

APPENDIX 9. INVESTIGATIONS – INFRASTRUCTURE



Preliminary Infrastructure Assessment

"Scotty's Corner" Code Amendment

| JOB NUMBER: | S55091 - 276554 | |
|-------------|---|--|
| CLIENT: | Future Urban | |
| SITE: | 1-5 Nottage Terrace and 43 Main North Road, Medindie (Scotty's Motel). | |
| DATE: | July 2021 | |
| REVISION: | С | |

Engineering your success.

ADELAIDE MELBOURNE SYDNEY

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Introduction

FMG Engineering (FMG) has been engaged by Future Urban to undertake a service infrastructure investigation to obtain preliminary, high level assessment of existing and potential future infrastructure needs in respect of the proposed rezoning.

This subject site is located at 1-5 Nottage Terrace and 43 Main North Road, Medindie (at the intersection of Nottage Terrace and Main North Road) and covers an area of approximately 7300 m² and is bounded by Nottage Terrace on the north, Main North Road on the West, and Residential buildings on the east and south ('Subject Site').

The subject site currently contains Motel (Scotty's Motel), vacant land and residential land uses. The subject site falls under the jurisdiction of Town of Walkerville and is currently within the Suburban Business Zone and Established Neighbourhood Zone of Planning and Design Code ('Code'). Medindie is an inner northern suburb of Adelaide the capital of South Australia. It is located adjacent to the Adelaide Park Lands, just north of North Adelaide, and is bounded by Robe Terrace to the south, Northcote Terrace to the east, Nottage Terrace to the north and Main North Road to the northwest

FMG Engineering has prepared this high-level infrastructure assessment by utilising information obtained via Dial-Before-You-Dig (DBYD), and discussion with the service authorities, wherever viable. FMG Engineering has attempted to contact the following service authorities for further information:

- Town of Walkerville (Council)
- SA Water (water and wastewater utilities)
- South Australian Power Networks SAPN (power authority)

The purpose of our investigation is to provide a desktop assessment of the infrastructure currently available to the subject site and to assess the current capacity of the existing infrastructure.

Site understanding

The subject site is as shown in Figure 1 below.



Figure 1: Site location

The subject land is approximately flat grades slightly towards the west with less than 1% slope and is currently accessible via both Main North Road and Nottage street. Subject site constitutes a Motel building, facilities and parking area on the centre of the plan, existing houses on the east, and a vacant lot on Main North Road. Main North Road and Nottage Terrace are two-way streets of approximately 18m sealed width bounded by a standard footpath lane on both sides. According to the Desktop GIS data, it can be concluded that there are Stormwater pit and pipe networks near the boundaries of the subject site under both Main North Road and Nottage Terrace as shown in Figure 2.



Figure 2- Existing Stormwater network for the subject site according to GIS data

Proposed Rezoning

According to the proposed rezoning, future development of the subject site may include a mix of commercial and residential land uses and multi storey built form.

As for the future plan for the intersection in the vicinity of the site, it is understood that DIT has proposed a road widening for this intersection, and future development will have to be designed to accommodate this.

Services investigation

FMG has undertaken a Dial Before You Dig Investigation which has located the following utilities adjacent to the site:

- Stormwater
- APA
- NBN Co
- SA Power Networks
- SA Water
- Telstra

Stormwater

FMG Engineering had contacted Council to obtain information for the stormwater management required for the subject site. Through discussion with Council, it is understood that future development will be assessed against the Code and the Town of Walkerville's conditions for stormwater management, achieving the below requirements:

- A Music Model showing that Stormwater reduction targets are met:
 - 80% reduction in average annual Total Suspended Solids
 - o 60% reduction in average annual Total Phosphorous
 - o 45% reduction in average annual Total Nitrogen
- Hydrology calculations: Maintains a pre-development peak flow rate from the site based upon a 0.35 runoff coefficient for the 5% AEP 30 minute storm (based off Code requirements for Land Divisions)
- Manages up to and including the 1% AEP flood event to avoid flooding of buildings
- Maintains the stormwater runoff time to peak to match that of the pre-development

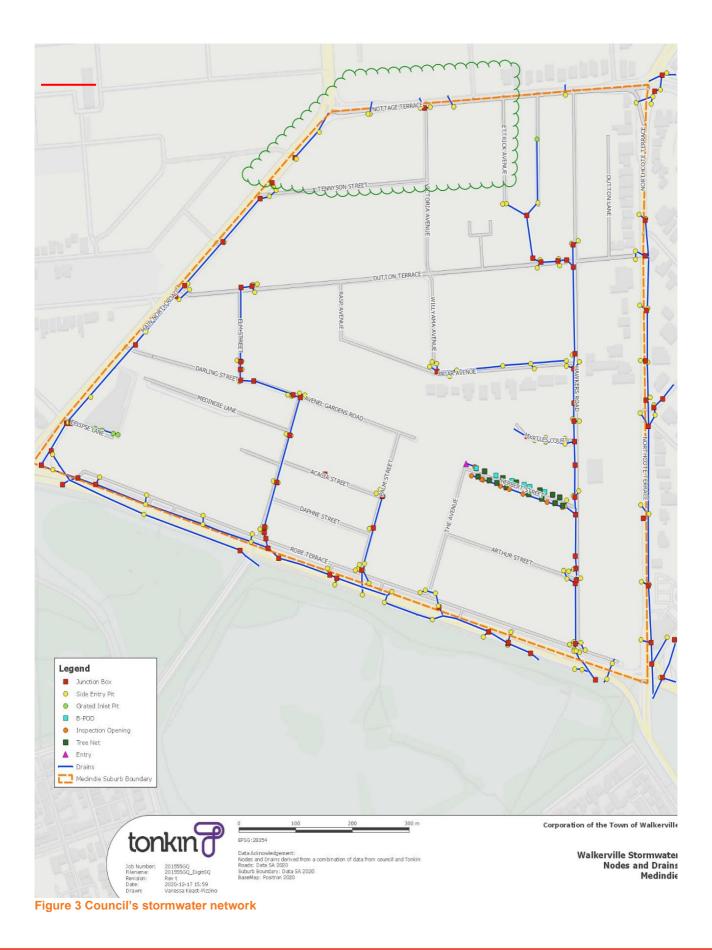
A desktop investigation indicated that the Town of Walkerville, City of Prospect and DIT share underground stormwater assets in the vicinity of the subject site. Given peak runoff will be limited to pre-development conditions, we have not identified the need for significant upgrades to downstream networks. Local flood data is not available for the site; however stormwater flooding will be managed by DIT, and it is reasonable to assume that any DIT intersection upgrades would address stormwater issues in the area. It should also be assumed that finished floor levels of future development will be set a minimum of 150-300mm above the top of kerb in Main North Road.

The subject site consists of a variety of land use currently, and is almost flat with approximately 60% impervious area. A combined commercial and residential land use may increase the total stormwater discharge from the site. Council has nominated pre-development stormwater assessment shall be on the condition of limiting the runoff coefficient to C=0.35, suggesting that there will be a need for on-site detention storage to achieve Council requirements. Future development could consider the integration of stormwater detention involving the following strategies such as:

- 1. Detention storage underground or above ground
- 2. Implementation of Water Sensitive Urban Design (WSUD) principles such as raingarden and landscape, wherever possible
- 3. Upsizing of internal pipe network

The volume of detention storage will vary depending on design outcomes. however, having regard to potential future development of the site, it is anticipated that onsite stormwater detention could be in the

order of 80-100m³. Detention storage could be achieved above ground via storage tanks in back of house areas, or below ground and pumped to the adjacent stormwater infrastructure in Main North Road. This volume is considered feasible within the proposed land use.



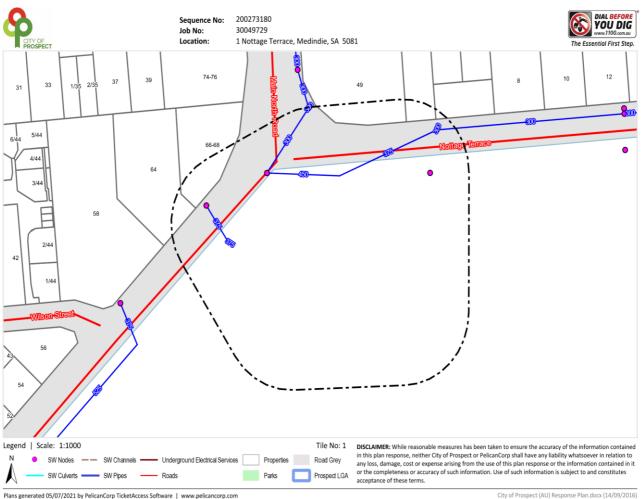


Figure 4- City Of Prospect's stormwater network

In addition, Council also requires improvement to stormwater quality being discharged from the subject site based on the parameters stated in Table 1.

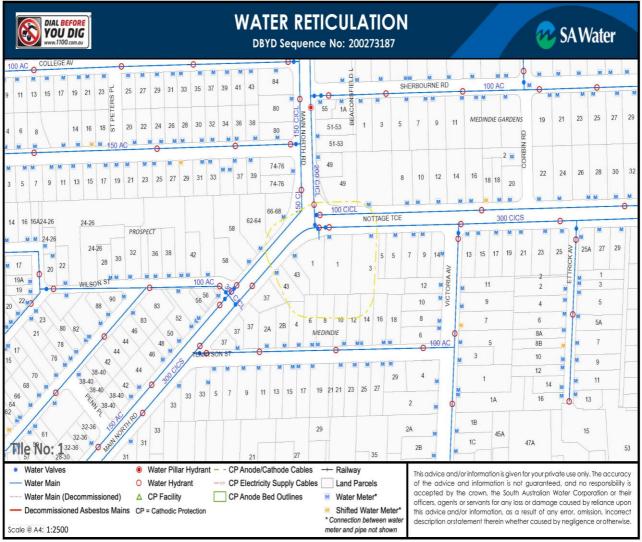
Table 1 Council stormwater target improvement for different parameters.

| PARAMETER | TARGET REDUCTION |
|--|------------------|
| Reduction litter / gross pollutant | 90% |
| Reduction in average annual total suspended solids (TSS) | 80% |
| Reduction in average annual total phosphorous (TP) | 60% |
| Reduction in average annual total nitrogen (TN) | 45% |

The quality of the runoff discharged from the site can be improved through the installation of proprietary water quality improvement devices. We note these devices will likely need to be a tertiary treatment device with filtration media / cartridges as there is insufficient area to achieve biofiltration / water quality improvement basins on the subject site. Note that the areas which create the greatest amount of polluted stormwater runoff are carparks and roads. Runoff generated from roofs are considered to be "clean" and can be directed directly to DIT / Council infrastructure in a controlled manner via stormwater detention.

Water mains

A review of the Dial Before You Dig investigation indicates that the subject site is surrounded by large diameter water mains. A 300 mm diameter supply main pipe (CICL) is located at both Nottage Terrace and Main North Road. The subject land is assumed to be currently supplied by the existing 300mm water main on Nottage Street as there are water valves and water meter supply on this water main alignment.



Plans generated (05/07/2021) by Pelicancorp TicketAccess Software | www.pelicancorp.com. Plan valid to 02/08/2021 AU.SA Water - Response Plan (Water).docx (rev. 31 Mar 2020 Figure 5 - SA water supply mains

As a result of future development on the subject site, there may be a need for booster pumps to assist with the supply demand of water. It is likely that there will not be a significant external augmentation charge for future development. It is also noted that there may be additional costs / infrastructure to meet fire code requirements. Future investigations to verify the capacity of the SA Water network at this location would include a flow test at the metered location.

SA Water requirements for future development would be resolved at the development application stage for future development.

FMG has contacted SA Water to obtain preliminary information on the anticipated augmentation works for the site to facilitate commercial rezoning. It is understood that detailed feedback will be provided by early August.

Sewer

Information obtained through SA Water indicated that there is an existing 150 mm sewer main pipe along Nottage Terrace and Main North Road, as shown on Figure 6.

Future development is likely to require new sewer mains connection into this main, and associated earthworks / traffic control. Detailed feedback from SA Water is anticipated in early August.

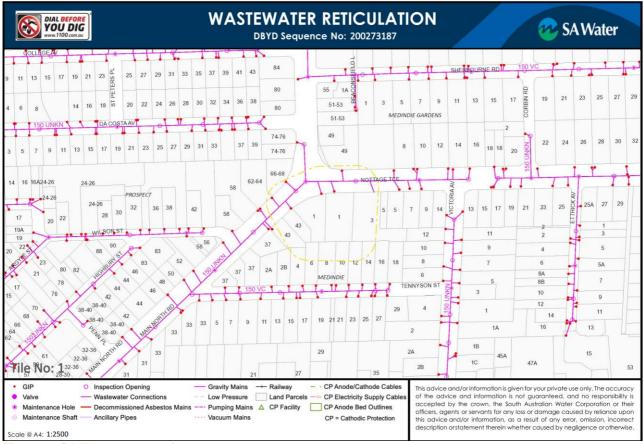


Figure 6 - SA Water sewer mains

Electrical

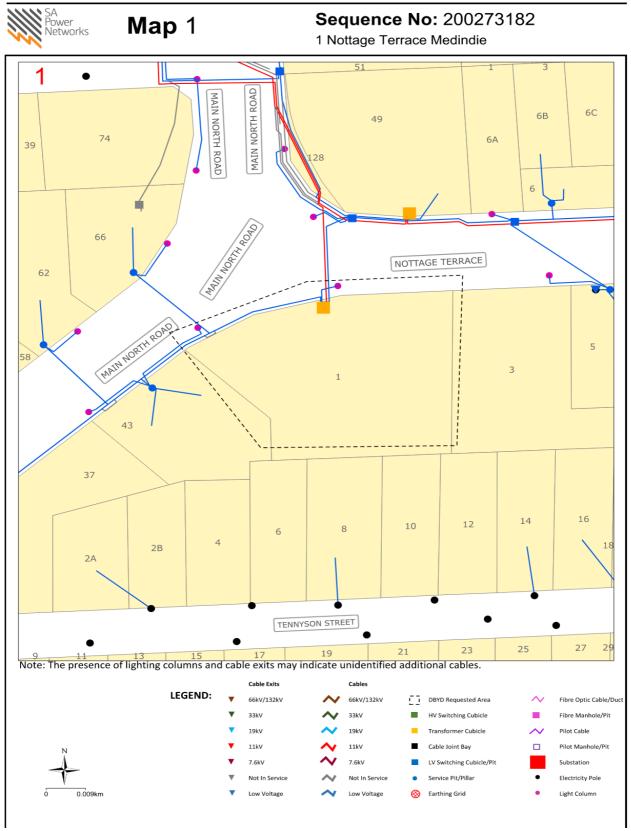
FMG have contacted SAPN regional manager Queenie Huang for further information on site loading requirements and whether it is likely that further augmentation will be required, however there is insufficient information at this stage for SAPN to validate exact network augmentation required.

FMG Engineering does not provide electrical engineering services in house, however, has previously been supplied an approximation of 100VA/m² for commercial spaces. On this basis, the total estimated demand for future development on the subject site would be in the range of (1,000-2,000 kVA).

Comments received from SAPN officers suggest that for a load of 1500kVA at Scotty's (1 Nottage Terrace, Medindie) an upgrade of supply with relevant infrastructure may be required:

- An existing pad mount transformer is at the site, however it not able to supply the increased load, and a new larger size transformer would be required.
- New extension of high voltage cables from existing network would be required. Trenching required for establishing cable routes and transformer vault/pad location.
- Easements required for the pad mount transformer and depending on network analysis there may be requirement for a separate high voltage switching cubicle, with its own easement on the site.

SA Power Networks would need to re-assess at point of application or in the event developer presents more accurate information. The comments are high level advice only; Site requirements for future development to be confirmed by SAPN at the development application stage.





Communications

A review of the Dial Before You Dig investigation shows that there NBN infrastructure within the vicinity of the subject site as shown in Figure 8-10. We believe this can be connected to, with new pit and pipe design to supplement this system internally.

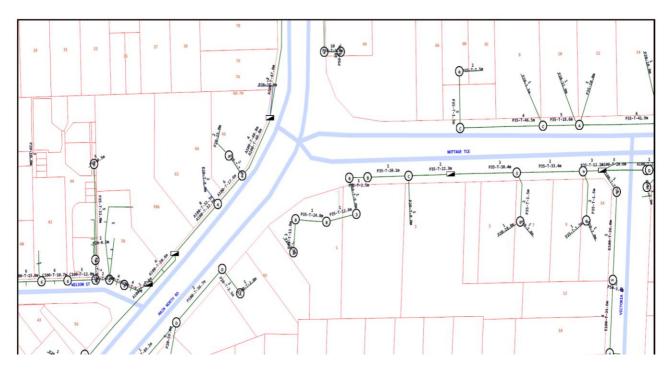
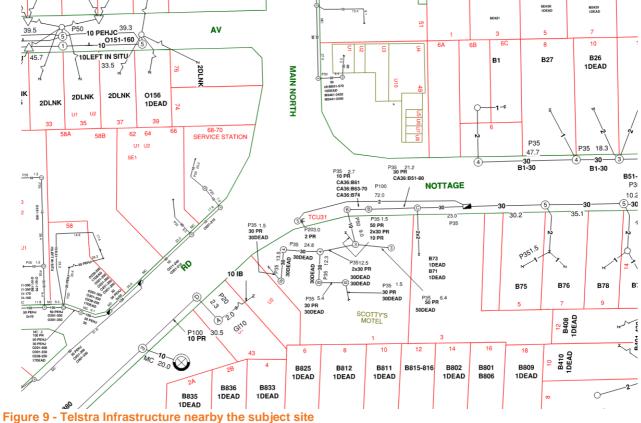


Figure 8 NBN network for the subject site

In addition to the NBN services on site, information obtained via DBYD indicated that there are Telstra, Optus, Nextgen, and Primus information in the vicinity of the site as shown in Figures 9-10.



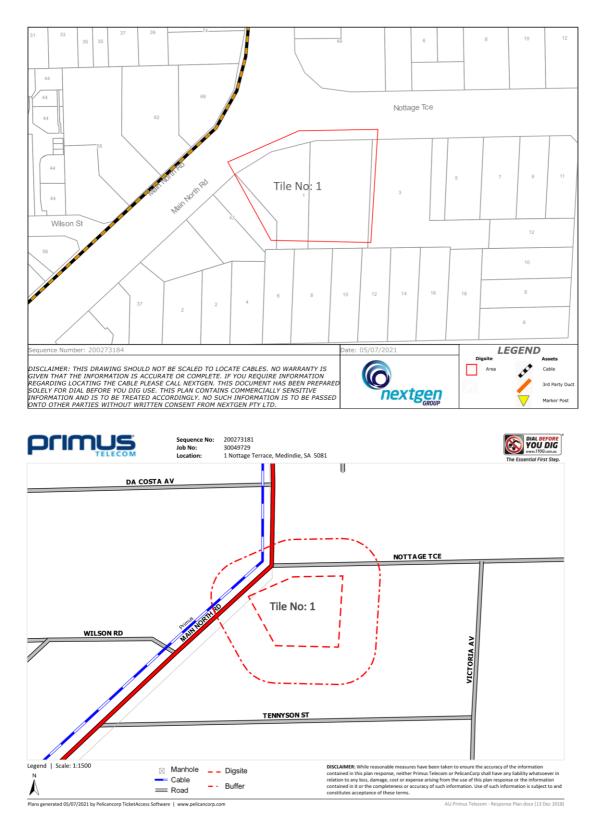
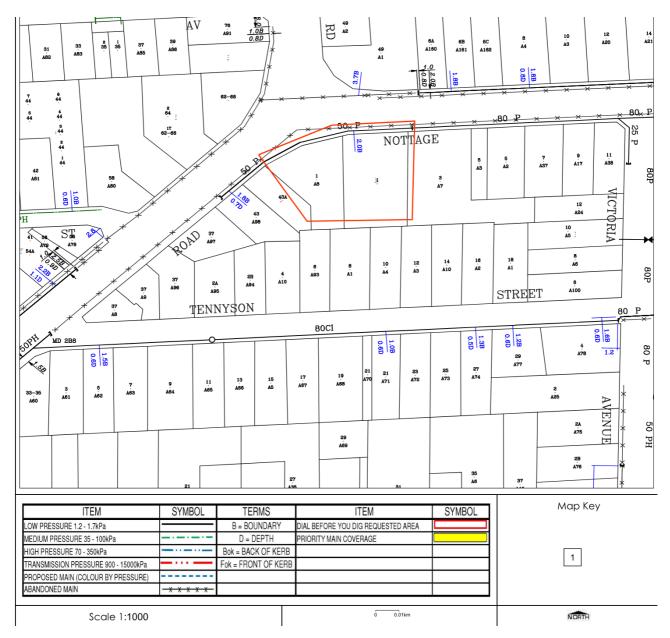


Figure 10 – Private communications infrastructure adjacent to the subject site

It is assumed that connection to these services to support future development will not require significant augmentation works.

Gas

Information obtained via DBYD indicated that there is existing low-pressure gas main (1.2-1.7kPa) within the vicinity of the site which may be adequate to service future development. The location of the gas mains is shown in Figures 11. Feedback provided by APA illustrates that, at a high level there would not be an issue with gas supply to the subject site.





Staging of Infrastructure Upgrades

FMG Engineering is not a qualified cost estimator, however, has been requested to provide some industry advice on how costs may be divided amongst stages. Whilst indicative in nature, we can provide the following opinions on how costs may be apportioned between the relevant stages, with some supplementary notes;

Stormwater

- Provision of ~80-100 cubic metres of stormwater detention across entire site
- Connection to existing stormwater infrastructure, noting considerable traffic requirements
- Tertiary level stormwater quality treatment including filter media or cartridge systems

Water mains

- Connection to existing mains
- Booster/'s may be required to service upper levels

Electrical

- No firm advice provided, electrical engineer input required to determine final augmentation requirements, however indicative advice suggests:
 - An existing pad mount transformer is at the site, however it not able to supply the increased load, and a new larger size transformer would be required.
 - New extension of high voltage cables from existing network would be required. Trenching required for establishing cable routes and transformer vault/pad location.
 - Easements required for the pad mount transformer and depending on network analysis there may requirement for a separate high voltage switching cubicle, with its own easement on the site.

Communications

- It is not anticipated significant augmentation works will be required.

Gas

- No suspected concerns with supply of gas. Final internal routing and connection points to be confirmed during detailed design

Summary

FMG Engineering had prepared this preliminary services assessment based on the information provided by Future Urban on the proposed rezoning of the subject site and through desktop investigation (via DBYD, GIS and Aquamap) and discussion with Council and SA Water. At this stage, we believe there to be sufficient capacity in many of the services to the subject site, however, are awaiting final detailed feedback from SA Water to verify these assumptions.



Correspondence from Service Authorities

From:Keileigh.Marra@agig.com.auSent:Monday, 12 July 2021 3:36 PMTo:Ghasem AshtijouCc:Jordan ColbertSubject:RE: [EXTERNAL] Gas network assessment for development projects

Good Afternoon Ghasem, At a high level there wouldn't be an issue with gas supply to either development.

Compliant locations for the gas meters will need to be approved, once you have further plans of the site we can evaluate and provide a Letter of Offer for each site which will outline the details of the connections. If you have any other questions in the meantime please don't hesitate to contact me. Kind Regards,

Keileigh Marra Business Development Representative M +61 418 853 508 T +61 8 8418 1167

E Keileigh.Marra@agig.com.au



330 Grange Road, Kidman Park, SA 5025

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From: Ghasem Ashtijou <ghasem.ashtijou@fmgengineering.com.au> Sent: Thursday, 8 July 2021 5:04 PM To: Keileigh Marra <Keileigh.Marra@agig.com.au>

| From: | Quyen Hoang <quyen.hoang@sapowernetworks.com.au></quyen.hoang@sapowernetworks.com.au> |
|----------|---|
| Sent: | Tuesday, 13 July 2021 4:10 PM |
| То: | Jordan Colbert |
| Cc: | Ghasem Ashtijou; Mitchell Ogilvy; Darren Marshall |
| Subject: | RE: High level services assessment - Lockleys and Medindie |

Hi Jordan

Thanks for contacting us.

Here are SA Power Networks' contacts for the two sites you have asked for a high level review on:

Mitchell Ogilvy – Scotty's Corner

Also thanks for recognising that this exercise is fairly broad and without an actual load demand request from yourself, we would not be able to indicate the level of network augmentation required. i.e. both are large developments When your electrical consultants are onboard and we do receive the electrical details, we can review this again based on the rules and regulations that apply.

Regards,

Queenie Hoang Customer Solutions Manager Adelaide

From: Jordan Colbert <jordan.colbert@fmgengineering.com.au>
Sent: Tuesday, 13 July 2021 2:41 PM
To: Quyen Hoang <Quyen.Hoang@sapowernetworks.com.au>
Cc: Ghasem Ashtijou <ghasem.ashtijou@fmgengineering.com.au>
Subject: RE: High level services assessment - Lockleys and Medindie

External email! - Think before you click.

Hi Queenie,

Just touching base on this one, we are looking to finalise our reporting for a client and would greatly appreciate a high level review of any supply concerns for the below discussed developments.

Regards, Jordan Colbert BEng (Civil & Struct) Civil Team Leader (SA)



| From: Sent: | Mitchell Ogilvy <mitchell.ogilvy@sapowernetworks.com.au> Thursday, 15 July 2021 2:54 PM</mitchell.ogilvy@sapowernetworks.com.au> |
|----------------|--|
| То: | Jordan Colbert |
| Cc: | Ghasem Ashtijou; Gemma Borin; Emily Nankivell |
| Subject: | RE: High level services assessment - Lockleys and Medindie |

Hi Jordan,

Based on the information you have provided I can supply very high level advice of what is potentially required.

For a load of 1500kVA at Scottys (1 Nottage Terrace, Medindie) an upgrade of supply with relevant infrastructure would be required:

- An existing padmount transformer is at the site, however it not able to supply the increased load, and a new larger size transformer would be required.
- New extension of high voltage cables from existing network would be required. Trenching required for establishing cable routes and transformer vault/pad location.
- Easements required for the padmount transformer, and depending on network analysis you may require a separate high voltage switching cubicle, with it's own easement on the site.

SA Power Networks would need to re-assess at point of application or in the event you present more accurate information. The following is high level advice only.

Feel free to give me a call if you wish to discuss further.

Regards,

Mitchell Ogilvy Network Project Officer - Adelaide

Direct: 08 8404 4560 Mobile: 0400 582 188 mitchell.ogilvy@sapowernetworks.com.au

From: Jordan Colbert <jordan.colbert@fmgengineering.com.au>
Sent: Tuesday, 13 July 2021 4:37 PM
To: Quyen Hoang <Quyen.Hoang@sapowernetworks.com.au>
Cc: Ghasem Ashtijou <ghasem.ashtijou@fmgengineering.com.au>; Mitchell Ogilvy
<Mitchell.Ogilvy@sapowernetworks.com.au>; Darren Marshall <Darren.Marshall@sapowernetworks.com.au>; Gemma Borin <gemma@futureurban.com.au>; Emily Nankivell <emily@futureurban.com.au>
Subject: RE: High level services assessment - Lockleys and Medindie

External email! - Think before you click.

Hi Queenie, Mitchell, Darren,

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From: Jordan Colbert
Sent: Friday, 2 July 2021 2:17 PM
To: queenie.hoang@sapowernetworks.com.au
Cc: Ghasem Ashtijou <ghasem.ashtijou@fmgengineering.com.au>
Subject: High level services assessment - Lockleys and Medindie

Hi Queenie,

Thankyou for your time over the phone today, as discussed FMG has been engaged to prepare a high level services infrastructure assessment on the behalf of Future Urban (Planning Consultants). Both sites are somewhat confidential, however I can provide the attached sketches and commentary below for internal review;

Scottys Corner

Please refer to the concept plan 'Scotty's Motel, Medindie - Concept Plan Option 2' attached, with a proposed total building area of 14,984m². For load purposes, please assume mixed use development of commercial/retail to the ground floor, residential to the upper floors and basement car parking. The development fronts Nottage Terrace and Main North Road at Medindie and allows for access from both roads. This site is currently occupied by a motel / hotel.



Enjoy the weekend!

Regards, **Jordan Colbert** BEng (Civil & Struct) Civil Team Leader (SA)

From: Sent: To: Cc: Subject: James Kelly <jkelly@walkerville.sa.gov.au> Thursday, 8 July 2021 12:06 PM Ghasem Ashtijou Jordan Colbert RE: Medindie - Scotty's Motel

Hi Ghasem,

We do not have the data on the 1% AEP for this location, unless DIT would have the local hydraulics of the Nottage/Main North catchment?

The development site will also need to adequately drain the 1% internally as well.

Happy to catch up to discuss.

Regards,

James Kelly Asset & Project Engineer

Town of Walkerville

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From: Ghasem Ashtijou <ghasem.ashtijou@fmgengineering.com.au>
Sent: Thursday, 8 July 2021 10:06 AM
To: James Kelly <jkelly@walkerville.sa.gov.au>
Cc: Jordan Colbert <jordan.colbert@fmgengineering.com.au>
Subject: RE: Medindie - Scotty's Motel

Hi James,

Thanks for your comprehensive information.

Regarding the code requirements, we checked the Waterconnect Flood Mappings to manage up to and including the 1% AEP flood event to avoid flooding of buildings. However, there is no known flood analysis for the subject site on the Waterconnect website databank. I hugely appreciate it if you can inform us about known flood maps concerning the site location if there is any.

Appreciate your time and consideration in advance.

Look forward to hearing from you.

Regards,

From: James Kelly <<u>jkelly@walkerville.sa.gov.au</u>> Sent: Tuesday, 6 July 2021 5:35 PM To: Jordan Colbert <<u>jordan.colbert@fmgengineering.com.au</u>>

Cc: Ghasem Ashtijou <<u>ghasem.ashtijou@fmgengineering.com.au</u>> Subject: RE: Medindie - Scotty's Motel

Hi Jodran,

Thanks for the chat earlier.

I believe this development will be assessed against the new planning and design code so I have provided some info below regarding stormwater requirements from there.

It will still be good to work through some ideas on the design as the code can be quite black and white and not always outcome focused.

Let us know how things progress with the design.

Code Requirements

- A Music Model showing that Stormwater reduction targets are met:
 - 80% reduction in average annual Total Suspended Solids
 - 60% reduction in average annual Total Phosphorous
 - 45% reduction in average annual Total Nitrogen
- Hydrology calculations: Maintains a pre-development peak flow rate from the site based upon a 0.35 runoff coefficient for the 5% AEP 30 minute storm (based off Code requirements for Land Divisions)
- Manages up to and including the 1% AEP flood event to avoid flooding of buildings
- Maintains the stormwater runoff time to peak to match that of the pre-development

Regards,

James Kelly Asset & Project Engineer

Town of Walkerville

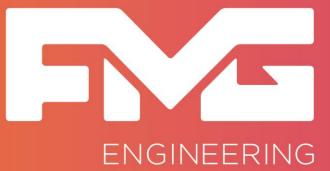
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From: Jordan Colbert <jordan.colbert@fmgengineering.com.au</pre>
Sent: Tuesday, 6 July 2021 9:32 AM
To: James Kelly <jkelly@walkerville.sa.gov.au</pre>
Cc: Ghasem Ashtijou <ghasem.ashtijou@fmgengineering.com.au</pre>
Subject: Medindie - Scotty's Motel

Hi James,

Thanks for your time over the phone this morning, as discussed FMG are undertaking a high level review for the feasibility of a multi-level mixed commercial / apartment building on the site of the current Scotty's Motel, 1 Nottage Tce, Medindie. The site will be largely roof area with some carparking and vehicle access around the perimeter. Can you please advise what Council's expectations would be on the following elements;

- Stormwater detention requirements (pre- to post-development)
- Available stormwater assets to connect into
- Any stormwater quality requirements with consideration for roof water vs. surface runoff



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