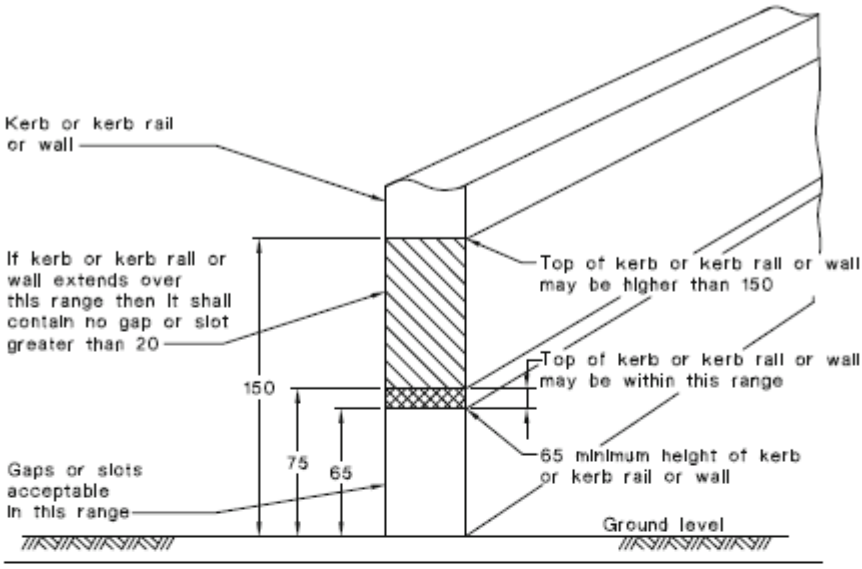
NOTE: TGSIs to be installed within the property boundary.



SECTIONAL ELEVATION A-A

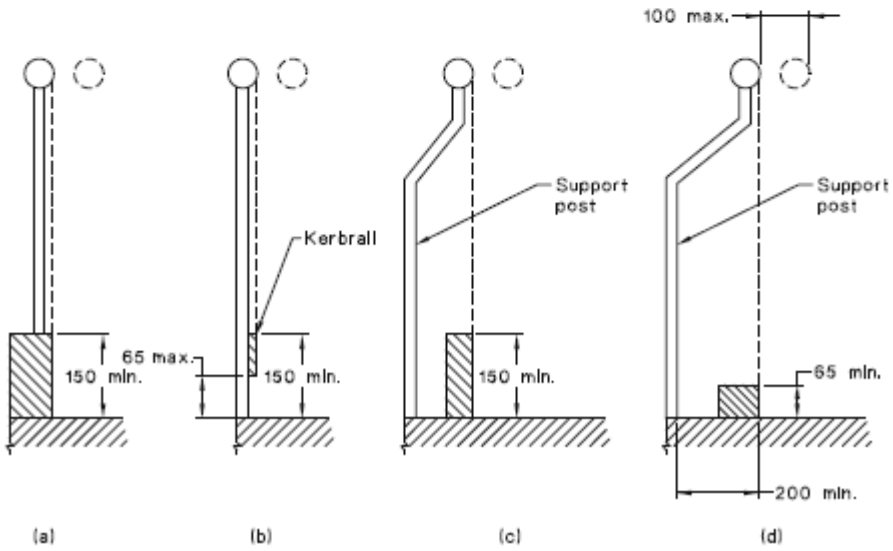


Plan

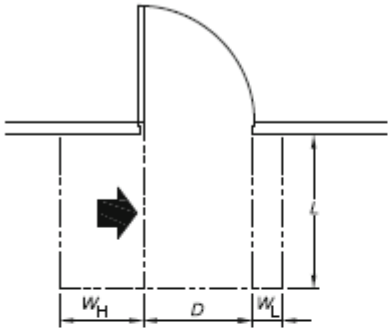


DIMENSIONS IN MILLIMETRES

FIGURE 18 KERB

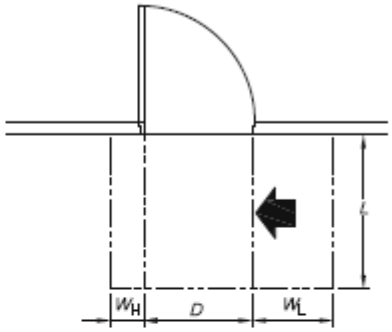


APPENDIX D – CIRCULATION SPACE AT DOORWAYS



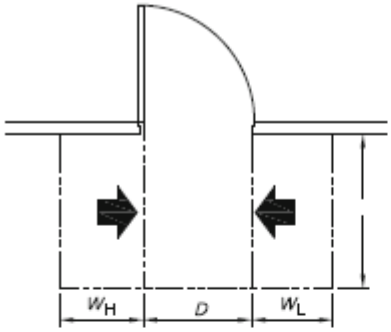
Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1220	560	340
900	1185	510	340
950	1160	460	340
1000	1140	410	340

(a) Hinge-side approach, door opens away from user



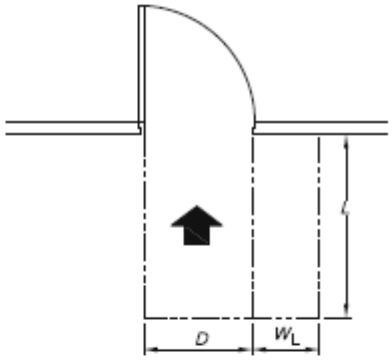
Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1240	240	660
900	1210	190	660
950	1175	140	660
1000	1155	90	660

(b) Latch-side approach, door opens away from user



Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1240	560	660
900	1210	510	660
950	1175	460	660
1000	1155	410	660

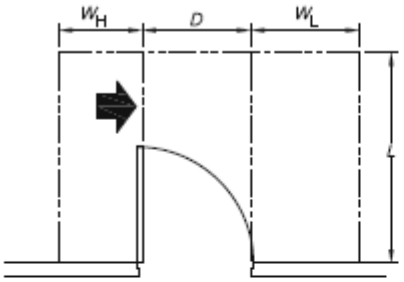
(c) Either side approach, door opens away from user



Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1450	0	510
900	1450	0	510
950	1450	0	510
1000	1450	0	510

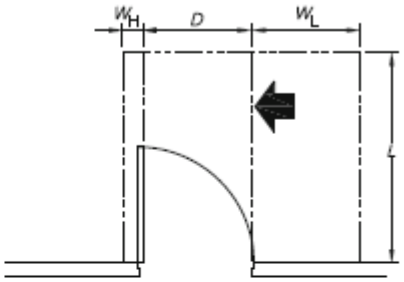
(d) Front approach, door opens away from user

LEGEND:
D = Clear opening of width of doorway
L = Length
W_H = Width—hinge side
W_L = Width—latch side
➡ = Direction of approach
—— = Circulation space



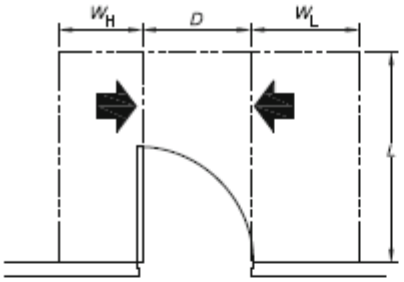
Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1670	660	900
900	1670	610	900
950	1670	560	900
1000	1670	510	900

(e) Hinge-side approach, door opens towards user



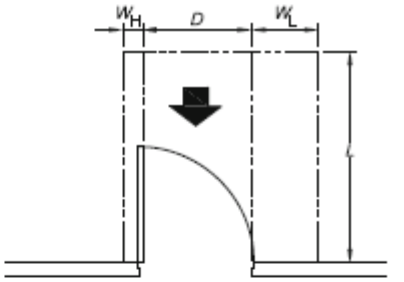
Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1670	110	900
900	1670	110	900
950	1670	110	900
1000	1670	110	900

(f) Latch-side approach, door opens towards user



Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1670	660	900
900	1670	610	900
950	1670	560	900
1000	1670	510	900

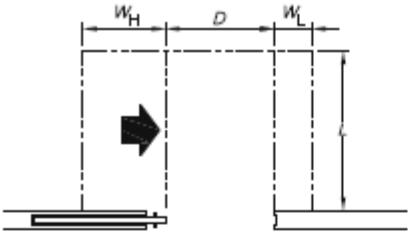
(g) Either side approach, door opens towards user



Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1450	110	530
900	1450	110	530
950	1450	110	530
1000	1450	110	530

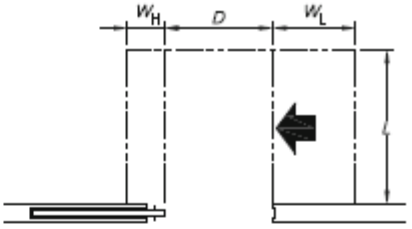
(h) Front approach, door opens towards user

LEGEND:
D = Clear opening of width of doorway
L = Length
W_H = Width—hinge side
W_L = Width—latch side
➡ = Direction of approach
-·-· = Circulation space



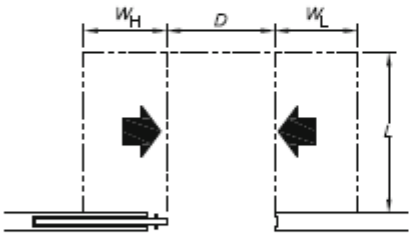
Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1280	660	395
900	1280	610	395
950	1280	560	395
1000	1280	510	395

(a) Slide-side approach



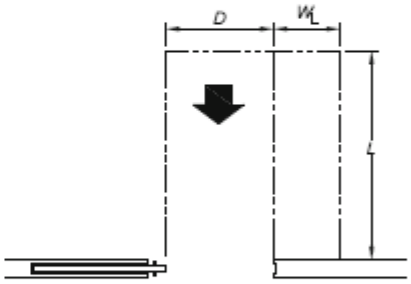
Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1230	185	660
900	1230	180	660
950	1230	180	660
1000	1230	180	660

(b) Latch-side approach



Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1280	660	660
900	1280	610	660
950	1280	560	660
1000	1280	510	660

(c) Either side approach



Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1450	0	530
900	1450	0	530
950	1450	0	530
1000	1450	0	530

(d) Front approach

LEGEND:
D = Clear opening of width of doorway
L = Length
W_H = Width—hinge side
W_L = Width—latch side
➡ = Direction of approach
—·— = Circulation space

Attachment 5
Erosion and Sediment

15-570(DA1)
PM
14 December 2015

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ACN 098 542 575
ABN 14 904 295 412

Dear Sir,

RE: PROPOSED HEALTH SERVICES FACILITY at 1A Dudley Road, Charlestown

In regard to correspondence dated 19th November 2015 from Lake Macquarie City Council, MPC comment as follows:

"Civil engineering drawings marked C01, C02, C03 and C04 issued for DA on 17 August 2015 comply with DCP 2014 for Soil and Water Management"

We trust that this information is of assistance. Should you require further information, please contact the undersigned.

Yours faithfully
MPC Consulting Engineers

PETER MARCH
Director

Encl: Acceptance of Proposal
Conditions of Engagement