Stage 2 Site Investigation Report

Block 29 Section 36 Mawson

50517082

Prepared for Land Development Agency (LDA)

May 2017
Buyers are required to undertake their own assessments of the site prior to forwarding a Development Application with ACTPLA.

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Executive Summary

Cardno has been engaged by the Land Development Agency (LDA) to prepare a Stage 2 Site Investigation Report for Block 29, Section 36, Mawson ACT. The purpose of the site investigation is to assess the site’s suitability for redevelopment. The site is zoned as a Community Facilities Zone (CFZ) and can be utilised for a number of different developments according to the ACT Territory Plan, including but not limited to:

- Business Agency
- Child Care Centre
- Health Facility
- Office
- Place of Worship
- Public Agency
- Emergency Services Facility
- Indoor recreation Facility
- Outdoor Recreation Facility
- Parkland
- Public Agency
- Residential Care Accommodation
- Retirement Village
- Supportive Housing

Of the above possible utilisations for the subject site, a mixed use site comprising of a child care centre and a place of worship was determined to produce the highest yield in terms of servicing requirements and was therefore utilised as the proposed development scenario. A preliminary planning study undertaken by the LDA determined that the proposed development option of a child care centre would service 120 children with approximately 22 Staff. The place of worship would service 200 patrons.

The proposed development site, Block 29 Section 36 Mawson, occupies an area of approximately 7,913m² and is located centrally within the suburb of Mawson. The subject site is bounded by Block 1 Section 35 to the west, Block 30 Section 36 to the east, Mawson Drive to the north and Shackleton Circuit to the south.

The scope of works for this site investigation report is listed in point form below.

- Investigations and Drawing of the Following Existing Services/Arrangements:
  - Sewerage
  - Water
  - Stormwater Drainage
  - Overland Flows
  - Telecommunications
  - Gas Supply
  - Electrical and Streetlighting
  - Easements and Setbacks
  - Verge Works
  - Traffic Parking and Access
  - Vegetation
Existing services information was obtained from service authority asset data and Work As Executed Documentation and the Block 29, Section 36, Mawson Due Diligence Report completed by Cardno (November 2016).

Based on existing services information the subject site is currently serviced by a sewer tie and not serviced by a water or stormwater tie. The provision of hydraulic services has been assessed by Cardno in consultation with the relevant service authorities and does not present any significant challenge.

Vehicle access to the subject site is currently not present, however the provision of two indicative HD-2 Driveways which may be constructed to provide suitable access to the subject site. Proposed driveway locations are shown on Drawing 50517082-SK02.

This site investigation report is for information only. Buyers are required to undertake their own assessments of the site prior to forwarding a Development Application with EPD.

Recommendations

The development of a child care centre facility and a place of worship on Block 29 Section 36 Mawson has been assessed in this site investigation report. A summary of the recommendations and necessary actions required for the proposed development include:

- Provide a DN40 water service tie as indicated on Drawing 50517082-SK02 in Appendix A.
- Provide a DN100 sewer service as indicated on Drawing 50517082-SK02 in Appendix A.
- Provide a DN375 stormwater service as indicated on Drawing 50517082-SK02 in Appendix A.
- Liaise with Telstra for connection to existing infrastructure surrounding the proposed development site.
- Liaise with Zinfra Gas for connection to the existing DN32 210Pa gas line at the southern boundary of the proposed development site. All works are to be carried out by Zinfra at the expense of the developer.
- Construct two TCCS Standard HD2 driveways to locations approved by TCCS. Indicative locations are shown on Drawing 50517078-SK02 in Appendix A.
- It is recommended the developer undertake a detailed soil investigation report to determine the underlying ground conditions and engineering attributes of the site and ensure that there is no contamination.
- Liaise with the conservator and TCCS Tree Protection Unit for the proposed removal of any trees.
- Liaise with ICON Water to install hydrants on the existing mains on Shackleton Circuit and Mawson Drive to ensure that hydrant spacing meets the requirement for F4 fire category.
- Liaise with ACT Fire and Rescue as to the potential requirement for water mains to surround the subject site.
- Utilise the existing electrical service line located within the northern verge of Shackleton Circuit to service the proposed development. The developer should undertake a detailed assessment of the peak draw of the proposed development and liaise with ActewAGL following submission of an application for preliminary advice for network connection.
- Undertake ‘step and touch’ analysis of substation #S1187 earthing (immediately adjacent the subject site) to ensure suitability for development.

- Undertake an ecological investigation of the subject site to determine the presence of black cockatoos as identified by the Mawson community in recent community consultation.
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1 Introduction

Cardno has been engaged by the Land Development Agency (LDA) to undertake a Stage 2 Site Investigation Report of Block 29 Section 36 Mawson, herein referred to as the ‘subject site’. Refer to Figure 1-1 for a locality plan of the subject site (subject site highlighted in yellow).

The purpose of this site investigation is to assess the condition of the site for the information of potential buyers. Cardno has undertaken an assessment of possible developments on the subject site and determined that a child care centre and place of worship would generate the highest demand for additional site infrastructure.

This report identifies the opportunities, constraints and required works, on and off the site and includes recommendations of works to be undertaken post sale.

A detailed scope of works is listed in Section 3, which is in accordance with the LDA Standard Template for Stage 2 Site Investigation Reports as well as project specific LDA directions.

Figure 1-1 Aerial View of the Site (2016 photography)
2 Land Use and Planning Framework

2.1 Overview

Block 29, Section 36, Mawson is currently a vacant site with full grass coverage and clusters of trees in the southern and central portions of the subject site. It is zoned for land use CF: Community Facilities in the Territory Plan. There is no onsite traffic or parking generated from access arrangements through the subject site.

To the west of the subject site is Block 1 Section 35 which is zoned as RZ2- Suburban Core. To the south of the subject site is Block 1 Section 40 which is zoned as PRZ1- Urban Open Space. To the east of the subject site is Block 30 Section 36 which is zoned as CFZ: Community Facilities. Immediately to the east of Block 30 Section 35 is Block 26 Section 36 and Block 28 Section 36 which are both zoned as RZ1- Suburban. To the north of the subject site there is Block 8 Section 16 which is zoned as CFZ- Community Facilities and Block 5 Section 17 which is zoned as PRZ1- Urban Open Spaces. Refer to Figure 2-1 below for the detailed use zoning surrounding the subject site from the Territory Plan.

Access is assumed to be provided by either Shackleton Circuit or Mawson Drive. There are no parking bays on either road that would prevent the incorporation of a driveway which could inhibit access. It is noted that access from Mawson Drive may face several constraints which are further investigated in Section 6.2.1.

The block’s highest point is the south west corner. The contours indicate that the block slopes from the south west corner to the north-west corner at a grade of approximately 6%. The northern boundary is the location of the block’s lowest point.

Figure 2-1 Territory Plan Land Use Zoning
2.2 Proposed Development

Whilst no layout has been provided by the LDA regarding the proposed development of this site it is understood that the proposed development site will remain zoned as a Community Facilities Zone (CF) and can be utilised for a number of different developments according to the ACT Territory Plan, including but not limited to:

- Business Agency
- Child Care Centre
- Health Facility
- Office
- Place of Worship
- Public Agency
- Emergency Services Facility
- Indoor recreation Facility
- Outdoor Recreation Facility
- Parkland
- Public Agency
- Residential Care Accommodation
- Retirement Village
- Supportive Housing

Of the possible utilisations for the block it was determined that a mixed use site comprising of a child care centre/place of worship or residential care accommodation would generate the highest demand for service infrastructure and were therefore analysed for the proposed development site. Upon analysis, a child care centre/place of worship was determined to produce the highest demand in terms of servicing requirements and was therefore assessed as the proposed development scenario. The preliminary planning study provided by the LDA for the proposed development details that a child care centre catering for 120 children with approximately 22 staff and a place of worship for 200 patrons may be supported by the subject site. The planning study indicated that subdivision of the subject site may be undertaken to facilitate the proposed development however indications from the LDA are that the site will not be subdivided and as such, no investigation was undertaken for separate site servicing. Refer to Figure 2-2 below and Appendix E for the preliminary planning study provided by the LDA, which further explores the potential of other proposed development options for the subject site.
Figure 2-2 Proposed Development Layout

Potential Left In/Out Vehicle Access
3 Investigation Scope

This report has been undertaken in accordance with the LDA standard template for Stage 2 Site Investigation Reports and provides a preliminary investigation of the following existing conditions:

- Investigations and Drawing of the Following Existing Services/Arrangements:
  - Sewerage
  - Water
  - Stormwater Drainage
  - Overland Flows
  - Telecommunications
  - Gas Supply
  - Electrical and Streetlighting
  - Easements and Setbacks
  - Verge Works
  - Traffic, Parking and Access
  - Vegetation
  - Heritage
  - Environmental
- Opportunities and Constraints
- Recommendations
- Drawings of Existing and Proposed Site Servicing
4 Site Description

The proposed development site, Block 29 Section 36 Mawson, occupies an area of approximately 7,913m² and is located centrally within the suburb of Mawson. The subject site is bounded by Block 1 Section 35 to the west, Block 30 Section 36 to the east, Mawson Drive to the north and Shackleton Circuit to the south.

The close proximity of the arterial road of Yamba Drive (approximately 600 metres to the east) and Athlon Drive (approximately 625 metres to the west) affords excellent commuting prospects within Mawson and the wider region.

The site is also within close proximity of the Mawson shopping precinct and numerous sporting facilities within Mawson. These facilities are located approximately 400m to the west of the subject site. Melrose High School and Marist College Canberra are both within 1km of the subject site.

A 1.2m wide concrete footpath running along the southern verge of Mawson Drive and a 1.2m concrete footpath located in Block 20, Section 36 immediately to the east of the subject site provide pedestrian access to the site. A 1.2m concrete footpath is located on the southern verge of Shackleton Circuit and provides informal access to the subject site. Shackleton Circuit is currently operating at low levels of traffic congestion whilst Mawson Drive is operating at moderate levels of traffic congestion, especially to the west of the subject site.

There are numerous trees located along the verges of Mawson Drive and Shackleton Circuit, which will need to be considered for site access. There are approximately 12 trees located on the block typically presented in clusters in the southern and central portion of the subject site. The approximate location of the trees is provided in drawing 50517082-SK01 located in Appendix A.

A site inspection was undertaken on 06/04/2017. Site photographs showing these trees and other site features are attached within Appendix B.

Figure 4-1 Aerial Photograph of the Subject Site
5 Existing Site Servicing

5.1 General
A detailed summary of the existing services information has been completed for the proposed development. The detailed analysis includes Dial Before You Dig (DBYD) enquiries, WAE records, correspondence with service authorities and visual site inspections.

The existing service information has been compiled from available documentation obtained from site inspections, information from service providers and Work as Executed information. The details, dimensions and alignments of existing services included in this report should be treated as indicative only and the accuracy of the information cannot be warranted. All services must be accurately located on site prior to any development proceeding. All existing services described under this section are detailed on the drawings within Appendix A and all relevant correspondence with service authorities including Dial Before You Dig Information is included within Appendix C.

5.2 Easements
Review of the ACTmapi database indicates that there are no easements within the proposed development area (refer to Figure 5-1). However the Telstra services crossing the subject site (discussed below) below may necessitate the creation of an easement within the subject site. Refer to Figure 5-1 for current location of easements.

Figure 5-1 Easements for the Development Site

5.3 Sewer
The existing sewer service information compiled from Dial Before You Dig, ICON Water correspondence and Work as Executed information indicates the following:

- The subject site is currently serviced by a sewer tie, which is located in the north eastern corner of the subject site.
Stage 2 Site Investigation Report  
Mawson, Block 29, Section 36

- A DN150 reticulated sewer main runs along the eastern verge of Mawson Drive. It terminates in the vicinity of the subject site, in the north eastern corner of the subject site.

- A sewer manhole is located in the vicinity of the service tie to the subject site. A second manhole is located approximately 75m to the east of the subject site.

Reference is made to Drawing 50517082-SK01 within Appendix A, detailing existing sewer services in close proximity to the subject site.

5.4 Potable Water

The existing water supply service information was compiled from the potable water masterplans, Dial Before You Dig (DBYD), Icon Water Correspondence and Work as Executed information, which indicated the following.

- There is no existing service tie to the subject site.

- An existing DN150 water main is present along the southern verge of Shackleton Circuit. The hydrant spacing is approximately 75m.

- An existing DN150 water main is present along the southern verge of Mawson Drive. The main crosses Mawson Drive and continues along Ainsworth Street and has approximately 20m of frontage to the subject site.

Reference is made to Drawing 50517082-SK01 within Appendix A, detailing existing potable water services in close proximity to the subject site. Refer to Table 5-1 for available pressures from the DN150 main in Shackleton Circuit.

**Table 5-1 ICON Water Available Pressures**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Static Pressure (m)</td>
<td>57</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand</td>
<td>47.12</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 10 L/s (m)</td>
<td>44.68</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 20 L/s (m)</td>
<td>41.61</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 30 L/s (m)</td>
<td>37.84</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 40 L/s (m)</td>
<td>33.35</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 50 L/s (m)</td>
<td>28.13</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 60 L/s (m)</td>
<td>22.19</td>
</tr>
</tbody>
</table>

5.5 Stormwater Drainage

5.5.1 Existing Stormwater Infrastructure

The following key stormwater infrastructure has been compiled from Dial Before You Dig (DBYD) information and observations during the site inspection.

- The site is not currently serviced by a stormwater tie.

- A DN525 stormwater service is present on the southern verge of Mawson Drive. The service crosses the road and continues to run along the eastern verge of Ainsworth Street.

- A stormwater sump is located on the southern verge of Mawson Drive near the north eastern corner of the subject site boundary.
Reference is made to Drawing 50517082-SK01 within Appendix A, detailing stormwater services in close proximity to the subject site.

5.5.2 Stormwater Catchment Description

The area of Block 29 Section 36 Mawson is approximately 7,913m². The fall across the subject site is approximately 6% over a distance of approximately 165m. The majority of the grading of the subject site is such that the overland stormwater flows will sheet flow towards the northern boundary of the subject site and onto Mawson Drive. Refer to Figure 5-2 for current stormwater catchment plan.

Figure 5-2 shows the current overland flow of Block 29 Section 36. The runoff is directed from the south of the site towards the low ground along the northern boundary.

5.6 Flooding and Overland Flows Characteristics

A review of the ACTmapi 1 in 100 year flood map shows that the proposed area is not subject to inundation during the 100 year ARI storm event. The subject site is located on a high point of Shackleton Circuit and therefore is not expected to be subject to flooding from the upstream road reserve, however, further assessment following any verge regrading proposed on Shackleton Circuit may be required.
5.7 Telecommunications Services

The following telecommunication infrastructure information has been compiled from Dial Before You Dig (DBYD) information and observations during the site inspection.

5.7.1 Telstra

- An existing Telstra service is present within the southern verge of Mawson Drive in a DN50 PVC conduit.
- The service runs through the subject site along the western boundary before turning into Block 30 Section 36.
- The service located within the subject site is contained within a DN35 conduit.
- There are two telecommunication pits located near the northern boundary of the subject site, A type 6 pit in the north west corner and a type 3 pit in the north east corner.

5.7.2 iinet

An existing iinet service is present within the northern verge of Mawson Drive.

5.7.3 Optus

Optus infrastructure is contained within Telstra services present in the southern verge of Mawson Drive.

5.8 Gas

- Currently, the subject site is not serviced by a gas tie.
- A DN32 210kPa gas main is present within the northern verge of Shackleton Circuit.
- A DN110 210kPa gas main is present within the northern verge of Mawson Drive. A DN32 main branches off along the eastern side of Ainsworth Street. The 32mm main crosses the road to the southern verge of Mawson Drive, near the north eastern corner of the subject site and continues east along Mawson Drive.
Correspondence with Zinfra indicates that the proposed development is serviceable from either 210kPa main in Mawson Drive and Shackleton Circuit.

5.9 Electrical
The following electrical service infrastructure information has been compiled from Dial Before You Dig (DBYD) information and observations during the site inspection.

- Existing high/low voltage underground and overhead cables are present within Block 30 Section 36 immediately adjacent the eastern boundary of the subject site and along the northern verge of Shackleton Circuit.
- Streetlighting infrastructure is present on the northern and southern boundaries of the subject site.
- An existing substation (#S1187) is present within Block 30 Section 36 located centrally on the eastern boundary of the subject site.

5.10 Traffic, Parking and Access
The proposed development area is located within a portion of Mawson that typically has a mixture of land use zoning including, RZ1-Residential Zone, RZ2-Suburban Core, PRZ1 Urban Open Space and CFZ Community Facilities. The subject site is approximately 400 metres from the Mawson shopping precinct and is easily accessible from the existing road network. The subject site is within close proximity to Yamba Drive (600 metres to the east) and Athlon Drive (625 metres to the west) which provide access to the wider region.

Currently pedestrian access to the subject site is available via the existing 1.2m wide footpath located on the southern verge of Mawson Drive and the 1.2m wide concrete footpath in the block immediately to the east of the subject site. A 1.2m concrete footpath on the southern verge of Shackleton Circuit provides informal access to the site.

A review of the surrounding road network shows that there is no on street parking available adjacent the subject site on either Mawson Drive or Shackleton Circuit.

An assessment of current midblock traffic volumes produced from EMME modelling supplied by Strategic Planning (EPD), indicates that during the 2031 AM peak hour, the road infrastructure surrounding the site is operating with low traffic congestion. This is with the exception of Mawson Drive and Ainsworth Street which are operating at moderate to high levels of traffic congestion. Refer to Figure 5-4 below for peak hour mid-block traffic volumes on the road network surrounding the subject site.
Based on the ACT Road Hierarchy Plan (2012) shown within Figure 5-5 below, the Classification of roads in vicinity of the subject site are as provided in Table 5-2.

Table 5-2 Road Traffic classification

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Road Capacity</th>
<th>Current Road Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mawson Drive East</td>
<td>Major Collector</td>
<td>3001-6000</td>
<td>8780</td>
</tr>
<tr>
<td>Mawson Drive West</td>
<td>Major Collector</td>
<td>3001-6000</td>
<td>1940</td>
</tr>
<tr>
<td>Wilkins Street</td>
<td>Major Collector</td>
<td>3001-6000</td>
<td>1620</td>
</tr>
<tr>
<td>Shackleton Circuit East</td>
<td>Minor Collector</td>
<td>1001-3000</td>
<td>830</td>
</tr>
<tr>
<td>Shackleton Circuit West</td>
<td>Minor Collector</td>
<td>1001-3000</td>
<td>1950</td>
</tr>
<tr>
<td>Toucher Street</td>
<td>Minor Collector</td>
<td>1001-3000</td>
<td>11</td>
</tr>
<tr>
<td>Hodgeman Street</td>
<td>Minor Collector</td>
<td>1001-3000</td>
<td>-</td>
</tr>
<tr>
<td>Ainsworth Street</td>
<td>Major Collector</td>
<td>3001-6000</td>
<td>7220</td>
</tr>
</tbody>
</table>
5.11 Verge works
The nature of the adjacent road reserves and associated verges are outlined below:

Mawson Drive
- The Road reserve is approximately 32m wide and consists of the following;
  - 12.0m wide road carriageway single lane
  - 10.5m wide northern grassed verge with kerb and gutter. A 1.2m wide concrete footpath is present
  - 10.0m wide southern grassed verge with kerb and gutter. A 1.2m wide concrete footpath is present.

Shackleton Circuit
- The road reserve is approximately 18.3m wide and consists of the following;
  - 7.0m wide road carriageway single lane.
  - 5.8m wide grassed northern verge with kerb and gutter. No footpath is present.
  - 5.5m wide grassed southern verge with kerb and gutter. A 1.2m wide concrete footpath is present immediately adjacent the roadway.

5.12 ACTION Bus Service
The nearest ACTION bus stop is located on the western verge of Ainsworth Street approximately 70m by north of the subject site. Refer to Figure 5-6 below for proximity to ACTION Bus Routes from the subject site.
5.13 Heritage

Block 29 Section 36 Mawson does not contain any registered heritage assets listed on the ACTMAPI database nor listed within the World, National and Commonwealth Heritage lists available through Australian Government Department of the Environment and Energy website. (Source: http://www.environment.gov.au/heritage/heritage-places)

5.14 Vegetation/Ecological

The proposed development site currently displays full grass coverage within the subject site and on the adjacent verges. It is complimented by clusters of trees located within the subject site and on the southern verge of Mawson Drive.

Review of the ACTmapi Significant Species, Vegetation Communities and Registered Tree Map indicates that there are no registered trees, environmental offset zones, significant plants, animals or threatened plans within or immediately adjacent to the subject site. A tree survey was undertaken in 2016 by Opus within their Stage 1 Site Investigation Report dated 13/01/2016 that identified 16 regulated trees and 2 registered trees within the subject site as detailed within Figure 5-7 below.

An ecological investigation of the subject site may be required to determine the presence of black cockatoos as identified by the Mawson community in recent community consultation.
The subject site is however inclusive of the following environmental conditions:

- Patch Priority Restoration Area occupying a small area in the south of the subject site. These areas are listed as opportunistic locations for planting to increase vegetation patch sizes.
- Local Links- Canopy Connection occupying a small area within the southern portion of the subject site.

Refer to Figure 5-8 below.
5.15 Environmental

Cardno is aware of a background Preliminary Environmental Investigation undertaken for the subject site by Opus in December of 2015. A Phase 2 detailed environmental investigation report was determined by Opus as not being required at this stage due to no issues with contamination being identified through their investigations. However, if site activities identify evidence of potentially contaminating activities having been conducted at the site, further investigations should be conducted.
6 Proposed Site Servicing

As discussed in **Section 2.2**, no firm layout has been provided for the proposed development of this site. It is understood that the proposed development will remain zoned as a Community Facilities Zone (CFZ) and hence may be utilised for a number of different developments according to the ACT Territory Plan.

All site servicing requirements have been calculated for the proposed development scenario of a child care centre, which is estimated to cater for approximately 120 children and 22 staff and a place of worship for 200 patrons as described in **Section 2.2** of this report. These figures were used to determine the maximum demand for the proposed development’s servicing requirements.

The number of staff for the proposed development was calculated using the Educator to Child ratios for different age groups (refer to **Table 6-1**) obtained from the Australian Children’s Education and Care Quality Authority (ACEQA). Of the 120 children one third were assumed to be between 0-24 months, one third between 24-56 months and one third between 36 months and pre-school to achieve a conservative number of 22 staff required for the child care centre. A 50% split of male and female staff was assumed. This figure was utilised for determining the demand upon infrastructure which enabled calculation of site servicing requirements.

**Table 6-1 Educator to Child Ratios**

<table>
<thead>
<tr>
<th>Educator to Child Ratios – children aged 0-24 months and younger than 36 months</th>
<th>Educator to child ratios - birth to 24 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>All states and territories</td>
<td>ACT 1.4&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>1.4&lt;sup&gt;1&lt;/sup&gt;</td>
<td>1.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Educator to child ratios – children aged 24-56 months</th>
<th>Educator to child ratios – children older than 24 months and up to and including preschool age</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT 1:11 for centre-based services other than a preschool 2:25 for a preschool</td>
<td>NSW 1:10</td>
</tr>
<tr>
<td>1:11</td>
<td>1:10</td>
</tr>
</tbody>
</table>

<sup>1</sup> Power declared approved services in Queensland have received an approval to operate at L.E. 1

<sup>2</sup> Some declared approved services in Tasmania have received an approval to operate at L.E. until 2018

<sup>3</sup> Table refers to legislation SEQ(200) which accommodates the requirement for Tasmanian Kindergartens to provide places to any child who, on 1 January in any year, is 4 years of age
6.1 Sewer Supply

To provide prospective developers with an understanding of the sewerage requirements, Cardno has undertaken an analysis of the proposed development's sewer demand in accordance with ICON Water Supply and Sewerage Standards and AS3500.2 Sanitary Plumbing and Drainage Australian Standard.

Using the ICON Water Sewerage Service Standards and Guidelines, calculations have been completed to determine the size required for the service tie for the proposed development outlined in Section 2.

The sewer loading calculation results are provided in Table 6-2 below.

**Table 6-2 ICON Water Sewer Calculations**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Staff</td>
<td>11</td>
</tr>
<tr>
<td>Female Staff</td>
<td>11</td>
</tr>
<tr>
<td>Students</td>
<td>120</td>
</tr>
<tr>
<td>Place of Worship Patrons</td>
<td>200</td>
</tr>
<tr>
<td>Total Equivalent Population (0.2/Student/Staff/Worshipper)</td>
<td>68</td>
</tr>
<tr>
<td>Average Dry Weather Flow (L/s)</td>
<td>0.0238</td>
</tr>
<tr>
<td>Peak Dry Weather Flow (L/s)</td>
<td>0.91</td>
</tr>
<tr>
<td>Peak Infiltration Intensity (L/s)</td>
<td>1.183</td>
</tr>
<tr>
<td>Peak Wet Weather Flow (L/s)</td>
<td>2.090</td>
</tr>
<tr>
<td><strong>Required Pipe Size at 2% Grade</strong></td>
<td>DN100</td>
</tr>
</tbody>
</table>

The above calculations show that the proposed development would be adequately serviced by the existing DN100 sewer tie. A DN100 service tie is the minimum sewer tie size in accordance with ICON Water Standards.

ICON Water has also advised that the system will have capacity to accommodate the increase in demand generated by the proposed development as detailed in correspondence with ICON Water dated 18/04/2017.

Due to the relatively consistent existing grading across the block of approximately 6% towards the existing sewer tie location, it is not expected that the site will have areas unserviceable by gravity unless the subject site levels are significantly altered.

Refer to Drawing 50517082-SK01 within Appendix A for more details on existing sewer services, Appendix C for correspondence with ICON Water and DBYD information and Appendix D for calculations of sewer loadings.
6.2 Water Supply

Cardno has undertaken calculations for potable water supply to the subject site based on ICON Water Supply and Sewerage Standards, Australian Standard AS3500.1 and the following:

Table 6-3 below, extracted from the Building Code of Australia (BCA Vol 1 Table F.2.3) indicates the required number of fixtures for a child care centre. For this development, it was assumed that the male to female staffing ratio was 1:1.

Table 6-4 below, extracted from the Building Code of Australia (BCA Vol 1 Table F.2.3) indicates the required number of fixtures for a place of worship. For this development, it was assumed that the male to female patron ratio was 1:1.

Table 6-3 BCA Vol 1 - Deemed to Satisfy Provisions Child Care Centre

<table>
<thead>
<tr>
<th>User Group</th>
<th>Closet Pans</th>
<th>Urinals</th>
<th>Washbasins</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Design</td>
<td>Number</td>
<td>Design</td>
</tr>
<tr>
<td>Class Sb — support</td>
<td>Occupancy</td>
<td></td>
<td>Occupancy</td>
</tr>
<tr>
<td>Male employees</td>
<td>1 — 20</td>
<td>1</td>
<td>1 — 10</td>
</tr>
<tr>
<td>&gt; 20</td>
<td>Add 1 per 20</td>
<td></td>
<td>1 — 20</td>
</tr>
<tr>
<td>Male employees &gt; 20</td>
<td>Add 1 per 20</td>
<td></td>
<td>&gt; 20</td>
</tr>
<tr>
<td>Female employees</td>
<td>1 — 5</td>
<td>1</td>
<td>1 — 30</td>
</tr>
<tr>
<td>&gt; 5</td>
<td>Add 1 per 15</td>
<td></td>
<td>&gt; 30</td>
</tr>
<tr>
<td>Class Sb — early childhood centres</td>
<td>1 — 15</td>
<td>1</td>
<td>1 — 30</td>
</tr>
<tr>
<td>&gt; 15</td>
<td>Add 1 per 15</td>
<td></td>
<td>&gt; 30</td>
</tr>
</tbody>
</table>

Note: Facilities for use by children must be—
(a) junior pans; and
(b) washbasins with a rim height not exceeding 800mm.

Table 6-4 BCA Vol 1- Deemed to Satisfy Provisions Place of Worship

<table>
<thead>
<tr>
<th>User Group</th>
<th>Closet Pans</th>
<th>Urinals</th>
<th>Washbasins</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Design</td>
<td>Number</td>
<td>Design</td>
</tr>
<tr>
<td>Class Sb — churches, chapels or the like</td>
<td>Occupancy</td>
<td></td>
<td>Occupancy</td>
</tr>
<tr>
<td>Male patrons</td>
<td>1 — 300</td>
<td>1</td>
<td>1 — 200</td>
</tr>
<tr>
<td>&gt; 300</td>
<td>Add 1 per 500</td>
<td></td>
<td>&gt; 200</td>
</tr>
<tr>
<td>Female patrons</td>
<td>1 — 150</td>
<td>1</td>
<td>1 — 250</td>
</tr>
<tr>
<td>&gt; 150</td>
<td>Add 1 per 150</td>
<td></td>
<td>&gt; 250</td>
</tr>
</tbody>
</table>

The following water network pressure information has been supplied by ICON water at a location near the proposed water tie detailed on Drawing 50517082-SK02.

Table 6-5 ICON Water Available Pressures

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Static Pressure (m)</td>
<td>57</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand</td>
<td>47.12</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 10 L/s (m)</td>
<td>44.68</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 20 L/s (m)</td>
<td>41.61</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 30 L/s (m)</td>
<td>37.84</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 40 L/s (m)</td>
<td>33.35</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 50 L/s (m)</td>
<td>28.13</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 60 L/s (m)</td>
<td>22.19</td>
</tr>
</tbody>
</table>
Based on the application of the above information, the results calculated for potable water supply to the subject site are provided in **Table 6-6** below.

**Table 6-6 ICON Water / AS3500.1 Water Supply Calculations**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available Minimum Pressure at Main @ Peak Demand (m)</td>
<td>47.12</td>
</tr>
<tr>
<td>RL of Point at Furthest Index Length (Existing surface contours) (AHD)</td>
<td>648.0</td>
</tr>
<tr>
<td>RL of Main (ACTmapi levels and assuming 600mm deep)</td>
<td>657.4</td>
</tr>
<tr>
<td>Head Loss (m)</td>
<td>-9.4m</td>
</tr>
<tr>
<td>Available Head (30m req. by Icon Water) (m)</td>
<td>51.5</td>
</tr>
<tr>
<td>Probable Simultaneous Demand (L/s)</td>
<td>2.20</td>
</tr>
<tr>
<td>Index Length (m)</td>
<td>200</td>
</tr>
<tr>
<td>Required Potable Water Pipe Size</td>
<td>DN40</td>
</tr>
</tbody>
</table>

Currently the subject site is not serviced by a potable water tie. Therefore the construction of an individual DN40 tie to the subject site will be required from the DN150 water main present in the southern verge of Shackleton Circuit. All connections and disconnection works are to be carried out by ICON Water at the expense of the developer.

In accordance with the Icon Water Design Standards, the minimum pressure during peak hour demands for a commercial development is 30 metres of head. This is the minimum pressure necessary over the highest point of the developed block. Based on the existing pressures provided in **Table 6-5** above, the pressure head available within the existing water supply network at the highest point of the subject site is 51.5m, which is in excess of the standard minimum 30 metre head requirement.

### 6.2.1 Fire Service

The fire risk category for a child care centre and place of worship on the subject site is F4, requiring 60L/s water flow at 10m head from the network during peak demand, with 60m hydrant spacing along the water main (ICON Water Supply and Sewerage Standards). It is noted that the fire risk category for F4 may require encircling of a community facility site with water main of a minimum 150mm diameter. At present the subject site is not surrounded by water mains. It is recommend that ICON Water and ACT Fire and Rescue be contacted to determine the required layout of mains for future development once the final proposed development layout is known.

Consultation and approval with ACT Fire and Rescue should be sought for firefighting and potable water parameters to be further developed during detailed design of the final development.

For F4 Fire category (60L/s required) the pressure attainable at the block boundary is 22.19m during peak periods. This exceeds the requirement of a minimum of 10m head and therefore complies with F4 pressure requirements. Refer to **Table 6-5** above for water pressure achievable during peak demands provided by ICON Water.

In accordance with the ICON Water Guidelines, the hydrant spacing for a development with an F4 fire risk category is 60m. The existing water main on Shackleton Circuit has hydrants spaced at approximately 75
metres. The hydrant spacing on the existing water main on Mawson drive varies between less than 60 metres and over 100 metres. Additional hydrants may be required should ACT Fire and Rescue stipulate such requirements during the detailed design/development approval phase of the proposed development (such as internal fire-fighting measures).

Refer to Drawing 50517082-SK02 within Appendix A for more details on proposed potable water services, Appendix C for correspondence with ICON Water and DBYD information and Appendix D for calculations of potable water requirements.

6.3 Stormwater

Figure 6-1 Proposed Stormwater Catchment Plan

The proposed development scenario has been assessed in accordance with the TCCS Design Standard for Stormwater. The development site has been designated as an Urban Neighbourhood Development and assessed for the 5 year ARI in accordance with Table 1.2-Minor System Design ARI within TCCS Standards. An impervious area of 60% for multi-residential developments is specified within the TCCS Standards and has been adopted to reflect the similar nature of the proposed development of a childcare centre.

The expected runoff from the developed block area is detailed in Table 6-7 below. The table also provides the required tie size based on construction at a 1.0% minimum grade.

Table 6-7 TCCS Stormwater Tie Calculations

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARI</td>
<td>5</td>
</tr>
<tr>
<td>Rainfall Intensity (mm/hr)</td>
<td>98</td>
</tr>
<tr>
<td>Area (m²)</td>
<td>7,913</td>
</tr>
<tr>
<td>Impervious Area Percentage</td>
<td>60%</td>
</tr>
<tr>
<td>Estimated Flow, Q (L/s)</td>
<td>172.33</td>
</tr>
<tr>
<td>Required Tie Size (at 1% min grade)</td>
<td>DN375</td>
</tr>
</tbody>
</table>

Provision of a DN375 stormwater tie is recommended to service the subject site. It should be noted that TCCS does not provide information in regards to the downstream capacity of existing infrastructure to accommodate
additional flows, therefore once development details are better known, the capacity of the existing DN525 should be verified against induced flows.

It is noted that the *EPD WaterWays: Water Urban Sensitive Design General Code* requires that the stormwater quality and quantity for new developments must be managed and the proposed development would be required to adhere to those guidelines (refer to Section 6.10 for more details). Part of those requirements include the reduction of post development flows to pre-development levels via retarding measures such as On Site Detention. Confirmation of the constraints imposed on the proposed development from this requirement can only be achieved during the detailed design process once the final development configuration is known.

Refer to Drawing S0517082-SK02 within Appendix A for more details on proposed stormwater services and Appendix D for calculations of stormwater servicing requirements.

### 6.4 Telecommunications

#### 6.4.1 TransACT/iinet

The proposed development is acceptable to iinet who have indicated that TransACT services can be provided from the existing pit on Mawson Drive upon request. TransACT have indicated that to facilitate this connection civil works will be required by the developer and by the developer and TransACT/iinet nominated contractor at the expense of the developer.

Refer to Appendix C for correspondence with TransACT/iinet and Appendix D for DBYD information.

#### 6.4.2 Telstra

The proposed development is acceptable to Telstra. It is noted that the developer will be required to provide a conduit from the block boundary to the Main Distribution Frame (MDF) within the building.

Telstra will require exclusive access to the lead-in conduit for the proposed development. Liaison with Telstra Network Integrity will be required through the re-development of the block and the developer will be required to register the development on the Telstra Smart Community website for connection purposes.

Telstra have indicated in correspondence dated 27/03/2017 that the existing Telstra service present within the subject site will require the establishment of an easement.

Refer to Appendix C for correspondence with Telstra and Appendix D for DBYD information.

### 6.5 Gas

Zinfra has confirmed that the existing medium pressure networks on Shackleton Circuit and Mawson Drive have sufficient capacity to service the proposed development and that there aren’t any constraints that would prevent connection to the existing infrastructure. Zinfra will however require the developer to undertake trenching for any internal reticulation of the gas network.

Refer to Appendix C for correspondence with Zinfra and Appendix D for DBYD information.

### 6.6 Electrical

ActewAGL have confirmed their support for the development. Correspondence with ActewAGL indicates that the existing network can supply the subject site from Pole Sub 1187, however, to supply the existing development the existing pole substation may require upgrading as it is only rated to 250kVA. It is recommended that further analysis of the peak electrical draw from the subject site be undertaken once the proposed development is better known.

It is noted that the proposed development is within 100m of the nearest substation (3m to #S1187). ActewAGL have indicated that once the proposed development layout is known, appropriate earthing investigation and protection measures (step and touch analysis) will be required to be undertaken.

The developer will be required to fund any new connection and removal or relocation of any ActewAGL assets, as per the ‘ActewAGL connection policy’.

Refer to Appendix C for correspondence with ActewAGL and Appendix D for DBYD information.
6.7 Flooding and Overland Flows

Initial assessment of the existing flow characteristics of the site within Section 5.5 indicates that the proposed development is not within the affected area for a 1 in 100 year flood as shown on ACTmapi.

The overland flows associated with the site flow towards the north western corner of the site and onto the southern verge of Mawson Drive. The proposed stormwater tie will have sufficient capacity to accommodate the capture of overland flows from the subject site up to the 5 year ARI storm event.

Further assessment of overland flows may be required if the development of the subject site requires regrading of the existing Shackleton Circuit verge to allow driveway access.

6.8 Boundaries and Easements

Based on information available on the subject site on ACTmapi and Dial Before You Dig, the subject site contains no easements within the bounds of the subject site. However, correspondence with Telstra indicates that a DN35 conduit runs along the western boundary of the subject site and will require the establishment of an easement. Refer to Drawing 50517082-SK01 included in Appendix A and Figure 5-1 above which detail the location of existing services and easements within the subject site. Refer to Appendix C for correspondence with Telstra regarding the necessity to establish an easement within the subject site.

6.9 Traffic, Parking and Vehicle Access

6.9.1 Vehicle Access

The Waste and Recycle Management Code for the ACT indicates that commercial, public and industrial developments require collection of Hoppers and/or Mobile Garbage Bins (MGBs) from a location on-site and the development must allow for unobstructed access/egress of the waste collection point by collection vehicles in a forward direction.

Currently there is no driveway to Block 29, Section 36, Mawson and a new driveway constructed in accordance with the TCCS Design Standard for Urban Infrastructure Type HD2 Geometry for use with commercial developments is required. Extensive correspondence with TCCS indicated that there would likely be significant difficulties achieving compliance with TCCS Standards and AS2890.1, for a full access driveway on Mawson Drive. However, this correspondence indicated that there is opportunity to construct a left in/out driveway on Mawson Drive and a full access driveway on Shackleton Circuit.

The location of the driveways must be coordinated with EPD and TCCS to be in an appropriate and approved locations where engineering services and tree removal/relocation is minimised. Refer to Drawing 50517082-SK02 for the indicative proposed vehicle access locations.

6.9.2 Parking

As discussed in Section 2, the development is classified as a compliant development within Community Facilities Zone and should be assessed accordingly under the Parking and Vehicular Access General Code (PVAGC). The parking provision rates for the child care centre have been adopted as follows:

1. 1 space/centre plus 2 spaces per 15 child care places for employee parking.
2. 4 spaces for visitor parking for 60-90 child care places.
3. 1 pick-up/set-down bay per 10 child care places.

Parking location requirements for this type of development are provided in Table 6-8 below.

In accordance with the Parking and Vehicular Access General Code The parking provision rates for the place of worship have been adopted as follows:

1. space/4 Seats all other areas
Table 6-8 Development parking location requirements

<table>
<thead>
<tr>
<th>Development Type</th>
<th>Long Stay Parking</th>
<th>Short Stay Parking</th>
<th>Operational Parking</th>
<th>Visitor Parking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Care Centre/Place of Worship</td>
<td>Within 200 m</td>
<td>On-site or within 100m</td>
<td>On-site</td>
<td>On-site or within 100m</td>
</tr>
</tbody>
</table>

Provision of parking for people with disabilities shall be allowed for in accordance with Clause 2.2.4 of the PVAGC, which states that the minimum percentage is to be 3% for disabled parking.

In accordance with the PVAGC, Clause 2.4, parking for motorcycles and scooters should allow provision for 3 motorcycle parking spaces per 100 parking bays with a minimum provision of 1 motorcycle parking space for car parks for a minimum of 30 parking spaces. Motorcycle parking spaces should comply with AS2890, Parts 1 and 5.

The proposed development parking requirements for the subject site are provided within Table 6-9 below.

Table 6-9 Development parking requirements

<table>
<thead>
<tr>
<th>Development Type</th>
<th>Number of Children/Patrons</th>
<th>SS</th>
<th>LS</th>
<th>TOTAL</th>
<th>DP</th>
<th>MP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Care Centre</td>
<td>120</td>
<td>18</td>
<td>17</td>
<td>35</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Place of Worship</td>
<td>200</td>
<td>50</td>
<td>0</td>
<td>50</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

The design of the proposed development will be required to take into account the provision of sufficient parking accommodation for the above requirements.

6.9.3 Traffic Analysis on Street Capacity from Development Traffic Generation

Table 6-10 Child Care Centre Traffic Generation Rates

<table>
<thead>
<tr>
<th>Centre Type</th>
<th>7:00-9:00am</th>
<th>2:30-4:00pm</th>
<th>4:00-6:00pm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-school</td>
<td>1.4</td>
<td>0.8</td>
<td>–</td>
</tr>
<tr>
<td>Long-day care</td>
<td>0.8</td>
<td>0.3</td>
<td>9.7</td>
</tr>
<tr>
<td>Before/after care</td>
<td>0.5</td>
<td>0.2</td>
<td>0.7</td>
</tr>
</tbody>
</table>

The traffic generation rates in Table 6-10 provides an insight on the traffic volumes and timing for a child care centre (long day care). Based on the yield of 120 children, 220 daily vehicles was determined and utilised as the design daily traffic generation volume for the proposed development.

The traffic generation rates from the place of worship were determined from the required number of parks indicated in Clause 3.6.5 of the Parking and Vehicular Access Code. 1 parking space per 4 patrons was used to obtain a figure of 50 parking spaces required for the place of worship. For the purpose of the traffic assessment it was assumed that the place of worship would provide for one service per day and generate 100 vehicle trips.

The application of these traffic generation rates were combined for a more conservative assessment, however it is noted that typically, traffic generation for these developments would not normally overlap for the respective peak hours of traffic generation.
The following assumptions were applied to traffic generated by the proposed development scenario during traffic analysis. Refer to Figure 6-2 and Figure 6-3 for plan views detailing the direction of proposed traffic generation formed from the below assumptions:

- 60% of traffic generated from the development was assumed to travel north towards the city whilst the remaining 40% of traffic were expected to travel south towards Tuggeranong and Queanbeyan

**Northbound Traffic from the proposed development (60%)**

- From the 60% of traffic heading towards the city, 75% were expected to utilise the northern driveway.
- Of the 75% utilising the northern driveway, 90% were expected to continue west on Mawson Drive and 10% were expected to turn north onto Ainsworth Street.
- Of the 25% utilising the southern driveway, 90% were expected to head east along Shackleton Circuit.
  - Of the 90% heading east along Shackleton Circuit, 100% were expected to turn onto Hodgeman Street. 100% of traffic on Hodgeman Street was expected to head east on Mawson Drive
  - Of the 10% heading west on Shackleton Circuit, 100% were assumed to turn onto Toutcher Street, then head north onto Wilkins Street, then head west onto Mawson Drive.

**Southbound Traffic from the proposed development (40%)**

- Of the 40% of traffic travelling south 50% were expected utilise the northern driveway and 50% were expected to utilise the southern driveway.
- Of the 50% utilising the northern driveway, 100% were expected to continue west on Mawson Drive.
- Of the 50% utilising the southern driveway, 85% were expected to head east on Shackleton Circuit and 15% were expected to head west on Shackleton Circuit.
  - Of the 85% travelling east on Shackleton Circuit, 100% were expected to head North on Hodgeman Street and then head East on Mawson Drive.
  - Of the 15% travelling west on Shackleton Circuit, 100% were expected to turn west onto Toutcher Street. 50% were expected to turn south onto Wilkins street and 50% north onto Wilkins Street.
  - Of the 50% of traffic heading north on Wilkins street, 100% were expected to turn west onto Mawson Drive.
Figure 6-2 Generated traffic travelling north (60%)

Figure 6-3 Generated traffic travelling south (40%)
### Table 6-11 Traffic from Development Heading North

<table>
<thead>
<tr>
<th>Road</th>
<th>Street Capacity</th>
<th>ACT Code Classification</th>
<th>60% of Total Development Traffic Generation</th>
<th>% North</th>
<th>No. of Cars (vpd)</th>
<th>% South</th>
<th>No. of Cars (vpd)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Northern Driveway (75%)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mawson Dr east</td>
<td>3001-6000</td>
<td>Major Collector</td>
<td></td>
<td>0</td>
<td>0</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Mawson Dr west</td>
<td>3001-6000</td>
<td>Major Collector</td>
<td></td>
<td>90</td>
<td>130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ainsworth St</td>
<td>3001-6000</td>
<td>Major Collector</td>
<td></td>
<td>10</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Southern Driveway (25%)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shackleton Cct east</td>
<td>1001-3000</td>
<td>Minor Collector</td>
<td></td>
<td>50</td>
<td>43</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Shackleton Cct west</td>
<td>1001-3000</td>
<td>Minor Collector</td>
<td></td>
<td>50</td>
<td>5</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Hodgeman St</td>
<td>1001-3000</td>
<td>Minor Collector</td>
<td></td>
<td>100</td>
<td>43</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Toutcher St</td>
<td>1001-3000</td>
<td>Minor Collector</td>
<td></td>
<td>100</td>
<td>5</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Wilkins St</td>
<td>3001-6000</td>
<td>Major Collector</td>
<td></td>
<td>100</td>
<td>5</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Mawson Dr east</td>
<td>3001-6000</td>
<td>Major Collector</td>
<td></td>
<td>100</td>
<td>43</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Mawson Dr west</td>
<td>3001-6000</td>
<td>Major Collector</td>
<td></td>
<td>100</td>
<td>5</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Ainsworth St</td>
<td>3001-6000</td>
<td>Major Collector</td>
<td></td>
<td>50</td>
<td>0</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

### Table 6-12 Traffic from Development Heading South

<table>
<thead>
<tr>
<th>Road</th>
<th>Street Capacity</th>
<th>ACT Code Classification</th>
<th>60% of Total Development Traffic Generation</th>
<th>% North</th>
<th>No. of Cars (vpd)</th>
<th>% South</th>
<th>No. of Cars (vpd)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Northern Driveway (50%)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mawson Dr east</td>
<td>3001-6000</td>
<td>Major Collector</td>
<td></td>
<td>0</td>
<td>0</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Mawson Dr west</td>
<td>3001-6000</td>
<td>Major Collector</td>
<td></td>
<td>100</td>
<td>64</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Ainsworth St</td>
<td>3001-6000</td>
<td>Major Collector</td>
<td></td>
<td>0</td>
<td>0</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td><strong>Southern Driveway (50%)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shackleton Cct east</td>
<td>1001-3000</td>
<td>Minor Collector</td>
<td></td>
<td>85</td>
<td>54</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Shackleton Cct west</td>
<td>1001-3000</td>
<td>Minor Collector</td>
<td></td>
<td>15</td>
<td>10</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Hodgeman St</td>
<td>1001-3000</td>
<td>Minor Collector</td>
<td></td>
<td>100</td>
<td>54</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Toutcher St</td>
<td>1001-3000</td>
<td>Minor Collector</td>
<td></td>
<td>100</td>
<td>10</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Wilkins St</td>
<td>3001-6000</td>
<td>Major Collector</td>
<td></td>
<td>50</td>
<td>5</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Mawson Dr east</td>
<td>3001-6000</td>
<td>Major Collector</td>
<td></td>
<td>0</td>
<td>54</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Mawson Dr west</td>
<td>3001-6000</td>
<td>Major Collector</td>
<td></td>
<td>100</td>
<td>5</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Ainsworth St</td>
<td>3001-6000</td>
<td>Major Collector</td>
<td></td>
<td>0</td>
<td>0</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>
Table 6-13 Ultimate Traffic Generated from Development

<table>
<thead>
<tr>
<th>Road</th>
<th>Street Capacity</th>
<th>ACT Code Classification</th>
<th>Ultimate Traffic Volume</th>
<th>Total Development Traffic Generation</th>
<th>Ultimate + Development</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shackleton Cct east</td>
<td>1001-3000</td>
<td>Minor Collector</td>
<td>830</td>
<td>98</td>
<td>928</td>
<td>12</td>
</tr>
<tr>
<td>Shackleton Cct west</td>
<td>1001-3000</td>
<td>Minor Collector</td>
<td>1950</td>
<td>14</td>
<td>1964</td>
<td>1</td>
</tr>
<tr>
<td>Hodgeman St</td>
<td>1001-3000</td>
<td>Minor Collector</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Toutcher St</td>
<td>1001-3000</td>
<td>Minor Collector</td>
<td>1190</td>
<td>14</td>
<td>1204</td>
<td>1</td>
</tr>
<tr>
<td>Wilkins St</td>
<td>3001-6000</td>
<td>Major Collector</td>
<td>1620</td>
<td>14</td>
<td>1634</td>
<td>1</td>
</tr>
<tr>
<td>Mawson Dr east</td>
<td>3001-6000</td>
<td>Major Collector</td>
<td>8780</td>
<td>98</td>
<td>8878</td>
<td>1</td>
</tr>
<tr>
<td>Mawson Dr west</td>
<td>3001-6000</td>
<td>Major Collector</td>
<td>1940</td>
<td>203</td>
<td>2143</td>
<td>10</td>
</tr>
<tr>
<td>Ainsworth St</td>
<td>3001-6000</td>
<td>Major Collector</td>
<td>7220</td>
<td>14</td>
<td>7234</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Based on the results of the proposed development’s generated traffic, it was determined that the development increases the surrounding road network traffic as shown within Table 6-13 above.

It is determined that the congestion experienced on Mawson Drive and Ainsworth street may be exacerbated by the proposed development. However, it is noted that the actual increased traffic on the existing road network may be reduced if the peak hours of operation for the place of worship do not overlap with peak hours for the surrounding network.

It is recommended that a traffic analysis of the effect of the proposed development’s generation on surrounding infrastructure is undertaken by the developer of the subject site once the proposed development is better known due to high levels of congestion present (70 to 80%) on Mawson Drive and Ainsworth Street.
6.10 Water Sensitive Urban Design

The redevelopment will drain via TCCS’ stormwater infrastructure into the existing stormwater network. It is important the developer is aware of and complies with all legislative requirements with regards to stormwater runoff quality and quantity.

Internal stormwater designs shall comply with the EPD Waterways Water Sensitive Urban Design General Code, for which the requirements are summarised within the Water Sensitive Urban Design Development Checklists, including but not limited to the following requirements:

- The developer must not increase the stormwater run-off from the previous retention levels on site.
- A summary of the required WSUD targets and achievements are listed below
  - Mains water use reduction = 40%
  - Reduction in suspended solids = 60%
  - Reduction in total phosphorus = 45%
  - Reduction in total nitrogen = 40%
  - Effluent Reuse = Optional

These objectives and targets can be achieved through design and construction of Water Sensitive Urban Design measures such as:

Mains water use reduction;
- Water efficient irrigation systems
- Use of stormwater to replace mains water for irrigation
- Water efficient landscaping
- Rainwater tanks for garden watering and internal uses, such as toilet flushing
- Use of greywater for irrigation and toilet flushing on individual dwellings
- Wastewater treatment and reticulation to commercial or industrial users who do not require water of a potable water mains standard

Stormwater management;
- Wetlands and Ponds,
- Retarding basins,
- Filter strips,
- Swales and Bio-Retention Swales in lieu of piped drainage systems,
- Downpipes and impervious surface areas not directly connected to the stormwater system; direct runoff across lawns and gardens
- Minimising impervious surfaces,
- Installing on-site detention storage, particularly in multi-dwelling sites (which may be increased in size to allow for water harvesting)
- Creating extended detention volume in ornamental ponds or landscaped depressions
- Direct connection of downpipes to a separate collection system to discharge to ornamental ponds to maintain water quality

Wastewater reuse;
- Use of domestic greywater, treated or untreated

Construction of the proposed development will be required to comply with the Environment Protection Authority, Environment Protection Guidelines for Construction and Land Development in the ACT.
7 Opportunity and Constraints

7.1 Planning and Layout

No environmental or heritage constraints were found to be contained within the site or nearby areas that would prohibit development internally. A better understanding of the development requirements from the LDA is required to highlight other constraints or opportunities of the site related to planning matters.

The proposed development is correctly zoned for the development of a child care facility and place of worship as Community Facility Zone, however being approximately 7,913m², this site is generally considered too large for the proposed development of childcare centre as a single use. Childcare centres typically occur on smaller blocks of approximately 3500m² and hence a place of worship was also provided as a secondary-supplementary use.

7.2 Geotechnical

Based on the existing ground conditions identified within Section 5.13 of this report, it is recommended that a development specific detailed geotechnical investigation inclusive of detailed drilling to fully determine the underlying ground conditions and engineering attributes of the site is undertaken to determine the suitability of the site for the final proposed development. If this is not undertaken the developer may face significant delays as a result of unknown latent ground conditions.

7.3 Vegetation/Ecological

Block 29 Section 36 Mawson does not contain any registered trees listed on the ACT tree database available through ACTmapi. However, upon review of aerial photography of the subject site and a site inspection, several large trees were identified on the boundary and within the subject site. A tree survey was undertaken in 2016 by Opus within their Stage 1 Site Investigation Report dated 13/01/2016 that identified 16 regulated trees and 2 registered trees within the subject site.

Any removal of trees proposed as part of the development of the subject site will require liaison and approval from the Conservator/ TCCS Tree Protection Unit.

An ecological investigation of the subject site may be required to determine the presence of black cockatoos as identified by the Mawson community in recent community consultation.

7.4 Servicing

The existing site currently is not shown within Dial Before You Dig or Work As Executed information as being directly serviced with potable water, stormwater, gas mains, communication or electrical mains services. Initial advice from service authorities indicates that these services however are readily available to the subject site with capacity in the surrounding network infrastructure.

A potential requirement of community facility sites is that they are surrounded by a DN150 water main. This is not currently the case for this site and additional water service infrastructure may be required to service the proposed development once the final layout is known and presented to ACT Fire and Rescue.

Advice from ActewAGL confirmed that the existing electricity network has capacity to accommodate the proposed development. However, further details cannot be confirmed until detailed design commences and a ‘Request for Preliminary Network Advice’ is submitted by the developer with more specific information on the loads required. Because there is a substation located within 100m of the subject site ActewAGL may request protective investigations/measures. Once details of the proposed development are known confirmation of these requirements should be sought from ActewAGL.

Advice from Telstra is that the existing telecommunications network has capacity to service the proposed development. However, during preliminary correspondence with Telstra, Telstra indicated that the existing DN35 conduit located within the subject site will require the creation of an easement.
7.5 Traffic and Access

Extensive correspondence with TCCS indicated that a full access driveway located on Mawson Drive would be highly unlikely to achieve approval by TCCS, therefore a full access driveway on Shackleton Circuit has been proposed. However, TCCS has indicated that a Left in/out Driveway located on the eastern boundary of the subject site is acceptable to TCCS. The development entrance should be established in coordination with TCCS to ensure the development satisfies all required design constraints. Tree removals required for driveway access will need to be coordinated and approved by the conservator and the TCCS Tree protection Unit.

Refer to Tables 6-11 to 6-13 detailing the application of the assumptions to traffic generation on the surrounding road network. Figures 6-2 and 6-3, provide a plan view of the traffic generation assumptions applied to the local road network. The assumptions show that the proposed development may exacerbate existing traffic congestion present on Mawson Drive and Ainsworth Street. It is recommended that a traffic analysis of the surrounding infrastructure is undertaken by the developer of the subject site once the proposed development is better known due to the high levels of congestion present on Mawson Drive and Ainsworth Street.

7.6 Parking Facilities

The proposed development is zoned on the Territory Plan as Community Facilities Zone (CF) and is therefore subject to the requirements of the EPD Parking and Vehicular Access General Code - Clauses 3.6 Community Facilities Zone. Parking provision requirements based on the proposed development are within Clause 6.9.2 of this report.

Vehicular access to on-site parking for staff is expected to operate via the proposed driveway on Shackleton Circuit indicated in Drawing 50517082-SK02 within Appendix A. Close consultation with EPD and TCCS will be required to ensure approval in principal of the recommended access location prior to proceeding with detail design works.

7.7 Environmental

Currently, Cardno is unaware of any background reports related to environmental/contamination issues on the subject site. However it is recommended that a Preliminary Environmental Site Investigation is undertaken to determine any potential environmental constraints on the subject site. The necessity and scope for a phase 2 environmental report would be determined from the results of the Preliminary Environmental Site Investigation.
8 Reserved
9 Recommendations

The development of a child care centre facility and a place of worship on Block 29 Section 36 Mawson has been assessed in this site investigation report. A summary of the recommendations and necessary actions required for the proposed development include:

- Provide a DN40 water service tie as indicated on Drawing 50517082-SK02 in Appendix A.
- Provide a DN100 sewer service as indicated on Drawing 50517082-SK02 in Appendix A.
- Provide a DN375 stormwater service as indicated on Drawing 50517082-SK02 in Appendix A.
- Liaise with Telstra for connection to existing infrastructure surrounding the proposed development site.
- Liaise with Zinfra Gas for connection to the existing DN32 210Pa gas line at the southern boundary of the proposed development site. All works are to be carried out by Zinfra at the expense of the developer.
- Construct two TCCS Standard HD2 driveways to locations approved by TCCS. Indicative locations are shown on Drawing 50517078-SK02 in Appendix A.
- It is recommended the developer undertake a detailed soil investigation report to determine the underlying ground conditions and engineering attributes of the site and ensure that there is no contamination.
- Liaise with the conservator and TCCS Tree Protection Unit for the proposed removal of any trees.
- Liaise with ICON Water to install hydrants on the existing mains on Shackleton Circuit and Mawson Drive to ensure that hydrant spacing meets the requirement for F4 fire category.
- Liaise with ACT Fire and Rescue as to the potential requirement for water mains to surround the subject site.
- Utilise the existing electrical service line located within the northern verge of Shackleton Circuit to service the proposed development. The developer should undertake a detailed assessment of the peak draw of the proposed development and liaise with ActewAGL following submission of an application for preliminary advice for network connection.
- Undertake ‘step and touch’ analysis of substation #S1187 earthing (immediately adjacent the subject site) to ensure suitability for development.
- Undertake an ecological investigation of the subject site to determine the presence of black cockatoos as identified by the Mawson community in recent community consultation.
10 Drawings

10.1 Drawings

As part of the site investigation report, the following drawings have been prepared and are provided within Appendix A.

<table>
<thead>
<tr>
<th>Drawing No.</th>
<th>Description</th>
<th>Revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>50517082 – SK01</td>
<td>Existing Services</td>
<td>A</td>
</tr>
<tr>
<td>50517082 – SK02</td>
<td>Proposed Services</td>
<td>A</td>
</tr>
</tbody>
</table>

These drawings are to be read in conjunction with this report. The plans are based upon information and consultation provided by service providers and authorities. All services details are to be confirmed on site. The existing services in the vicinity of the site are represented in an indicative format. The plans were prepared solely for the purposes of this report and for the use of the client.
APPENDIX B

SITE PHOTOS
Appendix B
Site Photos

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Block 29 Section 36 Mawson</th>
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</thead>
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<tr>
<td>Date</td>
<td>06/04/2017</td>
</tr>
<tr>
<td>Project No.</td>
<td>50517081</td>
</tr>
</tbody>
</table>

**LEGEND**

- **2** Photograph number and direction
- **5** Photograph of ground/ high angle
Site Photos

![](image1)

1

![](image2)

2
Tim Godman

From: Brennan, Mark <Mark.Brennan@act.gov.au>
Sent: Thursday, 6 April 2017 10:38 AM
To: Tim Godman
Subject: RE: B29 S36 Mawson SIR Request [SEC=UNCLASSIFIED]

Tim

The fire risk category for the whole block would be F4.

Regards

Mitch Brennan

ACT Fire & Rescue
Risk and Planning Section
9 Amberley Avenue Majura ACT 2601
62078472
e-mail: actfrriskplanning@act.gov.au

From: Tim Godman [mailto:tim.godman@cardno.com.au]
Sent: Thursday, 6 April 2017 9:03 AM
To: Brennan, Mark
Cc: Craig Allen
Subject: B29 S36 Mawson SIR Request

Good Morning Mitch,

Cardno has been engaged by the LDA to prepare a Stage 2 Site Investigation Report for Block 29 Section 36 Mawson, based on the proposed development of a mixed use site consisting of a child care centre and a place of worship.

The child care centre will service approximately 142 children and staff and the place of worship will service approximately 200 patrons. The block size is approximately 7913m².

Can you please confirm the fire category classification for the aforementioned site is F4.

Thank you for your assistance.

Regards

Tim Godman
GRADUATE ENGINEER
CARDNO
Hi Tim,

We will be able to provide power supply from existing Pole Sub 1187, however, the existing pole substation may require to upgrade as it is rated to 250kVA.

You/your customer/developer must conduct the detail earthing assessment and establish any additional earthing on the block as the proposed child care development is falling within 100m from the existing substation.

Thank you

Regards

Kedar Vedanti
Industry Interface and Coordination Lead
Network Connection Services
Customer Connections Branch
Energy Networks - ActewAGL Distribution
t 02 6248 3582 | f 02 6293 5762

www.actewagl.com.au

Please consider our environment before printing this email.

Good Afternoon Kedar

I am seeking information to the proposed development for a child care centre for 142 children and staff and a place of worship for 200 people on Block 29 Section 36 Mawson. Please see the image below.
Cardno has been engaged to conducted a stage 2 site investigation into the site based on the aforementioned childcare centre/ place of worship.

As part of this investigation we are required to propose site servicing and identify any constraints.

Could you please confirm the following information in regard to the above:

- Is the proposed development of this site for the proposed use acceptable to ActewAGL (is there capacity in the network?) Our initial calculation for peak electrical draw is 200kVA.
  - Any requirement for a new substation and where do you think it would need to be located?

Our estimation for peak draw from the site is 120kVA.

Thank you for your help with this requests.

Regards,

Tim Godman
GRADUATE ENGINEER
CARDNO
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******************************************************************
Hi Tim

Please see below revised table for the water pressure enquiry; The Max pressure provided was actually the Min pressure @ Peak Demand...

<table>
<thead>
<tr>
<th>Description</th>
<th>Pressure Head (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Static Pressure (m)</td>
<td>57</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand</td>
<td>47.12</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 10 L/s (m)</td>
<td>44.68</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 20 L/s (m)</td>
<td>41.61</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 30 L/s (m)</td>
<td>37.84</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 40 L/s (m)</td>
<td>33.35</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 50 L/s (m)</td>
<td>28.13</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 60 L/s (m)</td>
<td>22.19</td>
</tr>
</tbody>
</table>

Disclaimer
1. The above water supply pressure information ("Information") has been calculated using data provided by third parties and/ or Icon Water, which is then subject to mathematical modelling. The modelling endeavours to take into account future water demand patterns and future infrastructure development of adjoining areas.
2. You acknowledge the scope for errors in the data used by Icon Water in determining the Information.
3. Whilst Icon Water has used reasonable endeavours in determining the Information, Icon Water does not make any warranty as to its accuracy.
4. Icon Water accepts no liability for loss or liability arising from reliance on the Information.

Also - there is enough capacity in the system to service this Block with the extra 1.6L/s imposed on the system

Regards
Peter

Peter Havelka
A/Senior Technical Officer
Hydraulic Asset Acceptance
Hi Peter

Once again thanks for your response,

Just wanting to clarify one point, was the design sewer flow rate calculated for 1.594L/s and not 1.5L/s?

Thank you

Regards

Tim Godman
GRADUATE ENGINEER
CARDNO

Phone Direct +61 2 6112 4522
Address Level 2, 14 Wormald Street, Symonston, Australian Capital Territory 2609 Australia

Email tim.godman@cardno.com.au Web www.cardno.com

CONNECT WITH CARDNO

Cardno’s management systems are certified to ISO9001 (quality) and AS4801/OHSAS18001 (occupational health and safety)

Please see information below:

Regarding Sewer
  - Currently the Block is serviced via a DN100 Sewer Tie connecting to a Maintenance Hole in the North East corner of the block
  - There is enough capacity in the system to service this Block with the extra 1.5L/s imposed on the system

Regarding Water
  - Currently the Block has no water service
  - A DN150 CICL Water Main is located along Shackleton Circuit
The Water pressure enquiry for the DN100 Main came back as:

<table>
<thead>
<tr>
<th>Description</th>
<th>Pressure Head (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Static Pressure (m)</td>
<td>47.12</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 10 L/s (m)</td>
<td>44.68</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 20 L/s (m)</td>
<td>41.61</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 30 L/s (m)</td>
<td>37.84</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 40 L/s (m)</td>
<td>33.35</td>
</tr>
<tr>
<td>Min Pressure @ Peak Demand + 50 L/s (m)</td>
<td>28.13</td>
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2. You acknowledge the scope for errors in the data used by Icon Water in determining the Information.
3. Whilst Icon Water has used reasonable endeavours in determining the Information, Icon Water does not make any warranty as to its accuracy.
4. Icon Water accepts no liability for loss or liability arising from reliance on the Information.

Regards
Peter

Peter Havelka
A/Senior Technical Officer
Hydraulic Asset Acceptance

From: Tim Godman [mailto:tim.godman@cardno.com.au]
Sent: Tuesday, 21 March 2017 3:38 PM
To: Dahal, Nabin
Cc: Craig Allen
Subject: SIR Request Mawson Block 29 Section 36

Good afternoon

I am seeking information relating to the proposed development of a childcare centre for 142 children and staff on BLOCK 29 SECTION 36 MAWSON. Please refer to the image below.
Cardno has been engaged to conduct a stage 2 site investigation into the site based on the aforementioned childcare centre.

As part of this investigation we are required to propose servicing for the development. We have calculated that the site will require 2.2L/s to service the site. With reference to the attached file can you please provide data on available pressure at the location of the proposed water tie. Could you please also provide data on pressure near the gate valve located in the verge near the north western corner of the subject site?

Furthermore we are required to provide a recommendation for servicing sewer. We have calculated the design sewer flow rate as 1.542L/s. Can you please indicate whether the existing sewer infrastructure has sufficient capacity at the point of the existing sewer service?

Thank you for your help with this request

Tim Godman
GRADUATE ENGINEER
CARDNO

Phone  Direct +61 2 6112 4522
Address  Level 2, 14 Wormald Street, Symonston, Australian Capital Territory 2609 Australia

Email tim.godman@cardno.com.au  Web www.cardno.com

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Tim

Mawson info as requested. Please note that the sewer service line to this block may not exist and will be checked by Icon Water in the near future.

 Regards

Kieran

Kieran O'Shannassy
GIS Scientist
Geospatial and Asset Services

Icon Water
GPO Box 366 Canberra ACT 2601
T 02 61806056
iconwater.com.au | Twitter | YouTube | LinkedIn

SAFETY ◆ EXCELLENCE ◆ OPENNESS

******************************************************************
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******************************************************************
Hi Tim,
TransACT does have capacity in this area to service the proposed development with VDSL2 or Fibre Ethernet from the below pits marked in yellow.
The development is to install all internal cable paths from the verge of Mawson Dr and provide space within the development for Electronics as required.

We are happy to discuss requirements at the detailed design stage.

Kind Regards
Good Morning Wayne,

I am seeking information relating to the proposed development of a child care centre for 142 children and staff and a place of worship for 200 people on Block 29 Section 36 Mawson. Please refer to the image below.

Cardno has been engaged to conducted a stage 2 site investigation into the site based on the aforementioned childcare centre/ place of worship.

-Is the proposed development of the site for a childcare centre acceptable to iiNet (is there capacity in the network?)
-Are there any iiNet infrastructure requirements/constraints for the site for connection of or reticulation within the site?
Thanks again for your ongoing help with these investigations, feel free to give me a call if you need anything further. My telephone number is 61124522.

Regards

Tim Godman
GRADUATE ENGINEER
CARDNO

Phone Direct +61 2 6112 4522
Address Level 2, 14 Wormald Street, Symonston, Australian Capital Territory 2609 Australia

Email tim.godman@cardno.com.au Web www.cardno.com

CONNECT WITH CARDNO

Cardno’s management systems are certified to ISO9001 (quality) and AS4801/OHSAS18001 (occupational health and safety)

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Tim,

- Proposed development is acceptable to Telstra. There is sufficient spare capacity in the Telstra network to satisfy forecasted service demand.
- Access to Telstra network will be via Mawson Drive. Telstra will require developer to provide 1XP100 conduit from building MDF to property boundary at Mawson Drive to facilitate connection to Telstra network. Conduit will be for Telstra’s exclusive use.
- There is an existing Telstra conduit run along the western verge of block 29 section 36 Mawson. Telstra will require an easement along the western verge of block to maintain existing network.

Regards,

Jacob Lai
Senior Capacity Planner
Good Afternoon

I am seeking information relating to the proposed development of a child care centre for 178 children and staff on Block 29 Section 36 Mawson. Please refer to the image below.

Cardno has been engaged to conducted a stage 2 site investigation into the site based on the aforementioned childcare centre.

- Is the proposed development of the site for a childcare centre acceptable to Telstra (is there capacity in the network?)
- Are there any Telstra infrastructure requirements/constraints for the site for connection of or reticulation within the site?
Thanks again for your ongoing help with these investigations, feel free to give me a call if you need anything further. My telephone number is 61124522.

Regards

Tim Godman
GRADUATE ENGINEER
CARDNO

Phone Direct +61 2 6112 4522
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Hi Tim

The existing medium pressure network (210kPA) in either Mawson Drive or Shackleton Circuit have sufficient capacity to supply a development of the type and size proposed.

Reticulation within the site will be governed by the ACT Gas Service and Installation Rules (link below):

Good Afternoon Steve,

I am seeking information relating to the proposed development of a child care centre for 142 children and staff and a place of worship for 200 people on Block 29 Section 36 Mawson. Please refer to the image below.

Cardno has been engaged to conduct a stage 2 site investigation into the site based on the aforementioned childcare centre/place of worship.

- Is the proposed development of the site for a childcare centre acceptable to Jemena (is there capacity in the network?)
- Are there any Jemena infrastructure requirements/constraints for the site for connection of or reticulation within the site?

Thanks again for your help with these investigations, feel free to give me a call if you need anything further. My telephone number is 61124522.

Regards

Tim Godman
GRADUATE ENGINEER
CARDNO
WARNING: The map below only displays the location of the proposed dig site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.

- Check that the location of the dig site is correct. If not you must submit a new enquiry.
- Should the scope of works change, or plan validity dates expire, you must submit a new enquiry.
- Do NOT dig without plans. Safe excavation is your responsibility. If you do not understand the plans or how to proceed safely, please contact the relevant asset owners.

For more information on safe excavation practices, visit www.1100.com.au

The assets owners listed below have been requested to contact you with information about their asset locations within 2 working days. Additional time should be allowed for information issued by post. It is your responsibility to identify the presence of any underground assets in and around your proposed dig site. Please be aware, that not all asset owners are registered with the Dial Before You Dig service, so it is your responsibility to identify and contact any asset owners not listed here directly.

** Asset owners highlighted by asterisks ** require that you visit their offices to collect plans.

** Asset owners highlighted with a hash require that you call them to discuss your enquiry or to obtain plans.

### Caller Details
- **Contact:** Mrs Alison Stutchbury
- **Company:** Cardno
- **Address:** PO Box 7217
  Fyshwick ACT 2609

### Dig Site and Enquiry Details

#### WARNING:

The map below only displays the location of the proposed dig site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.

- Check that the location of the dig site is correct. If not you must submit a new enquiry.
- Should the scope of works change, or plan validity dates expire, you must submit a new enquiry.
- Do NOT dig without plans. Safe excavation is your responsibility. If you do not understand the plans or how to proceed safely, please contact the relevant asset owners.

### Your Responsibilities and Duty of Care

- If plans are not received within 2 working days, contact the asset owners directly & quote their Sequence No.
- ALWAYS perform an onsite inspection for the presence of assets. Should you require an onsite location, contact the asset owners directly. Please remember, plans do not detail the exact location of assets.
- Pothole to establish the exact location of all underground assets using a hand shovel, before using heavy machinery.
- Ensure you adhere to any State legislative requirements regarding Duty of Care and safe digging requirements.
- If you damage an underground asset you MUST advise the asset owner immediately.
- For more information on safe excavation practices, visit www.1100.com.au

### Asset Owner Details

The assets owners listed below have been requested to contact you with information about their asset locations within 2 working days. Additional time should be allowed for information issued by post. It is your responsibility to identify the presence of any underground assets in and around your proposed dig site. Please be aware, that not all asset owners are registered with the Dial Before You Dig service, so it is your responsibility to identify and contact any asset owners not listed here directly.

** Asset owners highlighted by asterisks ** require that you visit their offices to collect plans.

** Asset owners highlighted with a hash require that you call them to discuss your enquiry or to obtain plans.

### Lodge Your Free Enquiry Online – 24 Hours a Day, Seven Days a Week
Information

The approximate location of ActewAGL or Icon Water assets in the area-of-enquiry are shown on the attached maps. Please review all attached maps to check whether there are ActewAGL or Icon Water utility assets within your work area.

Please refer to your Dial Before You Dig (DBYD) enquiry information to ensure that you have received asset maps from all relevant utility owners before you commence work.

Note that there may be additional pages attached dependent on what assets are found in the area; and that maps might be on pages of different sizes.

Individual customer gas connections are generally not shown on any attached ActewAGL Gas Network map. For information regarding individual gas connections we recommend that you request a site meeting / inlet service location as per Item 6 in the Disclaimer.

HIGH PRESSURE CRITICAL GAS NETWORK ASSETS HAVE BEEN DETECTED WITHIN YOUR SEARCH AREA

As High Pressure critical gas assets are present, you must not commence any works without first contacting Jemena Land Services on (02) 9397 9000 (see Item 12 in Disclaimer for further information).

Comments

This information is valid from 06-Oct-2016 to 06-Jan-2017.

IN CASE OF EMERGENCY OR TO REPORT DAMAGE PHONE:
13 10 93 ELECTRICITY | 13 11 93 WATER AND SEWER | 13 19 09 GAS

Please read the following important information (overleaf)
Disclaimer

1. General location only
The Applicant acknowledges that:

(a) while Icon Water and ActewAGL have used reasonable endeavours to keep Asset location records current, neither party makes any warranty, guarantee or representation as to the accuracy, currency or completeness of the information contained in the attached Asset Plans.

(b) Asset Plans:
   i. may not show all assets in the work area;
   ii. show only the general and approximate location of Assets;
   iii. may show the position of Assets relative to fences, buildings, property lines, kerbs and/or other points of reference that existed at the time the Assets were installed. Any subsequent alterations to those fences, buildings etc may not have been updated on the Asset Plans. Persons should not rely on such things as a point of reference to estimate location of the Assets.

2. Limitation of liability
To the maximum extent permitted by law:

(a) subject to paragraph 2(b), Icon Water, Jemena and ActewAGL and the officers, employees and agents of each accept no responsibility or liability for any loss, damage, liability, cost, expense, claim or proceeding of whatever nature and howsoever arising, incurred by or awarded against the Applicant or its officers, employees, agents, contractors or subcontractors, arising out of, connected with or as a consequence of use of the Asset Plans or any inaccuracies in the Asset Plans;

(b) where:
   i. a Jemena or ActewAGL representative has, at the Applicants request, attended the work site to mark the location of Assets prior to commencement of any works on the work site, and
   ii. the Jemena or ActewAGL representative has been proven to be negligent in marking the Asset location

then Icon Water, Jemena and ActewAGL's liability, and the liability of the officers, employees and agents of each, is limited, at Icon Water / Jemena / ActewAGL's option, to re-attending the work site to re-mark the Asset location or paying the costs of having a third party attend the work site to re-mark the Asset location.

3. Electricity cables to be treated as LIVE
ALL electricity cables and conductors identified on the attached Asset Plans, including those marked as ‘Abandoned’, MUST be treated as ‘LIVE’ and dangerous until such time that they are tested and proven to be ‘DE-ENERGISED’. ActewAGL recommends that cables identified as ‘Abandoned’ and which may be impacted, severed, damaged and/or removed by excavation works be proven ‘DE-ENERGISED’ and safe before commencing full-scale excavations.

4. Location of Assets may change
Assets may be moved, or additional Assets may be installed at any time. Persons using the attached Asset Plans are advised to be alert for changed locations or new installations performed after the Issue Date. If work extends for a period of 3 months beyond the Issue Date, a new application MUST be made to Dial Before You Dig for up to date Asset Location Information.

5. Work to be undertaken without interference or damage to assets
Any work undertaken near Assets, including without limitation excavation, structures, material storage, heavy vehicle parking, blasting or change of surface level, must be performed in a way that does not interfere with the reliability of, or access to Icon Water or ActewAGL Assets, including electricity lines or plant. Persons excavating are required to exercise care if Assets are indicated on Asset Plans and will be held responsible for any damage caused through failure to exercise such care. Icon Water or ActewAGL (as applicable) will pursue the person responsible for causing the damage or interference to their Assets to recover costs and expenses incurred in remedying such damage or interference.

6. Asset location marking
You may request our representative to visit the work site to mark the approximate location of Assets by calling 02 6293 5770 (Water and Electricity) or 02 6203 0660 (Gas) between 7:30 am and 4 pm. Irrespective of any mandatory directions given in this notice, ActewAGL recommends that a site visit be conducted before commencing any works near Assets. Appointments will be accepted only if the Asset Location Information Sequence Number is supplied. The location and marking of Assets will not take place unless the Asset Location Advice and attached Asset Plans are in colour and to the same scale as supplied, and are at the work site. ActewAGL does not charge for these site visits. Alternatively, the Applicant may wish to engage a private underground Asset locator, at the Applicant’s expense.

You are responsible for maintaining the presence / visibility of all markings and to ensure that all workers on site are aware of:

• the presence of Icon Water / ActewAGL infrastructure in the vicinity of the intended work and
• Icon Water, Jemena and ActewAGL’s requirements.

NB: Arranging for marking of approximate Asset locations by either an ActewAGL representative or private underground asset locator will not relieve the Applicant and persons working on their behalf of responsibility to exercise care when working near ActewAGL / Icon Water Assets or for any damage they cause to ActewAGL / Icon Water Assets while performing works.

7. Underground Assets must be located by potholing
Potholing or other non-destructive techniques must be used until underground Assets are located. When located, excavation may commence provided that persons carrying out the excavation work must follow ActewAGL’s recommended specifications concerning minimum safety distances when excavating within the vicinity of Icon Water or ActewAGL’s networks. Unless otherwise approved by Jemena, under no circumstances can mechanical excavation be carried out within 1.0 metres of a gas main without a Jemena Representative on site.

8. Water, Sewer and Effluent Mains
Icon Water requires mandatory supervision by authorised Icon Water personnel when potholing and excavating within the vicinity of critical water and sewer network assets (as determined by Icon Water) or Icon Water mains with a diameter of 300mm and above. To arrange please call Icon Water 6248 3111 during business hours. In an emergency call 13 11 93.

9. Substation Earthing Conductors
The information does not include details of substation earthing conductors. These are installed within the vicinity of pole and ground mounted substations. Earthing conductors extend 1.0m in each direction from the substation. However, please be aware that site-specific requirements mean earthing conductors may be installed beyond this distance. Further information can be provided upon request.
10. Indications of the Presence of Cables

The presence of cables or conduits may be indicated by the following warning and marking devices:

- Letter “E” inscriptions on Kerbs or “Electrical” inscriptions on pit lids
- Danger signs on above ground posts, walls etc
- Thin Orange “Caution Electrical Cables” Warning Tape
- Orange /Black PLASTIC Polymeric slab (3-6mm thick x 200mm wide)
- Concrete Bricks or slabs (approx 200mm x 500mm)
- Orange PVC or white Asbestos Cement (AC) Conduit or Galvanized Pipe
- Cylindrical concrete “ACTEA Electric Cable” markers
- Weak Concrete encasement directly around cables / conduits
- Texture/ colour change of excavated material (bedding sand, cracker dust, clean fill)

Note that some cables may have been installed without the presence of such marking devices.

11. Gas mains

(a) ActewAGL gas mains are operated by Jemena Asset Management Pty Ltd.

(b) Mandatory stand-by / supervision by Jemena personnel is required when excavating within the vicinity of critical gas network assets OR where mechanical excavation is required within 1.0 metres of the gas network. Your activity around critical gas assets will be supervised by Jemena at no charge for the first two hours. This supervision is to ensure the integrity of ActewAGL’s assets is maintained.

Note: Charges may apply if stand-by is required for longer than two hours.

Please contact Jemena on 02 6203 0660 between 7.30 am and 4 pm if you require a stand-by person.

12. High Pressure Gas Network Assets

You must supply Jemena with your proposal of works including a written outline of your works and design plans for review. It may take up to four weeks for Jemena to review your works proposal. Following review, we will advise you of Jemena’s requirements for protecting the High Pressure gas main.

Please mail your proposed works details to:
Jemena Asset Management Pty Ltd
Attention: Land Services Department
PO Box 6507
Silverwater NSW 2128

Please note that a duty of care exists to ensure that this gas main is not compromised or damaged during future development or construction work.

THIS DOCUMENT AND ASSOCIATED ASSET PLANS MUST BE KEPT AT THE WORK SITE.
**ELECTRICITY NETWORK LEGEND**

**Support Structure (Distribution)**
- Pole
- Streetlight-Only Pole

**Support Structure (Transmission)**
- Pole
- Tower
- Yard Structure

**Underground Structure**
- Pit

**Recloser**
- Recloser

**Transmission Line**
- Overhead Transmission Line
- Underground Transmission Line

**Building**
- Zone Building
- Standalone Chamber

**Switches**
- Air Break
- Load Break
- Overhead Link

**Fuse**
- Drop Out Fuse

**HV Electric Lines**
- Overhead HV Electric Line
- Underground HV Electric Line

**LV Electric Lines**
- Overhead LV Electric Line
- Underground LV Electric Line

**Streetlight**
- Streetlight
- Streetlight Controller
- Streetlight Photoelectric Controller
- Other Streetlight Support
- Streetlight Column

**Streetlight Cable**
- Overhead Streetlight Line
- Underground Streetlight Line

**Joint**
- Cable Joint

**Service Lines**
- Overhead Service Line
- Underground Service Line

**Service Point**
- Service Point

**Fibre Communication Cable**
- Fibre Communication Cable

**Copper Communication Cable**
- Pilot Cable

**Underground Earth Cable**
- Underground Earth Cable

**Ground Mounted Structure**
- Streetlight Control Cubicle
- Distribution Box
- Point-Of-Entry Cubicle
- HV Switching Station
- Kiosk
- Padmount
- Link Pillar
- Micro Pillar
- Mini Pillar
- Pregnant Column
- Communication Cubicle
- SCADA Cubicle

**Electric Supply Site**
- 132kV Switching Station
- Bulk Supply Station
- Mobile Zone Substation
- Zone Substation
- Overhead Substation
- Chamber Substation
- Stockade

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**IMPORTANT NOTE:**

- The term ‘ABANDONED’ is utilised to identify an underground cable that has been physically disconnected from the ActewAGL electricity network, is not in service and cannot readily be put back into service without specific augmentation and/or reconnection works. Cable(s) identified by ActewAGL as ‘ABANDONED’ have been discarded in-situ by ActewAGL. ALL cables should be treated as ‘LIVE’ and Dangerous until proven de-energised and safe.

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WARNING – HIGH PRESSURE GAS PIPELINE IN THE VICINITY

Applicant/Contractor Job No. 11332874 DBYD Sequence No. 56126036

Company: Cardno
Contact: Mrs Alison Stutchbury
Telephone: 0261124500 Mobile: Not Supplied Fax: 0261124599
Address: PO Box 7217 Fyshwick ACT 2609
Email: alison.stutchbury@cardno.com.au

Work Details

Suburb: Mawson
Address: Mawson Drive
UBD Ref: 78K6,78K7
Description: CONTINUED FROM JOB: 11332840 -- CONTINUED FROM JOB: 11332814 -- CONTINUED FROM JOB: 11332758 -

Enquiry Date: 06-Oct-2016 Issue Date: 06-Oct-2016

The records of ActewAGL Gas Networks indicate that High Pressure Underground Assets/Pipes ARE present in the vicinity of and/or surrounding area of the above enquiry. Please read all the information and conditions below.

No excavations within 15 metres of this asset are permitted without the prior approval of Jemena

PHONE (02) 6203 0660

IN THE EVENT OF A GAS EMERGENCY CALL 13 19 09 (24 hours)

CONDITIONS FOR WORKS IN THE VICINITY OF ActewAGL GAS NETWORK ASSETS

Any information provided is valid only for 90 days from the date of issue. If the work operation extends beyond this period, or if the designs are altered in any way, you are requested to re-submit your proposal for re-assessment.

Consistent with the requirements of Part 2 General – Section 8 of the Utility Networks (Public Safety) Regulations 2001 No. 28, ActewAGL require that:

- The requestor shall ensure that all workers on site are aware of the presence of natural gas.
- The requestor shall ensure that under no circumstances will mechanical excavation be carried out within 1.0 metres of a gas main without there being a Jemena Representative on site.
- The requestor shall be responsible to maintain the presence / visibilities of all gas markings.
- No live or Isolated gas pipes shall be cut, altered or removed without APPROVAL from Jemena.

Note: Individual customer gas connections are generally not shown on the accompanying maps. For information regarding individual gas connections we recommend that you request a site meeting / inlet service location.

You can obtain additional information or arrange a site meeting by contacting Jemena on (02) 6203 0660. Note that 24 hours notice is required for site meetings.
1. High Pressure Pipelines

No excavations or heavy construction are permitted within 15m of these pipelines without notification to and authorisation from Jemena. If separation distance is 15m or less, you are required to notify Jemena of your works.

Prior to commencing works near or over the High Pressure Gas Mains you must supply Jemena with your proposal of works including design plans. You must allow four weeks for Jemena to review your works. Please mail your proposed works details to: Jemena Asset Management Pty Ltd, Land Services Dept, PO Box 6507, Silverwater, NSW, 2128.

Once Jemena has reviewed your proposal and design plans and you have received Jemena’s approval to proceed, you must organise for a Pipeline Technician to be on Stand-by during your works (charges may apply).

To arrange for a Pipeline Technician to be on site please call the High Pressure Coordinator on 1300 665 380 two working days prior to the works commencing.

2. High Pressure Steel and Large Diameter Medium Pressure Plastic Pipelines

You must contact a Pipeline Technician to conduct a survey before commencing any work in this area. You can arrange a survey by contacting the High Pressure Response Coordinator on 1300 665 380. Please note that two working days notice is required to arrange a survey. For all works in the vicinity of High Pressure Gas Mains you are required to arrange for a Pipeline Technician to attend. Charges apply for attendance of any works outside the hours of 7am to 4pm, Monday to Friday (“Standard Business Hours”) and for any attendance during Standard Business Hours that is longer than 2 hours.

WARNING. It is essential that ALL these documents be handed to the principal contractor carrying out the work. A photocopy may be taken for office records. All documents must be on site at the time of excavation. The information provided is to be used as guide only and does not absolve third parties in their “Duty of Care” obligations to take additional precautions where the work has the potential to impact on gas assets and the safety of people.

All work that may impact upon the ActewAGL Gas Network should be carefully planned with notification to Jemena well in advance of commencement. This includes excavation of gas pipelines, crossings of pipelines by other underground infrastructure (drains, power cables, etc), road works or structural installations.

ActewAGL plans have been provided to show the position of underground gas mains and equipment in public gazetted roads only. Individual customers’ services are not generally included on these plans. These plans have been prepared solely for ActewAGL’s own use and indicate the position of underground mains and installations relative to boundaries and kerbs as at the time the mains were installed, and do not necessarily reflect any subsequent changes eg: changes to road alignments.

ActewAGL and / or Jemena will accept no liability for inaccuracies in the information or lack of information on such plans for any cause whatsoever arising. Persons excavating or carrying out other earthworks will be held responsible for any damage caused to underground mains and equipment, and the costs associated with replacement or repair.

Please note that the information contained on the map provided is not a method of determining gas availability for the purposes of connection to a natural gas supply. Please contact a gas retailer to determine the availability of gas as an energy source.

IN THE EVENT OF A GAS EMERGENCY CALL 13 19 09 (24 hours)

Extinguish all sources of ignition and keep the area clear of all persons. Any attempt by third parties to repair damaged gas mains or services may result in prosecution under the Utility Networks (Public Safety) Regulations 2001.
### Legend - ActewAGL Gas Networks

#### GasStation CRITICAL
- DistrictRegulator
- TrunkReceivingStation
- PrimaryRegulatingStation
- BulkMeteringStation
- PressureMonitoringStation
- ScraperStation
- BoundaryRegulatorSet
- SecondaryBoundaryRegulatorSet
- ValveStation

#### CPCable
- CPRectifierCable
- CPGroundBedCable

#### Conduit
- Conduit

#### GasStructure
- <all other values>
- CPKiosk
- Pit
- StationStructure

#### GasDevice
- <all other values>
- IsolationValve
- Odouriser
- Siphon
- WaterbathHeater
- Filter
- Catalyst Heater
- Silencer
- Regulator

#### GasDevice High Risk Valve CRITICAL
- HighRiskAreaIsolation

#### GasService
- <all other values>
- Gas Service IN USE
- Gas Service NOT IN USE

#### GasService STEEL or MAOP>=1050 OR DIA>=75mm CRITICAL
- Gas Service IN SERVICE
- Gas Service NOT IN SERVICE

#### GasPipe
- <all other values>
- DistributionMain, Nylon, InService
- Gas Pipe NOT IN USE
- DistributionMain, PE, InService
- DistributionMain, Copper, InService

#### GasPipe STEEL OR MAOP>=1050 OR DIA>=75mm CRITICAL
- DistributionMain, Copper, InService
- DistributionMain, Nylon, InService
- DistributionMain, PE, InService
- PrimaryMain, Steel, InService
- PrimaryMain, Steel, Proposed
- SecondaryMain, Steel, InService
- SecondaryMain, Steel, Proposed
- TransmissionMain, Steel, InService
- Gas Pipe NOT IN USE

#### GasPipe
- DistributionMain, Nylon, InService
- DistributionMain, PE, InService
- PrimaryMain, Steel, InService
- SecondaryMain, Steel, Proposed
- TransmissionMain, Steel, Proposed
- Gas Pipe NOT IN USE

#### GasFitting
- EndCap
- Tee
- ExpansionJoint
- Flange
- Reducer
- Cross
- ServiceSaddle
- InsulationJoint
- GaugingPoint

#### CPAnode
- AnodeGroundBed
- SacrificialAnode

#### CPRectifier
- TransformerRectifier

R 10.0 = DISTANCE TO ROAD
B 10.0 = DISTANCE TO BOUNDARY
E 10.0 = DISTANCE TO END
C 10.0 = DISTANCE TO CHANGE OF DIRECTION

4.4 = DISTANCE FROM MAIN TO KERB
0.6 = DISTANCE FROM MAIN TO BOUNDARY

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Critical iinet assets found

<table>
<thead>
<tr>
<th>To:</th>
<th>Mrs Alison Stutchbury</th>
<th>From:</th>
<th>30213 - Transact Communications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company:</td>
<td>Cardno</td>
<td>Date:</td>
<td>6/10/2016</td>
</tr>
<tr>
<td>Address:</td>
<td>PO Box 7217</td>
<td>Location:</td>
<td>Mawson Drive Mawson ACT, 2607</td>
</tr>
<tr>
<td></td>
<td>Fyshwick</td>
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<tr>
<td></td>
<td>ACT, 2609</td>
<td></td>
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<tr>
<td>Phone:</td>
<td>0261124500</td>
<td>Sequence#:</td>
<td>56126033</td>
</tr>
<tr>
<td>Fax:</td>
<td>0261124599</td>
<td>Job#:</td>
<td>11332874</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:alison.stutchbury@cardno.com.au">alison.stutchbury@cardno.com.au</a></td>
<td>District:</td>
<td>Mawson</td>
</tr>
</tbody>
</table>

**iinet must be contacted in regards to this site prior to excavation commencing.**

An on site location is required call (02) 6229 8009 to arrange an onsite appointment.

Please allow a minimum of three (3) working days for an on-site location.

The response to this enquiry has been obtained from iinet’s records based on the GML location provided by DBYD from your original request.

**IMPORTANT NOTICE**

This form and associated plans are to be kept at the work site.

**DO NOT ASSUME DEPTH OR ALIGNMENT** of cables or plant as these may vary significantly.

This information is valid for 14 days from the sent date and indicates the presence of the iinet underground network in the area in the original DBYD GML file. The location of the iinet underground network may vary over time. Accordingly iinet plans are intended to be indicative only. The Recipient must make arrangements with iinet for an on-site investigation to determine its location, if such an investigation is required or requested. The Recipient, of this document is responsible for any damage caused to the iinet underground network and any other iinet plant or equipment where works commence before the receipt of this reply, or where the Recipient fails to follow any instructions issued by iinet following an on-site investigation. All investigation/excavation on or around the iinet underground network must be Soft dig. iinet reserves the right to recover compensation for any loss or damage, including consequential losses, to its underground network or any other plant or equipment, caused by the Recipient. If an on-site investigation is required or requested, the Recipient must contact iinet at least 3 business days prior to the commencement of any works. If additional works are planned at a location, which is not specified in this reply, or if works are not carried out within 14 days from the date of this reply, please note that iinet requires the Recipient to lodge an additional request.
RECIPIENT’S DUTY OF CARE

It is the Recipient’s responsibility to:

1. request information of iiNet underground network for a particular location at a reasonable time before construction is due to begin
2. must first physically expose iiNet plant by Soft Dig (Pot Holing)
3. Prior to any mechanical excavation, visually locate iiNet plant by hand Pot Holing (Soft Dig) every 5 metres where construction activities may damage or interfere with iiNet underground network.

DAMAGE

ANY DAMAGE TO TRANSACT’S NETWORK MUST BE REPORTED IMMEDIATELY.

It is the Recipient's responsibility to locate iiNet’s underground plant by careful hand Pot Holing prior to any mechanical excavation in the vicinity and to exercise due care during that excavation. iiNet will accept no liability for the accuracy and/or the completeness of the information contained herein.

TRANSACT WILL SEEK COMPENSATION FOR LOSS CAUSED BY ASSET DAMAGE.

Further assistance can be obtained via the iiNet contact details shown at the beginning of this document.

iiNet Capital Communications Pty Ltd retains copyright of these plans and as such they should be disposed of by shredding or other secure disposal method after use.

PRIVACY NOTE

Your information has been provided to iiNet by DBYD. iiNet keeps your information in accordance with its privacy policy.

Definition – The terms below have the following meanings in this document

1. Recipient means the recipient of this document including its contractors, employees and agents
2. Soft Dig means to physically expose the iiNet plant by non mechanical excavation
3. Pot Holing means to physically expose the iiNet plant by non mechanical excavation
WARNING

This plan contains commercially sensitive information and is to be treated accordingly. No such information is to be passed on to other parties without the written consent of TransACT Capital Communications.
WARNING
This plan contains commercially sensitive information and is to be treated accordingly. No such information is to be passed onto other parties without the written consent of TransACT Capital Communications.
To: Mrs Alison Stutchbury
Phone: 0261124500
Fax: 0261124599
Email: alison.stutchbury@cardno.com.au

Dial before you dig
Job #: 11332874
Sequence # 56126037
Issue Date: 10/06/2016
Location: Mawson Drive, Mawson, ACT-2607

Location of Underground Telecommunications Facilities

We thank you for your enquiry. In relation to your enquiry at the above address:

• nbn’s records indicate that there ARE underground fibre optic/telecommunications facility/facilities (owned or controlled by nbn) in the vicinity of the location identified above ("Location").
• nbn indicative plan/s are attached with this notice ("Indicative Plans").
• The Indicative Plans show general depth and alignment information only and are not an exact scale or accurate depiction of the location, depth and alignment of the fibre optic/telecommunications facilities shown on the Indicative Plans.
• In particular, the fact that the Indicative Plans show that a facility is installed in a straight line, or at uniform depth along its length cannot be relied upon as evidence that the facility is, in fact, installed in a straight line or at uniform depth.
• You should read the Indicative Plans in conjunction with this notice and in particular, the notes below.
• The information contained in the Indicative Plans is valid for 28 days from the date of issue set out above. You are expected to make your own inquiries and perform your own investigations (including engaging appropriately qualified plant locators at your expense to locate nbn telecommunications facilities during any activities you carry out on site).

We thank you for your enquiry and appreciate your continued use of the Dial Before You Dig Service. If you are planning to excavate or require further information, please contact nbn on 1800 626 762. For any enquiries related to moving assets or Planning and Design activities, please email nbn at RelocationWorks@nbnco.com.au.
Notes:

1. You are now aware that there are items of telecommunications and/or power facilities in the vicinity of the above property that could be damaged as a result of activities carried out (or proposed to be carried out) by you in the vicinity of the Location.
2. You should have regard to section 474.6 and 474.7 of the *Criminal Code Act 1995* (Cth) which deals with the consequences of interfering or tampering with a telecommunications facility. Only persons authorised by nbn can interact with nbn’s network facilities.
3. Any information provided is valid only for **28 days** from the date of issue set out above.

**Indicative Plans**
Referral Conditions

The following are conditions on which nbn provides you with the Indicative Plans. By receiving, accepting or relying upon the plans (including the Indicative Plans), you are agreeing to these conditions. These conditions are in addition to (and not in replacement of) any duties and obligations you have under applicable law.

1. **nbn** does not accept any responsibility for any inaccuracies of its plans including the Indicative Plans. You are expected to make your own inquiries and perform your own investigations (including engaging appropriately qualified plant locators at your cost to locate nbn telecommunications facilities during any activities you carry out on site).

2. You should not assume that **nbn** cables and assets follow straight lines or are installed at uniformed depths along their lengths, even if they are indicated on plans provided to you. Careful onsite investigations are essential to locate the exact position of cables.

3. In carrying out any works in the vicinity of **nbn** facilities, you must maintain the following minimum clearances:
   - 300mm when laying assets inline, horizontally or vertically
   - 500mm when operating vibrating equipment, for example: jackhammers or vibrating plates; and
   - 1000mm when operating mechanical excavators.
   - Adherence to clearances as directed by other asset owner’s instructions

4. You are aware that there are inherent risks and dangers associated with carrying out work in the vicinity of underground facilities (such as **nbn** fibre optic, copper and coaxial...
cables, and power cable feed to nbn assets). Damage to underground electric cables may result in:

- Injury from electric shock or severe burns, with the possibility of death.
- Interruption of the electricity supply to wide areas of the city.
- Damage to your excavating plant.
- Responsibility for the cost of repairs.

5. You must take all reasonable precautions to avoid damaging nbn facilities. These precautions may include, but not limited to, the following:

- All excavation sites should be examined for underground cables by careful hand excavation. Cable cover slabs if present must not be disturbed. Hand excavation needs to be undertaken with extreme care to minimise the likelihood of damage to the cable, for example, the blades of hand equipment should be aligned parallel to the line of the cable rather than digging across the cable.
- If any undisclosed underground cables are located, notify nbn immediately.
- All personnel must be properly briefed, particularly those associated with the use of earth-moving equipment, trenching, boring and pneumatic equipment.
- The safety of the public and other workers must be ensured.
- All excavations must be undertaken in accordance with all relevant legislation and regulations.

6. You will be responsible for all damage to nbn facilities that are connected whether directly, or indirectly with work you carry out (or work that is carried out for you or on your behalf) at the Location. This will include, without limitation, all losses expenses incurred by nbn as a result of any such damage.

7. You must immediately report any damage to nbn™ network that you are/become aware of. Notification may be by telephone - 1800 626 762.

8. Except to the extent that liability may not be capable of lawful exclusion, nbn and its servants and agents and the related bodies corporate of nbn and their servants and agents shall be under no liability whatsoever to any person for any loss or damage (including indirect or consequential loss or damage) however caused (including, without limitation, breach of contract negligence and/or breach of statute) which may be suffered or incurred from or in connection with this information sheet or any Plans attached hereto. Except as expressly provided to the contrary in this information sheet or the attached Indicative Plans, all terms, conditions, warranties, undertakings or representations (whether expressed or implied) are excluded to the fullest extent permitted by law.

All works undertaken shall be in accordance with all relevant legislations, acts and regulations applicable to the particular state or territory of the Location. The following table lists all relevant documents that shall be considered and adhered to.

<table>
<thead>
<tr>
<th>State/Territory</th>
<th>Documents</th>
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<tbody>
<tr>
<td>National</td>
<td>Work Health and Safety Act 2011</td>
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<tr>
<td></td>
<td>Safe Work Australia - Working in the Vicinity of Overhead and Underground Electric Lines (Draft)</td>
</tr>
<tr>
<td>State</td>
<td>Regulations</td>
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<td>--------</td>
<td>-------------------------------------------</td>
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<td>NSW</td>
<td>Occupational Health and Safety Act 1991</td>
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<td></td>
<td>Work Cover NSW - Work Near Underground Assets Guide</td>
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<tr>
<td></td>
<td>Work Cover NSW - Excavation Work: Code of Practice</td>
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<tr>
<td>VIC</td>
<td>Electricity Safety Act 1998</td>
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<td></td>
<td>Electricity Safety (Network Asset) Regulations 1999</td>
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<td>QLD</td>
<td>Electrical Safety Act 2002</td>
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<td>Code of Practice for Working Near Exposed Live Parts</td>
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<td>SA</td>
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<td>Electricity Reform Act 2005</td>
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<tr>
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</tr>
<tr>
<td></td>
<td>Electricity Reform (Safety and Technical) Regulations 2005</td>
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</tbody>
</table>

Thank You,

**Network Operations Centre - Assurance**

Date: 10/06/2016

This document is provided for information purposes only. This document is subject to the information classification set out on this page. If no information classification has been included, this document must be treated as UNCLASSIFIED, SENSITIVE and must not be disclosed other than with the consent of nbn co. The recipient (including third parties) must make and rely on their own inquiries as to the currency, accuracy and completeness of the information contained herein and must not use this document other than with the consent of nbn co.

Copyright © 2016 nbn co limited. All rights reserved.
ENQUIRY DETAILS
Location: Mawson Drive, Mawson, ACT 2607
Sequence No.: 56126035
DBYD Reference: 11332874

In relation to your enquiry of the above address, Optus advises as follows:

The records of Optus disclose that there ARE underground FIBRE OPTIC TELECOMMUNICATIONS cables in the vicinity of the above enquiry as per the attached plan(s). This reply is valid for a period of 30 days from the date above.

IMPORTANT INFORMATION

Drawings and Plans provided by Optus are reference diagrams which were correct at the time the asset was built. Exact ground cover and alignments cannot be provided with any certainty as these may alter over time. Depths of Telecommunications plant vary considerably as do alignments. It is essential to uncover the asset and positively identify the assets exact location.

Optus plans are provided as a guide only and the completeness of the information cannot be guaranteed.

“DUTY OF CARE”

When working in the vicinity of Telecommunications plant you have a legal “Duty of Care” that must be observed.

It is the responsibility of the owner and any consultant engaged by the owner, including an architect, consulting engineer, developer and head contractor to design for minimal impact to Optus plant. Optus will provide assistance at this design stage through the provision of plans and sketches or consultation.

It is the owner’s (or constructor’s) responsibility to:-

a) Request plans of Optus plant for a particular location at a reasonable time before construction begins. If you have doubts about the presence of Optus assets we strongly recommend that you engage an Optus Accredited plant locator.

b) Visually locate Optus plant by hand digging or using non-destructive water jet method where construction activities may damage or interfere with Optus plant

c) Contact Optus Network Operations – Asset Analyst (details below) if Optus plant is wholly or partly located near construction activities
CRIMINAL CODE ACT 1995

The following is an extract from the Criminal Code Act 1995 and is applicable to Optus plant

**Chapter 10** National infrastructure

**Part 10.6** Telecommunications Services

**Division 474** Telecommunications offences

**Sect 474.6** Interference with facilities

1) A person is guilty of an offence if the person tampers with, or interferes with, a facility owned or operated by:
   (a) a carrier; or
   (b) a carriage service provider; or
   (c) a nominated carrier.

Penalty: Imprisonment for 1 year.

2) For the purposes of an offence against subsection (1), absolute liability applies to the physical element of circumstance of the offence, that the facility is owned or operated by a carrier, a carriage service provider or a nominated carrier.

3) A person is guilty of an offence if:
   (a) the person tampers with, or interferes with, a facility owned or operated by:
      i. a carrier; or
      ii. a carriage service provider; or
      iii. a nominated carrier; and
   (b) this conduct results in hindering the normal operation of a carriage service supplied by a carriage service provider.

Penalty: Imprisonment for 2 years.

4) For the purposes of an offence against subsection (3), absolute liability applies to the following physical elements of circumstance of the offence:
   (a) that the facility is owned or operated by a carrier, a carriage service provider or a nominated carrier;
   (b) that the carriage service is supplied by a carriage service provider.

5) A person is guilty of an offence if:
   (a) the person uses or operates any apparatus or device (whether or not it is comprised in, connected to or used in connection with a telecommunications network); and
   (b) this conduct results in hindering the normal operation of a carriage service supplied by a carriage service provider.

Penalty: Imprisonment for 2 years.

**DAMAGE**

**ANY DAMAGE TO OPTUS NETWORK MUST BE REPORTED TO 1800 500 253 IMMEDIATELY**

The owner is responsible for all plant damage when works commence prior to obtaining Optus Drawings, or failure to follow instructions.

Optus reserves the right to recover compensation for loss or damage to its cable network and other property including consequential loss

**ASSET RELOCATIONS**

You are not permitted to relocate or alter any Optus assets or network under any circumstance.

For all enquiries relating to the relocation of Optus assets please email Fibre.Locations@optus.net.au
ESSENTIAL PRECAUTIONS AND APPROACH DISTANCES

Note: If the following clearances cannot be maintained, please contact Optus Network Operations Asset Analysis Team for advice on how to resolve the situation.

1. On receipt of plans and before commencing excavation work or similar activities near Optus plant, carefully locate the plant first to avoid damage. Engage an Optus accredited locator to undertake exposure of the Optus plant when working within the following approach distances.

Where Optus plant is in an area where road and footpaths are well defined by kerbs or other features a minimum clear distance of 1.0m must be maintained from where it could be reasonably presumed that plant would reside.

In non established or unformed reserves this distance must be at least 3 metres.

In country or rural areas which may have wider variations in reasonably presumed plant presence, the following minimum approach distance applies:

   a) Parallel to plant: 5 metres

Note: Indicated depths may vary significantly and pot-holing needs to be undertaken within extreme care, commonsense and using techniques least likely to damage cables. Potholing is only to be undertaken by an Optus accredited plant location contractor.

If construction work is parallel to Optus plant, then careful hand digging or using non destructive water jet method (pot holing) at least every 5m is required to establish the location of the plant, confirming the location of the plant prior to work commencing.

Under no circumstances is crossing of Optus plant to be performed without first exposing the Optus plant and having an Optus representative present onsite.

2. Maintain the following minimum clearance between construction activity and the actual location of Optus plant.

<table>
<thead>
<tr>
<th>Jackhammers / Pneumatic Breakers</th>
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All Optus pits and manholes should be a minimum of 1.0m in from the back of kerb or within 15m of street intersection after the completion of your work.

All Optus conduit should have the following minimum depth of cover after the completion of your work:

- **Footway**: 600mm
- **Roadway**: 1000mm at drain invert and at road centre crown

In cases where it is considered that these clearances cannot be maintained at the completion of works advice is to be sought from the Optus Damages and Relocations Team.

**FURTHER ASSISTANCE**

Assistance can be obtained by contacting Optus Network Operations Asset Analysis on **1800 505 777**

Where an on-site location is provided, the owner is responsible for all costs associated with hand digging or use of non-destructive water jet method (pot holing) to visually locate and expose Optus plant.

If plant location drawings or visual location of Optus plant by digging reveals that the location of Optus plant is situated wholly or partly where the owner plans to work, then Optus Damages and Relocates Team must be contacted through Optus Network Operations Asset Locations to discuss possible engineering solutions.

**PRIVATE RESIDENTIAL LANDOWNERS and RURAL LANDOWNERS**

Where Optus owned cable crosses private residential property or agricultural land, Optus may provide a once off free onsite electronic cable location. Optus Network Operations Asset Analyst will provide assistance in determining whether a free on-site location is required.

Please note:

- The exact location, including depth of cables can only be verified by pot holing which is not covered under this service
- This service is only available to assist private residential land owners and rural land owners
- The service covers one hour onsite only. Additional time will be charged at the current nominal rate.

**OPTUS ENGINEERING DRAWING SYMBOLS**

![Optus Engineering Drawing Symbols](image-url)
In relation to your enquiry of the above address, Optus advises as follows:

The records of Optus disclose that there ARE underground Optus FIBRE OPTIC TELECOMMUNICATIONS cables in the vicinity of the above enquiry as per the attached plan(s).

PLEASE NOTE THAT THE CABLES POTENTIALLY IMPACTED ARE OF NATIONAL SIGNIFICANCE with the potential to significantly disrupt communications in Australia if damaged.

This reply is valid for a period of 30 days from the date above.

IMPORTANT INFORMATION

Drawings and Plans provided by Optus are reference diagrams which were correct at the time the asset was built. Exact ground cover and alignments cannot be provided with any certainty as these may alter over time. Depths of Telecommunications plant vary considerably as do alignments. It is essential to uncover the asset and positively identify the assets exact location.

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   - (b) a carriage service provider; or
   - (c) a nominated carrier.

Penalty: Imprisonment for 1 year.

2) For the purposes of an offence against subsection (1), absolute liability applies to the physical element of circumstance of the offence, that the facility is owned or operated by a carrier, a carriage service provider or a nominated carrier.

3) A person is guilty of an offence if:
   - (a) the person tampers with, or interferes with, a facility owned or operated by:
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     - ii.a carriage service provider; or
     - iii.a nominated carrier; and
   - (b) this conduct results in hindering the normal operation of a carriage service supplied by a carriage service provider.

Penalty: Imprisonment for 2 years.

4) For the purposes of an offence against subsection (3), absolute liability applies to the following physical elements of circumstance of the offence:
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Note: If the following clearances cannot be maintained, please contact Optus Network Operations Asset Analysis Team for advice on how to resolve the situation.

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Assistance can be obtained by contacting Optus Network Operations Asset Analysis on **1800 505 777**

Where an on-site location is provided, the owner is responsible for all costs associated with hand digging or use of non-destructive water jet method (pot holing) to visually locate and expose Optus plant.

If plant location drawings or visual location of Optus plant by digging reveals that the location of Optus plant is situated wholly or partly where the owner plans to work, then Optus Damages and Relocations Team must be contacted through Optus Network Operations Asset Locations to discuss possible engineering solutions.

**PRIVATE RESIDENTIAL LANDOWNERS and RURAL LANDOWNERS**

Where Optus owned cable crosses private residential property or agricultural land, Optus may provide a once off free onsite electronic cable location. Optus Network Operations Asset Analyst will provide assistance in determining whether a free on-site location is required.

Please note:

- The exact location, including depth of cables can only be verified by pot holing which is not covered under this service
- This service is only available to assist private residential land owners and rural land owners
- The service covers one hour onsite only. Additional time will be charged at the current nominal rate.

**OPTUS ENGINEERING DRAWING SYMBOLS**

![Optus Engineering Drawing Symbols](image)
WARNING: This document is confidential and may also be privileged. Confidentiality nor privilege is not waived or destroyed by virtue of it being transmitted to an incorrect addressee. Unauthorised use of the contents is therefore strictly prohibited. Any information contained in this document that has been extracted from our records is believed to be accurate, but no responsibility is assumed for any error or omission.

Optus Plans and information supplied are valid for 30 days from the date of issue. If this timeline has elapsed please raise a new enquiry.

Sequence Number: 56126035
Date Generated: 06/10/2016

For all Optus DBYD plan enquiries –
Email: Fibre.Locations@optus.net.au
For urgent onsite assistance contact 1800 505 777
Optus Limited ACN 052 833 208
IMPORTANT:
When working in the vicinity of telecommunications plant you have a "Duty of Care" that must be observed. Please read and understand all the information and disclaimers provided below.

Telstra network is complex and requires expert knowledge to interpret information, to identify and locate components, to pothole underground assets for validation and to safely work around assets without causing damage. If you are not an expert and/or qualified in these areas then you should not be attempting these activities. Telstra will seek compensation for damages caused to its property and losses caused to Telstra and its customers.

The 4 essential steps that must be undertaken to prevent damage to Telstra assets are listed below. Construction activities must not commence without first undertaking these steps.

(The following pages contain more detail on each step below and the contact details to seek further advice. AS5488-2013 is the Australian Standard for the Classification of Subsurface Utility Information.)

1 Dial Before You Dig -Telstra Plans :
   - The essential first step in preventing damage.

   You must have current Telstra plans via the DBYD process. Telstra advises that the accuracy of the information provided by Telstra conforms to Quality Level D as defined in AS5488-2013. This means the information is indicative only, not a precise location. The actual location may differ substantially from that shown on the plans - refer to steps 2 & 3 to determine actual location prior to commencing construction.

2 Telstra Accredited Plant Locator :
   - The essential second step in preventing damage.

   To be able to trace and identify individual subsurface cables and ducts requires access to Telstra pits and manholes. Only a Telstra Accredited Plant Locator (TAPL) is authorised to access Telstra network for locating purposes. A TAPL can interpret plans, validate visible assets and access pits and manholes to undertake electronic detection of underground assets prior to further validation. All Telstra assets must be located, validated and protected prior to commencing construction. If you are not authorised to do so by Telstra, you should not be accessing Telstra network or locating Telstra network.

3 Validation :
   - The essential third step in preventing damage.

   All Telstra assets must be positively identified (i.e. validated), by physically sighting them. For underground assets this can be done by potholing by hand or using non-destructive vacuum extraction methods (Refer to 'validation’ as defined in AS5488-2013 QL-A). Underground assets located by electronic detection alone (step 2), are not deemed to be 'validated' and should not be used for construction purposes. Some TAPL’s can assist with non-destructive potholing for validation purposes. If you cannot validate the Telstra network you should not proceed with construction. Telstra will seek compensation for damages caused to its property and losses caused to Telstra and its customers.

4 Protection :
   - The essential fourth step in preventing damage.

   Telstra assets must be protected to avoid damage from construction activities. Minimum working distances around Telstra network must be maintained. These distances are provided in this document. Telstra can also provide advice and assistance in regards to protection – refer to the following pages.
STEP 1 – Dial Before You Dig -Telstra Plans:

The actual location of Telstra assets may differ substantially from that shown on the plans. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for the accuracy shown on the plans. Steps 2 and 3 must be undertaken to determine actual location of network.

- Telstra DBYD plans are not suitable for displaying Telstra network within a Telstra exchange site. For advice on Telstra network within a Telstra exchange site contact Telstra Plan Services.
- Telstra owns and retains the copyright in all plans and details provided in conjunction with the applicant's request. The applicant is authorised to use the plans and details only for the purpose indicated in the applicant's request. The applicant must not use the plans or details for any other purpose.
- Telstra plans or other details are provided only for the use of the applicant, its servants, agents or Telstra Accredited Plant Locators. The applicant may not give the plans or details to any parties other than these, and may not generate profit from commercialising the plans or details.
- Please contact Telstra Plan Services immediately should you locate Telstra assets not indicated on these plans.
- Telstra, its servants or agents shall not be liable for any loss or damage caused or occasioned by the use of plans and or details so supplied to the applicant, its servants and agents, and the applicant agrees to indemnify Telstra against any claim or demand for any such loss or damage.
- Please ensure Telstra plans and information provided remains on-site at all times throughout the inspection, location and construction phase of any works.
- Telstra plans are valid for 60 days after issue and should be replaced if required after the 60 days.

Emergency situations - receiving Telstra plans Telstra's automated mapping system (TAMS) will provide a fast response for emergency situations (faster than an operator can provide manually via a phone call - see below for fast response requirements). Automated responses are normally available 24/7.

To receive a fast automated response from Telstra your request must:
- Be a web request lodged at DBYD (www.1100.com.au). The request will be then forwarded to Telstra.
- Contain your current email address so you can receive the automated email response.
- Be for the purposes of 'mechanical excavation' or other ground breaking DBYD activity. (Requests with activity types such as conveyancing, planning & design or other non-digging activities may not be responded to until the next business day).
- Be for an area less than 350 metres in size to obtain a PDF map (over 350 metres will default to DWF due to size) this does not include congested CBD areas where only DWF may be supplied.
- Be for an area less than 2500 metres in size to obtain a DWF map (CBD’s less)

Data Extraction Fees. In some instances a data extraction fee may be applicable for the supply of Telstra information. Typically a data extraction fee may apply to large projects or requests to be supplied in non-standard formats. For further details contact Telstra Plan Services.

Electronic plans - PDF and DWF maps If you have received Telstra maps via email you will have received the maps as either a PDF file (for smaller areas) or DWF file (for larger area requests). All requests over approximately *350m or in congested CBD areas can only be supplied in DWF format. There are size limits on what can be provided. (*actual size depends on geographic location of requested area). If you are unable to launch any one of the softcopy files for viewing and printing, you may need to download and install one or more of the free viewing and printing products such as Adobe Acrobat Reader (for PDF files) or Autodesk Design Review (for DWF files) available from the internet

- Pdf files - PDF is the default softcopy format for all requests for areas up to approx *350m in length. (*depends on geographic location of request). The PDF file is nominally formatted to A3 portrait sheet however it can be printed on any size sheet that your printer supports, e.g. either as the full sheet or selected areas to suit needs and legibility. (to print a selected area zoom up and print ‘current view’) If there are multiple layers of Telstra network you may receive up to 2 sheets in the single PDF file attachment supplied. There are three types or layers of network normally recorded - local network, mains cables or a combined layer of local and mains (usually displayed for rural or semi-rural areas). If mains cable network is present in addition to local cables (i.e. as separate layer in a particular area), the mains will be shown on a separate sheet. The mains cable information should be read in conjunction with the local cable information.

- DWF files – DWF is the default softcopy format for all requests for areas that are over 350m in length. Maximum length for a DWF automated response is approx 2500m - depending on geographic
location of request (manually-processed plans may provide larger coverage). The DWF files differ from PDF in that DWF are vector files made up of layers that can be turned on or off and are not formatted to a specific sheet size. This makes them ideal for larger areas and for transmitting electronically.

- **How to view Telstra DWF files** –
  Telstra DWF files come with all layers turned on. You may need to turn individual layers on or off for viewing and printing clarity. Individual layer names are CC (main cable/conduit), DA (distribution area network) and sometimes a combined layer - CAC. Layer details can be viewed by either picking off the side menu or by selecting 'window' then 'layers' off the top menu bar. Use 'layers' to turn individual layers off or on (double click or right click on layer icon).

- **How to print Telstra DWF files** –
  DWF files can be printed on any size sheet – either their entirety or by selected areas of interest. Some DWF coverage areas are large and are not suited to printing legibly on a single A4 sheet - you may need several prints if you only have an A4 printer. Alternatively, an A3, A1 or larger printer could be used. To print, zoom in or out and then, by changing the 'print range' settings, you can print what is displayed on your screen to suit your paper size. If you only have a small printer, e.g. A4, you may need to zoom until the text is legible for printing (which is why you may need several prints). To print what is displayed on your screen the 'view' setting should be changed from 'full page' to 'current view'. The 'current sheet' setting should also be selected. You may need to print layers separately for clarity and legibility. (Details above on how to turn layers on or off)

- **How to change the background colour from white to black (when viewing) Telstra DWF files** –
  If using Autodesk Design Review the background colour can be changed by selecting 'Tools' then 'options' then 'sheet'. Tick the box 'override published paper colours' and select the colour required using the tab provided.

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**STEP 2 - Telstra Accredited Plant Locator (TAPL):**

Utilising a TAPL is an essential part of the process to identify network and to trace subsurface network prior to validating. A TAPL can provide plan interpretation, identification and electronic detection. This will assist in determining the position of subsurface assets prior to potholing (validating). Some TAPL’s can also assist in validating underground detected network. Electronic detection is only an indication of the existence of underground network and can be subject to interference from other services and local conditions. Electronic detection should not be used solely to determine location for construction purposes. The electronic (indicative) subsurface measurements must be proven by physically sighting the asset (see step 3 - Validation).

- All TAPL’s locating Telstra network must be able to produce a current photo ID card issued by Telstra. A list of TAPL’s is provided with the Telstra Dial Before You Dig plans.
- Telstra does not permit external parties (non-Telstra) to access or conduct work on our network. Only Telstra staff, Telstra contractors or locators whom are correctly accredited are authorised to work on or access our manholes, pits, ducts, cables etc. This is for safety as well as for legal reasons.

  **It is a criminal offence under the Criminal Code Act 1995 (Cth) to tamper or interfere with communication facilities owned by a carrier. Heavy penalties may apply for breach of this prohibition, and any damages suffered, or costs incurred by Telstra as a result of any such unauthorised works may be claimed against you.**

- Optic fibre cable locations must be performed by a locator with Telstra optic fibre cable location accreditation. The locators with optic fibre cable location accreditation are indicated by a ‘yes’ in the column headed ‘Fibre’ in the lists of locators that are published with the Telstra DBYD plans. Telstra Accredited Plant Locators that are DBYD Certified Locators are also fibre accredited. Inspection of photo ID cards will confirm whether locators are just copper accredited or copper + fibre accredited.
- The details of any contract, agreement or retainer for site assistance to locate telecommunications plant shall be for you to decide and agree with the Telstra Accredited Plant Locator engaged. Telstra is not a party to any contract entered into between you and a Telstra Accredited Plant Locator.
- Payment for the site assistance will be your responsibility and payment details should be agreed before the engagement is confirmed.
Telstra does not accept any liability or responsibility for the performance of or advice given by a Telstra Accredited Plant Locator. Accreditation is an initiative taken by Telstra towards the establishment and maintenance of competency standards. However, performance and the advice given will always depend on the nature of the individual engagement.

Neither the Telstra Accredited Plant Locator nor any of its employees are an employee or agent for Telstra. Telstra is not liable for any damage or loss caused by the Telstra Accredited Plant Locator or its employees.

Electronically derived subsurface measurements (e.g. depths/alignments by locating devices)

All locator provided measurements for Telstra assets must have the AS5488-2013 quality level specified - (e.g. QL-A, B, C or D). These quality levels define the accuracy of subsurface information and are critical for determining how the information is later used – for example if suitable for excavation purposes.

1) An example of a subsurface measurement with no quality level specified – (i.e. not to be used)
Telstra cover - 0.9m

The measurement above has no AS5488-2013 quality level specified and should not be provided by a locator or used for design or construction. This is because it is not known whether the measurement is actual or derived (where ‘actual’ means validated and ‘derived’ means assumed and not validated, e.g. electronic or other). Typically damages occur by constructors incorrectly using unvalidated measurements as actual measurements.

2) An example of a subsurface measurement with quality level B specified –
Telstra cover - 0.9m (QL-B)

Where (QL-B) complies with AS5488-2013 QL-B (for example an electronic location that complies with QL-B)
(Note QL-B means it has not been validated and should not be used for construction purposes around Telstra network, however it would assist further investigation to determine the actual location)

3) An example of a subsurface measurement with the quality level A specified –
Telstra cover - 0.6m (QL-A)

Where (QL-A) complies with AS5488-2013 QL-A (and is deemed suitable for excavation purposes). In this example the asset has been electronically located first, (QL-B) and then physically exposed (QL-A).

Note -Telstra will seek compensation for damages caused to its property and losses caused to Telstra and its customers if unvalidated subsurface measurements are used for construction and subsequently result in damage to Telstra assets. Only measurements conforming to AS5488-2013 (QL-A) are deemed by Telstra to be validated measurements.

Rural landowners Where Telstra-owned cable crosses agricultural land, Telstra may provide on-site assistance with cable location. You must contact Telstra Plan Services to determine eligibility and to request the service.

Please note the following –

- If eligible, the location assistance must be approved and organised by Telstra. Telstra will not pay for a location that has not been approved and facilitated by Telstra (Telstra is not responsible for payment assistance when a customer engages a locator directly).
- The exact location, including depth of cables, must be validated by potholing, which may not be covered by this service.
- This service is nominally only available to assist private rural land owners.
- This service nominally covers one hour on-site only. Any time required in addition to Telstra-funded time can be purchased directly from the assigned Telstra Accredited Plant Locator.
- This service does not apply to previously located network at the same location (i.e. it is a once off).
- This service does not apply to other carriers’ cables (marked as ‘OC’ on Telstra plans).
**STEP 3 – Validation:**

After utilising a Telstra Accredited Plant Locator and prior to commencing construction, any electronically detected underground network must be positively identified (validated) by physically sighting it. This can be done by careful hand digging or using non-destructive water jet methods to expose the network.

*Validation as defined in AS5488-2013 (QL-A).*

Manual potholing needs to be undertaken with extreme care and by employing techniques least likely to damage cables. For example, align shovel blades and trowels parallel to the cable rather than digging across the cable. Some Telstra Accredited Plant Locators are able to provide or assist with non-destructive potholing methods to enable validation of underground cables and ducts.

**If you cannot validate the underground network then you should not proceed with construction.** Telstra will seek compensation for damages caused to its property and losses caused to Telstra and its customers.

**Important note:** The construction of Telstra’s network dates back over many years. Some of Telstra’s pits and ducts were manufactured from asbestos-containing cement. You must take care in conducting any works in the vicinity of Telstra’s pits and ducts. You must refrain from in any way disturbing or damaging Telstra’s network infrastructure when conducting your works. We recommend that before you conduct any works in the vicinity of Telstra infrastructure that you ensure your processes and procedures eliminate any possibility of disturbing, damaging or interfering in any way with Telstra’s infrastructure. Your processes and procedures should incorporate appropriate measures having regard to the nature of this risk. For further information -

http://ucm.in.telstra.com.au/about/media/emergencies-incidents/asbestos/index.htm?ssSourceSiteId=consumer-advice

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**STEP 4 – Protection:**

You must maintain the following minimum clearance distances between construction activity and the validated position of Telstra plant.

<table>
<thead>
<tr>
<th>Jackhammers/Pneumatic Breakers</th>
<th>Not within 1.0m of actual validated location.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vibrating Plate or Wacker Packer Compactor</td>
<td>Not within 0.5m of actual validated location of Telstra ducts. 300mm compact clearance cover before compactor can be used across Telstra ducts.</td>
</tr>
<tr>
<td>Boring Equipment (in-line, horizontal and vertical)</td>
<td>Not within 2.0m of actual validated location. Constructor to hand dig or use non-destructive water jet method (pothole) and expose plant.</td>
</tr>
<tr>
<td>Heavy Vehicle Traffic (over 3 tonnes)</td>
<td>Not to be driven across Telstra ducts (or plant) with less than 600mm cover. Constructor to check actual depth via hand digging.</td>
</tr>
<tr>
<td>Mechanical Excavators, Farm ploughing and Tree Removal</td>
<td>Not within 1.0m of actual validated location. Constructor to hand dig or use non-destructive water jet method (pot-hole) and expose plant.</td>
</tr>
</tbody>
</table>

- For blasting or controlled fire burning please contact Telstra Plan Services for advice.
- If conducting roadworks all existing Telstra pits and manholes should be a minimum of 1.2m in from the back of kerb after the completion of your work.
- All Telstra conduit should have the following minimum depth of cover after the completion of ground work:-
  - Footway 450mm
- **Roadway 450mm at drain invert and 600mm at road centre crown**
  - For clearance distances relating to Telstra pillars, cabinets and RIMs/RCMs please contact Telstra Plan Services.
  
  - If Telstra plant is situated wholly or partly where you plan to work (i.e. in conflict), then Telstra's Network Integrity Group must be contacted to discuss possible engineering solutions. Please phone 1800 810 443 or email NetworkIntegrity@team.telstra.com
  
  - You are not permitted to relocate or alter or repair any Telstra assets or network under any circumstances.

It is a criminal offence under the **Criminal Code Act 1995 (Cth)** to tamper or interfere with communication facilities owned by a carrier. Heavy penalties may apply for breach of this prohibition, and any damages suffered, or costs incurred by Telstra as a result of any such unauthorised works may be claimed against you.

 Only Telstra and its contractors may access and conduct works on Telstra's network (including its plant and assets). This requirement is to ensure that Telstra can protect the integrity of its network, avoid disruption to services and ensure that the relocation meets Telstra's requirements.

- If Telstra relocation or protection works are part of the agreed solution, then payment to Telstra for the cost of this work shall be the responsibility of the principal developer, constructor or person for whom the work is performed. The principal developer or constructor will be required to provide Telstra with the details of their proposed work showing how Telstra's plant is to be accommodated and these details must be approved by the Regional Network Integrity Manager prior to the commencement of site works. Please phone 1800 810 443 or email NetworkIntegrity@team.telstra.com Further information - [https://www.telstra.com.au/consumer-advice/digging-construction/relocating-network-assets](https://www.telstra.com.au/consumer-advice/digging-construction/relocating-network-assets)


- You will be held responsible for all plant damage that occurs or any impacts to Telstra's network as a result of your construction activities. This includes interfering with plant, conducting unauthorised modification works and interfering with Telstra's assets in a way that prevents Telstra from accessing or using its assets in the future.

- Telstra reserves all rights to recover compensation for loss or damage to its cable network or other property including consequential losses.

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**FURTHER INFORMATION:**

**NATURAL DISASTERS**

Natural Disasters include (amongst other things) earthquakes, cyclones, floods and tsunamis. In the case of such events, urgent requests for plans or information relating to the location of Telstra network can be made directly to Telstra Network Integrity Team Managers as follows:

- NSW – John McInerney 0419 485 795
- QLD – Glenn Swift 0419 660 147
- VIC/TAS - David Povazan 0417 300 947
- SA/NT - Mick Weaver 0419 828 703
- WA - Angus Beresford-Peirse 0419 123 589

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**TELSTRA CORPORATION ACN 051 775 556**

**DOC Version 23 (2nd Aug 2016)**
TELSTRA PLAN SERVICES - for all Telstra Dial Before You Dig related enquiries

Email - Telstra.Plans@team.telstra.com
Phone - 1800 653 935 (general enquiries, business hours only)

*Telstra DBYD plan information - Shalin 07 3455 2997
    Anthony 07 3455 2365

Advice on preventing damage - Glen 07 3455 1011
    Lachlan 07 3455 3132

Accredited plant locator enquiries - Mike 0477 377 036
    Taylor 0477 365 666

Road closures - Megan 07 3455 0834
    Lachlan 07 3455 3132

Telstra easements - Glen 07 3455 1011

*Please note - to make a Telstra plan enquiry the plans must be current (within 60 days of issue). If your plans have expired you will need to submit a new request via DBYD prior to contacting Telstra Plan Services.

Information for new developments (developers, builders, home owners)

Asset relocations
Please phone 1800 810 443 or email NetworkIntegrity@team.telstra.com

Telstra offers free Cable Awareness Presentations, if you believe you or your company would benefit from this offer please contact Network Integrity on 1800 810 443 or NetworkIntegrity@team.telstra.com

PRIVACY NOTE

Your information has been provided to Telstra by DBYD to enable Telstra to respond to your DBYD request. Telstra keeps your information in accordance with its privacy statement entitled “Protecting Your Privacy” which can be obtained from Telstra either by calling 1800 039 059 or visiting our website at www.telstra.com.au/privacy
LEGEND

For more info contact a Telstra Accredited Locator or Telstra Plan Services 1800 653 935

- Exchange
  (major cable present)

- Footway access chamber
  (can vary from 1-lid to 12-lid)

- Pillar/cabinet
  (above the ground / free standing)

- Above ground complex equipment housing (eg RIM)
  Please Note: This equipment is powered by 240V electricity.

- OC
  other carrier

- Cable jointing pit
  (number indicating pit type)

- Elevated cable joint
  (above ground joint on buried cable)

- Telstra Plant in shared utility trench

- Aerial Cable
  (above ground)

- Aerial Cable
  (attached to joint use pole e.g. power)

- Direct buried cable

- Marker post installed

- Buried transponder

- Marker, transponder

- Optical fibre cable direct buried

Some examples of how to read Telstra plans:

- Single to multiple round conduit
  Configurations 1, 2, 4, 9 respectively
  P100

- Multiple square conduit
  Configurations 2, 4, 6 respectively
  E85

Some examples of conduit type and size:

- A - Asbestos cement, P - PVC / plastic, C - Concrete, GI - Galvanised iron, E - Earthenware

- Conduit sizes nominally range from 20mm to 100mm.
  P50 - 50mm PVC conduit
  P100 - 100mm PVC conduit
  A100 - 100mm asbestos cement conduit
  E 85 - 85mm square earthenware conduit

WARNING: Telstra plans and location information conform to Quality Level 'D' of the Australian Standard AS 5488 - Classification of Subsurface Utility Information. As such, Telstra supplied location information is indicative only. Spatial accuracy is not applicable to Quality Level D. Refer to AS 5488 for further details. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans.

FURTHER ON SITE INVESTIGATION IS REQUIRED TO VALIDATE THE EXACT LOCATION OF TELSTRA PLANT PRIOR TO COMMENCING CONSTRUCTION WORK. A plant location service is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works. The exact position of Telstra assets can only be validated by physically exposing it. Telstra will seek compensation for damages caused to its property and losses caused to Telstra and its customers.

TELSTRA CORPORATION ACN 051 776 556
Telstra plans and information supplied are valid for 60 days from the date of issue. If this timeframe has elapsed, please reapply for plans.

Please read and understand the information supplied in the duty of care statement attached with the Telstra plans. TELSTRA WILL SEEK COMPENSATION FOR LOSS CAUSED BY DAMAGE TO ITS PLANT.

It is your responsibility to locate Telstra's underground plant by careful hand pot-holing prior to any excavation in the vicinity and to exercise due care during that excavation.

Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans.

WARNING - Due to the nature of Telstra underground plant and the age of some cables and records, it is impossible to ascertain the precise location of all Telstra plant from Telstra's plans. The accuracy and/or completeness of the information supplied cannot be guaranteed as properly boundaries, depths and other natural landscape features may change over time, and accordingly the plans are indicative only.

Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans.

It is your responsibility to locate Telstra's underground plant by careful hand pot-holing prior to any excavation in the vicinity and to exercise due care during that excavation.

Please read and understand the information supplied in the duty of care statement attached with the Telstra plans. TELSTRA WILL SEEK COMPENSATION FOR LOSS CAUSED BY DAMAGE TO ITS PLANT.

Telstra plans and information supplied are valid for 60 days from the date of issue. If this timeframe has elapsed, please reapply for plans.

Sequence Number: 56126034

CAUTION: Critical Network Route in plot area. DO NOT PROCEED with any excavation prior to seeking advice from Telstra Plan Services on: 1800 653 935

The above plan must be viewed in conjunction with the Mains Cable Plan on the following page.
Telstra plans and information supplied are valid for 60 days from the date of issue. If this timeframe has elapsed, please reapply for plans.

It is your responsibility to locate Telstra’s underground plant by careful hand pot-holing prior to any excavation in the vicinity and to exercise due care during that excavation.

Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans.

Completeness of the information supplied cannot be guaranteed as property boundaries, depths and other natural landscape features may change over time, and accordingly the plans are indicative only.

For urgent onsite contact only - ph 1800 653 935 (bus hrs)
email - Telstra.Plans@team.telstra.com
For all Telstra DBYD plan enquiries -

Sequence Number: 56126034

CAUTION: Critical Network Route in plot area.
DO NOT PROCEED with any excavation prior to seeking advice from Telstra Plan Services on: 1800 653 935

WARNING - Due to the nature of Telstra underground plant and the age of some cables and records, it is impossible to ascertain the precise location of all Telstra plant from Telstra’s plans. The accuracy and/or completeness of the information supplied cannot be guaranteed as property boundaries, depths and other natural landscape features may change over time, and accordingly the plans are indicative only. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans.

It is your responsibility to locate Telstra’s underground plant by careful hand pot-holing prior to any excavation in the vicinity and to exercise due care during that excavation.

Please read and understand the information supplied in the duty of care statement attached with the Telstra plans. TELSTRA WILL SEEK COMPENSATION FOR LOSS CAUSED BY DAMAGE TO ITS PLANT.

Telstra plans and information supplied are valid for 60 days from the date of issue. If this timeframe has elapsed, please reapply for plans.
Sanitary Drainage Design Calculations

Project: Mawson Block 29 Section 36 Stage 2 Site Investigation

Project #: 50517082

Sanitary Drainage calculations based on AS3500, Part 2, Sanitary Plumbing & Drainage (AS3500) and ICON Water & Sewerage Service Standards and Guidelines (WSSS)

<table>
<thead>
<tr>
<th>Value</th>
<th>Unit</th>
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<tbody>
<tr>
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<tr>
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<td>Patrons</td>
</tr>
<tr>
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<td>Population</td>
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<td>L/s</td>
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Pipe sizing calculations based on Appendix 3-4A - Actew General Design Standards

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<th>S (Gradient)</th>
<th>2.000 %</th>
<th>Minimum Sewer Tie Grade</th>
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</thead>
<tbody>
<tr>
<td>Pipe Diameter</td>
<td>0.100 m</td>
<td></td>
</tr>
<tr>
<td>R (Hydraulic Radius)</td>
<td>0.025 sq.m/m</td>
<td></td>
</tr>
<tr>
<td>Area</td>
<td>0.008 sq.m</td>
<td></td>
</tr>
<tr>
<td>n (Pipe Roughness)</td>
<td>0.011 n</td>
<td></td>
</tr>
<tr>
<td>V (Velocity)</td>
<td>1.099 m/s</td>
<td></td>
</tr>
<tr>
<td>Q (Flow Rate)</td>
<td>8.633 L/s</td>
<td></td>
</tr>
</tbody>
</table>

Manning’s Equation

A DN100 pipe will have sufficient capacity to service the proposed Development
**Water Services Design Calculations**

**Project:** Mawson Block 29 Section 36 Stage 2 Site Investigation

**Project #:** 50517082

Water services calculations based on AS3500, Part 1, Water Services (AS3500) and ICON Water & Sewerage Service Standards and Guidelines (WSSS)

<table>
<thead>
<tr>
<th>Value</th>
<th>Unit</th>
<th>1:1 male female ration</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUDs =</td>
<td>Male</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Children</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>Patrons</td>
<td>200</td>
</tr>
<tr>
<td>PSD =</td>
<td>L/s</td>
<td>2.700</td>
</tr>
<tr>
<td>HP level</td>
<td>m</td>
<td>648.000</td>
</tr>
<tr>
<td>Water Tie Level =</td>
<td>m</td>
<td>657.400</td>
</tr>
<tr>
<td>Difference =</td>
<td>m</td>
<td>-9.400</td>
</tr>
<tr>
<td>Pressure head at tie during peak =</td>
<td>m</td>
<td>47.120</td>
</tr>
<tr>
<td>Pressure Drop (h) =</td>
<td>m</td>
<td>51.520</td>
</tr>
<tr>
<td>Index Length =</td>
<td>m</td>
<td>200.000</td>
</tr>
<tr>
<td>Head Loss Gradient=</td>
<td>m/100m</td>
<td>18.640</td>
</tr>
<tr>
<td>Existing Internal Pipe Size =</td>
<td>mm</td>
<td>0.000</td>
</tr>
<tr>
<td>Req Pipe Size =</td>
<td>mm</td>
<td>36.465</td>
</tr>
<tr>
<td>Proposed Tie Size</td>
<td>mm</td>
<td>40.000</td>
</tr>
<tr>
<td>Capacity of Required Tie =</td>
<td>L/s</td>
<td>3.456</td>
</tr>
</tbody>
</table>

Therefore a 36.46mm ID water service tie will be required to service the proposed development.

**Fire risk design**

<table>
<thead>
<tr>
<th>Desc</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Risk Type =</td>
<td>F3</td>
<td></td>
</tr>
<tr>
<td>F demand</td>
<td>45.000</td>
<td>L/s</td>
</tr>
<tr>
<td>Pressure at main during peak demand and firefighting draw off</td>
<td>22.190</td>
<td>m</td>
</tr>
<tr>
<td>Requirement for F5</td>
<td>10.000</td>
<td>m</td>
</tr>
</tbody>
</table>

The pressure obtainable at block boundary is 22.19m head pressure, including peak demand draw off. Standard requirements are for 10m residual head with 45L/s plus peak demand therefore the pressures are sufficient. Refer Appendix C for ICON (Actew) correspondence in relation to pressures achievable at the block boundary.
Stormwater Design Calculations based on TaMS Design Standards

Project: Mawson Block 29 Section 36 Stage 2 Site Investigation

Project #: 50517082

Block catchment flow calculations based on TaMS Design Standards - Stormwater

<table>
<thead>
<tr>
<th>Value</th>
<th>Unit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARI</td>
<td>5.000</td>
<td>Average Recurrence Intervals, Table 1.2 Minor System Design ARI</td>
</tr>
<tr>
<td>RI</td>
<td>98.000</td>
<td>Rainfall Intensity, Table 1.14 Canberra Rainfall Intensities (mm/hr)</td>
</tr>
<tr>
<td>Ci</td>
<td>0.900</td>
<td>Impervious Area Run off Coefficient, Figure 1.1</td>
</tr>
<tr>
<td>Cp</td>
<td>0.650</td>
<td>Pervious Area Run off Coefficient, Table 5.4.6(B) AS3500 Part 3</td>
</tr>
<tr>
<td>Ratio</td>
<td>60.000</td>
<td>Assumed percentage of impervious area (Table 1.3)</td>
</tr>
<tr>
<td></td>
<td>40.000</td>
<td>Assumed percentage pervious area</td>
</tr>
<tr>
<td>Area</td>
<td>7913.00</td>
<td>Catchment Total Area (sqm)</td>
</tr>
<tr>
<td>Area I</td>
<td>4747.80</td>
<td>Impervious area</td>
</tr>
<tr>
<td>Area P</td>
<td>3165.20</td>
<td>Pervious area</td>
</tr>
<tr>
<td>Q</td>
<td>172.33</td>
<td>Design Stormwater flow rate Clause 5.4.8 (d)</td>
</tr>
</tbody>
</table>

Pipe sizing calculations based on Manning’s Equation

<table>
<thead>
<tr>
<th>S (Gradient)</th>
<th>1.000</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe Diameter</td>
<td>0.375</td>
<td>m</td>
</tr>
<tr>
<td>R (Hydraulic Radius)</td>
<td>0.094</td>
<td>sq.m/m</td>
</tr>
<tr>
<td>Area</td>
<td>0.110</td>
<td>sq.m</td>
</tr>
<tr>
<td>n (Pipe Roughness)</td>
<td>0.011</td>
<td>n</td>
</tr>
<tr>
<td>V (Velocity)</td>
<td>1.876</td>
<td>m/s</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q (Flow Rate)</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.207</td>
<td>m3/s</td>
</tr>
<tr>
<td></td>
<td>207.21</td>
<td>L/s</td>
</tr>
</tbody>
</table>
SUMMARY OF EXISTING SITE CONDITIONS

- **Land Area**: 7,913m²
- **Maximum Building Height**: Buildings heights are limited to 2 storeys within 30m of residential blocks and 4 storeys, or 15m, for the remainder of the block.
- **Planning Controls**: ** Territory Plan - CF** - COMMUNITY FACILITIES

DISCLAIMER
The Schemes (drawings documents information and materials) contained within this discussion paper have been prepared solely for the purpose of providing information about potential schemes. The materials should not be considered to be error free or to include all relevant information. Further interrogation of the site including Site Investigation Reports and architectural schemes are to be tested prior to yield potential being confirmed.

Nothing in this paper in any way constitutes advice nor does the transmission or sending of these materials create any contractual relationship. Neither DFP nor any employee’s agents or contractors will be liable for any direct or indirect loss or damage you may suffer or incur arising directly or indirectly from the use of any materials from this paper.
STATUTORY PLANNING

National Capital Plan
The subject site is not located within a Designated Area of the National Capital Plan (NCP) and therefore no detailed planning provisions of the Plan apply to the site.

Territory Plan
MAWSON PRECINT MAP AND CODE
The Site is not subject to any additional prohibited development.

CFZ - Community Facility Zone
Zone Objectives
a) To facilitate social sustainability and inclusion through providing accessible sites for key government and non-government facilities and services for individuals, families, and communities.
b) To provide accessible sites for civic life and allow community organisations to meet the needs of the Territory’s various forms of community.
c) To protect these social and community uses from competition from other uses.
d) To enable the efficient use of land through facilitating the co-location, and multi-use of community facilities, generally near public transport routes and convenience services appropriate to the use.
e) To encourage adaptable and affordable housing for persons in need of residential support or care.
f) To safeguard the amenity of surrounding residential areas against unacceptable adverse impacts including from traffic, parking, noise or loss of privacy.

Permissible development types are:
ancillary use, business agency, child care centre, community activity centre, community theatre, consolidation, cultural facility, demolition, development in a location and of a type identified in a precinct map as additional merit track development, educational establishment, emergency services facility, health facility, hospital, indoor recreation facility, minor road, minor use, office, outdoor recreation facility, parkland, place of worship, public agency, religious associated use, residential care accommodation, retirement village, sign, subdivision, supportive housing, temporary use, varying a lease (where not prohibited, code track or impact track assessable)

Site Context
The following provides a summarised description of the site:
- The site is open space and no existing structures are present.
- The subject site is bounded by residential development to the west (RZ2) and east (RZ1), Mawson Drive road reserve to the north, and Shackleton Circuit road reserve to the south.
- The site currently has no formal access.
- The site generally slopes down toward the north at approximately 8 to 10%.
- The site contains no easements.
- Telstra services within and along the western boundary may require relocation / establishment of an easement to suit future development.
- An existing substation is present in the Block immediately to the east of the site.
- The site is not within a Bushfire Prone area or at risk of 100 year flooding.
- Traffic generation from the site is expected to have a significant effect on the surrounding road network especially Mawson Drive.
- A tree survey is recommended as there are a number of large trees on the Block.
Possible Land use Options

- Business agency – Code limits use to non-profit organisations, plus includes limits on time the use can occur plus a maximum 400m$^2$ GFA. The site is large enough to support multiple agencies or this use may be considered as part of a larger mixed use Community Facility building.
- Child care centre – The site is considered too large for a child care centre as a single use site. The usual area for a centre with 125 places is approximately 3,500m$^2$.
- Community activity centre, community theatre, cultural facility – The site may be considered for this use or as part of a subdivided Block.
- Educational establishment – The site is not considered to be of sufficient size to support a Private school.
- Emergency services facility - The site may be considered for this as part of a subdivided Block.
- Health facility - The site is considered large enough to support a health care building and associated car parking and is a possible use for the site. However, this type of facility is more usually co-located with other amenities such as local shops or medical centres.
- Hospital - The site is considered too small for a private hospital.
- Indoor recreation facility (Fitness centre, Gymnasium, Indoor sports stadium, Indoor swimming pool, Squash court, Basketball/Netball courts) – The site may be considered for this use.
- Office – The Code limits use to non-profit organisations, and include limits on time the use can occur plus a maximum GFA. The site is large enough to support multiple ‘offices’ or may be considered as part of a larger mixed use Community Facility building.
- Outdoor recreation facility (Bowling Green, BMX track, Swimming pool, Tennis court etc) – The site may be considered for this use.
- Parkland – possible use as an extension to the existing surrounding open space areas.
- Place of worship - The site is considered large, but not impossible for a place of worship. A small suburban church usually requires approximately 3,000m$^2$ however, the Hindu Temple across
the road is on 5,864m².

- Public agency - Code limits use to non-profit organisations, plus includes limits on time the use can occur plus maximum 400m² GFA. The site is large enough to support multiple agencies or may be considered as part of a larger mixed use Community Facility building.
- Residential care accommodation – the site may be considered for this use.
- Retirement Village - the site may be considered for this use.
- Supportive housing - the site may be considered for this use.

POTENTIAL DEVELOPMENT SCENARIOS

The objective of this study is to test the site for possibilities and constraints that would affect future development. To this end, a number of different uses are presented below, including Child Care due to its high demand on infrastructure when compared to the other possible use/development outcomes.

More detailed site investigation, architectural floor plans and review of all statutory documents should be undertaken should the site warrant further review.

Note; There is an existing substation on the adjacent CF Block immediately to the east of the subject site that could affect the use of this site for Child care (due to proximity).

Option 1

Subdivision with Child care centre and Place of worship

For the purpose of this study, subdivision of the site with a childcare facility utilising 4,000m² and a Place of worship on the remaining 3,900m² has been assumed.

Figure 2. Indicative plan showing a subdivided site with ‘Place of worship’ and ‘Child care’ sharing driveway access from Shackleton Circuit only.
<table>
<thead>
<tr>
<th>USE</th>
<th>Children/ seats</th>
<th>Building area</th>
<th>Outdoor area</th>
<th>Car parking area</th>
<th>Car parking number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Care</td>
<td>120</td>
<td>1,200m²</td>
<td>1,000m²</td>
<td>1,000m²</td>
<td>35</td>
</tr>
<tr>
<td>Place of worship</td>
<td>200</td>
<td>800m²</td>
<td>1,000m²</td>
<td>1,500m²</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td>NA</td>
<td>3,000m²</td>
<td>2,000m²</td>
<td>2,500m²</td>
<td>85</td>
</tr>
</tbody>
</table>

**Parking**

A 120 place child care centre could require 35 car parking spaces under the *ACT Parking and Vehicle Access Code*. This comprises:

- 1 space/centre plus 2 spaces per 15 childcare places for employee parking = 17
- *visitor parking* = 6
- 1 pick-up/set-down bay per 10 child care places = 12/35

Place of worship parking rate used is 1 car per 4 seats

For the purpose of this study, 30m² is used to calculate the area required for one car parking space.

*Note - The *ACT Parking and Vehicle Access Code* does not address Child Care Centres larger than 90 places (allocation of 4 visitor car parking spaces for 60 – 90 child care places). Two (2) additional spaces for 120 children (total 6) has been assumed for this study.

**Option 2**

**Residential care accommodation**

<table>
<thead>
<tr>
<th>Beds</th>
<th>Building/GFA (over 2 floors)</th>
<th>Landscape area</th>
<th>Parking area (basement)</th>
<th>Car parking spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>6,000m²</td>
<td>4,000m²</td>
<td>1,050m²</td>
<td>30</td>
</tr>
</tbody>
</table>

**Option 3**

**Retirement Village**

<table>
<thead>
<tr>
<th>ILU’s</th>
<th>Building/GFA</th>
<th>Landscape area</th>
<th>Parking area</th>
<th>Car parking spaces @ 1.5/dwelling</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>2,500m²</td>
<td>3,000m²</td>
<td>1,150m²</td>
<td>38</td>
</tr>
</tbody>
</table>