52 Richardsons Road
Concept Services Report

Justin Boocock, Senior Civil Engineer

Scope

52 Richardsons Road is proposed to be rezoned for primarily residential purposes. This report provides a brief overview of concept services required for the development. It is not a stand alone report, rather comments that can be inserted into the planning report.

Concept Services

Refer marked up drawing.

Access/Roads

The property has two road frontages, Bayview Road and Richardsons Road with the following attributes.

Bayview Road

- Sealed pavement width approximately 8m with a 1.2m wide asphalt footpath on one side.
- Kerb and channel on the downslope side. Rollover asphalt kerb on the upslope side. Refer Figure 1.
- Road reservation width 18m
- Generally consistent with a Local Through Road to IPWEA Standard Drawing TSD-R06-v1 with narrower pavement and footpath widths.



Figure 1 – Bayview Road (Courtesy Google Street View)

Richardsons Road

- Unsealed with an approximate 5m wide pavement
- Road reservation varies from approximately 10m to 18m

- Overhead power runs along the northern side of the road reservation and the southern side has many large trees creating challenges for road widening. Refer Figure 2
- Generally consistent with US1 unsealed road to IPWEA Standard Drawing TSD-R01-v1



Figure 2 – Richardsons Road (Courtesy Google Street View)

Proposal

It is proposed to use both Bayview and Richardsons Roads to access the development. The main through road would be designed with an 8.9m pavement through to the end of the urban residential area (Lot 153). From here, the road would narrow to a type S4 sealed rural road (6m sealed traffic width). The existing section of unsealed road will require upgrading to a similar S4 standard. Some land acquisition may be required to ensure an 18m wide road reservation, particularly around 40 and 28 Richardsons Road where the pavement appears to be outside of the road reservation.

Road grades within the development site will be generally steep, reaching up to 18%. A 20m wide road reservation is proposed to allow for road batters and accesses. This may be reduced to 18m where possible for the minor through road and linkage to Richardsons Road. It is expected that footpaths will be required on both sides of the road where properties are on both sides. A footpath on the residential side of the road only is proposed for lots 1 to 34.

Stormwater

There are two water sheds for the property. Lots 1 through to 22 (including the road) will drain back towards Bayview Road. All other lots to the south of the high point at Lot 23 will drain southwards to Richardsons Road. These two systems are discussed in further detail below.

Bayview Road Drainage

There is an existing piped stormwater system in Bayview Road that drains north to Frederick Henry Bay.

Proposed Lots 1 to 18 have their low point to the rear (north) of the property, necessitating a piped system to service these lots. Considering the steep grades, roadside stormwater treatment such as swales are not considered feasible. Therefore, it is proposed to install standard kerb and channel with underground reticulated drainage. Stormwater treatment and detention (if required) could be installed within the road reservation just prior to discharging to the existing system. Alternatively,

the existing system may require upgrading to cater for the additional flow and an end of line treatment installed for the entire catchment.

Richardsons Road Drainage

Runoff south of the high point at Lot 23 currently flows into the disused quarry and dams that have been partially remediated. There is a divide that generally runs down the area proposed for lots 35 to 147. Runoff from land to the north of this divide will drain directly into Ralphs bay. Runoff to the south currently drains into the dam on Lot 155 before continuing south to Dirty Bridge Creek, which drains into Pipe Clay Lagoon.

It is proposed to maintain existing drainage paths as much as possible. Runoff south of Lot 23 will be collected via a reticulated network and discharged into a centralised treatment and detention facility on Lot 155. Given the sensitive nature of the receiving environment, it is anticipated that a high quality treatment system will be required to at least best practice. A large wetland could provide good treatment as well as enhancing biodiversity and creating recreational opportunities.

Water Supply

Lauderdale is serviced from the Lauderdale Reservoir with the following attributes:

- Top Water Level (TWL) 97m
- Finished Floor Level (FFL) 90m
-

The Lauderdale Water Supply Zone (WSZ) is well connected with generally large bore pipes running from the reservoir through to the end of Bayview Road. There are a series of tanks on top of Richardsons Hill that sit at around 80m elevation. They are no longer used for water supply but apparently provide back up storage if required.

TasWater standards require a minimum service pressure at the property boundary of 25m (for steep blocks) when the reservoir is 1/3 full and demand is at Peak Hour. Although network modelling has not been done, it is estimated that properties above 65m elevation at the road frontage will not achieve the required minimum service pressures. This area includes Lots 15 to 32 inclusive.

TasWater have been consulted and agree that a local pressure boosted zone for properties on top of the hill would be acceptable. There are some existing properties that would also benefit from such as system. The booster pumps could be fed directly out of the Richardsons Hill Tanks with a separate reticulation system to properties above 65m.

For properties below 65m elevation, these will be serviced directly from the Lauderdale WSZ. The pipe linking from Bayview Road to properties beyond Richardsons Hill will have to rise up to approximately 74m AHD. Given this is 16m below the FFL of Lauderdale Reservoir this should not pose any issues regarding air entrainment. The serviceability of hydrants on the high point will have to be verified during detailed design. These may have to be serviced via the boosted system.

Sewerage

Lauderdale is serviced by a pressure sewer system, which consists of small pump stations in each property pumping to a pressure sewer network within the streets. This network ultimately discharges into the Mannata Street Sewage Pumping Station in central Lauderdale where it is pumped to Rokeby Sewage Treatment Plant for reuse and discharge.

There are two options for servicing the proposed development; extend the pressure sewer network or create a gravity network to a new sewage pumping station (SPS) and rising main (SRM) to Mannata Street. These are addressed separately.

Extend pressure sewer network

This would involve construction of small bore (DN90/75/63) low pressure polyethylene mains throughout the proposed street network as well as branches to a valve box within the property,

similar to a water supply network. As each property is developed, the owner would be responsible for installation of the pump station on their property. This is currently controlled by TasWater as it is a specialised task and infrastructure is ultimately owned by TasWater. The current cost is $17,275.80 and is payable by the developer prior to release of title.

TasWater advise that there is capacity in the pressure sewer system for the proposed 154 lots.

New gravity sewer network

There are two drainage paths in the proposed development; Lots 1 to 22 drain back towards Bayview Road, and the remainder drains south to Richardsons Road. In order to capture all proposed lots, the new pumping station would have to be located at the bottom of the hill in Lot 155. This would be an ideal location and could be incorporated into the stormwater treatment area, effectively creating a single public utility lot.

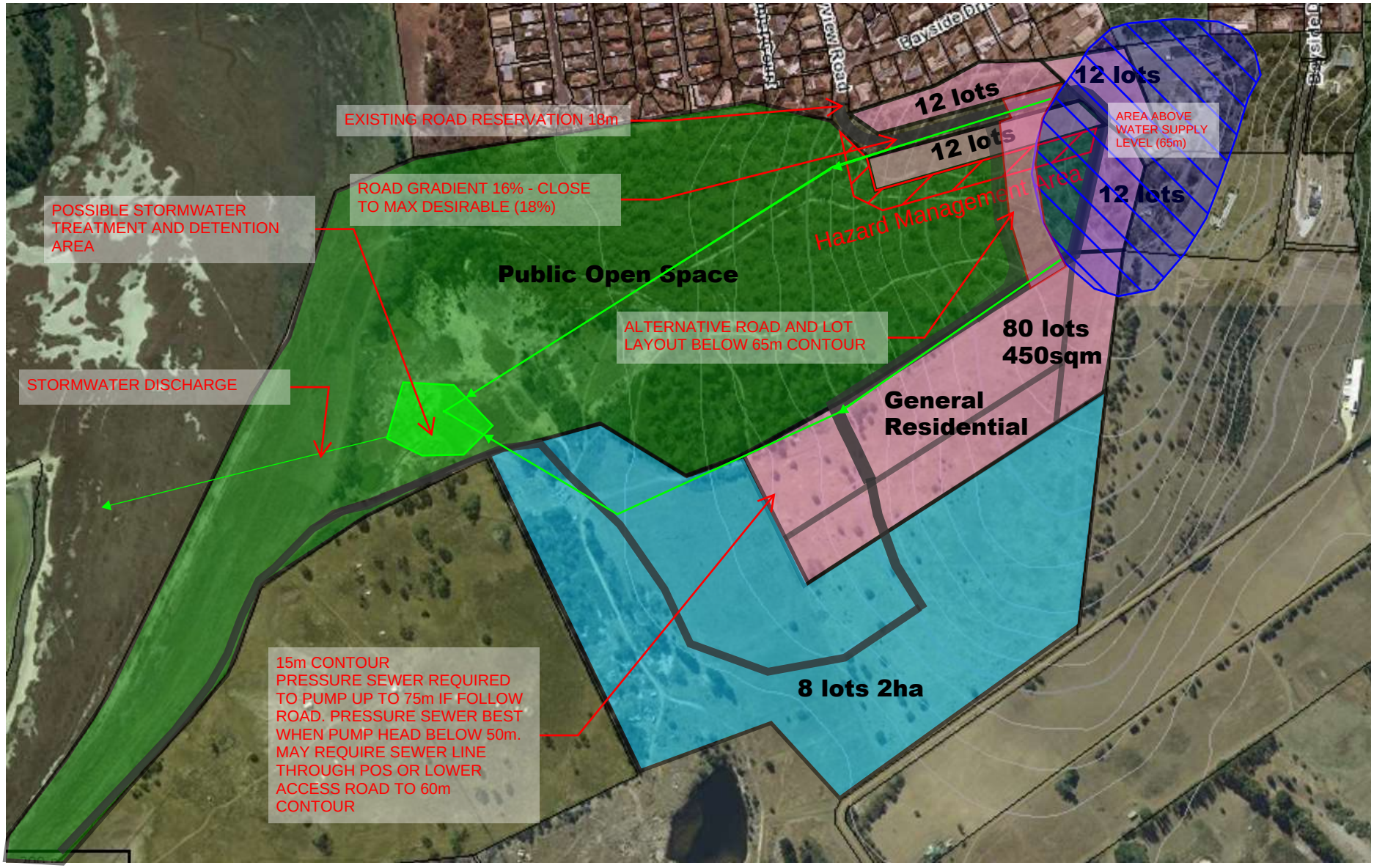
A sewer drain would be required to run across proposed POS lot 200 to service lots 1 to 22, which would be challenging considering natural values of that area. Alternatively, these lots could be serviced by extension of the pressure sewer network, negating the need for impact on POS natural values.

A rising main would also be required from the new SPS to Mannata Street SPS. The pipe route is estimated at around 3000m, half of which would be through non-residential grassland skirting the edge of the Racecourse Flats saltmarsh. The other half would be through residential areas of Lauderdale within the road reservation. It is likely that construction could be via directional drilling, minimising environmental impact.

Proposed solution

It is estimated that the cost of construction for each servicing option would be similar. Considering the likely environmental impact and challenges involved with approval of construction of a gravity sewer network, installation of the pressure sewer system is preferred.

The larger rural residential lots 148 to 155 could have onsite wastewater disposal.



52 Richardsons Road - Concept Plan January 2020

Engineers & Planners

EXISTING STORMWATER SERVICE (TYPICAL)

EXISTING WATER SERVICE (TYPICAL)

EXISTING PRESSURE SEWER SERVICE (TYPICAL)

NEW STORMWATER TREATMENT SITE FOR LOTS 1 TO 22

NEW STORMWATER SERVICE (TYPICAL)

NEW WATER SERVICE FROM LAUDERDALE WSZ (TWL 97m, FFL 90m). TYPICAL

NEW PRESSURE SEWER NETWORK (TYPICAL)

65m CONTOUR. APPROX. SERVICE LIMIT OF LAUDERDALE WATER SUPPLY ZONE

NEW PRESSURE BOOSTED WATER SERVICE

NEW PRESSURE BOOSTED WATER SUPPLY ZONE FED FROM NEW BOOSTER PUMPS AT RICHARDSONS HILL RESERVOIR SITE

STORMWATER TREATMENT AND DETENTION AREA

CONTOUR INTERVALS 1m

BAYSIDE DRIVE

BAYVIEW ROAD

RICHARDSONS ROAD

ROAD GRADE APPROX. 18%

ROAD GRADE APPROX. 13%

ROAD GRADE APPROX. 8%

ROAD GRADE APPROX. 16%

ROAD GRADE APPROX. 16%

Footway 201 440m²

Footway 202 240m²

Footway 203 216m²

Footway 204 216m²

existing Right of Way & Drainage Easement (100m wide

Proposed Right of Way 5.00m wide

possible playground (1000m²)

Public Open Space 200 35.6ha

Public Open Space 205 500m²

road width 20 metres

road width 18 metres

148 2.15ha

149 2.00ha

150 2.07ha

151 2.10ha

152 3.30ha

153 2.00ha

154 2.23ha

Balance 155 8.24ha

CONCEPT SERVICES SKETCH
JMG ENGINEERS AND PLANNERS
Justin Boocock
12.05.2020

REV	AMENDMENTS	DRAWN	DATE	APPR.
C	adjust road width to 18m & change lot 205	AB	3-4-2020	AB
B	major lot changes	AB	2-4-2020	AB
A	major changes, richardsons road change	AB	24-3-2020	AB

ROGERSON & BIRCH SURVEYORS
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OWNER: WORBEY DEVELOPMENTS PTY LTD & JULIE ANN RICHARDS

TITLE REFERENCE: C.T.158742/9

LOCATION: 52 RICHARDSONS ROAD SANDFORD

Proposed Subdivision

Date: 3-4-2020

Reference: LADOP02 12336-05

Scale: 1:1500 (A1) 1:3000 (A3)

Municipality CLARENCE