

Wednesday 30 January 2019

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**Town of Gawler
Council Assessment Panel**

ATTACHMENTS UNDER SEPARATE COVER

Wednesday 30 January 2019

Item	Page No
<div><div><div>5.1</div><div>Development Application:</div></div><div><div>490/594/2018</div><div>Applicant:</div><div>40-42 Adelaide Road GAWLER SOUTH 5118</div><div>Address:</div><div>Removal of Condition 3 of Development Authorisation 490/634/934 comprising of an Extension of Trading Hours (to 24/7 facility).</div><div>Nature of Development:</div></div><div><div>Attachment 1 -</div><div>Application Documentation</div></div></div>	<div>3</div> <div></div> <div></div> <div></div> <div></div> <div>5</div>

12th November 2018

Ref:7409DAletter

Town of Gawler
PO Box 130,
Gawler SA 5118

Attention Mr. Scott Twine

Dear Scott

Re: **MCDONALD'S AUSTRALIA, EXTENSION OF TRADING HOURS TO AN EXISTING RESTAURANT, 40-42 ADELAIDE ROAD, GAWLER SOUTH**

Please find herewith a completed application form, relevant Certificates of Title and an acoustic assessment for the above development.

The following is a description of the proposed development and an assessment of the development against the relevant provisions of the Development Plan.

Subject land and locality

The site is located at 40-42 Adelaide Road, Gawler South and comprises an irregular shaped holding of three titles excluding a separate title for land at located at 38A Adelaide Road.



Figure 1: Subject land and locality

Source: Property Location Browser

The land is developed with a McDonald's restaurant with associated Drive Thru, car parking and landscaping. The restaurant has occupied the land since 1994 and is positioned to the south-western corner of the land fronting Adelaide Road.

Vehicle access to the site is via an entry/exit crossover to Adelaide Road at the north-western end of the land, with separate entry and exit crossovers either side of the restaurant building towards the south-western Adelaide Road end of the frontage.

A dual Drive Thru lane wraps around the south-eastern and south-western perimeter of the land exiting directly to Adelaide Road.

An established landscaping buffer surrounds the south-eastern and south-western boundaries to just over 2.4 metres in height and a boundary fence of 2.0m is located on each side and the rear boundary.

George Lane at the rear of the site is a narrow, sealed, no through laneway which provides limited vehicle access to some properties fronting both and Fourth Street. The lane is closed in line with the southern boundary of the subject land.



Figure 2: Rear boundary of the subject land to right of photograph from George Lane showing heritage brick wall at the rear of houses fronting Fourth Street. Source: Google Streetview

There is no access to the subject land from George Lane.



Figure 3: Dwelling located at the southern end of George Lane just before the road closure with bollards. Note the window shutters and lack of windows facing the McDonald's site.
Source: Google Streetview

The locality comprises 2 relatively distinct parts in accord with the zoning, with development along Adelaide Road primarily comprising commercial and retail developments as provided for in the Town Centre Historic (Conservation) Zone and residential development in the adjoining Residential Historic (Conservation).

Adelaide Road is a primary arterial road and handles in excess of 20400 annual average daily traffic movements (DPTI data 14 September 2015)

ZONING

The subject site and land generally fronting Adelaide Road is zoned Town Centre Historic (Conservation) Zone. The land abutting to either side of the subject site to Adelaide Road are also zoned Town Centre Historic (Conservation).

To the rear (east) the land is zoned Residential Historic (Conservation), Gawler South Residential Historic (Conservation) Policy Area.



Figure 4: The subject land showing zoning

Source: Property Location Browser

Relevant Development Plan provisions seek the Town Centre to be a “focus for retail, business, community and entertainment activities serving the local and broader community and visitors to Gawler.”

Other Objectives for this zone centre largely upon conserving, maintaining and protecting the built form character of the existing buildings and guiding new development appropriately.

The proposed development

Development Approval 490/634/1994 permitted the McDonald’s restaurant to operate between the hours of 6.00am and midnight Sunday to Wednesday and through to 1.00am (the following day) Thursday through Saturday.

McDonald’s now seeks seek the ability to operate the restaurant 24 hours, 7 days.

Development Plan assessment

The principal issue arising from the application is the interface with adjoining sensitive development which is essentially the residential development at the rear of the site.

It is not unusual for fast food restaurants to have a close relationship with adjoining residential land uses as a consequence of their location, often in narrow Centre or Commercial zones along arterial roads.

It is increasingly more common for some commercial developments to operate over extended trading hours, reflecting emerging work patterns and entertainment behaviour. Fast food restaurants and service stations are two that come immediately to mind.

The Development Plan deals extensively with the relationship between developments and particularly is respect to those provisions below.

Interface Between Land Uses Objectives

- 42: Development located and designed to minimise adverse impact and conflict between land uses.**
- 43: Protect community health and amenity from adverse impacts of development.**
- 44: Protect desired land uses from the encroachment of incompatible development.**

Principles

- 107 Development should not detrimentally affect the amenity of the locality or cause unreasonable interference through any of the following:**
 - (a) the emission of effluent, odour, smoke, fumes, dust or other airborne pollutants;**
 - (b) noise;**
 - (e) light spill;**
 - (f) glare;**
 - (g) hours of operation;**
 - (h) traffic impacts.**
- 108 Development should be sited and designed to minimise negative impacts on existing and potential future land uses desired in the locality.**
- 110 Residential development adjacent to non-residential zones and land uses should be located, designed and/or sited to protect residents from potential adverse impacts from non-residential activities.**
- 111 Sensitive uses likely to conflict with the continuation of lawfully existing developments and land uses desired for the zone should be designed to minimise negative impacts.**
- 112 Non-residential development on land abutting a residential zone should be designed to minimise noise impacts to achieve adequate levels of compatibility between existing and proposed uses.**
- 113 Development that emits noise (other than music noise) should include noise attenuation measures that achieve the relevant Environment Protection (Noise) Policy criteria when assessed at the nearest existing noise sensitive premises.**

It is important to bear in mind the long-held precept that development on the edge of zone cannot expect to have the same level of amenity as development in the heart of a zone.

That said, the existing use established by the McDonald's restaurant has given considerable regard to maintaining an appropriate relationship with residential development to its rear, and in the 17 years it has been operating the franchisee is not aware of any noise complaints that have been made in relation to the development, notwithstanding its extended evening and night time operations.

Matters relevant to the interface with the adjoining Residential zone include;

- No access to the site from George Lane;
- Extensive landscaping around the perimeter of the site;
- Lighting shielded and located to avoid overspill;

- Video observation of public areas;
- Continual upgrading of plant and equipment to make sure it is operating efficiently and with minimal noise. In fact, the recent replacement of an air-conditioned compressor has resulted in substantially lower noise, simply because the unit is new, and improved technology results in quieter, more efficient operation;
- A very high level of site, locality and equipment maintenance, and
- High level of staff training to manage any issues that might arise.

It should be noted that most of the plant, and in particular compressors for the freezers and fridges on site now operate over 24/7 in any event.

In respect to the proposed extension of hours the land is fortuitously located in that it is separated from adjoining sensitive land uses by George Lane, that 2 of the three closest buildings are located behind a high stone wall that shields them from most, if not all impacts from the proposed development and that the third of the closest dwellings is already provided with window shutters that will block out most of the impacts arising from the extended trading hours.

In order to assess the noise impacts arising from the extended trading hours, McDonald's have engaged the services of Sonus Acoustic Engineers. Their assessment concludes that noise emissions resulting from extended trading hours will be no greater (in the worst case) than 49 dB(A), achieving the 50 dB(A) night-time goal noise levels of the Environment Protection (Noise) Policy thus satisfying the provisions of principle 113 above. The Sonus report relies on noise readings taken at the site in 2008. As advised above, improved and replacement plant since then has resulted in noise from this source actually being lower than in 2008.

It is also germane to note that the Development Plan does not expect the treatment of interface issues to be one-sided, and this perhaps acknowledges the point I made earlier about interface impacts generally. Principle 108 and 110 above, seek that both the receiving and source developments in the locality be designed and/or sited to protect uses from potential adverse impacts arising from the interface relationship.

Crime Prevention

Objectives

20: A safe, secure, crime resistant environment where land uses are integrated and designed to facilitate community surveillance.

Principles

- 42 Development should be designed to maximise surveillance of public spaces through the incorporation of clear lines of sight, appropriate lighting and the use of visible permeable barriers wherever practicable.**
- 43 Buildings should be designed to overlook public and communal streets and public open space to allow casual surveillance.**
- 44 Development should provide a robust environment that is resistant to vandalism and graffiti.**
- 45 Development should provide lighting in frequently used public spaces including those:**
 - (a) along dedicated cyclist and pedestrian pathways, laneways and access routes**
 - (b) around public facilities such as toilets, telephones, bus stops, seating, litter bins, automatic teller machines, taxi ranks and car parks.**

- 46 Development, including car park facilities should incorporate signage and lighting that indicate the entrances and pathways to, from and within sites.**
- 47 Landscaping should be used to assist in discouraging crime by:**
- (a) screen planting areas susceptible to vandalism**
 - (b) planting trees or ground covers, rather than shrubs, alongside footpaths**
 - (c) planting vegetation other than ground covers a minimum distance of 2 metres from footpaths to reduce concealment opportunities.**

Site, staff and customer safety are paramount to McDonald's who works closely with the police to ensure that site security is maintained at the highest level and that the site design incorporates a range of techniques to achieve this goal, including:

- lighting throughout the site including within the car parking area, entrance and generally around the building;
- clear staff/public surveillance of the car park area from within the building;
- video cctv surveillance to maximise safety for McDonald's employees and customers;
- internal site landscaping with groundcovers and feature trees to maintain appropriate lines of sight, thus maximising surveillance into the site from publicly accessible areas such as Adelaide Road;
- staff training to cope with emergency situations.

Having staff on site 24/7 itself will enhance site security.

It is in McDonald's best interest to maintain a safe environment at all times for both customers and employees of the business.

Anti-social behaviour is not common but occurs from time to time and cannot be accounted for by normal acoustic treatments or security measures, although it is clearly discouraged by the security measures in place on site.

This issue was considered by a full bench of the ERD Court in the matter of Reichelt & Ors v City of Charles Sturt & Anor [2016] SAERDC 38 (17 November 2016), in which the Court said;

"The occurrence of anti-social, even criminal, behaviour is an unfortunate fact of life to be encountered at a broad range of shopping, commercial and entertainment facilities. If development approvals for such facilities were refused in order to ensure that detrimental impacts on the amenity of nearby residents were avoided altogether and in every case, there would be very few such facilities ever approved.

There is no evidence that the operations of this type of facility or of this particular operator have resulted in any unusual level of anti-social behaviour. The nature of the proposal in terms of its layout, lighting and opportunities for surveillance suggest to us that instances of anti-social behaviour are perhaps less likely to occur (in the event that approval is given) at this site than at many others. We do not regard the possibility of anti-social behaviour occurring as in any way justifying a refusal of the proposal."

In that matter the Court was considering the development of a McDonald's restaurant in a Mixed Use zone (as a non-complying development) and immediately adjacent to a residential zone with neighbouring houses closer than that associated with the present development.

Existing building finishes are robust with a combination of site security measures referred to above and proposed 24-hour operation will further minimise the potential for anti-social behavior and graffiti attack, not only on site but within the broader locality.

Site lighting is already screened/shielded to minimise light spill to the rear of the property and there is no access between the McDonald's site and residential development to the rear of the property.

The site will continue be lit for security purposes, with lights directed and shielded in such a manner to avoid light spill into the adjoining residential properties.

Odour is often a matter raised in relation to restaurants.

The key sources of potential odours from the development are associated with cooking and waste storage on the premises.

With regard to cooking, the kitchen will be operated in accordance with the Food Standards Code under the Food Act 2003 and Australian Standard 4674 – Design, Construction and Fit out of Food Premises; and will accord with the Environment Protection (Air Quality) Policy 1994, under the Environment Protection Act, both of which are intended to minimise the potential for the site to generate cooking odours.

McDonald's adopt a strict regime of cleaning and maintenance of exhaust systems to ensure that any build-up of fat is removed from filters and exhaust hoods daily and from ducting and mechanical plant monthly.

All waste is be stored in an existing waste storage area. This area is of a sufficient size to accommodate the number of required bins and is cleaned regularly as part of the premises on-going operation.

The design and operation of the restaurant will incorporate an exhaust ventilation system which complies with the relevant Australian Standard for cooking, odour extraction, and operations which will minimise any odour that may be discharged by the development.

Service arrangements for the development will not be changed with deliveries to the site and waste collection, or any other service to occur only during suitable day time hours.

Summary

Having regard to the type and nature of the proposed development, its location in a Centre zone on an arterial road, the context of the locality and the sites juxtaposition relative to neighbouring residential development, it is considered that the proposal demonstrates an appropriate, if not a high degree of consistency with the relevant provisions of Gawler (CT) Development Plan.

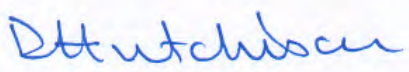
The acoustic assessment shows the development will be compliant with night-time goal noise levels of the Environment Protection (Noise) Policy, and considerable effort has already been put into ensuring that amenity impacts at the interface with adjoining residential developments are addressed, and that site security is maintained at the highest possible levels.

The operation of the site 24/7 is likely to enhance rather than detract from the security of the public in the locality.

For all of the above reasons I am of the view that the application warrants the approval of the Council.

Please do not hesitate to contact me on 81307222 or by email dhutchison@accessplanning.com.au if you have any queries regarding any of the above.

Yours sincerely,



David Hutchison BA CPP PIA
ACCESS PLANNING (SA) PTY LTD

McDonald's Gawler

Extension of Hours of Operation

Environmental Noise Assessment

S2929C4

February 2018

sonus.

Sonus Pty Ltd
17 Ruthven Avenue
Adelaide 5000 SA
+61 (8) 8231 2100
www.sonus.com.au

Document Title : McDonald’s Gawler
Environmental Noise Assessment

Document Reference : S2929C4

Date : February 2018

Author : Jason Turner, MAAS

Reviewer : Chris Turnbull, MAAS

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1 INTRODUCTION

An environmental noise assessment has been made of the proposed extension in trading hours of the McDonald's restaurant at Adelaide Road, Gawler.

The restaurant has a drive-through and car parking facilities, and is approved to operate from 6am to 12am on Sunday to Wednesday, and from 6am to 1am on Thursday to Saturday. The proposal is to extend the approved operating hours to allow 24 hour trading.

The closest dwellings to the site are located across George Lane, as shown on Figure 1.

There is an existing 2m high solid fence along the south-western and south-eastern boundary of the site adjacent to the drive through facility. The fence blocks line of sight between vehicle movements and ordering activity at the site and the dwellings and provides specific and significant noise reduction to the dwellings.

The assessment considers the environmental noise from activities at the site during the proposed extended hours (midnight to 6am on Monday to Thursday, 1am to 6am on Friday to Sunday), which include the use of the drive through facility; use of the car park; and operation of mechanical plant. All of these activities already occur during the approved hours and are not new to the site.

The assessment predicts the noise levels at the closest dwellings from the site, and compares them against the relevant requirements of the Gawler Council Development Plan and the *Environment Protection (Noise) Policy 2007* to ensure that the proposal does not adversely impact on the existing amenity of the closest dwellings.

The assessment has been based on:

- a site visit and manual noise measurements, conducted at site on 26 August 2017;
- noise data for the mechanical plant collected from the site during a previous environmental noise assessment; and,
- an understanding that the existing mechanical plant and site built form will not change with the proposed extension of operating hours.



Figure 1: McDonald's Gawler site and the closest dwellings.

2 ASSESSMENT CRITERIA

2.1 Development Plan

The subject land is located within a Town Centre Historic (Conservation) Zone in the Gawler CT Development Plan (consolidated 28 April 2016), whilst the closest dwellings are located within a Residential Historic (Conservation) Zone in the same Development Plan.

The Development Plan has been reviewed and particular regard has been given to the following Council Wide Interface Between Land Uses Provisions relevant to environmental noise:

OBJECTIVES

Objective 40: Protect community health and amenity and support the operation of all desired land uses.

PRINCIPLES OF DEVELOPMENT CONTROL

97. Development should not detrimentally affect the amenity of the locality or cause unreasonable interference through any of the following:

...

(b) noise:

...

103. Development should be consistent with the relevant provisions in the current Environment Protection (Noise) Policy.

2.2 Environment Protection (Noise) Policy 2007

Council Wide Interface Between Land Uses Principle of Development Control 103 references the *Environment Protection (Noise) Policy 2007* (the Policy).

The objective environmental noise criteria provided by the Policy are based on the World Health Organisation Guidelines to prevent annoyance, sleep disturbance and unreasonable interference on the amenity of an area. Therefore, compliance with the Policy will also satisfy the subjective provisions in the Development Plan which are related to environmental noise.

The Policy establishes goal noise levels to be achieved at the noise receivers (the closest dwellings), based on the Development Plan Zones in which the noise source (the facility) and the noise receivers are located, and the land use that the zones principally promote.

For a facility that is located in a zone which principally promotes commercial activity, and dwellings located in a residential area, the Policy provides a compliance¹ goal noise level of 50 dB(A) for night-time (10pm to 7am) activities.

When measuring or predicting noise levels for comparison with the goal noise levels of the Policy, a penalty adjustment may be applied if the noise exhibit any of the “annoying” characteristics of tone, impulse, low frequency and modulation. A 5 dB(A) penalty is applied if one characteristic is present; 8 dB(A) is applied for two characteristics; and 10 dB(A) is applied for three or four characteristics.

In order to apply a penalty, the characteristic must be dominant when considered within the context of the existing acoustic environment at the noise sensitive receivers. Where applicable, the penalty is added to the measured or predicted noise levels.

¹ The proposal is an extension of hours for existing noise sources that already operate during both the day and night periods.

3 ASSESSMENT

A noise prediction model for the site has been established with noise data input based on the following:

- noise measurement data of the existing mechanical and refrigeration plant collected during an earlier assessment, supplemented by manufacturer's noise data for the balance of plant now installed at the site. The Appendix provides the plant and associated sound power level inputs to the model; and,
- Sonus noise database which includes a range of previous noise measurements of:
 - drive-through activity, which include operation of the customer order vehicles, vehicles moving and idling at the drive through facility;
 - car park activities, which include vehicle movements, the opening and closing of vehicle doors; and getting in and out of cars.

The noise model and its inputs were supplemented with the noise measurements conducted at site on 26 August 2017.

The noise model takes into account the following:

- the separation distance between the noise sources and the dwellings;
- the time and duration that the noise sources operate;
- the influence of the boundary fence and other building structures;
- meteorological conditions conducive to sound propagation in accordance with the Policy (albeit with limited influence over such distances); and,
- the following concurrent level of activity in a 15 minute² period:
 - continual use of the closest drive-through lane;
 - car park activity associated with the use of 8 car park bays; and
 - continual operation of the air conditioning, ventilation and refrigeration (mechanical) plant.

Based on the above, the predicted noise levels at the closest dwellings (refer Figure 1) and comparisons with the relevant goal noise level of the Policy are provided in the table below:

Dwelling	Assessment Criteria, dB(A)	Predicted Noise Level, dB(A)	Penalty Adjustment, dB(A)	Resultant Noise Level, dB(A)
R1	50	44	+ 5	49
R2		37		42
R3		39		44

A 5 dB(A) penalty for modulation has been applied to predicted noise levels.

The table indicates that the noise from activity at the facility during the proposed extended hours will achieve the goal noise levels of the Policy.

² Default assessment period in accordance with the Policy.

4 CONCLUSION

An assessment has been made of the environmental noise from activity at the McDonalds Gawler facility during the proposed period of extended hours.

The assessment has predicted the noise levels at the closest dwellings from noise sources and activities at the site during the proposed extended hours, which include use of the drive through facility; use of the car park; and operation of mechanical plant.

Based on the predictions, the noise level at the closest dwellings from operation of the site during the extended hours of operation will be no greater than 49 dB(A), therefore achieving the 50 dB(A) night-time goal noise level of the *Environment Protection (Noise) Policy 2007*.

In doing so, it is considered that the relevant environmental noise provisions in the Gawler Council Development Plan are satisfied and the extension in hours will not cause an unreasonable interference in the existing amenity at the dwellings.

APPENDIX: MECHANICAL EQUIPMENT

Mechanical and refrigeration plant and the associated sound power level input to the noise model are summarised in the following table:

Plant	Maximum Sound Power Level
Party room ACU – <i>Temperzone OSA 181R</i>	70 dB(A)
Kitchen ACU – <i>Temperzone OSA 570 RKTBV</i>	80 dB(A)
Dining ACU – <i>Actron CAY620T</i>	81 dB(A)
Drive-through wall ACU - <i>Fujitsu AOTG09KMCA</i>	64 dB(A)
Restaurant north ACU	80 dB(A)
Kitchen exhaust fan 1	70 dB(A)
Kitchen exhaust fan 2	69 dB(A)
Refrigeration CU 1	75 dB(A)
Refrigeration CU 2	75 dB(A)

REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5223 Folio 48

Parent Title(s)	CT 4176/839			
Creating Dealing(s)	CONVERTED TITLE			
Title Issued	28/10/1994	Edition	2	Edition Issued 02/11/1994

Estate Type

FEE SIMPLE

Registered Proprietor

MCDONALD'S PROPERTIES (AUSTRALIA) PTY. LTD. (ACN: 008 496 928)
OF 2-6 SMITH STREET COLLINGWOOD VIC 3066

Description of Land

ALLOTMENT 3 FILED PLAN 125590
IN THE AREA NAMED GAWLER SOUTH
HUNDRED OF MUDLA WIRRA

Easements

NIL

Schedule of Dealings

NIL

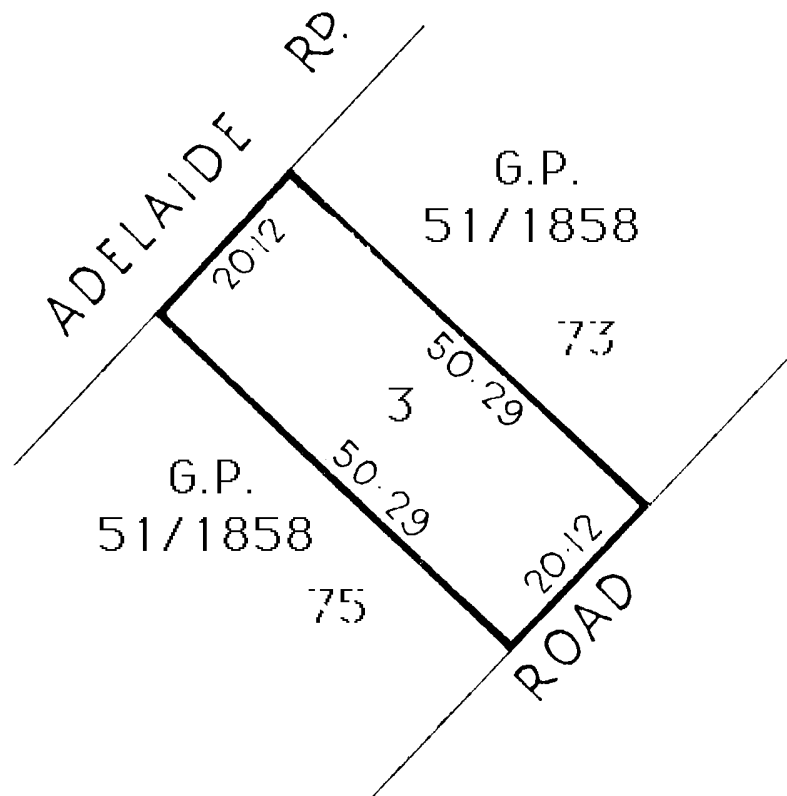
Notations

Dealings Affecting Title	NIL
Priority Notices	NIL
Notations on Plan	NIL
Registrar-General's Notes	NIL
Administrative Interests	NIL



This plan is scanned for Certificate of Title 4176/839

LAST PLAN REF : G.P. 51/1858



Note : Subject to all lawfully existing plans of division

REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5319 Folio 833

Parent Title(s)	CT 5147/911			
Creating Dealing(s)	TG 8005321			
Title Issued	18/01/1996	Edition	1	Edition Issued 18/01/1996

Estate Type

FEE SIMPLE

Registered Proprietor

MCDONALD'S PROPERTIES (AUSTRALIA) PTY. LTD. (ACN: 008 496 928)
OF 2-6 SMITH STREET COLLINGWOOD VIC 3066

Description of Land

ALLOTMENT 2 FILED PLAN 104584
IN THE AREA NAMED GAWLER SOUTH
HUNDRED OF MUDLA WIRRA

Easements

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED A TO THE ETSA CORPORATION (TG 8005321)

Schedule of Dealings

NIL

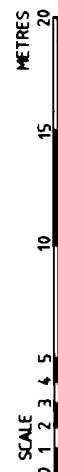
Notations

Dealings Affecting Title	NIL
Priority Notices	NIL
Notations on Plan	NIL
Registrar-General's Notes	NIL
Administrative Interests	NIL



Register Search (CT 5319/833)
14/11/2018 11:23AM

20181114004418
\$28.75



REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5457 Folio 934

Parent Title(s)	CT 4369/842			
Creating Dealing(s)	CONVERTED TITLE			
Title Issued	14/10/1997	Edition	3	Edition Issued 13/09/1999

Estate Type

FEE SIMPLE

Registered Proprietor

MCDONALD'S PROPERTIES (AUSTRALIA) PTY. LTD. (ACN: 008 496 928)
OF 2-6 SMITH STREET COLLINGWOOD VIC 3066

Description of Land

ALLOTMENT 71 FILED PLAN 153872
IN THE AREA NAMED GAWLER SOUTH
HUNDRED OF MUDLA WIRRA

Easements

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED A FOR SEWERAGE PURPOSES (TG 6940585)

Schedule of Dealings

NIL

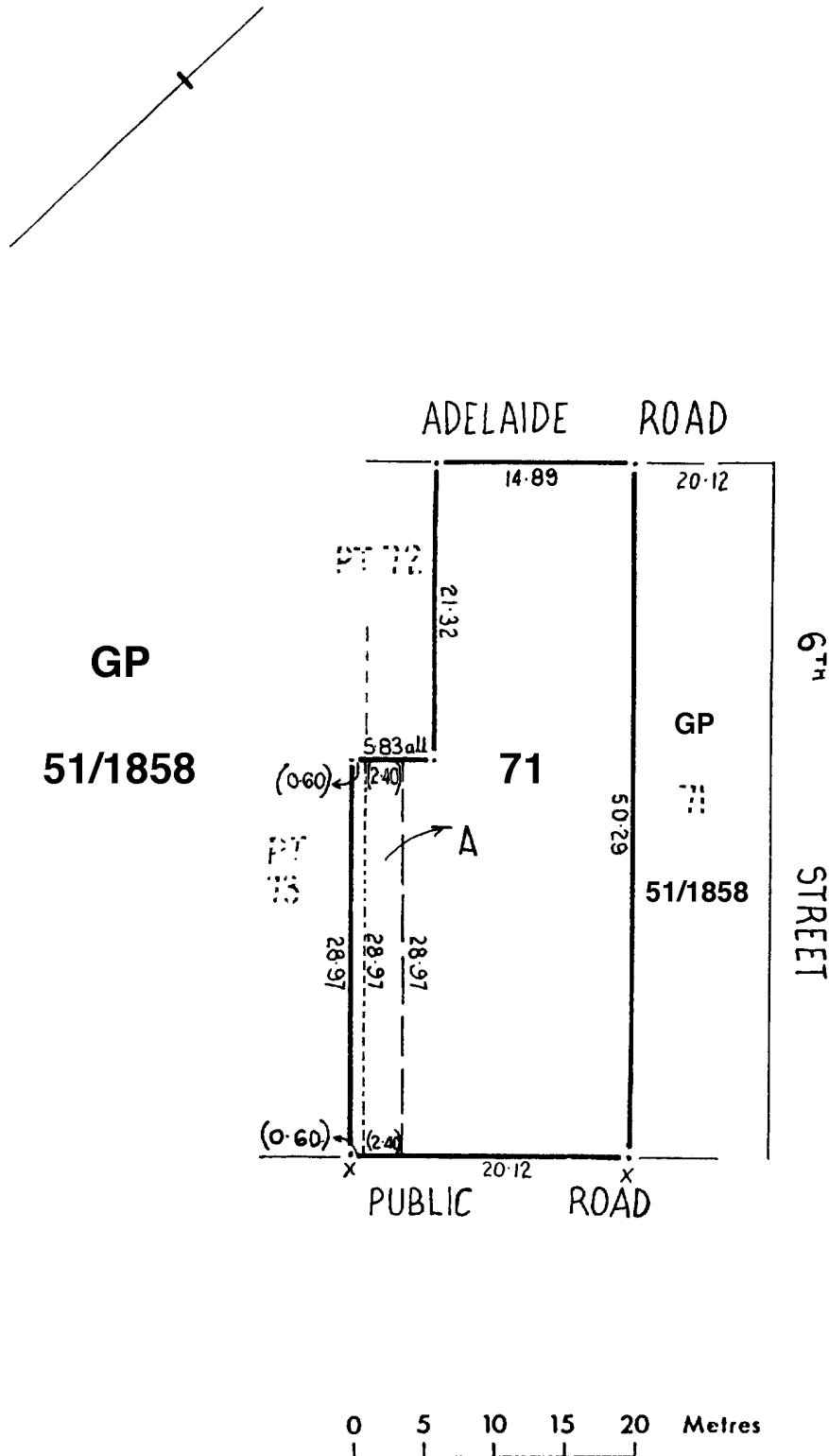
Notations

Dealings Affecting Title	NIL
Priority Notices	NIL
Notations on Plan	NIL
Registrar-General's Notes	NIL
Administrative Interests	NIL



THIS PLAN IS SCANNED FOR CERTIFICATE OF TITLE 4369/842
SEE TITLE TEXT FOR EASEMENT DETAILS

LAST PLAN REF: GP 51/1858



NOTE: SUBJECT TO ALL LAWFULLY EXISTING PLANS OF DIVISION

**Town of Gawler
Council Assessment Panel**

ATTACHMENTS UNDER SEPARATE COVER

Wednesday 30 January 2019

Item		Page No
5.2	Development Application: 490/10/2018	29
	Applicant: QUICKDRAW DRAFTING	
	Address: 39 Theen Avenue WILLASTON 5118	
	Nature of Development: Construction of 5 warehouse buildings (industrial use), signage, onsite car parking, landscaping and combined fence and retaining walls exceeding 2.1m	
	Attachment 1 - Application documentation and plans	31

Development Application Form

Gawler

Completing this application

- All sections must be completed. Failure to complete all sections may result in further delays or the inability to process your application.
- If hand written please print clearly using BLOCK LETTERS and place a TICK in appropriate boxes

Section 1 – Correspondence Method (Planning and Building)

By selecting "I Accept" below, you agree (as the Applicant, the Owner, and/or the Authorised Agent) to be legally bound by the terms and conditions of this service and that you consent all correspondence relevant to this application or which is otherwise required to be provided to you under the Development Act 1993 and including Decision Notification Forms, stamped plans and relevant documents being provided to you in **Electronic Format Only**. Please tick **only one** of the following boxes.

☒ **I Accept**

OR If you **do not** wish to correspond electronically, 3 complete sets of hardcopy documents will be required

☐ I choose only to receive general assessment correspondence via email but to receive stamped Plans and Decision Notification Forms by hardcopy mail.

Send to the following e-mail address rs@quickdrawdrafting.com.au

Section 2 – Consent Sought

Select **one** type of consent you wish to apply for:

☒ **Development Plan Consent**
(Planning Only)

☐ **Building Rules Consent**
(Building Only)

☐ **Development Approval**
(Planning & Building)

① If unsure of what type of consent is needed telephone Customer Service on 8522 9211

Section 3 – Location of Proposed Development

(This section must be completed)

<input type="text"/>	OR	<input type="text" value="13"/>	<input type="text" value="6062"/>	/	<input type="text" value="863"/>
HOUSE NUMBER		LOT NUMBER	CT VOLUME		CT FOLIO
<input type="text" value="KELLYS ROAD"/>			<input type="text" value="WILLASTON"/>	<input type="text" value="SA"/>	<input type="text" value="5118"/>
STREET			SUBURB	STATE	POSTCODE

Section 4 – Applicant Details

① Please note all correspondence will be sent to the Applicant (This section must be completed)

Name	<input type="text" value="QUICKDRAW DRAFTING"/>				
	GIVEN NAMES, SURNAME				
Postal Address	<input type="text" value="PO BOX 308 WILLASTON SA 5118"/>				
	No., STREET, SUBURB, STATE, POSTCODE				
Email	<input type="text" value="rs@quickdrawdrafting.com.au"/>	Phone	<input type="text" value="85224158"/>		

Section 5 – Owners Details of the Subject Land

① If same as Applicant, leave blank and move to Section 6.

Name	<input type="text" value="THAUTO PTY LTD"/>				
	GIVEN NAMES, SURNAME				
Postal Address	<input type="text" value="6 GREAVES COURT EVANSTON PARK SA 5116"/>				
	No., STREET, SUBURB, STATE, POSTCODE				
Email	<input type="text" value="tech@gawlerauto.com.au"/>	Phone	<input type="text" value="85221166"/>		

Section 6 – Contact for Further Information

① Please note this section is to be **completed** if contact person is not the Applicant

Name	<input type="text" value="QUICKDRAW DRAFTING"/>				
	GIVEN NAMES, SURNAME				
Email	<input type="text" value="rs@quickdrawdrafting.com.au"/>	Phone	<input type="text" value="—"/>		

Section 7 – Builders Details

① This Section **must be completed** by the Applicant if applying for Building and Development Approval

☐ Owner Builder

OR

☒ Builders Name

TO BE ADVISED

Phone

Postal Address

No., STREET, SUBURB, STATE, POSTCODE

Email

Lic. No.

Section 8 – Description of Development & Associated Detail

Description of Development (for example single storey detached dwelling, domestic garage, warehouse with office, tree removal)

PROPOSED SHOP/OFFICE DEVELOPMENT WITH CAR PARKING & LANDSCAPING

Existing site use (If Known)

VACANT

Does the proposal affect a regulated or significant tree?

Yes ☐

No ☒

Note: A regulated or significant tree may be on the adjoining land that may be affected (including damage to tree roots) by the proposed development.

① If unsure what a regulated or significant tree is refer Fact Sheet "Removal/Pruning a Tree on My property" - this can be accessed via Councils' website: www.gawler.sa.gov.au/planning-information-sheets

Is there a brush fence within 3 metres of the proposed building work?

Yes ☐

No ☒

Are there any easements on the Land?

Yes ☐

No ☒

Is the site connected to Sewer (SA Water)?

Yes ☒

No ☐

Septic System ☐

Section 9 – Costing and Floor Area

① Council may require written justification to verify costs (This section must be completed)

Estimated total cost of Proposal: \$ 250,000

Estimated floor area of work:

875 m²

① Development Cost does not include fit out cost

Please note works valued over \$15,000 require CITB Levy to be paid and receipt presented to Council

Section 10 – Declaration

Powerline Clearance

I, being the applicant for the development described herein, declare that the proposed development will involve the construction of a building which would, if constructed in accordance with the plans submitted, not be contrary to the regulations prescribed for the purposes of Section 86 of the Electricity Act 1996. I make this declaration under clause 2A (1) of Schedule 5 of the Development Regulations 2008.

☒ Yes, I acknowledge to comply with the relevant sections of the Act

A Building Safely Near Powerlines brochure has been prepared by the Technical Regulator to assist applicants and other interested persons. Hard copies are available from Council and the Office of the Technical Regulator. The brochure and other relevant information can also be found at www.technicalregulator.sa.gov.au.

Submission of Documents

☒ I acknowledge that Council will not accept my application unless the following has been supplied:

☒ Application Fees Paid

☒ Site Plan

☒ Floor Plan

☒ Elevation Details

☐ Technical Drawings (if Building Rules Consent sought)

☒ Certificate of Title (less than 12 months old) or Title Search Fee Paid

Display of Documentation

☒ I declare the information that I have provided on this application form is correct to the best of my knowledge and that I have the authority of any copyright holder for the public display and copying of any material lodged. I acknowledge that copies of this application and supporting documentation may be provided to interested persons in accordance with the Development Regulations 2008 and may be made available on Council's website for public comment and as an attachment to a report item in the Agenda of Council's Development Assessment Panel.

If you have any concerns over the confidentiality or security content of such documents or information, you should discuss these with a member of Council's planning staff prior to lodging. If another person claims copyright in any material you lodge, you must obtain and provide to Council the express authority of that person for the display and copying of that material.

SIGNATURE:

J. Skoda

DATE:

06.12.17

DEVELOPMENT REGULATIONS 1993

Declaration of Applicant (Pursuant to clause 2A(1) of Schedule 5)

To: TOWN OF GAWLER

From: QUICKDRAW DRAFTING

Date of Application: 06/12/17

Location of Proposed Development:

House No: Lot No: 13 Street: KELLYS RD Town/Suburb: WILLASTON

Section No (full/part): DP 84159 Hundred: MUDGA WIRRA

Volume: 6062 Folio: 863

Nature of Proposed Development:

PROPOSED SHED/OFFICE DEVELOPMENT WITH
CAR PARKING & LANDSCAPING

I QUICKDRAW DRAFTING being the applicant for the development described above declare that the proposed development will involve the construction of a building which would, if constructed in accordance with the plans submitted, not be contrary to the regulations prescribed for the purposes of section 86 of the *Electricity Act 1996*. I make this declaration under Clause 2A(1) of Schedule 5 of the *Development Regulations 1993*.

Date: 06/12/17

Signed: R Skoda

Note 1

This declaration is only relevant to those development applications seeking authorisation for a form of development that involves the construction of a building (there is a definition of 'building' contained in section 4(1) of the *Development Act 1993*).

Note 2

The requirements of section 86 of the *Electricity Act 1996* do not apply in relation to:

- a) a fence that is less than 2.0 m in height; or
- b) a service line installed specifically to supply electricity to the building or structure by the operator of the transmission or distribution network from which the electricity is being supplied.

Note 3

A *Building Safely Near Powerlines* brochure has been prepared by the Technical Regulator to assist applicants and other interested persons. Hard copies of this brochure are available from councils and the Office of the Technical Regulator. The brochure and other relevant information can also be found at www.technicalregulator.sa.gov.au

FEE TYPE	Fee Rate	GST	Amount Payable
LODGEMENT FEE			
Standard Lodgement Fee - <u>Required for all applications</u>	62.50	Exempt	\$ 62.50
Additional Lodgement Fee (if development cost exceeds \$5000 and Building Rules Consent is required)	70.50	Exempt	
Swimming Pool Lodgement Fee (if application involves the construction of or addition to a swimming pool or spa pool, or a safety fence or barrier for a swimming pool or spa)	186.00	Exempt	
PLANNING ASSESSMENT FEE			
If the development cost does not exceed \$10,000	39.00	Exempt	
If the development cost exceeds \$10,000 but does not exceed \$100,000	107.00	Exempt	
If the development cost exceeds \$100,000	0.125% dev. cost	Exempt	312.50
Building Rules Consent Only Fee (if application does not require planning assessment pursuant to Schedule 1A of the Development Act Regulations)	52.00	Exempt	
ADDITIONAL FEES FOR NON-COMPLYING DEVELOPMENT			
Non-Complying Lodgement Fee - additional to standard lodgement fee(s)	100.00	Exempt	
Non-Complying Development Administration Fee	127.00	Exempt	
Assessment Fee - if the development cost does not exceed \$10,000	53.50	Exempt	
Assessment Fee - if the development cost exceeds \$10,000 but does not exceed \$100,000	127.00	Exempt	
Assessment Fee - if the development cost exceeds \$100,000	0.125% of dev. cost	Exempt	
AGENCY REFERRAL FEES			
Government Agencies (DPTI, CFS, State Heritage Unit):			
– If the development cost does not exceed \$1,000,000	222.00	Exempt	
– If the development cost exceeds \$1,000,000	371.00	Exempt	
Environment Protection Authority (If development involves Wood Preservation Works, Cement Works, Ferrous & Non Ferrous Metal Melting, Pulp or Paper Works, Waste or Recycling Depot, Metallurgical Works)	371.00	Exempt	
OTHER PLANNING FEES			
Public Notification (For all Category 2 and 3 applications)	107.00	Exempt	
Category 3 Advertising (for advertisement in Bunyip newspaper)	396.00	Incl.	
Certificate of Title Search	36.00	Incl.	
Application to Extend any Consent or Approval	100.00	Exempt	
SEPTIC TANK APPLICATION (WASTEWATER) FEES			
Septic Application Fee - Including 3 inspections	469.00	Exempt	
Fee for Alteration of existing on-site system	106.00	Exempt	
Inspection Fees - Additional	117.00	Exempt	
BUILDING RULES ASSESSMENT FEE			
Minimum Fee	68.00	Incl.	
Classes 1, 2 & 4 (dwellings & flats)	Floor Area m ² x \$3.01/m ² =	Incl.	
Classes 3, 5 & 6 (lodging premises, offices, shops)	Floor Area m ² x \$4.01/m ² =	Incl.	
Classes 7 & 8 (commercial storage / manufacturing / packaging)	Floor Area m ² x \$2.66/m ² =	Incl.	
Class 9a & 9c (health care buildings)	Floor Area m ² x \$4.55/m ² =	Incl.	
Class 9b (assembly buildings)	Floor Area m ² x \$3.99/m ² =	Incl.	
Class 10 (garages, carports, verandahs, fences)	Floor Area m ² x \$0.90/m ² =	Incl.	
Staged Consent Fee (If private certifier to be used for Building Rules Consent)	62.50	Exempt	62.50
OTHER BUILDING FEES			
Demolition Fee (x 0.2 of building assessment fee <u>or</u> minimum fee, whichever is greater)	Min. 68.00	Incl.	
Certificate of Classification Fee ((Area x 0.8) x (Class Fee x 0.8) <u>or</u> minimum fee, whichever is greater)	Min. 66.50	Incl.	
Certificate of Occupancy Fee (Required for classes 2 - 9 only)	44.75	Incl.	
Variation to Development Application Fee	as for new application	Exempt	
Consent to Development at Variance to Building Rules	156.00	Incl.	
Essential Fire Safety Provisions	96.00	Incl.	
TOTAL FEE PAYABLE	Page 34 of 47 57.50		

REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 6062 Folio 863

Parent Title(s) CT 5806/296

Creating Dealing(s) RTC 11418187

Title Issued	10/08/2010	Edition	2	Edition Issued	20/04/2017
---------------------	------------	----------------	---	-----------------------	------------

Estate Type

FEE SIMPLE

Registered Proprietor

THAUTO PTY. LTD. (ACN: 116 782 748)
OF 6 GREAVES COURT EVANSTON PARK SA 5116

Description of Land

ALLOTMENT 13 DEPOSITED PLAN 84159
IN THE AREA NAMED WILLASTON
HUNDRED OF MUDLA WIRRA

Easements

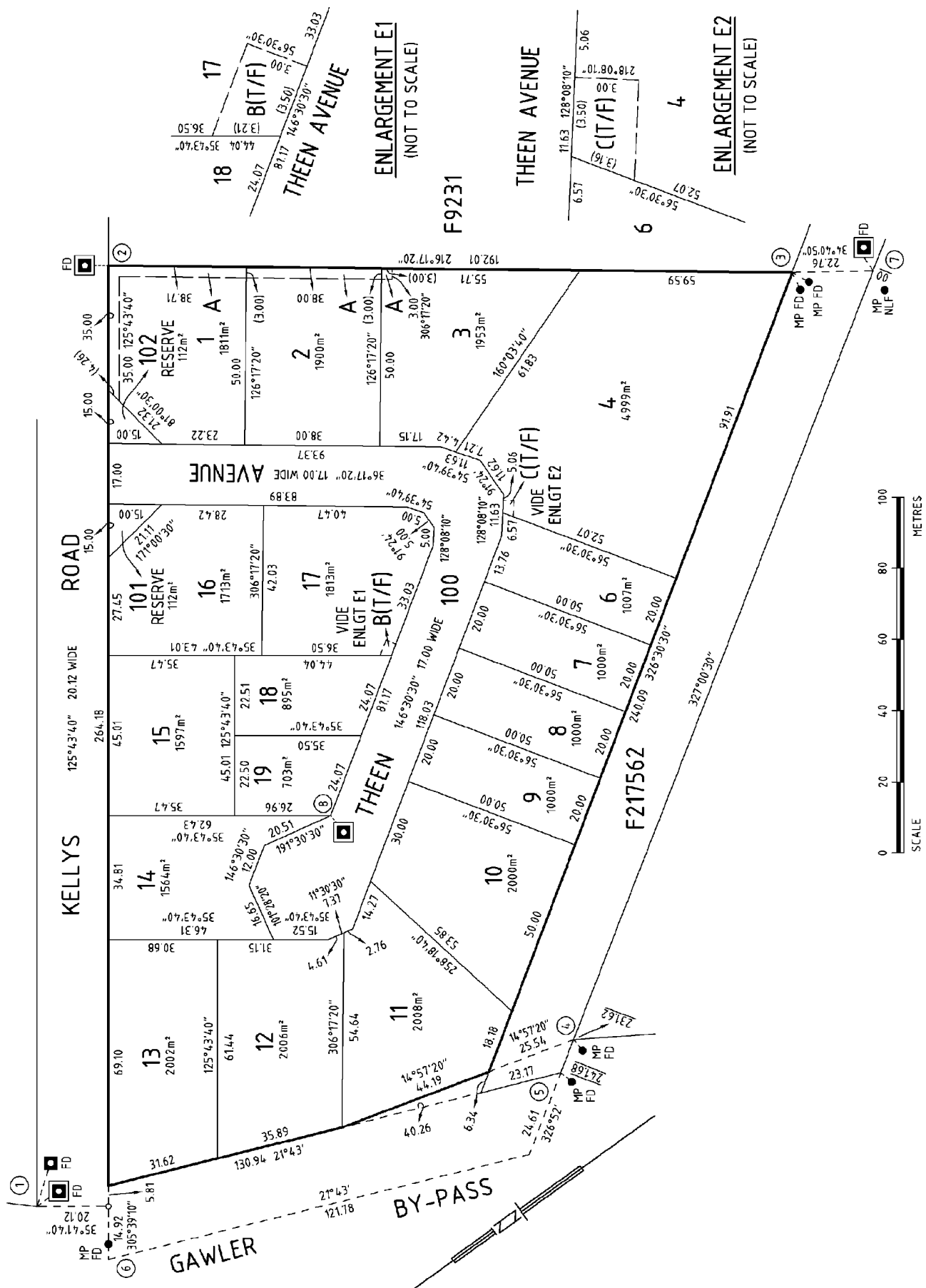
NIL

Schedule of Dealings

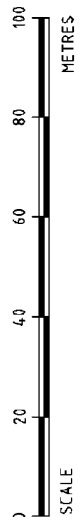
Dealing Number	Description
12704780	MORTGAGE TO WESTPAC BANKING CORPORATION (ACN: 007 457 141)

Notations

Dealings Affecting Title	NIL
Priority Notices	NIL
Notations on Plan	NIL
Registrar-General's Notes	NIL
Administrative Interests	NIL



SURVEY INFORMATION IS DERIVED FROM DEPOSITED PLAN 84159



KELLYS ROAD

TBM
TOP OF BOTTOM BOLT
ON STOBIE, PAINTED WHITE
RL 54.318

ALLOTMENT 13 DP 84153
In the area named WILLASTON.
Hundred of MUDLA WIRRA.
CT: 6062/863

2x100L rain water detention tanks.
Discharge overflow to street water
table through 27mm orifice.

Batter natural ground at boundary
down to new cat plateau at 1:3

Fire rate external wall with "Firechek"
behind wall cladding as required



SITE PLAN: 1:200

AREAS:	
SITE AREA:	2002.48 SQ.M.
BUILDING AREAS:	
OFFICE:	96.90 SQ.M.
AMENITIES:	129.54 SQ.M. x 6
WORKSHOP:	45.25 SQ.M.
CAR PARKS/DRIVES: (Concrete)	734.36 SQ.M.
LANDSCAPING/OPEN AREA:	819.91 SQ.M.
TOTAL:	306.06 SQ.M.
	2002.48 SQ.M.

CAR PARK REQUIREMENTS:	
BUILDING AREAS:	
OFFICE:	96.9 SQ.M. 4/100
WORK SHOP:	200.0 SQ.M. 2/100
WORK SHOP:	534.36 SQ.M. 1.33/100
CAR PARK SETOUT:	
1 OFF DISABLE C/P:	5.4M x 2.5M SIDE DEDICATED + REAR SHARED AREA.
15 OFF GENERAL C/P:	5.4M x 2.5M WITH WHEEL STOP.
CONCRETE DRIVE AND CARPARKS. PAINTED CARPARKS AND ISLE LINES.	

STORMWATER & SITE DRAINAGE TO ENGINEERS DETAILS AND DRAWING.

LANDSCAPING SCHEDULE:
100mm wide concrete kerbing retaining pine bark mulch.
Dripper irrigation system to individual plantings.
(water supplied by Rainwater tanks.)

Screening Hedge :

Grevillea "Coconut Ice"	1.5m	Grevillea	Pink flowers
Hakea laurina	1.2m	Pincushion Hakea	Red

Shrubs / Ground covers:

Lavandula angustifolia	0.6m	Lavender	Lavender blue flowers
Agapanthus praecox	0.6m	Agapanthus	Lavender blue flowers

FENCING:

- 2.1m high tubular fence to boundary generally with sliding gates to Entry/Exit.
- 2.1m high Custom Orb horizontal clad fence on mild steel framing where shown.

RETAINING WALL:

- Concrete block domestic retaining wall 1.0m high maximum.
- Concrete sleeper retaining wall 1.5m high maximum to Engineer's details.

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or use, whether in part or full is not permitted. Legal action will be
instigated against any infringement, without prior written approval.

PROPOSED SHED/OFFICE DEVELOPMENT
WITH CAR PARKING & LANDSCAPING.
(AMENDED NOVEMBER 2018)
THAUTO PTY LTD (ACN 116 782 748)
LOT 13 KELLYS ROAD, WILLASTON, S.A.
STORMWATER/SITE DRAINAGE DWG: 1 OF 9

Date:	Nov'17	Job No:	GD201735
Scale:	1:200	Client:	Harris

All dimensions are to be confirmed on site PRIOR to commencing
any part of the works including ordering or purchasing materials.
Written dimensions take preference to scaling the drawing.
DO NOT SCALE the drawings. If in doubt contact the office.

TBM
TOP OF BOTTOM BOLT
ON STOBIE, PAINTED WHITE
RL 54.318

ALLOTMENT 13 DP 24153
In the area named WILLASTON.
Hundred of MUDLA WIRRA.
CT: 6062/8663

2x100KL rain water detention tanks.
Discharge overflow to street water
table through 27mm orifice.

Batter natural ground at boundary
down to new cat plateau at 1:3

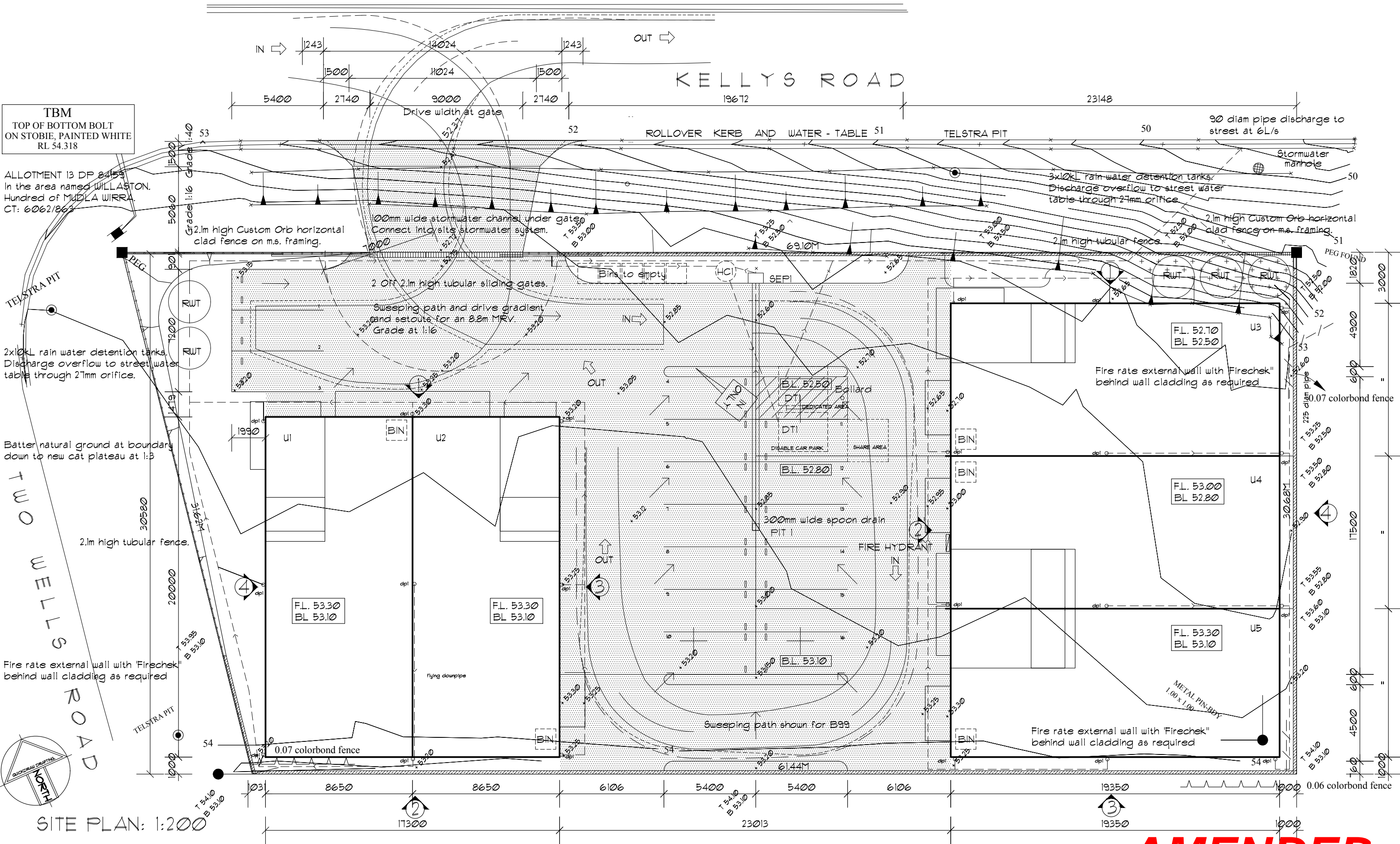
Fire rate external wall with "Firechek"
behind wall cladding as required



SITE PLAN: 1:200

CAR PARK REQUIREMENTS:		REQUIRED	CAR PARKS	CAR PARKS
BUILDING AREAS:		C/P RATE	REQUIRED.	PROVIDED
OFFICE:	96.9 SQ.M.	4/100	3.90	4
WORK SHOP:	200.0 SQ.M.	2/100	4	4
WORK SHOP:	548.35 SQ.M.	1.33/100	7.3	8

CAR PARK SETOUT:
15 OFF GENERAL C/P: 5.4M x 2.5M WITH WHEEL STOP.
1 OFF DISABLE C/P: 5.4M x 2.5M+SIDE DEDICATED+REAR SHARED AREA.
CONCRETE DRIVE AND CARPARKS. PAINTED CARPARK AND ISLE LINES.



(AMENDED NOVEMBER 2018)
(AMENDED SEPTEMBER 2018)
PROPOSED SHED/OFFICE DEVELOPMENT
WITH CAR PARKING & LANDSCAPING.
THAUTO PTY LTD (ACN 116 782 748)
LOT 13 KELLYS ROAD, WILLASTON. S.A.
CARPARK/VEHICLE MANOUVRE: 2 OF 9

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DO NOT SCALE the drawings. If in doubt contact the office.

Date: Nov'17
Scale: 1:200
Job No: QD201735
Client: Harris

AMENDED

QUICKDRAW DRAFTING
BUILDING DESIGN: PLANNING CONCEPTS: DRAFTING SERVICE
Telephone: 08 8522 4158
Email: quikdrawdrafting.com.au
Page 39 of 87
p.o. box 308 willaston. s.a. 5118

TBM
TOP OF BOTTOM BOLT
ON STOBIE, PAINTED WHITE
RL 54.318

KELLYS ROAD

ALLOTMENT 13 DP 84159
In the area named WILLASTON.
Hundred of MURRAY WARRA.
CT: 6062/863

2x10KL rain water detention tanks.
Discharge overflow to street water table.

2.1m high Custom Orb horizontal clad
fence on m.s. framing.

2 Off 2.1m high tubular sliding gates.

100mm wide stormwater channel under gate.
Connect into site stormwater system.

3x10KL rain water detention tanks.
Discharge overflow to street water table.

2.1m high Custom Orb horizontal clad
fence on m.s. framing.

2.1m high tubular fence

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PEG FOUND

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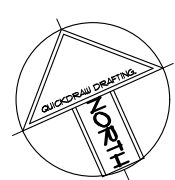
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TWO WELLS ROAD



SITE PLAN: 1:200
Drawing amended November 2018

AMENDED

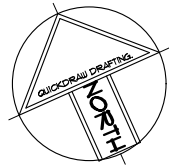
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PROPOSED SHED/OFFICE DEVELOPMENT
WITH CAR PARKING & LANDSCAPING.
(AMENDED NOVEMBER 2018)
THAUTO PTY LTD (ACN 116 782 748)
LOT 13 KELLYS ROAD, WILLASTON, S.A.
SITE PLAN: CUT & FILL DWG: 3 OF 9

Date:	Nov'17	Job No:	GD201735
Scale:	1:200	Client:	Harris

All dimensions are to be confirmed on site PRIOR to commencing
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QUICKDRAW
DRAFTING
BUILDING DESIGN: PLANNING CONCEPTS: DRAFTING SERVICE
Telephone or email for an appointment: 85224158
Page 40 of 87
p.o. box 308 willaston, s.a. 5118



Aluminium framed sliding Entry door
with cantilever canopy over.

Colorbond Wall cladding as selected
on m.s. framing to future details.

Colorbond rain head to each
end of internal box gutters.

Solar panels to west face
roof of each unit.

WORKSHOP AREA

Colorbond Custom Orb roof sheeting
on m.s. framing to future details.

Translucent sheet to north face
roof of each unit.

FLOOR LAYOUT: UNITS 1&2

Setout dimensions approximate only and subject
to change to suit final structural design.

FLOOR AREAS:

UNIT 1:
OFFICE: 16.53 SQ.M.
AMENITIES: 9.05 SQ.M.
WORKSHOP: 145.42 SQ.M.
TOTAL: 171.00 SQ.M.

UNIT 2:
OFFICE: 16.53 SQ.M.
AMENITIES: 9.05 SQ.M.
WORKSHOP: 149.46 SQ.M.
TOTAL: 175.04 SQ.M.

AMENDED

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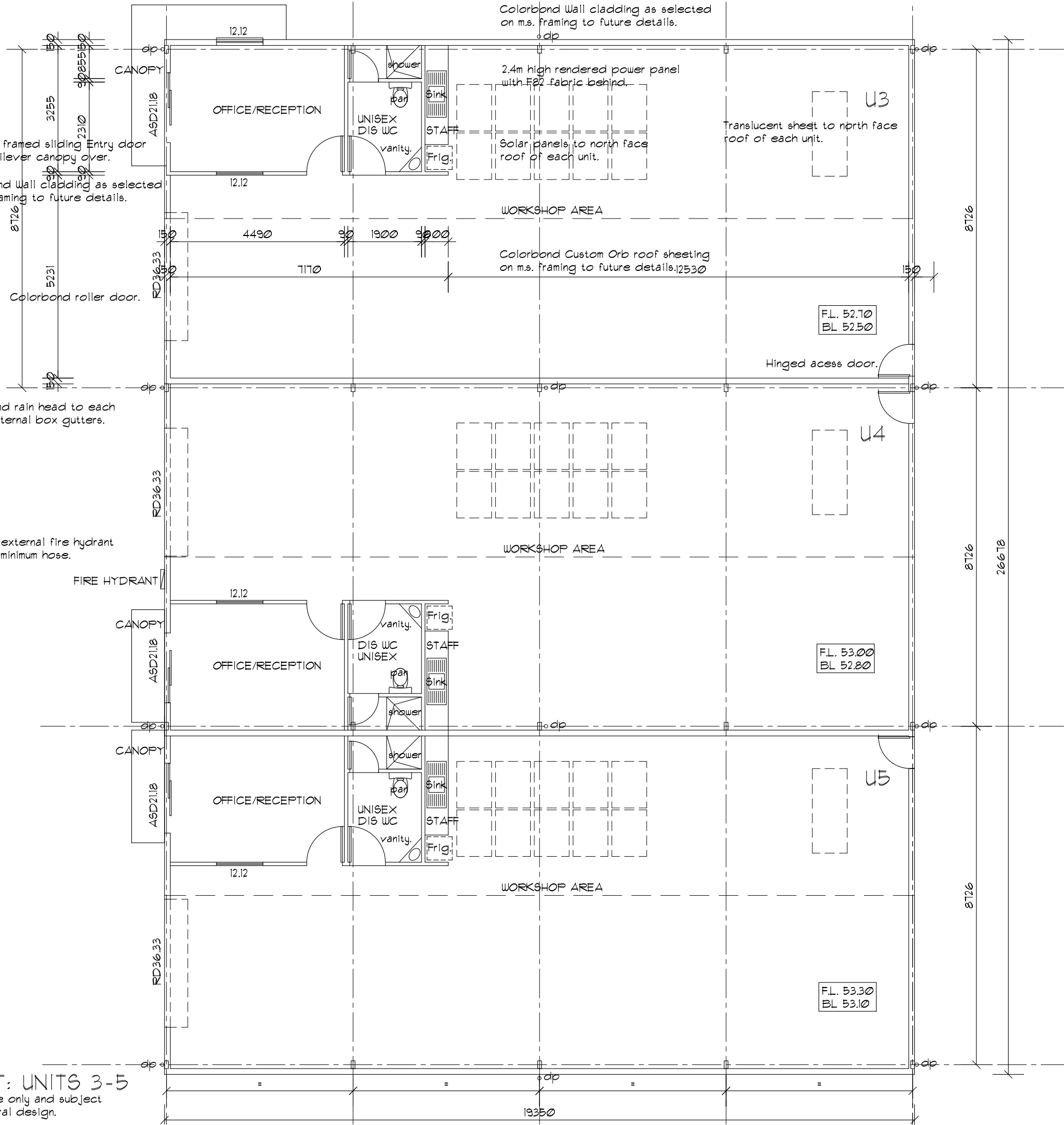
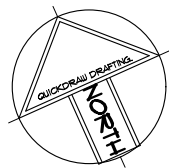
PROPOSED SHED/OFFICE DEVELOPMENT
WITH CAR PARKING & LANDSCAPING.
(AMENDED NOVEMBER 2018)

THAUTO PTY LTD (ACN 116 782 748)
LOT 13 KELLYS ROAD, WILLASTON. S.A.

FLOOR LAYOUTS: UNITS 1&2: DWG: 4 OF 9

Date:	Nov'17	Job No:	QD201735
Scale:	1:100	Client:	Harris

All dimensions are to be confirmed on site PRIOR to commencing
any part of the works including ordering or purchasing materials.
Written dimensions take preference to scaling the drawing.
DO NOT SCALE the drawings. If in doubt contact the office.



FLOOR AREAS:

UNIT 3:	
OFFICE:	16.53 SQ.M.
AMENITIES:	9.05 SQ.M.
WORKSHOP:	146.17 SQ.M.
TOTAL:	171.75 SQ.M.

UNIT 4:	
OFFICE:	16.53 SQ.M.
AMENITIES:	9.05 SQ.M.
WORKSHOP:	147.14 SQ.M.
TOTAL:	172.72 SQ.M.

UNIT 5:	
OFFICE:	16.53 SQ.M.
AMENITIES:	9.05 SQ.M.
WORKSHOP:	146.17 SQ.M.
TOTAL:	171.75 SQ.M.

AMENDED

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PROPOSED SHED/OFFICE DEVELOPMENT
WITH CAR PARKING & LANDSCAPING.
(AMENDED NOVEMBER 2018)

THAUTO PTY LTD (ACN 116 782 748)
LOT 13 KELLYS ROAD, WILLASTON. S.A.

ELEVATIONS UNITS 3-5:		DWG: 5 OF 9	
Date:	Nov'17	Job No:	QD201735
Scale:	1:100	Client:	Harris

All dimensions are to be confirmed on site PRIOR to commencing any part of the works including ordering or purchasing materials. Written dimensions take preference to scaling the drawing. DO NOT SCALE the drawings. If in doubt contact the office.

FLOOR LAYOUT: UNITS 3-5
Setout dimensions approximate only and subject to change to suit final structural design.

SITE STORMWATER ASSESSMENT AND MANAGEMENT

RETAINING WALL DESIGN

CLIENT: GAWLER AUTO ELECTRICAL
ADDRESS: LOT 13 KELLYS ROAD, WILLASTON, S.A. 5118
JOB NUMBER: HE16217
NOVEMBER 2017
REVISION A: APRIL 2018
REVISION B: SEPTMBER 2018
REVISION C: NOVEMBER 2018

AMENDED

HARNETT ENGINEERING

SAM HARNETT BE Hons (UniSA) MIE Aust, NER
34 MAIN NORTH ROAD
WILLASTON SA 5118
PHONE: 0402 518 871
EMAIL: sam@harnettengineering.com.au

Design Brief – Statement

This report contains advice supplied by Harnett Engineering for stormwater management of a site and a concrete sleeper retaining wall. Should the owner have any issues with any part of this service then the owner must contact Harnett Engineering in writing prior to any commencement of any work in order to determine if an adjustment is required to the design brief.

Design Brief

The design brief used for stormwater management and retaining walls by Harnett Engineering and for all civil and building projects is to complete the minimum design requirements in accordance with the Building standards of Australia and any other relevant building rules/codes at the time of this reports production.

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1.0 INTRODUCTION & ASSUMPTIONS

The proposal for this site is to construct a 2 warehouses, one either side of the property and a bitumen car park. The aim of this report is to determine the storm water detention requirements for the site. Each of the warehouse will direct all storm water landing on the roof to rain water tanks. This report will analyse the proposed works and determine the sites detention requirements.

A retaining wall along the boundary of Kellys Road will also be constructed. The maximum height of the wall will be 2m

The sites area is 2002m² or 0.2ha



Please refer to the storm water management drawing/s.

Storm water noters

- Roofed area, $C_r=1$, unroofed, impervious, paved area, $C_i=0.9$, Unroofed pervious area, $C_p=0.1$
- The permissible post development site discharge is (determined by council) 7.5L/s for a 1 in 100 year ARI storm lasting 5 mins.

2.0 SITE STORMWATER ANALYSIS

2.1 Pre-development Flow & Allowable Stormwater Flow onto Street

The predevelopment site discharge was determined by using a 1 in 10 year ARI storm lasting 5 mins.

Please see data below

Entire site - Pre Development Flow

Cr (roof coefficient)	1	
Ar (area of roof)	0	m ²
Ci (impervious coefficient)	0.9	
Ai (area of impervious)	0	m ²
m	0.95	
10I60	25.78	mm/hr
Cp (pervious coefficient)	0.10438	
Ap (area of pervious)	2002	m ²
I (intensity 10yr ARI, 5 min)	97.96	mm/hr
Q (flow from site)	5.69	L/s

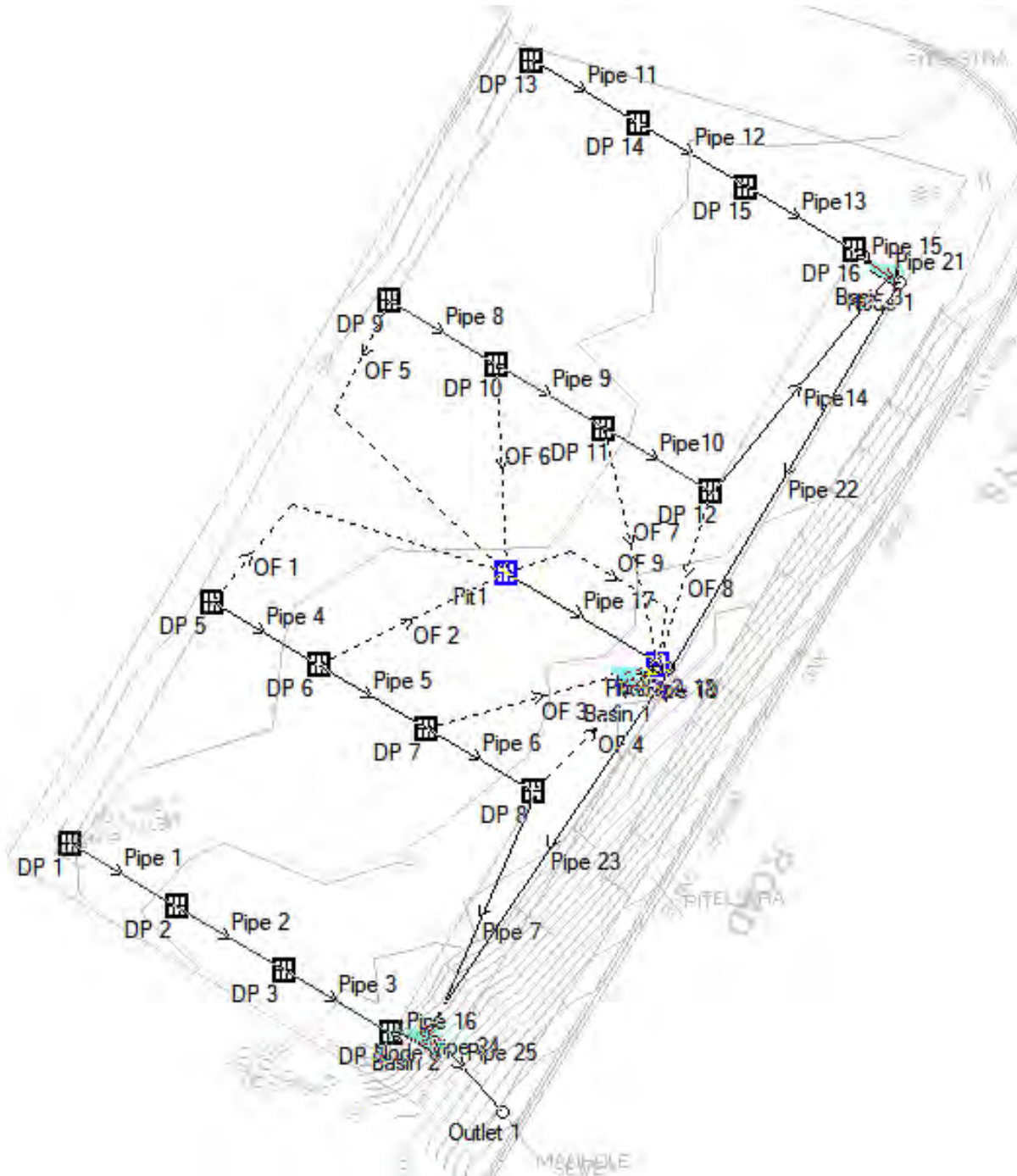
Predevelopment site discharge = 5.69L/s

The permissible post development site discharge is (determined by council)

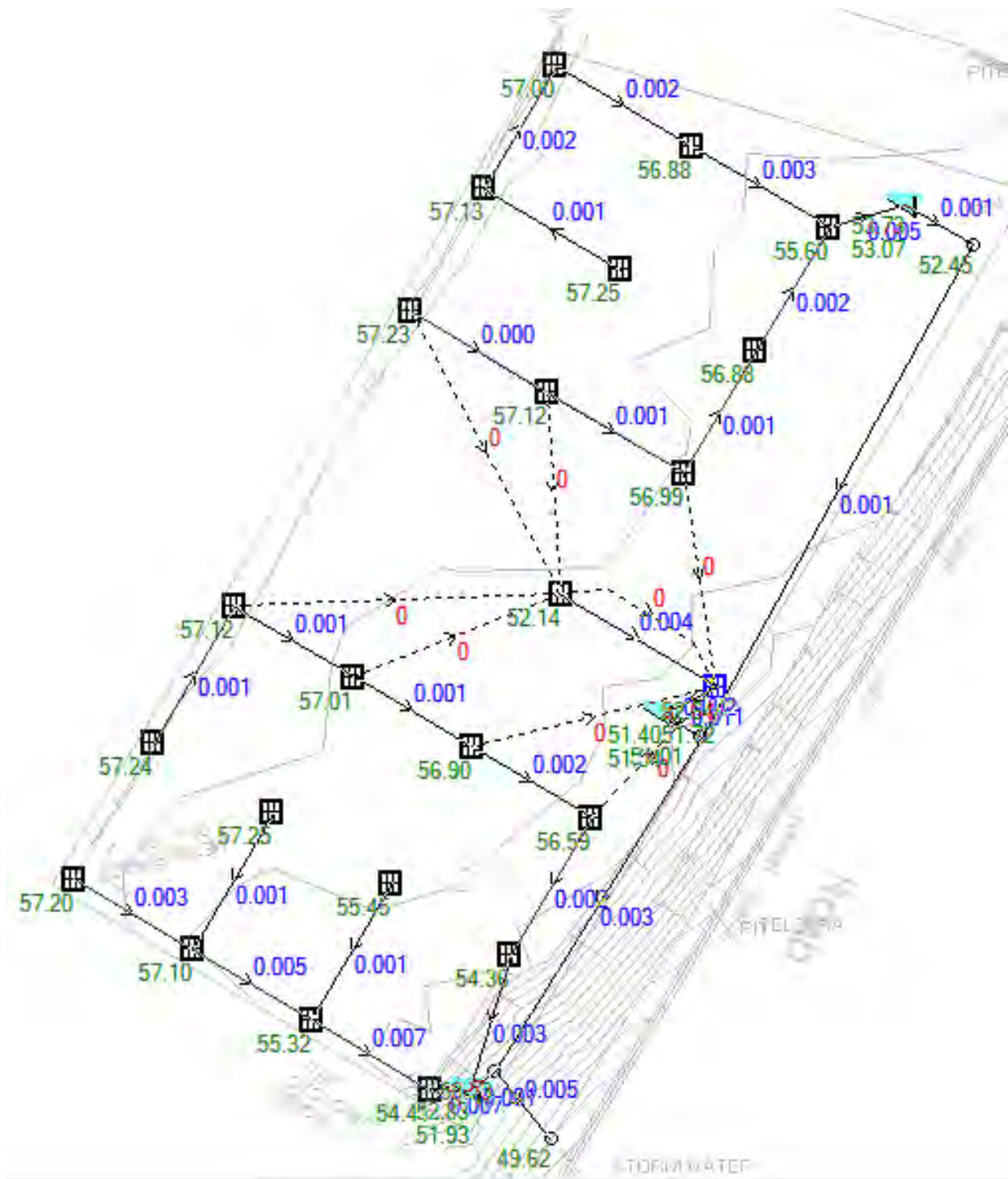
= 7.5L/s for a 1 in 100 year ARI storm lasting 5 mins.

2.2 Post Development Site Discharge and DRAINS Analysis

A DRAINS model was created for the proposed site. The DRAINS model was run for a 1 in 10 year ARI storm and a 1 in 100 year ARI storm. The DRAINS model and output can be seen below.

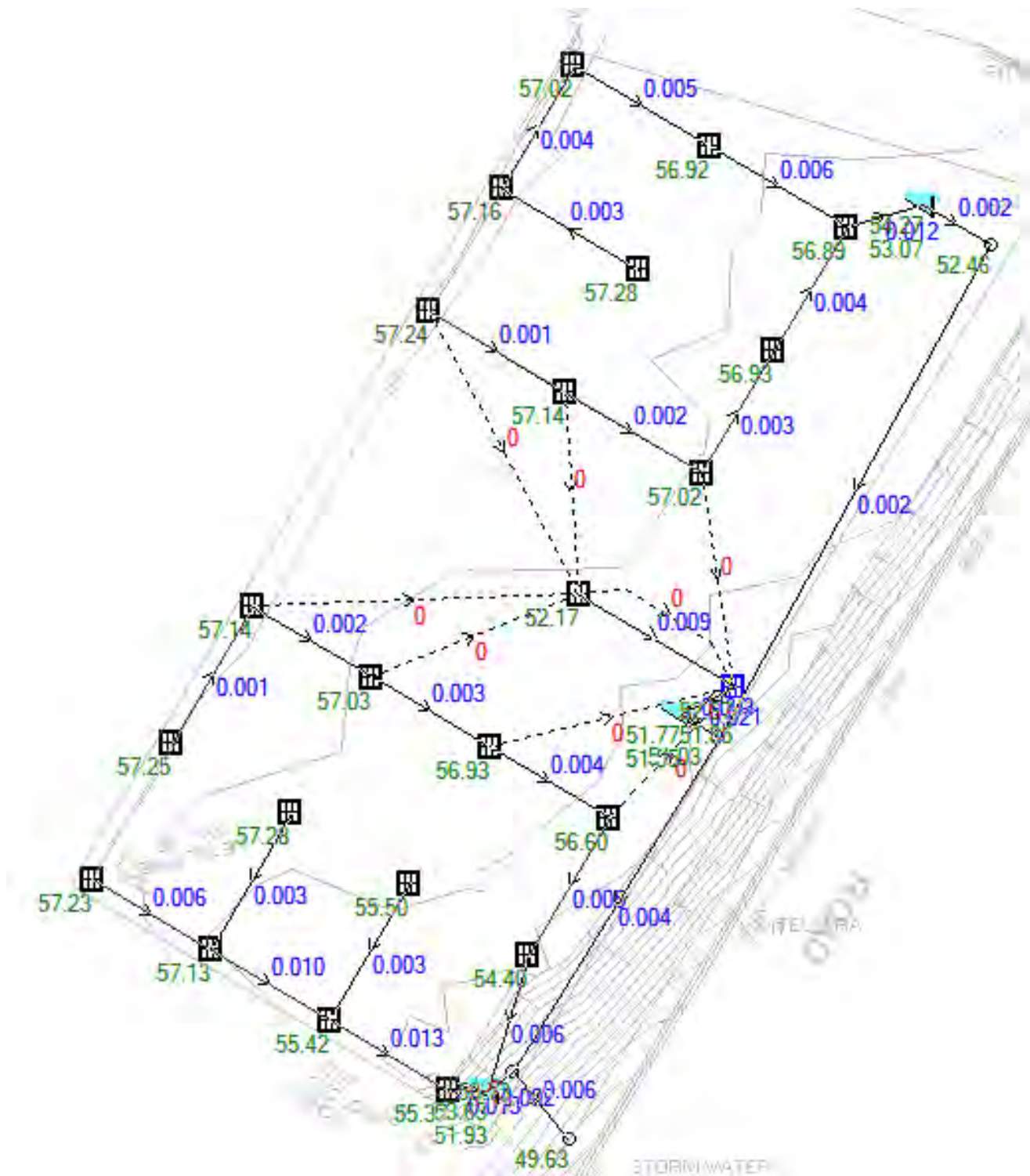


2.2.1 One in 10yr ARI



Blue values = pipe flow
As seen site discharge is 5L/s

2.2.2 One in 100yr ARI

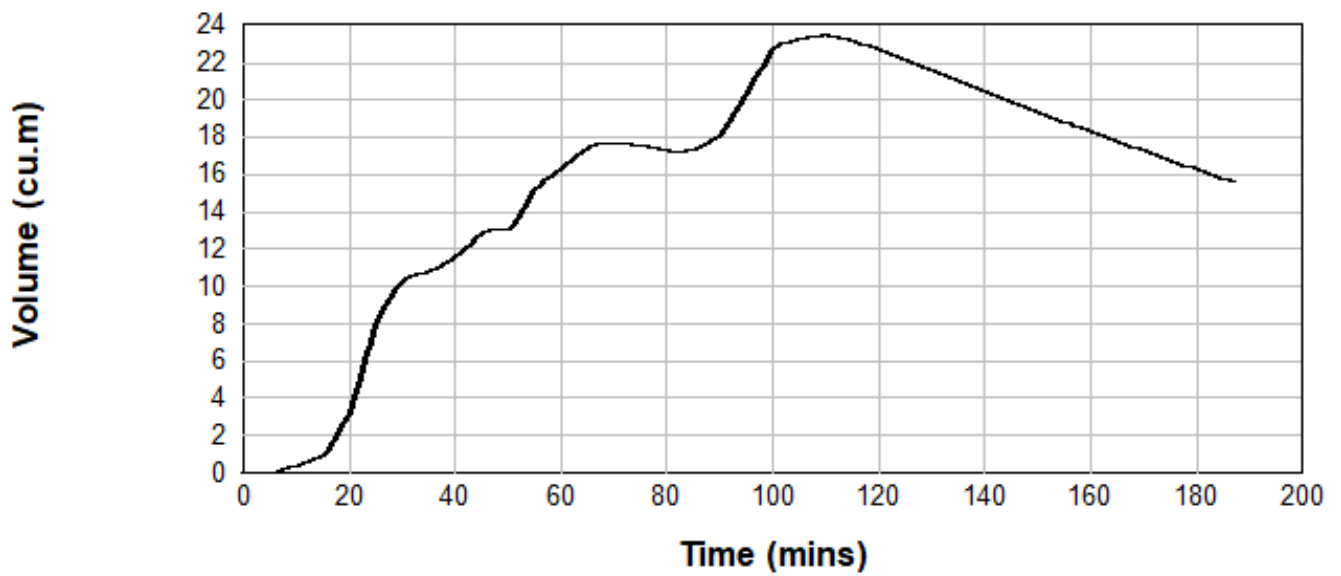


The critical storm was found to be 1 in 100 yr ARI lasting 2 hours

Blue values = pipe flow

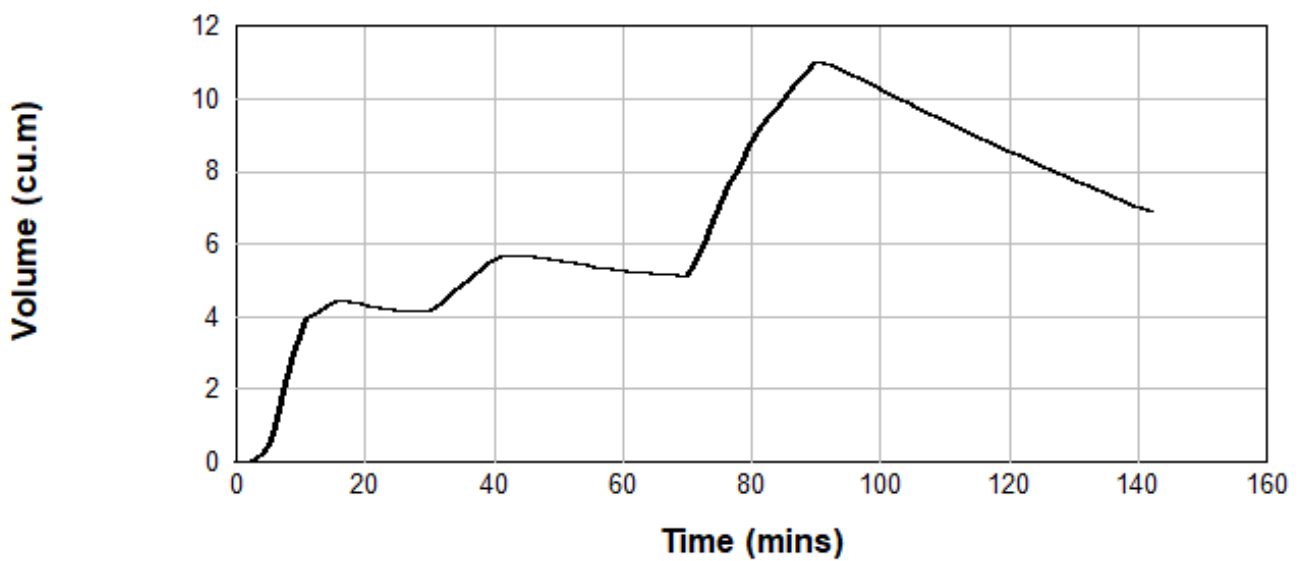
As seen site discharge is 6L/s

Detention Tank 1 = 3x10kL tanks



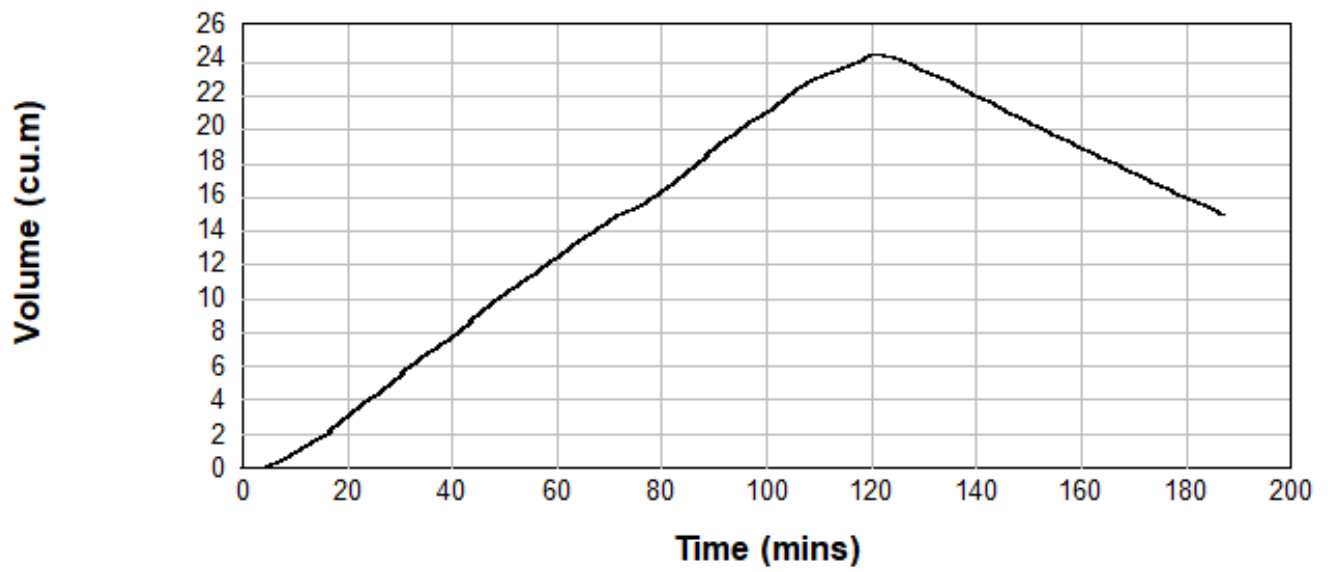
24kL of detention required.
Release through 27mm orifice at 2L/s

Detention Tank 2 = 2x10kL tanks



11kL of detention required.
Release through 27mm orifice at 2L/s

Detention Tank 3 = 25kL underground (under carpark) detention tank



25kL of detention required.
Release through 40mm orifice at 3L/s

DRAINS results prepared from Version 2018.02

PIT / NODE DETAILS

		Version 8					Min	Overflow	Constraint
Name	Max HGL	Max Pond	Max Surface	Max Pond	Freeboard				
	HGL	Flow Arriving	Volume		(m)				
		(cu.m/s)	(cu.m)						
Pit1	52.17	0.012	0.68	0.000	None				
Pit2	51.85	52.67	0.021	3.1	0.75	Inlet Capacity			
N2	51.03	0.000							
N3	50.73	0.000							
Outlet	49.63	0.000							
DP7	57.23	0.008	0.37		None				
DP9	57.13	0.002	0.47		None				
DP11	55.42	0.002	1.88		None				
DP12	55.37	0.001	1.63		None				
DP1	57.25	0.002	0.35		None				
DP2	57.14	0.001	0.46	0.000	None				
DP3	57.03	0.002	0.57	0.000	None				
DP4	56.93	0.002	0.37	0.000	None				
DP5	56.60	0.001	0.40	0.000	None				
DP6	54.40	0.002	2.60		None				
DP8	57.28	0.004	0.32		None				
DP10	55.50	0.004	0.30		None				
DP17	57.24	0.001	0.36	0.000	None				
DP18	57.14	0.002	0.46	0.000	None				
DP19	57.02	0.001	0.58	0.000	None				
DP20	56.93	0.002	0.67		None				
DP21	56.89	0.001	0.71		None				
N1	52.46	0.000							
DP13	57.28	0.004	0.32		None				
DP14	57.16	0.002	0.44		None				
DP15	57.02	0.001	0.58		None				
DP16	56.92	0.002	0.68		None				

SUB-CATCHMENT DETAILS

Name	Max Flow	Paved	Grassed	Paved	Grassed	Supp.	Due to Storm		
	Q	Max Q	Max Q	Tc	Tc	Tc	(min)	(min)	(min)
	(cu.m/s)		(cu.m/s)		(cu.m/s)				
Cat22	0.009	0.009	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8		
Cat23	0.015	0.015	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8		
Cat7	0.006	0.006	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8		
Cat9	0.001	0.001	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8		
Cat11	0.001	0.001	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8		
Cat 12		0.001	0.001	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8	
Cat1	0.001	0.001	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8		
Cat2	0.001	0.001	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8		
Cat3	0.001	0.001	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8		
Cat4	0.001	0.001	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8		
Cat5	0.001	0.001	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8		
Cat6	0.001	0.001	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8		
Cat8	0.003	0.003	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8		
Cat10	0.003	0.003	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8		

Cat 17	0.001	0.001	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8
Cat180.001	0.001	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8	
Cat190.001	0.001	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8	
Cat200.001	0.001	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8	
Cat210.001	0.001	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8	
Cat130.003	0.003	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8	
Cat 14	0.001	0.001	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8
Cat 15	0.001	0.001	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8
Cat 16	0.001	0.001	0.000	1.00	0.00	0.00	1% AEP, 45 min burst, Storm 8

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V	Max U/S (m/s)	Max D/S HGL (m)	Due to Storm HGL (m)	
Pipe 22	0.009	1.71	52.125	51.890	1% AEP, 45 min burst, Storm 8	
Pipe 25	0.021	1.21	51.788	51.787	1% AEP, 45 min burst, Storm 8	
Pipe 26	0.003	0.78	51.048	51.029	1% AEP, 2 hour burst, Storm 6	
Pipe 27	0.004	0.78	51.029	50.769	1% AEP, 2 hour burst, Storm 6	
Pipe29	0.006	2.66	50.735	49.627	1% AEP, 2 hour burst, Storm 6	
Pipe 7	0.006	5.26	57.160	57.130	1% AEP, 45 min burst, Storm 8	
Pipe 9	0.010	1.28	57.091	56.909	1% AEP, 45 min burst, Storm 8	
Pipe 11	0.013	0.54	55.372	55.370	1% AEP, 45 min burst, Storm 8	
Pipe 12	0.013	1.51	55.165	54.302	1% AEP, 45 min burst, Storm 8	
Pipe 28	0.002	0.94	51.934	51.884	1% AEP, 2 hour burst, Storm 8	
Pipe 1	0.001	4.71	57.220	57.145	1% AEP, 45 min burst, Storm 8	
Pipe 2	0.002	6.94	57.090	57.036	1% AEP, 45 min burst, Storm 8	
Pipe 3	0.003	1.53	56.996	56.934	1% AEP, 45 min burst, Storm 8	
Pipe 4	0.004	1.18	56.897	56.663	1% AEP, 45 min burst, Storm 8	
Pipe 5	0.005	1.40	56.580	56.498	1% AEP, 45 min burst, Storm 8	
Pipe 6	0.006	1.70	54.344	54.277	1% AEP, 45 min burst, Storm 8	
Pipe 8	0.003	8.60	57.221	57.165	1% AEP, 45 min burst, Storm 8	
Pipe 10	0.003	0.69	55.466	55.415	1% AEP, 45 min burst, Storm 8	
Pipe17	0.001	0.64	57.231	57.139	1% AEP, 45 min burst, Storm 8	
Pipe18	0.002	8.02	57.090	57.027	1% AEP, 45 min burst, Storm 8	
Pipe 19	0.003	1.22	56.987	56.932	1% AEP, 45 min burst, Storm 8	
Pipe 20	0.004	0.56	56.916	56.887	1% AEP, 45 min burst, Storm 8	
Pipe 21	0.012	1.35	56.747	55.551	1% AEP, 45 min burst, Storm 4	
Pipe23	0.002	1.54	53.070	52.459	1% AEP, 1.5 hour burst, Storm 1	
Pipe 24	0.002	0.72	52.459	51.809	1% AEP, 1.5 hour burst, Storm 1	
Pipe 13	0.003	6.40	57.223	57.165	1% AEP, 45 min burst, Storm 8	
Pipe 14	0.004	4.65	57.099	57.053	1% AEP, 45 min burst, Storm 8	
Pipe 15	0.005	0.80	57.016	56.918	1% AEP, 45 min burst, Storm 8	
Pipe 16	0.006	0.81	56.898	56.887	1% AEP, 45 min burst, Storm 8	

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm
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OVERFLOW ROUTE DETAILS

Name	Max Q Storm	U/S	Max Q	D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to
OF8	0	0	2.299	0	0	0	0			

OF1	0	0	0.884	0	0	0	0
OF2	0	0	0.735	0	0	0	0
OF3	0	0	0.779	0	0	0	0
OF4	0	0	0.693	0	0	0	0
OF5	0	0	0.868	0	0	0	0
OF6	0	0	0.702	0	0	0	0
OF7	0	0	0.699	0	0	0	0

DETENTION BASIN DETAILS

Name	Max WL	MaxVol Total	Max Q Low Level	Max Q High Level	Max Q
Basin3	51.77	24.2	0.003	0.003	0.000
Basin1	53.63	23.4	0.002	0.002	0.000
Basin2	54.27	11.0	0.002	0.002	0.000

Run Log for Harris Drains Design 4.drn run at 10:04:44 on 15/11/2018
No water upwelling from any pit. Freeboard was adequate at all pits.
Flows were safe in all overflow routes.

PIT / NODE DETAILS																
Version 13																
Name	Type	Family	Size	Ponding	Pressure	Surface	Max Pond	Base	Blocking	x	y	Bolt-down	id	Part Full	Inflow	Pit is
				Volume	Change	Elev (m)	Depth (m)	Inflow	Factor			lid		Shock Loss	Hydrograph	
				(cu.m)	Coeff. Ku			(cu.m/s)								
Pit1	OnGrade	Transport	TSA Single	Bay with	2.1	52.85		0	0	69945.39	-2493.78	No		1 x Ku	No	New
Pit2	Sag	Transport	TSA Single	10	1.8	52.6	0.15	0	0.5	69955.19	-2499.62	No		2 x Ku	No	New
N2	Node					52.5		0		69954.18	-2502.79			68	No	
N3	Node					52		0		69941.18	-2523.87			71	No	
Outlet	Node					50		0		69944.75	-2528.17			54	No	
DP7	OnGrade	Downpipe	Downpipe		5.9	57.6		0	0	69914.61	-2511.75	No		6 x Ku	No	New
DP9	OnGrade	Downpipe	Downpipe		1.4	57.6		0	0	69922.12	-2516.19	No		7 x Ku	No	New
DP11	OnGrade	Downpipe	Downpipe		5.9	57.3		0	0	69929.63	-2520.63	No		8 x Ku	No	New
DP12	OnGrade	Downpipe	Downpipe		1.8	57		0	0	69937.15	-2525.07	No		9 x Ku	No	New
DP1	OnGrade	Downpipe	Downpipe		5.9	57.6		0	0	69919.7	-2503.14	No		14 x Ku	No	New
DP2	OnGrade	Downpipe	Downpipe		4.9	57.6		0	0	69924.79	-2494.53	No		10 x Ku	No	New
DP3	OnGrade	Downpipe	Downpipe		1.4	57.6		0	0	69932.3	-2498.98	No		11 x Ku	No	New
DP4	OnGrade	Downpipe	Downpipe		1.3	57.3		0	0	69939.82	-2503.42	No		12 x Ku	No	New
DP5	OnGrade	Downpipe	Downpipe		1.1	57		0	0	69947.33	-2507.86	No		13 x Ku	No	New
DP6	OnGrade	Downpipe	Downpipe		1.8	57		0	0	69942.24	-2516.47	No		17 x Ku	No	New
DP8	OnGrade	Downpipe	Downpipe		4.3	57.6		0	0	69927.21	-2507.58	No		15 x Ku	No	New
DP10	OnGrade	Downpipe	Downpipe		3.3	55.8		0	0	69934.73	-2512.03	No		16 x Ku	No	New
DP17	OnGrade	Downpipe	Downpipe		1.5	57.6		0	0	69935.93	-2475.96	No		18 x Ku	No	New
DP18	OnGrade	Downpipe	Downpipe		4.4	57.6		0	0	69944.54	-2481.05	No		19 x Ku	No	New
DP19	OnGrade	Downpipe	Downpipe		1.9	57.6		0	0	69953.15	-2486.14	No		20 x Ku	No	New
DP20	OnGrade	Downpipe	Downpipe		1	57.6		0	0	69957.73	-2478.39	No		23 x Ku	No	New
DP21	OnGrade	Downpipe	Downpipe		1.8	57.6		0	0	69962.31	-2470.64	No		5 x Ku	No	New
N1	Node					53.15		0		69971.39	-2471.72			64	No	
DP13	OnGrade	Downpipe	Downpipe		3.7	57.6		0	0	69949.12	-2473.3	No		22 x Ku	No	New
DP14	OnGrade	Downpipe	Downpipe		2.9	57.6		0	0	69940.52	-2468.21	No		21 x Ku	No	New
DP15	OnGrade	Downpipe	Downpipe		0	57.6		0	0	69945.1	-2460.46	No		3 x Ku	No	New
DP16	OnGrade	Downpipe	Downpipe		1.2	57.6		0	0	69953.7	-2465.55	No		4 x Ku	No	New
DETENTION BASIN DETAILS																
Name	Elev	Surf. Area	Not Used	Outlet Type	K	Dia(mm)	Centre RL	Pit Family	Pit Type	x	y	HED	Crest RL	Crest Leng	id	
Basin3	51	31.25		Orifice		40	51			69951.83	-2501.36	No				57
	51.4	31.25														
	51.8	31.25														
Basin1	51.9	13.5		Orifice		27	52			69939.62	-2525.1	No				60
	52.27	13.5														
	52.64	13.5														
	53.01	13.5														
	53.38	13.5														
	53.75	13.5														
Basin2	53.05	9		Orifice		27	53.25			69967.17	-2469.25	No				55
	53.49	9														
	53.93	9														
	54.37	9														
	54.81	9														

PIPE DETAILS														
Name	From	To	Length	U/S IL	D/S IL	Slope	Type	Dia	I.D.	Rough	Pipe Is	No. Pipes	Chg From	At Chg
			(m)	(m)	(m)	(%)		(mm)	(mm)					
Pipe 22	Pit1	Pit2	11.403	52.074	51.824	2.19	Concrete,	150	150	0.013	New	1	Pit1	0
Pipe 25	Pit2	Basin3	3.781	51.6	51.5	2.64	Concrete,	150	150	0.013	NewFixed	1	Pit2	0
Pipe 26	Basin3	N2	2.743	51	50.95	1.82	Concrete,	100	100	0.013	NewFixed	1	Basin3	0
Pipe 27	N2	N3	24.864	50.95	50.701	1	Concrete,	100	100	0.013	New	1	N2	0
Pipe29	N3	Outlet	5.566	50.701	49.593	19.91	uPVC, not	100	105	0.012	New	1	N3	0
Pipe 7	DP7	DP9	8.726	57.143	57.056	1	uPVC, not	150	154	0.012	New	1	DP7	0
Pipe 9	DP9	DP11	8.726	57.026	56.843	2.1	uPVC, not	150	154	0.012	New	1	DP9	0
Pipe 11	DP11	DP12	8.726	55.246	55.159	1	uPVC, not	225	242	0.012	New	1	DP11	0
Pipe 12	DP12	Basin1	2.478	54.3	54.2	4.04	uPVC, not	100	105	0.012	NewFixed	1	DP12	0
Pipe 28	Basin1	N3	1.891	51.9	51.85	2.64	uPVC, not	90	86	0.012	NewFixed	1	Basin1	0
Pipe 1	DP1	DP2	10	57.212	57.112	1	uPVC, not	90	86	0.012	New	1	DP1	0
Pipe 2	DP2	DP3	8.726	57.082	56.995	1	uPVC, not	90	86	0.012	New	1	DP2	0
Pipe 3	DP3	DP4	8.726	56.965	56.877	1.01	uPVC, not	90	86	0.012	New	1	DP3	0
Pipe 4	DP4	DP5	8.726	56.847	56.612	2.69	uPVC, not	90	86	0.012	New	1	DP4	0
Pipe 5	DP5	DP6	10	56.543	56.443	1	uPVC, not	150	154	0.012	New	1	DP5	0
Pipe 6	DP6	Basin1	9.018	54.3	54.2	1.11	uPVC, not	100	105	0.012	NewFixed	1	DP6	0
Pipe 8	DP8	DP9	10	57.212	57.112	1	uPVC, not	90	86	0.012	New	1	DP8	0
Pipe 10	DP10	DP11	10	55.412	55.312	1	uPVC, not	90	86	0.012	New	1	DP10	0
Pipe17	DP17	DP18	10	57.212	57.112	1	uPVC, not	90	86	0.012	New	1	DP17	0
Pipe18	DP18	DP19	10	57.082	56.982	1	uPVC, not	90	86	0.012	New	1	DP18	0
Pipe 19	DP19	DP20	9	56.952	56.862	1	uPVC, not	90	86	0.012	New	1	DP19	0
Pipe 20	DP20	DP21	9	56.832	56.742	1	uPVC, not	100	105	0.012	New	1	DP20	0
Pipe 21	DP21	Basin2	5.054	55.5	55.45	0.99	uPVC, not	100	105	0.012	NewFixed	1	DP21	0
Pipe23	Basin2	N1	4.89	53.05	52.427	12.74	uPVC, not	90	86	0.012	NewFixed	1	Basin2	0
Pipe 24	N1	N2	35.516	52.427	51.777	1.83	Concrete,	100	100	0.013	New	1	N1	0
Pipe 13	DP13	DP14	10	57.212	57.112	1	uPVC, not	90	86	0.012	New	1	DP13	0
Pipe 14	DP14	DP15	9	57.082	56.992	1	uPVC, not	100	105	0.012	New	1	DP14	0
Pipe 15	DP15	DP16	10	56.962	56.862	1	uPVC, not	150	154	0.012	New	1	DP15	0
Pipe 16	DP16	DP21	10	56.832	56.732	1	uPVC, not	150	154	0.012	New	1	DP16	0

OVERFLOW ROUTE DETAILS																
Name	From	To	Travel	Spill	Crest	Weir	Cross	Safe Dept	SafeDepth	Safe	Bed	D/S Area		id		
			Time	Level	Length	Coeff. C	Section	Major Sto	Minor Sto	DxV	Slope	Contributing				
			(min)	(m)	(m)			(m)	(m)	(sq.m/sec	(%)	%				
OF8	Pit1	Pit2	0.1				10 m road	0.3	0.15	0.6	2.21	0		75		11.3
OF1	DP2	Pit1	0.1				10 m road	0.3	0.15	0.6	23.06	0		45		20.6
OF2	DP3	Pit1	0.1				10 m road	0.3	0.15	0.6	33.69	0		46		14.1
OF3	DP4	Pit2	0.1				10 m road	0.3	0.15	0.6	29.75	0		47		15.8
OF4	DP5	Pit2	0.1				10 m road	0.3	0.15	0.6	38.6	0		48		11.4
OF5	DP17	Pit1	0.1				10 m road	0.3	0.15	0.6	23.51	0		50		20.2
OF6	DP18	Pit1	0.1				10 m road	0.3	0.15	0.6	37.11	0		51		12.8
OF7	DP19	Pit2	0.1				10 m road	0.3	0.15	0.6	36.76	0		52		13.6

PIPE COVER DETAILS				
Name	Type	Dia (mm)	Safe Cove	Cover (m)
Pipe 22	Concrete,	150	0.6	0.6
Pipe 25	Concrete,	150	0.6	-0.68 Unsafe
Pipe 26	Concrete,	100	0.6	-0.12 Unsafe
Pipe 27	Concrete,	100	0.6	1.18
Pipe29	uPVC, not	105	0.3	0.3
Pipe 7	uPVC, not	154	0.3	0.3
Pipe 9	uPVC, not	154	0.3	0.3
Pipe 11	uPVC, not	242	0.3	1.59
Pipe 12	uPVC, not	105	0.3	-2.41 Unsafe
Pipe 28	uPVC, not	86	0.3	-0.09 Unsafe
Pipe 1	uPVC, not	86	0.3	0.3
Pipe 2	uPVC, not	86	0.3	0.43
Pipe 3	uPVC, not	86	0.3	0.33
Pipe 4	uPVC, not	86	0.3	0.3
Pipe 5	uPVC, not	154	0.3	0.3
Pipe 6	uPVC, not	105	0.3	-2.41 Unsafe
Pipe 8	uPVC, not	86	0.3	0.3
Pipe 10	uPVC, not	86	0.3	0.3
Pipe17	uPVC, not	86	0.3	0.3
Pipe18	uPVC, not	86	0.3	0.43
Pipe 19	uPVC, not	86	0.3	0.56
Pipe 20	uPVC, not	105	0.3	0.66
Pipe 21	uPVC, not	105	0.3	-2.51 Unsafe
Pipe23	uPVC, not	86	0.3	-0.09 Unsafe
Pipe 24	Concrete,	100	0.6	0.6
Pipe 13	uPVC, not	86	0.3	0.3
Pipe 14	uPVC, not	105	0.3	0.41
Pipe 15	uPVC, not	154	0.3	0.48
Pipe 16	uPVC, not	154	0.3	0.61

3.0 RETAINING WALL DESIGN

3.1 Retaining Wall Earth Pressure

Structure Classification: A

Limit state: U2/S1

Design life: 60 years (residential dwelling)

Maximum height of retaining wall: 2m with 1.8m fence on top.

Use Rankine Theory to determine resultant thrust from soil behind retaining wall.

1 layer under consideration

Layer 1 (0m-2m)

Soil friction, Φ = 20°

Soil cohesion, c = 0

Soil density, γ = 18 kN/m

At $z=2\text{m}$ (first layer)

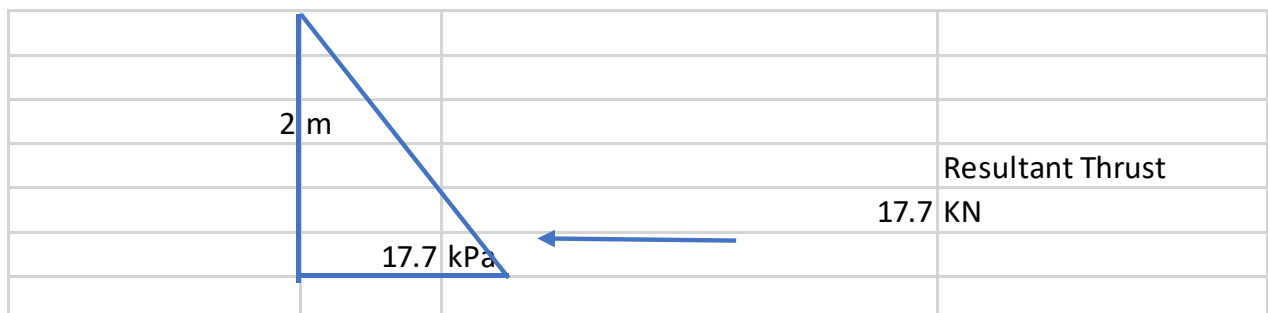
σ_z = 36

$Ka1$ = 0.49

σ_H = 17.7 kPa

Resultant Thrust in 1st layer = $0.5 \times 2 \times 17.7 = 17.7\text{kN}$

Resultant Thrust = 17.7 kN



3.2 Earthquake Loading

Acceleration, a = 0.1

Site factor, S = 1

aS = 0.1

As per tables I3 and I4 of AS4678

Design category = B_{er}

= Design for static loads, without further specific analysis for earthquake, is deemed to meet the requirements of this standard for earthquake design.

3.3 Other Retaining Wall Loads

DEAD LOADS

Fence = 0.5kN/m

Self weight of retaining wall = 10x 200x100 Concrete sleepers = 4.8kN/m

TOTAL DL = **5.3 kN/m**

LIVE LOADS

Design LL as per AS4678 = 2.5kPa

TOTAL = **2.5kPa**

3.4 Load Combinations

$$1.25G+1.5Q = 10.4\text{kN/m} \quad (\text{critical combination})$$

$$\Psi_c = 0.6$$

$$1.25G+\Psi_c Q+W_u = 8.1\text{kN/m}$$

$$F_{eq} = 0$$

$$1.25G+\Psi_c Q+1F_{eq} = 8.1\text{kN/m}$$

3.5 Piers

Concrete sleepers to span 2m, Bending moment on 2m length of wall.

$$K_a = 0.49$$

$$\gamma = 18$$

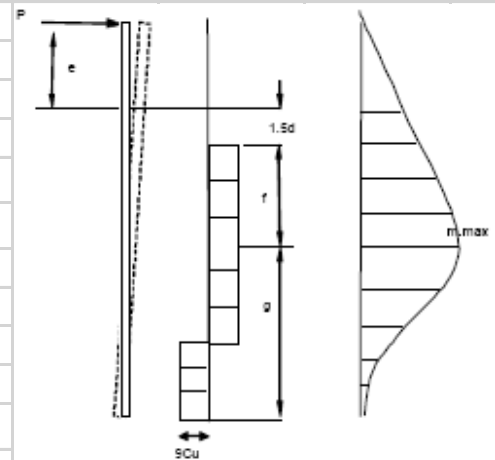
$$H = 2\text{m}$$

$$P_{\max} = K_a \times \gamma \times H = 17.6\text{kPa}$$

$$W = P_{\max}/2 \times (H \times \text{Load width}) = 35.3\text{kN}$$

$$\text{BM} = w \times H/2 = 35.3\text{kNm}$$

Brom's analysis for cohesive soil									
Applied Moment		Mult:=	35.28	kNm					
Generated at eccentricity		ecc:=	1.00	m					
F of S (overturning).		Fsot:	1.0						
Design moment		Md:=Fsot.Mult							
		Md=	35.28	kNm					
Force at ecc..		P:=Md÷ecc.							
		P=	35.28	kN					
		Ø:=	0.8						
Diameter of drilled pier		d:=	0.6	m					
Soil cohesion at surface		Øcu:=	15	kPa					
Max moment occurs at		f:=P÷9.Øcu.d							
		f =	0.436	m					
		Mmax =	74.72	kNm					
taking moments about of max moment									
M max:=P.(ecc+f+1.5d)-9.Øcu.d.f²÷2									
		Mmax÷2.25.d.9.Øcu		0.410					
gg:=√Mmax÷2.25.d.9.Øcu		gg=	1	m					
		L:= f+gg+1.5d							
Depth of Pier		L=	1.98	m					
Select depth		L2:=	2.00	m					



Brom's analysis suggests the minimum required depth of the pier is 1.98m, we will select a 2m depth pier for a 2m high retaining wall.

3.6 Post Design

Table 1: Summary of retaining wall steel heights and requirements

Length btw posts	Effective Height	Design Height	Depth of footing	Max moment in column	Section	Capacity kNm	Pier dia.
2.0m	2.0m	2.0m	2.1m + 0.6m = 2.7m	74.72	200UB29.8OR 250PFC FOR CORNERS	90.9	0.6m
2.0m	1.8m	1.8m	2.0m+ 0.6m = 2.6m	56.48	200UB25.4 OR 250PFC FOR CORNERS	74.6	0.6m
2.0m	1.6m	1.6m	1.8m+ 0.6m = 2.4m	41.53	200UB18.2 OR 200PFC FOR CORNERS	51.8	0.6m
2.0m	1.4m	1.4m	1.6m+ 0.6m = 2.2m	29.50	150UB18.0 OR 150PFC FOR CORNERS	37.0	0.6m
2.0m	1.2m	1.2m	1.4m+ 0.6m = 2.0m	17.52	150UB14 OR 150PFC FOR CORNERS	21.0	0.45m
2.0m	1.0m	1.0m	1.2m+ 0.6m = 1.8m	11.0	150UB14 OR 150PFC FOR CORNERS	21.0	0.45m

NOTE: Add 0.6m to pier depth to allow for 600mm excavation on neighbouring property.

3.7 Concrete Sleeper Design 2m Length

L	=	2000mm
d	=	200mm
b	=	50mm
t	=	100mm
H wall	=	2000mm (max)

General sleeper cover requirements

1km-50km from coast	-	B1 exposure class
	-	N32 concrete (40mm cover)

Check flexural strength

w	=	17.7kN/m
w*	=	17.7/0.2m = 3.5kN/m
M*	=	1.8kNm
Φ_b	=	0.8
A _{st required}	=	$f'_c \times d / (1.2 \times f_{sy}) \times (b - \sqrt{b^2 - (2.4 \times M^*) / (\Phi_b \times f'_c \times d)})$
	=	89mm ²

1 N12mm diameter bar required

Diameter of bar

A _{st}	=	113mm ²
ΦM_u	=	$\Phi_b \times f_{sy} \times A_{st} \times b \times (1 - 0.6 \times (A_{st} \times f_{sy}) / (b \times d \times f'_c))$
	=	2.0kNm
<u>$\Phi M_u > M^*$</u>		OK

Check shear strength

V*	=	3.5kN
Φ_v	=	0.7
β_1	=	1.1 x (1.6-100) = 1.7
$\beta_2 = \beta_3$	=	1
0.5* Φ_v * V _{uc}	=	0.5 x Φ_v x β_1 x β_2 x β_3 x b x d x $(A_{st} \times f'_c / (b \times d))^{1/3}$
	=	4.3kN

0.5* Φ_v * V_{uc} > V* **No shear reinforcement required**

3.8 Fence Post to UB Connection

Weld fence post (50x50 SHS) to UB

$$\text{Wind Load} = 0.62\text{kPa} \times 1.8\text{m}$$

$$= 1.1\text{kN/m}$$

$$\text{Fence DL} = 0.5\text{kN/m}$$

$$\text{Fence LL} = 1\text{kN/m}$$

$$1.2G + \Psi Q + \text{Wind} = 1.7\text{kN/m}$$

$$\text{Force on each post} = 3.4\text{kN/m}$$

Weld 200x50x10 flat plate to post and flange of UB

Weld 200x50x10 flat plate to post and web of PFC

$$\text{Apply structural purpose 3mm fillet weld} = 0.417\text{kN/mm}$$

3.9 Retaining Wall Summary

Concrete sleepers to span 2m and be reinforced as below, 32MPa concrete.

Table 2: Summary of retaining wall concrete sleeper requirements

Retaining wall depth	Concrete Sleeper Length (mm)	Concrete Sleeper Depth (mm)	Concrete Sleeper Thickness (mm)	Reinforcement Requirements	Concrete Strength (MPa)
0-2m	2000	200	100	1N12	32

Table 3: Summary of retaining wall steel heights and requirements

Length btw posts	Effective Height	Design Height	Depth of footing	Max moment in column	Section	Capacity kNm	Pier dia.
2.0m	2.0m	2.0m	2.1m + 0.6m = 2.7m	74.72	200UB29.8OR 250PFC FOR CORNERS	90.9	0.6m
2.0m	1.8m	1.8m	2.0m+ 0.6m = 2.6m	56.48	200UB25.4 OR 250PFC FOR CORNERS	74.6	0.6m
2.0m	1.6m	1.6m	1.8m+ 0.6m = 2.4m	41.53	200UB18.2 OR 200PFC FOR CORNERS	51.8	0.6m
2.0m	1.4m	1.4m	1.6m+ 0.6m = 2.2m	29.50	150UB18.0 OR 150PFC FOR CORNERS	37.0	0.6m
2.0m	1.2m	1.2m	1.4m+ 0.6m = 2.0m	17.52	150UB14 OR 150PFC FOR CORNERS	21.0	0.45m
2.0m	1.0m	1.0m	1.2m+ 0.6m = 1.8m	11.0	150UB14 OR 150PFC FOR CORNERS	21.0	0.45m

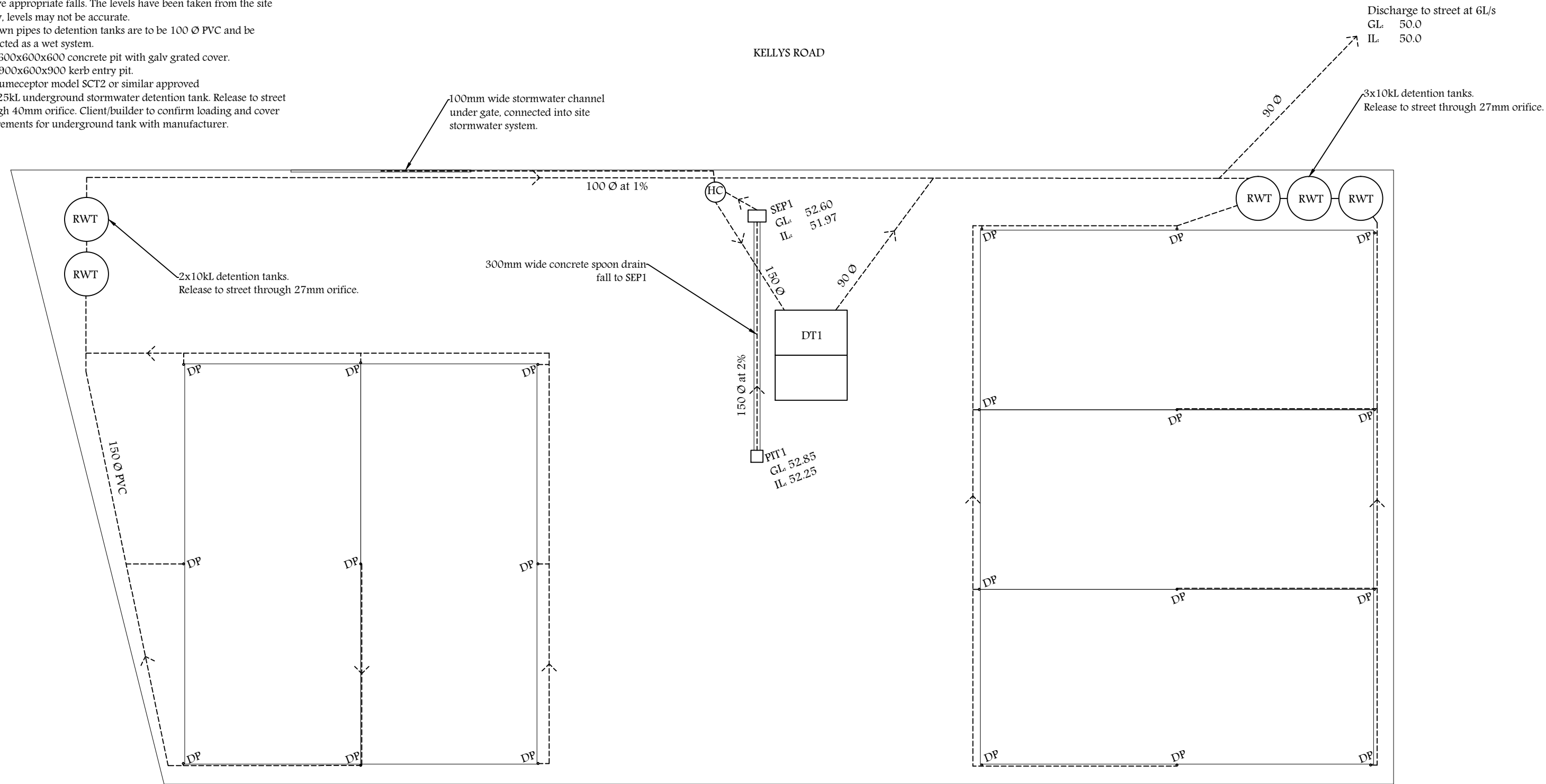
NOTES

Please provide agricultural drain at the base of the retaining wall.

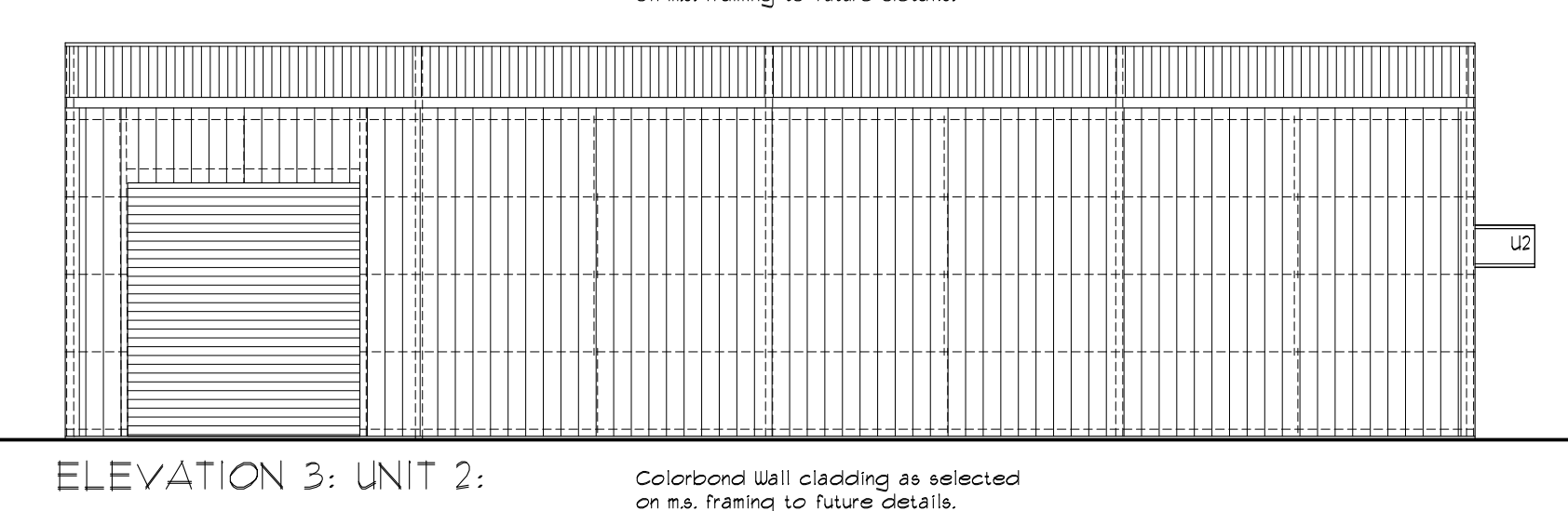
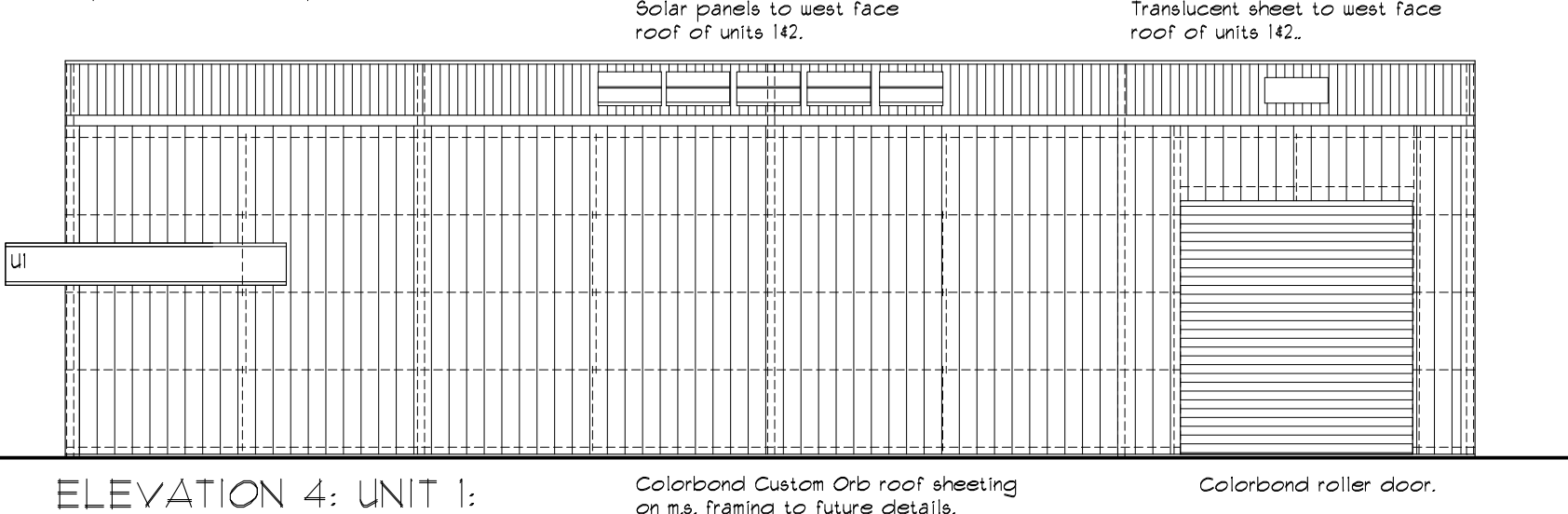
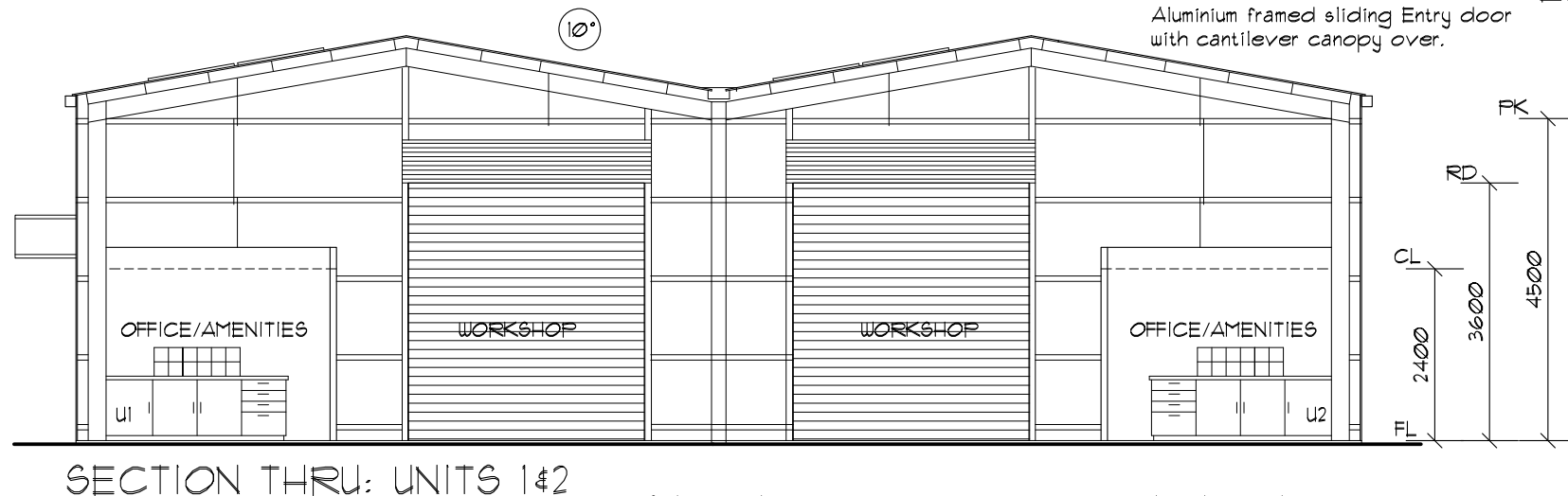
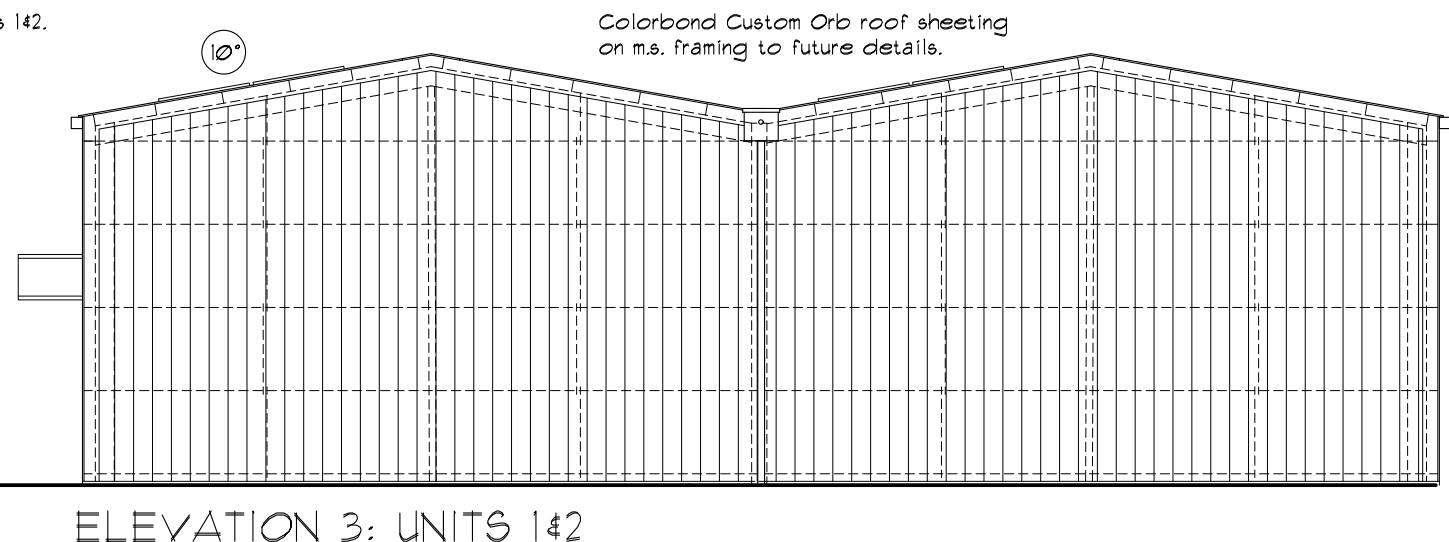
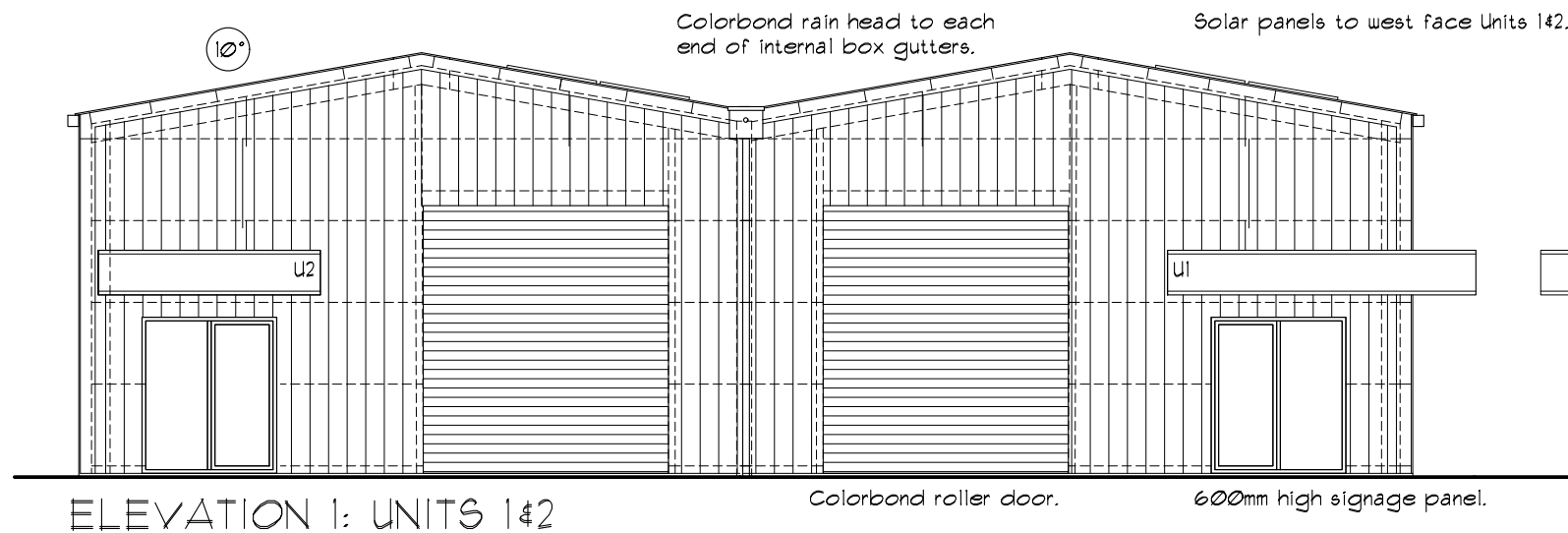
Add 0.6m to pier depth to allow for 600mm excavation on boundary.

NOTES & REQUIREMENTS

- Minimum pipe slope 1:200
- Refer to Gawler Council's standard Junction box/grated inlet pit details (drawing No. SK – 100).
- The contractor is to confirm all levels and invert levels on site to achieve appropriate falls. The levels have been taken from the site survey, levels may not be accurate.
- All down pipes to detention tanks are to be 100 Ø PVC and be connected as a wet system.
- PTT1: 600x600x600 concrete pit with galv grated cover.
- SEP1: 900x600x900 kerb entry pit.
- HC: Humeceptor model SCT2 or similar approved
- DT1: 25kL underground stormwater detention tank. Release to street through 40mm orifice. Client/builder to confirm loading and cover requirements for underground tank with manufacturer.



<div><div></div><div>HARNETT ENGINEERING</div></div> <div>34 Main North Road Willaston S.A. 5118 Phone: 0402518871</div>	SITE STORM WATER MANAGEMENT PLAN	SHEET: 01 of 01
	CLIENT: THAUTO PTY. LTD.	JOB NUMBER: HE16318
	ADDRESS: LOT 13 KELLYS ROAD, WILLASTON, S.A. 5118	REVISION:
		DATE: 15/11/2018
		SCALE: 1 : 200 A3 Sheet
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BUILDING ELEMENT:	MATERIAL:	COLOUR:
Roof sheeting.	Colorbond Custom Orb.	Gully
Top wall cladding.	Colorbond	Gully
Bottom wall cladding.	Colorbond	Dune
Trim, flashing, capping.	Colorbond mild steel.	Monument
Rain water head, gutter.	Colorbond	Monument
Canopy.	M.s. framed Colorbond m.s. plate.	to suit advertising
Door/window frames.	Colorbond aluminium frames.	Monument
Roll up doors.	Colorbond	Monument
Tubular fencing/gates.	Painted tubular.	Black
Screen fencing.	Colorbond Custom Orb.	Gully

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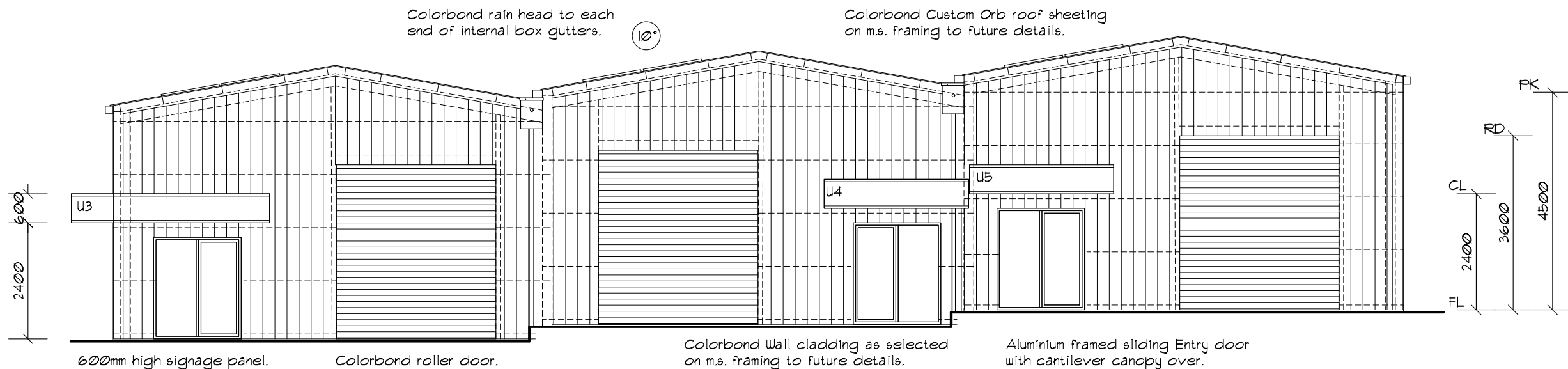
THAUTO PTY LTD (ACN 116 782 748)
LOT 13 KELLYS ROAD, WILLASTON. S.A.

ELEVATIONS UNITS 1&2: DWG: 5 OF 8

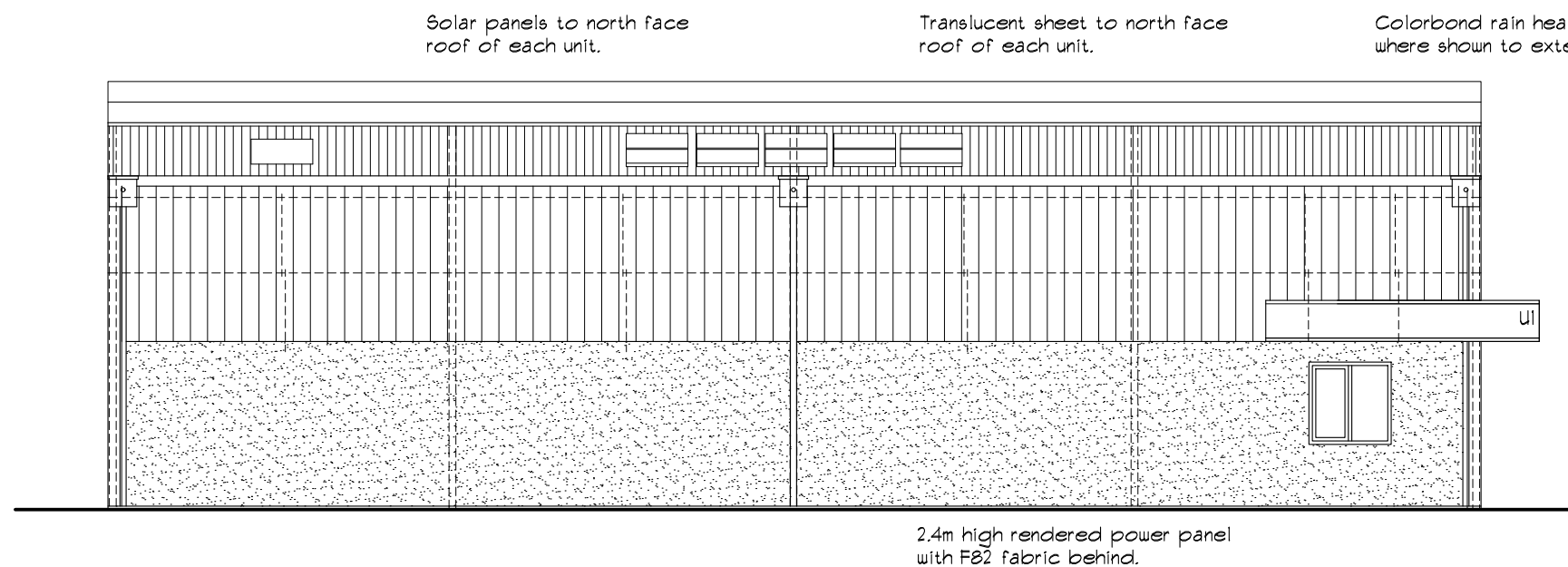
Date:	Nov'17	Job No:	QD201735
Scale:	1:100	Client:	Harris

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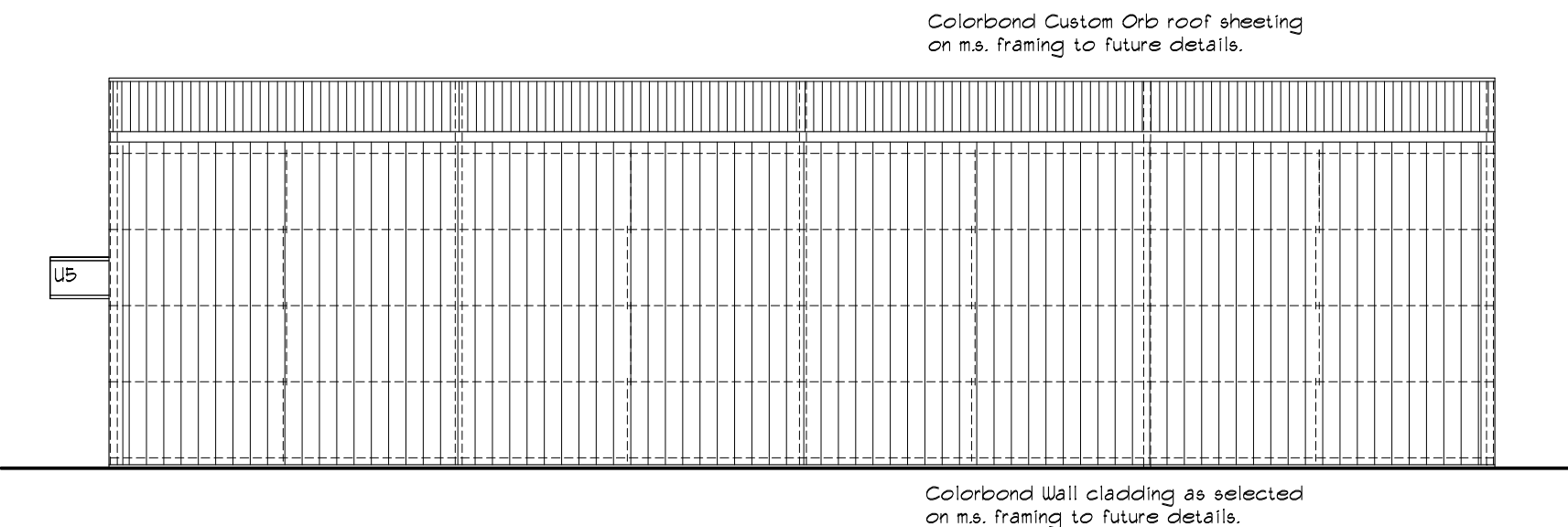
QUICKDRAW DRAFTING
BUILDING DESIGN: PLANNING CONCEPTS: DRAFTING SERVICE
Telephone or email for an appointment 85224158
Page 68 of 87
p.o. box 308 Willaston. s.a. 5118



ELEVATION 2: UNIT 3,4&5



ELEVATION 1: UNIT 3



ELEVATION 3: UNIT 5

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Roof sheeting.	Colorbond Custom Orb.	Gully
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Bottom wall cladding.	Colorbond	Dune
Trim, flashing, capping.	Colorbond mild steel.	Monument
Rain water head, gutter.	Colorbond	Monument
Canopy.	M.s. framed Colorbond m.s. plate.	to suit advertising
Door/window frames.	Colorbond aluminium frames.	Monument
Roll up doors.	Colorbond	Monument
Tubular fencing/gates.	Painted tubular.	Black
Screen fencing.	Colorbond Custom Orb.	Gully

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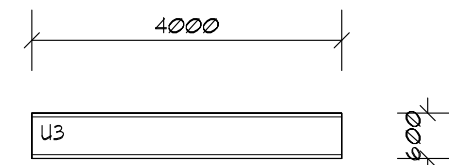
THAUTO PTY LTD (ACN 116 782 748)
LOT 13 KELLYS ROAD, WILLASTON. S.A.

ELEVATIONS UNITS 3-5: DWG: 6 OF 8

Date:	Nov'17	Job No:	GD201735
Scale:	1:100	Client:	Harris

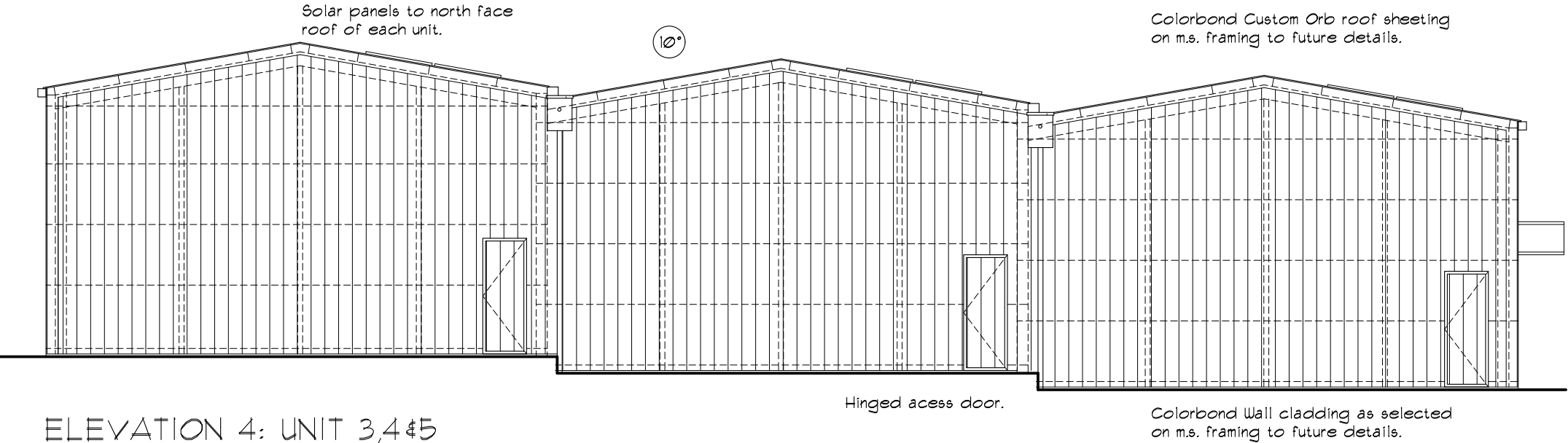
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Mild steel framed canopy over Entry doors.
4.0m long with 4.0m return to corner units (U1&U3)
3.0m long located centrally over Entry doors generally.

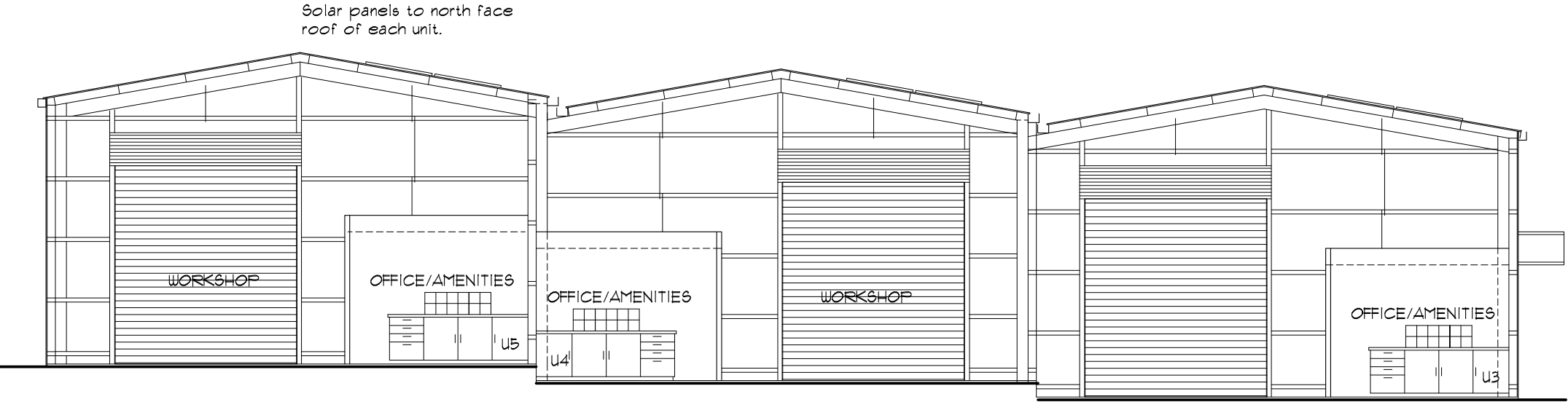


Flat face advertising panel to be painted with unit number and business details to suit corporate or business colours.

ADVERTISING DETAIL:



ELEVATION 4: UNIT 3,4&5



SECTION THRU: UNITS 3,4&5

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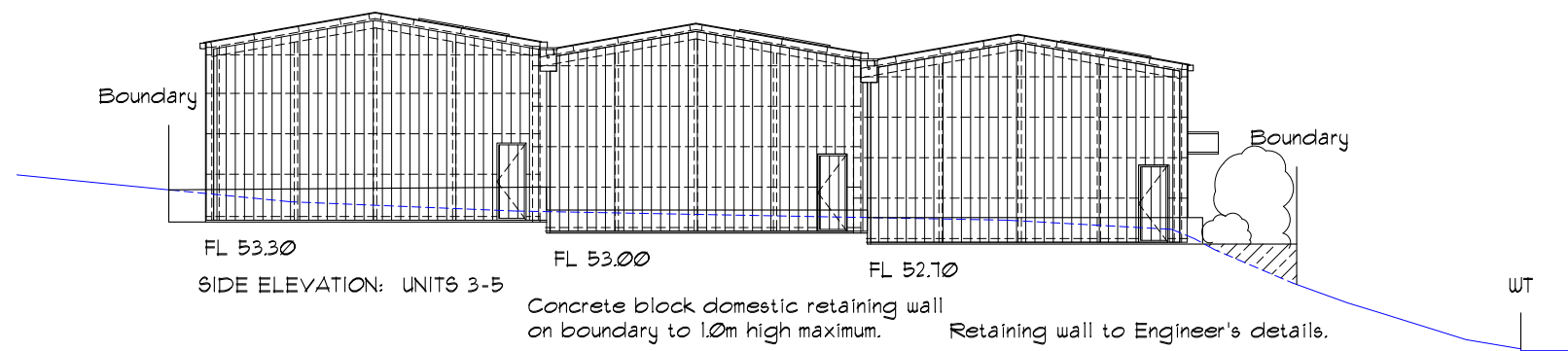
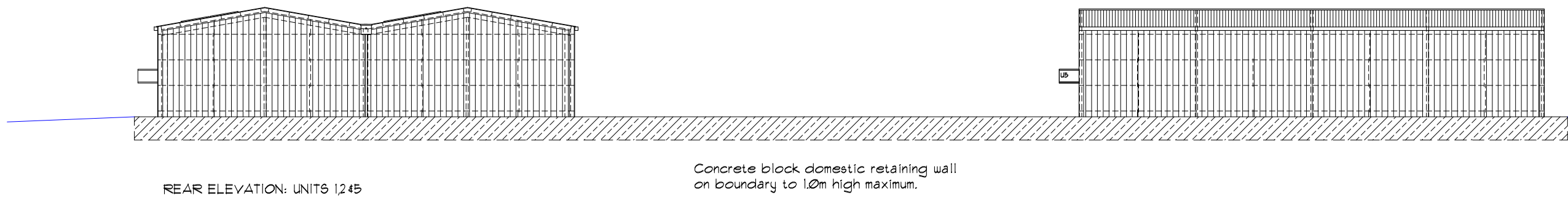
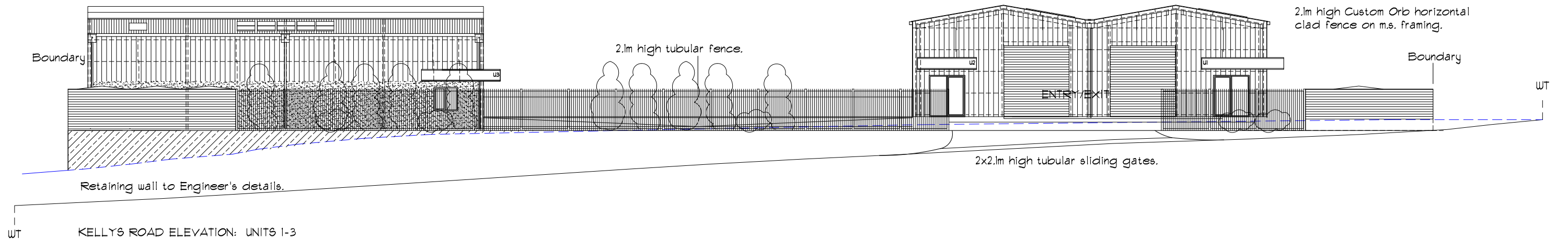
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ELEVATIONS UNITS 3-5: DWG: 1 OF 8

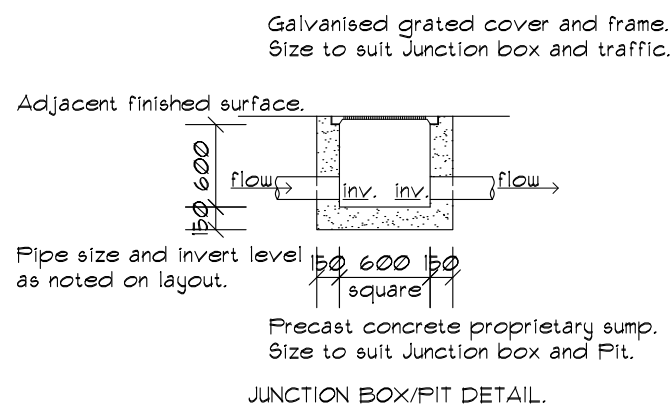
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Scale:	1:100	Client:	Harris

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Roll up doors.	Colorbond	Monument
Tubular fencing/gates.	Painted tubular.	Black
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THAUTO PTY LTD (ACN 116 782 748)
LOT 13 KELLYS ROAD, WILLASTON. S.A.

COMBINED ELEVATIONS: DWG: 8 OF 8

Date:	Nov'17	Job No:	QD201735
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**Town of Gawler
Council Assessment Panel**

ATTACHMENTS UNDER SEPARATE COVER

Wednesday 30 January 2019

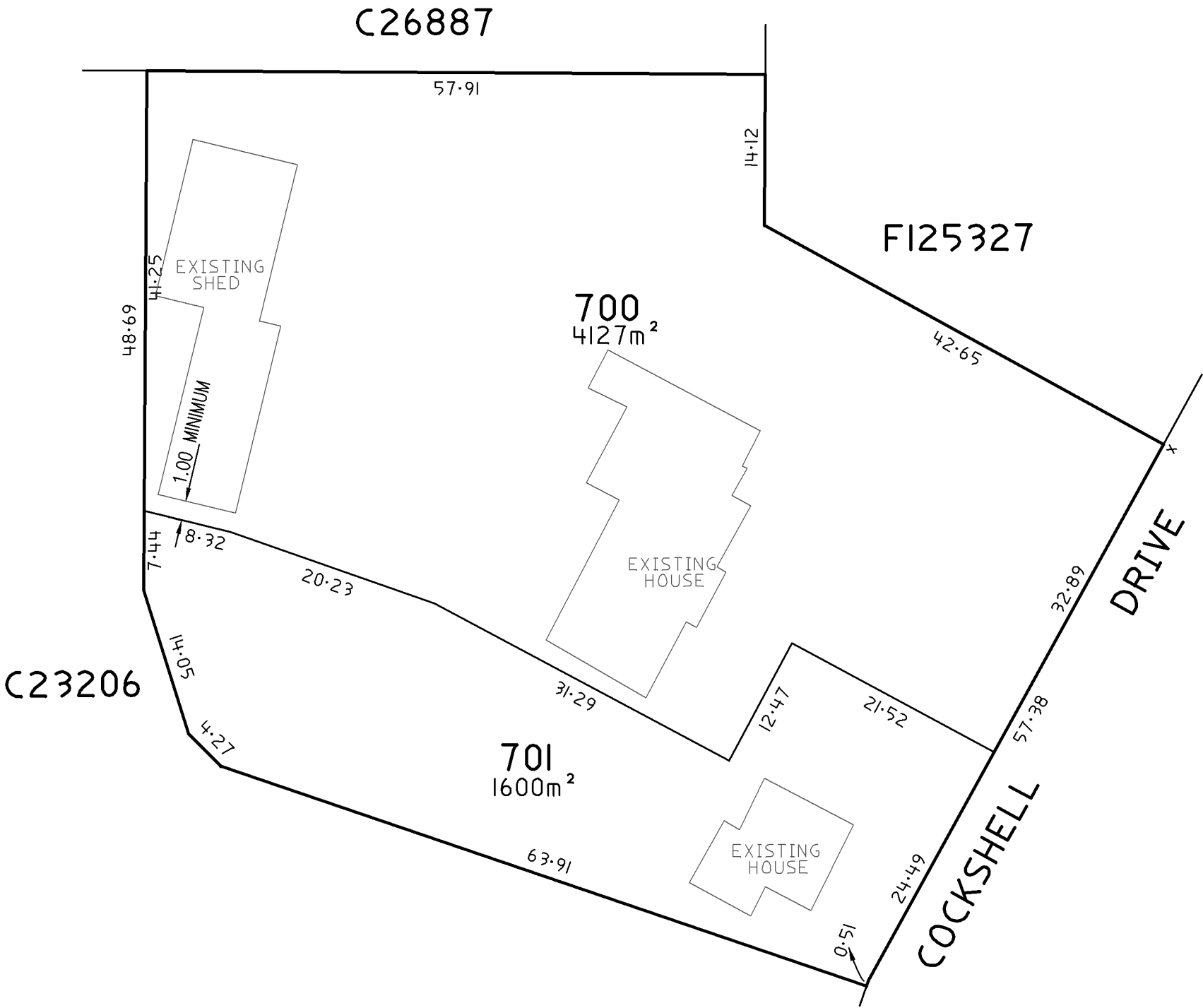
Item		Page No
5.3	Development Application: 490/219/2018	73
	Applicant: BLEEZE NEALE & ASSOCIATES	
	Address: 17 Cockshell Drive GAWLER EAST 5118	
	Nature of Development: Land Division - 1 into 2 Allotments	
	Attachment 1 - Proposed Plan of Division	75
	Attachment 2 - Planning Statement	76
	Attachment 3 - Superseded/original Plan of Division	80



ATTACHMENT 1

DEVELOPMENT NUMBER: 490/D007/18
DAC EDALA No: 61387
COUNCIL: TOWN OF GAWLER

DATA SUBJECT TO SURVEY



BNA

BLEEZE NEALE & ASSOCIATES PTY LTD

ACN 008 174 070

LICENSED SURVEYORS

10/230 MAIN SOUTH ROAD, MORPHETT VALE, SA, 5162

TEL: 08 8384 7344

27 19TH STREET, GAWLER SOUTH, SA, 5118

TEL: 08 85226700

Email: admin@bleezenealesurveyors.com

PROPOSED PLAN OF DIVISION

SITE: ALLOTMENT 34 IN D7969

HUNDRED OF BAROSSA

in the area named **GAWLER EAST**

SCALE



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MAP REFERENCE

TOTAL AREA

TITLE REFERENCE CT 5577/167

JOB NO: G3513

DRAWING NO:

G3513-STAGE 1-V4

SHEET of



28th November 2018

Scott Twine
Development Assessment Planner
Town of Gawler
PO Box 130
Gawler, SA 5118

PO Box 67, Springton SA 5235
p. 08 8568 2037 m. 0488 451 970
henri@regionalplanningdirections.com.au
www.regionalplanningdirections.com.au
ABN 80 152 935 852

Dear Scott,

PROPOSED LAND DIVISION AT 17 COCKSHELL DRIVE GAWLER EAST (DA NO:
490/D007/18) – REQUEST FOR COUNCIL SUPPORT

I wish to follow up on our recent discussion in relation to the amended plan submitted on behalf of Mr Kevin Launer (my Client) and your intimation that you are still unable to support the proposal despite significant amendments to the plan and my supporting statement.

You suggested that the proposal did not represent an orderly allotment configuration but that you may be able to support a noncomplying development resulting in an allotment area less than 1,600 square metres and well below the 25 metres frontage in order to overcome your concerns.

We have given consideration to the current allotment configuration and the suggested noncomplying alternative. This correspondence outlines our response including the underlying rationale and reasoning for requesting that Council reconsider its opposition to the proposal.

Alternative Layout (Noncomplying)

I have considered the alternative of undertaking a noncomplying form of development as shown in figure 1 below. However, the suggested alternative would fall seriously short of the required average allotment size of 1,600 square metres and the minimum road frontage of 25m. Furthermore the existing dwelling is somewhat run down and the shape of the noncomplying alternative would not be conducive to a future replacement dwelling due to the narrow allotment configuration. I am reluctant to support such a proposal on grounds that it would not be consistent with the Desired Character for the Wheatsheaf Policy Area and does not represent orderly development.

Current Proposed Land Division

The current amended proposal (see Figure 1 below) seeks to achieve relative parity with the requirements for the Wheatsheaf Policy Area. The proposal meets the average allotment size requirement of 2,000 square metres, the minimum requirement of 1,600 square metres for lot 701, and meets the 25m minimum frontage requirement.

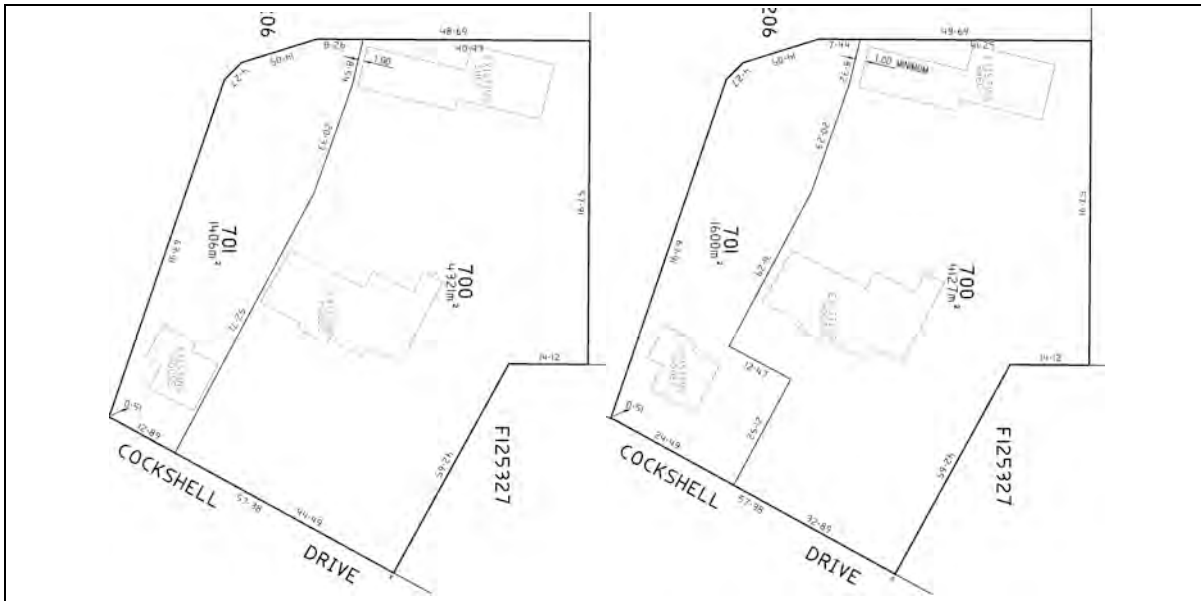


Figure 1: Alternative Noncomplying

Current Proposed

A closer analysis of allotment configurations in the locality has been undertaken. Figure 2 below shows the cadastral layout of allotments in the locality and highlights a number of examples where parts of allotments are tucked in behind portions of adjoining allotments. The current proposed land division layout has been overlaid and provides a visual comparison with the layout and configuration of allotments in the locality.

A number of examples are brought to your attention as follows:

- Three Community Lots adjoin the rear of my Client's property are in effect tucked behind the subject land in a series of irregular allotments to suit the topography, and the position of dwellings;
- The northern boundary of the subject land has a kink in the boundary partly tucked behind the adjoining lot 1;
- Two allotments opposite the subject land, with one being a hammerhead allotment, have kinks in the boundary;
- Two allotments including one at the front and a hammerhead to the rear located on the eastern side of Cockshell Drive at the southern end of the locality has a similar rectangular boundary section to what is proposed;
- Numerous hammerhead configurations with similar tucked boundaries exist throughout the locality

The above demonstrates the locality is an area where different allotment configurations can vary from the normal rectangular configurations is consistent with the established character. This is reflective in part due to the topography, the re-subdivision of larger allotments, and some of which contain more than one dwelling as is the case with my Client's proposal.

Furthermore, the dimensions of the rectangular front portion of the proposed lot 701 provides a more suitable site for constructing a new dwelling as the existing older dwelling is reaching a stage where redevelopment is becoming more likely.

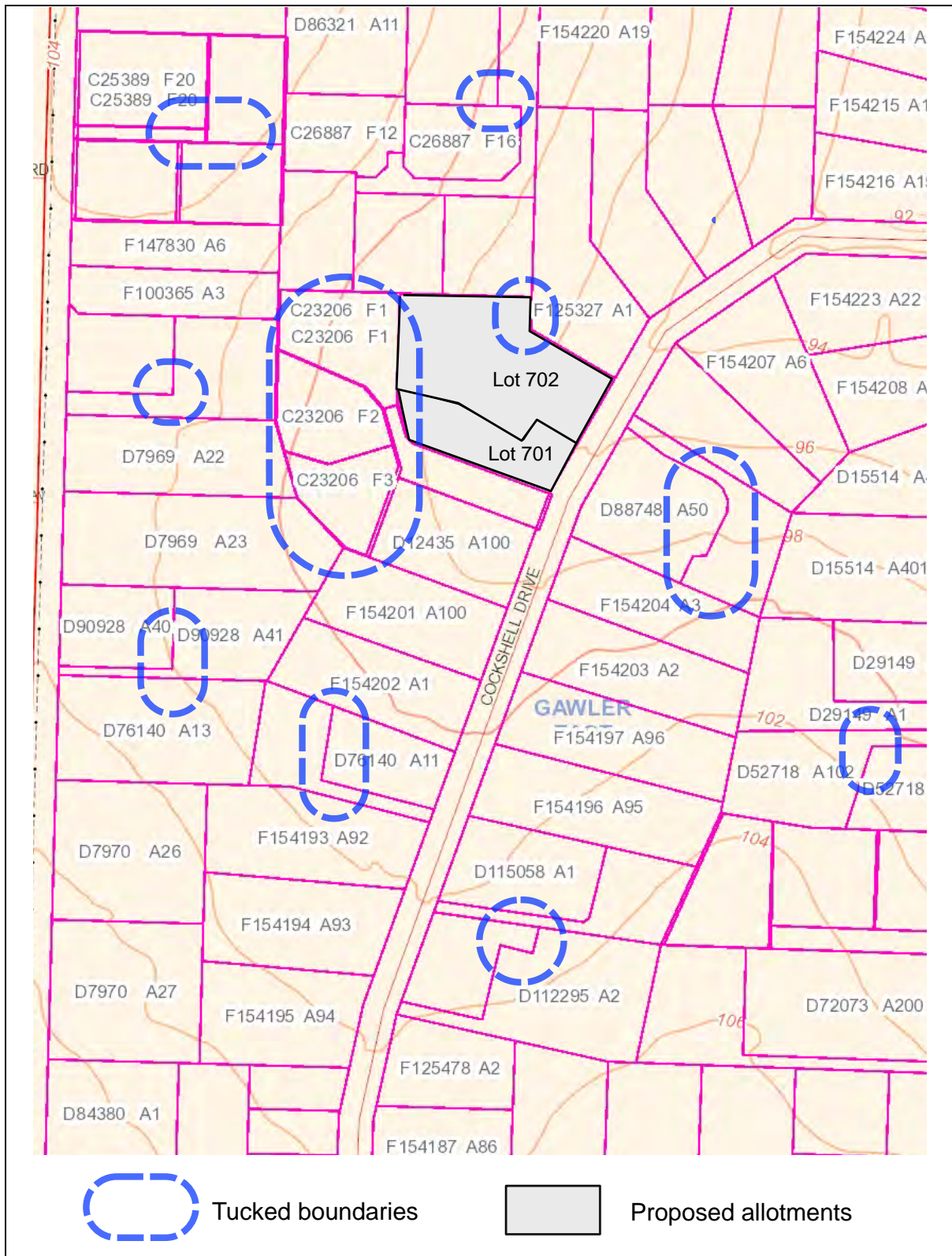


Figure 2 Examples of similar boundary configurations in the locality

In my opinion the main tests for whether or not the proposal represents an orderly and economic form of development relates to the adequacy of infrastructure and the suitability of the dimensions of the allotment for residential purposes. Firstly the proposal would not result in the provision of additional infrastructure as it has the benefit of existing infrastructure and as such would be economic. Secondly the proposal provides a rectangular portion towards the front of Lot 701 that meets the requirements for residential allotments outlined in Principle 234 (a) (b) (c) and the associated Design Technique 234.1 (a) (b) in the General Provisions for the Town of Gawler. The inclusion of a rectangle as is the case in the current proposal is consistent with what has been envisaged for residential development. At the same time the provisions for the Wheatsheaf Policy Area are respected in the proposal.

Conclusion

I am reluctant to support the noncomplying alternative allotment configuration favoured by the Council as it falls seriously short of the Wheatsheaf Policy Area provisions.

A closer analysis of allotment configurations within the locality has highlighted significant variations in allotments configurations with numerous example of boundaries and allotments tucked behind adjoining allotment boundaries. The necessity of such variations is due to a combination of topography, the re-subdivision of larger allotments, and, as in the case of my Client, the need to provide separate allotments for two existing dwellings.

The analysis of allotments shows that the proposal at hand is no different in character to numerous other allotments in the locality whilst at the same time providing a larger front portion more readily able to accommodate a replacement dwelling.

In view of the above it is requested that Council reconsider its current opposition to the proposal.

Should you require additional information or have any questions in relation to the proposal please do not hesitate to contact me on 08 85682037 or 0488451970 or via email on henri@regionalplanningdirections.com.au

Yours faithfully



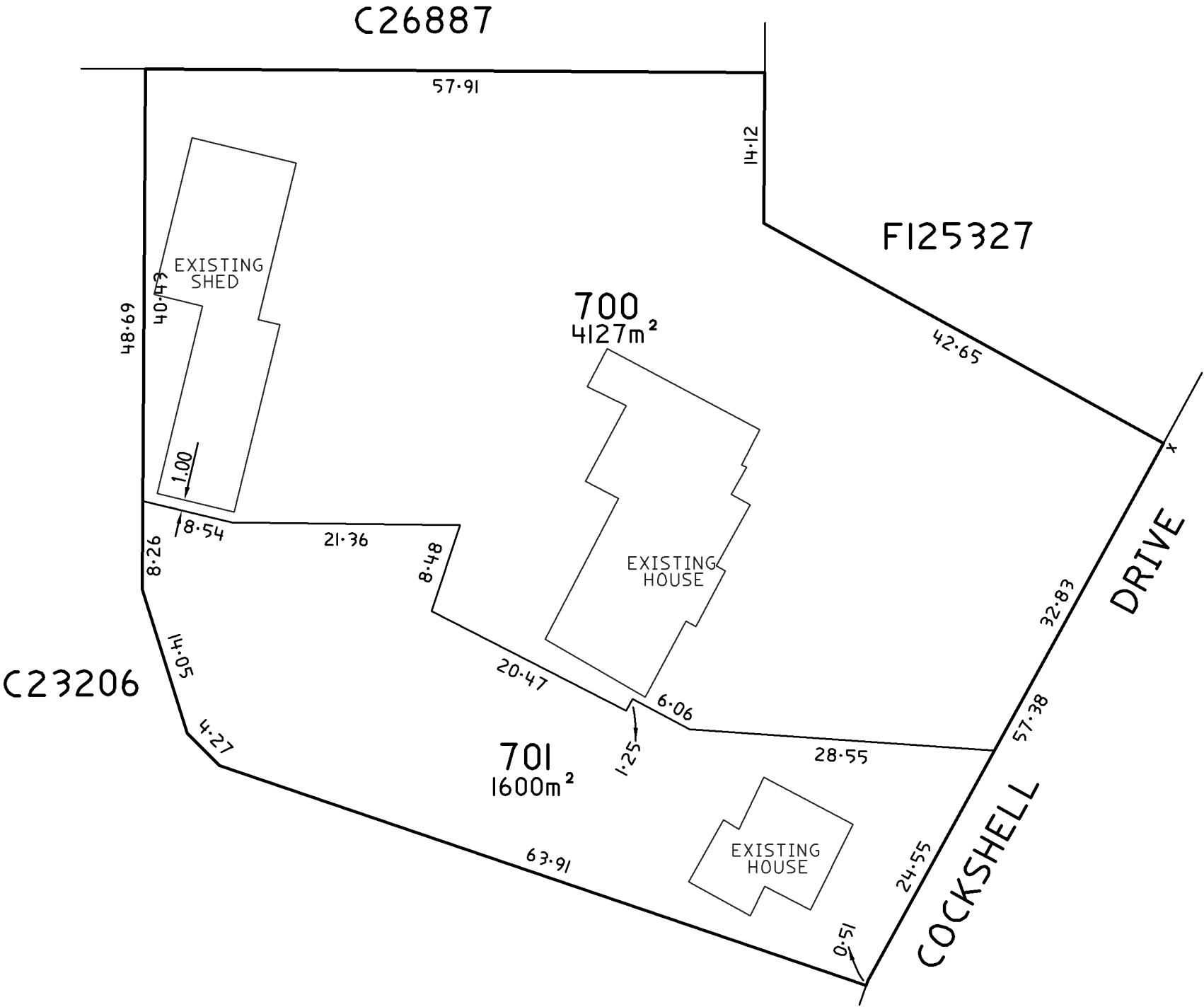
Henri Mueller BA (Plan), Grad. Dip. (RUP), M (Env. St.), MPIA

DIRECTOR – Regional Planning Directions

ATTACHMENT 3

DEVELOPMENT NUMBER: /D /
DAC EDALA No:
COUNCIL: TOWN OF GAWLER

DATA SUBJECT TO SURVEY



BNA

BLEEZE NEALE & ASSOCIATES PTY LTD
ACN 008 174 070
LICENSED SURVEYORS

10/230 MAIN SOUTH ROAD, MORPHETT VALE, SA, 5162
TEL: 08 8384 7344
27 19TH STREET, GAWLER SOUTH, SA, 5118
TEL: 08 85226700
Email: admin@bleezenealesurveyors.com

PROPOSED PLAN OF DIVISION

SITE: ALLOTMENT 34 IN D7969
HUNDRED OF BAROSSA
in the area named **GAWLER EAST**
SCALE



THIS DRAWING AND THE INFORMATION IT CONTAINS IS A PRIVATE AND CONFIDENTIAL
COMMUNICATION BETWEEN BLEEZE, NEALE & ASSOC'S PTY.LTD. AND ITS CLIENT.
IT MUST NOT BE COPIED, LOANED OR REPRODUCED WITHOUT WRITTEN CONSENT

MAP REFERENCE
TOTAL AREA
TITLE REFERENCE CT 5577/167

JOB NO: G3513
DRAWING NO:
G3513-STAGE 1-V2
SHEET of

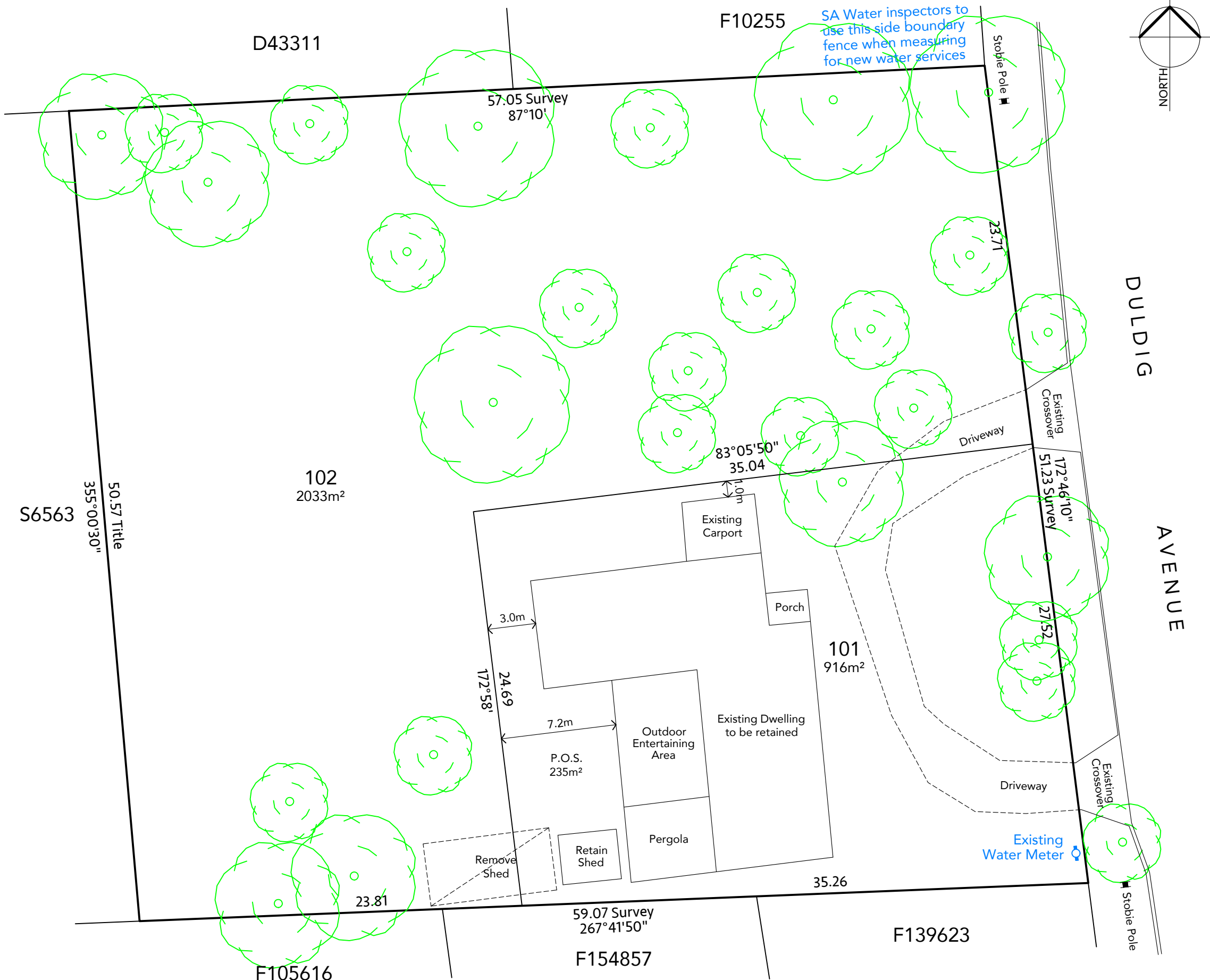
**Town of Gawler
Council Assessment Panel**

ATTACHMENTS UNDER SEPARATE COVER

Wednesday 30 January 2019

Item		Page No
5.4	Development Application: 490/341/2018	81
	Applicant: R G CALLOW	
	Address: 6 Duldig Avenue GAWLER EAST 5118	
	Nature of Development: Land Division by Torrens Title (1 into 2)	
	Attachment 1 - Application plans and documentation	83
	Attachment 2 - Plan showing location of Significant tree	86
	Attachment 3 - Indicative community title plan	87

ATTACHMENT 1



Land division application:	
490 / D012 / 18	
SHEET 1 OF 1 SHEETS	
Town of Gawler	
Total area of site:	2949m ²
Area of reserve provided:	0m ²
No. of existing allotments:	1
No. of proposed allotments:	2
No. of additional allotments:	1
Subject land details:	
Allotment 1 in F139787	
Site Address: 6 Duldig Avenue	
Suburb: Gawler East	
Hundred: Nuriootpa	
Title(s): C.T. 5258 / 9	

Annotations:

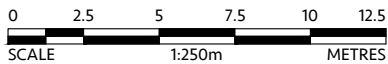
All measurements in metres unless shown otherwise. Do not scale drawing. Original sheet size is A3. All measurements are subject to survey and final plan of division. Always check the current certificate(s) of title for any easement(s) and annotations(s) that affect the within land.

The existing dwelling is to be retained for this project. All other structures are to be demolished/removed as per the plan diagram. Owner or developer to apply to Council for demolition approval (if required).

Owner or developer to alter the existing private internal sewer drains and/or water pipes. As-constructed diagram by licensed plumber to be submitted to OTR and SA Water before application proceeds to the Lands Titles Office.

AMENDED

SA Water Contact Details
Amanda Mitchell
Zaina Stacey Pty Ltd
Phone 8379 7979

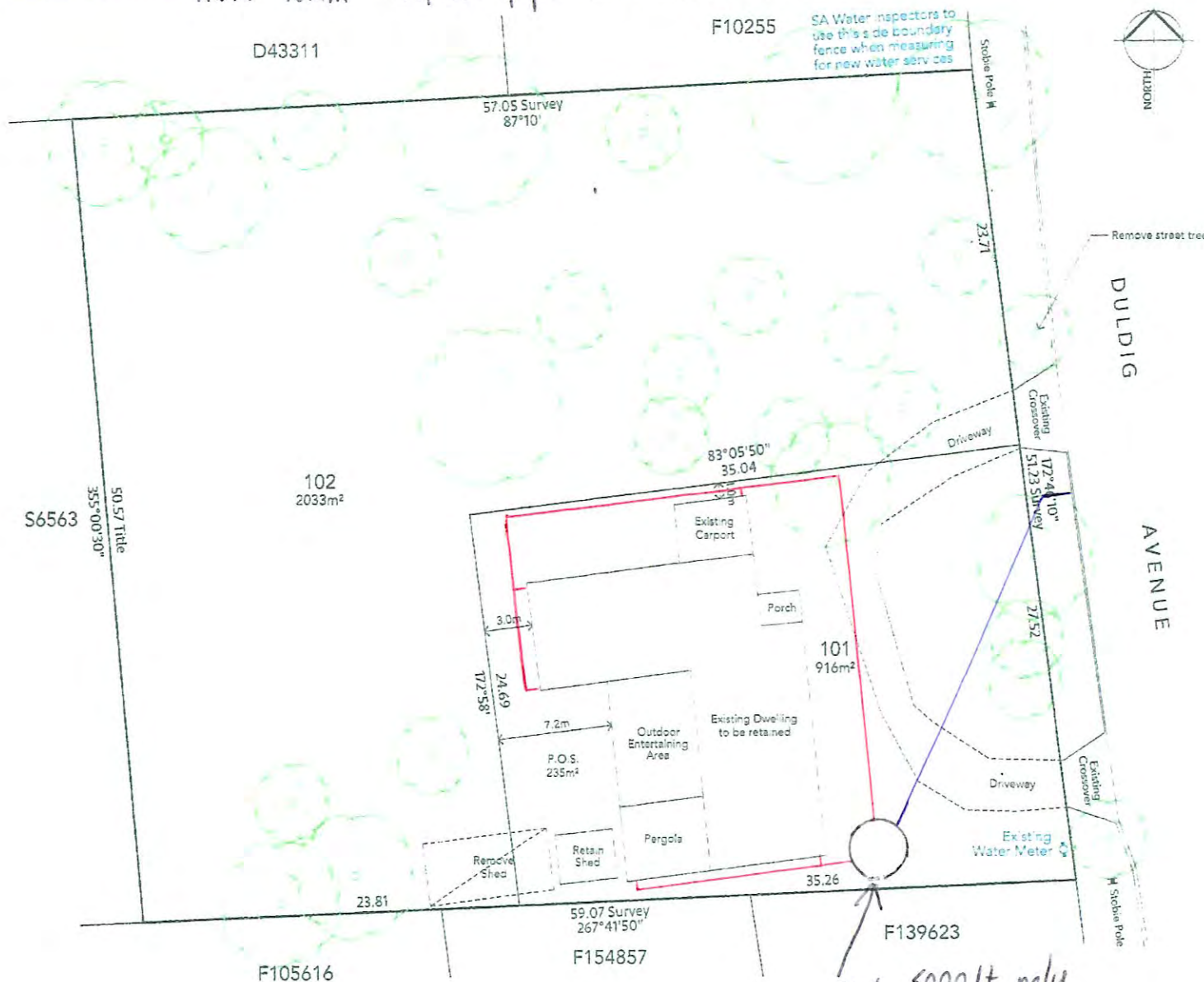


C	19/12/2018	Street tree removal notation removed
B	26/09/2018	Boundaries amended
A	26/06/2018	Details of structures to be retained amended
	25/06/2018	Original issue
Rev.	Date	Description

ZAINA STACEY
DEVELOPMENT CONSULTANTS
Office: 13 Avenue Road, Frewville SA
Post: PO Box 1000, Torrens Park SA 5062
Phone: 08 8379 7979
Email: planning@zainastacey.com

- new 90mm stormwater sealed system
- new 90mm overflow pipe with restricted orifice at 63mm to detain water

Page 84 of 87.



new 5000lt poly
detention tank to enable water
to be dispersed to street at a

Office: 13 Avenue Road, Fflew, e SA
Post: PO Box 1000, Torrens Park SA 5062
Phone: 08 8379 7979
Email: planning@camstoccy.com
Reference: 18190

Page 84 of 87.

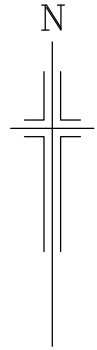
HARRADINE STREET

ALLOTMENT 20
IN D43311

ALLOTMENT 12
IN D10255

TBM
PSM 6628/40959
EL: 75.83m

TBM
PSM 6628/20232
EL: 77.97m

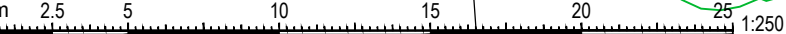


UNIT 1
IN S6563

UNIT 2
IN S6563

UNIT 3
IN S6563

COORDINATE SYSTEM	
VERTICAL:	AHD
HORIZONTAL:	GROUND PLANE ORIENTED
TO: MGA 94 ZONE 54	
SCALE: GROUND (CSF =)	
ADOPTED STATION & AUTHORITY	
PSM 6628/40959	RL: 75.830m SDB
PSM 6628/20232	E: 294 014.456m SDB
	N: 6 169 092.533m SDB
SDB denotes SA Government survey data base values	



ALLOTMENT 3
IN F105616

ALLOTMENT 56
IN F154857

ALLOTMENT 1
IN F139623

LEGEND

- 47.51TK TOP KERB

47.36WT WATER TABLE

45.16FL FLOOR LEVEL

48.12IL INVERT LEVEL

WATER METER

SPRINKLER / IRRIG VALVE

HYDRANT

DOMESTIC OUTLET

DOWNPIPE

DOMESTIC SUMP

STORMWATER WHOLE

SEP / GRATING

TEL. COMM. PILLAR / PIT

SIGN / BUS SIGN

LITTER BIN

MAIL BOX / SIGNAL BOX

TICKET MACHINE

ROAD / ELEC. SERVICE

WATER SV / FP

ELEC. /

GAS SERVICE

PSM

PEG / TBM

SURVEY MARKS

BOREHOLE

POWER / LIGHT POLE

CABLE MARKER

STOBIE / WOODEN POLE

POST / BOLLARD

SEWER MH / IO / SIP

UNKNOWN POINT / SERVICE

EDGE OF VEGETN

ROAD SIGN / HOARD

TREE / SHRUB

Possible REGULATED / SIGNIFICANT TREE by measurement only (trunk greater than 2.0m circumference). Professional advice from council / arborist required.

BOTTOM OF BANK

TOP OF BANK

CHANGE OF GRADE

DRAIN

SEWER PIPE UG

TEL. COMM. UG

WATER PIPE UG

BUILDING

WALL

GI BUILDING

CONCRETE

FENCE

GATE

CONTOUR INTERVAL: 0.20m	
SURVEY:	JSL 20-JUN-2018
DRAWN:	JSL 21-JUN-2018
CHECKED:	JSL 21-JUN-2018
Notes: Property boundaries shown hereon have been compiled from the government records and have not been verified by field survey.	

ZAINA STACEY
Development Consultants

13 Avenue Road, Frewville
PO Box 1000, Torrens Park SA 5062
T. 08 8379 7979 E. planning@zainastacey.com

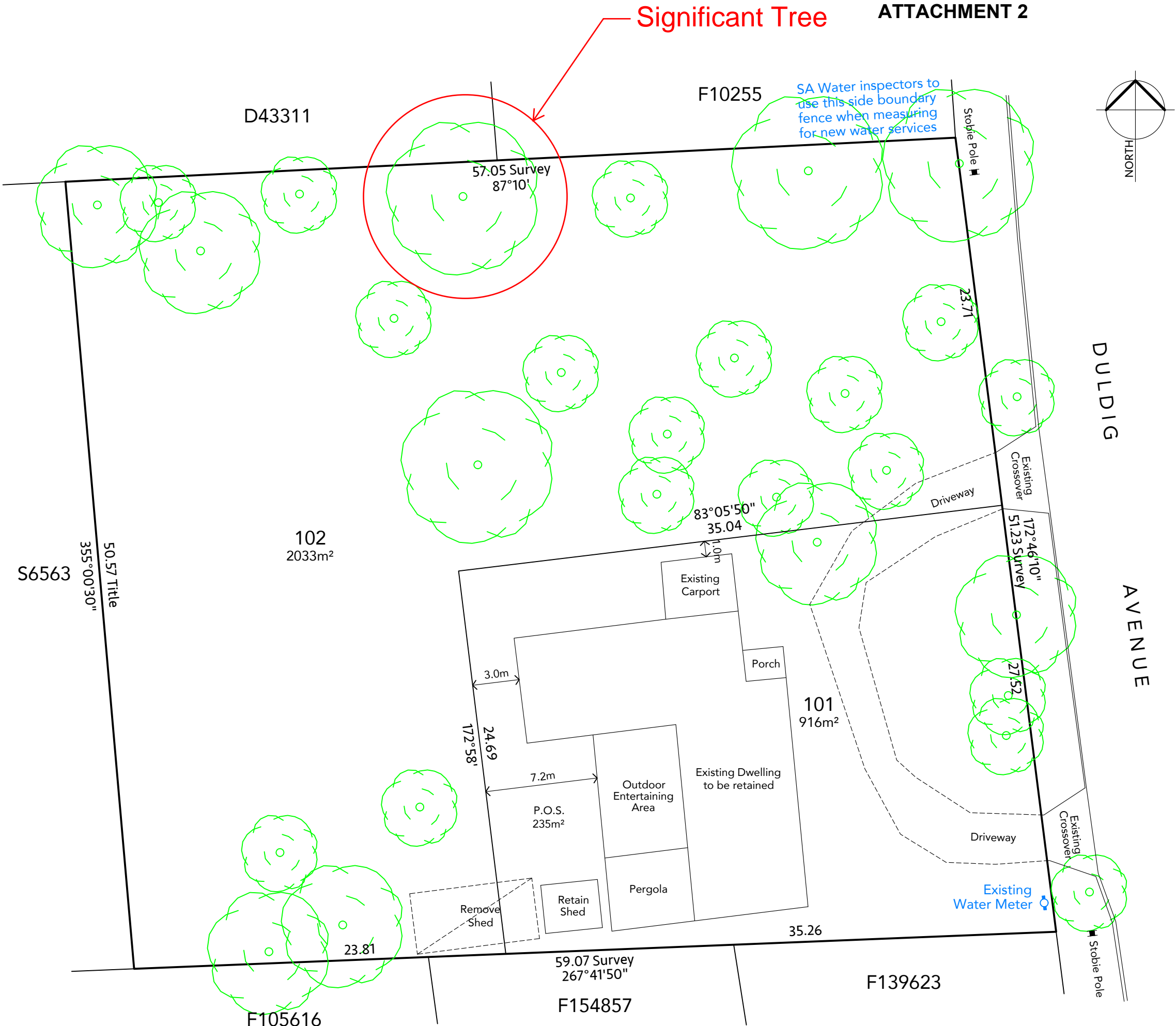
Reference: 18190

DETAIL AND LEVEL SURVEY
ALLOTMENT 1 IN F139787
CT Vol. 5258 Fol. 9
DULDIG AVENUE, GAWLER EAST

SHEET SIZE	DRAWING No.	SHEET 1 OF 1	REVISION
A3	A060017.0646 DET(A)	Page 85 of 87	A

Significant Tree

ATTACHMENT 2



Land division application:	
490 / D012 / 18	
SHEET 1 OF 1 SHEETS	
Town of Gawler	
Total area of site:	2949m ²
Area of reserve provided:	0m ²
No. of existing allotments:	1
No. of proposed allotments:	2
No. of additional allotments:	1
Subject land details:	
Allotment 1 in F139787	
Site Address: 6 Duldig Avenue	
Suburb: Gawler East	
Hundred: Nuriootpa	
Title(s): C.T. 5258 / 9	

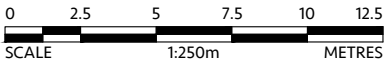
Annotations:

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Owner or developer to alter the existing private internal sewer drains and/or water pipes. As-constructed diagram by licensed plumber to be submitted to OTR and SA Water before application proceeds to the Lands Titles Office.

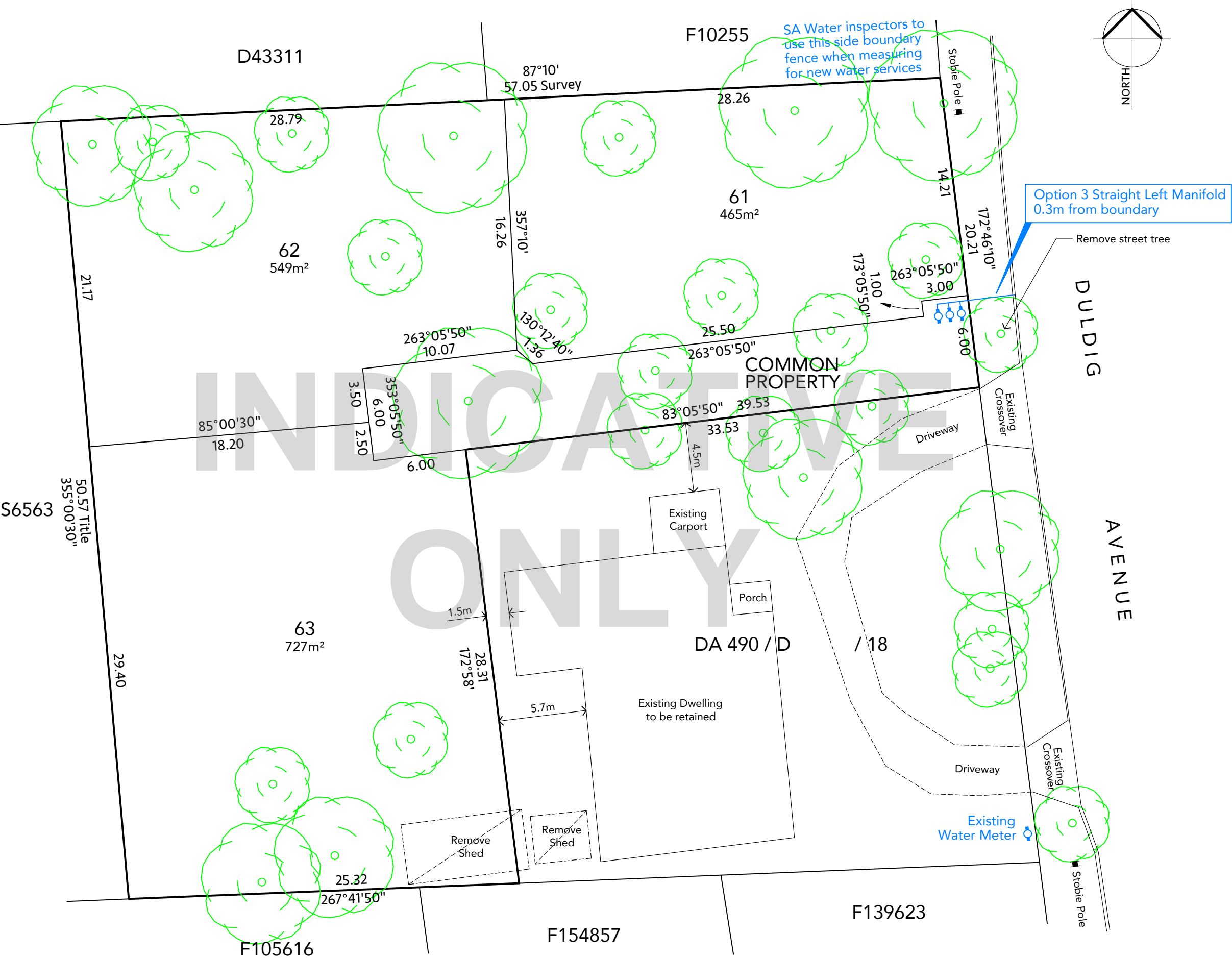
SA Water Contact Details
Amanda Mitchell
Zaina Stacey Pty Ltd
Phone 8379 7979



C	19/12/2018	Street tree removal notation removed
B	26/09/2018	Boundaries amended
A	26/06/2018	Details of structures to be retained amended
	25/06/2018	Original issue
Rev.	Date	Description

ZAINA STACEY
DEVELOPMENT CONSULTANTS
Office: 13 Avenue Road, Frewville SA
Post: PO Box 1000, Torrens Park SA 5062
Phone: 08 8379 7979
Email: planning@zainastacey.com

ATTACHMENT 3



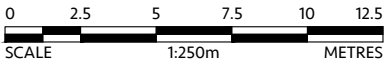
Land division application:	
490 / C / 18	
SHEET 1 OF 1 SHEETS	
Town of Gawler	
Total area of site:	1953m²
Area of reserve provided:	0m²
No. of existing allotments:	1
No. of proposed allotments:	3
No. of additional allotments:	2
Subject land details:	
Allotment 102 in 490/D /18	
Site Address:	6 Duldig Avenue
Suburb:	Gawler East
Hundred:	Nuriootpa
Title(s):	Portion of C.T. 5258 / 9

Annotations:

All measurements in metres unless shown otherwise. Do not scale drawing. Original sheet size is A3. All measurements are subject to survey and final plan of division. Always check the current certificate(s) of title for any easement(s) and annotations(s) that affect the within land.

The purpose of the common property is for access and provision of services.

SA Water Contact Details
Michael Zaina
Zaina Stacey Pty Ltd
Phone 8379 7979



25/06/2018		Original issue
Rev.	Date	Description
ZAINA STACEY DEVELOPMENT CONSULTANTS		
Office: 13 Avenue Road, Frewville SA		
Post: PO Box 1000, Torrens Park SA 5062		
Phone: 08 8379 7979		
Email: planning@zainastacey.com		
Reference: 18191		
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