

Disability Access Report

Trinity Point

Trinity Point Drive
MORISSET PARK NSW

For: Johnson Property Group
Ref: LP_21398



Document Control

This report has been prepared based on the documentation available and time allocated to conduct the review. All reasonable attempts have been made to identify key compliance matters.

Revision Summary:

prepared by: Lindsay Perry	Draft Revision 1	23 March 2022 29 March 2022

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Clarifications:

This report is limited to items within drawings listed in this report only.

Any dimensions quoted throughout this report and within Australian Standards are CLEAR dimensions, not structural.

The recommendations throughout this report reflect the professional opinion and interpretation of Lindsay Perry Access Pty Ltd. This may differ from that of other consultants.

Definitions:

The following terminology has been used throughout this report:

Capable of compliance | compliance is achievable through detailed design
Compliant | compliance with current accessibility legislation has been achieved
Compliant Configuration | circulation and spatial planning requirements are compliant
Not Yet Compliant | circulation and spatial planning requirements have not yet been met
To be addressed during detailed design stage | details not available at DA stage
To be confirmed | inadequate information is provided to determine compliance



Executive Summary

Concept development application documentation for the Trinity Point Mixed Use Development located at Trinity Point Drive Morisset Park, has been reviewed against current accessibility legislation.

A key element of the proposed development is the design philosophy and approach with six buildings capped by hill shaped angled green roofs to achieve a high level of sustainability. Accessibility has been considered within this realm of sustainability to ensure an inclusive community is achieved that will benefit the community as a whole.

We consider that the drawings presented for assessment, for the purposes of a concept development application, generally comply with current statutory requirements.

A handwritten signature in black ink, appearing to read 'L Perry'.

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1. Project Background

Trinity Point sits in the suburb of Morisset Park, which includes primarily low scale residential neighborhoods, with local shops and schools, which together form the Morisset Peninsula. The proposal is for a concept development application pursuant to Division 4.4 of the Environmental Planning and Assessment Act (EP&A Act) 1979. Detailed proposals are to be the subject of further development application/s.

The proposed development is a Mixed-Use Tourist, Hospitality and Residential Development that includes a 300 seat function centre; 2 x 300 seat restaurants/dining (including outdoor dining); serviced meeting rooms; pool; 224 hotel rooms (three room types); and 180 residential dwellings (2, 3, & 4 bedroom arrangements).

These uses will be distributed across six hill-shaped buildings set within an embellished ground plane that invites people to and through and connects to the lake foreshore, with basement parking and access/servicing as required.

The two northern buildings are proposed for tourism and hospitality uses, with Porte Cochere and embellishments including pool; with the four central and southern buildings proposed for residential uses. The buildings are proposed as five (5) buildings over eight (8) levels (ground + seven (7)) and one (1) building over six (6) levels. Each building follows a stepped/reduced floor space as the building rises. The architecture provides an organic curved form, with high and angled architectural roof features. The northern buildings are raised above current natural ground level to respond to flood planning level requirements.



Figure 1 | Proposed Development

The design approach for the project looks to transform the contribution the site can make to the area through replacing traditional residential flat building and hotel typology that plays it 'safe' with a design philosophy that is transformative and looks to the future of iconic form and sustainability

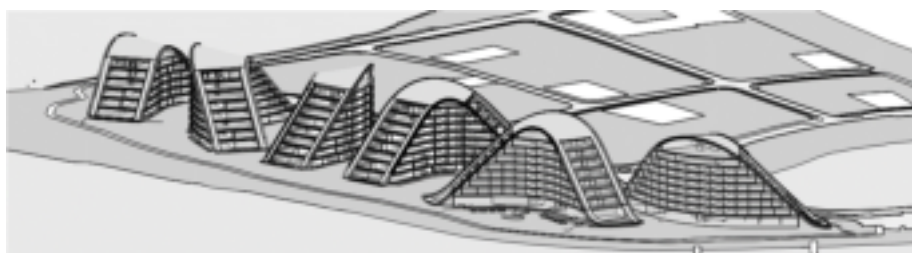


Figure 2 | Overall Site Perspective



2. Reviewed Documentation

Architectural documentation prepared by Koichi Takada Architects has been reviewed as follows:

dwg no.	drawing name	revision
PP-0000	Cover Page	A
PP-0001	Project Summary	A
PP-0010	Context Plan	A
PP-0013	Site Plan	A
PP-0015	Staging Plan	A
PP-0149	Basement Plans	A
PP-0150	Overall Plans 01	A
PP-0151	Overall Plans 02	A
PP-0152	Overall Plans 03	A
PP-0200	Elevations (Overall)	A
PP-0201	Elevations (Typical Hotel)	A
PP-0202	Elevations (Typical Residential)	A
PP-0300	Sections (Typical Buildings)	A
PP-0455	Cross Ventilation Diagrams 01	A
PP-0456	Cross Ventilation Diagrams 02	A
PP-0457	Cross Ventilation Diagrams 03	A
PP-0465	Solar Access Diagrams 01	A
PP-0466	Solar Access Diagrams 02	A
PP-0467	Solar Access Diagrams 03	A
PP-0470	Shadow Diagrams – Summer 01	A
PP-0471	Shadow Diagrams – Summer 02	A
PP-0472	Shadow Diagrams – Summer 03	A
PP-0476	Shadow Diagrams – Winter 01	A
PP-0477	Shadow Diagrams – Winter 02	A
PP-0478	Shadow Diagrams – Winter 03	A

Landscape documentation prepared by Terras Landscape Architects has been reviewed as follows:

dwg no.	drawing name	revision
	Cover Sheet	
L101	Site Analysis	11.03.22
L102	Site Analysis	11.03.22
L103	Heritage	11.03.22
L104	Heritage	11.03.22
L105	Significant Elements & References	11.03.22
L106	The Vision	11.03.22
L201	Design Principles	11.03.22
L203	Design Philosophy	11.03.22
L204	Design Philosophy	11.03.22
L205	Masterplan	11.03.22
L206	Key Plan	11.03.22
L207	Concept Plan 01	11.03.22
L208	Concept Plan 01 without trees	11.03.22



dwg no.	drawing name	revision
L209	Design Images	11.03.22
L2010	Concept Plan 02	11.03.22
L2011	Concept Plan 02 without trees	11.03.22
L2012	Design Images	11.03.22
L2013	Concept Plan 03	11.03.22
L2014	Concept Plan 03 without trees	11.03.22
L2015	Design Images	11.03.22
L2016	Concept Plan 04	11.03.22
L2017	Concept Plan 04 without trees	11.03.22
L2018	Concept Plan 05	11.03.22
L2019	Concept Plan 05 without trees	11.03.22
L2020	Concept Plan 06	11.03.22
L2021	Concept Plan 06 without trees	11.03.22
L2022	Concept Plan 07	11.03.22
L2023	Concept Plan 07 without trees	11.03.22
L2024	Rendering 07	11.03.22
L2025	Rendering 07	11.03.22
L301	Interpretive Element Type 01	11.03.22
L302	Interpretive Element Type 02	11.03.22
L303	Interpretive Element Type 03	11.03.22
L304	Interpretive Element Type 03	11.03.22
L305	Interpretive Element Type 04	11.03.22
L306	Interpretive Element Type 05	11.03.22
L307	Interpretive Element Type 06	11.03.22
L308	Interpretive Element Type 08	11.03.22
L401	Material Palette 01	11.03.22
L402	Planting Palette 01	11.03.22
L403	Planting Palette 01	11.03.22
L404	Planting Palette 01	11.03.22
L405	Planting Palette 04	11.03.22
L406	Planting Palette 03	11.03.22

3. Council Requirements

Lake Macquarie City Council Development Control Plan includes a Non-discriminatory Access Guideline (adopted 11 June 2013). The guideline provides a clear indication of the levels of information required to support the non-discriminatory access and use requirements outlined in Council's current Development Control Plan (DCP) and to outline the different types of development applications which require an Access Audit.

The key points of the guideline relating to this development is that an access report is to be submitted with the development application.



4. Legislation

Access assessment has been made against Access Legislation including:

- The Commonwealth Disability Discrimination Act 1992 (DDA)
- Disability (Access to Premises (Buildings)) Standards 2010
- Access Code for Buildings 2010
- The National Construction Code Building Code of Australia Volume 1, Amendment 1 2019 (BCA)
 - Section D2.14 / D2.15 / D2.17 – landings, thresholds and slip resistance
 - Section D3 – Access for People with Disabilities
 - Section E3.6 – Passenger Lifts
 - Section F2.4 – Accessible Sanitary Facilities
- Australian Standard AS1428.1 (2009) Amendment 1 & 2, – Design for Access and Mobility
- Australian Standard AS1428.2(1992) – Design for Access and Mobility: Enhanced and additional requirements – Buildings and facilities
- Australian Standard AS1428.4.1 (2009) Amendment 1 – Design for Access and Mobility: Means to assist the orientation of people with vision impairment – Tactile ground surface indicators
- Australian Standard AS2890.6 (2009) – Parking Facilities – Off street carparking For People with Disabilities.
- Australian Standard AS4299 – Adaptable Housing
- Australian Standard AS1735.12 – Lifts, escalators and moving walks: Lifts for persons with a disability
- State Environmental Planning Policy 65 – Residential Design Quality of Residential Apartment Development (SEPP65) – Apartment Design Guide – July 2015
- The Livable Housing Design Guidelines – Edition 4

A summary of the requirements of relevant legislation follows.

The Disability Discrimination Act 1992

The DDA requires independent, equitable, dignified access to all parts of the building for all building users regardless of disability. The DDA makes it unlawful to discriminate against a person on the grounds of disability.

The Disability (Access to Premises) Standards

The Disability (Access to Premises - buildings) Standards 2010 (the Premises Standards) commenced on 1 May 2011. Any application for a building approval for a new building or upgrade of an existing building on or after that date triggers the application of the Premises Standards.

The Premises Standards include an **Access Code** written in the same style as the Building Code of Australia. It has a number of Performance Requirements that are expressed in broad terms and references a number of technical Deemed-to-Satisfy Provisions.



The National Construction Code / Building Code of Australia (Volume 1)

The Building Code of Australia (BCA) is contained within the National Construction Code (NCC) and provides the minimum necessary requirements for safety, health, amenity and sustainability in the design and construction of new buildings (and new building work in existing buildings) throughout Australia. The BCA is a performance-based code and compliance can be met through satisfying the deemed-to-satisfy provisions or by meeting the prescribed performance requirements.

The BCA for Class 2 (residential apartment) buildings, access for people with disabilities is required:

- From a pedestrian entrance required to be accessible to at least 1 floor containing sole-occupancy units and to the entrance doorway of each sole-occupancy unit located on that level.
- To and within not less than 1 of each type of room or space for use in common by the residents, including a cooking facility, sauna, gymnasium, swimming pool, common laundry, games room, TV room, individual shop, dining room, public viewing area, ticket purchasing service, lunch room, lounge room, or the like.
- Where a ramp complying with AS 1428.1 or a passenger lift is installed—
 - a) to the entrance doorway of each sole-occupancy unit; and
 - b) to and within rooms or spaces for use in common by the residents, located on the levels served by the lift or ramp.

The BCA for Class 3 (hotel) buildings requires access for people with disabilities as follows:

- From a pedestrian entrance required to be accessible to at least 1 floor containing sole-occupancy units and to the entrance doorway of each sole-occupancy unit located on that level.
- To and within not less than 1 of each type of room or space for use in common by the residents, including a cooking facility, sauna, gymnasium, swimming pool, common laundry, games room, TV room, individual shop, dining room, public viewing area, ticket purchasing service, lunch room, lounge room, or the like.
- The provision of accessible sole occupancy units (number is dependent on total number of sole occupancy units). Not more than 2 required accessible sole-occupancy units may be located adjacent to each other. Where more than 2 accessible sole-occupancy units are required, they must be representative of the range of rooms available.
- Where a ramp complying with AS 1428.1 or a passenger lift is installed—
 - c) to the entrance doorway of each sole-occupancy unit; and
 - d) to and within rooms or spaces for use in common by the residents, located on the levels served by the lift or ramp.

The BCA for Class 6 (retail and hospitality) buildings requires access for people with disabilities to and within all areas normally used by the occupants.

The BCA for Class 9b (public) buildings requires access for people with disabilities to and within areas normally used by the occupants.



AS1428 – Design for Access and Mobility

The AS1428 Suite provides design requirements for accessibility generally, covering all types of disabilities. AS1428.1 and AS1428.4.1 are referenced by the NCC / BCA.

- Australian Standard AS1428.1 (2009) Amendment 1 & 2, – Design for Access and Mobility contains access requirements that are mandatory for the provision of access for persons with a disability and is referred by the BCA
- Australian Standard AS1428.2(1992) – Design for Access and Mobility: Enhanced and additional requirements – Buildings and facilities provides enhanced and best practice requirements that will minimize DDA risk
- Australian Standard AS1428.4.1 (2009) Amendment 1 – Design for Access and Mobility: Means to assist the orientation of people with vision impairment
 - Tactile ground surface indicators

AS2890.6 – Off-street Carparking for People with Disabilities

AS2890.6 (2009) applies to the carparking areas generally.

AS1735– Lifts, escalators and moving walks

AS1735.12 (1992) contains requirements for passenger lifts for persons with a disability.

SEPP 65 Residential Design Quality of Residential Apartment Development.

The Apartment Design Guide includes a requirement for livable housing. Developments are to provide a minimum 20% of apartments that achieve silver level for livable housing.

AS4299 Adaptable Housing

AS4299 (1993) provides housing for different community groups with different needs. It involves a move away from special accommodation for persons with a disability, avoiding social dislocation.

Livable Housing Australia Design Guidelines

The Livable Housing Design Guidelines, 2017 include Silver, Gold and Platinum Level which cater to differing levels of accessibility.



5. Methodology

The Trinity Point development, with its unique architectural approach offers an opportunity to create a truly inclusive environment. Both the built forms and the landscape connections between each form need consideration. The highest level of accessibility achievable should be incorporated into outdoor spaces within the constraints of the natural environment.

The built environment and urban environment are fundamentally different. The built environment creates an environment of fixed elevation and well-defined parameters that accommodate the necessity of everyday life. The urban environment offers dynamic and challenging opportunities on land, water, and even air. Although the urban environment is constructed, modifying this environment is usually done to provide general public access and ensure public safety. For the urban environment, the focus should be the provision of a system of paths that connect various elements and spaces within the context and constraints of the city.

While accessibility legislation caters largely for mobility, there are other disability groups that need to be considered in realizing a truly inclusive environment. The following suggestions have been made to promote inclusion for all users and represent the major disability groups.

5.1 People with Non-Ambulant Disabilities

A physical disability is the presence of an impairment which may have diverse effects within and among individuals including effects on physical activities such as mobility. Being non- ambulant refers to people unable to walk. Individuals who have a non-ambulant disability will generally use a manual or electric wheelchair for mobility.

We recommend the following design factors be incorporated as appropriate to cater for people with non-ambulant disabilities:

- Provide a continuous accessible path of travel, within the meaning of AS1428.1
- Provision of compliant kerb ramps, pavement joints and crossfalls
- Provision of accessible toilets in convenient locations
- Provision of accessible carparking in close proximity to the building entrance.

5.2 People with Ambulant Disabilities

Being ambulant means being able to move or walk about. An ambulant disability identifies individuals that have their mobility affected but are still able to walk. The effects of an ambulant disability may mean dependency on equipment such as walking frames, crutches or a scooter.

We recommend the following design factors be incorporated as appropriate to cater for people with ambulant disabilities:

- Provision of firm and level ground surfaces that aid balance and stability
- Provide resting areas, with seating, at regular intervals along the path of travel. AS1428.1 (1992) recommends seating at 60m. Seating should include back and arm rests.



5.3 People with Vision Impairment

The term vision impairment is used to describe people with any significant loss of sight. Low vision can be caused by a number of different diseases, conditions or accidents. Some eye conditions are congenital (present at or near birth), some are caused by a disease or infection and others can be caused by accidents or through exposure to damaging UV rays (sunlight) / chemicals.

We recommend the following design factors be incorporated as appropriate to cater for people with vision impairment:

- Way-finding cues including tactile signage / maps.
- Limitation of reflective, polished or mirrored surfaces.
- The use of luminance contrast to define accessways
- Landmarks that can be used for orientational purposes – fountains, statues, and the like
- Minimal use of tactile indicators.
- The provision of information in an audible format.
- Introduction of shore lines and / or the provision of clear building lines to assist in shore lining.

5.4 People with Hearing Impairment

The term hearing impairment is used to describe people with a hearing loss who communicate predominately orally.

We recommend the following design factors be incorporated as appropriate to cater for people with hearing impairment:

- The provision of assisted listening devices where information is provided in audio formats.
- The provision of information in a visual format.

5.5 People with Intellectual Disabilities

Intellectual disability is a disability characterized by significant limitations both in intellectual functioning and adaptive behavior, which covers many everyday social and practical skills. This disability can originate before the age of 18 (for example Downs Syndrome) or can be acquired through brain injury, psychiatric conditions, neurological illness, etc.

Wayfinding is a major issue for people with intellectual disabilities. There are three inter-related processes important to any wayfinding strategy: decision making; decision executing; and information gathering. Therefore, the provision of simple wayfinding strategies would assist their experience within the built environment. Effective wayfinding strategies minimise the level of cognitive functioning required to reach a destination and as such lower the incidence of disorientation and increase the feeling of inclusion.

Factors to consider in designing to accommodate intellectual disabilities is that strobe lighting and intense colour have been found to trigger seizures while clam and soft



lighting reduce the onset of seizures. Further to strobed lighting, reflective surfaces can also trigger seizures.

We recommend the following design factors be incorporated as appropriate to cater for people with intellectual disabilities:

- The use of simple signage strategies with graphics that are consistent in design and systematically located.
- The use of landmarks as reference points – fountains, statues, and the like
- Clearly articulated circulation zones
- Elimination of visual clutter along circulation routes (leads to unneeded cognitive processing).
- The use of non-reflective building materials.

6. The Disability (Access to Premises) Standards

Any application for a building approval for a new building or upgrade of an existing building triggers the application of the Premises Standards. The Premises Standards include an Access Code written in the same style as the Building Code of Australia. Additionally, it offers a number of concessions for existing buildings as outlined below.

6.1 Access Code

The Premises Standards include an Access Code written in the same style as the Building Code of Australia.

Compliance Summary:

Refer to BCA requirements throughout subsequent sections of this report.

6.2 New Work and The Affected Part

The Disability (Access to Premises – Buildings) Standards apply to **...a new part, and any affected part, of a building**, to the extent that the part of the building is...a Class 3, 5, 6, 7, 8, 9 or 10 building (Clause 2.1).

New work is defined as follows (Clause 2.1 (4)):

- An extension to the building or a modified part of the building.

An **affected part** is defined as follows (Clause 2.1 (5)):

- The principal pedestrian entrance of an existing building that contains a new part; and
- Any part of an existing building, that contains a new part, that is necessary to provide a continuous accessible path of travel from the entrance to the new part.

Compliance Summary:

Not applicable

Applies to modifications to existing buildings, not new development.

7 Site Connections

The approach to the building needs to be considered when considering access for persons with a disability. The BCA has three requirements for the approach to the building for persons with a disability.

An accessible path of travel is required to the building entrance from the allotment boundary at the main points of pedestrian entry, from accessible carparking areas and from any adjacent and associated accessible building.

In this instance, the approach to the building has been considered as follows:

- from the allotment boundary at the pedestrian entrance along Trinity Point Drive to the building entrances
- from the accessible carparking areas to the building entrances
- between associated accessible buildings within the site

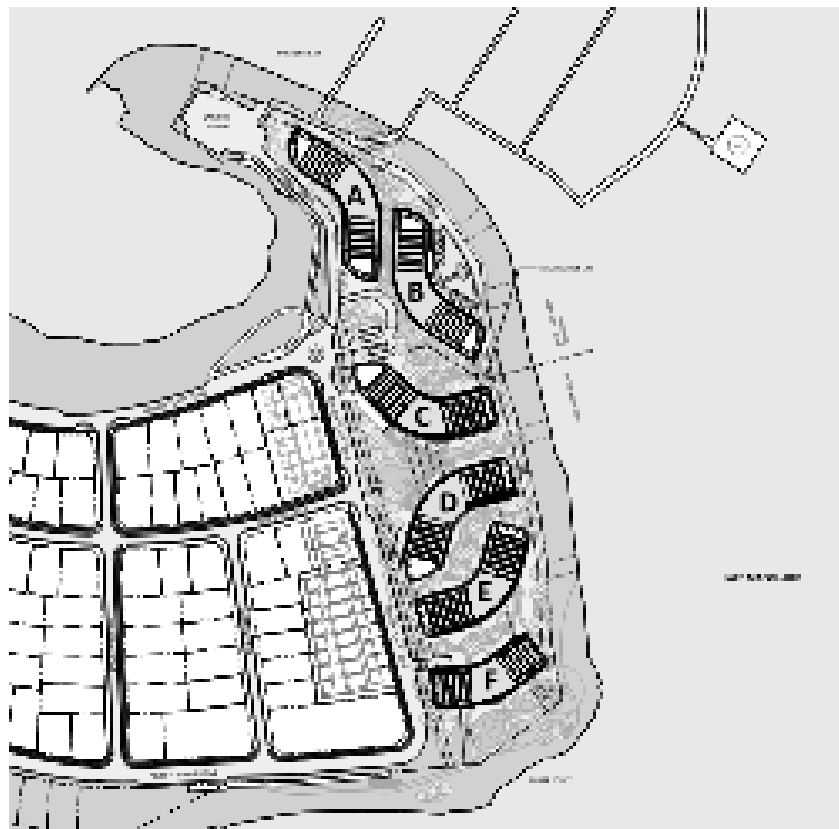


Figure 3 | Overall Site Plan

7.1 Approach from Allotment Boundaries

The BCA requires that a continuous accessible path of travel be provided from the allotment boundary at the main points of pedestrian entry to the main entrance.

Compliance Summary:

Compliant in Principle

Commentary:

The landscape strategy identifies major pedestrian linkages and secondary pedestrian linkages. The major pedestrian linkages provide access from the allotment boundaries along Trinity Point Drive and the Foreshore to buildings entrances and recreational activities within the site. The secondary pedestrian linkages are internal to the site and provide a connection to the foreshore.



Figure 4 | Proposed Pedestrian Linkages

The landscape concept indicates that a series of accessible routes are achievable through the site to promote inclusion. This includes both ramps and walkways. Seating is available along the paths of travel in key locations. A continuous public foreshore promenade around the entire site is a feature of the landscape concept.

7.2 Approach from Accessible Carparking

The BCA requires that a continuous accessible path of travel be provided from the accessible carparking areas to the main entrance.

Compliance Summary:

Compliant in Principle

Commentary:

Carparking is provided at the basement level with lift access throughout all levels of each building.

7.3 Approach between Associated Accessible Buildings

The BCA requires that a continuous accessible path of travel be provided between associated accessible buildings.

Compliance Summary:

Compliant in Principle

Commentary:

The landscape strategy shows separation between public areas and private landscaping areas enables amenity to visitors whilst maintaining privacy for the residents.



Figure 5 | Proposed Pedestrian Linkages between Buildings

The links between the individual buildings reflect this concept and provide a series of accessible routes are achievable through the site that promote inclusion. The consideration of both primary and secondary pedestrian linkages throughout the site will promote wayfinding generally.

Lighting is also a key feature of the landscape strategy and will be provided to provide safety.

8 Building Specific Commentary

The following provides an overview of the accessibility status of the proposed buildings within the Trinity Point development. The intent of the design is to maximise accessibility generally and offer an inclusive environment for all users.

8.1 Building A & Building B – Hotel & Serviced Apartments

Building A and Building B house the public areas of the development being the hotel, restaurant, function areas and associated facilities.



Figure 6 | Port Cochere (Impression Render)

Compliance Summary:

Compliant in Principle

Commentary:

Buildings A & B are considered capable of compliance with current accessibility legislation as follows:

- There is a pedestrian connection to Trinity Point Drive
- Ease access is afforded at the ground floor level
- A central lift core provides access through all levels including basement carparking.
- Direct and clear circulation areas are provided throughout
- The design, in its conceptual form, enables flexibility for the provision of accessible hotel rooms within each building.
- Visual and accessible connections are provided from internal to external areas.
- Accessible connections are available to the foreshore from the ground floor levels and recreational areas.

8.2 Building C, Building D, Building E & Building F – Residential Apartments

Buildings C, D, E and F will accommodate approximately 180 residential apartments in a two, three and four bedroom arrangement. They occupy the southern section the site.

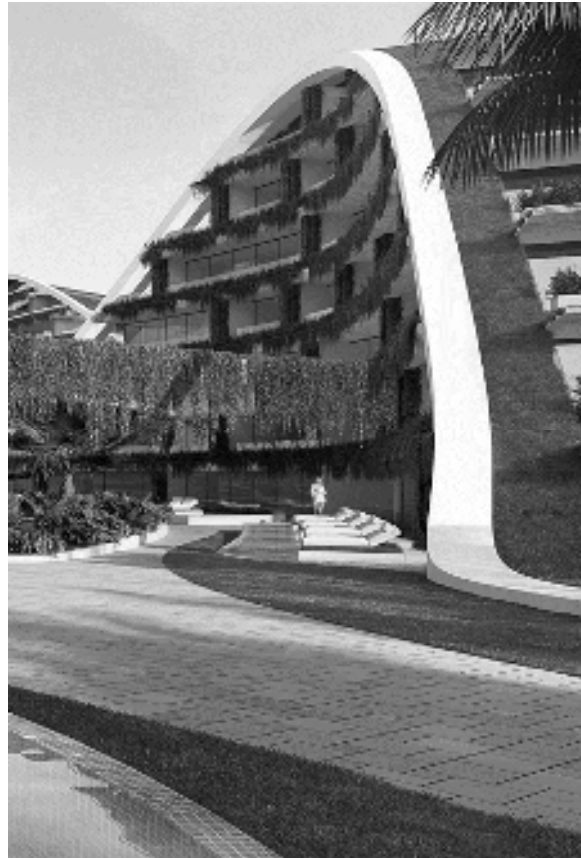


Figure 7 | Concept Impression Render

Compliance Summary:

Compliant in Principle

Commentary:

Buildings C, D, E & F are considered capable of compliance with current accessibility legislation as follows:

- There is a pedestrian connection to Trinity Point Drive
- Ease access is afforded at the ground floor level
- Lift cores are distributed evenly within each building and provide access through all levels including basement carparking.
- Direct and clear circulation areas are provided throughout each building
- The design, in its conceptual form, enables flexibility for the provision of adaptable and universal (livable) housing principles.
- Accessible connections are available to the foreshore from the ground floor level private common areas.



9 General Accessibility Features | External Areas

The following generally accessibility features apply throughout the proposed development to ensure an inclusive and equitable environment is created for all building occupants. They should be addressed during further design stages to ensure compliance of the built form.

9.1 Accessways (Pedestrian Areas Generally)

The accessible path of travel refers to a pathway which is grade restricted and provides wheelchair access as per the requirements of AS1428. For compliance with AS1428.1, the following access requirements apply.

- a. The minimum unobstructed width of all pathways is to be 1000mm (AS1428.1, Clause 6.3). A width of 1200mm is preferred for compliance with AS1428.2.
- b. All pathways are to be constructed with no lip or step at joints between abutting surfaces (a construction tolerance of 3mm is allowable, or 5mm for bevelling edges).
- c. The maximum allowable crossfall of pathways is to be 1:40.
- d. The ground abutting the sides of the pathways should follow the grade of the pathway and extend horizontally for 600mm. We note that this is not required where there is a kerb or handrail provided to the side of the pathway.
- e. Pathways to have passing bays complying with AS1428.1 at maximum 20m intervals where a direct line of site is not available. They are required within 2m of the end of the pathway where it is not possible to continue travelling along the pathway.
- f. A passing space shall have a minimum width of 1800 for a minimum length of 2000mm. Refer to AS1428.1, Clause 6.4.

9.2 Accessible Carparking

Access requirements for accessible carparking are as follows. Accessible carparking should be located in a convenient location close to the building entrance if possible. A covered accessway between the accessible carparking and building entrance is highly desirable.

- a. For angle parking, accessible carparking to be a minimum of 2400mm wide with a shared area to one side of the space 2400mm wide. Circulation space can be shared between adjacent accessible carparks.

For parallel parking, accessible carparking to be a minimum of 3200mm wide and 7800mm in length with a circulation area 1600mm beside the carparking space.



- b. Provide a bollard to the shared circulation space as illustrated in AS2890.6, Figure 2.2 (angle parking).
- c. The maximum allowable crossfall of accessible carparking area to be, 1:40 (1:33 for bituminous surfaces). This crossfall applies both parallel and perpendicular to the angle of parking.
- d. For covered carparking, the clear height of the accessible carparking space to be 2500mm as illustrated in AS2890.6, Figure 2.7.
- e. Designated accessible carparking is to be identified using the International Symbol for Access (ISA) between 800 and 1000mm high placed as a pavement marking in the centre of the space between 500-600mm from its entry point. The perimeter of the space is to be identified by an unbroken yellow & slip resistant line 80-100mm wide (except where there is a kerb or wall)

Shared space to be identified using yellow slip-resistant & unbroken stripes 150 to 200mm wide with spaces 200 to 300mm between stripes. Stripes to be at an angle of 45° to the side of the space.

9.3 Kerb Ramps

Where kerb ramps are provided to pedestrian areas within the accessible path of travel, the configuration of kerb ramps is to be in accordance with AS1428.

The following access requirements apply to kerb ramps.

- a. Kerb ramps to comply with AS1428(2009) Amendment 1, Clause 10.7
- b. Maximum gradient of the kerb ramps to be 1:8 and maximum length to be 1520mm (providing a maximum height of 190mm).
- c. Kerb ramps to have a non-slip surface as required by AS1428.
- d. A tooled joint should be provided between parts of the kerb ramp to assist persons with a vision impairment with orientation.
- e. Kerb ramps are to be aligned across the roadway.

9.4 Step Ramps

The configuration of step ramp is to be in accordance with AS1428.

BCA Clause 3.11 states that a landing for a step ramp must not overlap a landing for another step ramp. The following access requirements apply to step ramps.

- a. The configuration of the step ramp is to comply with the requirements of AS1428.1, Clause 10.6.
- b. Maximum gradient of the step ramp to be 1:10 and maximum length to be 1900mm (providing a maximum height of 190mm).



- c. Provide landings at the top and bottom of the step ramp to comply with AS1428.1, Clause 10.8.2.
- d. Step ramp to be enclosed on both sides (minimum height 450mm) or a kerb and handrail needs to be installed. Where a kerb is to be installed, the height of kerb rails is to be less than 65mm or greater than 150mm above the finished surface level. This is to ensure that the foot plate of a wheelchair cannot become lodged on the kerb rail.

9.5 Accessible Ramps

Access requirements for the accessible ramps are as follows.

- a. Ramp to comply with AS1428.1, Clause 10.3. Maximum allowable gradient of the ramp is 1:14, minimum clear width to be 1000mm and maximum length between landings to be 9m (for 1:14 gradient).
- b. Accessible ramp is to have a maximum rise of 3.6m (BCA Clause 3.11).
- c. The ramp is required to be set back a minimum 900mm from the property boundary (AS1428.1, Clause 10.3 (f)). This allows tactile indicators and handrail extensions to occur within the boundary and not protrude into the footpath area.
- d. Provide handrails, with extensions, to both sides of the ramp to comply with AS1428.1, Clause 12. Handrails to have an external diameter between 30-50mm to assist persons with a manual disability such as arthritis. Handrails are required on both sides of the ramp to cater for left and right-handed disabilities.
- e. Where ramp is not enclosed, provide kerb rails in accordance with AS1428.1. The height of kerb rails is to be less than 65mm or greater than 150mm above the finished surface level. This is to ensure that the foot plate of a wheelchair cannot become lodged on the kerb rail.
- f. Provide tactile indicators at the top and bottom of the ramps to comply with BCA Clause D3.8 and AS1428.4. Tactile indicators to be detectable, durable, non-slip and have a minimum 30% luminance contrast to the background colour. For discrete tactile indicators, 45% luminance contrast is required (60% where two-tone indicators are used).

Tactile indicators at the top and bottom of the ramps are usually required to be 600-800mm deep across the width of the ramp and set back 300mm from the edge of the ramp (refer AS1428.4.1, Figure A1).

9.6 Stairs

AS1428.1 has access requirements for all public access stairs and is applicable in this instance. Access requirements for stairs are as follows.

- a. Stairs to comply with AS1428.1(2009), Clause 11.2.



- b. Where the stair intersects the property boundary, the stair shall be set back a minimum of 900mm so that handrail extensions and tactile indicators do not protrude into the traverse path of travel.
- c. Stairs to have closed or opaque risers. Open risers cause confusion for persons with a vision impairment and may trigger conditions such as epilepsy due to light penetrating through the open riser.
- d. Provide handrails, with extensions, to both sides of the stair (AS1428.1 (2009), Clause 11.2 & 12). Handrails to have an external diameter between 30-50mm to assist persons with a manual disability such as arthritis.
- e. Handrails are required on both sides of the stair to cater for left and right-handed disabilities. A central handrail is also an acceptable solution where adequate width is available. In this instance, the use of a double handrail is encouraged so that two users can travel in opposite directions and maintain their grip on the handrail.
- f. Stair nosings to have minimum 30% luminance contrast strip 50-75mm wide to the top of the stair tread to assist persons with a vision impairment. The strip can be set back 15mm from the edge of the riser.
- g. Stair nosings shall not project beyond the face of the riser.
- h. Provide tactile indicators at the top and bottom of the stair to comply with BCA Clause D3.8 and AS1428.4.
- i. Tactile indicators to be detectable, durable, non-slip and have a minimum 30% luminance contrast to the background colour. For discrete tactile indicators, 45% luminance contrast is required (60% where two-tone indicators are used).

9.7 Walkways

AS1428.1 defines a walkway as having a gradient of 1:20, which is provided in this instance. The accessible path of travel refers to a pathway which is grade restricted and provides wheelchair access as per the requirements of AS1428. For compliance with AS1428.1, the following access requirements apply to the walkways.

- a. The minimum unobstructed width of walkways is to be 1000mm (AS1428.1, Clause 6.3). A width of 1200mm is preferred for compliance with AS1428.2.
- b. Walkways are to be constructed with no lip or step at joints between abutting surfaces (a construction tolerance of 3mm is allowable, 5mm for beveled edges -refer to Figure 6 of AS1428.1).
- c. The maximum allowable crossfall of a walkway is to be 1:40.
- d. Surface of the walkway to be slip-resistant.



- e. The ground abutting the sides of the walkway should follow the grade of the pathway and extend horizontally for 600mm. This is not required where there is a kerb or handrail provided (refer to AS1428.1 Clause 10.2).
- f. Maximum allowable gradient of the walkway is 1:20 and maximum length between landings to be 15m (for 1:20 gradient). Landings to be a minimum 1200mm in length (where there is no change in direction). For changes in direction of 180°, landings to be 1540mm in length – refer to AS1428.1(2009), Clause 10.8.

9.8 Tiered Seating

Tiered seating areas are commonly provided as a part of the landscaping elements with stairs usually providing a means of access to platforms.

These areas can be viewed as a “Special Use” seating area per H1.4 of the BCA and therefore, there are no accessibility requirements for stairs generally.

Access to the top and base of the tiered seating to afford wheelchair seating areas in keeping with BCA requirements for auditoriums will promote inclusion.

9.9 Pedestrian Crossings

Where kerb ramps are to be provided at the roadway to provide an accessible path of travel for persons with a disability, they should offer compliance with AS1428.1 (2009) and be aligned across the roadway.

Where the pedestrian crossing is at the same level as the roadway, provide tactile indicators to both sides of the roadway to alert persons with a vision impairment of the hazard. Tactile indicators to be 600-800mm deep across the width pedestrian crossing. Tactile indicators to be detectable, durable, non-slip and have a minimum 30% luminance contrast to the background colour.

9.10 Threshold Ramps

To mitigate water ingress, it is sometimes necessary to contrast a threshold ramp at building entrances. Threshold ramps are to offer compliance with AS1428.1 (2009) as follows.

- a. Threshold ramp to comply with AS1428.1, Clause 10.5.
- b. Threshold ramp to have a maximum rise of 35mm, maximum length of 280mm and maximum gradient of 1:8.
- c. Threshold ramp to be located within 20mm of the door leaf that it services.

9.11 Accessible Entrances

In a building required to be accessible, an accessway must be provided through the principal pedestrian entrance, and not less than 50% of all pedestrian entrances including the principal pedestrian entrance.



In a building with a total floor area more than 500 sqm a pedestrian entrance which is not accessible must not be located more than 50m from an accessible pedestrian entrance. The following access requirements apply to the entrance.

- a. Accessible entrances to comply with AS1428.1(2009), Clause 13 as part of the accessible path of travel.
- b. Doors are to have a minimum clear opening width of 850mm to comply AS1428.1(2009), Clause 13.2 as part of the accessible path of travel.

Where double door sets are provided, one door leaf is to be capable of being held in the closed position to provide door opening widths and circulation to comply with AS 1428.1.

- c. Entrance doorways to have complying circulation areas as illustrated in AS1428.1(2009), Figure 31. Circulation areas to have a maximum crossfall of 1:40.
- d. Doorways to have minimum 30% luminance contrast as described in AS1428.1(2009), Clause 13.1.
- e. Door threshold to be level to provide seamless entry as part of the accessible path of travel. Maximum allowable construction tolerance is 3mm for compliance with AS1428.1(2009), 5mm where beveled edges are provided between surfaces.
- f. Door to have hardware within the accessible height range of 900-1100mm above the finished floor level (AS1428.1(2009), Clause 13.5)
- g. Door handles and related hardware shall be able to be unlocked and opened with one hand per AS1428.1 (2009), Clause 13.5.1. The handles shall enable a person who cannot grip to operate the door without their hand slipping from the handle. We recommend the use of lever handles.
- h. For glass doors, provide decals to assist persons with a vision impairment. Decals to be solid and have a minimum 30% luminance contrast to the background colour and be not less than 75mm high located within the height range of 900-1100mm above the finished floor level.

9.12 Non-accessible Entrances

It is permissible for an entrance to be a Non-accessible entrance if it is located within 50m of an accessible entrance. The following access requirements apply to non-accessible entrances.

- a. Provide direction signage displaying the location of the accessible entrance that displays the International Symbol for Access per BCA Specification D3.6.



9.13 Tactile Indicators at Entrance

BCA Clause 3.8 (a) (v) states that for a building that is required to be accessible, tactile ground surface indicators must be provided to warn people who are blind or have a vision impairment that they are approaching – in the absence of a suitable barrier – an accessway meeting a vehicular way adjacent to any pedestrian entrance to a building...if there is no kerb or kerb ramp at that point, except for areas exempted by D3.4.

If no kerb is provided between the entrance and the driveway area, tactile indicators are required. The following access requirements apply.

- a. Where no kerb is provided, install tactile indicators for compliance with BCA Clause D3.8 and AS1428.4.
- b. Tactile indicators to be detectable, durable, non-slip and have a minimum 30% luminance contrast to the background colour.
- c. Tactile indicators to be 600-800mm deep across the width of the path of travel set back 300mm from the edge of the driveway / roadway.

9.14 Access to Swimming Pools

The BCA requires access for persons with a disability to swimming pools with a total perimeter greater than 40m that are associated with as Class 1b, 2, 3, 5, 6, 7, 8, or 9 building that this required to be accessible (Table D3.1).

For pools required to be accessible by this clause, not less than one accessible entry / exit must be provided by means of a fixed or moveable ramp and an aquatic wheelchair; or a zero depth entry at a maximum gradient of 1:14; or a platform swimming pool lift; or a swing style swimming pool lift.

For pools with a perimeter greater than 70m, the use of a swing stile swimming pool lift is not permitted.



10 General Accessibility Features | Interior Areas

The following generally accessibility features apply throughout the proposed development to ensure an inclusive and equitable environment is created for all building occupants. They should be addressed during detailed design stages to ensure compliance of the built form.

10.1 Extent of Access Generally – BCA

Access for people with disabilities is required to and within all areas normally used by the occupants. This is achieved throughout the proposed building works as outline in the preceding section of this report.

10.2 Circulation Areas

BCA (Clause D3.3) requires the provision of turning spaces and passing areas to corridors to enable wheelchair circulation throughout a building.

Turning spaces 1540mm wide by 2070mm long are required within 2m of the end of corridors to enable a wheelchair to turn through 90° and passing areas 1800mm wide by 2000mm long are required every 20m along a corridor unless there is a clear line of sight.

Within corridor areas, 1500x1500mm is required to facilitate a 90° turn by a wheelchair. This must be accommodated within accessible areas.

10.3 Doorways Generally

AS1428 has requirements for doorways within the accessible path of travel to enable independent access for people using a wheelchair. Access requirements for doorways within the accessible path of travel are as follows.

- a. Doorways within the accessible path of travel to have a minimum clear opening width of 850mm (AS1428.1(2009), Clause 13.2). We recommend the use of a 920 leaf door as a minimum to achieve adequate clear width. For double doors, the operable leaf must achieve this clear opening width.
- b. All doorways within the accessible path of travel to have complying circulation areas as illustrated in AS1428.1(2009), Figure 31. Circulation areas to have a maximum crossfall of 1:40.
- c. Doorways to have minimum 30% luminance contrast as described in AS1428.1(2009), Clause 13.1.
- d. Door to have hardware within the accessible height range of 900-1100mm above the finished floor level (AS1428.1(2009), Clause 13.5)
- e. Door handles and related hardware shall be able to be unlocked and opened with one hand per AS1428.1 (2009), Clause 13.5.1. The handles shall enable a person who cannot grip to operate the door without their hand slipping from the handle. We recommend the use of lever handles.



- f. Doorways to external areas to achieve a level threshold as part of the accessible path of travel. Maximum allowable construction tolerance is 3mm for compliance with AS1428.1(2009), 5mm where beveled edges are provided between surfaces.
- g. Doorways to have operational forces per AS1428.1 (2009), Clause 13.5.2. A maximum allowable force of 20N is required to operate the door.

10.4 Doorways within Vestibules and Air-locks

AS1428 has requirements for circulation areas between doorways within vestibules / airlocks to enable independent access for people using a wheelchair. Clause 13.4 requires a minimum dimension of 1450mm between doors. Where a doorway encroaches into the space, 1450mm plus the door leaf width is required.

10.5 Doorways within Vestibules and Air-locks to Ambulant Toilet Cubicles

AS1428 has requirements for circulation areas between doorways within vestibules / airlocks as part of the path of travel to ambulant toilet cubicles to enable independent access for people using a mobility aid. Figure 34(b) requires a minimum dimension of 900mm between doors. Where a doorway encroaches into the space, 900mm plus the door leaf width is required.

10.6 Hearing Augmentation at Service Counters

For buildings that are required to be accessible, the BCA (Clause D3.7) requires hearing augmentation systems at service counters **where the user is screened from the service provider**. We note that this may not be relevant to this project.

With the implementation of “sneeze screens” as a COVID-19 mitigation measure, the provision of hearing augmentation at service counters has become a critical accessibility issue for people with hearing impairments.

10.7 Hearing Augmentation

For buildings that are required to be accessible, the BCA (Clause D3.7) requires hearing augmentation systems within auditoriums, meeting rooms and the like **where an inbuilt amplification system, other than the one used for emergency warning is installed**. The following systems can be used: an induction loop to at least 80% of the floor area; or a system requiring the use of receivers (infrared or the like) to not less than 95%.

10.8 Exempt Areas

BCA Clause D3.4 does not require access for people with disabilities to areas that would be inappropriate due to the particular use of the area or would pose a health and safety risk. This includes the path of travel to these areas.

10.9 Floor Finishes

All floor finishes are to be flush to provide an accessible path of travel throughout the different areas of the building. Maximum allowable construction tolerance is 3mm (5mm for bevelled edges) as part of the accessible path of travel. Refer to AS1428.1(2009), Clause 7.2 for further details.



10.10 Carpet

AS1428.1 has access requirements for carpet. Where carpet is used as the floor surface, pile height should not exceed 4mm. Exposed edges will be fastened to the floor surface. Carpet trims shall have a vertical face not more than 3mm high.

BCA states that 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.

10.11 Controls

Controls such as light switches, alarm keypads, card swipes, etc are to be located within the accessible height range of 900-1100mm above the floor level and not within 500mm of an internal corner to comply with AS1428.1(2009), Clause 14.

10.12 Visual Indication to Glazing

Provide decals to all full height glazing that can be mistaken for a doorway to assist persons with a vision impairment. Decals to be solid and have a minimum 30% luminance contrast to the background colour and be not less than 75mm high located within the height range of 900-1100mm above the finished floor level. Decals are to be solid per AS1428.1, Clause 6.6.

10.13 Tactile Indicators

For a building that is required to be accessible, tactile ground surface indicators must be provided to warn people who are blind or have a vision impairment that they are approaching a stairway (other than a fire isolated stair); an escalator; a moving walkway; a ramp (other than a fire isolated ramp, step ramp, kerb ramp or swimming pool ramp); and in the absence of a suitable barrier, an overhead obstruction less than 2m above the floor level or an accessway, meeting a vehicular way if there is no kerb or kerb ramp (BCA D3.8).

Tactile indicators are generally required to be 600-800mm deep across the width of the hazard and set back 300mm from the edge of the hazard (refer AS1428.4.1, Figure A1). Tactile indicators to be detectable, durable, non-slip and have a minimum 30% luminance contrast to the background color (45% for discrete tactile indicators and 60% for discrete two-tone tactile indicators).

10.14 Signage

Access requirements for signage are as follows. Note that this does not include general wayfinding signage.

- a. Braille and tactile signage formats as outlined within BCA Specification D3.6 that incorporate the international symbol of access or deafness, as appropriate, in accordance with AS 1428.1 must be provided to identify the following:
 - a sanitary facility, except a sanitary facility associated with a bedroom in a Class 1b building or a sole-occupancy unit in a Class 3 or Class 9c building
 - a space with a hearing augmentation system

- each door required by E4.5 to be provided with an exit sign and state level
 - an accessible unisex sanitary facility and identify if the facility is suitable for left or right handed use
 - an ambulant accessible sanitary facility 1 and be located on the door of the facility
 - where a pedestrian entrance is not accessible, directional signage incorporating the international symbol of access 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 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
- b. Braille and tactile components of the sign to be located not less than 1200mm and not higher than 1600mm affl.
- c. Signage to be located at the latch side of the doorway with the leading edge of the sign 50-300mm from the architrave. Where this is not possible, the sign can be located on the door.

Sample signs are as follows. These are examples only – ensure selected signage complies with BCA Specification D3.6 including provision of Braille locator for multiple lines of text and characters.



10.15 Slip Resistance (Stairs & Ramps)

The BCA defines the following slip resistance requirements for stairs and ramps:

Application	Surface Conditions	
	Dry	Wet
Ramp steeper than 1:14	P4 or R11	P5 or R12
Ramp steeper than 1:20 but not steeper than 1:14	P3 or R10	P4 or R11
Tread or Landing surface	P3 or R10	P4 or R11
Nosing or landing edge strip	P3	P4



10.16 Distribution of Accessible Sanitary Facilities

The following is required to satisfy BCA requirements, noting that not all are applicable to all developments:

- A unisex accessible toilet at each level. Where more than one bank of toilets is provided at any level, at least 50% of those banks will have an accessible toilet facility.
- At each bank of toilets where there is one or more toilets in addition to an unisex accessible sanitary compartment at the bank of toilets, a sanitary compartment suitable for a person with an ambulant disability in accordance with AS1428.1 must be provided for use by males and females
- A unisex accessible shower is required where showers are required by F2.3. In this regard, BCA only requires accessible showers within hospitals, early childhood centres, theatres and sporting venues. Showers are not *required* within commercial, retail or industrial premises. If ***required by Clause F2.3***, where one or more showers are provided, 1 accessible shower for every 10 or part thereof must be provided.
- One unisex accessible adult change facility must be provided in certain buildings.

10.17 Unisex Accessible Toilets

Access requirements for the accessible toilet facilities are as follows. These are **CLEAR** dimensions. Provision for wall linings needs to be considered.

- a. Accessible toilet facilities to be unisex facilities for compliance with the BCA.
- b. Unisex accessible facilities to comply with AS1428.1(2009), Clause 15 including set-out of fittings and fixtures, circulation areas and doorways.
- c. Where more than one unisex accessible toilet is provided within the building, they should be in a mirrored configuration to allow for both left and right-handed use.

WC Pan:

- d. Crucial dimensions for the toilet are 450mm from centreline of pan to side wall, 800mm from front of pan to rear wall and a seat height of 470mm.
- e. A minimum clear dimension of 1400mm is required from the toilet pan to any other fixture (see figure 43).
- f. Grabrails to be provided at the side and rear of the toilet in compliance with AS1428.1 at a height of 800mm.



- g. Toilet seat shall be of the full round type, be securely fixed in position when in use and have fixings that create lateral stability. They should be load rated to 150kg, have a minimum 30% luminance contrast to the background colour (eg pan, wall or floor) and remain in the upright position when fully raised.
- h. Provide a backrest to accessible toilets to comply with AS1428.1, Clause 15.2.4.

Basin:

- i. For the basin, a minimum dimension of 425mm is required from the centreline of the basin to the side wall and height of basin to be between 800 and 830mm.
- j. Taps to have lever handles, sensor plates or similar controls. For lever taps, a minimum 50mm clearance to be provided to adjacent surfaces.

Door:

- k. Doorways to have a minimum clear opening width of 850mm to comply AS1428.1(2009), Clause 13.2 as part of the accessible path of travel. Adequate circulation area at the latch side of the doorway is required to allow independent access to the facility – for details refer to AS1428.1, Figure 31.
- l. Door hardware to be located within the accessible height range of 900-1100mm above the finished floor level. The use of lever handles is encouraged to assist persons with a manual disability such as arthritis.

Controls:

- m. Controls such as light switches within the accessible toilet facilities to be in the accessible height range of 900-1100mm above the finished floor level to comply with AS1428.1(2009), Clause 14. Controls should be located not less than 500mm to a corner.

10.18 Cubicles for People with an Ambulant Disability

Ambulant cubicles are required in addition to the unisex accessible sanitary compartment. Accessibility requirements for the ambulant toilets are as follows.

- a. Options for the configuration of the ambulant cubicles are illustrated in AS1428.1, Figure 53.
- b. Provide an ambulant cubicle within each bank of male and female toilets in compliance with AS1428.1, Clause 16.
- c. Minimum width of ambulant cubicles to be 900-920mm.
- d. Provide grabrails to ambulant cubicles to comply with AS1428.1, Clause 17 and Figure 53A.



- e. Doors to have a minimum opening width of 700mm and comply with AS1428.1, Figure 53B.
- f. Provide signage to the ambulant cubicles to comply with AS1428.1, Clause 16.4.

10.19 Unisex Accessible Shower Facility

An accessible shower is required within this development. Access requirements for accessible showers are as follows.

- a. Accessible showers are to comply with AS 1428.1, Clause 15.5 and include accessible features such as grabrails, adjustable height shower rose and fixtures within an accessible height range.
- b. Floor waste to be positioned 550mm and 580mm from enclosing shower walls as illustrated in AS1428.1 (2009), Figure 47a.
- c. The minimum dimension of an accessible shower to be 1160 x 1000mm. A folding seat, at a height of 470mm is to be provided. All taps to be located within the height range of 900-1100mm above the finished floor level.
- d. Circulation space in front of the shower is to be provided as illustrated in AS1428.1, Figure 47.

10.20 Accessible Adult Change Facility

An adult change facility is required within the building per BCA Clause F2.9 and must be constructed in accordance with Specification F2.9. Note that this is **in addition to the required unisex accessible toilet facilities**. The adult change facility cannot be combined with any other sanitary compartment.

Adult change facilities are required in the following developments:

- Class 6 building that is a shopping centre having a design occupancy not less than 3,500 people.
- Class 9b sports venue having a design occupancy not less than 35,000 spectators; or contains a swimming pool that has a perimeter of not less than 70m and that is required by Table D3.1 to be accessible.
- Museum, art gallery or the like having a design occupancy not less than 1,500 patrons.
- Theatre or the like having a design occupancy not less than 1,500 patrons.
- Passenger use area of an airport terminal building within an airport that accepts domestic and/or international flights that are public services as defined by Disability Standards for Accessible Public Transport 2002

Each accessible adult change facility must—

- be constructed so that all required equipment and fixtures are contained within the same room; and



- if it is a unisex facility, be located such that it can be entered without crossing an area reserved for one sex only.

In each accessible adult change facility, the following must be provided per Specification F2.9:

- a. A hoist complying with Clause 3.
- b. A toilet pan, seat, backrest and grabrails complying with Clause 4.
- c. A washbasin and tap complying with Clause 5.
- d. Fixtures and fittings as specified in Clause 6.
- e. A change table complying with Clause 7.
- f. Changing rails complying with Clause 8.
- g. An automated entrance door complying with Clause 9.
- h. Signage complying with Clause 10.
- i. Operating instructions for the hoist and change table in accordance with Clause 11.
- j. Circulation spaces complying with Figure 2.

10.21 Passenger Lifts

The following access requirements apply to the lifts. These requirements are for disabled access only and do not include requirements for stretchers.

- a. Lift is to comply with AS1735.12 and be fully automatic as required by the BCA, Clause E3.6.
- b. Minimum internal dimensions of the lift car to be 1400mm wide x 1600mm deep BCA, Clause E3.6 – for a lift that travels over 12m.
- a. Clear opening of the lift door to be minimum 900mm.
- b. Provide a handrail complying with the provisions for a mandatory handrail in AS1735.12.
- c. All lift control buttons are to be in the accessible height range of 900-1100mm affl and have a minimum 30% luminance contrast to the background colour. This includes buttons within the lift car and at each public lift lobby. All buttons are to be provided with information in Braille and tactile formats.
- d. Auditory / voice cues are to be provided within the lift car to assist persons with a vision impairment.
- e. Series of door opening devices that will detect a 75mm diameter rod across the door opening between 50mm and 1550mm above the floor level.
- f. Emergency hands-free communication, including a button that alerts a call centre of a problem, a light to signal that the call has been received by the call centre and a light indicating assistance is being dispatched.



10.22 Stairs

AS1428.1 has access requirements for all stairs other than fire isolated egress stairs and is applicable in this instance.

- a. Stair construction to comply with AS1428.1, Clause 11.1.
- b. Stairs to have closed or opaque risers. Open risers cause confusion for persons with a vision impairment and may trigger conditions such as epilepsy due to light penetrating through the open risers.
- c. Where the stair intersects with an internal corridor, the stair shall be set back in accordance with AS2418.1 Figure 26C/D to allow adequate space for handrail extensions and tactile indicators.
- d. Provide handrails, with extensions, to both sides of the stair (AS1428.1, Clause 11.2). Handrails to have an external diameter between 30-50mm to assist persons with a manual disability such as arthritis. Handrails should be continuous around the landings where possible.

Handrails are required on both sides of the stair to cater for left and right-handed disabilities. A central handrail is also an acceptable solution where adequate width is available.

- e. Stair nosings to have minimum 30% luminance contrast strip 50-75mm wide to the top of the stair tread to assist persons with a vision impairment. The strip can be set back 15mm from the edge of the riser.
- f. Stair nosings shall not project beyond the face of the riser.
- g. Provide tactile indicators at the top and bottom of the stair to comply with BCA Clause D3.8 and AS1428.4.1.

Tactile indicators to be detectable, durable, non-slip and have a minimum 30% luminance contrast to the background colour. For discrete tactile indicators, 45% luminance contrast is required (60% where two-tone indicators are used).

Tactile indicators at the top and bottom of the stair to be 600-800mm deep across the width of the stair set back 300mm from the edge of the stair.

10.23 Fire Isolated Egress Stairs

Designated fire egress stairs are not considered public access stairs and therefore are not subject to the requirements of AS1428.1 with the exception of contrasting nosing strips and handrail requirements. These are required per AS1428.1.

- a. Stair nosings to have minimum 30% luminance contrast strip 50-75mm wide to the top of the stair tread to assist persons with a vision impairment. The strip can be set back 15mm from the edge of the riser.



- b. Stair nosings shall not project beyond the face of the riser.
- c. Handrails in a required exit serving an area required to be accessible, are to be designed and constructed to comply with AS 1428.1, Clause 12 (BCA D2.17).

Note: handrails within fire-isolated stairs are required to one side only and do not require the provision of handrail extensions. They must have a diameter between 300-50mm; be between 865-1000mm high above the nosing; have a consistent height along the length of the stair – no vertical sections; have a clearance to the wall not less than 50mm; have no obstruction along the length of its passage; and have an end that turns through 180°, turns to the ground, or returns fully to an end post.

We recommend the use of the staggered stair to maintain a constant height along the length of the handrail per AS1428.1 (2009), Clause 12.

10.24 Adaptable Units

An adaptable housing unit is defined by AS4299 as follows:

A housing unit which is designed and constructed to meet the performance requirements stated in the standard. It is designed in such a way that it can be modified easily in the future to become accessible to both occupants and visitors with disabilities or progressive frailties.

There are requirements for both the pre-adaption state and post-adaption states. In the pre-adapted state, an adaptable unit is required to be “visitable” and these requirements are applicable at the time of construction. Other elements are to be provided on adaption of the unit.

At **time of construction**, the following are required:

- An accessible entrance per AS1428.1 (2009).
- A visitable toilet at the entry level per AS4299
- An accessible path of travel from the entrance to the visitable toilet within the meaning of AS1428.1 (2009)
- An accessible path of travel from the entrance to the living area within the meaning of AS1428.1 (2009)

At **time of adaption**, the following are required:

- Compliance with AS4299 Appendix A – essential criteria. This includes kitchen layouts, laundry layouts, carparking, etc

The following requirements for adaptable apartments are based on AS4299, Section 4 – Design of the Housing Unit, essential criterion as listed in Appendix 1, AS4299 Schedule of Features for Adaptable Housing. Compliance with the following features will achieve a Class C adaptable housing unit.



Private Car Accommodations

Private carparking spaces for adaptable housing units shall be large enough to enable a person with a wheelchair to get in and out of both the car and the parking space. A width of 3.8m is necessary to enable the driver to alight, open the passenger door and assist a person with a disability into a wheelchair. A clear vertical clearance of 2.5m is desirable.

The introduction of AS2890.6 in 2009 offers an approach to the provision of accessible carparking that can be easily accommodated in a standard carparking layout. It offers an accessible space 2400mm wide with a circulation area 2400mm wide adjacent to the space (4800mm for a single space). The circulation area can be “shared” between two accessible spaces (7200mm for two spaces). This offers carparking spaces in excess of the minimum requirement of AS4299 (3800mm).

Letterboxes

Letterboxes to adaptable housing units should be located on a hard standing area connected by an accessible path of travel to the adaptable housing unit. Letterboxes to adaptable apartments should be provided within the accessible height range of 900-1100mm affl.

Accessible Entrance

Entrances to adaptable housing units are to comply with AS4299 Clauses 4.3.1 and 4.3.2. AS4299 which require that the entry doors comply with AS1428.2 **at time of construction**. The minimum clear opening width of the doorway is to be 850mm and allow for wheelchair maneuverability (provide minimum 1550mm long area in front of the doorway). Entrances to the adaptable housing units to be weatherproofed.

Door hardware is to comply with AS1428. In this regard, entry door hardware is to be in the accessible height range of 900-1100mm above finished floor level. The use of lever handles is encouraged to assist persons with a manual disability such as arthritis.

Doorways

Doorways throughout adaptable housing units are required to have a clear opening width of 820mm. **At time of construction, an accessible path of travel within the meaning of AS1428.1 is required from the entrance to the visitable toilet and living area.** Other door circulation areas are to comply with AS1428.1 on adaption of the unit.

All door hardware is to be operable with one hand and in the height range of 900-1100mm above the floor level. The use of lever handles is encouraged to assist persons with a manual disability such as arthritis.

Internal Corridors

There is a requirement for all corridors to be minimum 1000mm.

Visitable Toilet

Each adaptable housing unit is required to have a toilet on the entry floor that is a visitable toilet within the meaning of AS4299 **at time of construction**. The toilet is to be installed in compliance with AS1428 (correct set-out distance from fixed walls) and have the capacity to accommodate a grabrail that complies with Figure 4.5 of AS4299. A



circulation area 1200mm x 900mm in front of the toilet and clear of door swings and fixtures is required complying with Figure 1.1 of AS4299. Slip resistant floors are also required.

Bathrooms

Bathrooms within an adaptable housing unit are to comply with AS1428 after adaption. Issues to be considered include slip resistant floor, shower minimum 1100x1160mm with future provision for accessible features including handheld shower and grabrails, shower waterproofing to AS3740, recessed soap holder, washbasin with knee clearance, adequate circulation areas, automatic control of hot water, double GPO next to the mirror and the provision of capstan or lever taps. Refer to AS4299, Clause 4.4.4.

Kitchens

Essential requirements for kitchens within an adaptable housing unit allow for future adaption and include items such as sinks, taps, cooktops, location of oven, cupboard handles, general power outlets, dimensions of the space and location of refrigerator.

Kitchens are required to have a clear space between benches of 1550mm. An area of bench top 800mm wide is required that can be adjusted through the height range of 750 – 850mm above floor level. Alternatively, a section of this dimension needs to be easily replaceable to achieve this requirement.

Bedrooms

At least one bedroom within an adaptable housing unit is required to have adequate space for a wardrobe and a queen size bed with minimum 1540mm wide circulation at the foot of the bed (for compliance with AS1428.2, Clause 6.1).

Living Area

Living areas within an adaptable housing unit are required to have circulation areas that allow a wheelchair to maneuver within the space **at time of construction**. In this regard, an area with 2250mm diameter is required, clear of furniture. AS4299, Clause 4.7 outlines this requirement. A telephone outlet adjacent to a general power outlet is also a requirement for living areas.

Laundry

Requirements for laundry areas within adaptable housing units include the provision for an automatic washing machine / clothes dryer with clear space in front of the appliances. An area of 1550mm diameter will achieve this requirement. Laundries are to have slip resistant floors and door circulation areas in compliance with AS1428.1.

Floors Generally

AS4299 requires that all floor surfaces including bathrooms, laundry and external paved surfaces be slip resistant to comply with AS3661.1.

Non-essential items include that after modification, carpets should have short pile and consideration should be given to the fire hazard indices. Floors should be easily cleanable and bold patterns should be avoided to eliminate confusion for persons with vision impairment.



Ancillary Items

Ancillary items are not considered essential items. Switches such as light switches must be located within the accessible height range of 900-1100mm above the floor level.

Power outlets should be located at a height not less than 600mm affl – a height of 1000mm is preferred. They should be located not less than 500mm from internal corners.

10.25 Universal (Livable) Housing

The NSW Government promotes better apartment design across NSW through the State Environmental Planning Policy No. 65 – Design Quality of Residential Apartments Development. Developments are to provide a minimum 20% of apartments that achieve silver level for livable housing. Livable housing requirements for Silver Level are summarised below:

Dwelling Access

There is a safe, continuous, step-free pathway from the street entrance and/or parking area to a dwelling entrance that is level.

- Path of travel should be minimum 1000mm wide with no steps; an even, slip resistant surface; crossfall not more than 1:40; and maximum slope of 1:14.
- Where ramps are required, landings at 9m intervals are to be provided and are to be not less than 1200mm in length.
- Where a carparking space is relied upon as the safe and continuous pathway to the dwelling, it should be at least 3200mm wide....
- Step ramps where provided to have a maximum gradient of 1:10, clear width of 1000mm and maximum length of 1900mm.
- Where ramps adjoin gates or doorways, landings no less than 1200mm in length, exclusive of the door swing, are required.

Dwelling Entrance

There is at least one level (step-free) entrance into the dwelling to enable home occupants to easily enter and exit the dwelling.

- Entrance doors to have a clear opening with of 820mm and have a level transition (5mm allowable tolerance – where in excess of 5mm, threshold ramp up to 56mm high is allowable)).
- Reasonable shelter from the weather is required.
- 1200x1200mm level landing area required on the arrival side of the door.

Internal Corridors and Doors

Internal doors and corridors facilitate comfortable and unimpeded movement between spaces.

- Doorways on the entry level used for living, dining, bedroom, bathroom, kitchen, laundry and sanitary compartment purposes to have a clear opening with of 820mm and level transition between surfaces (5mm allowable tolerance).
- Corridors to be 1000mm wide.

Toilet

The ground (or entry) level has a toilet to support easy access for home occupants and visitors.



- A toilet on the ground / entry floor is required to have a circulation area in front of the toilet pan 900x1200mm.
- Toilet pan is to be provided in a corner of a room.

Shower

The bathroom and shower are designed for easy and independent access for all home occupants.

- A bathroom is required to have a non-slip hobless shower, located on the corner of the room.

Reinforcement of Bathroom & Toilet Walls

The bathroom and toilet walls are built to enable grabrails to be safely and economically installed.

- Walls to enable safe installation of grabrails to toilet, bath and shower.
- Reinforcement to be in the form of 25mm noggins or plywood sheeting with 12mm thickness.

Internal Stairways

Where installed, stairways are designed to reduce the likelihood of injury and also enable future adaptation.

- Stairs to have a continuous handrail to one side of the stair where the rise is greater than 1m.



11 Best Practice Measures for Consideration

We recommend a best practice approach to accessibility that goes beyond minimum standards and embraces the intent of the DDA. The following measures will promote inclusion and participation for all users.

11.1 Accessways

We recommend that the accessible path of travel be a minimum 1200mm wide to comply with AS1428.2. Wider pathways will allow easy access for more people who have a permanent disability, people with a temporary disability, people pushing prams and elderly people using walking frames and the like. This is in keeping with the principles of Universal Design. For one wheelchair and a pram to pass 1500mm is required and for two wheelchairs to pass requires 1800mm.

11.2 Automatic Entrance Doors

The provision of automatic sliding doorways maximizes access for people with a disability. Further, delivery drivers, people carrying parcels and the elderly also benefit from the provision of automatic doors.

Automatic doors provide safe, convenient access for everyone, regardless of age or ability in keeping with universal design principles. They also offer COVID-19 mitigation measures, reducing the transfer of germs and bacteria.

11.3 Accessible Service Counters

The provision of an accessible section of counter will benefit people using wheelchairs and people of short stature.

AS1428.2 contains access requirements for service counters and recommends the height of the counter be between 750mm(±20) and 850mm (±20) above the finished floor level and have foot and knee clearance under the counter. The minimum width of an accessible counter and clearance below is recommended as 900mm.

11.4 Luminance Contrast

Luminance contrast assists people with a vision impairment to navigate the built environment. Mandatory items that require luminance contrast are tactile indicators, accessible toilet seats and doorways as outlined in other sections of this report. The following can also be provided as a best practice measure to ensure ease of use:

- Minimum 30% luminance contrast between floors and walls or between walls and skirting boards;
- Minimum 30% luminance contrast between the ground surface and obstructions such as columns, bollards and street furniture;
- To assist people with vision impairment locate the building entrance, consider providing features with a minimum 30% luminance contrast to the background surface such as an entry mat or awning.
- Minimum 30% luminance contrast between the floor and the entrance mat (this allows people with vision impairment to locate the entrance);
- Minimum 30% luminance contrast between walls and handrails.



11.5 Visual Indication to Glazing (additional measures)

To ensure full height glazing that can be mistaken for a doorway is highlighted, we recommend the provision of a “double decal” as per international precedent. This involves the provision of two (2) decal strips that have a minimum 30% luminance contrast to each other. As such, the background colour does not need to be relied upon.

11.6 Furniture and Joinery Hardware

The use of D-type pull handles to furniture and joinery that provide a minimum 35mm clearance between the rear face of the handle and the face of the drawer is generally recommended to promote accessibility and inclusion.

11.7 Wayfinding – Signage

Signs and symbols should be provided to inform all users. A signage system which informs all users is encouraged. The use of pictograms and directional cues is recommended as is the use of luminance contrast to ensure the message is clear and legible.

11.8 Wayfinding – Landmarks and Tactile Indicators

To assist people with vision impairment navigate their environment, the use of directional tactile indicators can be implemented, noting that their use should be minimised. The design of directional tactile indicators is site / building specific.

Additionally, landmarks such as entry features, statues, sculpture, fountains, or other unique features can be used as a means of way-finding throughout a building. This especially assists people with intellectual disabilities.

11.9 Terminology (Best-practice recommendation)

The use of positive terminology such as “accessible” should be used when referring to accessible facilities such as toilets and carparking. This term is preferable to “disabled” which is commonly used. This principle is to be adopted through the design and documentation of a project and on signage throughout the completed building.

11.10 Emergency Call Button in Sanitary Compartments

If provided, emergency call button should be located at 600+/- 20mm above the finished floor level in front of the toilet roll holder to enable ease of access for someone who has fallen off the pan. People do fall off the pan, in particular those with no or limited upper trunk control.

11.11 Provision of “Bed- Shakers”

We recommend the provision of “bed-shakers” within accommodation buildings such as hotels or boarding houses. For a person with hearing loss who is unable to hear the emergency alarm or smoke alarm, an alerting system becomes a critical aspect in terms of emergency egress. A specialized alarm, called a 'Bed Shaker,' can be installed next to the bed, and alerts those in the accommodation using a strobe light and vibrating pad that can be placed under the mattress or pillow. The alert is activated when an accompanying traditional smoke / fire alarm sounds.



12 Conclusion

This report demonstrates that the fundamental aims of accessibility legislation are achievable within the Trinity Point Mixed Use Development. The conceptual spatial planning and general arrangements of facilities will offer inclusion for all building users.

Disability is often defined as any limitation, restriction or impairment which restricts everyday activities and has lasted or is likely to last for at least 6 months. Disabilities can be very varied. They can be physical, cognitive, intellectual, mental, sensory, or developmental. They can be present at birth or can occur during a person's lifetime. They can also be permanent or temporary. In Australia, almost one in five people – 4.3 million – have a disability with one in three having severe or profound core activity limitation.

Equity and dignity are important aspects in the provision of access to buildings for all users. With respect to people with a disability, equity and dignity are sometimes overlooked in the construction of new buildings or refurbishment works. The design approach needs to maintain a high level of equity for people with disabilities and meet the performance requirements of the BCA. The performance requirements adopt two main concepts in the provision of access for people with a disability being **to the degree necessary** and **safe movement**. Both of these concepts need to be achieved within the context of equitable and dignified access.

In this respect, a wide range of disabilities needs consideration and a compromise reached between requirements of different disability groups. Measures need to be implemented to ensure inclusion of all users, not a particular disability group in isolation.

