

PLANS AND DOCUMENTS  
referred to in the PDA  
DEVELOPMENT APPROVAL

Approval no: DEV2018/988

Date: 30 July 2019



*Bushman + Wyatt*

In association with:



robertsday



saunders  
havill  
group



THE CONSULTANCY BUREAU

CRGACOUSTICS

Steven Hosking Surveys Pty Ltd

## SEWER INFRASTRUCTURE MASTER PLAN

To support the Reconfiguration of a Lot (Permissible) Development Permit  
Application for Urban Residential Development.

Address: Lot 24 Bushman Drive and 68 Wyatt Road,  
Riverbend Qld 4280

Lot & RP Description: Lot 24 on SP142997  
Lot 1 on RP49296

Parish: Maclean

County: Stanley

Assessment Manager: MEDQ

MUS Reference: 23305-ALL

Prepared for:

**PACIFIQ**

DATE: 10<sup>th</sup> May 2019



CIVIL ENGINEERING

TOWN PLANNING

PROJECT COORDINATION

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Prepared for:

**PACIFIQ**

**Property Address:**  
Lot 24 Bushman Drive and  
68 Wyatt Road,  
Riverbend Qld 4280

**Real Property Descriptions:**  
Lot 24 on SP142997  
Lot 1 on RP49296

## DOCUMENT CONTROL

### Report Summary

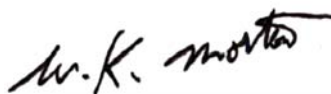
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#### Distribution

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Signed:



Warren Morton (RPEQ 4706)

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#### **List of Attachments**

- Attachment A    **Subdivision Proposal Plan (Sheet 1 only)**  
(Dwg No. 23305-PP-S001 to S005, dated 12.11.2018)  
Prepared by Mortons-Urban Solutions
- Attachment B    **Prelodgement Meeting Minutes**  
(Minutes dated 15.06.2018)  
Prepared by EDQ
- Attachment C    **'Bushman & Wyatt' Sewer Calculation Table**  
(Dwg No. 23305-SNA-007, Rev A dated 15.11.2018)  
Prepared by Mortons-Urban Solutions
- Attachment D    **GFPDA External Sewer Infrastructure Plan (Sheet 1)**  
(Dwg. No. 23305-SNA-003, Rev A dated 15.11.2018)  
Prepared by Mortons-Urban Solutions
- Attachment E    **GFPDA External Sewer Infrastructure Plan (Sheet 2)**  
(Dwg. No. 23305-SNA-005, Rev B, dated 09.05.2019)  
Prepared by Mortons-Urban Solutions
- Attachment F    **Sewer Network Plan**  
(Dwg. No. 23305-SNA-500, Rev A, dated 15.11.2018)  
Prepared by Mortons-Urban Solutions

## 1.0 PURPOSE OF THE INFRASTRUCTURE MASTER PLAN

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The purpose of this Infrastructure Master Plan (IMP) is to address the Greater Flagstone Development Scheme and direct the provision of infrastructure as outlined in the Reconfiguration of a Lot (Development Permit) application for 314 lots at 'Bushman & Wyatt'.

During a pre-lodgement meeting Economic Development Queensland requested the inclusion of a:

- **Sewer Supply Infrastructure Master Plan**; and a
- Water Supply Infrastructure Master Plan.

Infrastructure Master Plans are required to:

- Be for the whole of the site;
- Demonstrate compliance with PDA Guideline No. 13 – Engineering Standards;
- Detail applicable infrastructure networks both within an external to the site, and identify where works are required to connect existing or future networks on the site into existing or future sub-regional networks;
- Identify the overall planning and delivery principles for the infrastructure works, required to support the ultimate development of the site; and
- Identify how and when each component of the infrastructure will be provided (including dedication/transfer), or if not known, how and when provision of that infrastructure is to be determined.

*This IMP covers the 'Bushman and Wyatt' development within the Greater Flagstone Priority Development Area (GFPDA). This IMP should be considered a 'living' document and may require updating from time to time.*

### 1.1 PDA Guideline No. 13 Engineering Standards

*PDA Guideline 13 – Engineering Standards* requires the water and sewer is designed and constructed in accordance with the SEQ Water Supply and Sewerage Design and Construction Code.

The requirements of Guideline No. 13 and the SEQ Code have been addressed in this IMP.

## 2.0 'BUSHMAN & WYATT'

Bushman and Wyatt is a 314 lot subdivision within the Greater Flagstone Priority Development Area (GFPDA). The development will become a community of 391 dwellings positioned adjacent to a future railway station; and the future Flinders Lakes Drive. 'Bushman & Wyatt' development proposes primarily single lots of varying sizes for detached dwellings with duplexes nominated in suitable locations. The proposal plan includes master lots adjacent to the future train station providing an opportunity for medium density residential and 2 commercial sites adjacent to the future Flinders Lakes Drive (refer **Attachment A**). **Figure 1** below provides a reference to the proposed development.

**Figure 1:** Subdivision Proposal Plan



The parkland shown is proposed to provide a broad range of amenities promoting shelter, shade, and shared path networks which connect the neighbourhood internally, and also provide connections to other facilities and greenspace external to the subject site.

The proposed sewer strategy for the development was discussed with EDQ at the Pre-lodgement Meeting held on 8<sup>th</sup> June 2018. Outcomes from this meeting were detailed in EDQ email dated 15<sup>th</sup> June 2018 (refer copy in **Attachment B**).

### 3.0 PLANNING AND DELIVERY PRINCIPLES

The proposed sewer network has been planned to accommodate 391 dwellings and proposed non-residential development located within 'Bushman & Wyatt' site.

EDQ has previously advised the desired standards of service to be adopted for the sewer master planning of the proposed development are outlined in the Logan Water Alliance's 'Master Planning Review of Desired Standards of Service' document, dated April 2014 (Task Number: 90-12-43) with an amendment to the Peak Wet Weather Flow (PWWF). EDQ advised that the PWWF must be designed with a flow of 1,000L/EP/day and 75% depth of flow instead of 1,300L/EP/day and 100% depth of flow. Appendix E of Logan Water Alliance's report outlined the recommended design criteria utilised within this Sewer Supply Infrastructure Master Plan. A copy is contained within **Figure 2** for ease of reference.

**Figure 2:** Logan Water Alliance's Recommended Wastewater Desired Standards of Service

| WASTEWATER NETWORK DSS                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameter                                                | Criteria                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <i>Sewage load</i>                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| ADWF                                                     | 165 L/EP/day                                                                                                                                                                                                                                                                                                                                                                                                                          |
| PWWF                                                     | <p>Use actual flow data; or</p> $d \times 165 \quad \text{L/EP/d or,}$ $d \times 0.00191 \times EP \quad \text{L/s}$ <p>Where:<br/> <math>d = 0.01(\log A)^4 - 0.19(\log A)^3 + 1.4(\log A)^2 - 4.66\log A + 7.57</math><br/> <math>d</math> = dry weather peaking factor<br/> <math>A</math> = gross plan area of development catchment, in hectares</p> <p>Refer to WSAA Sewerage Code of Australia; Part 1 Planning and Design</p> |
| Containment standard for assessment of existing networks | <p>Network to contain a 1 year ARI storm event, for critical storm duration.</p> <p>This is an overflow containment standard rather than a conveyance standard. For those catchments that fail the standard, mitigation measures such as l/i reduction and wet weather storage should be considered in addition to any capacity increases.</p>                                                                                        |
| PWWF                                                     | <p>Residential 1300 L/EP/d</p> <p>For Common Effluent Discharge PWWF = 660 L/EP/d</p> <p>Commercial 1300 L/EP/d</p> <p>Light Industrial 1000 L/EP/d</p> <p>Heavy Industrial 840 L/EP/d</p>                                                                                                                                                                                                                                            |
| <i>Gravity sewer design</i>                              |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Flow equation                                            | Colebrook White to be used for all applications – design and modelling                                                                                                                                                                                                                                                                                                                                                                |
| Pipe roughness general                                   | Colebrook White $k = 1.5\text{mm}$                                                                                                                                                                                                                                                                                                                                                                                                    |
| Maximum velocity @ PWWF                                  | 3 m/s                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Depth of flow @ PWWF - Existing                          | Up to 1m below MH surface level and no spillage through overflow structures                                                                                                                                                                                                                                                                                                                                                           |
| Depth of flow @ PWWF - Proposed/ new sewers              | 100% of pipe depth                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Depth of flow @ PDWF – existing and new sewers           | Maximum 60% of pipe depth                                                                                                                                                                                                                                                                                                                                                                                                             |
| Slime Stripping                                          | It is desirable where gradients permit to achieve slime stripping. A wall shear of 3.85 Pa is required to achieve slime stripping.                                                                                                                                                                                                                                                                                                    |

The Equivalent Persons (EP) values have been determined in accordance with the Demand Table contained within Appendix A of the SEQ WS&S D&C Code. The specified EP/ET conversion rate for Logan City Council is 2.7 EP/ET.

Based on the above, the proposed development's estimated sewer load has been calculated and is detailed in the Sewer Calculations Table on Drawing 23305-SNA-007 (refer **Attachment C**). **Attachment C** is summarised in Section 5.0 below.

## 4.0 EDQ ENDORSED GREATER FLAGSTONE PDA SEWER STRATEGY

Following the preparation of a report titled 'Logan South (including Greater Flagstone and Yarrabilba Priority Development Areas) Wastewater Servicing Strategy', a sewer solution for the Greater Flagstone PDA was agreed and endorsed by Council in June 2016. The report reviewed several options regarding the transfer and treatment of sewerage within the area and summarised the preferred strategy as follows:

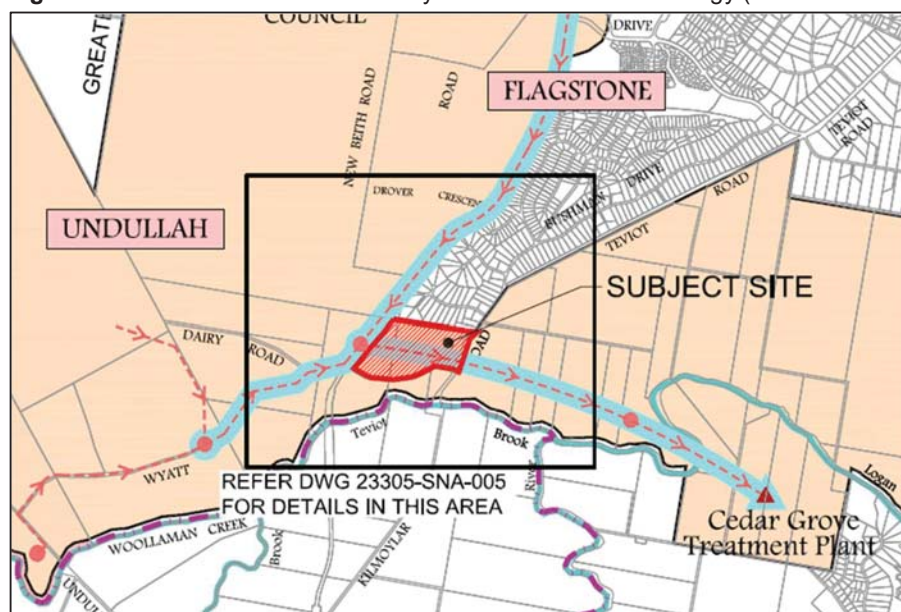
1. Upgrade the existing Flagstone wastewater treatment plant (WWTP);
2. Install temporary WWTP's around the PDA where required;
3. Decommission the temporary WWTP's and pump to a new WWTP at Cedar Grove, and;
4. The use of tankering in early phases of development if feasible.

The implementation of the preferred strategy is contingent upon the establishment of an infrastructure funding agreement with EDQ, Council and the major GFPDA developers which is understood to be currently under negotiation. LWIA's 'on the ground investigations' have commenced within the GFPDA and Council already own the proposed Cedar Grove WWTP site. Timing of the construction of the Cedar Grove WWTP is currently advised as 2019 (previously 2021).

The 'Logan South (including Greater Flagstone and Yarrabilba Priority Development Areas) Wastewater Servicing Strategy' was a strategic review to determine appropriate high-level strategies for the GFPDA. It was envisaged that reviews at a local level would be undertaken to ensure strategies are site specific and relevant to proposed development.

This Sewer Network Infrastructure Master Plan reviews the 'Bushman & Wyatt' catchment at a local level. The ultimate sewer strategy for the GFPDA is shown in **Figure 3** (refer **Attachment D – MUS Dwg No. 23305-SNA-003**). It is understood that EDQ and LWIA are currently securing the required resumptions/agreements with landowners to deliver this strategy.

**Figure 3:** 'Extract from 'Bushman & Wyatt' External Sewer Strategy (refer **Attachment D**)

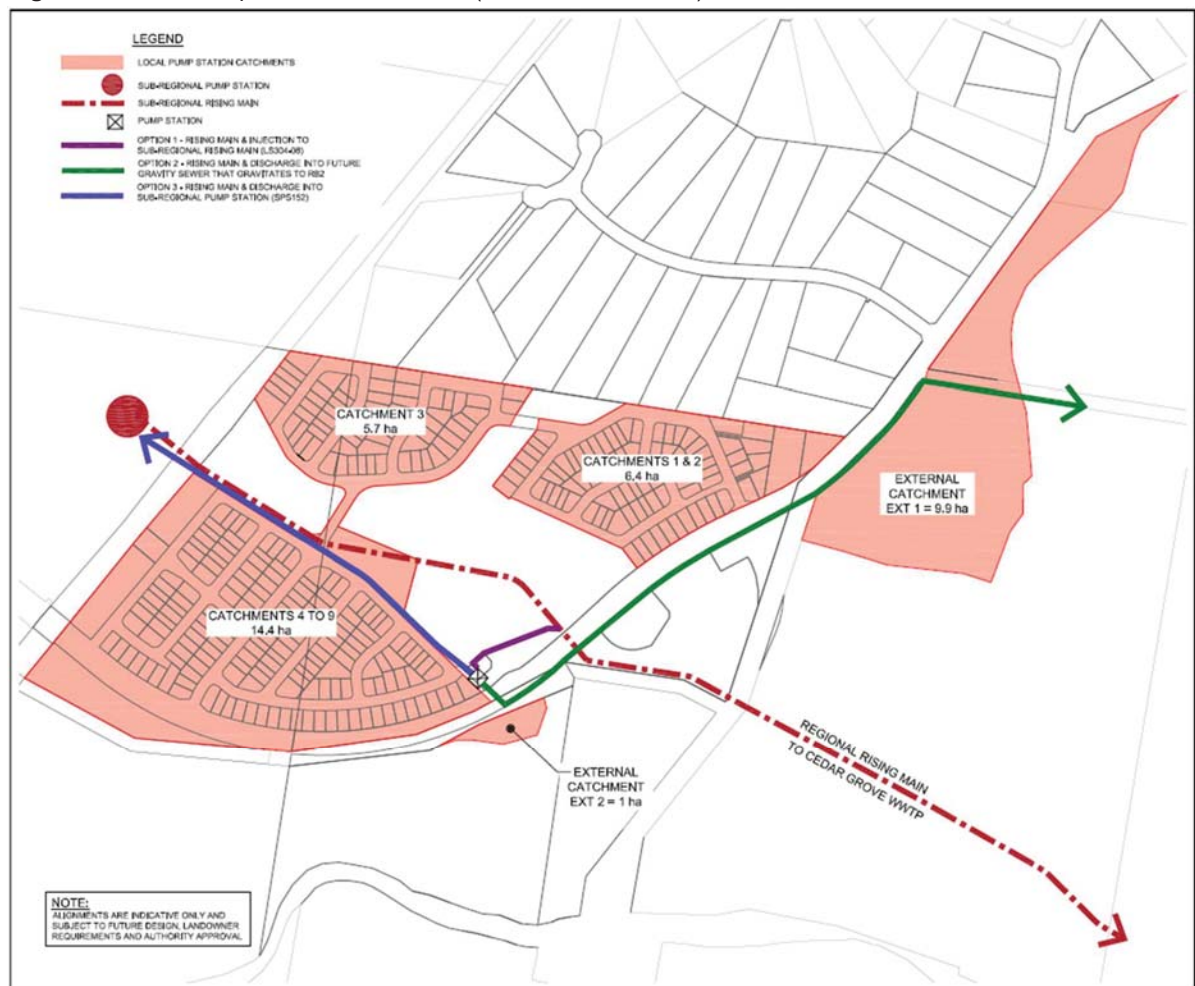


## 5.0 SEWER NETWORK

The proposed 'Bushman & Wyatt' Sewer Network has been developed in accordance with EDQ's Endorsed Greater Flagstone PDA Sewer Strategy with main sizing proposed in accordance with the SEQ Code. Preliminary sewer main sizes have been calculated based on minimum grade capacities and the network allows for surrounding development as requested by EDQ at the Pre-Lodgement Meeting.

A pump station is proposed in the low point of development to deliver the catchment's wastewater to the sub-regional infrastructure proposed by LWIA. **Figure 4** below (an extract of **Attachment E**) indicatively shows the pump station location and options for delivery to LWIA's infrastructure. **Section 5.1** below discusses the potential interim and ultimate delivery options.

**Figure 4:** Local Pump Station Catchment (refer **Attachment E**)



Access to the proposed pump station will be via the existing Wyatt Rd until the development road network provides access.

Estimated sewer loads from the proposed development are summarised in **Table 5.1** below.

| <b>Catchment ID</b> | <b>Estimated Catchment Area (ha)</b> | <b>Estimated Dwellings</b> | <b>Demand Conversion</b> | <b>Total Sewer Load (EP)</b> | <b>Average Day Weather Flow (l/s)</b> | <b>Peak Wet Weather Flow (l/s)</b> |
|---------------------|--------------------------------------|----------------------------|--------------------------|------------------------------|---------------------------------------|------------------------------------|
| Catchments 1 + 2    | 6.4                                  | 91 dw                      | 2.7 EP/dw                | 252.0                        | 0.48                                  | 2.94                               |
| Catchment 3         | 5.7                                  | 74 dw                      | 2.7 EP/dw                | 199.8                        | 0.38                                  | 2.31                               |
| Catchments 4 to 9   | 14.4                                 | 226 dw                     | 2.7 EP/dw                | 618.3                        | 1.18                                  | 7.28                               |
| <b>Total</b>        | <b>26.4ha</b>                        | <b>391 dw</b>              |                          | <b>1,070</b>                 | <b>2.04</b>                           | <b>12.5 l/s</b>                    |

The estimated sewer load for adjacent development has also been considered in the sizing of the sewer infrastructure for the proposed development. **Table 5.2** summarises the external catchments considered within this IMP.

| <b>External Catchment ID &amp; Proposed Land Use</b> | <b>Estimated Catchment Area (ha)</b> | <b>Estimated Dwellings</b> | <b>Demand Conversion</b> | <b>Total Sewer Load (EP)</b> | <b>Average Day Weather Flow (l/s)</b> | <b>Peak Wet Weather Flow (l/s)</b> |
|------------------------------------------------------|--------------------------------------|----------------------------|--------------------------|------------------------------|---------------------------------------|------------------------------------|
| EXT1 Residential                                     | 9.9                                  | 149 dw                     | 2.7 EP/dw                | 402.3                        | 0.77                                  | 4.66                               |
| EXT2 Residential                                     | 1.0 *                                | 15 dw                      | 2.7 EP/dw                | 40.5                         | 0.08                                  | 0.47                               |
| <b>Total</b>                                         | <b>10.9ha</b>                        | <b>164 dw</b>              |                          | <b>442.8</b>                 | <b>0.85 l/s</b>                       | <b>5.13 l/s</b>                    |

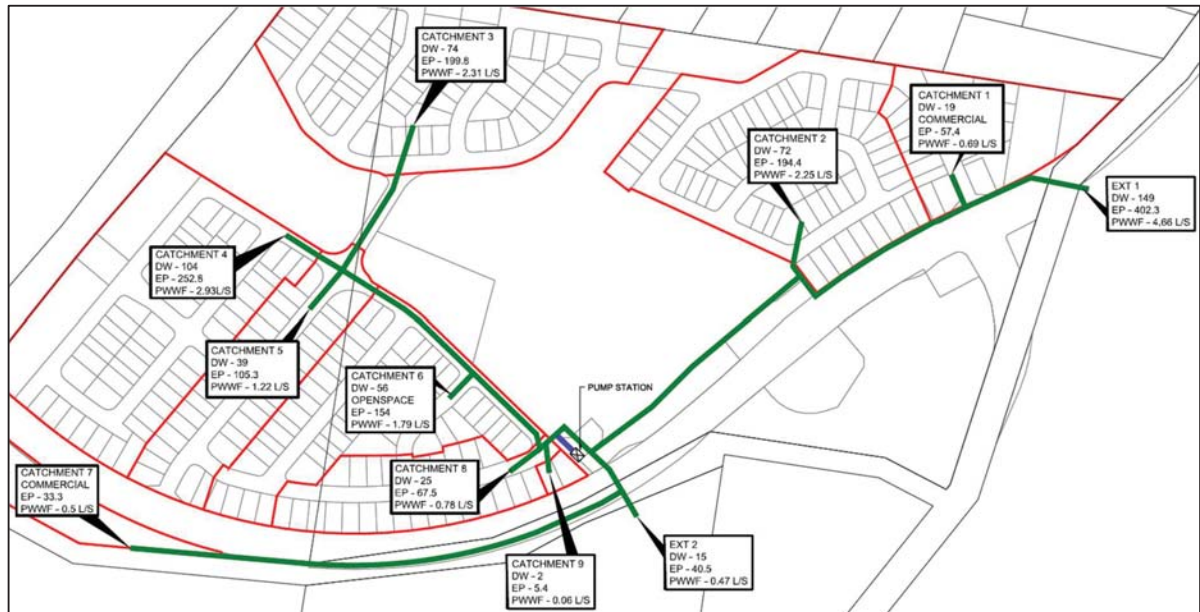
\* Assumed a minimum catchment of 1ha for EXT2

The surrounding catchment calculations are estimated based on approximately 15 dwellings/ha of the total area. It is noted that the external sewer catchments are preliminary only and subject to future detailed design and Authority approvals (by others).

The above tables are included in **Attachment C**.

The Sewer Network Plan is shown in Figure 5 below (refer **Attachment F**) which shows the preliminary sizing of the sewer network based on the above assumptions.

**Figure 5:** Sewer Network Plan



As can be seen in **Figure 5** above, 150mm sewer main is suitable throughout to service the catchment with the exception of a small section of 225mm where all catchments converge and gravitate into the pump station.

### 5.1 Interim and Ultimate Delivery Options

In accordance with advice from EDQ and LWIA in April/May 2019, options exist for the delivery of the development's wastewater to LWIA's OD630mm rising main (LS304-08). **Figure 4** indicatively shows the alignment of these options.

- Interim
  1. Construction of rising main that injects into LWIA's OD630mm rising main (LS304-08) – Preferred option. This is shown as Option 1 on **Figure 4** (refer **Attachment E**). Suitable pumps will be selected to suit the head/flow within LWIA's main.
  2. Construction of rising main that delivers wastewater to the sub-regional pump station (SPS152) west of the railway. Options exist for the alignment of the rising main across to SPS152 with Option 3 on **Figure 4** (**Attachment E**) showing one potential alignment.

The timeframe for the interim is understood to be until the downstream RB2 pump station is constructed and operational by others. The timing for the construction of RB2 is unknown at this point in time. Prior to RB2 becoming operational, the following ultimate options will be considered in consultation with EDQ and LWIA:

- Ultimate
  1. The injection into LWIA's OD630mm rising main (LS304-08) remains with the proposed pump station pumps upgraded to suit the increased head/flow within LWIA's main – Preferred option.
  2. Construction of a rising main that delivers wastewater into the future gravity network to the east. This option is shown as Option 2 on **Figure 4 (Attachment E)**. The length of this rising main will rely on the downstream gravity network constructed by others.
  3. Construction of rising main that delivers wastewater to the sub-regional pump station (SPS152) west of the railway. Options exist for the alignment of the rising main across to SPS152 with Option 3 on **Figure 4 (Attachment E)** showing one potential alignment.

## 6.0 DEMAND MANAGEMENT

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Consideration will be given to the following demand management strategies during the detailed design phase of the project:

- Reuse of the treated effluent from the Cedar Grove Treatment Plant in line with any GFPDA strategies approved by EDQ. It is expected that the returned treated effluent would be used opportunistically for irrigation of open space areas, street trees, urban agriculture areas and riparian buffers within the site; for dust suppression during construction and potentially for reuse by non-residential uses. The scale of this project would likely render this strategy cost-prohibitive unless a GFPDA wide strategy is implemented by EDQ and Council.
- A program that involves monitoring sewage flows to minimise leakage and infiltration of the sewer network is proposed, aiming to reduce the required size and extend the duration of the sewerage treatment infrastructure. This program will also be able to test the efficiency of the sewerage pipe network in conveying sewerage, particularly the effect of wet weather on flow rates within the development. Accurately determining the EP through ABS demographics and lot/dwelling size will assist in estimating the actual system demand and the effectiveness of sewer load and water demand management strategies.
- Greywater recycling has been considered for the development to assist in reducing sewage discharge and potable water consumption, however the high additional upfront and on-going costs payable by the buyer/resident is likely to cause an unacceptable impact on housing affordability.

## **7.0 INNOVATION AND TWCM**

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In accordance with the proposed Total Water Cycle Management Plan, the following sewerage related measures are proposed to be researched and potentially implemented within 'Bushman & Wyatt':

### **7.1 Reduced Infiltration Gravity Sewer (RIGS)**

In an effort to minimise infiltration into the sewerage system the Reduced Infiltration Gravity Sewer (RIGS) system is being considered for 'Bushman & Wyatt'. Achieving a reduction in infiltration enables an overall reduction in the size of pipes, associated pump stations, energy consumption and end-of-line treatment. Construction is therefore cheaper and through the use of different products (i.e. maintenance shafts and bends), the RIGS system can provide significant cost savings.

### **7.2 Polyethylene (PE) Sewer**

The Project Team are also investigating Polyethylene (PE) sewer mains as an option for the sewer system throughout the development. Polyethylene sewer mains are the basis of Brisbane City Council's 'NuSewer' and Queensland Urban Utilities' (QUU) sewer network.

The pipe and fittings are joined using an electrofusion process (couples, saddles and end caps) which is designed to eliminate infiltration by storm and ground water and tree roots.

The PE Sewer System greatly reduces the number of manholes and allows for both vertical and horizontal bends. Maintenance shafts are provided at regular intervals to permit jet-rodding to remove blockages.

### **7.3 Pressure Sewer System (PSS)**

A pressure sewer system consists of a network of pressure pipes and grinder pumps. The grinder pumps are generally installed at each property grinding all wastewater into a slurry for transportation through a low pressure pipe network.

Pressure sewerage systems are generally more suitable and cost-effective in environments which are either very flat (avoids deep excavations) or very hilly (avoids several pump stations). Whilst the development lends itself to a gravity system given its topography, PSS also provides several other benefits over traditional gravity networks through its ability to essentially eliminate wet weather infiltration as it is a sealed system and provides flexibility to monitor and control flows throughout the network.

The ability to monitor the flows throughout the network allows early leak detection and can be used to determine dwellings/lots that have incorrect connections (ie pool overflow or roof water). This allows pipes and end-of-line treatment infrastructure to be sized for actual flows rather than 4 or 5 times for peak wet weather flows.

## **8.0 INFRASTRUCTURE DELIVERY AND STAGING**

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The necessary internal infrastructure will be installed during the construction of each stage of the works as required. Each Operational Works submission will detail the works to be completed to adequately service that stage of the development.

It is intended that on completion of the works, the infrastructure will be transferred to LCC as the Asset Owner in accordance with the procedures outlined by EDQ.

The pump station will be constructed with the first stage of development although the option of tankering may be explored with EDQ & LWIA in the future. The rising main will traverse future stages which will be covered by a temporary easement that will be extinguished as the development progresses.

## **9.0 GREATER FLAGSTONE ICOP - OFFSETABLE INFRASTRUCTURE**

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Given the location of the proposed development within the GFPDA, it is integral in the provision of a suitable sewer strategy for the catchment. As a result of this, the proposed development may require the construction of several items of trunk sewer infrastructure identified within EDQ's Greater Flagstone Infrastructure Charging Offset Plan (ICOP).

As requested by EDQ, Infrastructure Offsets aren't discussed any further in this IMP as they will be addressed separately to the development assessment process.

**ATTACHMENT A**

**Subdivision Proposal Plan (23305-PP-S001 Rev A) (Sheet 1 Only)**

Prepared by Mortons-Urban Solutions  
Dated 12.11.2018

LEGEND

SITE BOUNDARY

STAGE BOUNDARY

EASEMENT (DRAINAGE)

GENERAL RESIDENTIAL

MIXED-USE / MULTIRESIDENTIAL

COMMERCIAL

LOCAL CIVIC PARK

LOCAL RECREATION PARK

LINEAR OPEN SPACE

SHEET 02

Development Summary

| STAGE                      | 1        | 2        | 3        | 4        | 5        | 6        | 7        | 7A       | 7B       | 8        | 9        | 10       | 11       | 12       | 13       | 14       | 15       | TOTALS    |
|----------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Area of Park               | 0.385 ha | 1.045 ha | 4.177 ha | 1.893 ha | 3.319 ha | 3.213 ha | 0.060 ha | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | 14.213 ha |
| Area of Road               | 0.278 ha | 0.204 ha | 0.211 ha | 0.566 ha | 0.314 ha | 0.193 ha | 0.385 ha | -        | -        | 0.242 ha | 0.290 ha | 0.170 ha | 0.103 ha | -        | -        | -        | -        | 2.871 ha  |
| Residential Lots           | 35       | 27       | 21       | 31       | 33       | 23       | 41       | -        | -        | 36       | 24       | 25       | 13       | -        | -        | -        | -        | 309       |
| Mixed-Use / Multi-Use Lots | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | (1)      | -        | -        | -        | (2)       |
| Commercial Lots            | (1)      | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | (2)       |
| Stage Area                 | 3.244 ha | 0.085 ha | 2.603 ha | 1.454 ha | 7.209 ha | 2.453 ha | 3.354 ha | 5.816 ha | 3.223 ha | 0.060 ha | 1.706 ha | 1.643 ha | 0.655 ha | 0.572 ha | 0.437 ha | 0.129 ha | 1.145 ha | 38.461 ha |
| Stage Area                 | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | -        | 0.065 ha  |

Park Area Table

| Lot No     | 900      | 901      | 902      | 903      | 904      | 905      | 907      | 908      |
|------------|----------|----------|----------|----------|----------|----------|----------|----------|
| Area       | 0.129 ha | 0.765 ha | 1.891 ha | 7.295 ha | 0.473 ha | 0.385 ha | 3.213 ha | 0.061 ha |
| Total Park | -        | -        | -        | -        | -        | -        | -        | -        |

SCALE: 1:100

PROJECT NAME

Bushman + Wiggatt

PACIFIQ

R.P. DESCRIPTION

LOT 24 ON SP142997  
AND  
LOT 1 ON RP49296

ASSOCIATED CONSULTANTS

HDG

ENVIRONMENT GROUP

robertsday

THE CONSULTANT GROUP

BMT WBM

Where will our knowledge take you?

Cardno

ORGANISATIONS

SA saunders hawill group

THE CONSULTANT GROUP

Stevens Hocking Surveys Pty Ltd

Stevens Hocking Surveys Pty Ltd

DRAWING TITLE

SUBDIVISION  
PROPOSAL PLAN  
(Page 1 of 5)

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| DESIGNED | DRAWN    | CHECKED  | DATE     | SCALE |
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23305-PP-S001

A

## **ATTACHMENT B**

### **Prelodgement Meeting Minutes**

Prepared by EDQ  
Minutes Dated 15.06.2018

## Matthew McLaren

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**From:** Brandon Bouda <Brandon.Bouda@dsdmip.qld.gov.au>  
**Sent:** Friday, 15 June 2018 11:44 AM  
**To:** Gavin Johnson  
**Subject:** Pre-lodgement Bushman Drive / Wyatt Road - PRE2018/335  
**Attachments:** Bushman Drive Draft Sketch Layout\_EDQ\_Comments\_June\_2018 (EDQ Comment) (003).pdf

Hi Gavin

Thank you for coming in with Stephen, John and Craig to meet to discuss the proposal and clarify some matters.

The following is a summary of the meeting discussions.

### **Attendees**

Jeanine Stone – EDQ  
Brandon Bouda – EDQ  
Marco Bonotto – EDQ  
Gavin Johnson – Mortons Urban Solutions  
John Harrison – Mortons Urban Solutions  
Stephen Harrison – Harrison Development Group  
Craig Christensen – Robertsday  
Idris Glozier

### **Discussion**

The applicant took EDQ through the proposal:

- 42 ha site which is confined by various constraints, including land outside PDA to the north and the railway line to the west.
- The plans submitted include approximately 12ha for open space, 2ha for medium density and 24ha for low density residential.
- Open space is along existing waterway corridors and is designed to protect existing ecological values and includes a neighbourhood park and linear corridors.
- Whilst a centre is noted on the plans, this is earmarked to be delivered on the Undullah site (west of the railway line) as per the Undullah endorsed context plan.
- The proposal has considered the future railway station and the potential use of entry/exit at each end of the station.

The applicant will be seeking a combined MCU/ROL application and are looking for early approval.

### **Planning**

EDQ discussed the planning aspects of the proposal.

- Generally the proposal can be supported and is generally consistent with the endorsed context plan for this area, with the following exceptions:
  - o the neighbourhood recreational park is located in a different location. This can be supported because it is more central to the development
  - o consider the inclusion of a civic park/space in the medium density area, which can be incorporated into a mixed use proposal
- EDQ noted that incorporation of mixed use outcomes near the train station
- Interface to the exiting rural residential lots (prefer larger lots with fewer boundaries adjoining the rural residential properties)
- Interface with Wyatt Road extension – applicant will need to manage acoustic requirements while still ensuring a CPTED outcomes can be maintained. Wyatt Road is proposed to be 4 lane arterial road at its ultimate development.

- Applicant to consider extending the medium density area north of the waterway corridor where adjacent to the railway corridor, whilst managing the interface with the rural residential lots. It is noted that if low density in this area is still proposed, consideration should be given to larger lots to manage an acoustic requirements from the railway line.
- The open space needs to accord with EDQ Guideline 12 – Parks Planning and Design
- EDQ noted the isolated site on the north eastern side adjoining Bushman Drive and queried what is proposed here. The applicant advised it could be a non-residential use, such as a service station.

EDQ notes a revised plan was sent on 11/06 following the prelodgement meeting. EDQ notes that the plan reflects the discussion as noted above. Additional comments are shown on the plan as mark ups.

#### *Engineering*

EDQ noted that the following Engineering outcomes:

#### *Traffic*

The proposed road layout is generally acceptable with a second connection to be provided to the South-West part of the development (avoiding that all the vehicular traffic of this area be channelled through the roundabout). It is recommended that roads hierarchy and relative cross sections are discussed with EDQ early in the design process.

\*\* following the meeting, it has been identified that the external road connection will be the planned extension of Teviot Rd and the upgrade of the last section of Bushman Drive. If the applicant seeks to use Bushman Drive in the interim, an impact assessment report shall be undertaken by a suitable qualified engineer and submitted to EDQ for consideration.

#### *Stormwater*

Stormwater quality and quantity shall be managed within the site. In particular, it is noted that the site is within the Seqwater drinking water catchment and the proposal shall address the SPP State Interest for Water Quality and Seqwater Development Guidelines.

#### *Water*

Water supply will be provided through the planned 375mm main to be constructed along Teviot Rd and Wyatt Rd). A water network analysis shall be provided to support the internal reticulation layout and identified any temporary works (booster pump) that may be required in the short term.

#### *Sewer*

The site will be serviced by a local pump station discharging on the gravity network west of the railway (to the sub-regional pump station SPS152). The pump station and reticulation network shall make provision for the two small external catchments (South of Wyatt Rd and East of Bushman Drive).

#### *Other*

EDQ will discuss the proposal with the Department of Transport and Main Roads in relation to the railway station and its potential design on lodgement of the application.

#### *Reports to be provided*

- Acoustics
- Bushfire
- Ecology
- Traffic
- Water/sewer
- Stormwater, including responding to the SEQwater water supply buffer area outcomes
- Housing Affordability and Diversity OSS
- Community Development OSS – for implementation charges offsets purposes
- Employment and Economic Development OSS – for implementation charges offsets purposes
- Ecological Sustainability and Innovation OSS – for implementation charges offsets purposes

Feel free to contact me if you have any queries.

Regards



Brandon Bouda  
Manager  
**Economic Development Queensland**  
Department of State Development,  
Manufacturing, Infrastructure and Planning

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## **ATTACHMENT C**

**‘Bushman & Wyatt’ Sewer Calculation Table (Drawing: 23305-SNA-007 Rev A)**

Prepared by Mortons-Urban Solutions  
Dated 15.11.2018

PROJECT NAME

Bushman + Wyatt

SEWER NETWORK

CLIENT

PACIFIQ

ISSUES

TENDER

COUNCIL

CONSTRUCTION

DATE

A

1

SUBMIT

FOR SUBMISSION

PREPARED

DATE

AMENDMENT

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ASSOCIATED CONSULTANTS

HDS

robertsday

BMT WBM

Cardno

SA

saunders

havl

group

THE CONSULTANTS GROUP

Where will our knowledge take you?

CSG

ACOUSTICS

Shoreline Engineering Pty Ltd

SEWER NETWORK

CALCULATION SHEET

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DESIGNED

MM

DRAWN

RV

APPROVED

DATE

18-02-18

DRAWING NUMBER

23305-SNA-007

AREA

A

'Bushman & Wyatt' Catchment Sewer Network Table

| Neighbourhood / Activity Centre | Type           | Approximate Catchment Area (ha) | Lot Count (No.) | Dwelling Count (No.) | EP/ET Conversion | EP Count | Average Dry Weather Flow (ADWF) (l/s) | Peak Dry Weather Flow (PDWF) (l/s) | Peak Wet Weather Flow (PWWF) (l/s) | PWWF for Sewer Network (l/s) |
|---------------------------------|----------------|---------------------------------|-----------------|----------------------|------------------|----------|---------------------------------------|------------------------------------|------------------------------------|------------------------------|
| Eastern Catchment               | Residential    | 6.4                             | 15              | 15                   |                  | 2.7      | 40.5                                  | 4.63                               | 1,000                              | 0.47                         |
|                                 | Duplexes       | 6.4                             | 2               | 4                    |                  | 2.7      | 10.8                                  | 4.63                               | 1,000                              | 0.13                         |
|                                 | Commercial     | 6.4                             | 1               | 0                    | 0.2033 ha        | 30       | 6.1                                   | 4.63                               | 1,300                              | 0.09                         |
|                                 | Residential    | 6.4                             | 60              | 60                   |                  | 2.7      | 162.0                                 | 4.63                               | 1,000                              | 1.88                         |
|                                 | Duplexes       | 6.4                             | 6               | 12                   |                  | 2.7      | 32.4                                  | 4.63                               | 1,000                              | 0.38                         |
| Development Subtotal            |                | 6.4                             | 84              | 91                   | dwelling         | 252      | 0.5                                   | 2.2                                | 2.9                                | 2.9                          |
| External Catchment (EXT1)       |                | 9.9                             | 149             | 149                  |                  | 2.7      | 402.3                                 | 4.14                               | 1,000                              | 4.66                         |
| Eastern Catchment Total         |                | 16.3                            | 233             | 240                  | dwelling         | 654      | 1.2                                   | 5.4                                | 7.6                                | 7.6                          |
| Western Catchment               | Residential    | 5.7                             | 54              | 54                   |                  | 2.7      | 145.8                                 | 4.77                               | 1,000                              | 1.69                         |
|                                 | Duplexes       | 5.7                             | 10              | 20                   |                  | 2.7      | 54.0                                  | 4.77                               | 1,000                              | 0.63                         |
|                                 | Residential    | 14.4                            | 42              | 42                   |                  | 2.7      | 113.4                                 | 3.77                               | 1,000                              | 1.31                         |
|                                 | Duplexes       | 14.4                            | 11              | 22                   |                  | 2.7      | 59.4                                  | 3.77                               | 1,000                              | 0.69                         |
|                                 | Medium Density | 14.4                            | 2               | 40                   |                  | 2        | 80.0                                  | 3.77                               | 1,000                              | 0.93                         |
| Catchment 5                     |                | 14.4                            | 27              | 27                   |                  | 2.7      | 72.9                                  | 3.77                               | 1,000                              | 0.84                         |
| Catchment 6                     | Duplexes       | 14.4                            | 6               | 12                   |                  | 2.7      | 32.4                                  | 3.77                               | 1,000                              | 0.38                         |
|                                 | Residential    | 14.4                            | 42              | 42                   |                  | 2.7      | 113.4                                 | 3.77                               | 1,000                              | 1.31                         |
|                                 | Duplexes       | 14.4                            | 7               | 14                   |                  | 2.7      | 37.8                                  | 3.77                               | 1,000                              | 0.44                         |
|                                 | Open Space     | 14.4                            | 1               | 0                    |                  | 2.8      | 2.8                                   | 3.77                               | 1,300                              | 0.04                         |
|                                 | Commercial     | 14.4                            | 1               | 0                    | 1.1087 ha        | 30       | 33.3                                  | 3.77                               | 1,300                              | 0.50                         |
| Catchment 7                     |                | 14.4                            | 25              | 25                   |                  | 2.7      | 67.5                                  | 3.77                               | 1,000                              | 0.78                         |
| Catchment 8                     | Residential    | 14.4                            | 2               | 2                    |                  | 2.7      | 5.4                                   | 3.77                               | 1,000                              | 0.06                         |
|                                 | Residential    | 14.4                            | 230             | 300                  | dwelling         | 818      | 1.6                                   | 6.3                                | 9.6                                | 9.6                          |
| Development Subtotal            |                | 20.1                            | 230             | 300                  | dwelling         | 818      | 1.6                                   | 6.3                                | 9.6                                | 9.6                          |
| External Catchment (EXT2)       |                | 1.0                             | 15              | 15                   |                  | 2.7      | 40.5                                  | 7.57                               | 1,000                              | 0.47                         |
| Western Catchment Subtotal      |                | 21.1                            | 245             | 315                  | dwelling         | 859      | 1.6                                   | 6.9                                | 10.1                               | 10.1                         |
| Development Total               |                | 314                             | 391             | 1,070                |                  | 1,070    | 2.0                                   | 8.5                                | 12.5                               | 12.5                         |
| Catchment Total                 |                | 478                             | 555             | 1,513                |                  | 1,513    | 2.9                                   | 12.3                               | 17.7                               | 17.7                         |
|                                 |                | Lots                            | Dwellings       | EP                   |                  | EP       | ADWF (l/s)                            | PDWF (l/s)                         | PWWF (l/s)                         | PWWF (l/s)                   |

Table calculations based on Logan Water Alliance's Master Planning Review - Review of Desired Standards of Service (dated 25th June 2014)

d = Dry Weather Peaking Factor

## **ATTACHMENT D**

**GFPDA External Sewer Infrastructure Plan (Drawing: 23305-SNA-003 Rev A)**

**Sheet 1 of 2**

Prepared by Mortons-Urban Solutions

Dated 15.11.2018



## **ATTACHMENT E**

**GFPDA External Sewer Infrastructure Plan (Drawing: 23305-SNA-005 Rev B)**

**Sheet 2 of 2**

Prepared by Mortons-Urban Solutions

Dated 09.05.2019



## **ATTACHMENT F**

**Sewer Network Plan (Drawing: 23305-SNA-500 Rev A)**

Prepared by Mortons-Urban Solutions  
Dated 15.11.2018

