# DEVELOPMENT APPLICATION
## 12-22 Willan Drive
## Cartwright, 2168

| DWG No. | Title | REV |
|---|---|---|
| DA000 | Title Page | B |
| DA100 | Site Analysis | A |
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| DA102 | Demolition Plan | A |
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| DA201 | Level 03 - Roof Plans | B |
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| DA301 | Adaptable Units | A |
| DA400 | Elevations | B |
| DA401 | Elevations & Section | B |
| DA402 | Perspectives | B |
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| DA501 | Solar Access Calculations | A |
| DA502 | Cross Ventilation Calculations | A |
| DA503 | Communal Open Space Calculations | A |
| DA504 | Deep Soil Zone Calculations | A |
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| DA701 | Shadow Diagrams 1 | A |
| DA702 | Shadow Diagrams 2 | A |

7.6
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0001788060
Assessor Name: Amir Girgis
Accreditation no.: 20579
Certificate date: 10 August 2017
Dwelling Address: 12-16 Willan Drive Cartwright, NSW 2168

www.nathers.gov.au

ABSA Class 2 Building Multi-Unit

| | |
|---|---|
| Validation Number | 1011315676 |
| Validation Date | 10/08/2017 |
| Assessor Name | Amir Girgis |
| Assessor Number | 20579 |
| Assessor Signature | |

Simulated under BASIX Thermal Comfort Protocol
BASIX

## BASIX NOTES

Water efficiency:

- 5,000L rainwater tank per building to collect water from a roof area of 500m2
- Rainwater to serve all common landscape irrigation on ground floor 399m per building.
- 4- Star WELS rated toilets
- 5-Star WELS kitchen taps and bathroom taps
- 3-Star WELS rated showers (>4.5 but <= 6 L/min)
- 5 Star WELS rated toilet for Carers Toilet on GF
- 5 Star WELS rated taps for Carers Toilet on GF

Thermal Comfort:

- R3.0 bulk insulation to all external exposed walls (total R-value for the wall system R3.24)
- R1.5 slab insulation for all suspended floors (total R-value for the suspended floor, R1.71)
- Total R-value for party walls R0.28
- R2.5 bulk insulation under all exposed ceiling area (total R-value for the ceiling/roof with air gap R2.66 (including exposed to balcony above)
- All windows to achieve a total U-value of 5.4 and SHGC of 0.49 (NFRC)
- Provision of NO downlights/spotlights in the apartments or provision of thermally sealed fittings
- Weather seals for all exhaust & ventilation vents

Energy Efficiency:

- Gearless traction lifts with Variable Voltage & Frequency (VVVF) motors
- No Mechanical ventilation in plant/service rooms
- Exhaust ventilation only in garbage rooms
- Natural Ventilation(no mechanical ventilation) in hallways
- LED lighting for all lifts and lighting connected to lift call button
- LED for garbage room/ plant room/ service room with motion sensor control
- LED lighting with daylight sensors and motion sensors for GF lobbies and all other hallways
- 6 Star instantaneous gas hot water system for each individual dwelling
- Individual fans ducted to façade for kitchen, bathroom and laundry exhaust and interlocked to light
- Gas cooktops and electric ovens
- Dedicated Compact Fluorescent/LED fittings for all internal areas in apartments
- ceiling fans for living rooms and bedrooms
- Common area clothes line
- Indoor clothes drying line (including balconies)

| Rev | Date | By | Chk | Description |
|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

Client Details
[illegible]
NORTHROP
in view
SLR

DKO

DKO Architecture (NSW) Pty Ltd
[illegible]
NSW Nominated Architects
[illegible]

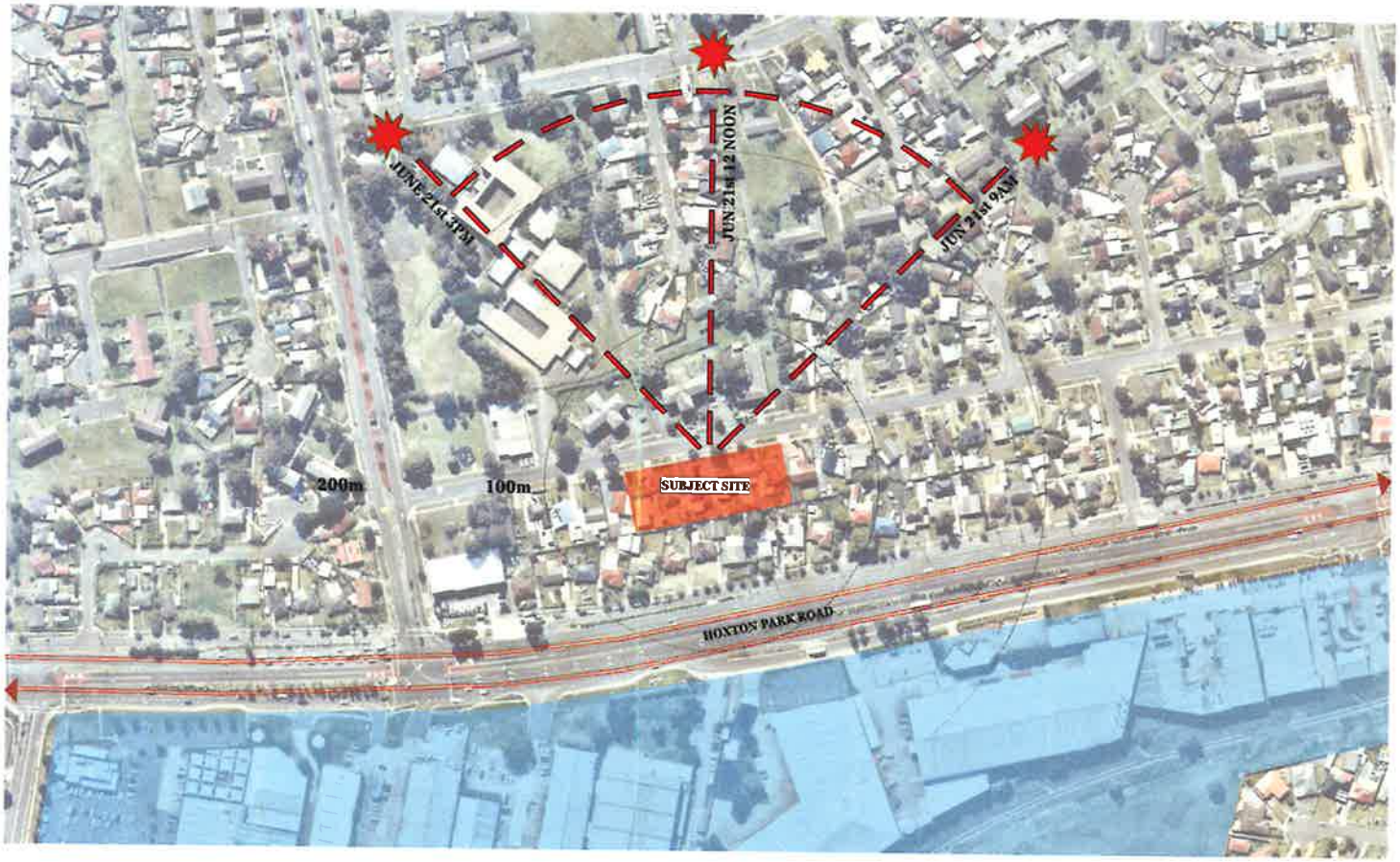
Project Name: [illegible]
Project Number: [illegible]
Project Address: [illegible]

Drawn By: [illegible]
Checked By: [illegible]
Date: [illegible]
Scale: [illegible]

Drawing Series: [illegible]
Drawing Name: Cover Page
Title Page

Drawing Number DA000
Revision B

N




Key

- 12-22 Willan Drive, Cartwright
- Non-Residential Typology
- Main Road

Site Analysis

7.6
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0001855840
Assessor Name: Amir Girgis
Accreditation no.: 20579
Certificate date: 31 August 2017
Dwelling Address: 12-22 Willan Drive Cartwright, NSW 2168

www.nathers.gov.au

ABSA Class 2 Building Multi-Unit

| | |
|---|---|
| Validation Number | 1011315676 |
| Validation Date | 10/06/2017 |
| Assessor Name | Amir Girgis |
| Assessor Number | 20579 |
| Assessor Signature | |

Simulated under BASIX Thermal Comfort Protocol
BASIX

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE DATA

| Rev. | Date | By | Chk. | Description |
|---|---|---|---|---|
| A | 30/06/17 | JG | | Issue For Development Application |

Client Details
SGCH St George Community Housing

Consultants
idealgroup
NORTHROP
In view
FloodMill
SLR

DKO

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ABN: 61 959 796 990

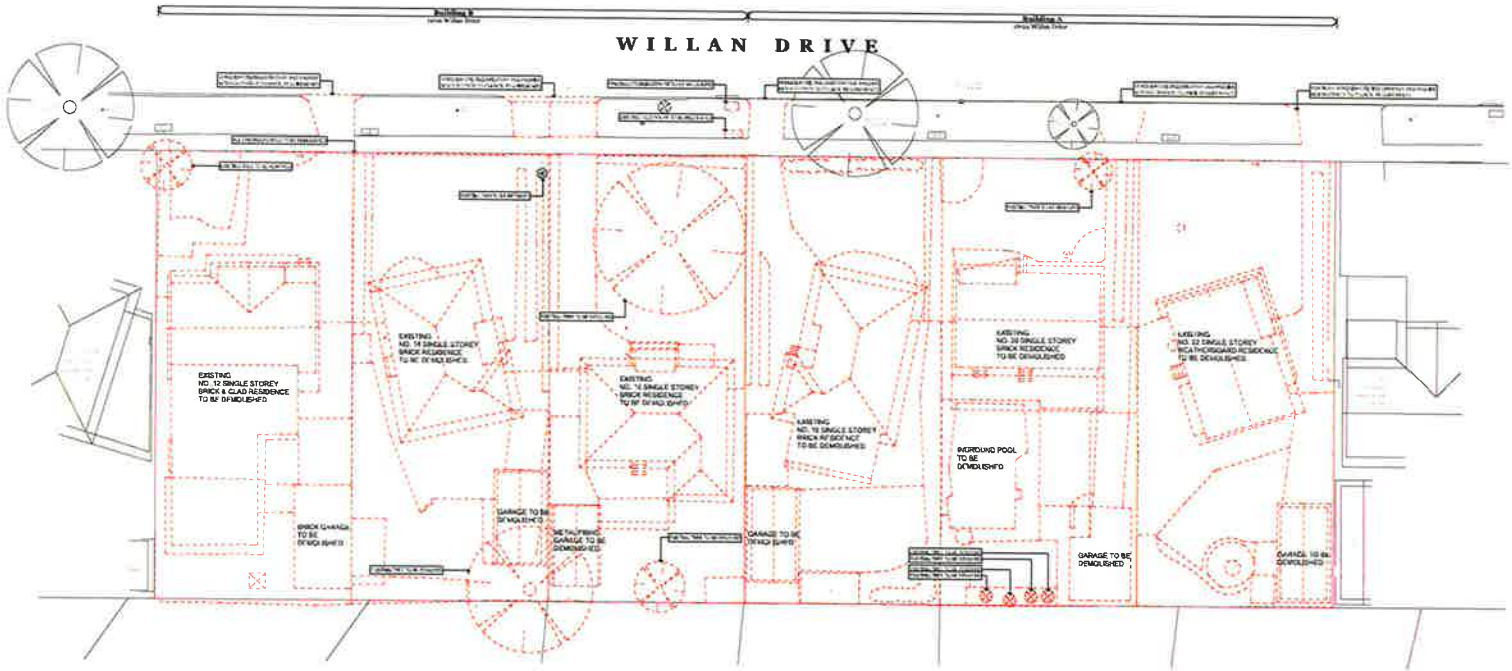
NSW Nominated Architects
Koen de Keijzer 5767 &
David Randerson 6342

Project Name: SGCH Willan Drive
Project Number: 11534
Project Address: 12-22 Willan Drive, Cartwright, NSW 2168
Drawn By: JG
Checked By: JL
Date: 06/06/17
Scale: 1:200@A1

Drawing Series: Site Series
Drawing Name: Site Analysis

Drawing Number: DA100
Revision: A

N




Demolition Plan

7.6
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0001855840
Assessor Name: Amir Girgis
Accreditation no.: 20579
Certificate date: 31 August 2017
Dwelling Address
12-22 Willan Drive
Cartwright, NSW
2168

www.nathers.gov.au

ABSA Class 2 Building Multi-Unit

| | |
|---|---|
| Validation Number | 1011315676 |
| Validation Date | 10/08/2017 |
| Assessor Name | Amir Girgis |
| Assessor Number | 20579 |
| Assessor Signature | |

Declared under BASIX Thermal Comfort Protocol
BASIX

| Rev. | Date | By | Chk | Description |
|---|---|---|---|---|
| A | [illegible] | AG | [illegible] | [illegible] |

Client Details
[illegible]

Consultants
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NORTHROP
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SLR
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NSW Nominated Architects
Sam de Keijzer 5707 &
David Sanderson 5544

Project Name: 8X20 Willan Drive
Project Number: 16[illegible]
Project Address: 12-22 Willan Drive Cartwright, NSW 2168

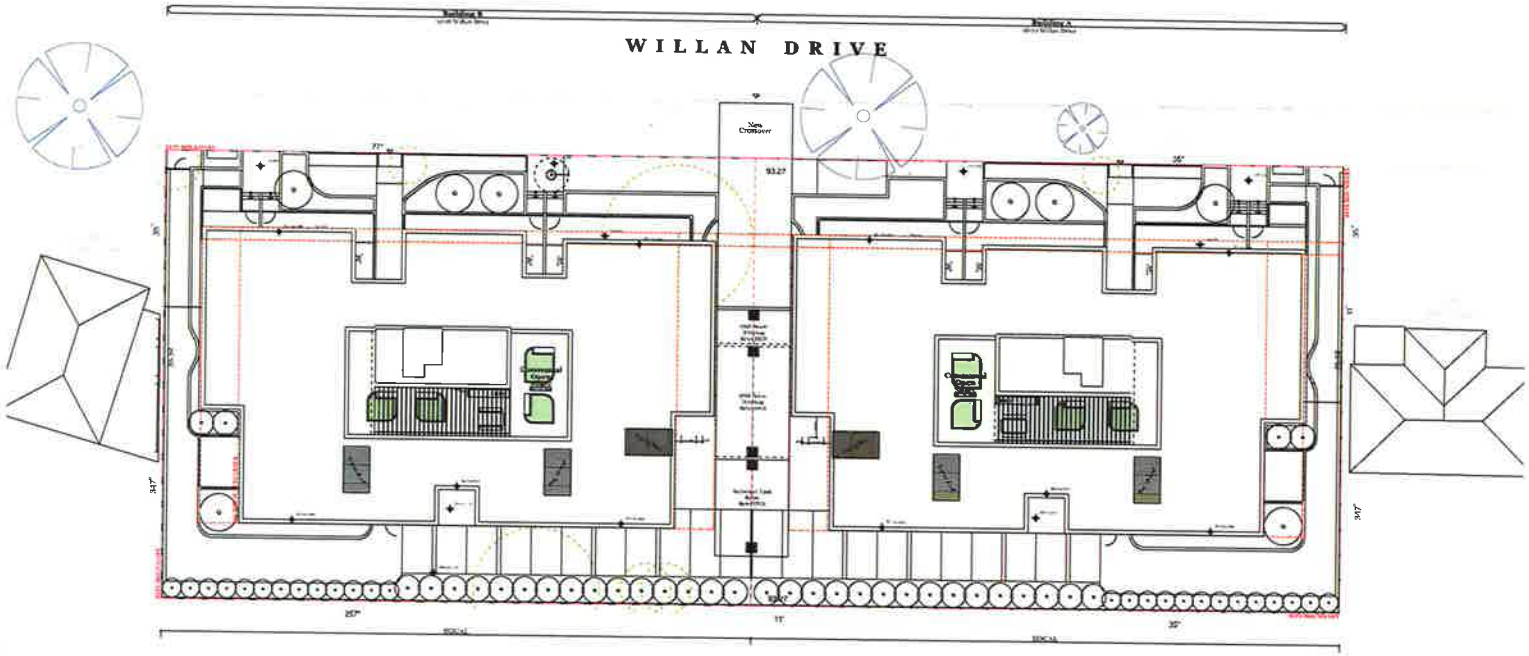
Drawn By: AG
Checked By: IL
Date: 08/08/17
Scale: 1:200@A1

Drawing Series: Site Series
Drawing Name: Demolition Plan

Drawing Number: DA102
Revision: A

N

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE DATA.




Site Plan

| Rev | Date | By | Chk | Description |
|---|---|---|---|---|
| | | | | |

Client Details

Consultants

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ABN: 41 056 780 590

NSW Nominated Architects
Jennifer Kerner 5747
David Rutherford 6561

| | |
|---|---|
| Project Name | BASIX Willan Drive |
| Project Number | 16534 |
| Project Address | 12-22 Willan Drive, Cartwright, NSW 2168 |
| Drawn By | JO |
| Checked By | JL |
| Date | 08/08/17 |
| Scale | 1:200@A1 |
| Drawing Series | Site Series |
| Drawing Name | Site Plan |

Drawing Number DA101
Revision A

N

7.6
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

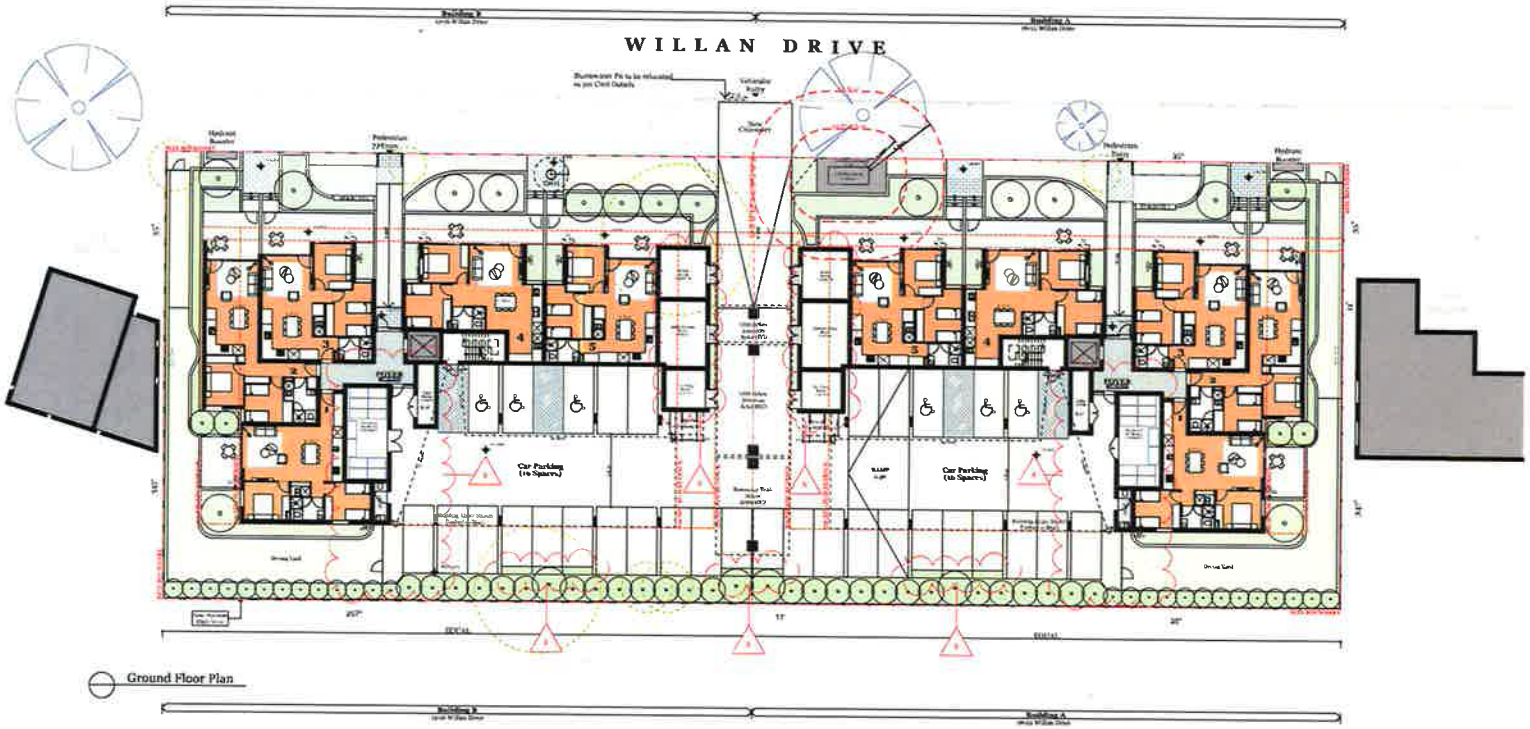
| | |
|---|---|
| Certificate no.: | 0001855840 |
| Assessor Name | Amir Girgis |
| Accreditation no. | 20579 |
| Certificate date: | 31 August 2017 |
| Dwelling Address | 12-22 Willan Drive Cartwright, NSW 2168 |

www.nathers.gov.au

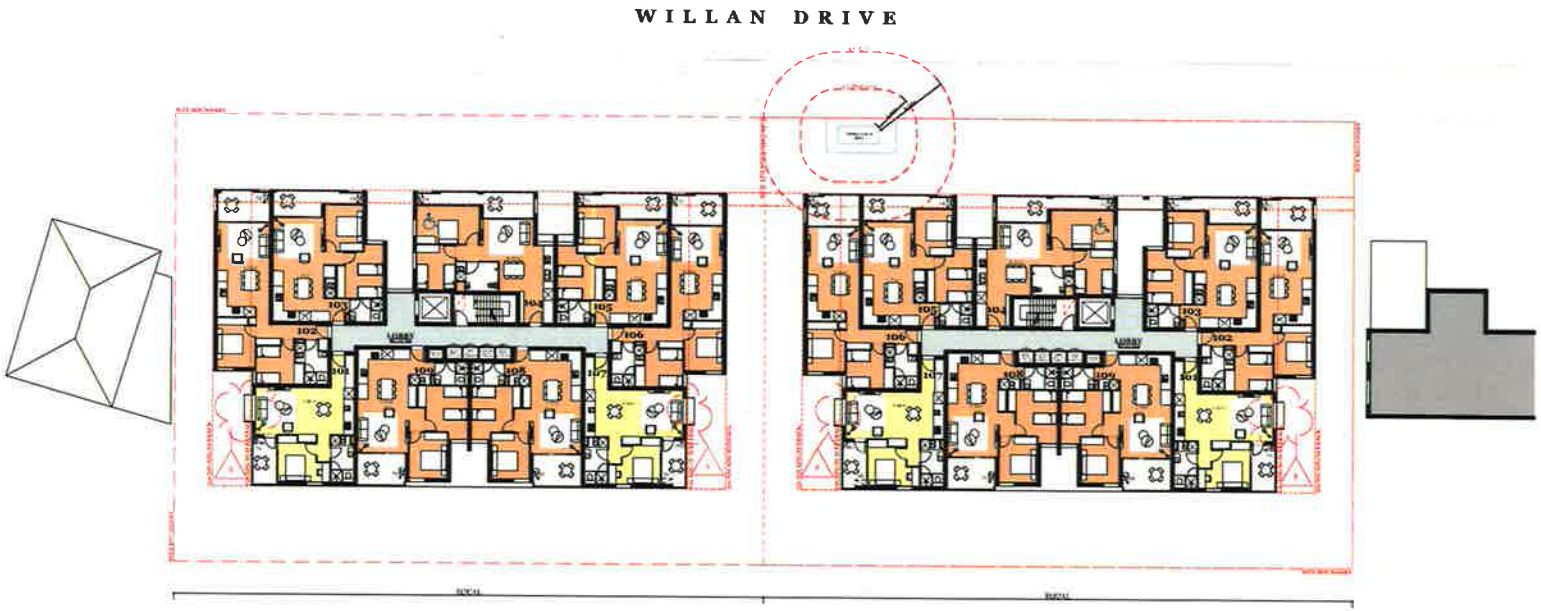
ABSA Class 2 Building Multi-Unit

| | |
|---|---|
| Validation Number | 1011315676 |
| Validation Date | 10/08/2017 |
| Assessor Name | Amir Girgis |
| Assessor Number | 20579 |
| Assessor Signature | |

Simulated under BASIX Thermal Comfort Protocol
BASIX




Ground Floor Plan




First & Second Floor Plans

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE DATA.

| Rev. | Date | By | Chk | Description |
|---|---|---|---|---|
| A | [illegible] | JC | L | [illegible] |
| B | [illegible] | JC | L | [illegible] |

Client Details
SGCH St George Community Housing

T +61 2 9585 1699
E info@sgch.com.au

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[illegible]

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ABN: 51 150 709 590

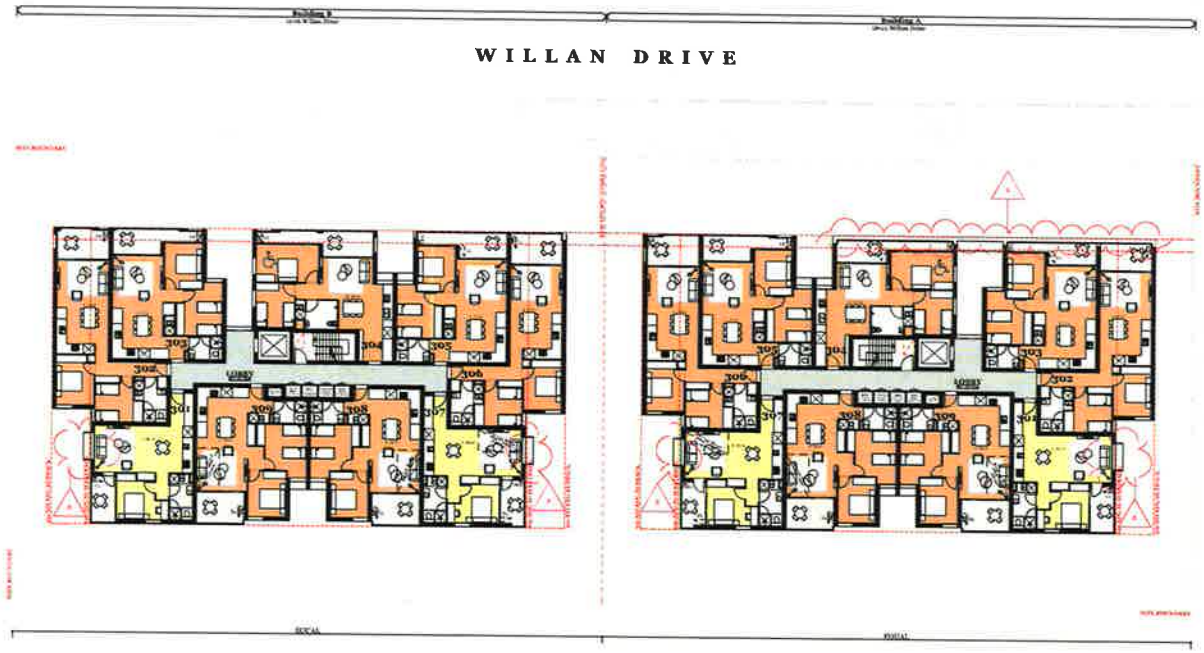
NSW Nominated Architects
Scott de Rochford 5787
Gavin Sandstrom 6360

| | |
|---|---|
| Project Name | SGCH Willan Drive |
| Project Number | 15534 |
| Project Address | 10-12 Willan Drive, Cottesloe, NSW 2108 |
| Drawn By | JO |
| Checked By | LL |
| Date | |
| Scale | [illegible] |

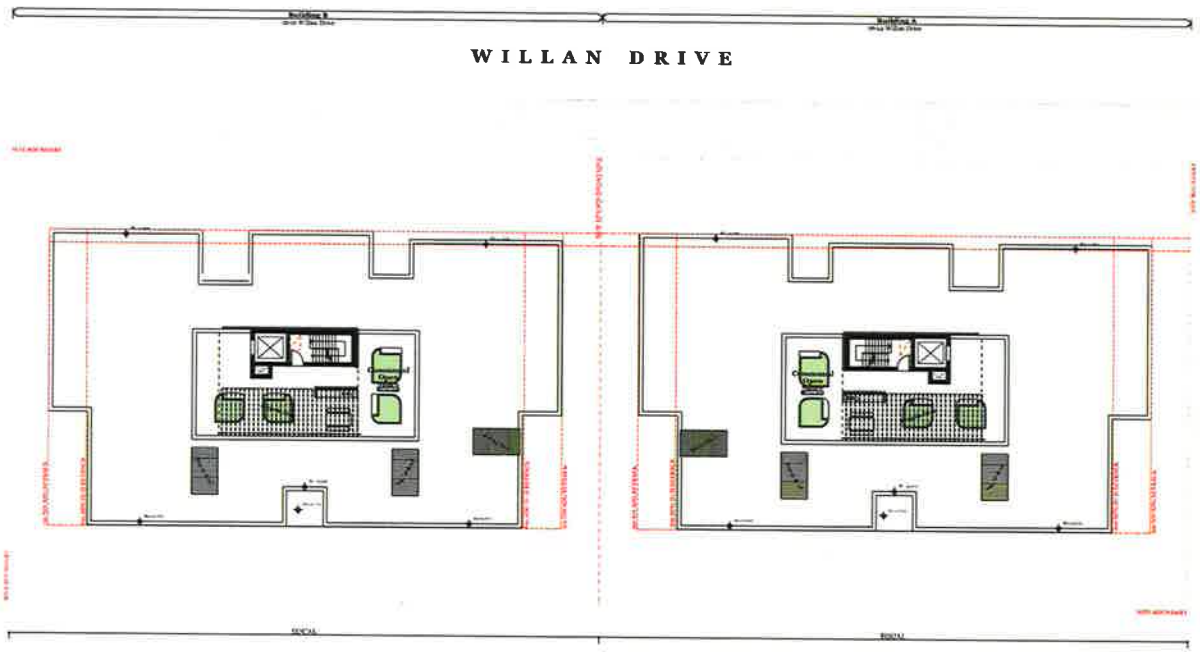
| | |
|---|---|
| Drawing Series | Plans |
| Drawing Name | Ground - Level 2 Plans |

Drawing Number DA200
Revision B

N




Level 3 Floor Plan




Roof Level Plan

| Rev. | Date | By | Chk. | Description |
|---|---|---|---|---|
| A | 23/06/2017 | AJ | JL | Issue 1 - Development Application |
| B | 18/Oct/17 | AJ | JL | Issue 2 - Development Application |

Client Details
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E office@ssg.com.au
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ABN: 81 056 706 590

NSW Nominated Architects
Kees de Reijger 5367 &
David Sandstrom 6344

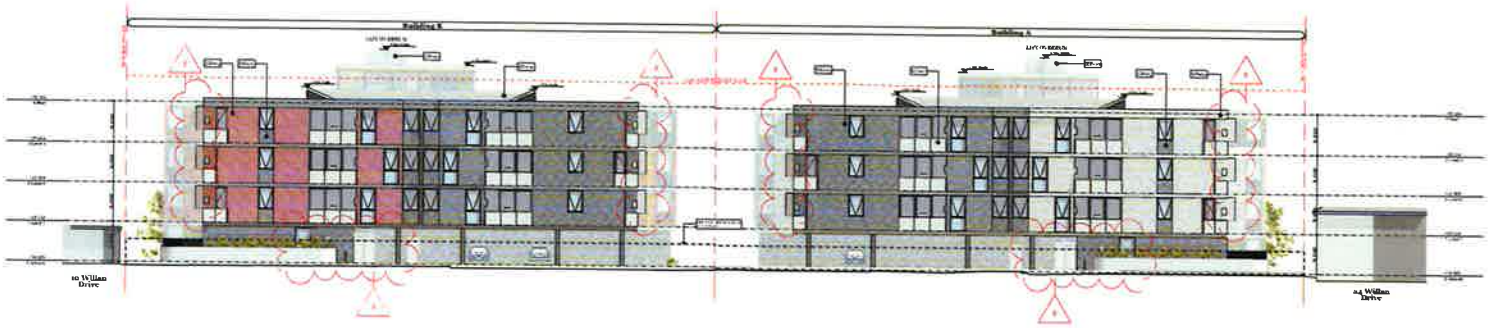
| | |
|---|---|
| Project Name | SGCH Willan Street |
| Project Number | 11234 |
| Project Address | 12-16 Willan Drive, Cartwright, NSW 2168 |
| Drawn By | AJ |
| Checked By | JL |
| Date | |
| Scale | 1:200@A1 |

| | |
|---|---|
| Drawing Series | Plans |
| Drawing Name | Level 03 - Roof Plans |

Drawing Number **DA201**
Revision **B**

N

North Elevation




South Elevation

**External Finishes Legend**

- EF-01: Mid-Grey Paint
- EF-02: White Paint
- EF-03: Colorbond Grey
- EF-04: Brownish-Red Brick
- EF-05: Dark-Grey Brick
- EF-06: White Brick
- EF-07: Translucent Glass Balustrade
- EF-08: Powder Coated Metal Screens
- EF-09: Metal Fence
- EF-10: Light Grey Paint

| Rev. | Date | By | Chk | Description |
|---|---|---|---|---|
| A | [illegible] | [illegible] | [illegible] | [illegible] |
| B | [illegible] | [illegible] | [illegible] | [illegible] |

Client Details
SGCH St George Community Housing

Consultants
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CAT
in view
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ABN: 81 136 700 390

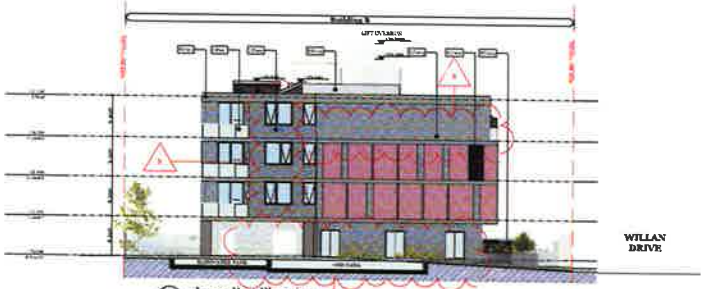
NSW Nominated Architects
Kate de Keijzer 5707 &
David Randmann 6541

| | |
|---|---|
| Project Name | 50-51 Willan Drive |
| Project Number | 11834 |
| Project Address | 10-12 Willan Drive, Carlingford, NSW 2118 |
| Drawn By | JU |
| Checked By | B. |
| Date | |
| Scale | 1:200 @ A1 |

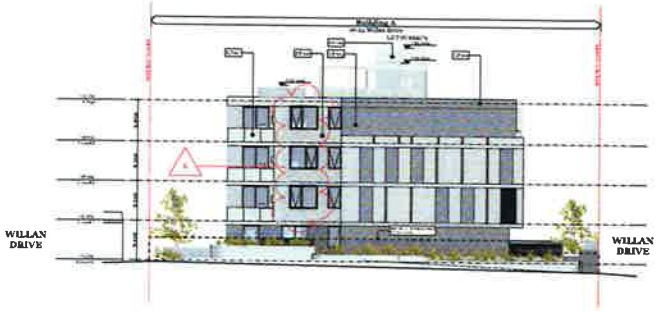
| | |
|---|---|
| Drawing Series | Elevations & Sections |
| Drawing Name | Elevations |

Drawing Number **DA400**
Revision **B**

West Elevation



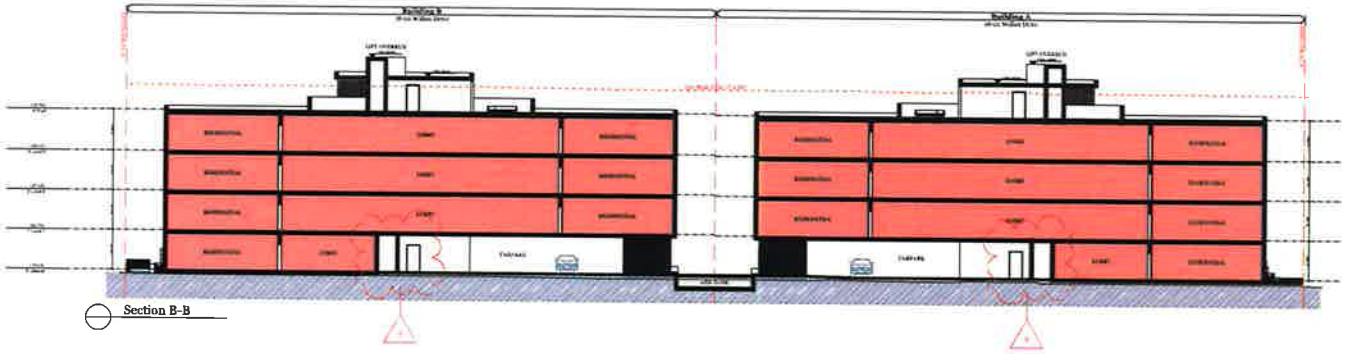

Inner-East Elevation




East Elevation

Inner-West Elevation

Section A-A



Section B-B

**External Finishes Legend**

- EF-01: Mid-Grey Paint
- EF-02: White Paint
- EF-03: Colorbond Grey
- EF-04: Brownish-Red Brick
- EF-05: Dark-Grey Brick
- EF-06: White Brick
- EF-07: Translucent Glass Balustrade
- EF-08: Powder Coated Metal Screens
- EF-09: Metal Fence
- EF-10: Light Grey Paint

| Rev. | Date | By | Chk. | Description |
|---|---|---|---|---|
| A | 14 Feb 01 | AC | IL | Issued for Development Application |
| B | 19 Feb 01 | AC | IL | Issued for Development Application |

Client Details
T +61 2 9295 9555
E office@dko.com.au
SGCH St George Community Housing

Consultants
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ABN. 81 956 706 590

NSW Nominated Architects
Koen de Keizer 5707 &
David Randerson 6540

| | |
|---|---|
| Project Name | SGCH Willan Drive |
| Project Number | 15134 |
| Project Address | 10-12 Willan Drive, Cartwright, NSW 2168 |
| Drawn By | JO |
| Checked By | IL |
| Date | |
| Scale | 1:200@A1 |

| | |
|---|---|
| Drawing Series | Elevations & Sections |
| Drawing Name | Elevations & Section |

| | |
|---|---|
| Drawing Number | DA401 |
| Revision | B |

**External Finishes Legend**

- EF-01: Mid-Grey Paint
- EF-02: White Paint
- EF-03: Colorbond Grey
- EF-04: Brownish-Red Brick
- EF-05: Dark-Grey Brick
- EF-06: White Brick
- EF-07: Translucent Glass Balustrade
- EF-08: Powder Coated Metal Screens
- EF-09: Metal Fence
- EF-10: Light Grey Paint

| Rev. | Date | By | Chk | Description |
|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

Client Details
[illegible]
[illegible]

Consultants
[illegible]
NORTHROP
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CAT
in view
FloodMII
SLR
[illegible]

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ABN: 81 456 700 590

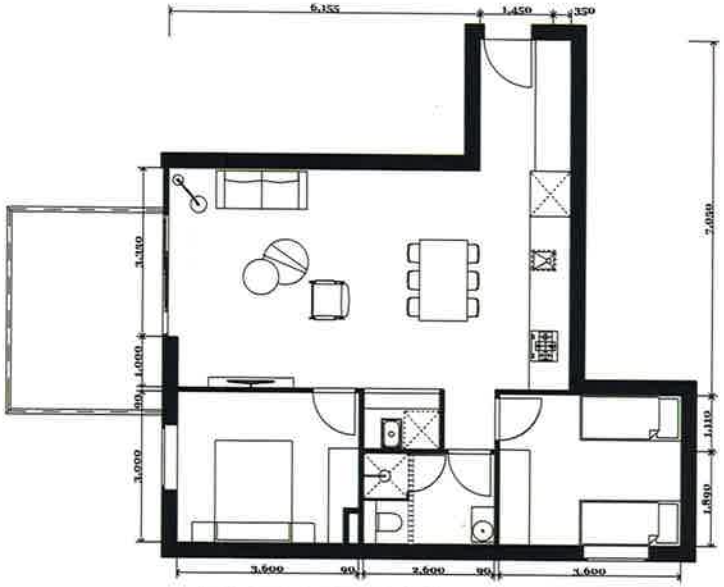
NSW Nominated Architects
Justin M. Kellett 5767 R
David Bendemann 6544

| | |
|---|---|
| Project Name | 50-51 Willan Drive |
| Project Number | 19134 |
| Project Address | 12-20 Willan Drive Carrington, NSW 2168 |
| Drawn By | JD |
| Checked By | JL |
| Date | [illegible] |
| Scale | 1:200 @ A1 |

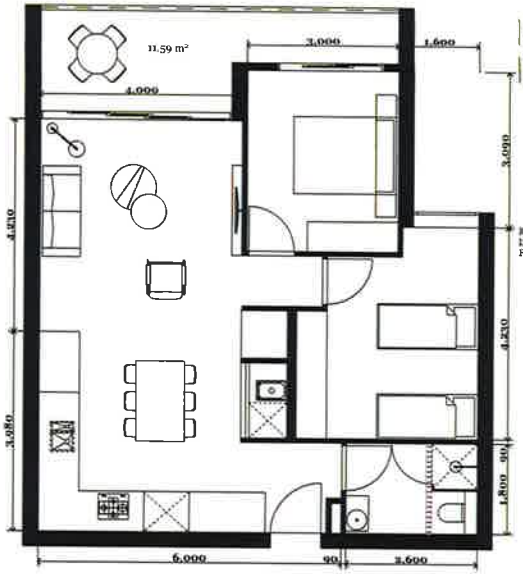
| | |
|---|---|
| Drawing Series | Elevations & Sections |
| Drawing Name | Perspectives |

Drawing Number **DA402**
Revision **B**

Unit Type 1



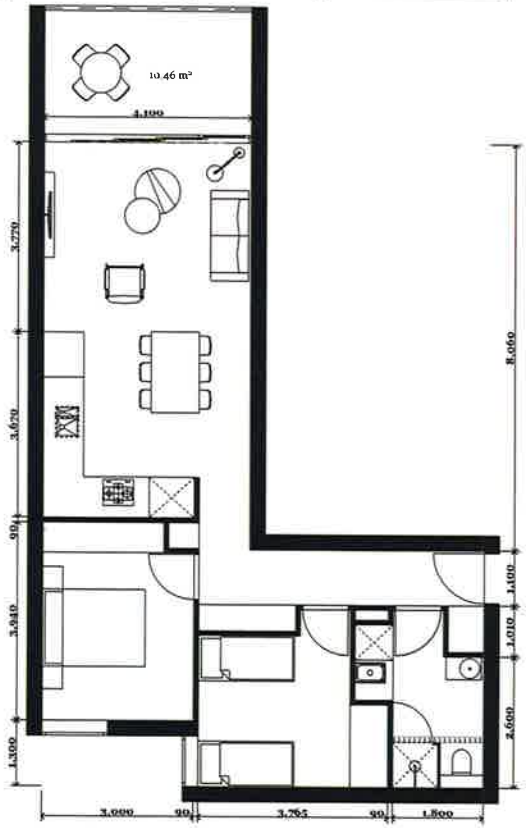

Unit Type 2



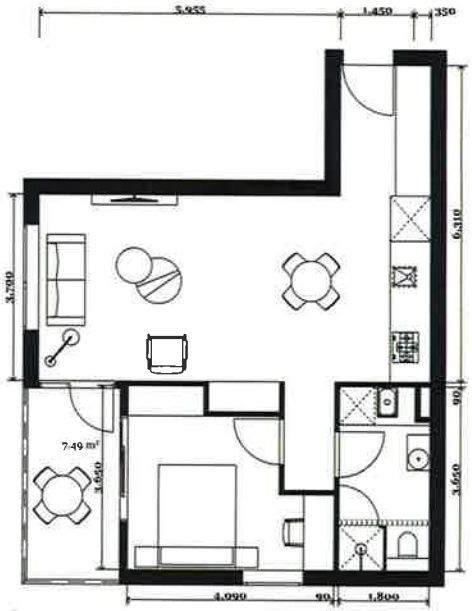

Unit Type 3

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE DATA.

| Rev. | Date | By | Chk | Description |
|---|---|---|---|---|
| - | [illegible] | [illegible] | [illegible] | [illegible] |




Unit Type 4




Unit Type 5

7.6

Average star rating

NATIONWIDE HOUSE ENERGY RATING SCHEME

www.nathers.gov.au

| | |
|---|---|
| Certificate no.: | 0001855840 |
| Assessor Name: | Amir Girgis |
| Accreditation no.: | 20579 |
| Certificate date: | 31 August 2017 |
| Dwelling Address: | 12-22 Willan Drive Cartwright, NSW 2168 |

www.nathers.gov.au

ABSA Assessor Training Community Association

Class 2 Building Multi-Unit

| | |
|---|---|
| Validation Number | 1011315676 |
| Validation Date | 10/08/2017 |
| Assessor Name | Amir Girgis |
| Assessor Number | 20579 |
| Assessor Signature | |

Simulated under BASIX Thermal Comfort Protocol

BASIX

Client Details
SGCH St George Community Housing

Consultants
[illegible]
NORTHROP
[illegible]
GAT
in view
FloodMit
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www.dko.com.au
ABN. 81 136 700 590

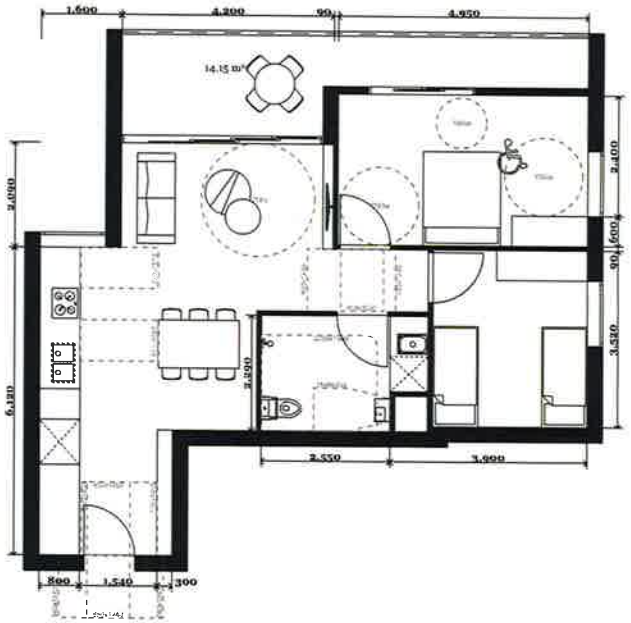
NSW Nominated Architects
Koen de Keijzer 5767 &
David Batalleman 6544

| | |
|---|---|
| Project Name | 8-22 Willan Drive |
| Project Number | 15234 |
| Project Address | 12-22 Willan Drive Cartwright, NSW 2168 |
| Drawn By | JO |
| Checked By | IL |
| Date | 08/08/17 |
| Scale | 1:200@A1 |
| Drawing Status | Apartment Types |
| Drawing Name | Typical Units |

Drawing Number DA300
Revision A

N

Unit Type 6
Pre-Adapted




Unit Type 6
Post-Adapted

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE DATA.

| Rev. | Date | By | Chk. | Description |
|---|---|---|---|---|
| A | [illegible] | AG | [illegible] | [illegible] |

Client Details
SGCH St George Community Housing

Consultants
[illegible]
NORTHROP
CAT
FloodMit
SLR
in view

DKO

DKO Architecture (NSW) Pty Ltd
13a Redfern Street
Redfern, NSW 2016
T +61 2 9368 4300
info@dko.com.au
www.dko.com.au
ABN: 81 958 706 590

NSW Nominated Architects
Jason de Avillar 5767 &
David Kanderman 6544

Project Name: [illegible]
Project Number: [illegible]
Project Address: [illegible]

Drawn By: AG
Checked By: IL
Date: 06/04/17
Scale: 1:200@A1

Drawing Series: Apartment Types
Drawing Name: Adaptable Units

Drawing Number: DA301
Revision: A

N

Certificate no.: 0001855840
Assessor Name: Amir Girgis
Accreditation no.: 20579
Certificate date: 31 August 2017
Dwelling Address: 12-22 Willan Drive Cartwright, NSW 2168

7.6
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

www.nathers.gov.au

ABSA Class 2 Building Multi-Unit

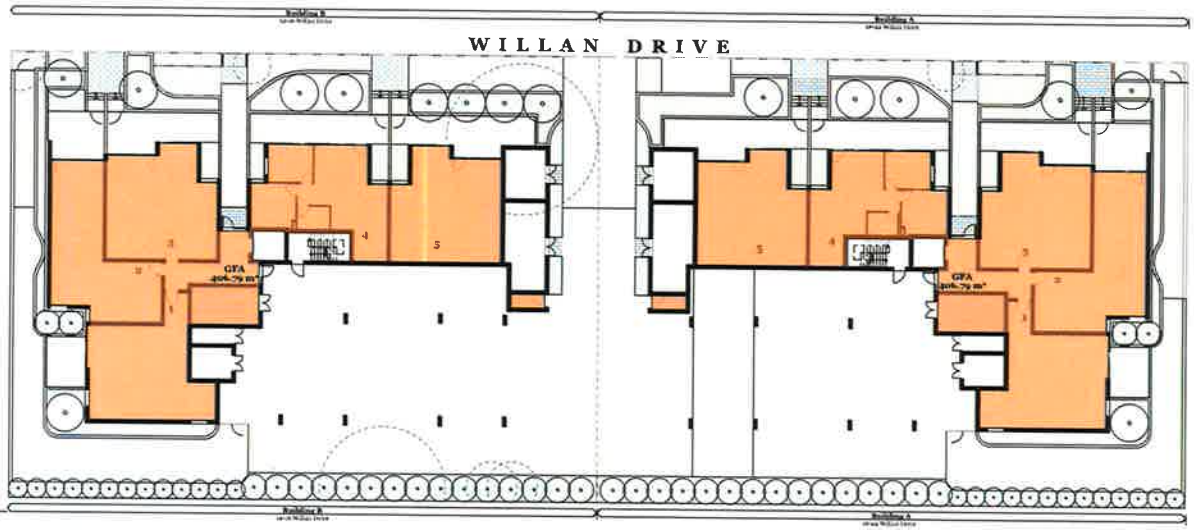
| | |
|---|---|
| Validation Number | 1011315876 |
| Validation Date | 10/08/2017 |
| Assessor Name | Amir Girgis |
| Assessor Number | 20579 |
| Assessor Signature | |

Simulated using ABSA Thermal Comfort Protocol
BASIX

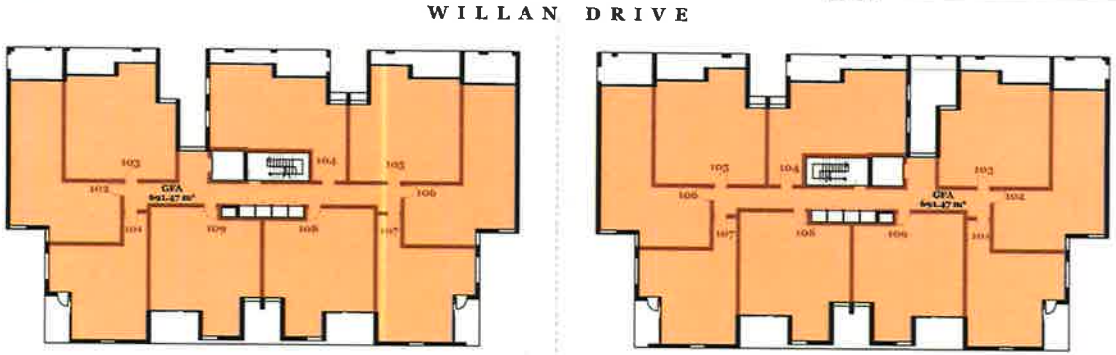
**GFA CALCULATION**
Total Site - 12 - 22 Willan Drive
Permissible GFA = 4970m²
Proposed GFA = **4962m²**

**LEGEND**

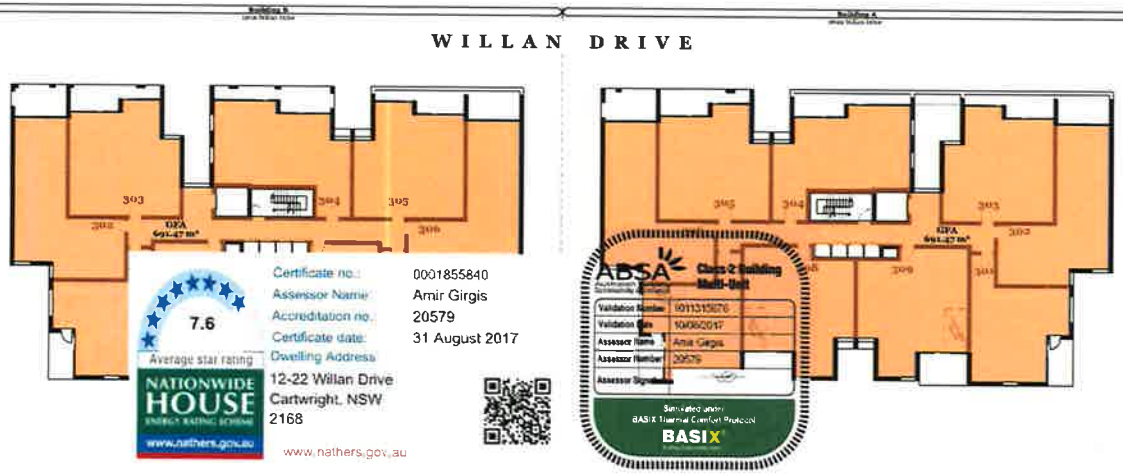
Areas included in the GFA calculation




Ground Level




Levels 1 & 2




Level 3

ABSA Class 2 Building Multi-Unit

| | |
|---|---|
| Validation Number | 1011315876 |
| Validation Date | 10/08/2017 |
| Assessor Name | Amir Girgis |
| Assessor Number | 20579 |
| Assessor Signature | |

Simulated under BASIX Thermal Comfort Protocol
BASIX

7.6
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

| | |
|---|---|
| Certificate no.: | 0001855840 |
| Assessor Name: | Amir Girgis |
| Accreditation no.: | 20579 |
| Certificate date: | 31 August 2017 |
| Dwelling Address | 12-22 Willan Drive Cartwright, NSW 2168 |

www.nathers.gov.au

ABSA Class 2 Building Multi-Unit

| | |
|---|---|
| Validation Number | 1011315876 |
| Validation Date | 10/08/2017 |
| Assessor Name | Amir Girgis |
| Assessor Number | 20579 |
| Assessor Signature | |

Simulated under BASIX Thermal Comfort Protocol
BASIX

| Rev. | Date | By | Chk. | Description |
|---|---|---|---|---|

Client Details
SGCH St George Community Housing

Consultants
NORTHROP
in view
SLR

DKO

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19 Anderson Street
Sydney, NSW 2010
T +61 2 9326 4500
info@dko.com.au
www.dko.com.au
ABN: 61 656 700 590

NSW Nominated Architects
Koen de Keijzer 5787 &
David Randebrook 8342

| | |
|---|---|
| Project Name | SGCH Willan Drive |
| Project Number | 18934 |
| Project Address | 12-22 Willan Drive, Cartwright, NSW 2168 |
| Drawn By | JD |
| Checked By | IL |
| Date | 08/08/17 |
| Scale | 1:200@A1 |
| Drawing Series | Calculations |
| Drawing Number | GFA Calculations |

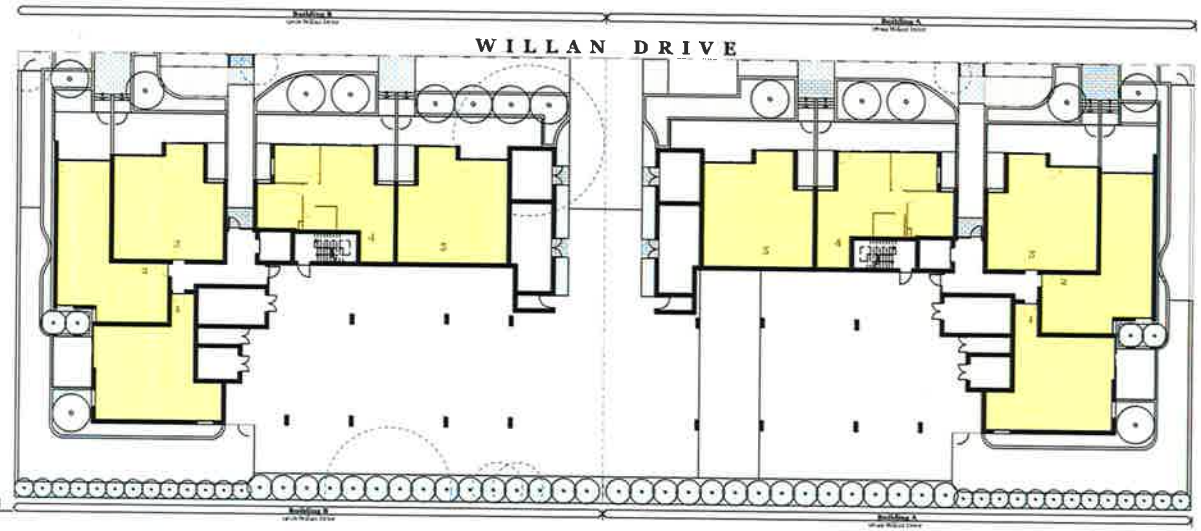
Drawing Number **DA500**
Revision **A**

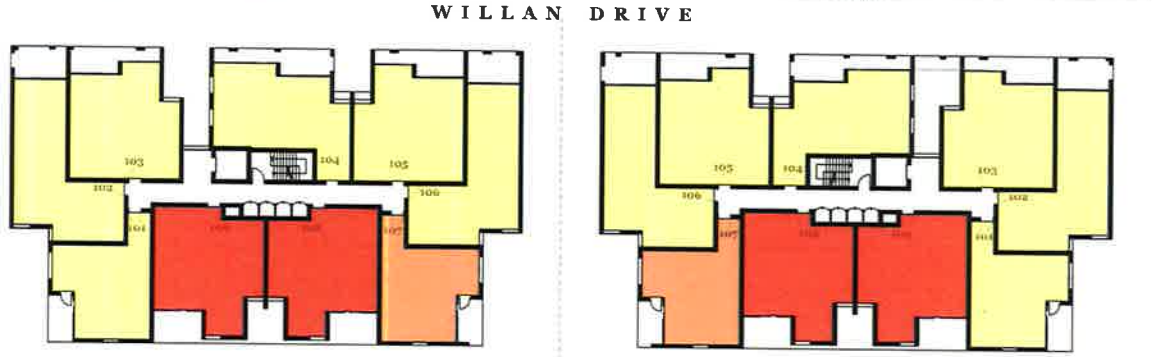
N

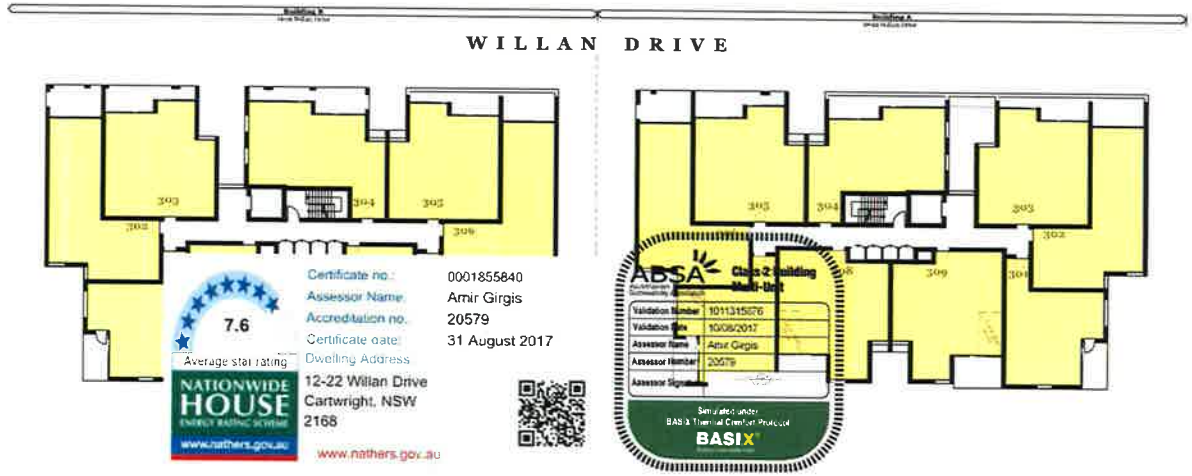
**SOLAR ACCESS**
SEPP 65 -
70% of residential units should have solar access for more than 2 hours
**81.25%** of residential units have solar access for more than 2 hours
**NO SOLAR ACCESS**
SEPP 65 -
15% of residential units should receive no sunlight
**12.5%** of residential units receive no sunlight

**LEGEND**

- Apartments receiving more than 2 hours of sunlight
- Apartments receiving less than 2 hours of sunlight
- Apartments receiving no direct sunlight




ABSA Class 2 Building Multi-Unit

| | |
|---|---|
| Validation Number | 1011315676 |
| Validation Date | 10/08/2017 |
| Assessor Name | Amir Girgis |
| Assessor Number | 20579 |
| Assessor Signature | |

Simulated under BASIX Thermal Comfort Protocol
BASIX

7.6
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

| | |
|---|---|
| Certificate no.: | 0001855840 |
| Assessor Name: | Amir Girgis |
| Accreditation no.: | 20579 |
| Certificate date: | 31 August 2017 |
| Dwelling Address | 12-22 Willan Drive Cartwright, NSW 2168 |

www.nathers.gov.au

ABSA Class 2 Building Multi-Unit

| | |
|---|---|
| Validation Number | 1011315676 |
| Validation Date | 10/08/2017 |
| Assessor Name | Amir Girgis |
| Assessor Number | 20579 |
| Assessor Signature | |

Simulated under BASIX Thermal Comfort Protocol
BASIX

Rev | Date | By | Chk | Description

Client Details
SGCH St George Community Housing

Consultants
NORTHROP
in view
SLR

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Project Name
Project Number
Project Address

Drawing By
Checked By
Date
Scale

Drawing Series
Drawing Name

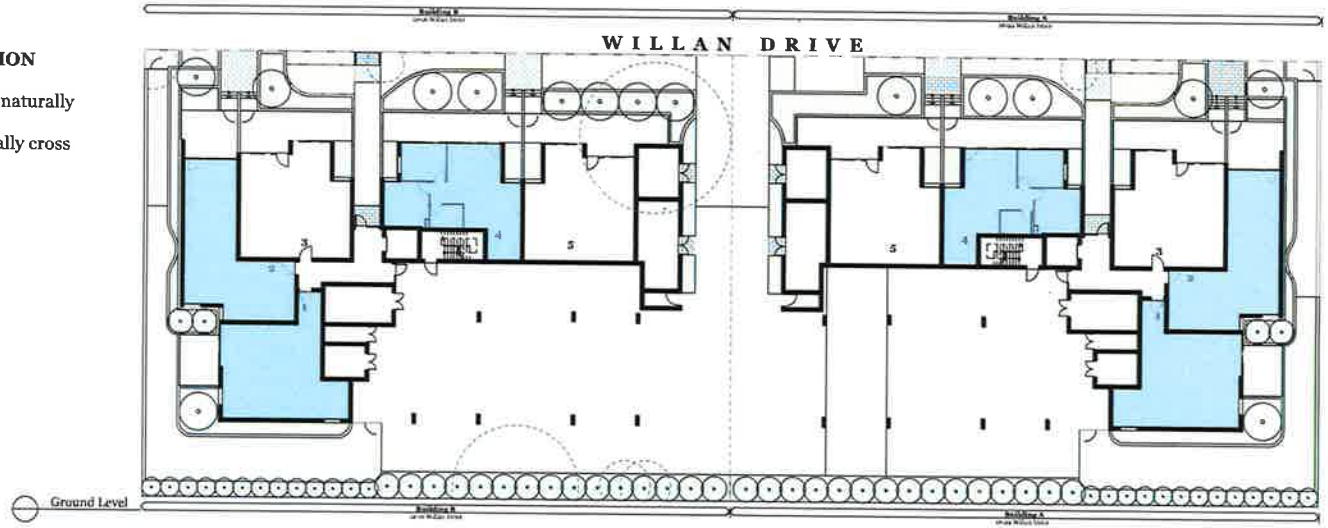
Drawing Number DA501
Revision A

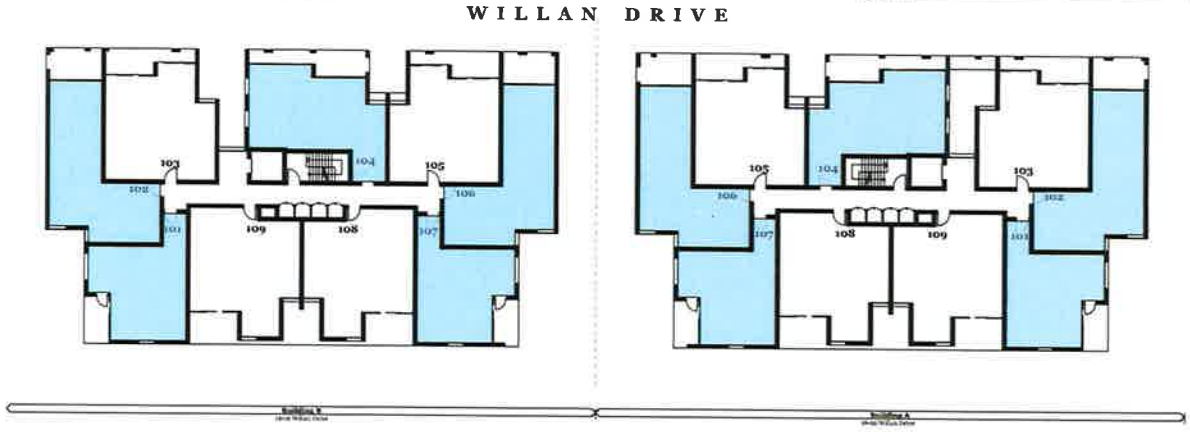
N

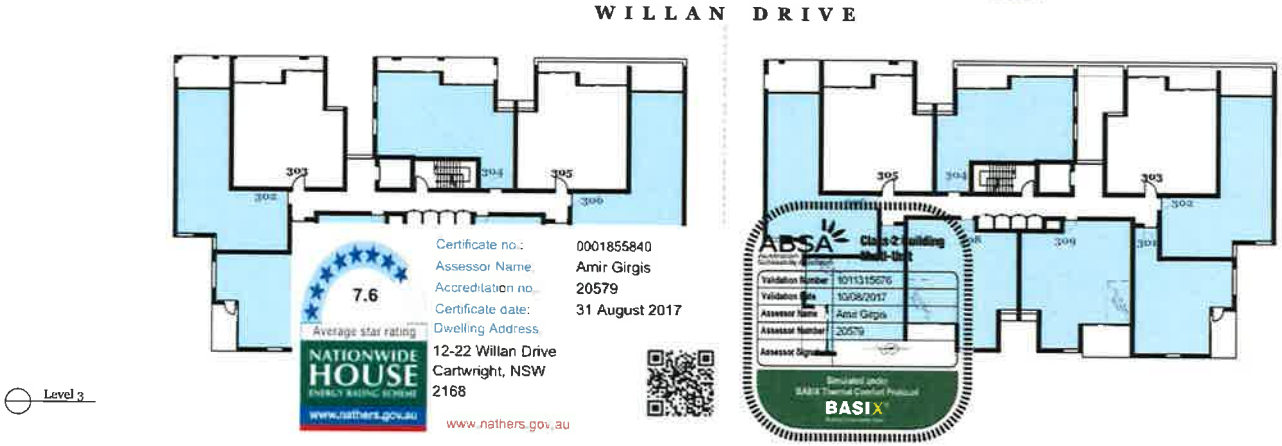
**NATURAL CROSS VENTILATION**
SEPP 65 -
60% of residential units should be naturally cross ventilated
**63%** of residential units are naturally cross ventilated

**LEGEND**

Cross ventilated apartments




ABSA Class 2 Building Multi-Unit

| | |
|---|---|
| Validation Number | 1011315676 |
| Validation Date | 10/08/2017 |
| Assessor Name | Amir Girgis |
| Assessor Number | 20579 |
| Assessor Signature | |

Simulated under BASIX Thermal Comfort Protocol
BASIX

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Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
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Certificate no.: 0001855840
Assessor Name: Amir Girgis
Accreditation no.: 20579
Certificate date: 31 August 2017
Dwelling Address: 12-22 Willan Drive Cartwright, NSW 2168

www.nathers.gov.au

ABSA Class 2 Building Multi-Unit

| | |
|---|---|
| Validation Number | 1011315676 |
| Validation Date | 10/08/2017 |
| Assessor Name | Amir Girgis |
| Assessor Number | 20579 |
| Assessor Signature | |

Simulated under BASIX Thermal Comfort Protocol
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| Rev. | Date | By | Chk. | Description |
|---|---|---|---|---|

Client Details

Consultants
NORTHROP
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T +61 2 9349 4500
www.dko.com.au
ABN 40 150 786 390

NSW Nominated Architects
Kent de Gelder 7287 &
David Sandstrom 6366

Project Name: ROCH Willan Drive
Project Number: 11234
Project Address: 12-22 Willan Drive Cartwright, NSW 2168
Drawn By: JO
Checked By: IL
Date: 08/08/17
Scale: 1:200@A1

Drawing Series:
Drawing Name: Cross Ventilation Calculation

Drawing Number: DA502
Revision: A

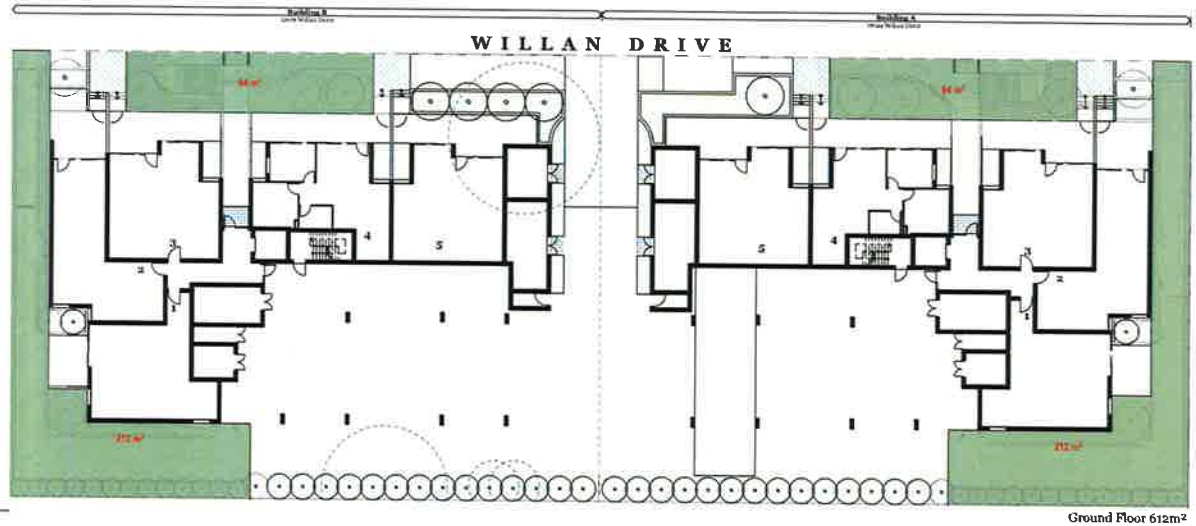
N

**COMMUNAL OPEN SPACE**
SEPP 65 -
Total Site - 12-22 Willan Drive
Required Communal Open Space (25%) = 828m²

Proposed Communal Open Space (26%) = **850m²**

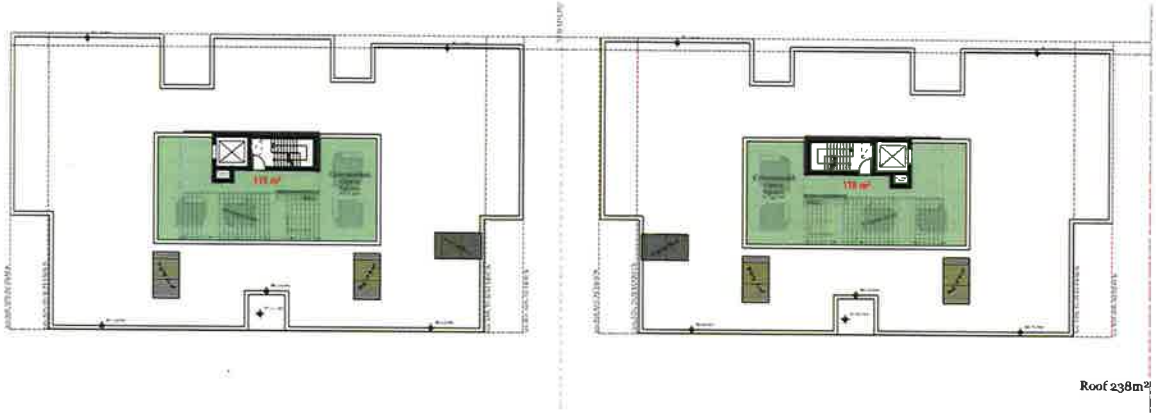
**LEGEND**

Areas included in the communal open space calculations




Ground Level

Ground Floor 612m²



Levels 1 & 2

Roof 238m²

| Rev. | Date: | By. | Chk. | Description |
|---|---|---|---|---|
| | | | | |

Client Details
SGCH St George Community Housing

Consultants
Northrop
Cardno
GAT
in view
Floodmis
SLR

DKO

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19 Roberts Street
Redfern, NSW 2016
T +61 2 8248 4280
info@dko.com.au
www.dko.com.au
ABN: 63 606 700 590

NSW Nominated Architects
Anne de Keijzer 5797 &
David Kendleman 6540

| | |
|---|---|
| Project Name | SGCH Willan Drive |
| Project Number | 15234 |
| Project Address | 12-22 Willan Drive Cartwright, NSW 2168 |
| Drawn By | JO |
| Checked By | IL |
| Date | 08/08/17 |
| Scale | 1:200@A1 |
| Drawing Series | Calculations |
| Drawing Name | Communal Open Space Calculations |
| Drawing Number | DA503 |
| Revision | A |

N

7.6
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0001855840
Assessor Name: Amir Girgis
Accreditation no.: 20579
Certificate date: 31 August 2017
Dwelling Address
12-22 Willan Drive
Cartwright, NSW
2168

www.nathers.gov.au

ABSA
Class 2 Building
Multi-Unit

| | |
|---|---|
| Validation Number | 1011315370 |
| Validation Date | 10/08/2017 |
| Assessor Name | Amir Girgis |
| Assessor Number | 20579 |
| Assessor Signature | |

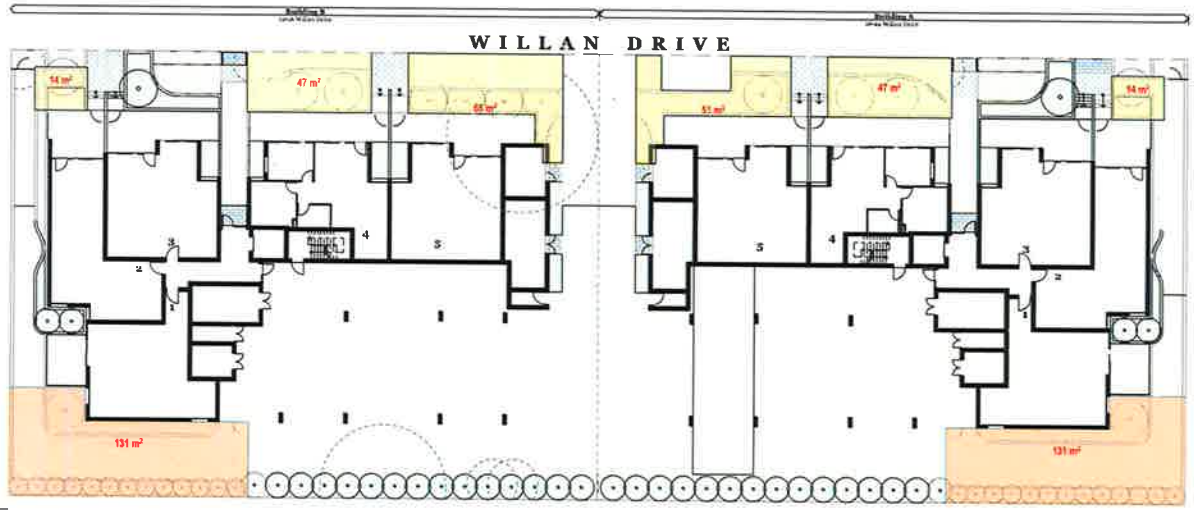
Simulated under BASIX Thermal Comfort Protocol
BASIX

**DEEP SOIL**
SEPP 65 -
Total Site - 12-22 Willan Drive
Required Deep Soil (7%) = 232m²

Proposed Deep Soil (15%) = **501m²**

**LEGEND**

- Areas included in the deep soil calculations with a minimum dimension of 6m (262m²)
- Areas included in the deep soil calculations with a minimum dimension of 3m (excluding the 6m zone) = 239m²




Rev. Date By Chk Description

Client Details
T +61 2 9586 1499
SGCH St George Community Housing

Consultants
NORTHROP
in view
SLR

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T +61 2 8596 4300
mail@dko.com.au
www.dko.com.au
ABN 81 150 700 590

NSW Nominated Architects
Kees de Kuijper 5787 &
David Kanckwitz 6542

Project Name: SGCH Willan Drive
Project Number: 19254
Project Address: 12-22 Willan Drive, Cartwright, NSW 2168

Drawn By: JO
Checked By: IL
Date: 06/09/17
Scale: 1:200@A1

Drawing Series: Calculations
Drawing Name: Deep Soil Zone Calculations

Drawing Number **DA504**
Revision **A**

N

7.6
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0001855840
Assessor Name: Amir Girgis
Accreditation no.: 20579
Certificate date: 31 August 2017
Dwelling Address:
12-22 Willan Drive
Cartwright, NSW
2168

www.nathers.gov.au

ABSA Class 2 Building Multi-Unit

| | |
|---|---|
| Validation Number | 1011315876 |
| Validation Date | 10/08/2017 |
| Assessor Name | Amir Girgis |
| Assessor Number | 20579 |
| Assessor Signature | |

Secured under BASIX Thermal Comfort Protocol
BASIX

**18-22 Willan - Cartwright**
Development Summary

09.08.17

Site Area: 3313 m²
Max GFA (FSR 1.5:1) 4969 m²
ARH SEPP

| BUILDING B 12-16 WILLAN DRIVE | Residential | | | | | GFA |
|---|---|---|---|---|---|---|
| | Studio | 1 bed | 2 bed | 3 bed | Subtotal | |
| | 35m² | 50m² | 70m² | 90m² | | m² |
| Basement 1 | | | | | | |
| Ground | | 0 | 5 | 0 | **5** | 407 |
| Level 1 | | 2 | 7 | 0 | **9** | 691 |
| Level 2 | | 2 | 7 | 0 | **9** | 691 |
| Level 3 | | 2 | 7 | 0 | **9** | 691 |
| Subtotal | 0 | 6 | 26 | 0 | **32** | |
| Proposed Mix | 0% | 19% | 81% | 0% | | |
| Target Mix | 0% | 30% | 60% | 10% | | |
| **GFA Total** | | | | | | **2480** |

| BUILDING A 18-22 WILLAN DRIVE | Residential | | | | | GFA |
|---|---|---|---|---|---|---|
| | Studio | 1 bed | 2 bed | 3 bed | Subtotal | |
| | 35m² | 50m² | 70m² | 90m² | | m² |
| Basement 1 | | | | | | |
| Ground | | 0 | 5 | 0 | **5** | 407 |
| Level 1 | | 2 | 7 | 0 | **9** | 691 |
| Level 2 | | 2 | 7 | 0 | **9** | 691 |
| Level 3 | | 2 | 7 | 0 | **9** | 691 |
| Subtotal | 0 | 6 | 26 | 0 | **32** | |
| Proposed Mix | 0% | 19% | 81% | 0% | | |
| Target Mix | 0% | 30% | 60% | 10% | | |
| **GFA Total** | | | | | | **2480** |

FSR 1.50

| Rev: | Date | By | Chk | Description |
|---|---|---|---|---|
| | | | | |

Client Details
T +61 2 9365 4000
E office@dko.com.au
300N N George Gateway, Mascot

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19 Roberts Street
Redfern, NSW 2016
T +61 2 9365 4000
mail@dko.com.au
www.dko.com.au
ABN: 41 636 700 590

NSW Nominated Architects
Kate de Keijzer 5797 &
David Randerson 6362

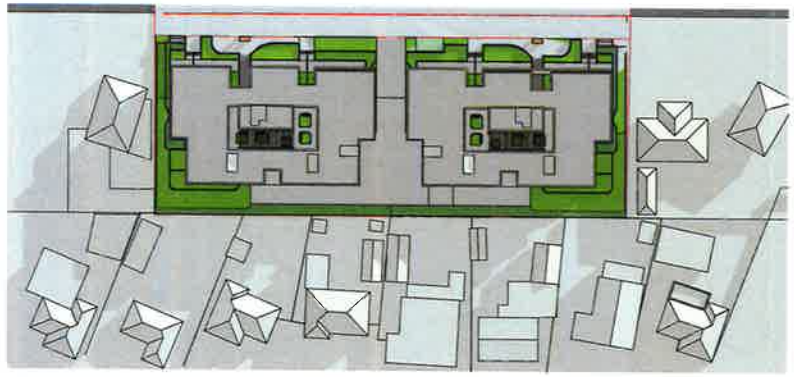
| | |
|---|---|
| Project Name | 18-22 Willan Drive |
| Project Number | 1634 |
| Project Address | 18-22 Willan Drive, Cartwright, NSW 2168 |
| Drawn By | JD |
| Checked By | IL |
| Date | 08/04/17 |
| Scale | 1:200@A1 |
| Drawing Series | Calculations |
| Drawing Name | Development Summary |

Drawing Number DA505
Revision A

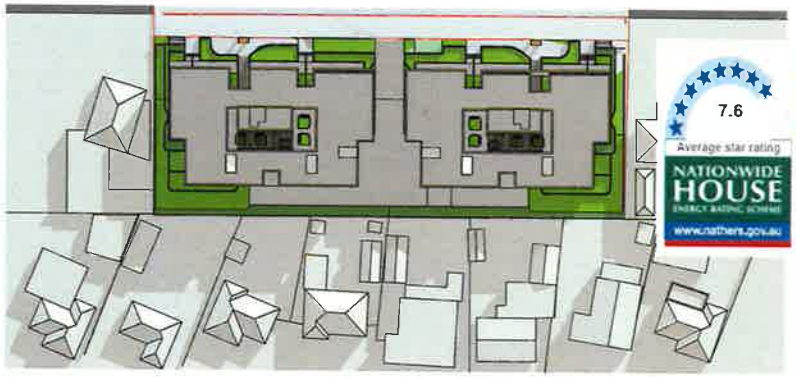
N

Certificate no.: 0001855840
Assessor Name: Amir Girgis
Accreditation no.: 20579
Certificate date: 31 August 2017
Dwelling Address
12-22 Willan Drive
Cartwright, NSW
2168

www.nathers.gov.au



9AM



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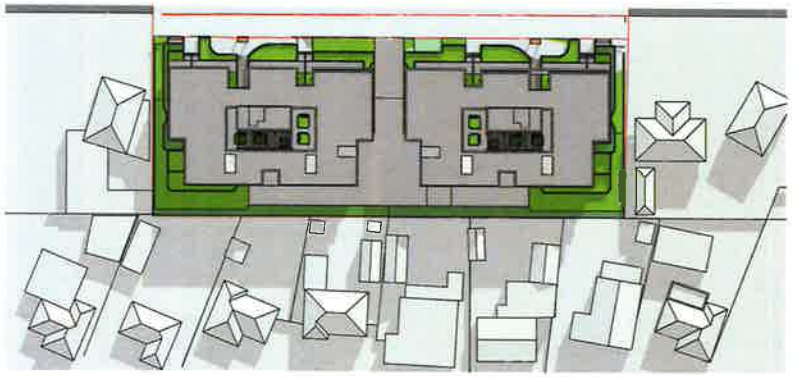

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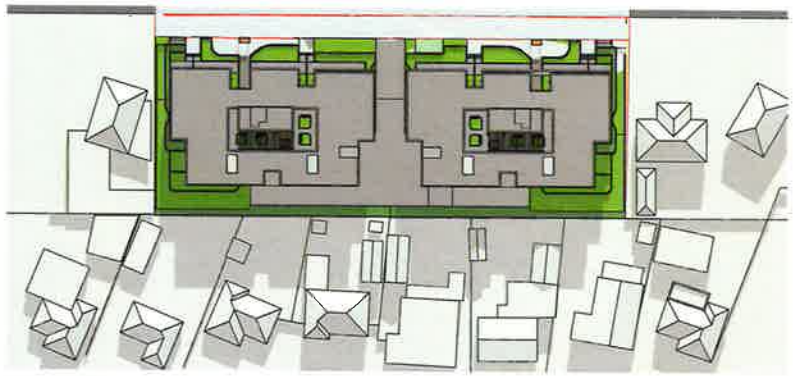
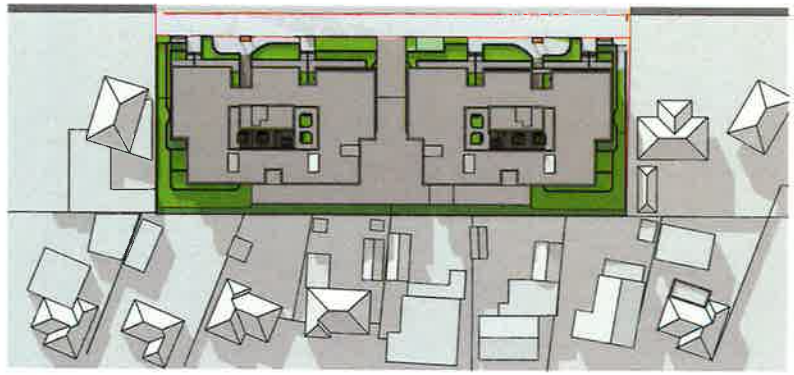


12 NOON

1PM



2 PM

7.6

Average star rating

NATIONWIDE HOUSE ENERGY RATING SCHEME

www.nathers.gov.au

Certificate no.: 0001855840

Assessor Name: Amir Girgis

Accreditation no.: 20579

Certificate date: 31 August 2017

Dwelling Address

12-22 Willan Drive
Cartwright, NSW
2168

www.nathers.gov.au

ABSA

Class 2 Building
Multi-Unit

| | |
|---|---|
| Validation Number | 1011315676 |
| Validation Date | 10/8/2017 |
| Assessor Name | Amir Girgis |
| Assessor Number | 20579 |
| Assessor Signature | |

Simulated under
BASIX Thermal Comfort Protocol

BASIX

| Rev. | Date | By | Chk | Description |
|---|---|---|---|---|
| A | | | | |

Client Details

NSW Housing Commission

Consultants

NORTHROP

in view

SLR

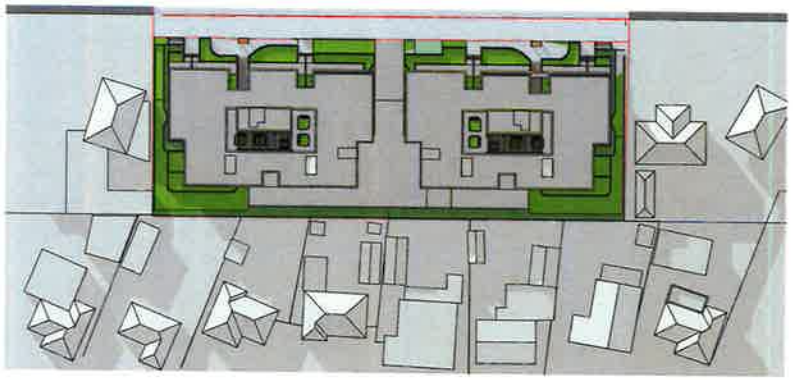
DKO

DKO Architecture (NSW) Pty Ltd
Nominated Architects

Project Name
Project Number
Project Address

Drawing Series
Drawing Name

Drawing Number DA701
Revision A



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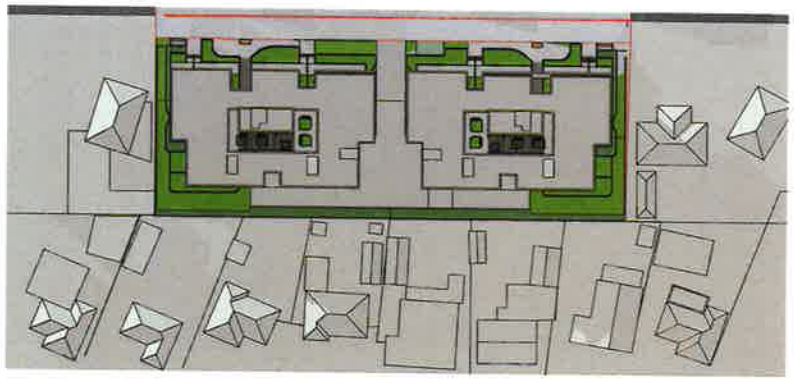

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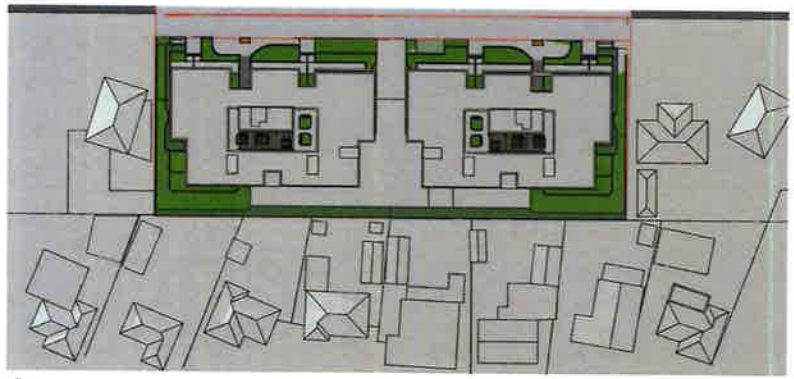

5PM

| Rev. | Date | By | Chk | Description |
|---|---|---|---|---|
| A | 30/08/17 | JO | IL | Issue For Development Application |

Client Details
T +61 2 9585 1499
E office@ppjh.com.au
SGCH St George Community Housing

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info@dko.com.au
www.dko.com.au
ABN: 81 956 706 590

NSW Nominated Architects
Kees de Keijzer 5767 &
David Kauffman 6542

Project Name: SGCH Willan Drive
Project Number: 1534
Project Address: 12-22 Willan Drive Cartwright, NSW 2168
Drawn By: JO
Checked By: IL
Date: 08/08/17
Scale: 1:1000@A1

Drawing Series: Plan Diagrams
Drawing Name: Shadow Diagrams 2

Drawing Number: DA702
Revision: A

N

Certificate no.: 0001855840
Assessor Name: Amir Girgis
Accreditation no.: 20579
Certificate date: 31 August 2017
Dwelling Address
12-22 Willan Drive
Cartwright, NSW
2168

7.6
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
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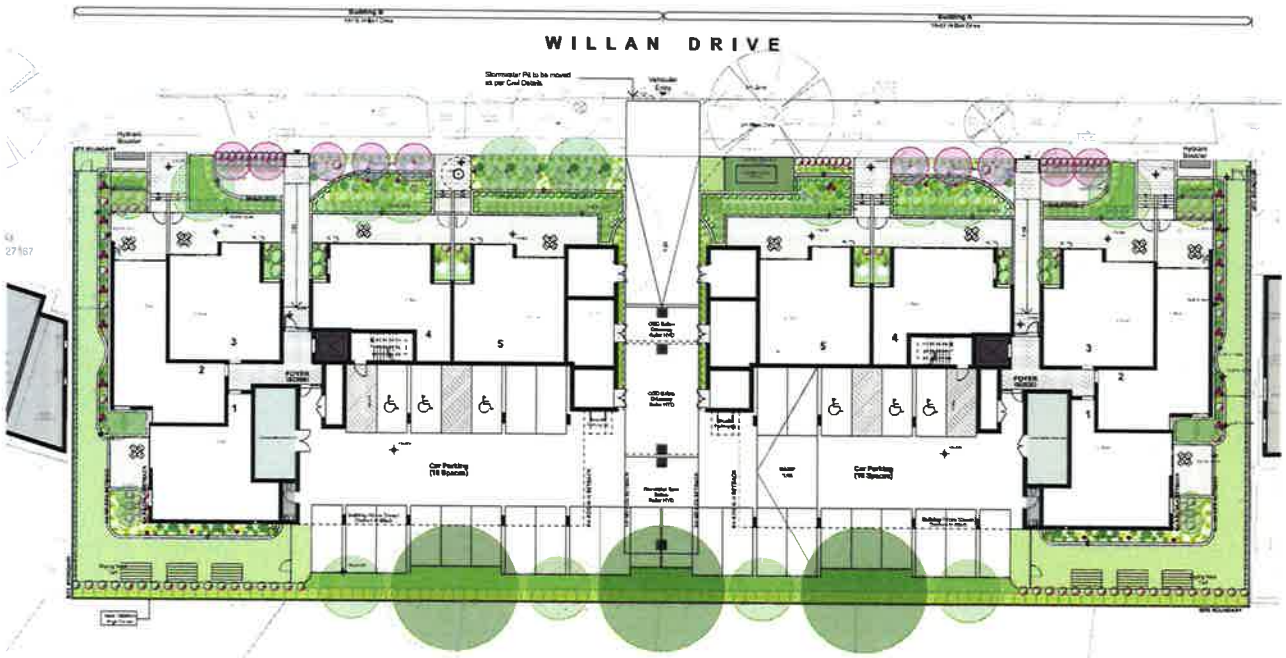
ABSA Australian Building Sustainability Assessor
Class 2 Building Multi-Unit

| | |
|---|---|
| Validation Number | 1011315876 |
| Validation Date | 10/08/2017 |
| Assessor Name | Amir Girgis |
| Assessor Number | 20579 |
| Assessor Signature | |

Simulated under BASIX Thermal Comfort Protocol
BASIX

1 Landscape Plan - Rooftop
1:200




2 Landscape Plan
1:200

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client:
SGCH Willan Drive

site address:
12-22 Willan Drive, Cartwright, NSW 2168

sheet title:
Landscape Plan

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abn: 74 118 972 973

North:

NLM owner CD

| | | | | |
|---|---|---|---|---|
| E3 | Removed Timber Fence | PDF | E | 19.03.18 |
| E2 | Removed Timber Fence | PDF | E | 02.03.18 |
| E1 | Removed Timber Fence | PDF | E | 27.02.18 |
| issue | detail | medium | drafter | date |

revisions

Legend
Medium: P - Print, PDF - Image format, D - CAD, P - print
Drawing: E - Email, W - Web, M - MultiCourier, F - fax

scale: 1:200 @ A1

sheet number: L01

# WILLAN DRIVE

1 Landscape Plan - Building A
1:100

legend:

- existing trees to be retained
- existing trees to be removed
- proposed tree
- planting areas
- metal edging
- turf
- fencing
  for all fencing materials and types refer to the architects plans.

plant schedule - ground floor

| code | botanical name | common name | mature height | pot size | stake | quantity |
|---|---|---|---|---|---|---|
| **Trees** | | | | | | |
| Hfl | *Hymenosporum flavum* | Native Frangipani | 10.0m | 45L | yes | 4 |
| Lob | *Lophostemon confertus* | Brush Box | 15.0m | 45L | yes | 3 |
| Lla | *Lagerstroemia indica 'Acoma'* | White Crape Myrtle | 3.5m | 45L | yes | 2 |
| Lis | *Lagerstroemia indica 'Sioux'* | Pink Crepe Myrtle | 4.0m | 45L | yes | 10 |
| Mlg | *Magnolia 'Little Gem'* | Little Gem | 4.0m | 45L | yes | 8 |
| Pca | *Pyrus 'Capital'* | Capital Pear | 9.0m | 45L | yes | 2 |
| Tlf | *Tristaniopsis laurina 'Luscious'* | Water Gum | 10.0m | 45L | yes | 9 |
| **Shrubs** | | | | | | |
| Alr | *Alternanthera 'Little Ruby'* | Little Ruby | 0.4m | 140mm | no | 110 |
| Cal | *Correa alba* | White Correa | 1.5m | 200mm | no | 22 |
| Cep | *Camellia 'Early Pearly'* | Early Pearly | 2.0m | 200mm | yes | 8 |
| Rop | *Raphiolepis 'Oriental Pearl'* | Indian Hawthorne | 1.0m | 140mm | no | 59 |
| Sas | *Syzygium australis 'Superior'* | Superior Lilly Pilly | 3.0m | 200mm | yes | 96 |
| Sre | *Syzygium 'Resilience'* | Lilly Pilly | 3.0m | 200mm | yes | 105 |
| Stt | *Syzygium 'Tiny Trev'* | Lilly Pilly | 0.75m | 200mm | no | 20 |
| Wgb | *Westringia 'Grey Box'* | Coastal Rosemary | 0.4m | 140mm | no | 95 |
| **Groundcovers, Grasses and Feature Plants** | | | | | | |
| Ana | *Asplenium nidus* | Birds Nest Fern | 1.0m | 200mm | no | 6 |
| Bca | *Blechnum cartilagineum* | Gristle Fern | 0.7m | 200mm | no | 6 |
| Gcv | *Crassula ovata* | Jade | 1.2m | 140mm | no | 29 |
| Csp | *Cymbidium sp* | Cymbidium Orchids | 0.7m | 140mm | no | 6 |
| Das | *Doodia aspera* | Rasp Fern | 0.3m | 140mm | no | 6 |
| Dea | *Dianella 'Emerald Arch'* | Native Flax | 0.5m | 140mm | no | 12 |
| Dli | *Dianella 'Little Jess'* | Turf Lily | 0.6m | 140mm | no | 42 |
| Dlr | *Dianella 'Little Rev'* | Native Flax | 0.4m | 140mm | no | 126 |
| Dro | *Dietes robinsoniana* | Lord Howe Is Lily | 0.7m | 140mm | no | 13 |
| Dsf | *Dichondra 'Silver Falls'* | Silver Falls | 0.1m | 140mm | no | 34 |
| Dtb | *Dianella tasmanica 'Blaze'* | Native Flax | 0.4m | 140mm | no | 59 |
| Gcc | *Grevillea 'Cherry Clusters'* | Cherry Clusters | 0.5m | 140mm | no | 5 |
| Ult | *Lomandra longifolia 'Tanika'* | Tanika | 0.6m | 140mm | no | 174 |
| Pxa | *Philodendron 'Xanadu'* | Xanadu | 0.7m | 140mm | no | 6 |
| Rsf | *Rhagodia spinescens 'Aussie Flat'* | Aussie Flat Bush' | 0.3m | 140mm | no | 4 |
| Tas | *Trachelospermum asiaticum 'Flat Mat'* | Asiatic Jasmine | 0.1m | 140mm | no | 29 |
| Vha | *Viola hederacea* | Native Violet | 0.1m | 140mm | no | 35 |

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client: SGCH Willan Drive
site address: 12-22 Willan Drive, Cartwright, NSW 2168
sheet title: Landscape Plan - Building A

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north

ASGH Hunter Site

| | | | | |
|---|---|---|---|---|
| E1 | Removed Tender Issue | PDF | E | 19.03.18 |
| E2 | Removed Tender Issue | PDF | E | 22.03.18 |
| E3 | Removed Tender Issue | PDF | E | 31.03.18 |

revisions

scale: 1:100 @ A1

sheet number: L02

# WILLAN DRIVE

Stormwater Pit to be moved as per Civil Details

Vehicular Entry

Hydrant Booster

SITE BOUNDARY

343
DP 227167

MAILBOXES

FOYER

Car Parking
(16 Spaces)

Building Above Shown Dashed In Black

OSD Below Driveway Refer HYD

OSD Below Driveway Refer HYD

Rainwater Tank Below Refer HYD

Drying Yard Turf

Clothes lines

New 1800mm High Fence

legend:

- existing trees to be retained
- existing trees to be removed
- proposed tree
- planting areas
- metal edging
- turf
- fencing
  for all fencing materials and types refer to the architects plans.

**Refer to L02 for plant schedule**

1 Landscape Plan - Building B
1:100

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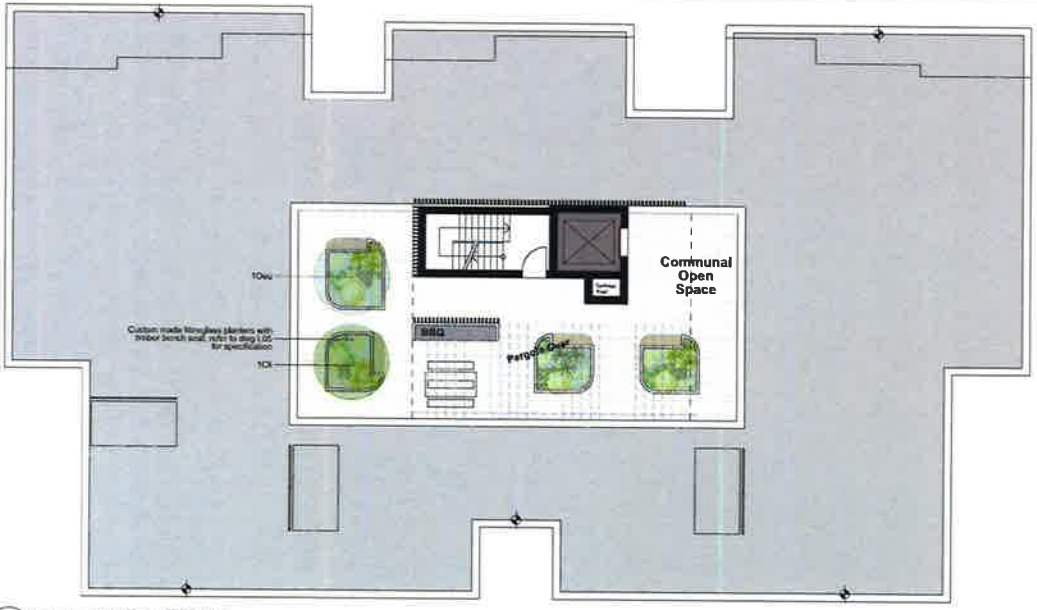
SGCH Willan Drive

12-22 Willan Drive, Cartwright, NSW 2168

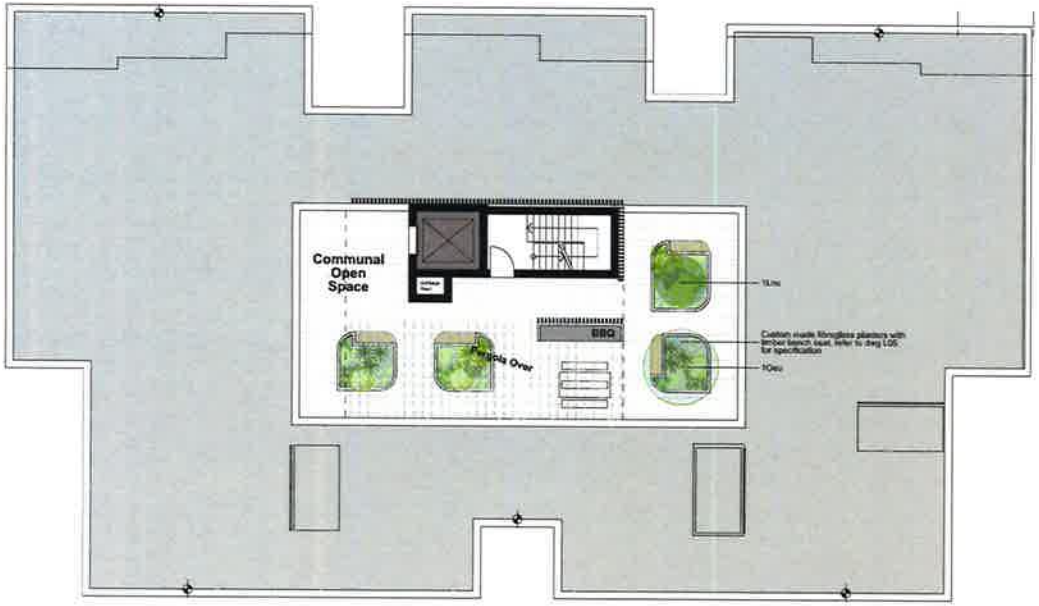
Landscape Plan -Building B

revisions

L03




1 Landscape Plan - Building A
1:100




2 Landscape Plan - Building B
1:100

**plant schedule - roof top garden**

| code | botanical name | common name | mature height | pot size | stake |
|---|---|---|---|---|---|
| **Trees** | | | | | |
| Ci | *Citrus limon* | Lemon | 3.5m | 45L | yes |
| Lno | *Laurus nobilis* | Bay Tree | 3.5m | 45L | yes |
| Oeu | *Olea europaea 'Swans Hill'* | Olive | 3.5m | 45L | yes |
| **Shrubs** | | | | | |
| Ro | *Rosmarinus officinalis* | Rosemary | 1.0m | 200mm | no |
| Rop | *Raphiolepis 'Oriental Pearl'* | Indian Hawthorne | 1.0m | 200mm | no |
| Sch | *Santolina chamaecyparissus 'Nana'* | Cotton Lavender | 0.4m | 200mm | no |
| **Groundcovers, Grasses and Feature Plants** | | | | | |
| Arv | *Anigozanthus 'Ruby Velvet'* | Red Kangaroo Paw | 0.8m | 140mm | no |
| Agv | *Anigozanthus 'Gold Velvet'* | Yellow Kangaroo Paw | 0.8m | 140mm | no |
| Dli | *Dianella 'Little Jess'* | Little Jess Turf Lily | 0.4m | 140mm | no |
| Dre | *Dichondra repens* | Kidney Weed | 0.1m | 200mm | no |
| Dsf | *Dichondra 'Silver Falls'* | Silver Falls | 0.1m | 140mm | no |
| Smo | *Sansevieria 'Moonshine'* | Moonshine | 0.4m | 140mm | no |
| Sti | *Sansevieria trifasciata* | Mother in Laws Tongue | 0.6m | 140mm | no |

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client: SGCI Willan Drive
site address: 12-22 Willan Drive, Cartwright, NSW 2168
sheet title: Landscape Concept Plan - Rooftop Gardens

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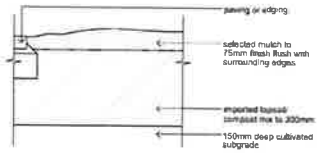
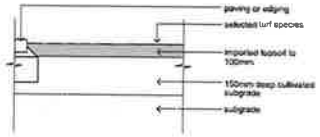
revisions

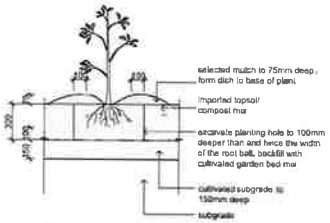
L04



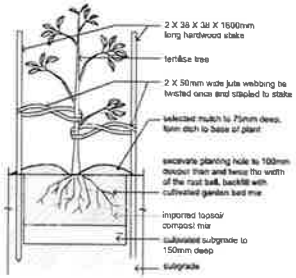

1 garden bed preparation detail
1:10




2 turf preparation detail
1:10




3 garden bed planting
1:20




4 15 - 45l tree planting detail
1:20

LANDSCAPE NOTES:

Check boundaries, levels, dimensions and locate services on site prior to starting work.
Clear site of any builders rubbish and set up erosion and sediment control as per councils requirements.
Protect any trees to be retained to council requirements. Grade site to achieve proposed final grades.
Cultivate sub grade to a depth of 300mm.
Stockpile soil if suitable for reuse or provide landscape soil that meets Australian Standards to replace site top soil.
Install plant material as per plan. Keep planting areas moist, stake plants as required and water in.
Fertilise exotic plants with Osmocote 'Plus' 6-8 month slow release fertiliser and native plants with Osmocote zero Phosphorus 5-6 month slow release. Apply as per manufacturer's instructions.
Gardens are to be mulched to a 75mm depth using ANL 'Forestblend' that meets Australian Standards.
Keep mulch clear of all plant stems.
Refer to Architectural drawings for fence types, retaining walls, paving and decking details.

SPECIFICATION NOTES

SERVICES

Before landscape work is commenced, The Landscape Contractor is to establish the position of all service lines and ensure tree planting is carried out at least 3 metres away from these services. Service lids, vents and hydrants shall be left exposed and not covered by any landscape finishes (turfing, paving, garden beds etc.) Finish adjoining surfaces flush with pit lids.

PLANTING MIXTURE

Soil mix to comprise of one part approved compost to three parts top soil. Topsoil shall be either imported topsoil or stockpiled site topsoil (if suitable ie. no clay) and mix shall be a homogenous blend of existing garden bed soil and additive of ANL 'greenlife cow and compost'. Additive to be to a depth of 100mm, cultivated with existing garden bed soil to 250mm depth. Install 75mm of selected mulch.

RAISED PLANTER BEDS MIXTURE

Shall be a homogenous blend of soil and additives in the following proportions

| | |
|---|---|
| Imported Black Soil | 30% |
| DIW Sand | 30% |
| Composted Hardwood Sawdust | 20% |
| Graded Ash | 10% |
| Composted Pine Bark | 10% |

MULCH

APPLICATION. Place mulch to the required depth (refer to drawings), clear of plant stems and rake to an even surface finishing 25mm below adjoining levels. Ensure mulch is watered in and tamped down during installation.

MULCH TYPE:

General - ANL 'Forestblend'

PLANT MATERIAL

All plants supplied are to conform with those species listed in the Plant Schedule on the drawings. Generally plants shall be vigorous, well established, hardened off, of good form consistent with species or variety, not root or forced, free from disease or insect pests with large healthy root systems and no evidence of having been restricted or damaged. Trees shall have a leading shoot, immediately hyrd dried out, damaged or unhealthy plant material before planting. All stock is to be container grown for a minimum of six (6) months prior to delivery to site.

PLANTING AREAS

Ensure that the mass planting areas have been excavated to 300mm below finished levels. Rip to a further depth of 150mm. Supply and install 300mm soil mix. Install non-plastic weed matting to all courtyard garden beds to manufacturers details.

TURF

Excavate/ grade areas to be turfed to 120mm below the required finished levels. Do not excavate with 1500mm of any existing tree to be retained. Ensure that all of the surface water runoff is to be directed towards the nearest pits, kerbs etc. all away from buildings. Ensure that no pooling or ponding will occur. Rip subgrade to 150mm deep. Install 100mm depth of 5 parts imported topsoil mixed with 1 part compost. Just prior to spreading turf, spread 'Shirleys no. 17 lawn fertiliser' over the topsoil at the recommended rate. Lay Sir Walter Buffalo turf rolls closely butted. Fill any small gaps with topsoil, water thoroughly.

FERTILISER

MASS PLANTING AREAS: Fertilise exotic plants with Osmocote 'Plus' 6-8 month slow release fertiliser and native plants with Osmocote zero Phosphorus 5-6 month slow release. Thoroughly mix fertiliser with planting mixture at the recommended rate, prior to installing plants. Apply as per manufacturer's instructions.

ADVANCED TREES: Pellets shall be in the form intended to uniformly release plant food elements for a period of approximately nine months equal in Shirleys Kolen pellets, analysis 6.3.7.6.2.3. Kolen pellets shall be placed at the time of planting to the base of the plant, 50mm minimum from the root ball at a rate of two pellets per 300mm of top growth to a maximum of 8 pellets per tree.

STAKING AND TYING

Stakes shall be straight hardwood, free from knots and twists, pointed at one end and sized according to size of plants to be staked.

a. 5-15 litre size plant 1x(1200x25x25mm)
b. 35-75 litre size plant 2x(1500x38x38mm)
c. 100-greater than 200litre 3x(1800x50x50mm)

Ties shall be 50mm wide hessian webbing or approved equivalent nailed or stapled to stake. Drive stakes a minimum one third of their length, avoiding damage to the root system, on the windward side of the plant.

METAL EDGING

Formboss Galvanised Steel Edging. Use Cold Galvanised Spray Paint to spray areas that are screwed and cut (areas that have exposed inner metal due to installations). Over time if the edging is damaged or surface rust is identified use a wire brush to brush down the area first, ensure it's dry, and coat the areas generously.
Profile: 150mm
Edge burrel: Minimum 1/3 of profile height.
Stake spacing: Three per length at 810mm spacing.
Stake length: Minimum twice the edging profile height.
Straight lines ideally 2mm+ for decent straight lines. Higher gauge = better straight lines.
Drainage: Back the edging (over 150mm high) with screenings before backfilling with soil.
Screws: Must be under soil level. One screw for each side of the connection, one per stake.

IRRIGATION

An automated irrigation system shall be installed. The system shall be commercial grade, sub-surface, automatic, self timed with back flow prevention device fitted and installed to all garden and turf areas in the common areas.

ROOFTOP PLANTERS

Fibreglass planter boxes with timber bench seat - custom made, Supplier: Fibremate PH: 02 9671 7997

LANDSCAPE MAINTENANCE PROGRAMME

Maintenance shall mean the care and maintenance of the landscape works by accepted horticultural practice as rectifying any defects that become apparent in the landscape works under normal use. This shall include, but shall not be limited to, watering, mowing, fertilising, reseeding, re-turfing, weeding, pest and disease control, staking and tying, replanting, cultivation, pruning, pickling, renewing, topdressing, maintaining the site in a neat and tidy condition as follows:-

1.0 GENERAL
The landscape contractor shall maintain the landscape works for the term of the maintenance (or Plant establishment) period to the satisfaction of the council. The landscape contractor shall attend to the site on a weekly basis. The maintenance period shall commence at completion and continue for a period of six months (26) weeks. The Contractor shall submit a program and log for the required maintenance in the handover manuals for the Principal's Approval. The contractor shall maintain the Log and submit at end of Maintenance Period.

2.0 WATERING.
Grass, trees and garden areas shall be watered regularly so as to ensure continuous healthy growth. The minimum acceptable watering required is equal to 25mm of natural rainfall or its applied equivalent during each period of one (1) week, around individual plants, maintain a completely weed and grass free watering saucer of a minimum diameter of one (1) metre.

3.0 RUBBISH REMOVAL
During the term of the maintenance period the landscape contractor shall remove rubbish that may occur and reoccur throughout the maintenance period. This work shall be carried out regularly so that at weekly intervals the area may be observed in a completely clean and tidy condition.

4.0 REPLACEMENTS
The landscape contractor shall replace all plants that are missing, unhealthy or dead at the Landscape Contractor's cost during the maintenance period. Replacements shall be of the same size, quality and species as the plant that has failed unless otherwise directed by the Landscape Architect. Replacements shall be made on a continuing basis not exceeding two (2) weeks after the plant has died or is seen to be missing.

5.0 STAKES AND TIES
The landscape contractor shall replace or adjust plant stakes, and tree guards as necessary or as directed by the Landscape Architect. Adjust ties to give adequate support to the plants, replace broken or damaged ties as necessary and straighten stakes. Remove stakes and ties at the end of the maintenance period if so directed.

6.0 PRUNING
Trees and shrubs shall be pruned as directed by the Landscape Architect. Pruning will be directed at the maintenance of the dense foliage or miscellaneous pruning and beneficial to the condition of the plants to improve plant shape and form or to clear footpaths and driveways. Any damaged growth shall be pruned. All pruned material shall be removed from the site.

7.0 MULCHED SURFACES
All mulched surfaces shall be maintained in a clean and tidy condition and be reinstated if necessary to ensure that a depth of 75mm is maintained. Ensure mulch is kept clear of plant stems at all times.

8.0 PEST AND DISEASE CONTROL
Control pathological diseases or insect pests by physical removal. Where physical removal is not possible use registered non- toxic sprays, applied in accordance with manufacturer's instructions.

9.0 WEED ERADICATION
Eradicate weeds by environmentally acceptable methods using a non-residual glyphosate herbicide (eg. 'Roundup') in any of its registered formulae, at the recommended minimum rate. Regularly remove by hand weed growth that may occur or recur throughout grassed, planted and mulched areas. Remove weed growth from an area 750mm diameter around the base of trees in grassed areas. Continue eradication throughout the course of the works and during the maintenance period.

10.0 FERTILISING
Apply follow up compostated organic fertiliser to all turfed areas once during the maintenance period 10 weeks after Completion.

11.0 LAWNS
Mow at max 10-day intervals. Trimming all edges, remove all weed growth or grass around base of all plants in turf or by hand in grass areas within the isolated planting area edging and within one (1) metre diameter area in grass. do not use nylon line type edge trimmers around base of trees - replace or repair failed turf and bare patches.

12.0 SOIL SUBSIDENCE
Any soil subsidence or erosion which may occur after the soil filling and preparation operations shall be made good by the landscape contractor at no cost to the client.

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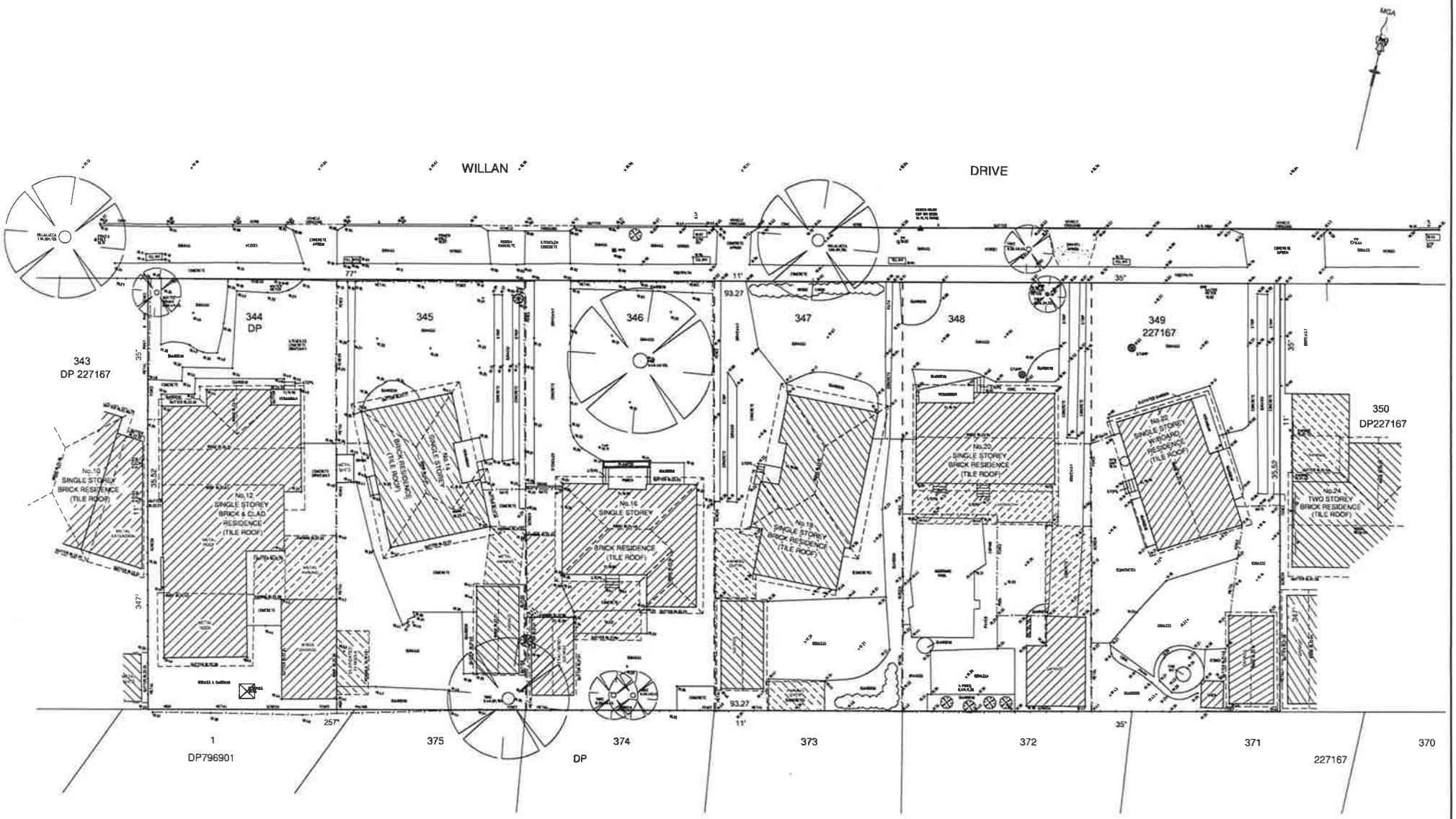
| | |
|---|---|
| client: | SGCI I Willan Drive |
| site address: | 12-22 Willan Drive, Cartwright, NSW 2168 |
| sheet title: | Landscape Details and Specification |

North:

| | | | | | |
|---|---|---|---|---|---|
| 28 | Rooftop DA Issue | TDF | 1 | 19.04.21 | |
| 20 | DA Issue | TDF | 1 | 29.03.21 | |
| 28 | Preliminary DA Issue | TDF | 1 | 23.03.21 | |
| Issue | Date | Drawn | Checked | Date | |

revisions

drawing number: L05




## NOTES:

1) TITLE BEARINGS AND DIMENSIONS ARE SHOWN
BOUNDARY REDEFINITION HAS NOT BEEN UNDERTAKEN
2) ORIGIN OF LEVELS: PM 20728 RL 19.789 (A.H.D.) SCIMS
3) SITE COMPRISES LOTS 344-349 DP 227167
4) SITE AREA 3312m² BY TITLE DIMENSIONS.
5) UNDERGROUND SERVICES HAVE NOT BEEN INVESTIGATED
6) 0.3×10H,B5 DENOTES INDICATIVE TREE SIZE 0.3 TRUNK DIAMETER, 10 HIGH, 8 SPREAD.
(G) DENOTES GUTTER LEVEL.
7) TREE NAMES SHOWN CONSTITUTE OUR OPINION ONLY. IF TREE SPECIES IDENTIFICATION IS IMPORTANT FOR DESIGN OR HERITAGE REASONS THEY SHOULD BE DETERMINED BY A QUALIFIED ARBORIST

| ISSUE | DATE | AMENDMENT |
|---|---|---|
| | 28.04.17 | THIS PLAN IS AN AMALGAMATION OF PRIOR SURVEYS;<br>24481 - 07.11.16 - No's 18-22 WILLAN DRIVE<br>24486 - 05.04.17 - No's 12-16 WILLAN DRIVE |

TITLE: PLAN SHOWING SELECTED DETAIL & LEVELS OVER No's 12-22 WILLAN DRIVE, CARTWRIGHT

| | | | |
|---|---|---|---|
| LGA: LIVERPOOL | | REFERENCE: 24481 | |
| CLIENT : ST.GEORGE COMMUNITY HOUSING | | DATE: 1.05.17 | SHEET 1 |
| SCALE (AT A1): 1:150 | DATUM : AHD | SURVEYOR: AW | |


**Norton Survey Partners**
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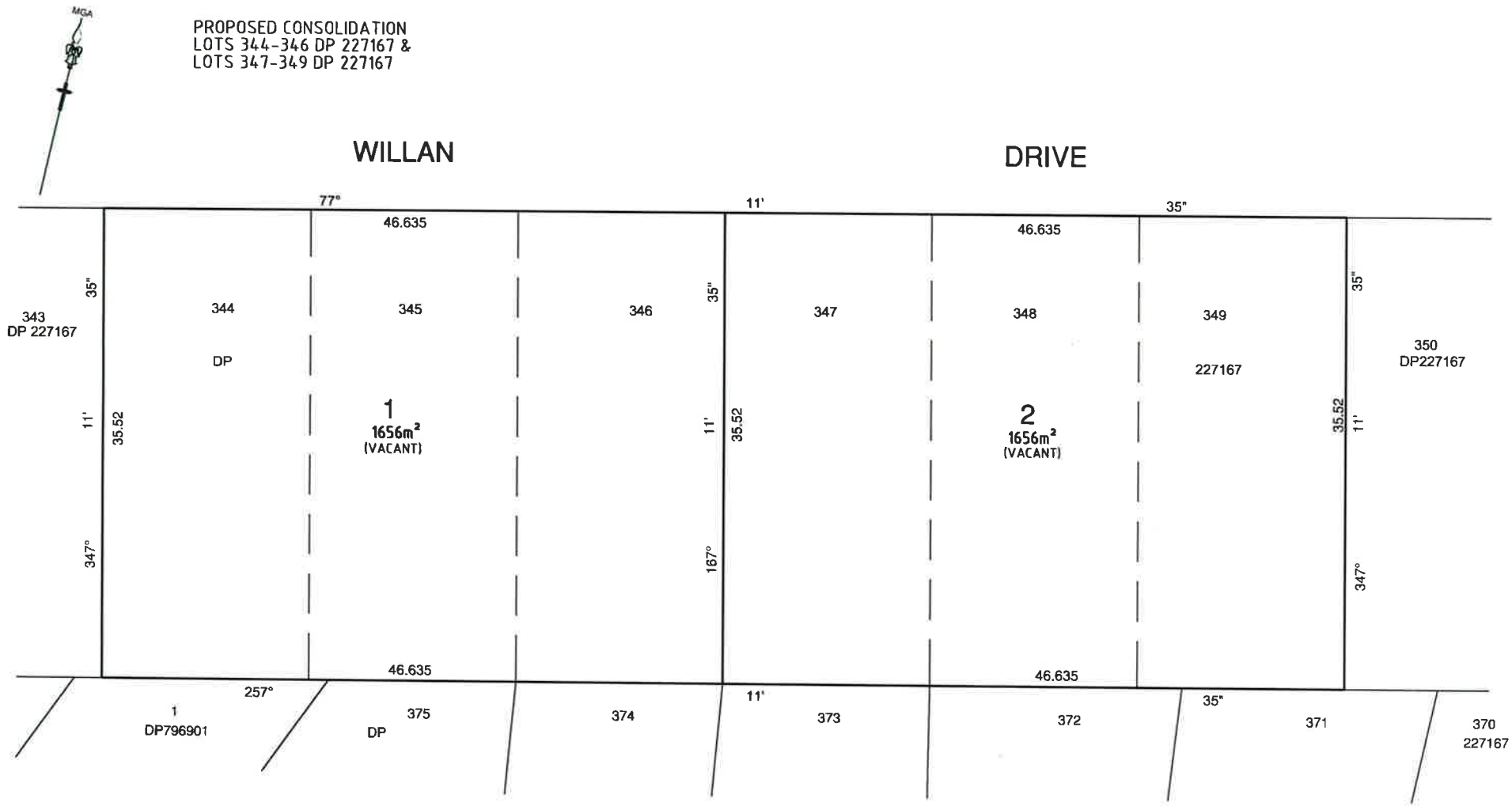
office@nspartners.com.au

PROPOSED CONSOLIDATION
LOTS 344-346 DP 227167 &
LOTS 347-349 DP 227167




LOT LAYOUT, DIMENSIONS, AREAS, "EASEMENTS" SUBJECT TO FINAL SURVEY

| ISSUE | DATE | AMENDMENT |
|---|---|---|
| | | |

TITLE: PLAN SHOWING PROPOSED LOT LAYOUT
No'S 12-22 WILLN DRIVE, CARTWRIGHT

| | | | |
|---|---|---|---|
| LGA: LIVERPOOL | | REFERENCE: 24481 | |
| CLIENT : ST. GEORGE COMMUNITY HOUSING | | DATE: 15.08.17 | SHEET S1 |
| SCALE (AT A3) 1:300 | DATUM : - | SURVEYOR: AW | |


**Norton Survey Partners**
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NOTES:

1. EROSION AND SEDIMENT CONTROL (ESC) PLAN IS BASED ON SURVEY PLAN PROVIDED. PROTECT ALL NEW AND EXISTING DOWNSTREAM PITS/DRAINS TO BE RETAINED FROM SEDIMENT INFILTRATION DURING CONSTRUCTION.

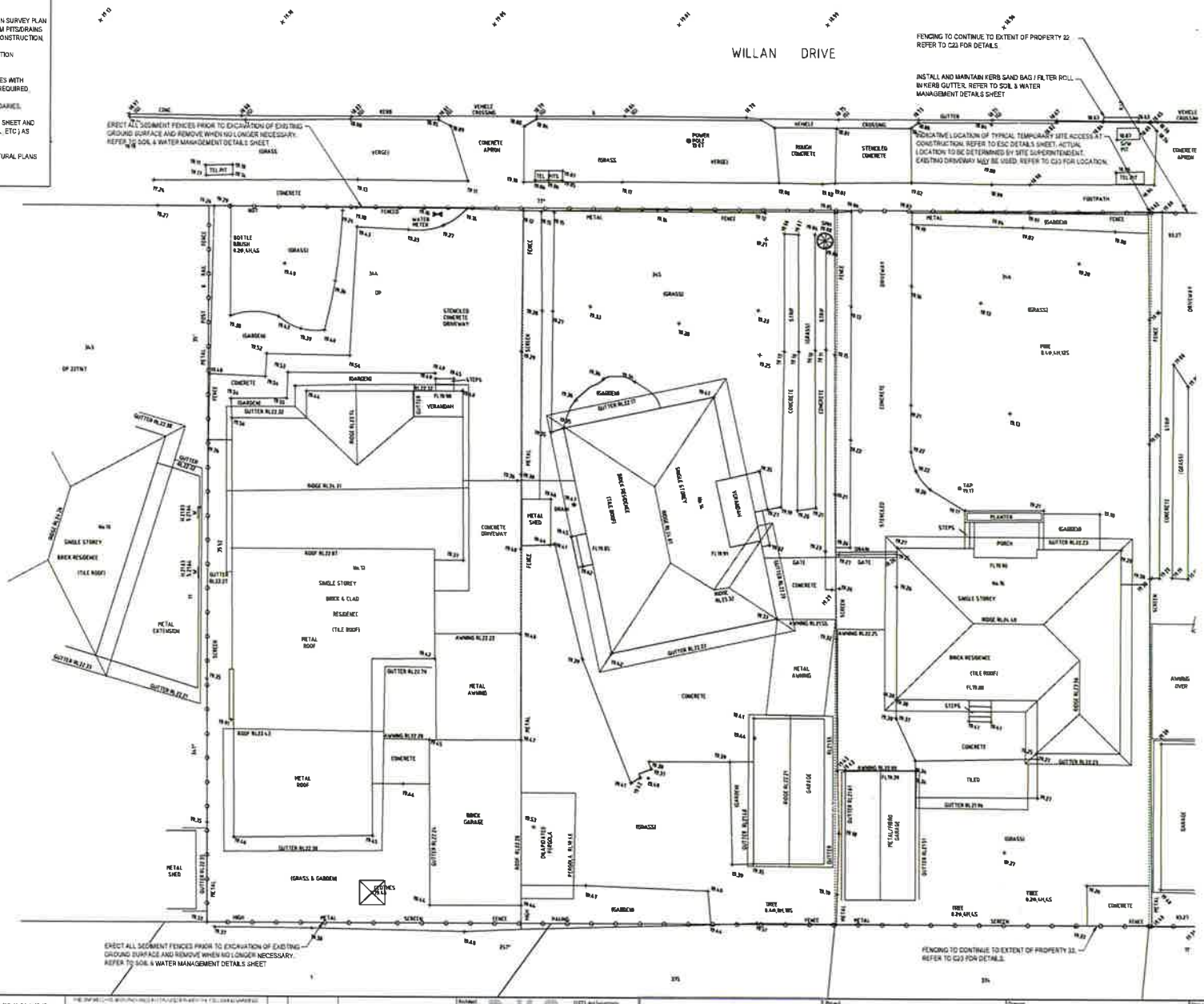
2. PROTECT ALL NEW PITS/DRAINS FROM SEDIMENT INFILTRATION PROGRESSIVELY, AS THEY ARE CONSTRUCTED.

3. INSTALL ALL NECESSARY SITE SECURITY/BOUNDARY FENCES WITH LOCKABLE ENTRY GATE AND DUST CONTROL HESSIAN AS REQUIRED.

4. CONSTRUCT SEDIMENT FENCE ALONG DOWNSLOPE BOUNDARIES.

REFER TO EROSION AND SEDIMENT CONTROL (ESC) DETAILS SHEET AND FURTHER REPORTS (ARBORIST, LANDSCAPE, GEOTECHNICAL, ETC) AS REQUIRED.

REFER TO ARBORIST AND LANDSCAPE REPORTS, ARCHITECTURAL PLANS AND COUNCIL CONSENT CONDITIONS FOR TREES TO BE RETAINED/REMOVED.




| | | |
|---|---|---|
| P2 | 24.08.2017 | DEVELOPMENT APPLICATION |
| P1 | 11.07.2017 | PRELIMINARY ISSUE - FOR REVIEW |
| No. | Date | Details |

Architect: DKO


AJ Whipps Consulting Group
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Project: SGCH WILLAN DRIVE
12-22 WILLAN DRIVE
CARTWRIGHT, NSW 2168

Drawing: STORMWATER SERVICES
EROSION & SEDIMENT CONTROL PLAN
12-16 WILLAN DRIVE

Status: PRELIMINARY ISSUE: NOT FOR CONSTRUCTION

Project No.: 20160420
Drawing No. (Revision): C13 [P2]
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Date: JULY 2017
Scale: 1:100
Size: A1

SGCH WILLAN DRIVE, 12-22 WILLAN DRIVE, CARTWRIGHT, NSW 2168 20160420 - C13 [P2]

NOTES:

1. EROSION AND SEDIMENT CONTROL (ESC) PLAN IS BASED ON SURVEY PLAN PROVIDED. PROTECT ALL NEW AND EXISTING DOWNSTREAM PITS/DRAINS TO BE RETAINED FROM SEDIMENT INFILTRATION DURING CONSTRUCTION.

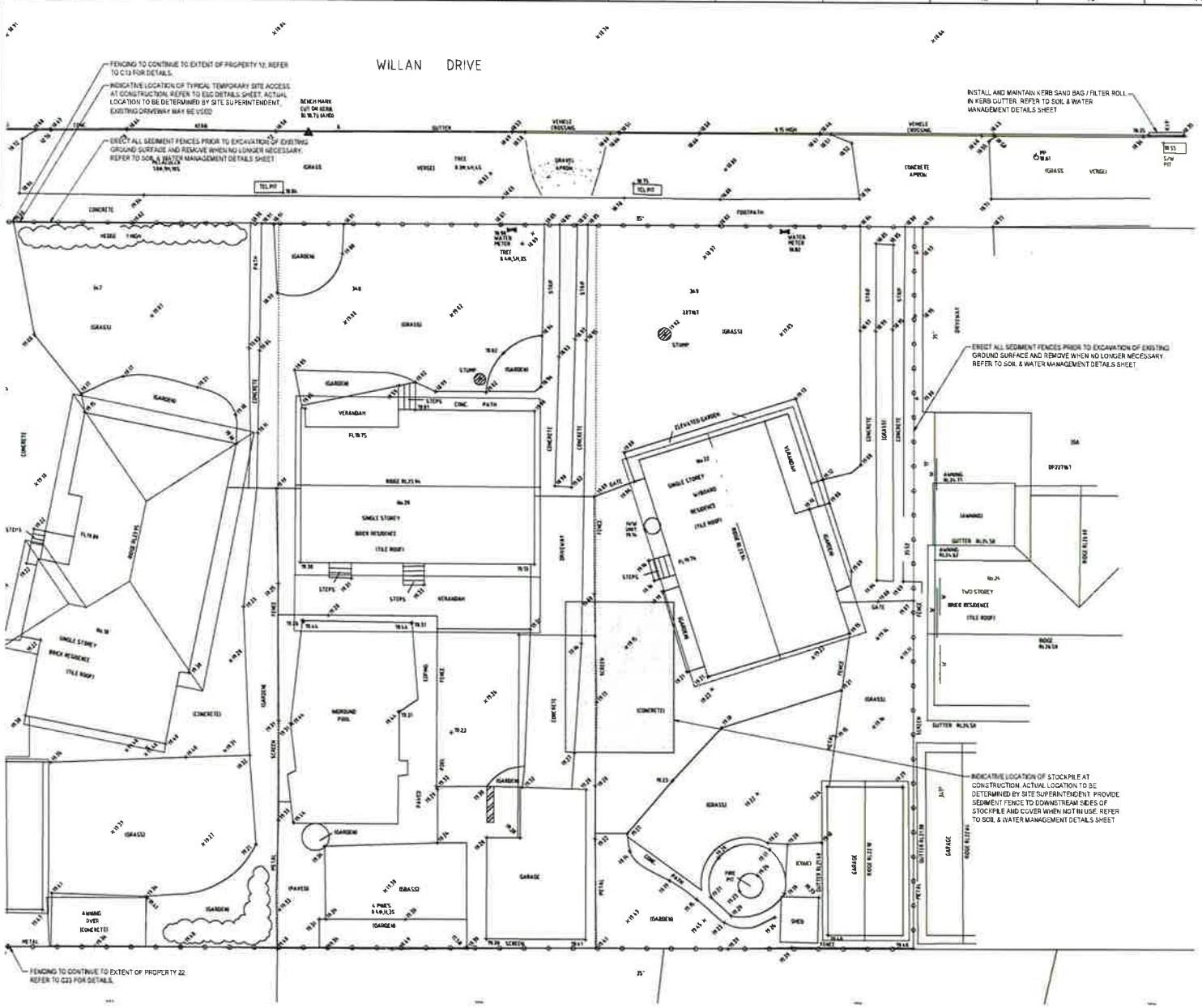
2. PROTECT ALL NEW PITS/DRAINS FROM SEDIMENT INFILTRATION PROGRESSIVELY, AS THEY ARE CONSTRUCTED.

3. INSTALL ALL NECESSARY SITE SECURITY/BOUNDARY FENCES WITH LOCKABLE ENTRY GATE AND DUST CONTROL HESSIAN AS REQUIRED.

4. CONSTRUCT SEDIMENT FENCE ALONG DOWNSLOPE BOUNDARIES.

REFER TO EROSION AND SEDIMENT CONTROL (ESC) DETAILS SHEET AND FURTHER REPORTS (ARBORIST, LANDSCAPE, GEOTECHNICAL, ETC.) AS REQUIRED.

REFER TO ARBORIST AND LANDSCAPE REPORTS, ARCHITECTURAL PLANS AND COUNCIL CONSENT CONDITIONS FOR TREES TO BE RETAINED/REMOVED.

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| P2 | 24.08.2017 | DEVELOPMENT APPLICATION |
| P1 | 11.07.2017 | PRELIMINARY ISSUE - 70% REVIEW |
| No. | Date | Details |


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Drawing
STORMWATER SERVICES
EROSION & SEDIMENT CONTROL PLAN
18-22 WILLAN DRIVE

Status: PRELIMINARY ISSUE: NOT FOR CONSTRUCTION

Project No. 20160420
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SGCH WILLAN DRIVE, 12-22 WILLAN DRIVE, CARTWRIGHT, NSW 2168 20160420 - C23 [P2]

## GENERAL REQUIREMENTS

THE FOLLOWING SEDIMENT AND EROSION CONTROL PLAN (SECP) HAS BEEN DEVELOPED IN GENERAL ACCORDANCE WITH LANDCOM (2004) - MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION. OTHERWISE KNOWN AS 'THE BLUE BOOK'. THE CONTRACTOR SHALL BE AT ALL TIMES RESPONSIBLE FOR TAILORING THIS PLAN TO SUIT SITE CONDITIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY AT ALL TIMES TO ENSURE THAT THE SITE MEASURES COMPLY WITH THE REQUIREMENTS OF THE BLUE BOOK.

## SITE ESTABLISHMENT

PRIOR TO THE COMMENCEMENT OF EARTHWORKS ON THE SITE THE FOLLOWING SHALL BE UNDERTAKEN AS A MINIMUM

1. ERECT SAFETY FENCING WITH SIGNAGE CLEARLY INDICATING THAT THE SITE IS A CONSTRUCTION ZONE AND ACCESS IS RESTRICTED AS DEEMED NECESSARY.
2. ERECT CLEARLY VISIBLE BARRIER FENCING AT LOCATIONS SHOWN OR IF NOT SHOWN AT THE DISCRETION OF THE SITE SUPERINTENDENT TO ENSURE TRAFFIC IS CONTROLLED AND TO PROHIBIT UNNECESSARY SITE DISTURBANCE.
3. INSTALL STABILISED SITE ACCESS IN ACCORDANCE WITH DRAWING SD6-14 AT EACH SITE ACCESS POINT TO PREVENT CONSTRUCTION EQUIPMENT FROM CARRYING SEDIMENT OFF THE SITE ONTO SURROUNDING ROADS.
4. INSTALL SEDIMENT AND EROSION CONTROL DEVICES IN ACCORDANCE WITH THE CONSTRUCTION DETAILS SPECIFIED IN THIS DRAWING SET AND/OR THE REQUIREMENTS OF THE 'BLUE BOOK'.

## CONSTRUCTION

5. TOPSOIL FROM ALL AREAS TO BE DISTURBED, SHALL BE STRIPPED PRIOR TO CONSTRUCTION OF ANY WORKS AND STOCKPILED AND LATER RESPREAD TO AID REVEGETATION IN LOCATIONS WHERE SHOWN ON THIS DRAWING. TOPSOIL SHALL BE STOCKPILED IN WINDROWS OUTSIDE OF MAJOR FLOW AREAS.
6. ALL DRAINAGE WORKS SHALL BE CONSTRUCTED AND STABILISED AS EARLY AS POSSIBLE DURING DEVELOPMENT.
7. ALL TAIL-OUT DRAINS SHALL BE GRASSED AND TRAPEZOIDAL IN SECTION. HAY BALES SHALL BE PLACED AS A SEDIMENTATION CONTROL DEVICE WHERE REQUIRED.
8. ALL DISTURBED AREAS SHALL BE REVEGETATED AS SOON AS THE RELEVANT WORKS ARE COMPLETED. TOPSOIL SHALL BE AMELIORATED AND COMPOSTED TO LANDSCAPE ARCHITECTS SPECIFICATIONS.
9. INLET FILTERS WILL BE INSTALLED WHERE SHOWN TO PREVENT WATER FROM DIRECTLY ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE. IF THE LOCATION OF INLET FILTERS ARE NOT SHOWN ON THE PLAN THEIR LOCATION SHALL BE AT THE DISCRETION OF THE SUPERINTENDENT.

## STOCKPILES

10. SPOIL AND TOPSOIL STOCKPILES SHALL BE LOCATED NO CLOSER THAN 2m (PREFERABLY 5m) FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
11. IF STOCKPILES ARE TO BE IN PLACE FOR LONGER THAN 10 DAYS THEN THEY SHALL BE STABILISED BY COVERING WITH MULCH OR WITH TEMPORARY VEGETATION.
12. STOCKPILES SHALL BE IN WINDROWS NO HIGHER THAN 2m HIGH AND SHALL HAVE BATTER SLOPES NO STEEPER THAN 1 IN 2. AN EARTH BANK SHALL BE INSTALLED ON THE UPSLOPE SIDE AND SEDIMENT FENCING SHALL BE INSTALLED ALONG THE LENGTH OF THE DOWNSLOPE SIDE ON ANY STOCKPILE.

## MAINTENANCE

13. ALL SEDIMENT BASINS AND TRAPS SHALL BE CLEANED WHEN THE STRUCTURES ARE A MAXIMUM OF 50% FULL OF SOLID MATERIALS (INCLUDING DURING THE MAINTENANCE PERIOD) AND DISPOSED OF IN A MANNER THAT PREVENTS FURTHER POLLUTION OF THE SITE.
14. TEMPORARY SEDIMENT AND EROSION CONTROL DEVICES WILL BE RETAINED UNTIL AFTER THE LANDS THEY ARE PROTECTING, ARE COMPLETELY REHABILITATED.
15. THE CONTRACTOR WILL INSPECT THE SITE AT LEAST WEEKLY OR AFTER ANY STORM EVENT AND WILL
    - ENSURE THAT DRAINS OPERATE PROPERLY AND TO EFFECT ANY NECESSARY REPAIRS
    - REMOVE SPILLED SAND OR OTHER MATERIALS FROM HAZARD AREAS (E.G. LANDS CLOSER THAN FIVE METRES FROM AREAS OF LIKELY CONCENTRATED OR HIGH VELOCITY FLOWS ESPECIALLY DRAINS, WATERWAYS AND PAVED AREAS)
    - REMOVE TRAPPED SEDIMENT WHENEVER LESS THAN DESIGN CAPACITY REMAINS WITHIN THE STRUCTURE
    - ENSURE REHABILITATED LANDS HAVE EFFECTIVELY REDUCED THE EROSION HAZARD AND TO INITIATE UPGRADING OR REPAIR AS APPROPRIATE
    - CONSTRUCT ADDITIONAL EROSION AND/OR SEDIMENT CONTROL WORKS AS REQUIRED
    - MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES IN A FULLY FUNCTIONING CONDITION UNTIL ALL EARTHWORK ACTIVITIES ARE COMPLETED AND THE SITE IS REHABILITATED
    - REMOVE TEMPORARY EROSION AND SEDIMENT CONTROL STRUCTURES AS THE LAST ACTIVITY IN THE REHABILITATION PROGRAM.
16. A SELF-AUDITING PROGRAM WILL BE ESTABLISHED BASED ON A CHECK SHEET. A SITE INSPECTION USING THE CHECK SHEET WILL BE MADE BY THE CONTRACTOR
    - AT LEAST WEEKLY
    - IMMEDIATELY BEFORE SITE CLOSURE
    - IMMEDIATELY BEFORE FORECAST RAIN AND AFTER RAINFALL.
    - ENTRIES WILL INCLUDE (BUT ARE NOT LIMITED TO)
      i) THE VOLUME AND INTENSITY OF ANY RAINFALL EVENTS
      ii) THE CONDITION AND MAINTENANCE OF ANY SOIL AND WATER MANAGEMENT PLAN WORKS
      iii) THE CONDITION OF VEGETATION AND ANY NEED TO IRRIGATE
      iv) THE NEED FOR DUST PREVENTION STRATEGIES
      v) ANY REMEDIAL WORKS TO BE UNDERTAKEN.
    - A SIGNED DUPLICATE OF THE CHECK SHEET SHOULD BE FORWARDED TO THE PROJECT MANAGER WEEKLY FOR THEIR INFORMATION. ALL CHECK SHEETS SHOULD BE COLLATED, KEPT ON-SITE AND MADE AVAILABLE TO ANY AUTHORISED PERSON ON REQUEST.

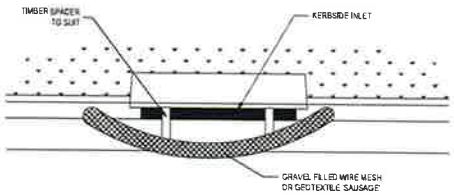
## SEDIMENT FENCE CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10YR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5m LONG STAR PICKETS INTO THE GROUND AT 2.5m INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

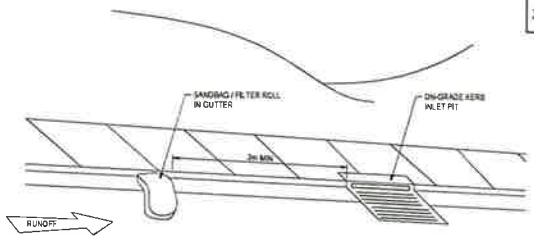
### *IMPORTANT – FOR PRINCIPAL CONTRACTOR*

TO ENABLE THE ISSUE OF STORMWATER CERTIFICATION PERMITTING OCCUPATION IN ALIGNMENT WITH COUNCIL LEGISLATION, SITE INSPECTIONS MUST OCCUR. THE PRINCIPAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL STORMWATER INSPECTIONS. ABSENCE OF INSPECTION WILL PREVENT ISSUE OF STORMWATER CERTIFICATION. SITE INSPECTIONS ARE TO BE COMPLETED BY AJ WHIPPS CONSULTING GROUP (AJW) AS FOLLOWS.

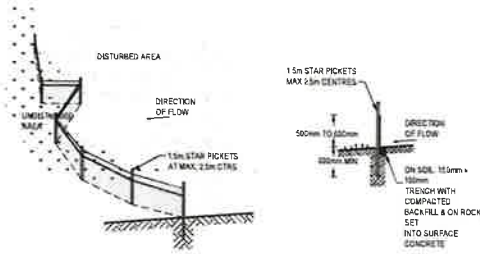
| INSPECTION NO. | STORMWATER INSPECTION REQUIREMENTS | AJW REPRESENTATIVE NAME | AJW REPRESENTATIVE SIGNATURE | INSPECTION DATE | PASS TICK ✓ OR | FAIL NA |
|---|---|---|---|---|---|---|
| 1 | INSPECTION OF INGROUND STORMWATER DRAINAGE PRIOR TO BACKFILL (MANDATORY) | | | | | |
| 2 | INSPECTION OF ANY INGROUND STORMWATER DRAINAGE NOT VIEWED AT INSPECTION NO. 1 (OPTIONAL) | | | | | |
| 3 | INSPECTION OF INFILTRATION PIT / TANK / TRENCH PRIOR TO BACKFILL (JOB SPECIFIC) | | | | | |
| 4 | FINAL INSPECTION ON COMPLETION OF ALL LANDSCAPING & POST COMMISSIONING OF THE STORMWATER SYSTEM (MANDATORY) | | | | | |
| 5 | SURVEY OF RAINWATER & ONSITE DETENTION TANKS & WORKS AS EXECUTED STORMWATER DRAWINGS (MANDATORY) *TO BE PROVIDED TO AJW PRIOR TO INSPECTION | | | | | |



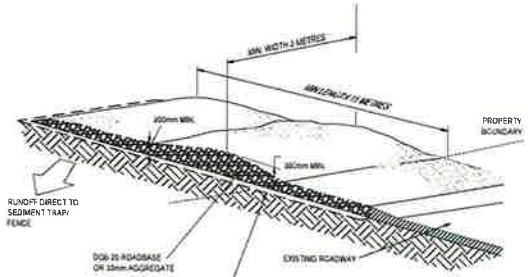

FILTER ROLL DETAIL FOR SAG KERB INLET
NTS




SANDBAG KERB SEDIMENT TRAP
NTS




SEDIMENT FENCE DETAIL
NTS




STABILISED SITE ACCESS
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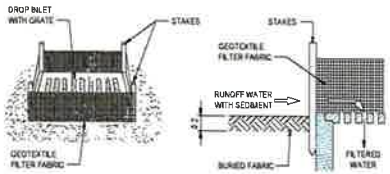


NOTES:
1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. CUT A 200mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.0m LONG STAR PICKETS INTO GROUND AT THE FOUR CORNERS OF PIT WALLS. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

GEOTEXTILE INLET FILTER
NTS

NOTES:
1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES 1 TO 2 METRES DOWNSLOPE.

STOCKPILE
NTS

| No. | Date | Details |
|---|---|---|
| P2 | 24.04.2017 | DEVELOPMENT APPLICATION |
| P1 | 11.07.2017 | PRELIMINARY ISSUE - FOR REVIEW |


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Drawing: STORMWATER SERVICES
EROSION & SEDIMENT CONTROL DETAILS

Status: PRELIMINARY ISSUE: NOT FOR CONSTRUCTION

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