

TWO WELLS TOWNSHIP EXPANSION

THE REPORT

PREPARED ON BEHALF OF HICKINBOTHAM GROUP
DECEMBER 2011

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1. INTRODUCTION

This report has been commissioned by the Hickinbotham Group and has been prepared to inform the preparation of a future Development Plan Amendment (DPA) for the Two Wells Study Area by recommending planning directions to achieve the objectives set out in the 30 Year Plan for Greater Adelaide.

The Hickinbotham Group and the District Council of Mallala have entered into a Heads of Agreement (HOA). This HOA acknowledges that the Hickinbotham Group and the District Council of Mallala:

- intend to develop a shared vision for the future development of Two Wells; and
- intend to prepare a DPA and enter into a Development Deed.

A key philosophy underpinning the investigations and potential expansion of the Two Wells township is to achieve a critical mass that provides greater potential for the provision of increased infrastructure including social services.

The report documents specific investigations undertaken on behalf of the Hickinbotham Group. Investigations have related to the following issues:

- spatial context and location of the Study Area relative to the existing town centre and other centres and townships;
- population and housing projections including the potential capacity of the area (dwellings / population) as informed by the '30 Year Plan for Greater Adelaide';
- market attraction (residential) including desirability as an urban area, existing growth pressure and future attractiveness and demand;
- existing transport network including investigations into the capacity of the arterial road system to accommodate an increase in traffic movement;
- required transport improvements and augmentation;
- investigation of existing infrastructure availability and capacity (including water, reclaimed water, sewer, power, gas, stormwater, telecommunications), required infrastructure augmentation and review and investigate future infrastructure augmentation capability;
- extent and general location of land required to accommodate stormwater management infrastructure (including the broad spatial arrangement and configuration of detention basins);
- ability to flood-proof the existing township and any future expansion or intensification of development from the floodwaters of the Light and Gawler Rivers;
- existing social infrastructure provision and capacity in the locality (including community facilities, education, recreational facilities, health and medical services) and required social infrastructure services;
- ability to foster and plan for residential growth in order to achieve critical service thresholds that will enable self-sustaining provision of improved local services in Two Wells;
- function of the town as a service and community centre for the significant population of the Lewiston area;
- employment availability, accessibility and growth prospects;
- demand for retail floor space and associated centres strategy;

- availability, nature and composition of land for urban expansion (opportunities and constraints) including:
 - a. ownership pattern (including encumbrances, leases, licences, easements or other rights);
 - b. land configuration (size, pattern and composition of allotments);
 - c. development capability/predisposition;
 - d. land use conflicts and interface issues (including the identification of buffers, separation distances and transition methods to avoid, manage and / or mitigate the impact of conflicting activities and to protect the integrity of desired activities including horticulture, industry, open space, residential development, utilities and infrastructure – inclusive of high pressure gas mains);
 - e. environmental issues (flora and fauna conservation and biodiversity including identification of any remnant and / or endangered native species as well as identification, retention and protection of any areas of conservation value etc);
 - f. topography; and
 - g. European and aboriginal heritage (including heritage sites and places).
- existing relevant strategies, policies and controls and in the context of alignment with the 'South Australian Strategic Plan' and 'The 30-Year Plan for Greater Adelaide';
- contamination risk over the study area; and
- aspirations of the District Council of Mallala and key stakeholders.

Numerous specialist consultants have been engaged to undertake detailed investigations, which ultimately have informed this report. The following studies/documents/strategies have been prepared and considered in the preparation of this report:

- Connor Holmes, *Two Wells Development Scoping Paper*, May 2011;
- Connor Holmes, *Two Wells Land Supply Report*, June 2011;
- Design IQ, *Concept Plan*, 2011
- Geoffrey Bishop (Rural Solutions), *Two Wells Township Expansion – Land Suitability/Capability Assessment*, 2011;
- Connor Holmes, *Preliminary Infrastructure Directions – Two Wells Project*, July 2011;
- Urban and Regional Planning Solutions, *Two Wells Community Infrastructure Analysis*, November 2011
- Herriot Consulting, *Two Wells Township Expansion Master Plan Investigations Preliminary Services Assessment*, September 2011;
- Australian Water Environments, *Flood Mitigation and Water Balance Assessment* September 2011;
- Potter, D, *Two Wells Development Wastewater System Overview*, September 2011;
- HDS Australia, *Two Wells Master Plan Investigations – Wastewater Collection, Treatment and Potential Re-Use – Concept Report Revision A*, June 2011;
- Murray F Young and Associates, *Land Division Master Plan – Two Wells Traffic Report*, December 2011;
- Hudson Howells, *Economic Impact Assessment – Proposed Two Wells Township Expansion*, June 2011;

- Alastair Tutte, *Two Wells Retail Profile and Prospects*, July 2011;
- Helen Smith Consulting, *Two Wells Expansion Masterplan Report and Development Plan Amendment – Human Services*, June 2011;
- Keryn Walshe, *Two Wells Master Plan Investigation – Aboriginal Heritage*, June 2011;
- TMK Consultant Engineers, *Stage 1 Environmental Site History: Two Wells, South Australia*, June 2011;
- TMK Consultant Engineers, *Stage 1 Environmental Site History: Two Wells, South Australia – Supplementary Advice*, November 2011;
- Sonus, *Two Wells Master Plan Investigation: Environmental Noise Assessment*, November 2011;
- Environmental Regeneration Australia, *Report regarding the remnant original vegetation of an area lying to the north and east of the township of Two Wells*, June 2011;
- Outerspace Landscape Architects, *Planting and Biodiversity Report: Two Wells Master Plan*, June 2011;
- Village Well, *Place Making Road Map for Two Wells*, 2011;
- Australian Water Environments, *Light River Floodplain Mapping and Flood Management Study*, September 2011;
- JPE/WAX, *Two Wells Main Street and Design Guidelines*, 2011;
- *Development of Horticulture Industries on the Adelaide Plains – A Blueprint for 2030*

2. CONTEXT

2.1 Purpose of Report

The purpose of this report is to inform the preparation of a future Development Plan Amendment (DPA) for the Two Wells Growth Area, by recommending planning directions to achieve the objectives set out in The 30-Year Plan for Greater Adelaide.

The context for the report is larger than the Two Wells Growth Area and accordingly takes in the wider Barossa Region of Greater Adelaide. Given the growth area is towards the edge of the Barossa Region, some issues have required consideration of the Northern Adelaide Region. Consideration of the wider regions enables a framework within which growth in the Two Wells area can be considered.

2.2 Future Development Plan Amendment

A Statement of Intent (SOI) has been prepared by the District Council of Mallala as an amendment to a SOI approved by the Minister for Urban Development and Planning in April 2007.

The amendment to the 2007 SOI is required to reflect important findings of a jointly funded study into the management of the Light River floodplain and to reflect the directions set out in The 30 Year Plan for Greater Adelaide (The 30 Year Plan) (February 2010).

The SOI was accepted by the Minister of Urban Development and Planning in November 2011.

The SOI identifies that the following issues will be addressed in the DPA:

- *Accommodation of the residential growth that has been estimated to occur at approximately 3% per annum and to accommodate the significant potential for growth in Two Wells, in particular, due to its geographic proximity to the northern suburbs of metropolitan Adelaide;*
- *The function of the town as a service and community centre for the significant population of the Lewiston area;*
- *The need to prioritise areas for growth within the District to enable the allocation of resources into new infrastructure required to support larger populations;*
- *The ability to foster and plan for residential growth in order to achieve critical service thresholds that will enable self-sustaining provision of improved local services in Two Wells;*
- *The ability to facilitate the preferred option for flood-proofing the existing township and any future expansion or intensification of development from the floodwaters of the Light and Gawler Rivers, taking into account:*
 - *the five swale options to the north of the town*
 - *a combination of levee banks around the south and east of the existing township plus increases in the capacity of culverts under the railway bridge and Port Wakefield Road*
 - *the impact that flood mitigation work on the North and South Para River and levee construction on the Gawler River has on the future flood risk*
- *The need to consider the specific implications of residential and commercial growth in Two Wells on infrastructure (energy, water (potable and local stormwater), transport/traffic and telecommunications);*
- *The introduction of policies that accommodate development at appropriate densities once suitable effluent management arrangements are in place;*
- *Recognition of patterns of growth and service provision within the region and adjoining Council areas and their influence on growth at Two Wells;*

- *Buffering urban land development from the impacts of agricultural, horticultural and farming uses around the fringes of the township and in particular the proposed new areas of growth;*
- *Sustainability implications and opportunities in regard to residential and commercial expansion; and*
- *Introduction of a range of residential and urban design policies, to ensure appropriate standards of residential and commercial development and to maintain and protect the positive country town characteristics of Two Wells.*

It is anticipated that this report will reflect the content of the bulk of these investigations and therefore be a key document used to inform the DPA.

Council has commissioned a planning consultant to review both this report and to provide advice in respect to the future DPA.

2.3 Infrastructure Directions

The Hickinbotham Group and the District Council of Mallala have discussed preliminary directions for the approach to infrastructure for Two Wells.

These discussions have canvassed proposals and/or options for the provision of infrastructure to serve the future township (comprising both the existing established township and the proposed future urban growth area north of the town) and have specifically considered:

- *What* will be provided – the nature of the infrastructure to be provided;
- *When* it will be provided – the trigger points for provision;
- *Who* will provide it – the party who will take responsibility for provision;
- *How* it will be funded – who will pay for it and how;
- *Zoning links* – what implications (if any) this has for the DPA; and
- *Next steps* – proposed actions and/or investigations to progress resolution.

Council commissioned a planning consultant to review and advise possible funding options that could be used to support provision of municipal services required to support the township expansion and as a result it has been agreed that:

- The Hickinbotham Group will take responsibility for all internal infrastructure;
- The costs of external infrastructure will be shared equitably between Council, Hickinbotham and (as relevant) other parties; and
- A Development Deed will be used to make the agreed arrangements binding.

3. STUDY AREA

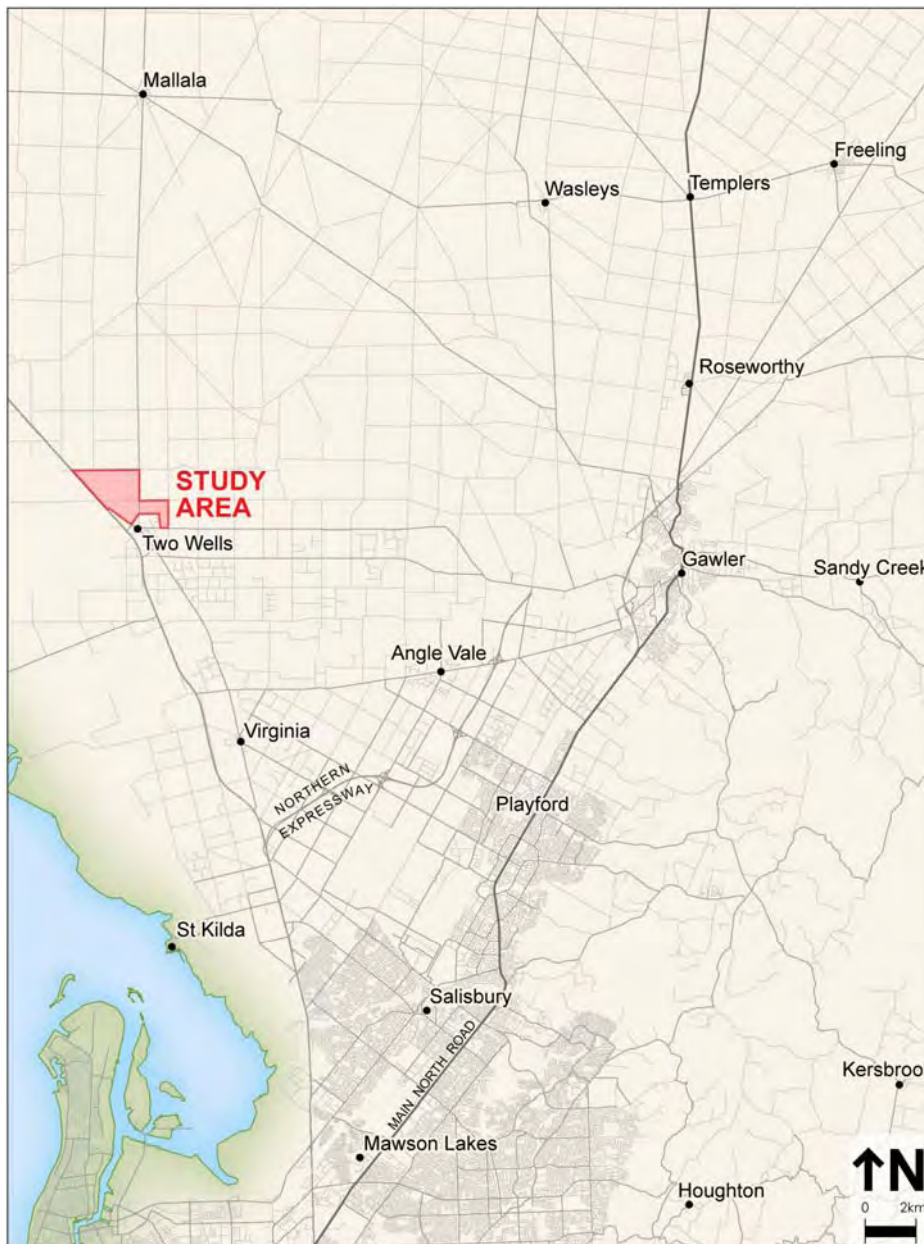
3.1 Location

The Two Wells Growth Area (the “Study Area”) is located just east of Port Wakefield Road and is immediately adjacent to the existing Two Wells township. Figure 3.1 shows the location of the Study Area relative to the wider locality.

The Study Area is around 40 kilometres north of the Adelaide CBD and 22 kilometres west of Gawler. The Lewiston and Gawler River rural residential areas are situated to the east of the township.

The Study Area is located within the District Council of Mallala and within the Greater Adelaide Region, and more specifically within the Barossa State Government Region (SGR).

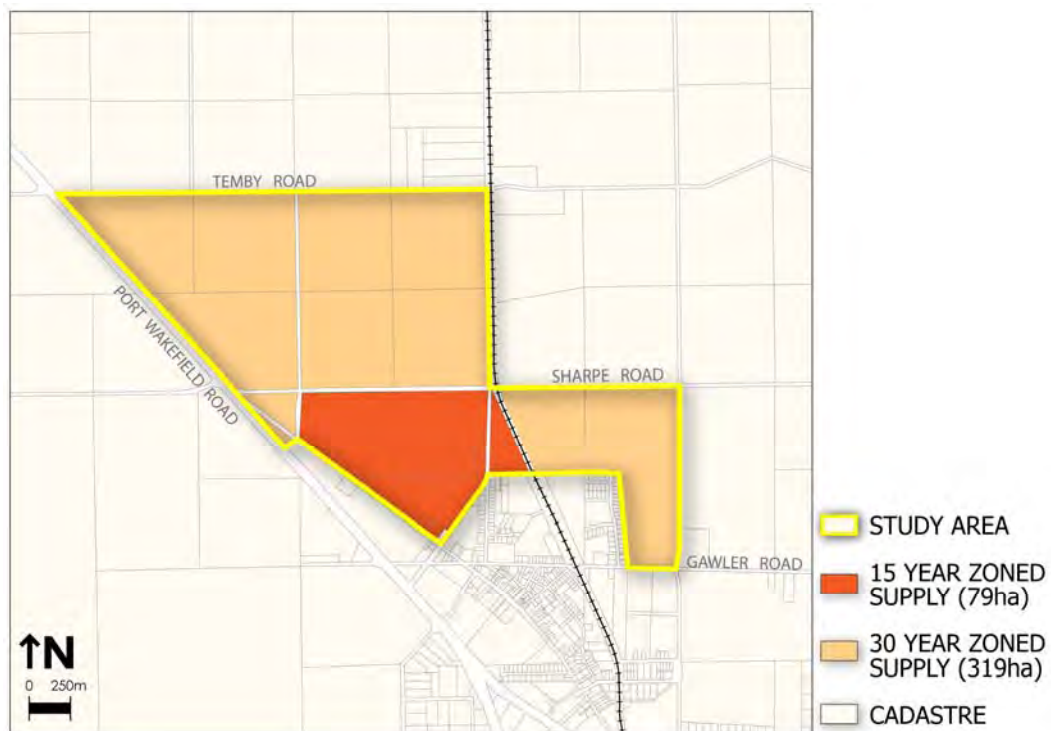
Figure 3.1: Regional Location Plan



3.2 Relationship to The 30-Year Plan for Greater Adelaide

The Study Area (shown on Figure 3.2) comprises 417 hectares of land, inclusive of roads.

Figure 3.2: Study Area

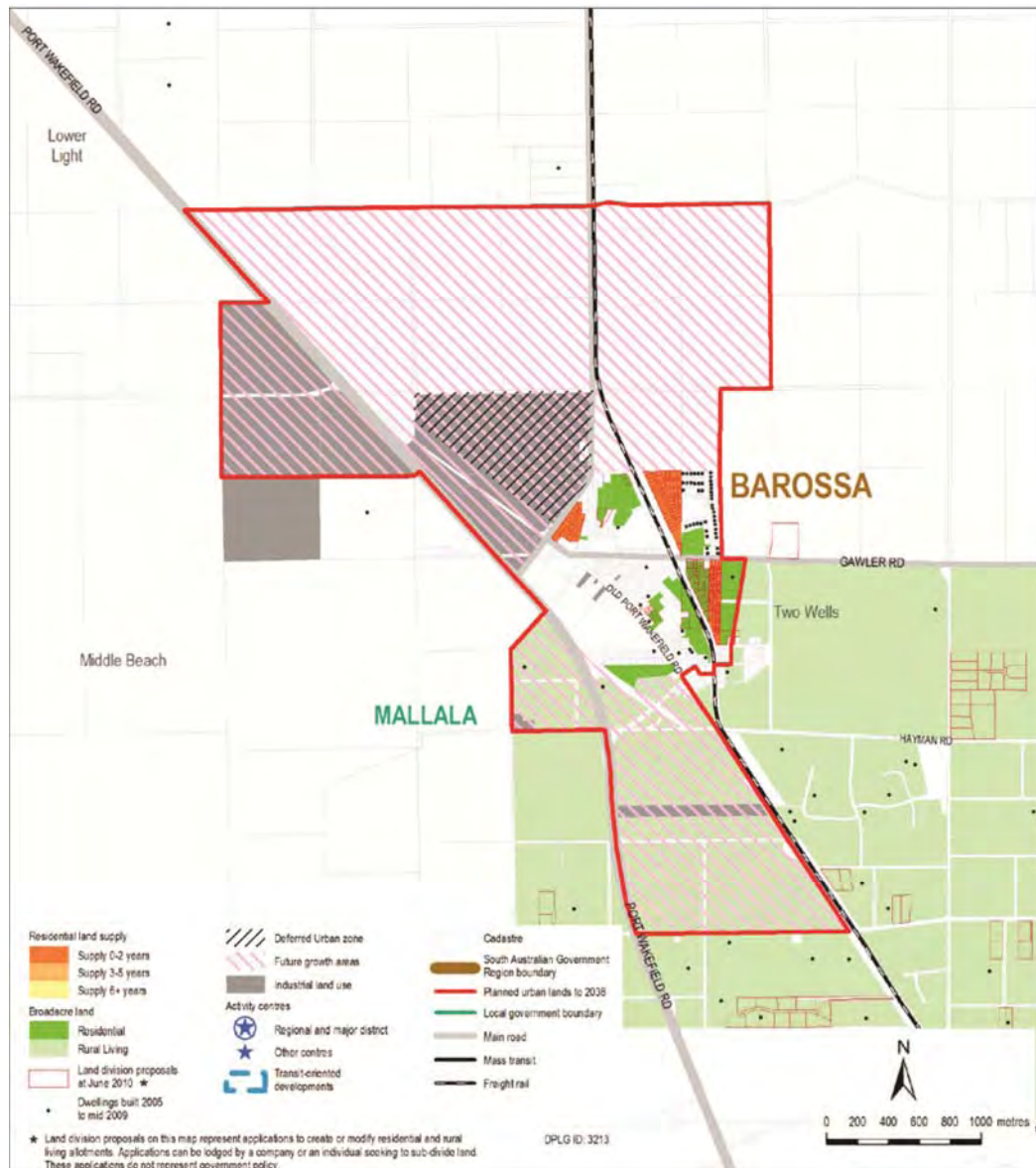


Both The 30-Year Plan for Greater Adelaide and the Housing Employment Land Supply Program (HELSP) identify Two Wells as a significant residential growth area, as shown in Figure 3.3. The Study Area represents less than half of the future growth area identified in The 30-Year Plan for Greater Adelaide and the HELSP (841 hectares).

The HELSP programs 108 hectares of land at Two Wells for rezoning in 2012. This reflects the portion of the growth area identified as forming part of the 15 years zoned supply in The 30-Year Plan for Greater Adelaide.

The 417 hectare area being investigated approximates that originally approved for investigation in the 2007 Statement of Intent (408ha).

Figure 3.3: Programmed Land Supply



Source: HELSP

The Study Area is larger than the 108ha identified in the HELSP for rezoning in 2012. This reflects the response to initial flooding investigations, which involved:

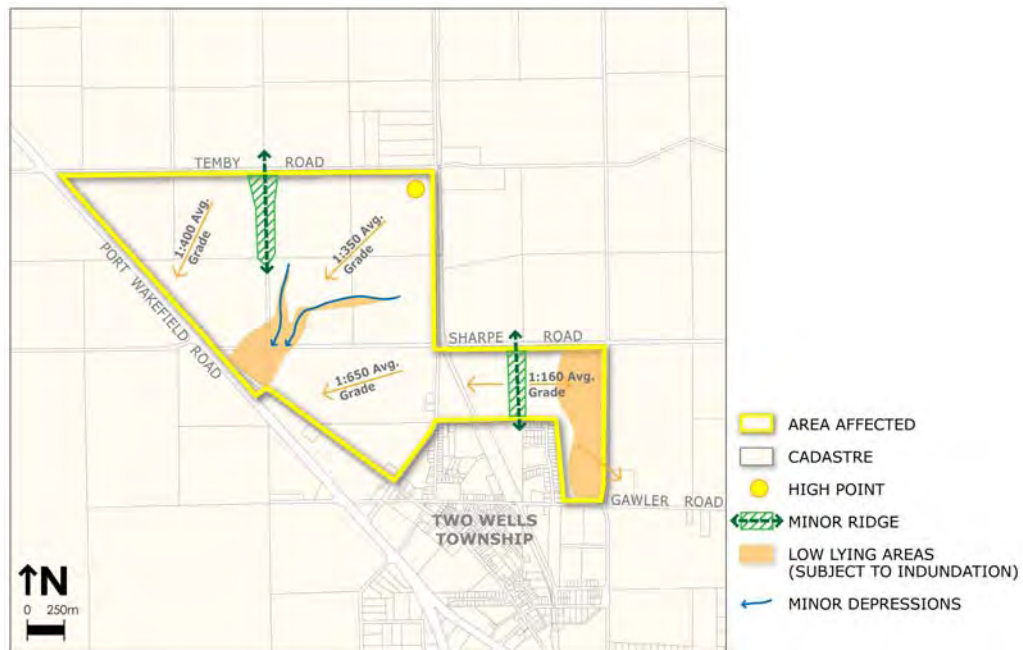
- deleting the land south of the township that was identified for urban growth in the 2007 SOI, due to new information regarding flooding and also in reflection of the complex challenges arising from fragmented land ownership; and
- adding land north of the township to compensate for the deletion of the southern area and to facilitate flood-proofing of the town from floodwaters that originate from the north.

The full area identified in the HELSP cannot be developed until flood management infrastructure is constructed in the north of the Study Area. The expense associated with this infrastructure means that development of the 108 hectares alone is unlikely to be viable, hence the decision to broaden the Study Area.

3.3 Topography

The Study Area is generally very flat with an average grade of 1:350. In general terms, the fall of the land is from the north-east to the south-west, as demonstrated by Figure 3.4. Minor natural depressions in the land provide overland flow paths toward Port Wakefield Road.

Figure 3.4: Topography



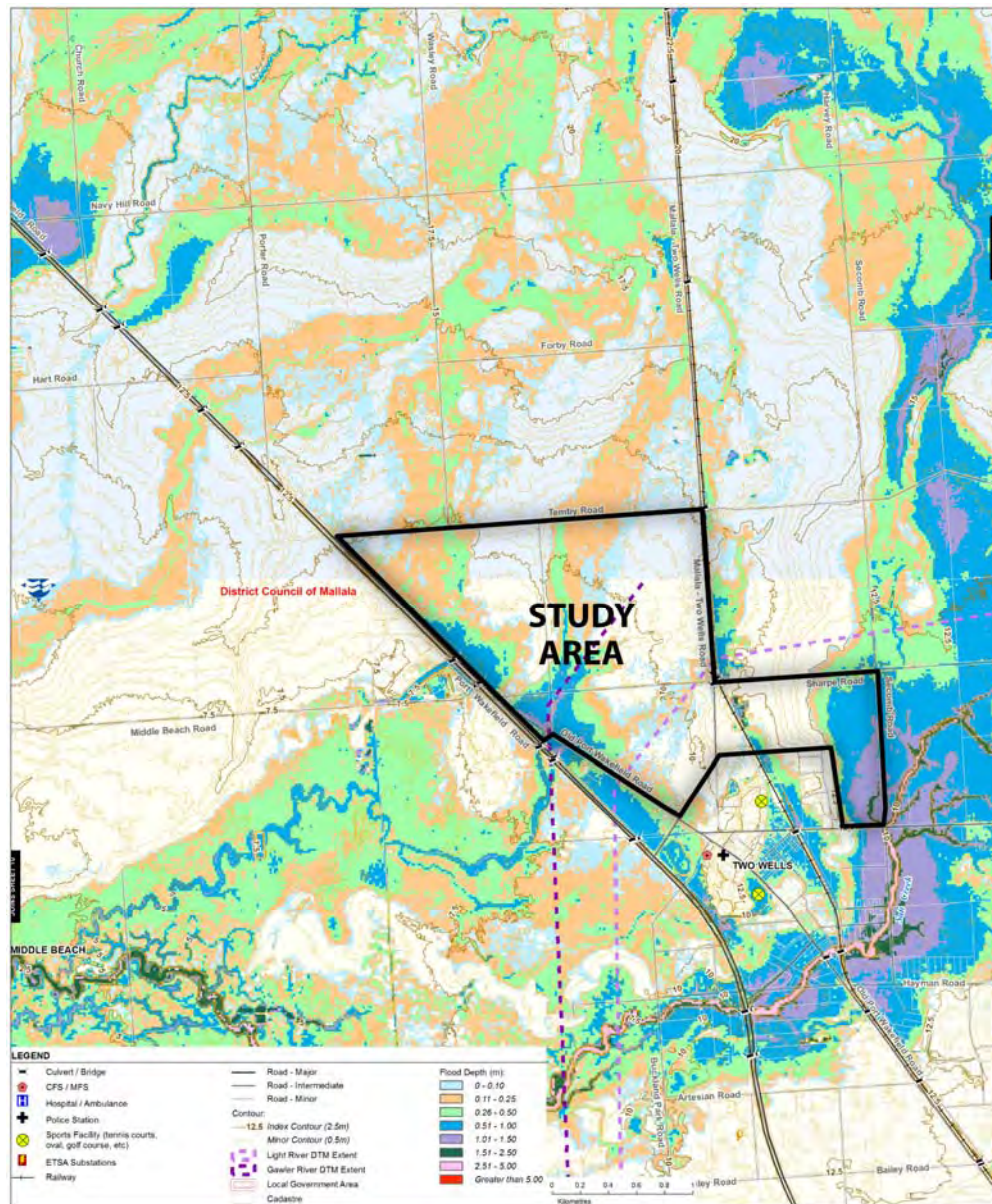
3.4 Hydrology

There are three water courses that could potentially impact on the Study Area; these being the Light River, Salt Creek and the Gawler River.

Historically, Two Wells has been subject to regional flooding. The existing Development Plan includes flood hazard mapping based on a 1 in 100 year ARI flood.

The extent of flooding in the area from both the Light River and Gawler River is shown by Figure 3.5.

Figure 3.5: Flood Risk



Source: AWE

Recent work undertaken by Australian Water Environments has identified a number of possible flood mitigation measures, designed to protect the existing township together with the 30 Year growth area. The strategies identified are documented in the *Flood Mitigation and Water Balance Assessment*, prepared by AWE.

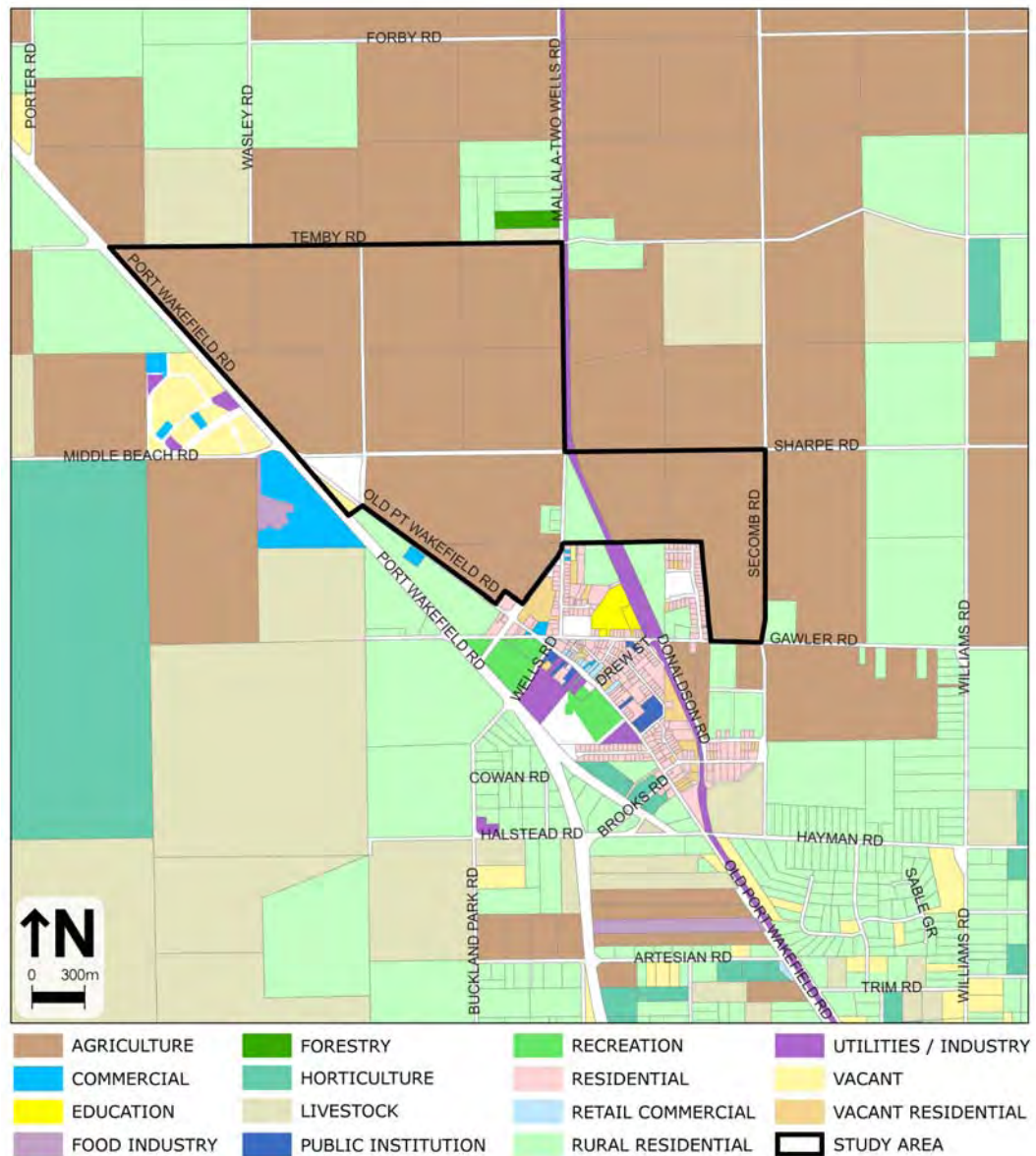
3.5 Land Use Characteristics

Two Wells functions as a trade and service centre for neighbouring areas and comprises a mix of uses, as shown in Figure 3.6.

The Study Area is located on the edge of the existing township of Two Wells and is within the Lower North agricultural district. The principal land use has been, and remains, primary production – cropping (cereals, legumes/pulses, hay) and livestock grazing. Land to the south, adjacent to the Gawler River, is used for market gardening, both field and glasshouse production.

Given the nature of rural activities, the Study Area has been largely cleared, although there is some scattered remnant vegetation contained within small isolated pockets, predominantly within the road reserve.

Figure 3.6: Key Land Uses



Source: DPTI June 2010

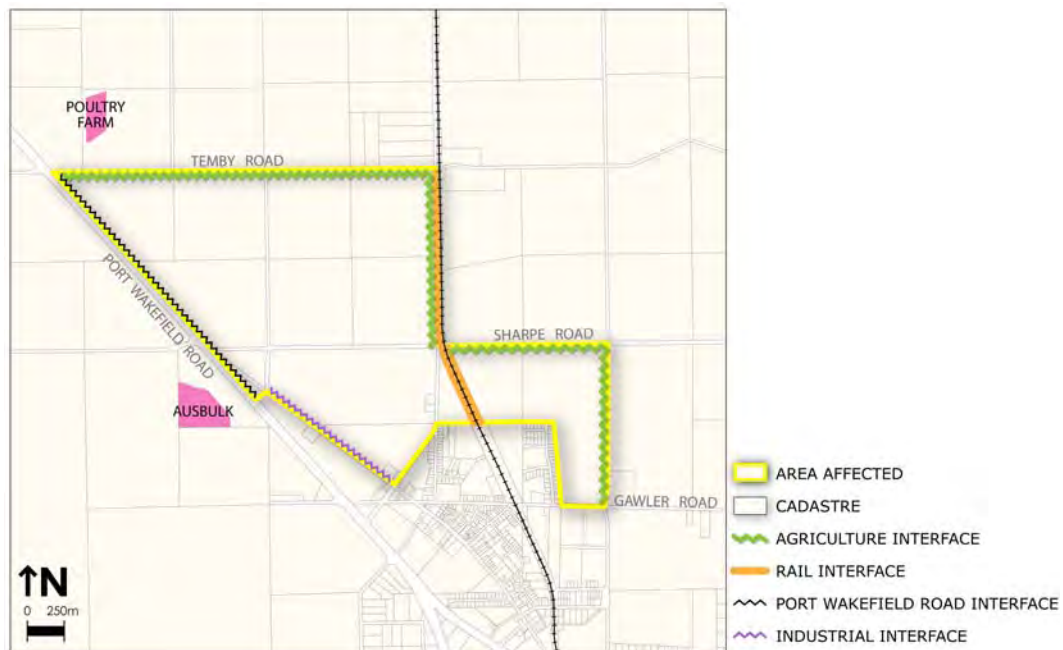
3.6 Interface

Given the potential for the Study Area to be used for residential purposes, consideration of the interface of the Study Area is important. The key interface influences are shown on Figure 3.7.

3.6.1 Interface with EPA licensed activities

The EPA's *Guidelines for Separation Distances* (2007) recommends separation distances be applied in planning proposals to ensure that incompatible land uses are located in a way that minimises impacts caused by noise, odour, polluting air emissions and/or water polluting activities.

Figure 3.7: Key Interface Influences



Appropriate consideration should be given to the interface between sensitive uses (residential, pre-school, and primary school) and the EPA licensed crushing, grinding and milling activities of Ausbulk Ltd, located half way along the Port Wakefield Road boundary to the site on the western side.

3.6.2 Interface with Agricultural type land uses

Interface issues already exist at the boundary of the current township, with Two Wells bordered by primary production land.

Residential or rural living allotments adjacent to a primary production zone may result in residents being subject to noise, chemical spray drift, odour, dust, or smoke from primary production activities. In turn, residential encroachment may hinder primary producers undertaking approved activities.

An expansion of the township will not increase interface issues. An expansion is more likely to shift the interface outwards. Moreover shifting the interface provides opportunities to better plan for the interface by providing buffers and the like.

Planning to prevent land use conflict between sensitive uses and primary producers should ensure sufficient separation between uses with very different amenity expectations as the primary safeguard against land use conflict.

The existing poultry farm adjacent to the north-western corner of the Study Area may have an impact on the capacity to develop land in this corner of the site.

The EPA's *Guidelines for Separation Distances* do not specify distances for activities such as broad scale grazing and horticulture. Determination of appropriate separation distances will need to consider factors including the types of noise and air emissions, the scale of operations, topography and meteorology.

In the event that separation is not possible, design/engineering (e.g. vegetated buffer, acoustic attenuation) will be required.

3.6.3 Interface with Major Roads

Residential development in close proximity to the Port Wakefield Road will require appropriate measures to avoid residents being exposed to frequent noise and emissions from vehicles.

3.6.4 Interface with Rail

Residential development in close proximity to the Adelaide to Darwin/Perth freight rail line will require appropriate measures to avoid unacceptable impact on residents in terms of noise and vibration.

3.6.5 Wastewater Treatment System Interface

Different wastewater treatment options will necessitate different separation distances – affecting the area of land taken up by wastewater treatment.

3.6.6 Electricity Substation Interface

Any development of land abutting or in the vicinity of a possible new substation site could be impacted by noise associated with the operation of transformers and circuit breakers. Appropriate separation and/or attenuation may need to be considered.

3.6.7 Interface with Industry

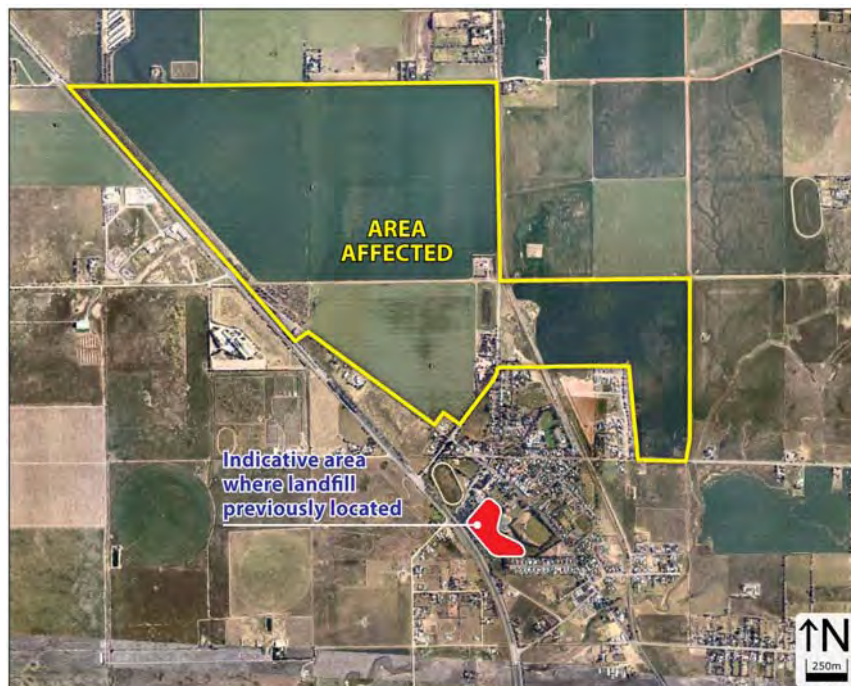
Future development within or adjacent to the Industry (Two Wells) Zone could necessitate an acoustic barrier to address the interface between the Industry (Two Wells) Zone and future residential development. The potential rezoning of that portion of the Industry (Two Wells) Zone located east of Old Port Wakefield Road for residential purposes can assist in facilitating an appropriate buffer.

3.6.8 Interface with Landfill

A historic landfill facility is understood to have existed within Two Wells, south of the Area Affected. Figure 3.8 shows the extent of the landfill, based on anecdotal evidence with Council (the EPA has no formal record).

The location is more than 500 metres from the Study Area and as such no further investigations are considered necessary.

Figure 3.8: Indicative Location of Former Landfill



3.7 Ownership

All of the broadhectare land located within the Study Area is under the control of the Hickinbotham Group. This enables an integrated and co-ordinated development outcome to be achieved, which is particularly critical given the key flood proofing and other infrastructure required to service the Study Area.

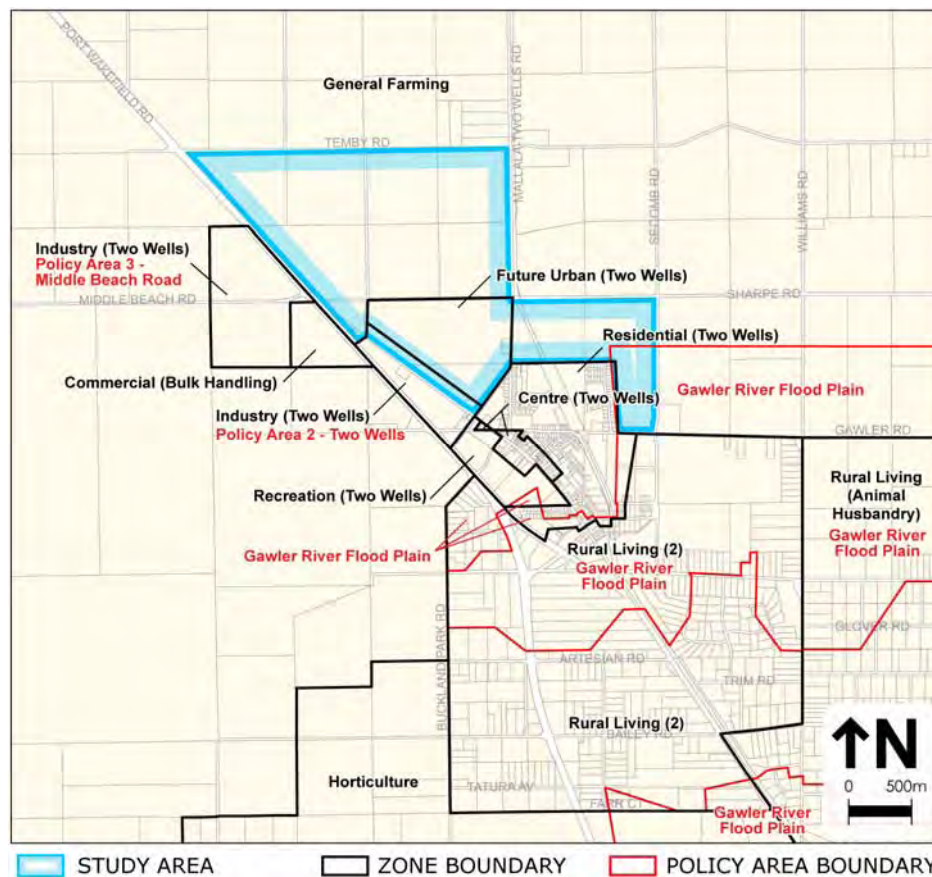
4. EXISTING ZONING

The Study Area is located within the District Council of Mallala. The Mallala (DC) Development Plan is the relevant planning instrument. The Study Area is located within the:

- Future Urban (Two Wells) Zone;
- Industry (Two Wells) Zone; and
- General Farming Zone.

The zones and policy areas which presently apply to the Study Area are shown on Figure 4.1.

Figure 4.1: Current Zoning



Source: Derived from Mallala Development Plan

4.1 Future Urban (Two Wells) Zone

The Future Urban (Two Wells) Zone has frontage to Sharpe Road to the north and the Mallala – Two Wells Road to the east.

The entire zone is included in the 15 Year Zoned Supply, as identified by The 30-Year Plan for Greater Adelaide.

The zone is designated to retain the status quo for farming activities until such time as required for expansion of the township. Accordingly, it is envisaged that when demand is warranted to accommodate urban development, rezoning investigations will be undertaken with the view to rezone the land for urban purposes.

Presently, the following objective applies for the Future Urban (Two Wells) Zone:

Objective 1: *A zone accommodating a restricted range of rural uses not prejudicial to development of the land for future urban purposes, and not detracting from the appearance and rural character of the zone or adjoining zones.*

The future use of land contained within this zone for urban purposes is consistent with the strategic intention of the zone.

4.2 Industry (Two Wells) Zone

The study area currently includes a 92 metre wide ribbon of land within the Industry (Two Wells) Zone which fronts the eastern side of Old Port Wakefield Road for a distance of 1,060 metres (approximately 11ha).

The total area of the Industry (Two Wells) Zone is approximately 35ha. On this basis, the strip within the study area accounts for only 30% of the area of the zone. The Zone allows a range of industrial and commercial development which must provide a level of amenity that is satisfactory to the adjacent residential areas.

The three objectives of this Zone are reproduced below.

Objective 1: *A zone accommodating a range of industrial and commercial development, servicing the local district or capitalising upon a near Port Wakefield Road location.*

Objective 2: *Protection of the amenity of and outlook from, the residential areas adjacent to the zone and from Port Wakefield Road.*

Objective 3: *An attractively landscaped industrial area.*

Policy Area 2 – Two Wells applies to the whole of the Industry Zone within the Study Area. The Principles of Development Control of this Policy Area require that development should be set back at least 20 metres from the boundary of the Future Urban (Two Wells) Zone, and that a landscaped buffer strip of at least 5 metres in width should be established around the perimeter of the Industry Zone.

The Statement of Intent identifies the need to investigate the possible future use of Industry (Two Wells) Zone (as identified within the Area Affected) for residential purposes.

The land within this zone is identified as forming part of the 15 years zoned supply in The 30-Year Plan for Greater Adelaide.

4.3 General Farming Zone

The General Farming Zone comprises the greater portion of the Study Area. The landscape is dominated by large land holdings with homesteads, ancillary buildings and paddocks enclosing livestock and cereals.

The zone does not support intensification of development and seeks the continuance of cropping and open range grazing uses. This is reflected in the objectives for the zone, reproduced as follows.

- Objective 1:** *Maintenance of general farming activities and land use on large property holdings.*
- Objective 2:** *Reinforcement of the existing open rural character of the area.*
- Objective 3:** *Preservation of features of scenic or environmental significance.*
- Objective 4:** *Recognition of the flooding potential of the Light River, Gawler River and Templers Creek.*
- Objective 5:** *Protection of rural support infrastructure for the bulk handling, storage and transportation of farm commodities situated at Long Plains and Adelaide Road (south west of the Mallala township).*

All of the General Farming Zone land within the Study Area is included in the 30-Year Zoned Supply as identified by The 30-Year Plan for Greater Adelaide.

5. STRATEGIC CONTEXT

This review and analysis has been undertaken in the context of existing State and local government strategic and future plans.

5.1 South Australia's Strategic Plan

South Australia's Strategic Plan outlines a medium to long-term vision for the whole of South Australia. It has two important, complementary roles. Firstly, it provides a framework for the activities of the South Australian Government, business and the entire South Australian community. Secondly, it is a means for tracking progress state-wide, with the targets acting as points of reference that can be assessed periodically.

The Strategic Plan does not contain any specific reference to the Study Area. However the Plan does express themes which are relevant to planning within the Study Area. The investigations recognise and support South Australia's Strategic Plan, and ensure future policy will assist in achieving key goals and targets.

The Strategic Plan sets out six objectives each with its own suite of targets, with the following considered relevant.

Target 7: Affordable housing

South Australia leads the nation over the period to 2020 in the proportion of homes sold or built that are affordable by low and moderate income households (*baseline: 2010*)

Target 8: Housing stress

South Australia leads the nation over the period to 2020 in the proportion of low income households not experiencing housing stress (*baseline: 2010*)

Target 45: Total population

Increase South Australia's population to 2 million by 2027 (*baseline: 2003*)

Target 47: Jobs

Increase employment by 2% each year from 2010 to 2016 (*baseline: 2010*)

Target 56: Strategic infrastructure

Ensure the provision of key economic and social infrastructure accommodates population growth (*baseline: 2010-11*)

Target 68: Urban development

By 2036, 70% of all new housing in metropolitan Adelaide will be being built in established areas (*baseline: 2010*)

Target 73: Recycled stormwater

South Australia has the system capacity to harvest up to 35 GL of stormwater per annum by 2025 (*baseline: 2009*)

Target 74: Recycled wastewater

South Australia has the system capacity to recycle up to 50 GL of wastewater per annum by 2025 (baseline: 2009)

Target 75: Sustainable water use

South Australia's water resources are managed within sustainable limits by 2018 (baseline: 2003)

The Study Area provides significant opportunities to facilitate the attainment of these targets. The Study Area has the potential to provide significant additional housing which will support population growth within the key Northern sector of Adelaide. Given the scale of the Study Area potential exists to introduce sustainable water supply and water reuse systems.

5.2 The 30-Year Plan for Greater Adelaide

Aims and Objectives

The Planning Strategy presents current State Government planning policy for development in South Australia. In particular, it seeks to guide and coordinate State Government activity in the construction and provision of services and infrastructure that influence the development of South Australia. It also indicates directions for future development to the community, the private sector and local government.

The 30-Year Plan is a volume of the Planning Strategy for South Australia and applies to the Study Area. The Plan has been prepared by the Government to guide the community, local government, business and industry.

The main aim of The 30-Year Plan is to outline how the South Australian Government proposes to balance population and economic growth with the need to preserve the environment and protect the heritage, history and character of Greater Adelaide. The 30-Year Plan seeks to create inclusive, vibrant and livable communities, while protecting the regional hinterlands and primary production lands and sustaining natural resources.

Finally, The 30-Year Plan is one of the key tools to assist the State Government, local government and the entire community in building resilience to the risks and impacts of climate change.

The context and vision for The 30-Year Plan is outlined in detail in Chapters B and C of the Plan. While it is not intended to reiterate the content of these chapters in any detail, it is worth providing a snapshot of those comments of most relevance to formulating a land use planning framework for the growth area identified at Two Wells.

The 30-Year Plan's context provides discussion on a number of main themes including population characteristics, form of new development and employment.

In relation to expected changes to the size and composition of the population within the Greater Adelaide Region The 30-Year Plan sets out the following:

- a total forecast population for Greater Adelaide of 1.85 million people by 2036 (the population is growing faster than was forecast in South Australia's Strategic Plan (2004) and the Prosperity Through People population policy (2004), which both forecast a target of 2 million people by 2050 for the entire state; this is now projected to be reached 23 years ahead of target, in 2027);

- Greater Adelaide's population is older than the Australian average and our share of people aged over 65 is growing faster than the national average:
 - those aged over 65 will increase from 194,000 in 2006 to 407,000 in 2036, a 110 per cent increase;
 - the proportion of aged people (over 65 years) in the population will increase from 18 per cent in 2006 to 22 per cent in 2036;
 - the number of South Australians aged 85 years or more is projected to increase by 222 per cent by 2036, with those living in non-private accommodation projected to increase by more than 220 per cent from about 10,000 in 2006 to in excess of 31,000 in 2036;
- the three dominant household types in Greater Adelaide (couples with children, couples without children and lone-person households) will comprise about 84 per cent of total occupied private dwellings and of these:
 - lone-person households were the fastest-growing household type in the past decade and are projected to account for 33 per cent of all household types in Greater Adelaide by 2036;
 - lone-person households reflect the ageing of the population and changes in family relationships;
- changes in population dynamics has resulted in the need for more dwellings to accommodate the same number of people - in the 1950s to 1970s, when households were made up of large families, 300 extra homes were needed for every 1000 extra people; today, 420 homes are required for every 1000 people; and by 2036, 435 homes will be required for every 1000 people.

To meet the demands of a larger population and household needs, The 30-Year Plan outlines a vision for a 'new urban form' including:

- locating new housing and new jobs in transport corridors:
 - o the Plan contains a detailed strategy to locate the bulk of new housing in established areas around the existing public transport networks and transit corridors to create a transit-connected city;
- placing an emphasis on good design and creating unique precincts;
- creating vibrant mixed-use precincts:
 - o a greater co-location of a greater mixture of building uses (e.g. street facing shops and services located under residential apartments, providing walkable neighbourhoods and easy access to services);
- taking a new approach to Greenfields development;
 - o new greenfield developments to contain a larger mixture of densities and housing types;
- retaining the essential characteristics of rural towns;
- achieving a diversity of dwelling types:
 - o achieve a greater mix of dwelling types to cater for the changing make-up of the population. These would range from single detached dwellings to low-rise attached accommodation, such as townhouses and villas, and medium-density housing, such as well designed three-to-five storey apartment blocks in appropriate locations;
- water and energy efficiency;
- greenways and a network of open spaces;

- o a network of connected open spaces would characterise the major activity centres and transit corridors. These very distinct green buffers would improve amenity, have a cooling effect and provide a noise buffer between residential accommodation and transport thoroughfares.

The 30-Year Plan for Greater Adelaide is underpinned by 14 principles. Those of particular relevance to these investigations include:

1. *A compact and carbon efficient city.*
2. *Housing diversity and choice.*
3. *Accessibility.*
5. *World class design and vibrancy.*
6. *Social inclusion and fairness.*
7. *Heritage and character protection and enhancement.*
8. *Healthy, safe and connected communities.*
9. *Affordable living.*
11. *Climate change and resilience.*

The investigations in this report are informed by policies and targets of The 30-Year Plan, detailed in Appendix 1.

Two Wells– Targets and Policies

Two Wells is located within the Barossa State Government Region. The population, dwellings and jobs growth targets for this region for the period 2009-2038 are outlined in Table 5.1 as follows:

Table 5.1: Targets for Barossa

POPULATION TARGET	HOUSING	JOBS
110,000 (net additional)	46,400 (net additional)	38,500 (net additional)

The capacity for growth within the currently zoned township of Two Wells is estimated at around 214 dwellings over the next 30 years. Under the proposed development scenarios, the development of the Study Area for residential and country living allotments could increase the total supply of dwellings in Two Wells to between 2,826 and 3,646 dwellings over 30 years. Over 30 years, supply of housing from Two Wells is predicted to contribute 2.5-3.2% of total dwelling growth targeted in the Northern Adelaide and Barossa State Government Regions.

Therefore it is not expected rezoning of the land at Two Wells will significantly influence overall residential supply and demand conditions in the Northern Adelaide and Barossa Regions. Nevertheless, residential expansion at Two Wells will make an important contribution to the expansion of land and housing opportunities in the north, particularly to the Barossa township target, providing greater housing and lifestyle choice for future residents.

Two Wells will also contribute to employment growth arising from the need to service the future population (service industry). It is however anticipated that other locations (such as Roseworthy) are better placed to accommodate more strategic employment opportunities.

5.3 Adelaide and Mount Lofty Ranges Natural Resource Management Plan

The Adelaide and Mount Lofty Ranges Natural Resource Management (NRM) Plan targets and outcomes relevant to these investigations are contained in Table 5.2.

Table 5.2: Adelaide and Mount Lofty Ranges NRM Targets

RELEVANT NRM TARGETS	OUTCOMES
T1 Stormwater and waste water used	75% of stormwater used 100% of waste water reused
T2 Surface water and groundwater	All water resources meet water quality guidelines to protect defined environmental values
T3 Water resources managed within sustainable limits	All water resources used within sustainable yield (allowing for variability)
T7 Condition and function of ecosystems (terrestrial, riparian)	Recovery RE: significant ecosystems
T9 Conservation status of native species (terrestrial, marine, aquatic)	No decline in conservation status from current levels

The attainment of the water related targets are supported by existing policy in the Mallala (DC) Development Plan that promotes water sensitive urban design measures in all developments. There are also provisions that support the protection and enhancement of native vegetation.

5.4 Strategic Infrastructure Plan for South Australia 2005/6 – 2014/15

The *Strategic Infrastructure Plan for South Australia 2005/06 – 1014/15* is a coordinated long-term approach to infrastructure provision throughout the State. It provides an overarching framework for the planning and delivery of infrastructure by all government and private sector infrastructure providers. The Plan identifies strategic priorities for 14 infrastructure sectors such as transport, energy, health, and recreation and sport.

The Plan expresses policies and actions as outlined below which are relevant to the planning and development of broad hectare land.

Transport:

- *Coordinate the development of urban planning and transport systems to maximise the economic, social and environmental benefits.*

Land:

- *Give greater consideration to population data and changing demographics in residential land supply planning.*
- *Ensure that planning for residential developments is more closely integrated with infrastructure and transport planning.*
- *Ensure residential land supply is available when needed to meet market demand.*

Community Services and Housing:

- *Encourage higher-density residential development in appropriate urban areas through planning for land use and infrastructure augmentation.*

- *Promote energy efficiency and environmental sustainability in new residential developments.*

The nature of these investigations represents a holistic approach to urban planning with a significant focus on infrastructure provision.

5.5 Housing Plan for South Australia

The Housing Plan contains five main objectives and key actions in relation to affordable housing, high needs housing, neighbourhood renewal and other associated areas of importance to South Australians.

Key principles and actions of the Housing Plan relevant to a future DPA include:

- *expanding the supply of affordable housing by implementing a target of 10% affordable and 5% high needs housing in all significant new housing developments. Work with industry, local government and the community to achieve this target;*
- *working with the Department of Planning and Local Government (the Department) to develop planning mechanisms to support affordable housing provision, including:*
 - *amending development plans to accommodate affordable housing;*
 - *developing guidelines for design and planning modules for affordable housing;*
- *halving the number of South Australians experiencing housing stress within 10 years;*
- *increasing South Australia's population to two million by 2050.*

The growth envisaged to be accommodated within Two Wells Growth Area provides an opportunity to support relevant aspects of the Housing Plan.

Consideration should be given to local circumstances prevailing in the area that may influence choices for high needs housing (in particular) to ensure easy access to a range of community services and facilities and public transport.

5.6 District Council of Mallala Strategic Plan 2011-2014

The Strategic Plan articulates Council priorities over the next four years. The Plan is framed around four key goals which have in turn provided the framework for development of outcomes and strategies. The four goals are:

- a safe and healthy community, enjoying a high quality of life;
- a developing economic base and increased employment supported by a growing population and appropriate infrastructure;
- a natural environment that is protected, valued and enhanced and a built environment that meets current and future community needs; and
- a responsive Council Team providing proactive leadership, good governance and sustainable services.

The Strategic Plan is implemented through priority actions and projects. These investigations and the Concept Plan for Two Wells have regard to these outcomes and strategies.

5.7 District Council of Mallala – Other Strategic Studies

Other strategic documents, which have been commissioned by DC Mallala, and which are relevant to this investigation, are the *Two Wells Main Street Design Guidelines* and the *Light River Flood Plain Mapping and Flood Management Studies*.

5.7.1 Two Wells Main Street Design Guidelines

The focus of this project is to guide the expansion of the existing Town Centre, to cater for a growing community whilst strengthening its special character, through developing a planning framework that is underpinned by Design Guidelines and Desired Character Statements.

As a consequence of the above, it is clear that Council has an intention to foster the redevelopment and growth of the Town Centre as a focus for the local community. This will influence the potential role and hierarchy of a centre within the Study Area.

5.7.2 Light River Floodplain Mapping and Flood Management Study, AWE, September 2011

Council has initiated a comprehensive review of the flooding issues associated with the Two Wells township. In addition to revised flood mapping which identified the flood risk, the *Light River Floodplain Mapping Study* explores a range of potential structural mitigation measures to reduce flood damages in Two Wells as a result of flooding of the Gawler River and the Light River systems.

The outcomes of the assessment included:

- *A flood protection levee around the east and south of Two Wells would be effective in mitigating the flood risk from flows approaching the township along Salt Creek from both Gawler River and Light River breakouts;*
- *The construction of a diversion channel north of Two Wells would be effective in providing significant areas of flood free land between the diversion channel and Two Wells. A number of alternative alignments are likely to be feasible; and*
- *Increasing the capacity of Port Wakefield Road bridge and the railway opening across Salt Creek would reduce flood levels by less than 100 mm and given the potential cost of upgrading these structures against the modest reduction in flood levels (reduced cost of levee) this alternative does not appear to cost effective.*

As a consequence of the above, potential now exists to further develop and expand Two Wells, providing the recommendations of the study are implemented.

5.7.3 Development of horticulture industries on the Adelaide Plains: a blueprint for 2030

The Blueprint for 2030 provides a vision for the Horticulture Industry on the Adelaide Plains. The document identifies several areas, which if correctly addressed, could lead to increased horticultural output, more employment, and growth of the South Australian economy.

The Blueprint recognises the future expansion of Two Wells as part of the overall vision.

5.8 Better Development Plans Library

In order to improve the effectiveness of the planning system and the efficiency with which planning policy is amended the State Government has developed a planning policy library. All Development Plans will be converted to the new format with most metropolitan Councils having already converted to the new format.

The merits of the following planning policy modules are further considered in Chapter 9 (Recommendations and Policy Considerations):

- Suburban Neighbourhood Zone module;
- Residential Zone Module; and
- Rural Living Zone module.

6. DETAILED INVESTIGATIONS

6.1 Residential Land Supply and Demand

6.1.1 Context/Supply Analysis

Residential land supply and demand has been investigated in the *Two Wells Land Supply Report*. The following information represents a summary of the findings of this report. For further information, refer to the full report.

The Two Wells Growth Area is located at the southern edge of the Barossa region, adjoining the Northern Adelaide Region. Together, these two regions are projected to accommodate around half of all population growth in Greater Adelaide over the next 30 years.

Ensuring an ample supply of residential land and development opportunities, both in infill areas and on the urban fringe is a key policy direction of the 30 Year Plan for Greater Adelaide. Based on the population projections discussed in Chapter 5, The 30-Year Plan identifies the need for an additional 258,000 dwellings across the Greater Adelaide region over the next 30 years.

Within the Barossa Region, The 30-Year Plan targets an additional 46,400 dwellings over the next 30 years, with a further 67,600 dwellings targeted in the adjoining Northern Adelaide Region. The majority of additional dwellings in these two regions are expected to be supplied in fringe and township locations.

In total, 87,500 new dwellings are targeted to be supplied in fringe and township locations within the Barossa and Northern Adelaide Regions over 30 years. The Two Wells Growth Area will contribute to the supply of residential development opportunities on the northern fringe, as per its identification as a residential growth area in The 30-Year Plan and is expected to be rezoned in 2012, as per the Housing and Employment Land Supply Program (HELSP). Growth areas in the surrounding area, including part of the Barossa and Northern Adelaide Regions, are shown in Figure 6.1.

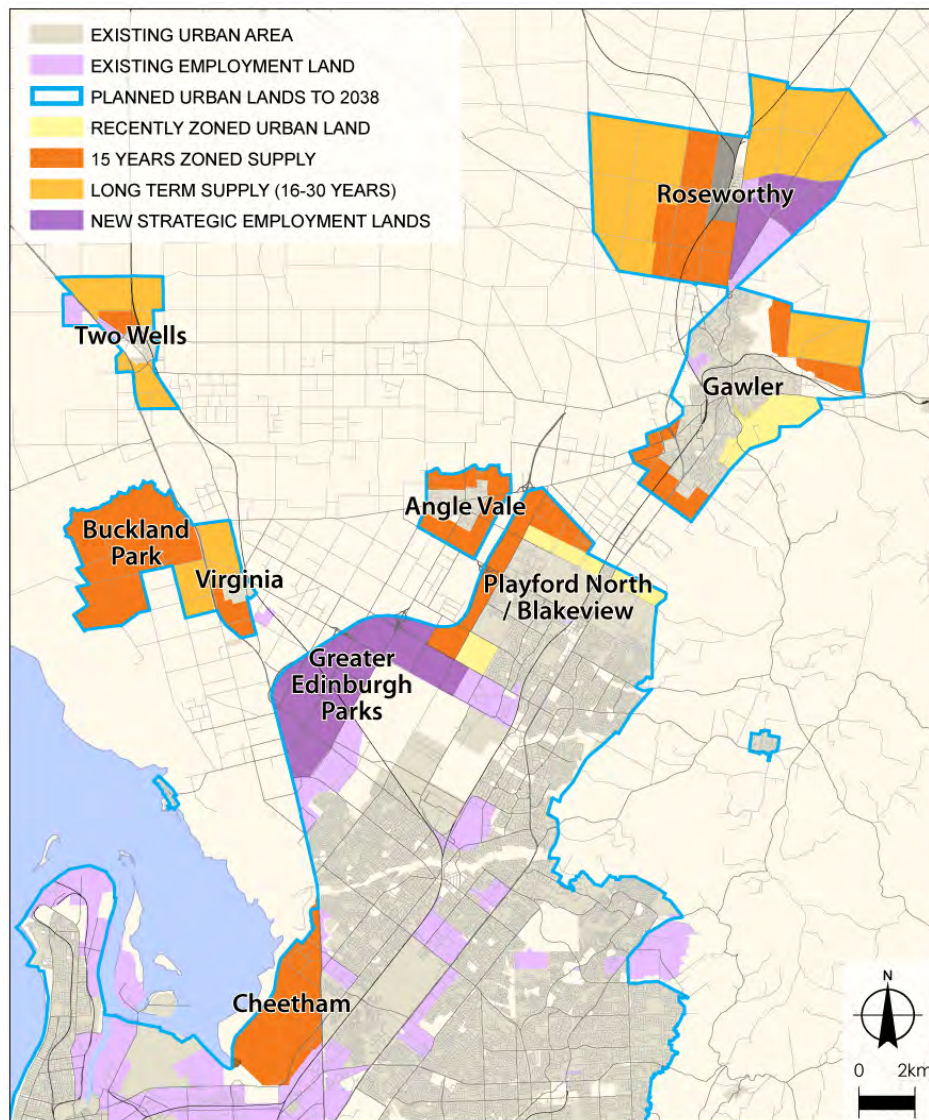
Growth Areas that have been rezoned for residential development are:

- Playford North;
- Blakeview;
- Penfield;
- Gawler East;
- Evanston South/Gardens; and
- Buckland Park.

Growth areas that are currently being investigated for rezoning are:

- Two Wells;
- Munno Para (Playford North Extension);
- Angle Vale;
- Roseworthy (west of Main North Road); and
- Virginia.

Figure 6.1: Residential Growth Areas in Surrounding Region



Source: Derived from Department of Planning and Local Government, 2010.

It is anticipated that the above areas will be rezoned within the next two years.

The remaining areas, specifically Cheetham/Globe Derby Park and Concordia are not currently on the State Government or Councils' agendas for rezoning in the short term.

In a regional context, growth in the Metropolitan Adelaide's northern areas (the Northern and Barossa State Government Regions) are expected to be strong and substantially above Greater Metropolitan Adelaide's overall growth rates. Indeed, the Barossa and Northern Adelaide SGRs are projected to accommodate 50% of Greater Adelaide's population growth.

These areas have already seen a rise in population growth rates, and improvements to infrastructure and the creation of significant new employment precincts at Greater Edinburgh Parks and Roseworthy will make the region more attractive.

The four growth areas predicted to be key competitors in the residential market are identified to be:

- Virginia;
- Buckland Park;
- Angle Vale; and
- Roseworthy.

These competitors are all likely to commence marketing allotments within the next five years and could potentially deliver around 80,000 dwellings.

To compete in this market, land releases at Two Wells will need to either be cheaper than competitors or offer a different lifestyle which represents better value for money for certain buyer groups. Two Wells currently offers a distinctive country township environment, offering large allotments and a main street.

6.1.2 Demand

The key determinants of the demand for residential land and housing are the total population and average household size. There are a number of other factors that influence market demand across the state, these include:

- economic conditions;
- availability and cost of finance;
- tenure profile;
- holiday home ownership; and
- location and residential product preferences.

Strong demand for residential land and housing in the Barossa and Northern Adelaide Regions is expected to be underpinned by:

- strong overall population growth and dwelling demand in Greater Adelaide;
- a scarcity of affordable land on the southern fringe;
- limited availability of 'traditional' allotments in infill areas;
- lack of affordable housing options in infill areas;
- strong accessibility to the CBD and major new employment areas;
- choice of housing and lifestyle options; and
- attraction of Barossa for retiring baby boomers seeking a tree change in a country township.

The State Government has introduced stronger development controls in the Barossa Region, through a *Barossa Valley District Protection Bill*.

The Bill places additional restrictions on residential development however does not impact directly on Two Wells.

The 30-Year Plan and HELSP identify residential growth opportunities in Barossa townships which could support the development of around 1,700 additional dwellings.

It is estimated that minor infill development within townships is likely to contribute a maximum of 50% of targeted infill development for the region (1,800 net additional dwellings), though this may be unrealistically high depending on the form that proposed protections of the Barossa Valley take.

This implies that there will be heavy reliance on Two Wells, as the major township growth area identified for the Barossa Region to meet targeted dwelling growth. Based on the above, Two Wells would need to supply **at least 5,000 dwellings** over 30 years to meet the township target of 8,500 dwellings.

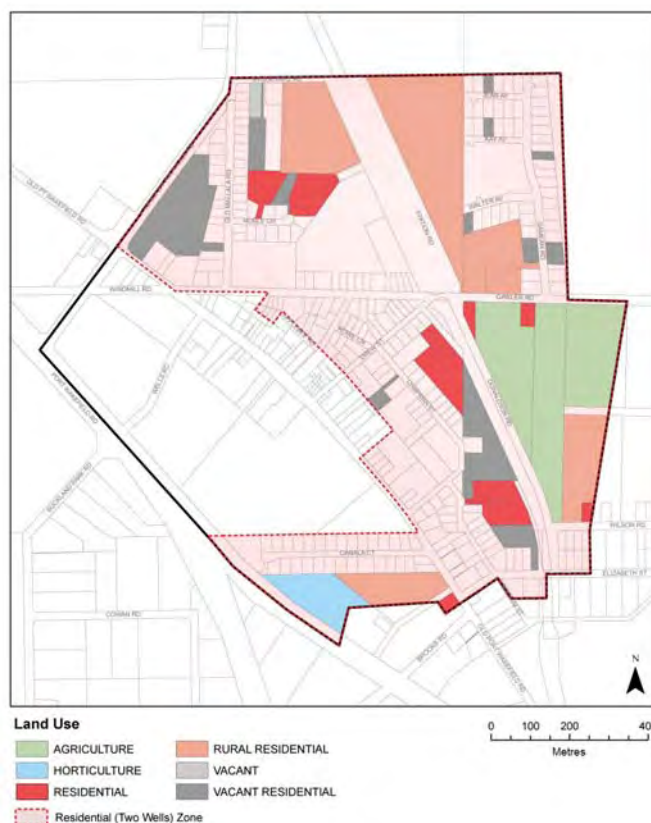
It is expected that a range of allotment sizes and housing products will be delivered within the Two Wells Growth Area that will cater to a form of demand not currently capable of being met in Two Wells or the surrounding district. It is considered unlikely that high density dwelling forms would be well received by the market in this location.

6.1.3 Capacity

Remaining vacant residential land, now estimated at 30 hectares, could potentially yield up to 195 dwellings, based on a minimum lot size of 1,200 square metres (minimum area necessary for on-site effluent treatment) and assuming minimal (20%) take-up of land for roads, open space etc (due to the small nature of remaining vacant land parcels). It is highly unlikely that all remaining vacant land will be developed to maximum capacity over the next 30 years. Rather, it is considered likely that around half of theoretical potential, specifically around 100 dwellings, could be developed on remaining vacant land.

In summary, assuming that planned land divisions go ahead and around 50% of remaining vacant land is taken up over the next 30 years, the existing Residential (Two Wells) Zone could accommodate up to 214 additional dwellings. Figure 6.2 identifies the land available for residential development within the Two Wells Growth Area, as at June 2010.

Figure 6.2: Existing Residential Capacity within the Two Wells Growth Area



6.1.4 Projected Yield

The Study Area has a total area of approximately 417 hectares (inclusive of roads). Approximately 343 hectares of land within the Study Area is located west of the rail line and is assumed to be developed primarily for residential allotments.

Land east of the railway line is assumed to be developed as country living allotments. A preliminary concept design for this land indicates that 172 allotments could be delivered.

Typically it is estimated that 30 percent of rezoned land will not be developed for residential purposes due to fragmentation of land parcels and the differing intentions of the owners. However, in this case, there is a high level of confidence that owners will not withhold land from development. Accordingly, no yield reduction is assumed due to land owner uncertainty and for fragmented ownership.

The following land budget applies to the Study Area west of the rail line. This budget will require review once detailed design has been undertaken.

The gross residential areas will encompass roads, buffers, open space, stormwater management and potentially schools and local centres. It is expected that these non-residential uses will occupy around 40% of the gross land area, as shown in Table 6.1.

Table 6.1: Preliminary Land Budget

LAND USE	LAND AREA	% LAND AREA
Residential allotments	195.7 ha	57%
Roads	68.5 ha	20%
Open Space	42.9 ha	12.5%
Stormwater management*	17.1 ha	5%
Other infrastructure/buffers*	8.6 ha	2.5%
Schools	10 ha	3%
Total	342.8 ha	100%

*It is expected that the actual area required for storm water management and buffers will be larger, but some of this land will be credited towards the open space contribution.

Two density scenarios have been developed based on the land budget set in Table 6.1 and an assumed average allotment size of approximately 600 and 800 square metres. These density scenarios reflect an expectation that the land will be developed at relatively low densities given the likely patterns of demand and the need to cater for a “township living” lifestyle.

Table 6.2: Densities and Yields

RESIDENTIAL AREA	LOW SCENARIO	HIGH SCENARIO
Gross Residential land area	342.8 ha	342.8 ha
Gross density	7.1 dw/ha	9.5 dw/ha
Dwelling yield	2,440 dw	3,260 dw
Net residential land area	195.7 ha	195.7 ha
Net Density	12.5 dw/ha	16.6 dw/ha
Average Lot Size	800m ²	600m ²

Table 6.3 provides two potential dwelling occupation schedules for both the high and low density scenarios. The 'base case' schedule reflects the likely dwelling production peak of 150 dwellings per annum, whereas the 'targeted' schedule reflects a dwelling production peak of 250 dwellings per annum.

Table 6.3 estimates that land supply from Two Wells could last for between 18 and 29 years. At the lower end, this is consistent with the Government's 15 year supply benchmark, while at the higher end it is consistent with the 30 Year supply target.

Table 6.3: Indicative Dwelling Occupation Schedule (cumulative total)

YEAR	LOW SCENARIO		HIGH SCENARIO	
	Base Case Dwelling Occupation	Targeted Dwelling Occupation	Base Case Dwelling Occupation	Targeted Dwelling Occupation
2014	50	50	50	50
2015	100	100	100	100
2016	175	175	175	175
2017	250	275	250	275
2018	325	375	325	375
2019	425	500	425	500
2020	525	650	525	650
2021	625	800	625	800
2022	725	975	725	975
2023	850	1,150	850	1,150
2024	975	1,350	975	1,350
2025	1,100	1,600	1,100	1,600
2026	1,250	1,850	1,250	1,850
2027	1,400	2,100	1,400	2,100
2028	1,550	2,350	1,550	2,350
2029	1,700	2,500	1,700	2,600
2030	1,850	2,575	1,850	2,850
2031	2,000	2,612	2,000	3,100
2032	2,150	-	2,150	3,250
2033	2,275	-	2,300	3,360
2034	2,375	-	2,450	3,432
2035	2,475	-	2,600	-
2036	2,550	-	2,750	-
2037	2,612	-	2,900	-
2038	-	-	3,025	-
2039	-	-	3,150	-
2040	-	-	3,250	-
2041	-	-	3,350	-
2042	-	-	3,432	-

It has been assumed that, within the expanded Two Wells township, country living allotments will have an average household size of approximately 3.3 persons and residential allotments will have an average household size of approximately 2.8 persons. This equates to an average household size of approximately 2.83 persons across new residential and country living communities, when fully established.

It is likely that in the early years of development, average household size within the expanded Two Wells township will be greater than 2.83, reflecting the attractiveness of relatively large and affordable allotments for young families. However, over the estimated 18-29 year development timeframe, it is expected that household size will decline as early residents age and children leave home.

Table 6.4 outlines the resulting and population projections.

Table 6.4: Total Dwellings and Population

STUDY AREA	LOW SCENARIO	HIGH SCENARIO
Residential Allotments	2,440	3,260
Country Living Allotments	172	172
Total Dwellings	2,612	3,432
Total Population	7,400	9,700

It is estimated that the Study Area will yield between 2,612 to 3,432 dwellings, combined with the estimated remaining capacity within the township of 214 dwellings, could potentially provide a total of 2,826 to 3,646 additional dwellings in Two Wells as a whole.

Based on the household size modelling, the estimated yield of the Study Area of 2,612 to 3,432 dwellings, combined with the estimated remaining capacity within the township of 214 dwellings, could potentially yield a total population of 7,400 to 9,700 in Two Wells as a whole.

As highlighted in the *Human Services Report*, the potential population increase would add to the current town population of 717 persons and the additional local population from the Lewiston area of 3,307 persons for which Two Wells is a service centre. This would create a combined total population in the order of 13,720 persons.

6.2 Industry (Two Wells) Zone

It is considered that the 84 metre wide section of land within the Industry-(Two Wells) zone, located immediately to the east of Old Port Wakefield Road is relatively insignificant when viewed as a portion of the total area zoned for industry use adjacent to the Study Area.

Use of this portion of the Industry (Two Wells) Zone for residential development, rather than industry, would enhance the interface to the residential land use envisaged for the Future Urban (Two Wells) Zone. Instead of providing a buffer to industry within the Future Urban area, Old Port Wakefield Road could be utilised to provide a physical separation from industry on the western side of the road, with any further buffering treatment (to industry or the road) able to occur within the ribbon of land presently zoned Industry (Two Wells). Buffering treatments along Old Port Wakefield Road boundary of the Study Area will be further considered in Section 6.10.

Further, it is considered that the use of this portion of industry-zoned land for residential development would provide the opportunity to create a more attractive frontage to the Study Area along to be developed along Old Port Wakefield Road.

The *Stage 1 Environmental Site History: Two Wells, South Australia*, prepared by TMK did not raise any issue in respect to this section of Industry Zone land, with it noted that the land is used for agricultural rather than industrial purposes.

Rezoning of the land will not compromise the intent/effectiveness of Industry (Two Wells) Zone or deprive market of employment land opportunities.

6.3 Primary Production Capability

A review of the potential development area in terms of its value for primary production purposes was conducted by Rural Solutions SA in the report entitled *Two Wells Township Expansion – Land Suitability/Capability Assessment*. The report found that the subject land parcels have:

- moderate reliability as a farming district;

- limitations for agriculture, with poor surface soil structure resulting in difficult access during winter;
- a moderate to moderate-high Land Capability Class;
- overall a moderate Priority for Retention for primary production (cropping and grazing);
- a moderate-high and low-moderate potential for horticultural use, dependant on the availability of a water supply of both good quantity and quality; and
- a lower production capability than land surrounding Freeling and Mallala.

Development of Horticulture Industries on the Adelaide Plains – A Blueprint for 2030 (2007, cited in Rural Solutions SA 2011), identified the land to the immediate north of Two Wells as ‘Proposed extension of Two Wells township’ and placed the potential horticultural land further north and north-east. *Blueprint for 2030* also noted that extensions to water, gas, electricity and transport infrastructure would be required in order to support horticultural expansion between Two Wells and Mallala.

Both The 30-Year Plan and the HELSP acknowledge Two Wells as a significant residential growth area.

6.3.1 Rural Interface Issues

The Land Suitability/Capability Assessment Report acknowledges the potential for rural/residential interface issues to arise and identifies likely causes of conflict to be:

- spray drift from crop or pasture or horticultural activity spraying (including herbicide application);
- noise from machinery during spraying and farming operations (mainly during seeding and harvesting time);
- dust from bare paddocks and as a result of livestock grazing; and
- particulates from seeding and harvesting operations.

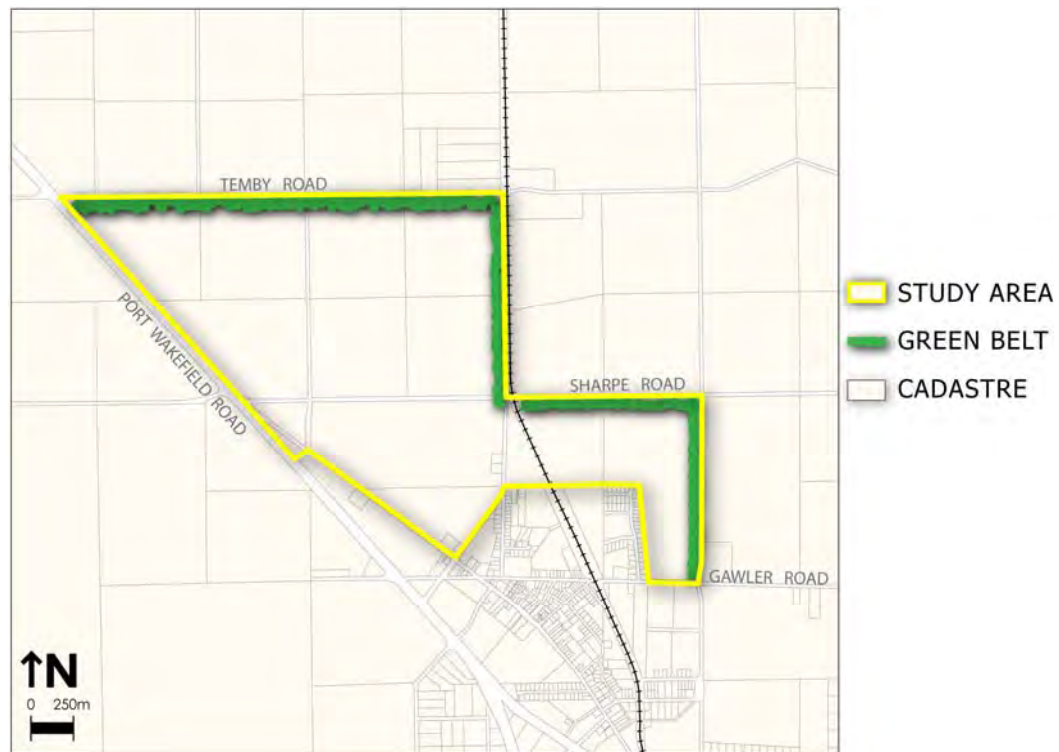
Most of these issues can be managed. For example, crop or pasture spraying should only occur when weather conditions are favourable, namely little or no wind, to minimise spray drift. Destocking in dry seasons will reduce dust nuisance.

Citing the *Development of horticulture industries on the Adelaide Plains : a blueprint for 2030*, Rural Solutions SA recognise that the horticulture industry is expanding into the area between Two Wells and Mallala but that there are pressures for expansion around Two Wells and Mallala.

The *Land Capability/Suitability Assessment* report recommends the planting of a 20 metre wide vegetative buffer of suitably selected species in order to act as a visual screen and minimise any spray drift that may occur, along with enhancing local biodiversity value. The areas in which a vegetative buffer would be suitable for separating the proposed residential development from the surrounding agricultural land uses are shown in Figure 6.3 below.

The report also recommends that the planning process should investigate offset opportunities for the developers, in relationship to local or regional NRM issues and goals.

Figure 6.3: Recommended Buffer to Productive Land



6.4 Rural Living

The south-western portion of the Area Affected abuts the Rural Living 2 Zone. The Rural Living 2 Zone wraps around the southern and western boundaries of the existing township. The zone is essentially developed with most allotments containing dwellings.

Further to the east is the Rural Living (Animal Husbandry) Zone. This Zone has a slightly different focus compared to the Rural Living 2 Zone.

This is reflected by the following extracts from each of the zones.

Rural Living 2

Objective 1: *A zone for rural living including small-scale farming, but excluding any significant amount of horse keeping and dog kennelling and excluding other forms of intensive animal keeping.*

Rural Living (Animal Husbandry)

Objective 1: *A zone for rural living including small-scale farming, horse keeping and dog kennelling, but excluding other forms of intensive animal keeping.*

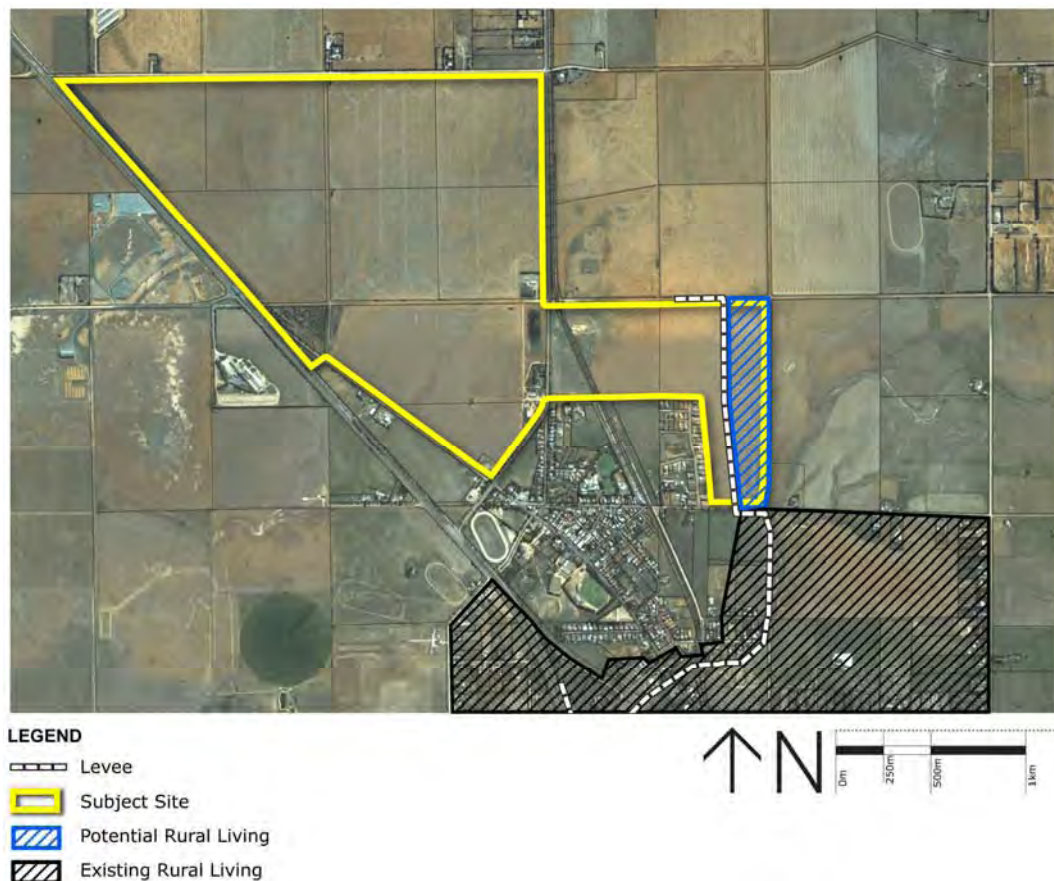
As further outlined in Section 6.8, *The Flood Mitigation and Water Balance Assessment*, prepared by AWE, identifies how stormwater and flood waters can be managed within the Study Area.

One of the recommended strategies is for the construction of a flood protection levee around the east and south of Two Wells, to protect both the existing town and the designated growth areas.

The recommended alignment of the levee creates a delineation between that part of the Study Area which would remain subject to flooding (ie within the Gawler River Flood Plain Policy Area) and that part where flood management strategies would enable more intensive residential development to occur.

Figure 6.4 shows the location of the proposed levee. The land immediately to the east of the levee, has the potential to accommodate rural living allotments, as larger allotments enable management of flood risk within a very low density environment.

Figure 6.4: Proposed Levee and Rural Living Area

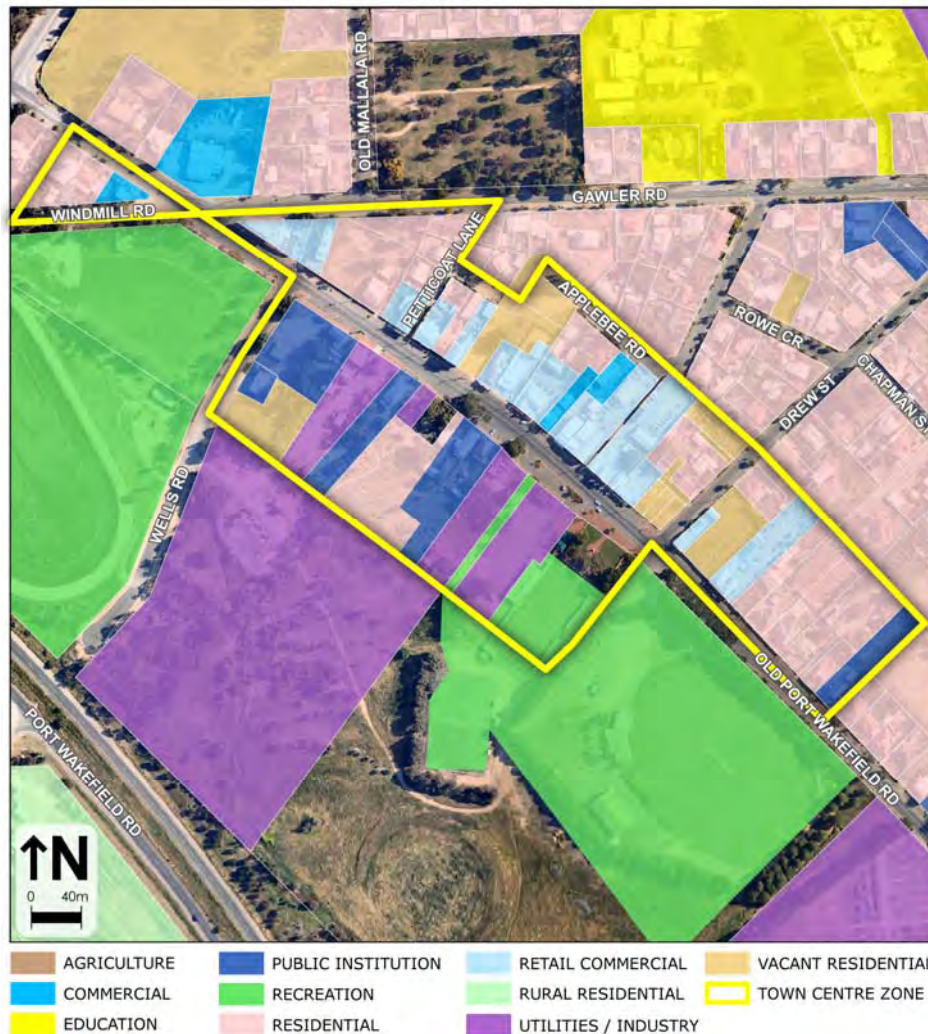


Rezoning of the land to the east of the levee would potentially accommodate 40 rural living allotments, assuming an average allotment area of 0.5ha. The overall extent of the area is approximately 24 hectares. This would only marginally increase the supply of rural living land and would provide an appropriate interface and transition between the General Farming land to the north, Rural Living 2 Zone to the south and the west and the future residential growth areas to the north-west.

6.5 Retailing and Centres

Retail facilities within Two Wells comprise a small IGA supermarket of about 500m² plus 10 specialty shops clustered on the eastern side of Old Port Wakefield, opposite the Post Office. Specialty shops include bakery, butcher, café/take-away food (4), hairdresser, pharmacy, hardware and pet shop. There is also a small vacant shop. The location of the retail facilities are shown in Figure 6.5.

Figure 6.5: Existing Land Uses in Town Centre Zone



The *Two Wells Retail Profile and Prospects Report*, prepared by Alistair Tutte, expresses that the ultimate population of Two Wells and surrounds would be able to support a full range supermarket of about 3,500m².

The *Two Wells Retail Profile and Prospects Report* considers that the development a full range supermarket in Two Wells would appear to be achievable, with some substantial underutilised land located behind the main street shops. The report also identified that there is a large vacant site of about 3,700m² with frontage to Old Port Wakefield Road just to the north of the IGA.

A retail development of 4,000m² plus parking would require a site of about 10,000m², and some northward adjustment of the Town Centre Zone might be required in order to accommodate this.

The report notes that from a planning perspective, it would be highly desirable to reinforce the Two Wells main street as the principal retail destination.

Council has prepared a structure plan for the future expansion of the Two Wells Town Centre. The plan provides for retail expansion to the south-west of Old Port Wakefield Road. Council has embarked on a range of actions necessary to unlock development potential in the Town Centre, allowing it to expand to serve the needs of the township as it grows.

In the event that retail floor space of the required scale cannot be accommodated within the main street of Two Wells, the zoning of the development area should be sufficiently flexible to accommodate retail services required to service the expanded township in an appropriate location within the development area (as the only alternative to forcing residents to commute to nearby urban areas to satisfy their shopping needs).

6.6 Human Services

Helen Smith has projected the demand on human services based on the dwelling and population projections assumed for the Study Area. The *Two Wells Expansion Masterplan Report and Development Plan Amendment – Human Services* contains the full analysis and recommendations. Key findings are outlined in the following sub-sections.

It is relevant to note that Chapter 8 sets out proposals and/or options for the provision of infrastructure/services in areas such as health, education and community development to serve the future township, as canvassed in the *Preliminary Infrastructure Directions Discussion Paper*.

6.6.1 Education

In regard to the potential population of children in Two Wells it is assumed that there will be at least on average one child per household, and that there will be children residing within the Study Area, within 3 to 5 years of its formation.

On the assumption that the first dwellings will be occupied in 2013, children will begin to have a significant impact on services such as child minding and schools onwards from 2015.

The number and type of schools required within the Two Wells Growth Area will be influenced by the number of students who attend government and non-government schools. Based on trends in comparable areas, it is considered likely that around 60% of primary school and 40% of secondary school students will attend government schools.

6.6.1.1 Primary School

There are currently 300 students attending Two Wells Primary School, which has capacity for 500. This capacity has been reaffirmed by DECS. Further capacity could be generated in the future with the site capable of accommodating additional classrooms if required.

Assuming that there will continue to be at least 200 students coming from areas other than the new development area and that the first dwellings will be occupied in 2013, the capacity of the school will be reached in 2023, using the high scenario projections.

Additional capacity would be required at that time, either in the form of an expansion of the existing school or the provision of a new facility (public or private). Further alternatives include the accommodation of students at Mallala primary school, which has been upgraded in recent years.

6.6.1.2 Secondary School

Two Wells does not currently have a years 8 to 12 secondary school. It is considered that it would be difficult to justify a government secondary school in Two Wells and therefore opportunities should be pursued in relation to a private secondary school facility or potentially an R-12 school. This approach has been previously been taken by private developers including the Hickinbotham Group.

Public secondary schooling will continue to be offered in other places such as Gawler (school zoned for Two Wells) or Balaklava.

6.6.2 Child Care Services

The community managed child care centre and DECS kindergarten are close to capacity but the privately operated Stepping Stone Child Care Centre has 30 places available. However, there is a high demand for vacation care and pre-school and after school care in preference to long day care, with children having to go to Virginia to access this service. Demand for all types of child care services will increase, particularly given that a predominance of couples with young families that are likely to populate the Two Wells growth area.

The new development will impact child minding services by 2014/15 assuming one child per household and a start date for the development of 2013.

6.6.3 Aged Accommodation

The ageing of the existing population and the need for these persons to locate close to relatives and within the area that they have their social networks creates an opportunity for aged accommodation within the Study Area. The housing choices provided for older people should include both high and low care arrangements and independent living, including retirement/lifestyle villages.

6.6.4 Health Services

The General Practice within the Two Wells township is currently operating over-capacity. The Medical Practice has difficulty attracting doctors and the current doctor in is on-call seven days per week. People are being referred to a GP at Mallala and Gawler. Many of the aged population, who are without private transport, have difficulty accessing services out of the township of Two Wells.

The Two Wells Medical Practice is currently investigating opening another practice in the main street in Two Wells and is interested in exploring opportunities to relocate to within the new development.

It is recommended that there needs to be one GP per 1,000-1,500 additional people.

A range of health services are provided to the township of Two Wells by the Inner North Country Health Service, including acute services such as referral to hospital and outpatients services.

Nearest hospitals are located at Elizabeth, Gawler or Balaklava. There is a hospital at Mallala but it only provides hostel accommodation for the aged and related services.

Home and Community Care services are provided to the aged, which are accessed through referral from Council and the Inner North Country Health Service.

6.6.5 Recreation and Open Space

Two Wells is well catered for a variety of sporting activities and has a well-used oval located in the main street. The Town supports a wide range of formal sporting activities including hockey, football, tennis, cricket, bowling and softball with many clubs sharing clubrooms. These clubrooms are in need of updating and expanding and it is anticipated with a younger population locating in the new housing development that participation levels in these sports will only increase thus putting more demand on these already out dated facilities. Any new school facilities within the Study Area could provide additional sport/recreation facilities that are accessible to the community.

Alternatively other locations for recreation facilities can be determined as part of future land division applications whereby public open space is required to be provided as part of the 12.5% open space contribution.

Table 6.5 outlines the theoretical recreation facilities needed to meet the needs of a future population of 10,000 persons. The theoretical demands are based on Queensland and Victorian Guidelines for outer urban growth areas.

Table 6.5: Theoretical Recreation Needs

FACILITY	INDICATIVE RATIO PER 10,000 PERSONS	ACTIONS
Football Oval (AFL)	2.67	New Australian Rules (winter)/cricket (summer) oval to be provided within development area (seek to integrate with school site) to supplement existing facilities in Town Centre.
Cricket Oval	1.5	New Australian Rules (winter)/cricket (summer) oval to be provided within development area (seek to integrate with school site) to supplement existing facilities in Town Centre.
Netball Courts	5	Two new netball courts to be provided within development area (seek to integrate with school site) and two new courts to be provided within Town Centre (via co-contributed Community Development Trust Fund). Seek to co-locate with tennis courts (shared use).
Tennis Courts	13.5	As above, four new courts to be provided (shared with netball).
Soccer Pitch	2.67	New pitch to be provided within development area. Seek to integrate with school site.
Softball/Baseball	0.7	Threshold not met based on projected population
Bowling	0.7	Threshold not met based on projected population
Indoor Recreation	0.36	Threshold not met based on projected population. Potential however for future school to incorporate.

Source: Indicative ratios from URPS, 2011

6.6.6 Emergency Services

A Police Station and a Country Fire Service Station are located in Two Wells. The closest SA Ambulance Service is the Volunteer Station at Mallala and the closest SES unit is at Edinburgh. If additional services are required in the future then the Town Centre provides opportunity for the location of such.

6.6.7 Public Transport

The Yorke Peninsula Coach Lines provides a daily passenger transport service to Adelaide, but there is no public transport service in the town. The Mid North Regional Community Passenger Transport Network caters mostly for the elderly and transport disadvantaged, and is based on a referral system.

It is proposed to progressively augment the community bus service (via co-contributed Community Development Trust Fund) to the point where improvements to regular public transport services become viable.

6.6.8 Community Facilities

6.6.8.1 Library

The library, located in the main street is well patronised and operates a mobile service in the district.

Provision will be made (via a co-contributed Community Development Trust Fund) to progressively expand the library to meet the needs of the growing population.

6.6.8.2 Community Centre

Two Wells has a Community Centre which operates mostly as a gathering place and a venue for hire for social events. In response to the anticipated growth within the town, it is expected that there will be a need for a Community Centre which offers more of a 'community development' facility providing opportunities for a range of community agencies to locate, providing services for youth, aged and the retired. It is noted that the Two Wells Uniting Church is currently accommodating similar services, albeit on a smaller scale in conjunction with Gawler Health and Para Worklinks.

The Church in partnership with DC Mallala and the Two Wells RSL are also developing a Community Shed project to be located on Church grounds.

The Two Wells RSL provides a range of activities and is an important contact for members in the community but will require upgrading with any expansion of the township.

Provision will be made (via a co-contributed Community Development Trust Fund) for the existing community centre to be progressively expanded (or relocated or supplemented) to meet the needs of the growing population.

6.6.8.3 Community Services

There are currently no administrative, government or agency services provided in the town except for a post office and the DC Mallala outreach service, which houses Council's Planning and Health section and is also an outlet for Council administration and general information.

The following services would be required for the anticipated population growth:

- Centrelink;
- Transaction centre; and
- Aged care services.

It is stated in the *Preliminary Infrastructure Directions Report* that the Hickinbotham Group will provide for internal social and community infrastructure by integrating suitable sites (where required) into the structure plan for the development area, and by making land available (on appropriate terms) for development of key social/community infrastructure, potentially including:

- new private school(s);
- new GP clinic;
- new child care centre(s);
- new emergency services site(s); and
- aged persons accommodation.

It is proposed that a small scale local centre (not necessarily designated by zoning) within the development area would provide local convenience and retail services and help create a community “hub”.

In addition provision will be made (via a co-contributed Community Development Trust Fund) for a contribution towards a community development program in Two Wells.

6.7 Transport Network

Murray F. Young & Associates were engaged to provide an assessment of the traffic and transport matters that need to be considered as a result of the development of the Study Area. They produced the *Land Division Master Plan Two Wells – Traffic Report*.

6.7.1 Existing Transport Network

Port Wakefield Road is a National Highway and is a controlled access road under the care and control of the Department for Planning Transport and Infrastructure (DPTI). It is a dual lane carriageway with a wide median and has a daily traffic volume of approximately 7,800 vehicles per day (vpd).

The Mallala–Two Wells Road is also a DPTI maintained road with an AADT of 2,000 vpd.

The intersection of Port Wakefield Road and Mallala–Two Wells Road provides access to the area north of Two Wells from the major arterial road, including the Study Area.

An alternative access is available to Two Wells from Port Wakefield Road at the intersection of Port Wakefield Road and Brooks Road (to the south).

There are three existing railway crossings in Two Wells, which are all active crossings (at-grade crossings with signals and boom gates).

Access to the eastern portion of land would either be via Gameau Road or via Secomb Road (or an equivalent connection to Gawler Road).

Gawler Road is an arterial road which provides access between Two Wells and Gawler. It is a DPTI maintained road and has an estimated daily traffic volume of 1,800 vpd.

6.7.2 Traffic Impacts of Proposed Development

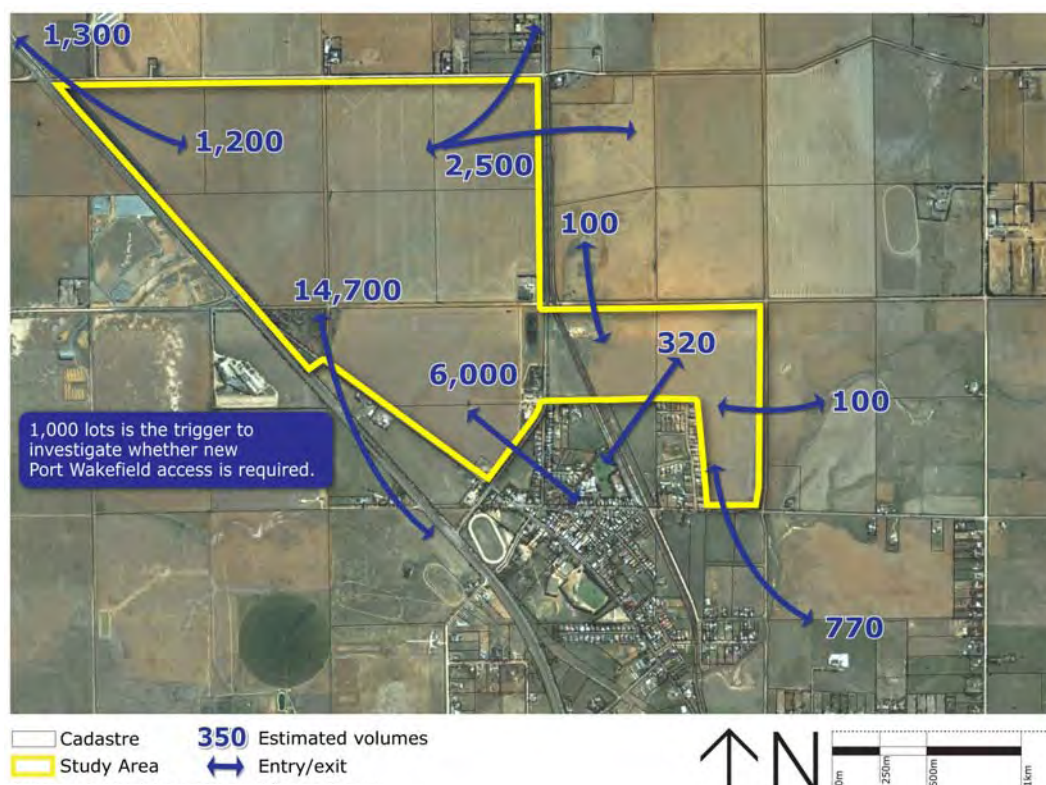
A preliminary traffic generation and distribution assessment based on the indicative dwelling yields and other potential land uses within the Study Area has identified the following:

- based on the high case dwelling yield scenario and adopting the forecast rate of 7.5 trips per dwelling per day utilised in the Playford North/Blakeview DPA assessments, development of the Study Area will result in peak hour volumes of approximately 2,500 vehicles per hour (vph) generated by the western portion of land;
- the expansion of the retail area and services within the town centre will generate a traffic volume of nine trips per 100 m² (810 trips) during the pm commuter peak and 1.5 trips per 100 m² (135 trips) during the am commuter peak;
- approximately 40% of the retail related traffic will be generated to/from Port Wakefield Road, with 85% being from and 15% to Port Wakefield Road in the am peak and an approximate equal split in the pm peak; and
- the school will generate approximately 550 trips during the am and pm commuter peak, based on 400 students.

Figure 6.6 illustrates the estimated forecast daily traffic volumes.

Modelling has determined that the existing intersection of Port Wakefield Road/Mallala–Two Wells Road would not be able to accommodate the future traffic volumes. DPTI have indicated that its preference would be to pursue an alternative access to the Area Affected Modeling has determined that a new intersection to Port Wakefield Road would be required when approximately 1000 dwellings are developed in the western area.

Figure 6.6: Estimated forecast traffic volumes from western and eastern portions

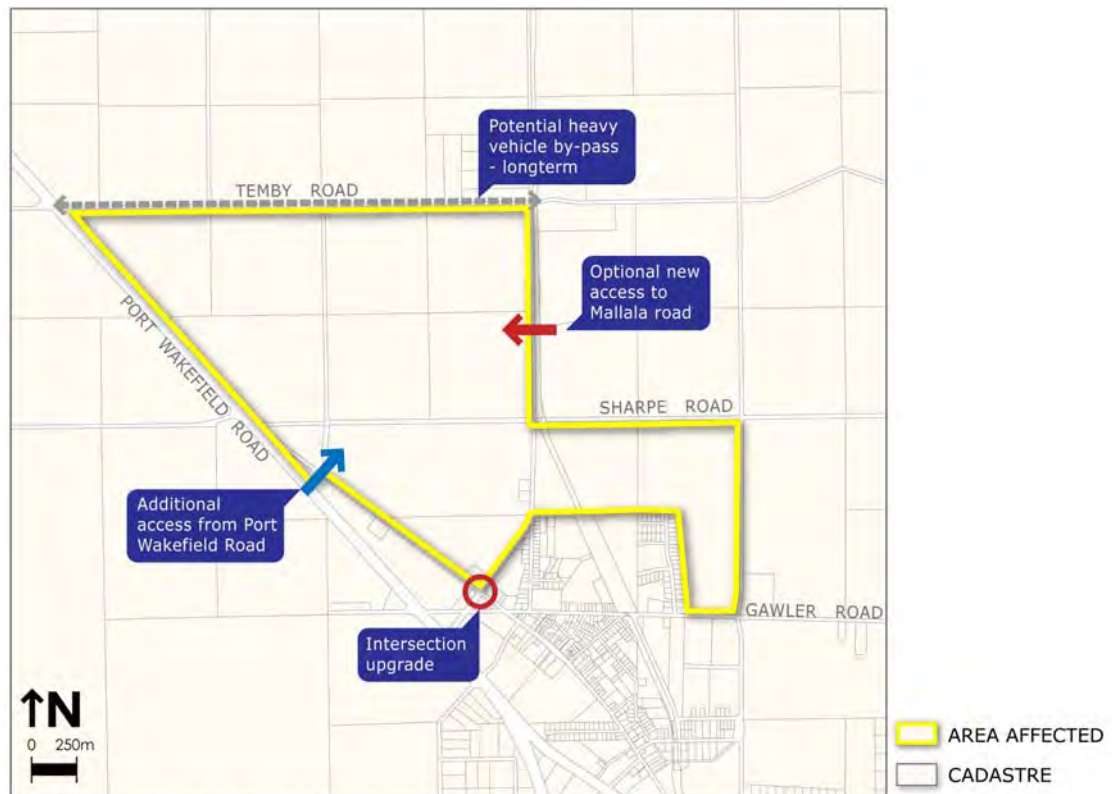


Source: Derived from MFY Report

6.7.3 Recommended Traffic Infrastructure Upgrades

The traffic infrastructure upgrades that are identified in Murray F. Young’s report are shown in Figure 6.7.

Figure 6.7: Recommended Traffic Infrastructure Upgrades



Source: Derived from MFY Report

6.7.3.1 Additional Access from Port Wakefield Road

Murray F. Young’s report identified the need for an additional access from Port Wakefield Road. This need will be generated when approximately 1000 dwellings are established in the western portion of the Study Area.

DPTI is prepared to consider options for access to serve Two Wells, however any access arrangements will need to reflect the strategic nature of Port Wakefield Road and the need to preserve its function, safety and capacity.

DPTI’s preference would be to pursue an additional access from Port Wakefield Road to the subject land in lieu of necessitating signalisation of the Port Wakefield/Mallala-Two Wells intersection. The installation of a second access could be staged to only be required following development of a portion of the subject site.

Murray F Young & Associates advise that the new intersection should be located at the existing Warren Road intersection with Port Wakefield Road. Further, they note that while this road is currently unmade, it is established road reserve and is located at an appropriate separation point from the existing access.

Murray F Young & Associates consider that it would be appropriate to assess the operation of the Mallala-Two-Wells Road/Port Wakefield Road intersection when approximately 1000 dwellings have been developed on the subject site to ascertain appropriate timing for the construction of the Warren Road/Port Wakefield Road intersection.

6.7.3.2 Linking the New Development to the Existing Township

There will be a need for improvements to the Mallala–Two Wells Road/Old Port Wakefield Road intersection to provide a direct link to the town centre. Alternative access via Sharpe Road would provide limited benefit to the development but could be considered, particularly as an emergency egress route. Should this access be provided, Sharpe Road should be sealed.

6.7.3.3 Heavy Vehicle By-pass

Further consideration of an additional by-pass route between Port Wakefield Road and the Mallala-Two Wells Road is warranted, as this would provide another route to reduce the existing volumes of traffic bisecting Two Wells (all vehicles other than those using Gawler Road could then by-pass the township without significantly altering their travel route).

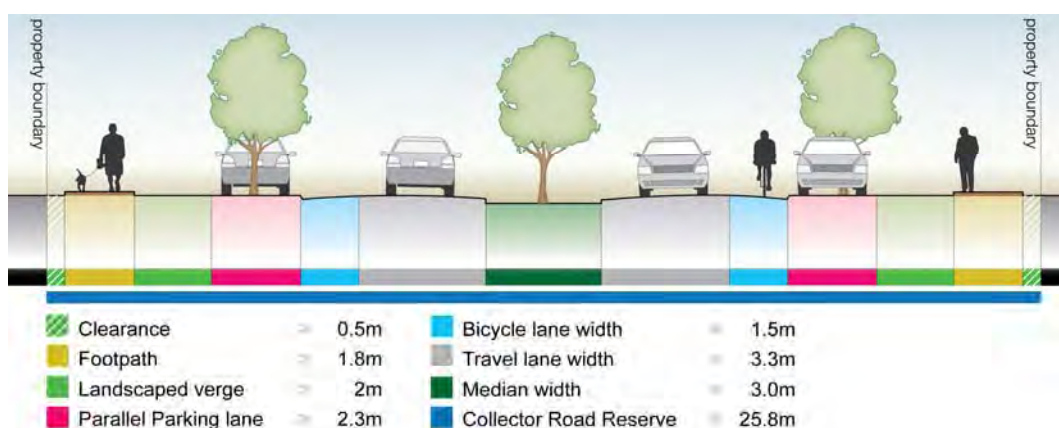
6.7.4 Road Configuration

The Traffic Report recommends that the Concept Plan should adopt the following road hierarchy:

- a major collector road which could accommodate up to 6,000 vpd and in the case of the western area, provide efficient access between Mallala–Two Wells Road and the residential road network and to the residential area via Port Wakefield Road;
- minor collector roads which could accommodate in the order of 3,000 vpd and which would provide access between the major collector and the residential streets; and
- residential streets which could have a series of hierarchy levels between a short culs-de-sac and longer streets but could accommodate between 100 vpd and 2,000 vpd. Rear access lanes could also be considered.

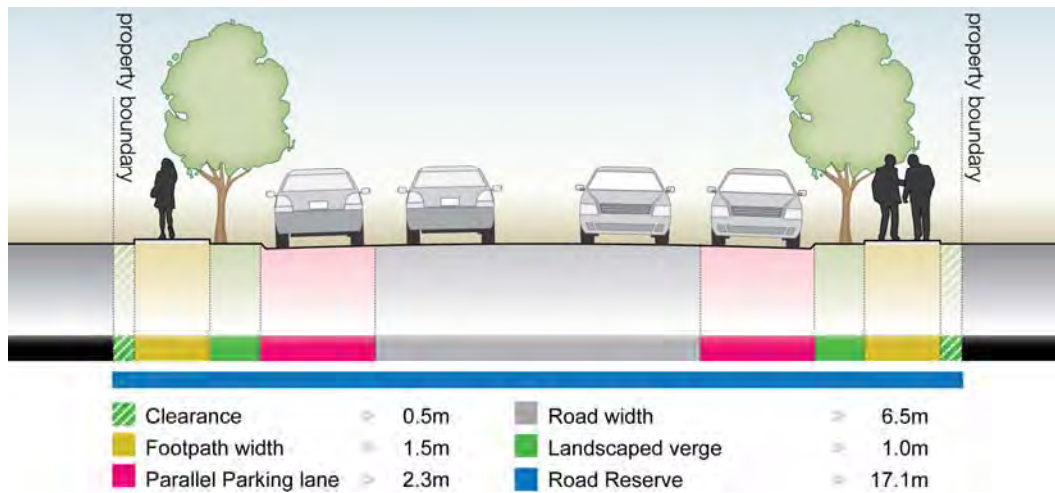
Figures 6.8, 6.9 and 6.10 illustrate concept cross sections for the above road types.

Figure 6.8: Concept cross section for major collector road



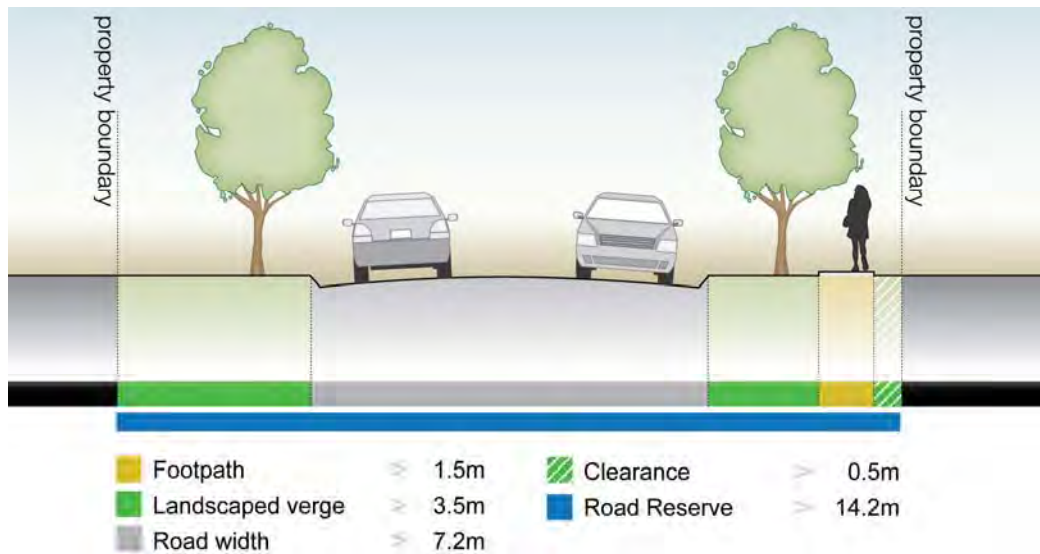
Source: CH/MFY

Figure 6.9: Concept cross section for minor collector road



Source: CH/MFY

Figure 6.10: Concept cross section for residential street



Source: CH/MFY

6.7.5 Public Transport/Pedestrians/Cyclists

6.7.5.1 Public Transport

Increasing the population of Two Wells provides opportunity for public transportation strategies to be reviewed over time, particularly as the viability for such a service increases. In the interim, it is proposed to progressively enhance the existing community bus service.

In respect to traffic engineering requirements, the major collector roads and new intersection should be designed to accommodate a future bus route, albeit such a route is yet to be confirmed.

6.7.5.2 Pedestrians and Cyclists

The major collector road between the western site and the town centre should be designed to facilitate pedestrian access, according to the primary pedestrian desire line.

A crossing facility should be provided on Mallala–Two Wells Road along the pedestrian desire line, in close proximity to the Old Port Wakefield Road/Mallala–Two Wells Road intersection.

Consideration should also be given to the need for cyclist facilities along the major desire lines between the subject sites and the town centre, particularly at the crossing points.

6.8 Physical Infrastructure Capability

Herriot Consulting have undertaken a comprehensive review of physical infrastructure in respect to the Two Wells Growth Area, as outlined by the *Two Wells Township Expansion Master Plan Investigations Preliminary Services Assessment*.

A separate Development Deed based on detailed negotiations between the Council and the Hickinbotham Group will detail who will be responsible for providing and funding each of the physical infrastructure components.

6.8.1 Potable Water

6.8.1.1 Existing System

Two Wells is serviced by the SA Water mains network which is served by the Barossa Water Treatment Plant (BWTP). However in order to meet the demand of an additional 2800-3600 dwellings, major new infrastructure works and upgrades of the existing mains would be required.

6.8.1.2 Servicing Options

SA Water has advised that Two Wells is subject to an augmentation charge of \$1,203 per allotment. It is possible that the augmentation charge would be reviewed to cover the cost of infrastructure to increase the capacity of the water network to provide adequate supply to the Study Area.

In addition to SA Water, the option exists to utilise non-potable recycled wastewater for open space area irrigation.

This option is discussed in further detail in Section 6.8.2.

6.8.2 Wastewater

6.8.2.1 Existing System

SA Water does not currently provide wastewater services to the Two Wells township. In order to meet the demand of an additional 2800-3600 dwellings, major new infrastructure works would be required.

6.8.2.2 Servicing Options

Mr David Potter has investigated wastewater system options in respect to the study area. The findings and recommendations are contained in the *Two Wells Development Wastewater System Overview*.

Mr Potter has recommended the discharge of raw sewerage into gravity sewer collection drains with pumping stations and pumping mains for delivery to the treatment works. This option is seen as more cost effective than on-site soakage or aerobic treatment/irrigation which require large allotments.

6.8.2.3 Wastewater Treatment System

As is noted Mr Potters report, localised wastewater treatment and distribution of reclaimed water is a well established practice supported by regulations and guidelines, and offers an alternative to traditional methods.

Several options for treatment exist in the study area and are summarised as follows:

1. Lagoon system;
2. Construct a new mechanised/biological treatment system within the Two Wells development area capable of treating the wastewater to an appropriate class commensurate with the preferred disposal path; and
3. Collaborate with SA Water.

A mechanised/biological plant based on intermittent extended aeration is the solution recommended by David Potter.

According to Mr Potter, the combined Equivalent Persons (EP) for future township and development projections is 13,970 EP. For planning purposes a 15,000 EP plant is recommended, would occupy a site of 2.7 ha in area.

Mr Potter advises that a mechanised/biological treatment plant serving a population between 5,000 and 15,000 persons requires a separation distance of 300m (EPA "Guidelines for Separation Distances" 2007).

A treatment plant can be built in stages and upsized as the population and demands increase, a key benefit in ensuring the orderly, economic and sustainable delivery of wastewater infrastructure.

SA Water has been consulted, with two alternate options considered for the offsite treatment of sewerage. One option is for the Two Wells township and development area to direct sewerage to Bolivar for treatment, with the recycled water returned to the development area. The other option would be for SA Water to construct a new wastewater treatment plant between Virginia and Angle Vale, in order to collect and treat sewerage from all other growth areas in the region, such as Buckland Park, Virginia and Gawler.

6.8.2.4 Reclaimed Water Uses

Several options are available for the satisfactory use of the treated wastewater (reclaimed water). They are:

1. Non-commercial application to the land on a continuous basis with only small emergency storage;
2. Application to land for agricultural and horticultural commercial uses with winter storage to maximise use in the summer months;

3. Application to public reserves and recreational uses (night watering) with winter storage to maximise use in the summer months;
4. Application to public reserves and recreational uses (watering anytime) with winter storage to maximise use in the summer months; and
5. Delivery of reclaimed water to households for the use in toilet flushing and garden watering through a "Third Pipe System".

The best solution is likely to be one that grows and changes during the development.

In order to verify a possible option for the reuse of reclaimed water, a wastewater/stormwater reuse water balance assessment was undertaken by AWE.

The analysis indicated that the reuse of treated wastewater for irrigation of open space areas, a surplus volume of 300 ML/a would be generated, which would require a winter storage volume of 250 ML/a. This surplus water could either be supplied to a third party or form part of an internal third pipe scheme (ie facilitating toilet flushing and garden watering for portion of the development).

In addition to irrigating public spaces with reclaimed water, consideration is being given to the reticulation of reclaimed water for residential non-potable uses via a third-pipe system to either all or portion of the development according to its availability.

6.8.3 Stormwater/Flood Management

The *Flood Mitigation and Water Balance Assessment*, prepared by AWE identifies how stormwater and flood waters can be managed within the Study Area.

A number of alternative options were investigated, with three primary strategies identified. These being:

- a flood protection levee around the east and south of Two Wells, to protect both the existing town and the designated growth areas;
- the construction of a diversion channel north of Two Wells; and
- the implementation of non-structural measures such as flood warning, flood preparedness and planning controls.

Figure 6.11 shows the spatial location of the proposed levee.

Figure 6.11 Location of Proposed Levee and Flood Diversion Channels



Source: CH/AWE

Figure 6.11 also shows the spatial location of the proposed flood diversion channels (swales). The main swale follows the alignment of Temby Road and Port Wakefield Road. A central diversion swale is also proposed providing outflow further south on Port Wakefield Road.

In terms of stormwater treatment, four primary wetland systems, totalling approximately 10.5 ha in area have been recommended in the southern portion of the Study Area.

In relation to stormwater reuse, the aquifer system at Two Wells generates bore yields of sufficient volume for the development of a viable stormwater harvesting and reuse scheme.

Notwithstanding the recommended establishment of certain flood management measures, the nature of flood risk in the locality is such that the Development Plan should ideally reiterate the need for dwellings and habitable buildings to be established above the 1:100 ARI level.

6.8.4 Telecommunications

NBN Co has indicated that Two Wells is located outside of the fibre footprint. Applications would be required for Two Wells to be included in any future broadband rollout.

6.8.5 Gas

6.8.5.1 Existing System

Presently there is no gas infrastructure servicing Two Wells or the Study Area.

6.8.5.2 Service Options

The APA Group have advised that the potential exists to extend the existing gas main from Virginia in order to service Two Wells. The main issue associated with this is cost and the need to negotiate cost sharing.

6.8.6 Electricity

6.8.6.1 Existing Systems

Two Wells is currently supplied by 11kV high voltage mains and a regulator station near Old Port Wakefield Road and Port Gawler Road.

The estimated electrical load increases of approximately 2800 to 3600 residences cannot be catered for by existing substation infrastructure.

6.8.6.2 Servicing Options

ETSA advise that the proposed development of Two Wells will ultimately require one new Distribution Substation (66/11kV) (of nominal size 100m x 100m) to be supplied from a new and upgraded 66kV overhead line extension (requiring a 26 metre wide easement corridor, or less if line is on a road corridor) from the upgraded Virginia Substation (66/11kV). This will require converting the existing 132kV line to 66kV.

According to Herriot Consulting, the preferred location for the new substation would be the corner of Sharpe Road and Mallala Road, which is generally central to the load requirements.

Normal 11kV underground street distribution network supplying end customers will radiate out from these new substations progressively as the stages of the development are established.

6.9 Economic Development and Employment

The economic outcomes from investment in the township expansion of both infrastructure and housing relate to both local community benefits (direct employment) in addition to multiplier effects that benefit local, state and national economies.

The *Economic Impact Assessment* estimates that the construction of infrastructure and housing associated with the Two Wells project would directly and indirectly (i.e. including the flow-through multiplier impact) provide an annual average of 471 FTE jobs over 18 years.

Research suggests that retail, manufacturing and health would provide the greatest employment opportunities as Two Wells expands. New and expanded facilities could be expected in supermarkets, general retail and health clinics.

The township expansion would also provide opportunities for new employment in the area which could be stimulated by other surrounding industry development and infrastructure projects broad regional job estimates including, for example:

- *The Edinburgh Defence Precinct (located within Edinburgh Parks)* – the largest industrial park in South Australia. It is situated about 16 kilometres south east of Two Wells and 25 kilometres north of Adelaide's CBD. The precinct is home to some of the state's major Defence facilities – the Defence Science and Technology Organisation, RAAF Base Edinburgh and from 2011, Army's 1,200 person 7RAR Battle Group. Edinburgh Defence Precinct is set to become one of Australia's only 'super bases' – with space reserved for further expansion;

- *Proposed Buckland Park Residential Development* – Approximately 12 kilometres south of Two Wells and about 32 km north of the Adelaide’s city centre, on Port Wakefield Road. It’s a large site of approximately 1,340 hectares, and is 6 kilometres across and the development is planned to include:
 - residential areas for up to 12,000 new houses built slowly over 25 years, until 2036;
 - neighbourhood centres for shops, community facilities, primary schools and high schools;
 - a District Centre on Port Wakefield Road, for shops, offices and government services that may be needed, like police, ambulance and fire brigade. The District Centre won’t be built for another 12 or 13 years;
 - industrial areas for business and industry;
 - open space for landscaping, bikeways, walking trails, ovals and protecting native plants and animals. Some of the open space will also be used for storm and flood water channels and basins, and wetlands;
 - 2,000 jobs p.a. during construction; and
 - 25,000 jobs p.a. when fully operational.
- *D’Vine Ripe Greenhouse Project* - operates an 8 ha glasshouse at Two Wells, producing 4.5 million kilograms of truss and small specialty tomatoes in 2009-10. The success of the stage 1 hydroponic farm has encouraged its owners, the Victor Smorgon Group and Perfection Fresh Australia to invest in a stage 2 expansion, building a new 9 ha glasshouse alongside the existing one. When phase 2 is operational, the total production of 10,000 tonnes of tomatoes a year will be worth close to \$40 million. The glasshouse utilises the latest in greenhouse technology, maintaining the highest efficiency in temperature and moisture control and recirculation;
- *Wakefield Waters* - a residential marina complex proposed for Port Wakefield. The proposal includes:
 - 2,700 homes for up to 7,000 people;
 - 500 jobs p.a. during construction;
 - 6,000 jobs p.a. when fully operational;
 - a 200 berth marina;
 - a commercial precinct with a function centre, retail outlets, medical -centre, tavern, tourist accommodation and commercial.
- *The Northern Connector* - proposed road and rail corridor to join the new Northern Expressway to the Port River Expressway and to South Road, making a fast and efficient rail, freight and commuter link to and from the northern region.

It is also well placed as a potential source of labour for the developing industries of advanced manufacturing, cleantech and knowledge intensive industries.

Two Wells’ position as an historic town could also see its development as a short term tourism base for other surrounding tourism developments.

Total investment in the Two Wells project is estimated be \$677 million (\$2011) with a total project value (investment into the economy) being \$1.225 billion. A total of 471 annual construction jobs are anticipated over 18 years. Employment generation (direct and indirect) is expected to be 7,500 FTE jobs (over the life of the project).

Two Wells is therefore well positioned to prosper from existing and planned regional developments as well as generating new employment opportunities associated with its own residential development.

6.10 Cultural Heritage

The Adelaide Plains Region is an area associated with the Kurna People. The name Two Wells refers to two Aboriginal wells, found in the area around 1839 and suggests a resource rich area for the hunter gatherers occupying the landscape prior to pastoral settlement. Accordingly a desk top assessment of cultural heritage was undertaken by Dr Keryn Walshe (*Two Wells Master Plan Investigation: Aboriginal Heritage 2011*).

In this report, Walshe identifies that stone tool scatters, culturally modified trees and burial sites have recently been identified along highly eroded watercourses and in cultivated paddocks in the Gawler River region [approximately 4-5 km south of the study area] (Wood 2004). Thus it is possible that sites and objects are still evident along a highly modified and minor water course such as Salt Creek, which touches the south east portion of the study area.

Whilst a desk-top assessment of archaeological/Aboriginal heritage databases and registers did not reveal any sites or objects in the study area, Wlashe considers the potential for locating unrecorded sites in the study area to be:

- highly likely for unrecorded stone tools;
- highly unlikely for culturally modified trees; and
- possible for skeletal remains.

Prior to construction works commencing on any level an archaeologist should be engaged to undertake an Aboriginal heritage field survey. If this survey identifies an Aboriginal site or test pitting identifies a burial, then an application under section 23 of the Aboriginal Heritage Act 1988 will need to be made to the Minister for Aboriginal Affairs and Reconciliation to disturb or destroy the finds.

6.11 Environment

6.11.1 Environmental Site Analysis

A high level environmental site history overview has been undertaken by TMK Consulting Engineers. From this review, farming (broadacre cropping and grazing) and market gardening uses were identified as activities of interest. The types of land use and subsequent development is relatively well understood in terms of the likely chemicals of interest and assessment methodologies.

Areas of environmental interest include two underground fuel storage tanks, chemical storage, three areas of possible waste disposal and general chemical use across the site and areas where localised filling may have occurred.

TMK consider that the suitability of the agricultural portions of the land for residential use should be achieved with readily available techniques and methods, as part of site works, in accordance with normal environmental planning and development controls.

Provided that these issues are addressed, TMK considers the risk of significant or gross soil and/or groundwater contamination across the whole site that would be likely to preclude the use of the Study Area for the proposed residential development to be low.

Advice dated 28 November 2011 states:

We understand that, should the land be rezoned, development will be undertaken in stages over a timeframe of potentially up to 33 years. Because there were no issues reported that were considered to be wide ranging across the entirety of the site, it will be inefficient – and perhaps ineffective – to deal with each of the aspects outlined in the site history report “upfront” as a pre-requisite to rezoning. In our view, a staged resolution of the issues, undertaken as each stage is development, will be the most effective approach.

I reiterate my findings that the risk of any ‘contamination’ existing on the site that would preclude development for residential purposes is low. On this basis, and on the basis of the intent to develop the land in stages over a potentially long timeframe, it is our advice that the issues reported can be readily addressed at the land division stage – both in terms of the physical work and also the mechanisms that are in place for the land division process to capture and address the potential for site contamination.

Based on our previous experience with many similar rezoning/DPA/PAR assessments, there is no reason to conduct further investigations as a prerequisite to rezoning. Indeed, given the potentially long staging timeframe and the intent that the land remain in agricultural use pending development, circumstances on the site may well have changed significantly by the time the last stages are developed – in other words, undertaking detailed investigations now may not preclude risks emerging in the timeframe between rezoning and development.

It is considered that these issues can be readily addressed as part of site works moving forward and in accordance with normal environmental planning and development controls.

It is understood that DPTI is satisfied that this level of contamination risk can be dealt with at the land division stage, with the Development Plan policies providing guidance in respect to this process.

6.11.2 Noise

Sonus was engaged to undertake an assessment of the potential for noise impact to the Study Area. The following key noise sources were identified:

- road traffic associated with Port Wakefield Road;
- rail traffic on the existing (Adelaide to Darwin/Perth) freight rail line;
- existing industry and primary industry in the vicinity of the Study Area; and
- future industrial land use in the Industry (Two Wells) Zone.

Sonus identified that a number of design features are included within the Hickinbotham Group concept plan to reduce the noise impacts of Port Wakefield Road and the freight rail corridor, including a 150m wide swale that acts as a noise buffer zone and a 30m wide separation between the rail corridor and the nearest proposed dwellings.

The Sonus assessment determines the need for supplementary acoustic treatment in addition to the buffers provided.

6.11.2.1 Road Traffic Noise

The Draft Minister’s Specification SA8 “Construction Requirements for the control of external sound” (SA8) dated August 2011 aims to “protect the occupants of (residential) buildings from the impact of existing or future road and rail sound”.

SA8 specifies acoustic treatment requirements for dwellings based on the type of road and the distance from that road.

The classification of the type of road under SA8 is based on traffic flows. A "Type A" road is understood to be a road carrying more than 15,000 vehicles per day. The relevant sector of Port Wakefield Road carries a 24 hour 2 way traffic flow in the order of 10,000 vehicles per day¹, which is taken to correlate with the "Type B" classification.

SA8 also provides the "road sound source levels" for each type of road at a distance of 10m, and a noise level measurement conducted at 10m from the road corridor in the vicinity of the site is consistent with the Type B classification.

Under a Type B classification, there is no requirement for specific acoustic treatment to dwellings due to the significant buffer distance provided by the 150m wide swale.

That is, a mound, barrier or treatment to the dwellings such as upgraded glazing, walls or ceilings is not required in this circumstance due to the type of road and the distance between that road and the proposed dwellings.

6.11.2.2 Rail Traffic Noise

The Draft Minister's Specification SA8 "Construction Requirements for the control of external sound" (SA8) dated August 2011 aims to "protect the occupants of (residential) buildings from the impact of existing or future road and rail sound".

SA8 specifies acoustic treatment requirements for dwellings based on the type of rail corridor and the distance from that corridor.

The type of rail corridor is not specified in SA8, but is understood to relate to a line carrying both passenger and freight traffic. Due to the heavy freight content of the corridor, detailed noise monitoring has been conducted to determine the extent of acoustic treatment required under SA8.

Based on the measurements, the following acoustic treatment is recommended:

1. Maintain a separation distance of 30m from the rail corridor in lieu of a trackside mound or barrier alongside the corridor;
2. Implement acoustic treatment to the first row of dwellings based on the requirements of SA8.

The acoustic treatments will vary under SA8 according to the individual dwelling designs, however, the general acoustic treatment provisions are likely to comprise:

- slab on ground or specific lightweight elevated construction made from multiple layers of flooring and sheeting between the ground and the floor;
- an upgraded external wall comprising masonry outer layer and an internal lightweight layer of particular construction with acoustic insulation between the wall layers;
- an upgraded ceiling construction in the habitable rooms with specific acoustic insulation above;
- upgraded glazing construction depending on the area of glazing;
- the use of solid core doors with rubber seals.

6.11.2.3 Primary Industry Land Use Interface

The two important considerations associated with the noise from existing land uses are to:

- ensure a reasonable level of amenity is experienced at future residences; and
- protect the existing land uses from future complaints.

The separation distances between the Study Area and existing intensive activity is likely to achieve the requirements of the Environment Protection (Noise) Policy (2007). However, minor acoustic treatment (such as boundary fences or upgraded glazing) might be necessary in some areas.

The EPA identified that this proposal will introduce residential development in close proximity to the EPA licensed crushing, grinding and milling activities of Ausbulk Ltd, which may have noise and air quality impacts that would need to be appropriately managed. The EPA's *Guidelines for separation distances* (2007) recommends a separation of 300 metres from the activities that take place at Ausbulk, as shown in Figure 6.13.

Another EPA licenced facility – Greenwheat Freekeh Pty Ltd – currently operates within the Study Area. This is a produce processing works for which the EPA recommends a 150 metre separation distance.

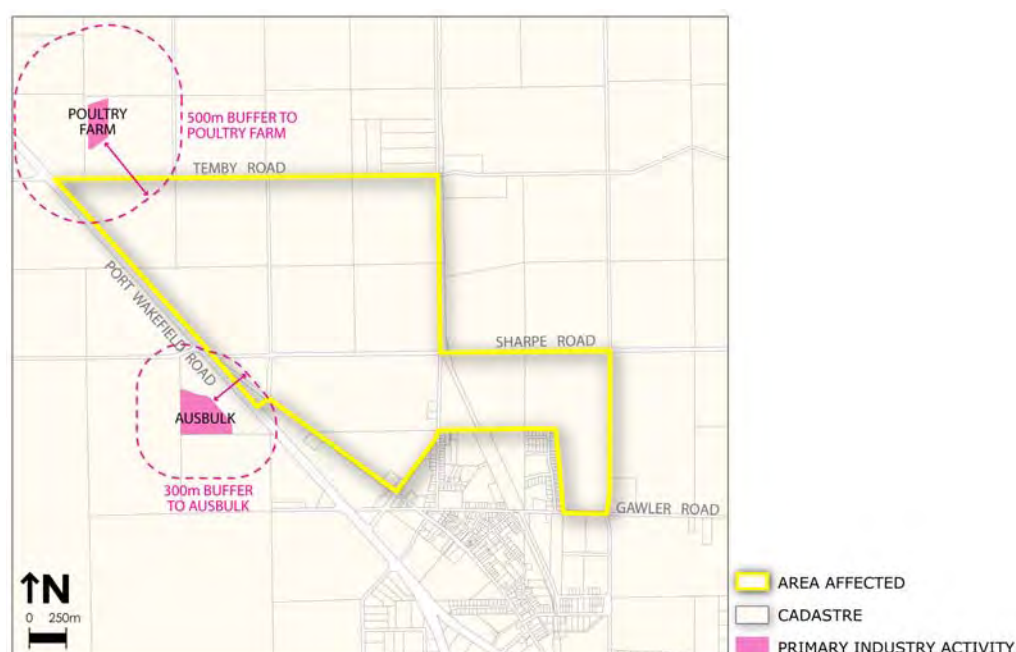
The Hickinbotham Group has an option over this land and the facility will cease to operate upon exercising of the option. In the event that the land is not acquired by the Hickinbotham Group then the Development Plan will require policy to ensure that appropriate separation distances are applied.

There is also a poultry farm just outside the north western corner of the Study Area. Council Wide Principle of Development Control 234 of the DC Mallala Development Plan states that there must be 500 metres between any dwelling (not occupied by a person involved with the intensive animal keeping activity) and the area used for intensive animal keeping (including poultry battery).

Accordingly, the development will need to consider land use in the north western corner, which is within the 500 metre radius of the poultry farm (shown in Figure 6.13).

Rural Interface Issues have been discussed in Section 6.3.1 and recommended buffers to agricultural land are illustrated in Figure 6.3 above.

Figure 6.13: Separation Distances to Specific Primary Industry Activities



6.11.2.4 Future Development of the Industry (Two Wells) Zone

That portion of the Industry (Two Wells) Zone located east of Old Port Wakefield Road is recommended for rezoning for residential purposes, with Old Port Wakefield Road to become the boundary and buffer between residential land to the east and industrial land to the west.

It is recommended that suitable provision be made to contain noise along the Old Port Wakefield Road boundary to the Industry (Two Wells) Zone. Sonus recommend the following treatments for the first row of dwellings closest to Old Port Wakefield Road:

Either:

1. A berm:

- Construction of a noise barrier along the Old Port Wakefield Road frontage. The barrier should be at least 2.5m in height and may be constructed from any combination of earth mound and Colorbond fence. For example, a 1.8m high Colorbond fence constructed on a 700mm earth mound.

Or

2. Dwelling façade upgrades:

- Upgrade of any glazing in the façade facing Old Port Wakefield Road to 10mm thick laminated glass;
- Provision of acoustic seals to any glazing that provide an airtight seal when closed;
- Inclusion of 50mm thick polyester insulation with a minimum density of 32kg/m³ above the ceilings of habitable rooms (living areas and bedrooms);
- Inclusion of 13mm thick fire rated plasterboard for the ceilings of habitable rooms (living areas and bedrooms).

With either of these measures in place, or a combination thereof, suitable provision will be made for future industrial land use to contain noise to the relevant goal noise levels of the *Environment Protection (Noise) Policy*, which can be achieved outside with the construction of a mound, or inside a dwelling in the case of façade treatment.

6.11.3 Vegetation, Habitat and Biodiversity

The Report regarding the remnant original vegetation prepared by Environmental Regeneration Australia identifies that there is little that remains of the original local-native vegetation in the Study Area. The remnant vegetation that does occur is most evident along Gawler, Secomb, Temby and the eastern portion of Sharpe Roads, and the southern extension of the Warren Road reserve (shown in Figure 6.14). Although, as the drainage lines and the dam are clearly artificial, the vegetation along Gawler Road and the junction with Secomb Road do not constitute a truly natural remnant environment.

However, because of the extensive clearance undertaken historically in the Study Area, in relative terms, any remnant vegetation must be viewed as having some biodiversity significance.

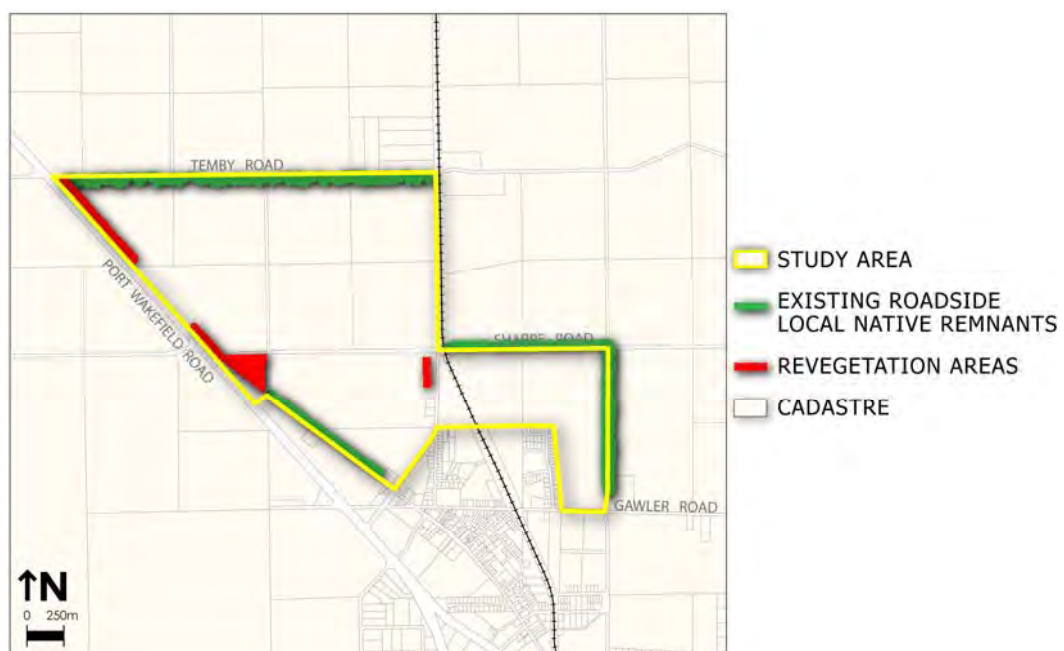
There has been significant revegetation work undertaken in three main sections of the western portion of the Study Area (shown in Figure 6.14). In particular, the strip that runs along Old Port Wakefield Road forms an excellent buffer to the 4.5 hectare Sharpe-Warren Road Triangle reserve.

Environmental Regeneration Australia (ERA) considers that the impact of urban development on any existing remnant/local-native vegetation could be minimal, if managed appropriately. Further, a well-managed development presents opportunities to enhance the condition of those remnant plant communities that do exist.

The report recommends that the areas of local-native vegetation (shown in Figure 6.14) be retained and enhanced as a core component for any biodiversity enhancement and infill revegetation program, as they represent an excellent seed resource. Detailed design will need to consider the interaction between vegetation retention and stormwater management, with a flexible approach needed to balance the need to address flood management. Option exists to replant vegetation in alternate locations (using local native seed) if required.

The report notes that there is a native grassland in the Station Road/rail reserve that merits appropriate protection during construction.

Figure 6.14: Existing Native Vegetation



Source: ERA

7. CONCEPT PLAN CONSIDERATIONS

7.1 Context

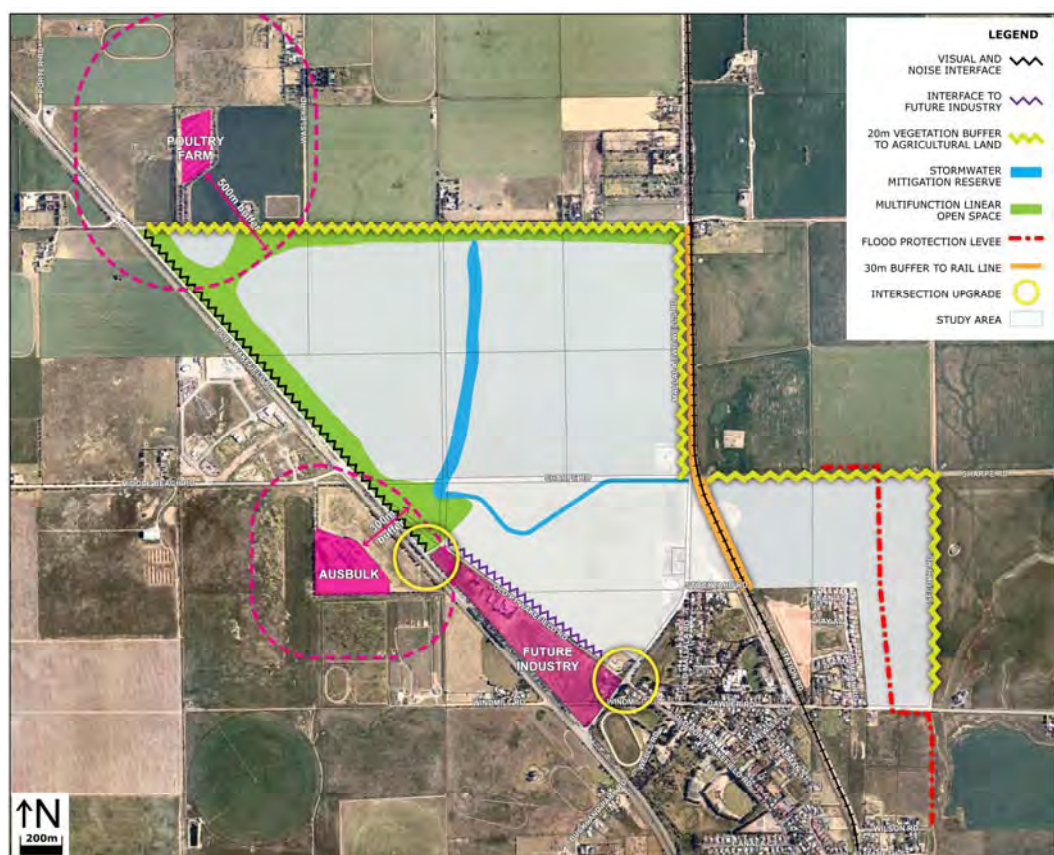
The Two Wells Growth Area forms a logical extension to the existing Two Wells township. It is important that the development of the Two Wells Growth Area operates as a complementary extension to the existing township, maintaining a sense of identity and providing services and facilities to support a high quality of life for future residents.

The investigations undertaken in relation to the Study Area have revealed a number of key considerations and influencing factors that the concept plan will need to address. These issues are mapped in Figure 7.1 (A3 version in Appendix 3) and are summarised below:

- **500 m buffer to poultry farm:**
 - to protect the existing land uses from future complaints and ensure a reasonable level of amenity for future residents; and
 - excluding sensitive land uses within a 13.89 ha area in the north western corner of the site.
- **300 m buffer to Ausbulk:**
 - to minimise noise and air quality impacts; and
 - excluding sensitive land uses midway along Port Wakefield Road, within a 4.23 ha area.
- **Potential visual and noise barrier to Port Wakefield Road:**
 - to enhance the amenity of major outdoor living spaces; and
 - in addition to maintaining the existing vegetation buffer.
- **30 m buffer to rail line:**
 - from the centre of rail line to property boundary;
 - to minimise noise and vibration impacts; and
 - can include rear gardens of residential property.
- **20 m dense vegetation buffer to agricultural land:**
 - using suitably selected species that will create vegetation layers;
 - to act as a visual screen and minimise noise and air-borne particulates; and
 - to create a significant wild life corridor and enhance biodiversity.
- **Buffer/attenuation to future industry along Old Port Wakefield Road:**
 - restriction of the first row of dwellings to single storey.
- **Storm water mitigation reserves:**
 - to mitigate flooding to built-up areas by channelling the on-site flows to the boundaries along Temby Road and Port Wakefield Road and two internal channels; and
 - multi-functional as linear open space and agricultural buffer.

- **Levee bank:**
 - to mitigate flooding to built-up areas;
- **Upgrades to roads/junctions:**
 - an additional access point at the intersection of Warren Road and Port Wakefield Road in order to maximise distribution between the two access points;
 - to facilitate strong linkage between the new development and the existing township, there will be a need for improvements to the Mallala-Two Wells Road/Old Port Wakefield Road intersection.

Figure 7.1: Concept Plan Considerations



Further issues that the concept plan will need to consider, but which do not involve prescribed locations are:

- **setting aside land for a wastewater treatment plant**
 - including a 300 m buffer to reduce odour, noise and visual impacts.
- **setting aside land for open space**
 - playing fields, that are potentially shared with the proposed school
 - neighbourhood parks;
 - linear walking and cycling trails; and
 - linkages within the Study Area and to the Two Wells township.

- ***setting aside land for an activity hub***
 - centrally located, so accessible to the greatest number of future residents as possible;
 - comprising of key social/community infrastructure, including an R-12 school, child care services, dentists, doctors, Centrelink, aged care services; and
 - does not require specific zoning.
- ***road profile***
 - promote walking/cycling; and
 - stormwater management / treatment function (WSUD).
- ***housing form and density***
 - variety of housing forms; and
 - higher density adjacent open space.

7.2 Opportunities

The investigations have highlighted that expansion of Two Wells into the Study Area will present opportunities and benefits in terms of:

- promoting certainty and continuity in achieving master planned outcomes over the long term;
- opening up additional sources of land supply to compensate for the indefinite deferral of other key growth areas (and uncertainty about the timing and yield of other areas);
- supporting the provision of housing choice by enhancing the yield of the Barossa Region's only major township growth opportunity;
- minimising the costs of new infrastructure and services to the new growth area by adjoining existing infrastructure;
- creating a sustainable community with an expanded rate base to support a growing council;
- facilitating catchment thresholds that will justify an enhanced range and quality of future urban infrastructure and services;
- addressing pressing flood management issues;
- in addition to its storm water management function, open space plays an important buffering, recreation, place making, way finding and linkage roles;
- shared use facilities between the community and a new school;
- Water Sensitive Urban Design has the potential to achieve multiple objectives such as water quality and conservation, flood management and enhanced amenity, as well as the protection of biodiversity and ecosystem integrity;
- providing for inter-generational transfer of social capital as new residents contribute to and enjoy the benefits of the assets and services of a larger community and the older established residents have the opportunity to age more comfortably in-situ or in more appropriate accommodation than is currently available; and
- removing weeds and replacing them with native species, thereby improving the overall biodiversity of the area and amenity value.

7.3 Constraints

7.3.1 Interfaces between Sensitive Land Uses

Noise

The investigations show that there will be noise impacts from several sources that will need to be managed. These sources include:

- traffic movements along Port Wakefield Road;
- the Adelaide to Darwin/Perth rail corridor;
- electricity substation interface; and
- farm machinery.

The investigations have determined that a combination of separation distances to particular noise sources and the incorporation of acoustic attenuations to future dwellings can successfully manage the issue of noise.

Odour, Smoke, Dust and Chemical Spray-drift

The investigations show that there is the potential for impacts from the following sources:

- vehicle emissions;
- potential wastewater treatment plant;
- agricultural land type uses; and
- EPA licensed activities.

An appropriate combination of separation distances to sources of air pollution, and design treatments, such as vegetated buffers, have been identified in the investigations to mitigate the impacts of air pollution on future residents.

7.3.2 Flood Risk and Stormwater Management

At present, the risk of flooding is significant, however there are a range of suitable options available for managing on-site flows. The preferred options include an intercept swale along Temby Road and filling lower lying allotments in the eastern portion of the Study Area.

7.3.3 Transport

Based on the predicted traffic volumes for the key roads in the network of the Study Area, a range of upgrading requirements have been developed to cater for predicted demands and users. Where critical these have been shown on the Concept Plan.

7.3.4 Open Space

Open space will be required to accommodate much of the water sensitive urban design outcomes which are intended to form a key element of the stormwater management strategy.

In addition to the dual-function buffer areas and linear open space, neighbourhood parks are also sought within the Study Area.

7.3.5 Infrastructure Provision

Augmentation will be required in order to supply adequate infrastructure. Whilst the specific funding responsibilities have not yet been agreed, a Development Deed will ultimately resolve this matter. Importantly, the investigations have determined that the Study Area can be economically serviced.

7.4 Urban Design/Community Engagement

The placemaking process conducted by Village Well involved visioning workshops in which community members offered their aspirations for the proposed development.

The ideas generated by the Two Wells community, contributed to the formation of a '*Placemaking Road Map for Two Wells*', which sets out:

- Place Essence: "Two Wells is a caring, connected, resilient, can-do community. Steeped in rich history, it celebrates the past whilst looking forward to a prosperous future";
- Placemaking Principles: Connected, Healthy, Exchange and Prosperous, which underpin the Place Essence; and
- Strategic recommendations and actions to guide the delivery of the new development.

Community charrettes, with a total of 100 attendees, were held over two sessions to test the Place Essence Road Map and Vision Principles and capture the community's aspirations as concept plans. Key outcomes of the community charrette were:

- strong connection to town;
- centrally located school and local shops;
- idea of taking linear open space through the site and not just on edges;
- wetlands throughout development;
- legible wider streets;
- functional safe parks spread throughout; and
- provide for public transport.

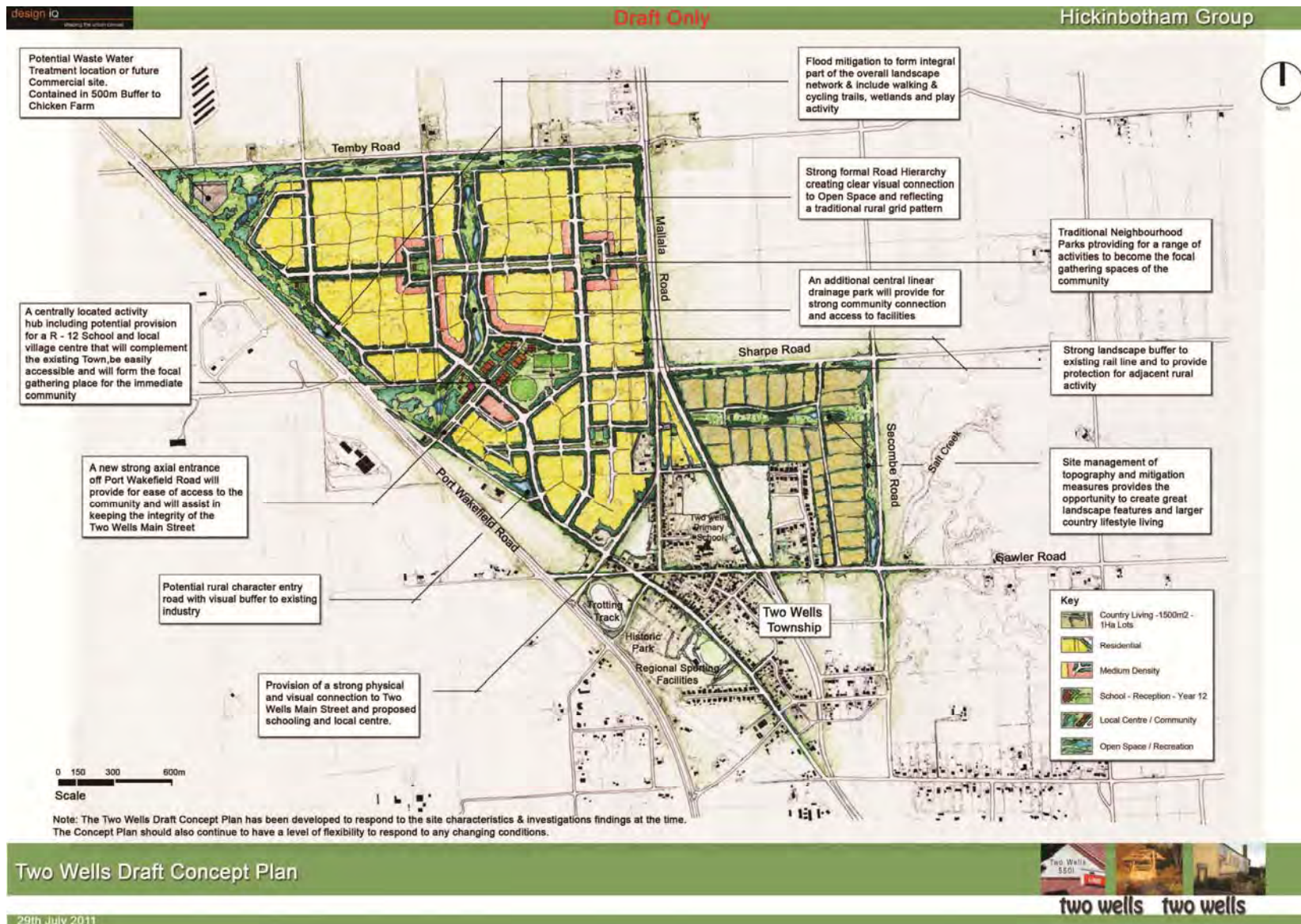
7.5 Preferred Concept Plan

The Concept Plan has been informed by the key findings of the background investigations and consideration of the impacts of the opportunities and constraints on the future development of the Two Wells township. The concept plan is presented in Figure 7.2 below (A3 version in Appendix 3). The features of the concept plan are summarised as follows:

- *landscaped buffers to:*
 - existing industry;
 - surrounding agricultural lands;
 - rail line; and
 - Port Wakefield Road.
- *landscaped buffer to Ausbulk,*
 - which also makes use of a low lying area that is subject to inundation.

- *buffer to poultry farm, containing:*
 - either a waste water treatment facility; or
 - future commercial land uses; and
 - vegetated open space.
- *60-150m Flood mitigation corridors, which:*
 - also function as a buffer to surrounding agricultural lands; and
 - doubles as a linear walking and cycling trail.
- *open space, which:*
 - is linked to form a walking/cycling network;
 - has traditional neighbourhood parks, providing for a range of activities; and
 - provides for shared community/school use.
- *movement network which:*
 - integrates with existing roads;
 - clearly defines arterial routes, local collectors and local streets;
 - reflects a grid pattern, to enhance accessibility and optimise solar access;
 - supports potential public transport;
 - supports accessibility for pedestrians and cyclists;
 - provides a major new access point off Port Wakefield Road;
 - minimises direct access to Gawler Road and Mallala Road;
 - does not provide direct property access to the arterial road network; and
 - provides a strong connection between the proposed development and the existing township.
- *a centrally located activity hub, which:*
 - includes provision for a private R-12 school;
 - accommodates a local village centre that will complement the existing town centre; and
 - provides a focal gathering place for the immediate community.
- *density, with:*
 - lower density, catering for a “township living” lifestyle;
 - lots to be regular in shape and generally have standardised dimensions;
 - ‘country living’ lots within the eastern portion of the Study Area;
 - average residential allotments of 600 square metres, in line with the high scenario; and
 - smaller lots located adjacent public open space and village centre.

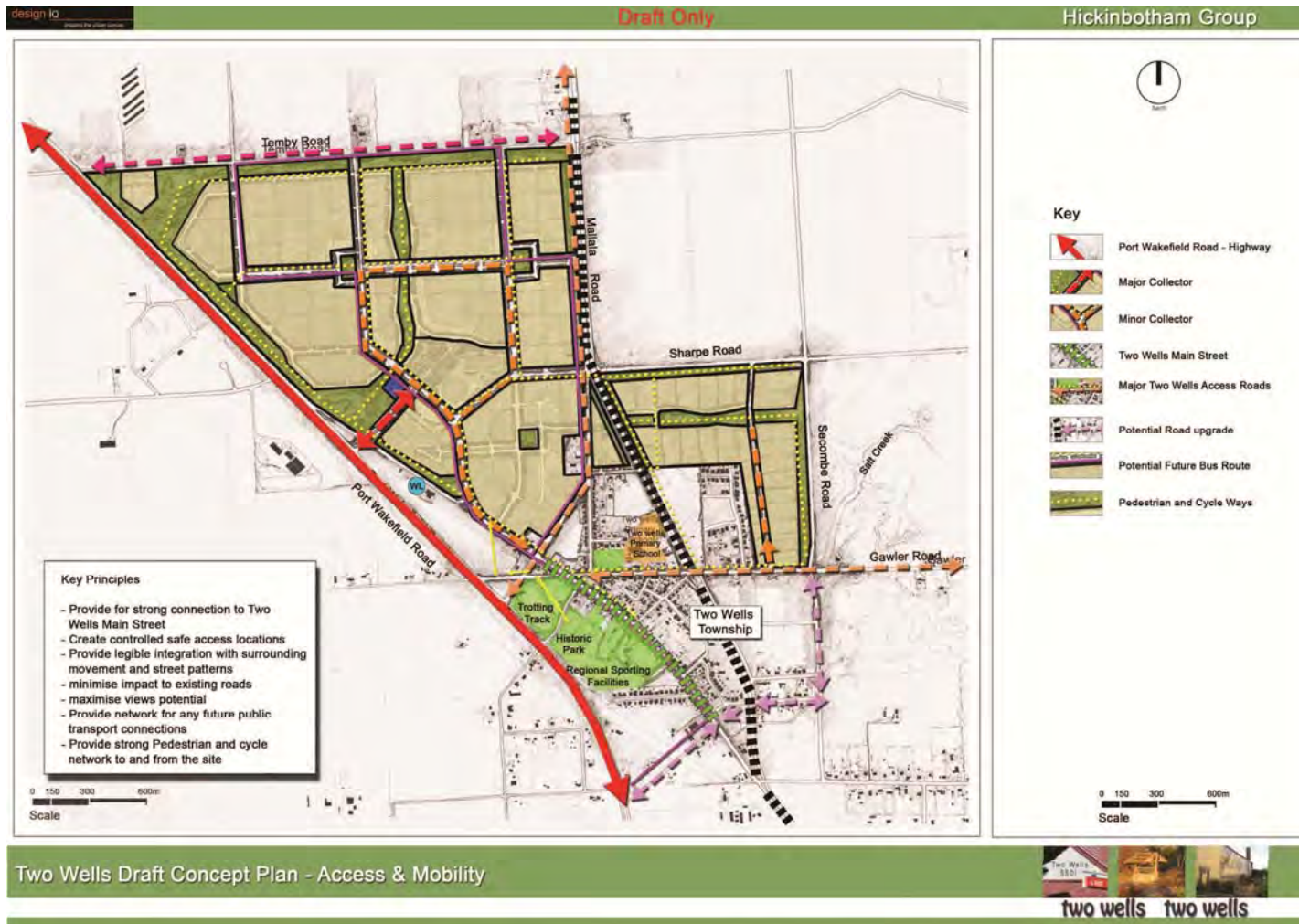
Figure 7.2: Concept Plan



29th July 2011

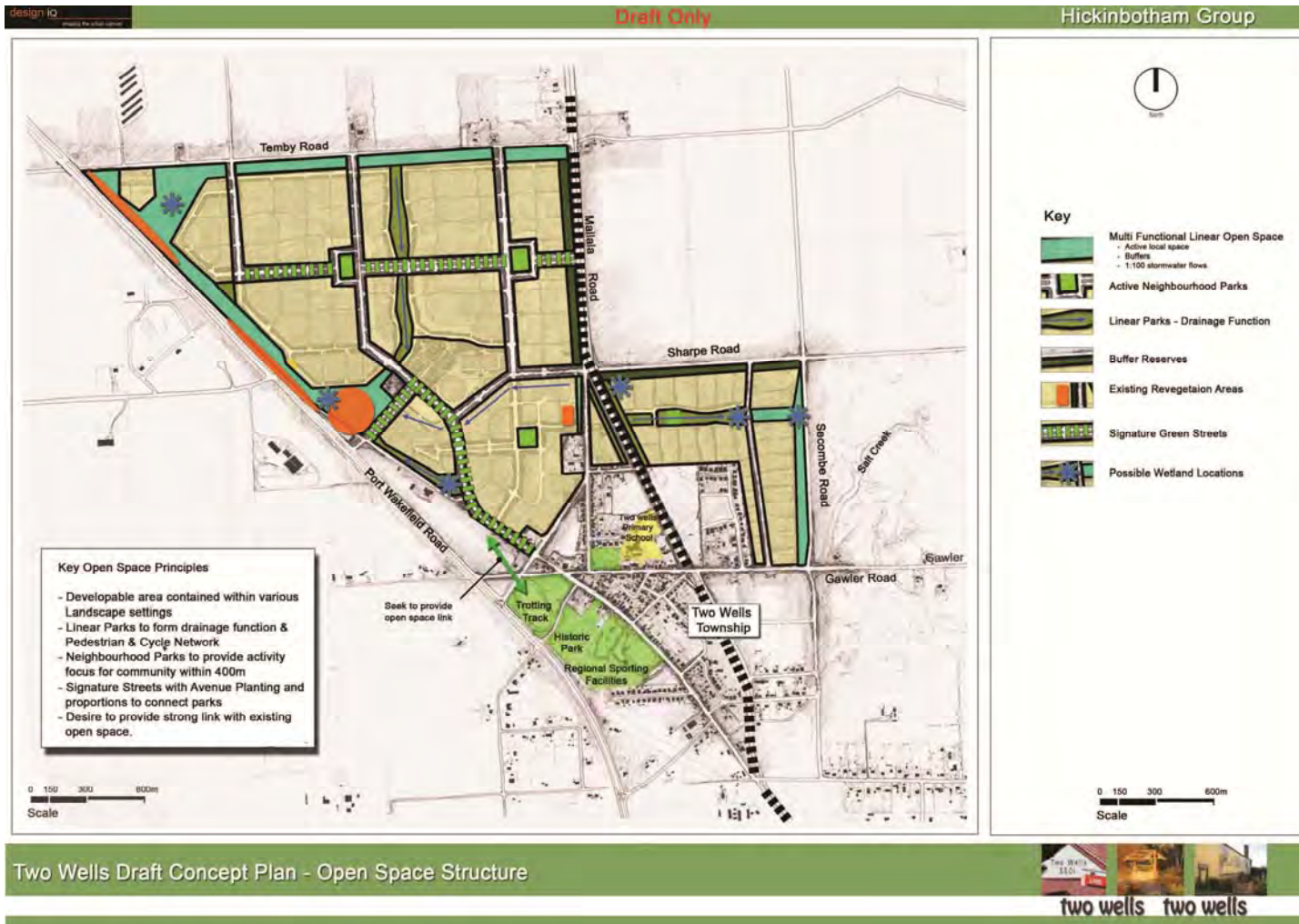
Based on the overall Concept Plan, an access and mobility layer has been created which shows an indicative bus route together with key pedestrian linkages. This plan is included as Figure 7.3.

Figure 7.3 Access and Mobility Overlay



Based on the overall Concept Plan, an open space layer has been created which shows an indicative open space hierarchy. The plan also identifies which areas of the proposed open space will be subject to a 1 in 10 ARI event.

Figure 7.4: Open Space Overlay



The hierarchy of open space includes:

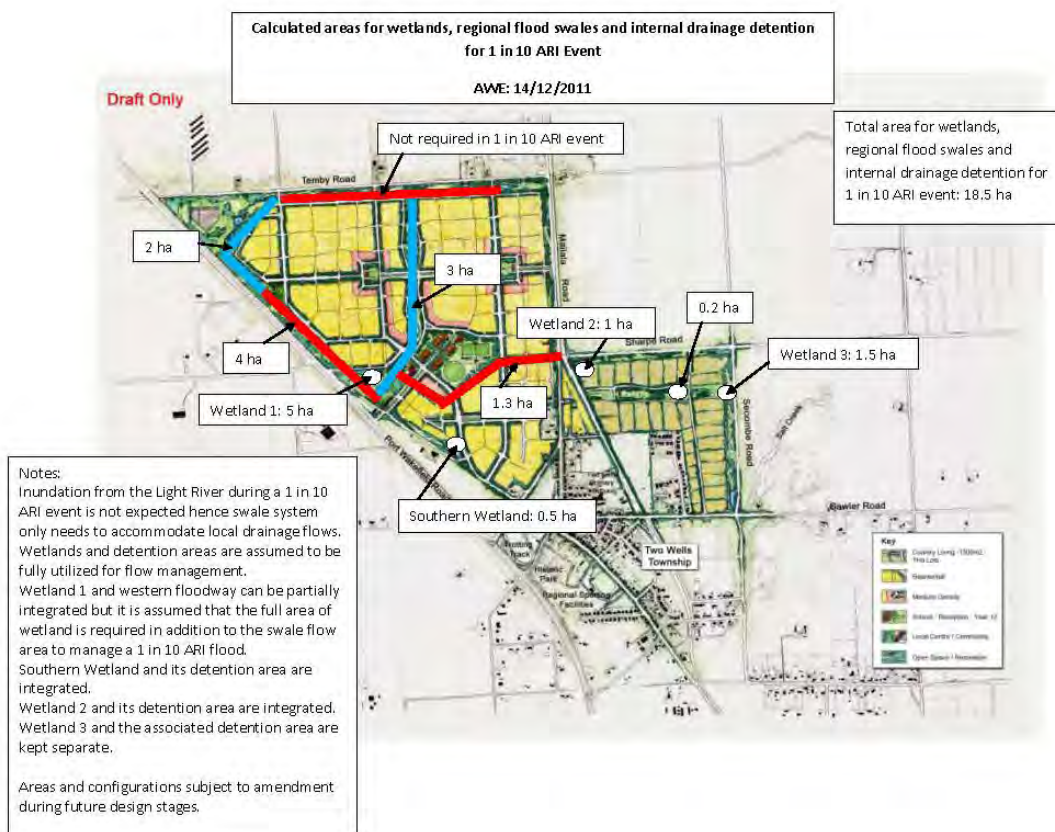
- three neighbourhood level spaces each of approximately 1ha in area; and
- linear open space areas which provide a dual function of a buffer to adjacent primary industry/industry land, together with stormwater management function. These areas are located along the majority of the boundary of the Study Area, together with two key internal drainage swales;

It is important to note that additional local open space is likely to be provided at the detailed land division phase. This level of detail is not required in respect to informing the DPA.

AWE has undertaken modelling to determine the extent of the Study Area which is likely to be impacted upon by a 1:10 ARI event.

Figure 7.5 below shows the spatial location of the areas required for wetlands, regional flood swales and internal drainage detention for the 1:10 ARI event. For the whole of the Study Area, 18.5ha of land is required for stormwater detention. For the main portion of the Study Area, west of Mallala Road, 14.7ha is required.

Figure 7.5 Drainage Detention for 1 in 10 ARI Event



Source: AWE 2011

Based on the modelling undertaken, it is possible to indicatively determine the implications of the stormwater management system in respect to the open space shown on the Concept Plan, particularly in the context of the 12.5% contribution required for public open space.

Fyfe Surveyors have prepared an indicative development scheme for the main area west of Mallala Road to assist in the calculation of open space areas. This plan is indicative only and has been prepared to demonstrate that the Concept Plan provides sufficient open space. The indicative scheme is reproduced as Figure 7.6.

Figure 7.6: Indicative Development Scheme – West of Mallala Road



Table 7.1 outlines an indicative open space schedule, which is based on the indicative areas shown on the Concept Plan and those calculated from the Fyfe scheme. Due to the level of preliminary design work undertaken, this analysis is confined to the area west of Mallala Road.

Table 7.1: Indicative Open Space Calculation – West of Mallala Road

Developable Area	Open Space Area	Open Space %	1:10 Inundation Area	1:10 Inundation %	Open Space Inundated 1:10 (%)
310ha	59.47ha	20%	14.7ha	4.7%	18%

It is noted that the Fyfe scheme includes approximately 2.0ha of relatively thin linear open space which includes the buffer to Mallala Road and the 10 metre wide alignments intended to incorporate drainage swales. If these reserves were not included as part of the 12.5% contribution then this would have little overall impact, with all other open space considered to be usable.

8. INFRASTRUCTURE PROVISION

This chapter, sets out broad directions to guide discussion between the Hickinbotham Group and the District Council regarding the approach to infrastructure provision for the future township of Two Wells (comprising both the existing established township and the proposed future urban growth area north of the town).

Final infrastructure arrangements will be set out in Development Deed between Hickinbotham Group and Council.

Proposed infrastructure roles and responsibilities are summarised in the following statements and Table 8.1 below. It is emphasised that detailed arrangements and have yet to be agreed and resolved.

8.1 Proposed Directions for the Hickinbotham Group

Internal – Physical Infrastructure

- Provide physical infrastructure within the development area.

Internal – Social/Community Infrastructure

- provide a local centre within the development area to provide local convenience retail services and help create a community “hub”;
- make sites available if required within the development area (on suitable terms) to accommodate key social/community infrastructure, potentially including:
 - new private school(s);
 - new GP clinic;
 - new child care centre(s);
 - new emergency services site(s); and
 - aged persons accommodation.
- Provide recreation facilities including:
 - Australian Rules/cricket oval;
 - soccer pitch;
 - 2 tennis courts;
 - 2 netball courts (possible co-located).
- contribute to a Community Development Trust Fund, with further investigations to be undertaken over time to determine the nature and timing of social infrastructure to be provided.

External – Physical Infrastructure

- negotiate with DPTI and Council to ensure provision of new and/or upgraded intersections to:
 - Old Port Wakefield Road/Mallala-Two Wells Road;
 - Mallala-Two Wells Road (east of development area); and
 - Port Wakefield Road (west of development area);

- take responsibility for ensuring provision to the development area (only) of:
 - potable water supply;
 - recycled water ("third pipe") for irrigation of treated stormwater;
 - electricity supply;
 - wastewater treatment;
 - stormwater management;
 - gas supply (optional);
 - Light River flood management infrastructure;
 - telecommunications services; and
 - acoustic infrastructure.
- make a negotiated financial or in-kind contribution (proportionate to the benefit that will accrue to the development area) to Council for:
 - Gawler River flood levy around the south and east of Two Wells; and
 - pedestrian/cycle connection from development area into Town Centre.

External – Social/Community Infrastructure

- contribute to Community Development Trust Fund to help provide a community development program and upgraded library, enhanced community centre, community bus and Town Centre recreation facilities;
- support Council in negotiations with State agencies.

8.2 Proposed Directions for Council**Internal – Physical Infrastructure**

- liaise with Hickinbotham Group to support planning, design and integration.

Internal – Social/Community Infrastructure

- liaise with Hickinbotham Group to support planning.

External – Physical Infrastructure

- consider options for connecting existing township (on appropriate terms) into new or extended infrastructure for:
 - wastewater treatment;
 - telecommunications services; and
 - gas supply;
- construct Gawler River flood levy around the south and east of Two Wells (with contribution from Hickinbotham Group); and
- construct walking / cycling connections between Town Centre and development area (with contribution from Hickinbotham Group).

External – Social/Community Infrastructure

- lead negotiations with State Government (with support from Hickinbotham Group) regarding upgrades to key services:
 - education;
 - kindergarten;
 - health;
 - emergency services; and
 - public transport.
- deliver upgrade and expansion of Two Wells Town Centre;
- contribute to Community Development Trust Fund to help provide a community development program, upgraded library, enhanced community centre, community bus and town centre recreation facilities.

Table 8.1: Summary Preliminary Infrastructure Directions

Category		Responsibility					
		Internal Infrastructure			External Infrastructure		
		Hickinbotham	Council	Others	Hickinbotham	Council	Others
Physical	1. Roads	✓			✓✓	✓	✓ DPTI, grant funding option
	2. Potable Water	✓			✓✓		✓ SA Water
	3. Wastewater	✓		✓ grant funding option		✓ (existing town)	✓ grant funding option
	4. Stormwater	✓		✓ grant funding option	N/A	N/A	N/A
	5. Flood	✓		✓ grant funding option	✓ (proportionate to benefit)	✓✓	✓ grant funding option
	6. Electricity	✓			✓✓		✓ (Electranet)
	7. Gas	✓			✓✓	✓ (existing town)	✓ (APA Group)
	8. Telecommunications	✓		✓ NBN Co			✓ NBN Co
	9. Acoustic	✓			N/A	N/A	N/A
	10. Walking/ Cycling	✓			✓ (proportionate contribution)	✓✓	
	11. Open Space/recreation	✓			N/A	N/A	N/A
Social/ Community	1. Education	✓✓ (land if required)		✓ (private option)			✓ (DECS)
	2. Health	✓✓ (land if required)		✓ (private option)			✓ DOH
	3. Shopping	✓ (local only)				✓ town centre upgrade	
	4. Child Care	✓✓ (land if required)		✓ (private option)			✓ (DECS)
	5. Municipal/Community Development	N/A	N/A	N/A	✓ (contribution via Trust Fund)	✓✓	✓ grant funding option
	6. Aged Care/ Housing	✓✓ (land if required)		✓ (private option)	N/A	N/A	N/A
	7. Public Transport	✓ (contribution to community bus)			✓ (contribution to community bus via Trust Fund)	✓✓ (community bus)	✓ DPTI
	8. Emergency Services	✓ (land if required)					✓ State agencies

Note: ✓✓ in cases of multiple contributions, denotes lead responsibility

8.3 Implementation

The Hickinbotham Group will enter into a Development Deed with Council that will ensure agreed items of infrastructure will be provided as and when they are required.

In relation to physical infrastructure, the Deed will identify required works, trigger points and apportionment of reasonability for costs.

In relation to community infrastructure, the Deed will establish a Community Development Trust Fund into which both Hickinbotham Group and Council will contribute funds on a “per lot sold” basis. The Fund will be jointly managed to underpin the identification and delivery of community infrastructure over the life of the project.

9. POLICY CONSIDERATIONS

9.1 Certainty

It is clear from the preceding discussion that the Two Wells development area will require provision of major trunk infrastructure that is both costly and “lumpy”. This means that, over the life of the project (which could be between 20 and 30 years), expenditure will be required at key points to serve not only current development stages but also to underpin and/or achieve economies in serving future stages.

Securing agreement for these services, undertaking detailed design and then funding provision will require certainty over the life of the project. In other words, there must be confidence that the benefits and/or returned value of upfront investment in key infrastructure by agencies, utilities and the Hickinbotham Group will be maximised over the life of the project.

While many forms of infrastructure can be scaled up as development proceeds, the need for long term land supply certainty to underpin short term infrastructure planning and investment is clearly desirable.

All forms of infrastructure become more economical and efficient to provide if there is certainty that key service thresholds can be achieved over time (subject of course to market demand).

For these reasons, **the upfront rezoning of all of the development area is essential to underpin infrastructure investment by all relevant parties**. This requires that the entire development area be placed within a “live” development zone at the start of the project (ie residential or similar).

The rezoning of only part of the development area (including the use of “deferred urban” or similar zoning over future stages) will mean that long term development is subject to a highly uncertain, time consuming and expensive DPA process and will deprive the project of the:

- certainty that is essential for all parties (public and private sector) to underpin infrastructure planning and investment;
- ability to flexibly plan and deliver stages according to market demand and infrastructure economies;
- confidence in achieving future infrastructure and service economies; and
- negotiating power to achieve favourable outcomes from utility providers.

Including additional land will promote continuity and certainty by allowing an integrated master plan to be prepared for the long-term development of Two Wells. In addition to facilitating long term planning for integrated infrastructure, it will promote a consistent approach to land use planning and built form.

For these reasons, upfront rezoning of the entire development area is a key infrastructure direction for agreement between Council and the Hickinbotham Group, and subsequently for submissions to DPLG via the DPA process.

9.2 Concept Plan/Structure Plan

The Concept Plan arising from these investigations should inform the preparation of a high level Concept Plan/Structure Plan which is included in the Development Plan. The Concept Plan/Structure Plan should be incorporated into any new zone which applies to the Study Area and referenced in the Desired Character statement. In particular, the Concept Plan/Structure Plan should be referenced in regard to:

- land use;
- key connections, including potential bus route and key pedestrian linkages;
- spatial location of stormwater management infrastructure in particular swales and wetlands;
- the village centre location;
- spatial location of acoustic buffer / attenuation; and
- spatial location of landscape buffers and open space.

9.3 Zoning

9.3.1 Suburban Neighbourhood Zone

The Suburban Neighbourhood Zone Module (South Australian Planning Policy Library Version 6) is considered to provide an appropriate policy basis for the Study Area, west of the rail line.

The Suburban Neighbourhood Zone is a broad zone well suited for large development areas which have been the subject of a structure plan process.

The primary intention of the zone is to accommodate residential development, however is sufficiently flexible to enable a range of other uses, such as a small scale community and retail uses.

The Suburban Neighbourhood Zone includes policy provisions relating to:

- open space;
- housing affordability;
- non-residential development;
- residential development;
- centre type development;
- land division;
- car parking;
- hazards;
- Water Sensitive Urban Design; and
- interfaces between land Uses.

9.3.2 Residential Zone

The Residential Zone Module (South Australian Planning Policy Library Version 6) is considered to provide an appropriate policy basis for the Study Area, east of the rail line and west of the recommended levee alignment

The Residential Zone is a broad zone well suited for traditional residential areas of low density, and only a very limited range of supporting non-residential uses.

As the western portion of the Area Affected is not likely to be connected to a common effluent disposal scheme, the on-site treatment of effluent will be required. As such allotments would need to be sized accordingly, with 900 square metres being the current accepted standard for such practice.

9.3.3 Rural Living Zone Module

The Rural Living Zone Module (South Australian Planning Policy Library Version 6) is considered to provide an appropriate basis for the area to the east of the alignment of the flood management levee as previously identified in Figure 6.4.

The Rural Living Zone is suitable for areas consisting large allotments, detached dwellings and rural activities that are complimentary to the amenity of the locality.

The Rural Living Zone includes policy provisions relating to:

- land use;
- form and character; and
- land division.

Scope exists for this area to be distinct from other Rural Living Zones (in a policy sense) given that the land has an interface with the intended residential zone to the west.

Allotments sizes of 5000 square metres are recommended as this should be sufficient to ensure flood risk issues are capable of being accounted for and to allow for the orderly construction of future dwellings.

In addition, allotments of 5000 square metres will diversify the range of rural living allotments available at Two Wells, with the existing Rural Living 1 and Rural Living 2 Zone requiring allotments with a minimum of 1ha.

On the assumption that Council will ultimately introduce a single Rural Living Zone for the majority of the existing rural living areas, then the land at Two Wells could form its own precinct within the overall zone umbrella.

9.4 Specific Policy Considerations

9.4.1 Acoustics

Policy however should be sufficiently flexible to enable the range of available design/attenuation solutions to be made as part of the detailed design (land division) process.

The DC of Mallala Development Plan already includes policies regarding noise management at land-use interfaces. These policies are likely to adequately address the acoustic issues identified.

Subsequent Better Development Plan conversion will also result in relevant policies being incorporated from the Planning Policy Library.

Provisions similar to the following are recommended for inclusion in any future DPA:

- dwellings should be located a minimum of 30 metres from the centre of the rail corridor;
- the first row of dwellings located adjacent to the rail corridor should comply with Minister's Specification SA8 'Construction Requirements for the control of external sound'.

9.4.2 Industrial and Primary Industry Land Use Interface

It is recommended that the following provision be included in any future DPA:

Residential development should be sited such that existing noise levels associated with the lawful operation of existing land uses achieves the Environment Protection (Noise) Policy 2007 goal noise levels for an existing noise source.

The western portion of the zone is located adjacent to land identified for industrial use. Noise treatment measures will be required to ensure an appropriate interface between industrial and residential development.

Suitable measures may include the construction of a 2.5 metre high noise barrier along the Old Port Wakefield Road frontage and/or treatments to the façade of adjacent dwellings including the restriction of the first row of dwellings adjacent to this interface to single storey.

Such need for acoustic treatments can be included as part of the desired character statement for the relevant zone(s) of drafted as a principal of development control.

9.4.3 Stormwater/Flood Management

The need for a coordinated approach to drainage and flood management should be considered for inclusion in the Desired Character Statement for the new zone. Key detention areas, levees and drainage swales should also be identified on the Concept Plan. It will be important for the zone policy to recognize the key benefits the likely required flood mitigation strategies will have in terms of both the growth area together with the existing township. This benefit to the existing township needs to be recognized in respect to the use of open space for stormwater management purposes.

9.4.4 Affordable Housing

At least 15% affordable housing provision is required to be reflected in the Objectives and Principles of Development Control of the relevant Zone/Policy Area or through an Affordable Housing Overlay.

9.4.5 Staging

It is understood that there will be a need to stage development in an orderly manner, and that infrastructure provision will need to have regard to this general staging approach. A key influencing factor in relation to the staging relates to the flood/stormwater infrastructure required to protect the township and the future development area. Related to this is the earthworks 'balance' with ground levels to be varied in order to accommodate the stormwater strategy.

A prescriptive staging plan is not considered necessary and the necessary staging directions should be achieved through appropriate policy guidelines within the new zoning. In this way, flexibility and adaptability can be maintained while also providing general staging guidance.

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APPENDIX 1
30-YEAR PLAN POLICIES AND TARGETS

Overall Spatial Distribution

Policies

- 1** *Plan for population growth of 560,000 people over 30 years and accommodate growth through the delivery of 258,000 additional dwellings to be constructed over the life of the plan.*
- 6** *Concentrate growth outside the metropolitan area in major regional towns and generally constrain growth in small towns and villages to protect their heritage and character.*
- 7** *Ensure the bulk of new residential development in Greater Adelaide is low to medium rise development (including detached dwellings) and confine high rise development to the 14 identified transit oriented developments.*

New Metropolitan and Township Growth Areas

Policies

- 32** *Ensure new urban growth occurs in designated urban and township areas shown on Map D7. This map shows the indicative areas of land that will be considered for urban growth. The actual boundaries of land will be identified for public consultation when the process of updating the relevant Development Plan is undertaken.*
- 33** *Provide sufficient other new growth areas for a 25 year rolling supply of land, of which 15 years is zoned for urban development.*
- 34** *Subject new growth areas designated in the Plan to Structure Plans, which will*
 - *Require the provision of services and higher density residential areas, as well as a mixture of retail and support services around transport interchanges;*
 - *Specify the amount of open space and parklands to be provided;*
 - *Clearly designate land requirements for infrastructure in new growth areas. This includes services such as health and education and utilities such as waste, water, power, ICT, transport and community services.*
- 35** *Base the planning of greenfield growth areas on the principles of self-contained, mixed use development that is contiguous to transport services where possible*
- 38** *Ensure new growth areas provide a mixture of dwelling types and an increased supply of smaller dwellings, and continue to cater for families by providing the bulk of new detached family homes.*
- 42** *Restrict ad hoc construction of isolated rural dwellings and subdivision of rural lands through the planned expansion of townships, density increases within township boundaries, and appropriate intensification of existing Rural Living Zones, and strategic designation of new Rural Living Zones, outside areas of primary production significance.*
- 44** *Manage the interface between primary production activities and urban areas and townships through the identification of appropriate separation buffers, screening vegetation and appropriate alignment of allotment boundaries.*

Targets

- P** *Plan for strategic new growth areas, comprising a net land supply of 10,650 hectares (gross total of 14,200 hectares, including the 25 per cent buffer identified in Target R). These areas include Two Wells.*
- Q** *Provide for 124,000 dwellings and 44,500 jobs in these areas as well as the existing urban land supply and other fringe growth opportunities.*

- R** Provide for a buffer of 25 per cent of the total land mass to allow for land that will remain undeveloped for various reasons (for example, due to landowner decisions, environmental constraints, buffer requirements or policy decisions).
- S** Provide 40-60 per cent of the total land mass to be developed for non-residential purposes (for example, roads, retail, utilities and local employment).
- T** Ensure that fringe developments and development involving township growth provide a net contribution of active and passive open space to the local area.

Urban Design

Policies

- 5** Develop guidelines in Structure Plans to help create unique characteristics and identity across different neighbourhoods, suburbs and precincts.
- 6** Structure Plans for greenfield developments, urban infill and transit-oriented developments will set objectives and guidelines for the quality of building performance outcomes in terms of:
- Climate response;
 - Energy use;
 - Water use and recycling;
 - Noise attenuation and air quality;
 - Improving the aesthetics of the public realm.
- 11** Provide safe and attractive streetscapes in growth areas and transit oriented developments through street tree plantings and lighting

Communities and Social Inclusion

Policies

- 4** Plan for the growing number of young families
- 5** Plan for the projected increase in the number and proportion of elderly people and respond to their preference to remain living in their existing community.
- 8** Provide engaging spaces where young people can congregate for social activities in a positive setting.
- 9** Give priority to pedestrian, wheelchair, gopher and cycle movement in neighbourhoods, which will ensure greater access for people with less mobility, particularly children, the elderly and people with prams.

Targets

- B** Plan for regional distribution of projected population growth as shown in Map D8 [which projects 110,000 people for the Barossa Region].

Housing Mix, Affordability and Competitiveness

Policies

- 4** Ensure Structure Plans and Development Plans reflect the definitions of low, medium and high density housing and the definitions of low, medium and high rise development.
- 6** Ensure Structure Plans and Development Plans provide for new retirement housing and residential aged care facilities, and protect and allow for appropriate redevelopment of such existing facilities. This will increase the opportunities for older people to remain living in and connected to their communities as their needs for support increase.

Targets

- C** *At least 30 per cent of new housing is available at competitive house prices (that is, at or below the median house sale price in its market) to ensure affordability.*

Efficient planning and land supply and the Housing and Employment Land Supply Program**Policies**

- 9** *Identify sufficient land for residential purposes to lock in a 25-year rolling supply of land in both the established areas and new growth areas (the 25-year rolling supply recognises the long lead times associated with bringing land to market).*
- 12** *Allow for four factors in the amount of land that needs to be set aside for residential purposes and the management of the Housing and Employment Land Supply Program. They are:*
- *the total amount of housing that will need to be provided over 30 years;*
 - *the projected annual rate of new housing that needs to be produced;*
 - *the amount of land that needs to be zoned at any given time to achieve the housing production, factoring in the long lead times for land development;*
 - *the amount of land that is not likely to get to market because of fragmented ownership, lack of interest by the owner to bring the land to market, and loss of residential capacity due to provision for open space and infrastructure.*

Affordable Housing**Policies**

- 1** *Reinforce the state government policy that at least 15 percent of new dwellings should meet the criteria for affordable housing in significant new development and growth areas including areas subject to Structure Plans and precinct planning, in particular new transit oriented developments and transit corridors.*
- 5** *Ensure that the standard of affordable housing is at least consistent with other dwellings in a development, for example, in appearance, construction, materials, energy efficiency and water conservation measures.*

Targets

- A** *Provide for at least 15 per cent of housing in all new significant developments to be affordable housing, including five per cent for high-needs people.*
- B** *At least 38,700 new dwellings (15 per cent of all dwelling growth) should be affordable housing (see Table D1[which shows the Barossa affordable housing target to be 6950 new dwellings]).*

Health and Wellbeing**Policies**

- 1** *Design pedestrian and cycle friendly areas in growth areas and existing neighbourhoods to promote active communities.*

Transport**Policies**

- 1** *Protect the transport functionality of road and rail corridors through planning policy in Development Plans*

Infrastructure**Policies**

- 7** *Require state government agencies to use the Plan as their key tool for identifying infrastructure priorities, such as health services and schools. Agencies will be encouraged to identify clear trigger points, such as population growth in a particular area, to indicate when new infrastructure will be needed.*

Biodiversity**Policies**

- 2** *Contain growth where possible to areas inside identified urban lands.*

Open Space, Sport and Recreation**Greater Adelaide Open Space System****Policies**

- 3** *Provide neighbourhood open spaces within safe, comfortable walking distances of residents in new growth areas.*

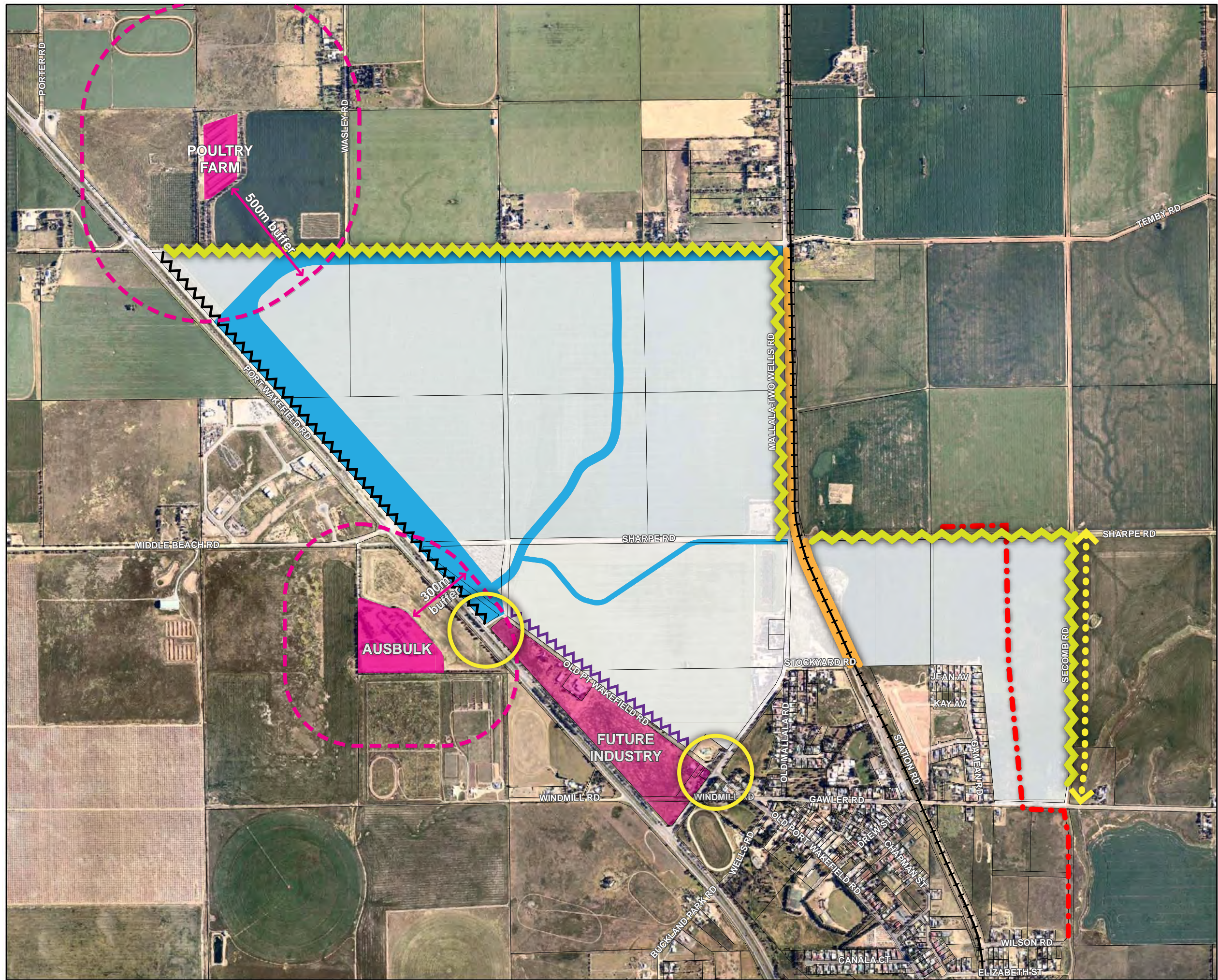
Water**Policies**

- 1** *Incorporate water-sensitive urban design (WSUD) techniques in new developments to achieve water quality and water efficiency benefits.*

Targets

- A** *Reduce demand on mains water supply from new development through the introduction of water-sensitive urban design (this target will be quantified once the WSUD mandating scheme is determined).*

APPENDIX 2
CONCEPT PLAN CONSIDERATIONS



LEGEND

- POTENTIAL VISUAL AND NOISE BARRIER
- 2.5m HIGH NOISE AND VISUAL BARRIER TO FUTURE INDUSTRY
- 20m VEGETATION BUFFER TO AGRICULTURAL LAND
- STORMWATER MITIGATION RESERVE
- FLOOD PROTECTION LEVEE
- 30m BUFFER TO RAIL LINE
- UPGRADE SECOMB ROAD
- INTERSECTION UPGRADE
- STUDY AREA

PRELIMINARY

1:15,000
@ A3

CLIENT
HICKINBOTHAM GROUP

PROJECT
TWO WELLS DPA AND MASTER PLAN REPORT

TITLE
CONCEPT PLAN CONSIDERATIONS

PROJECT NO. DATE CREATED
3768 **26.8.11**

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APPENDIX 3
CONCEPT PLAN



Potential Waste Water Treatment location or future Commercial site. Contained in 500m Buffer to Chicken Farm

Flood mitigation to form integral part of the overall landscape network & include walking & cycling trails, wetlands and play activity

Strong formal Road Hierarchy creating clear visual connection to Open Space and reflecting a traditional rural grid pattern

Traditional Neighbourhood Parks providing for a range of activities to become the focal gathering spaces of the community

An additional central linear drainage park will provide for strong community connection and access to facilities

A centrally located activity hub including potential provision for a R - 12 School and local village centre that will complement the existing Town, be easily accessible and will form the focal gathering place for the immediate community

Strong landscape buffer to existing rail line and to provide protection for adjacent rural activity

A new strong axial entrance off Port Wakefield Road will provide for ease of access to the community and will assist in keeping the integrity of the Two Wells Main Street

Site management of topography and mitigation measures provides the opportunity to create great landscape features and larger country lifestyle living

Potential rural character entry road with visual buffer to existing industry

Provision of a strong physical and visual connection to Two Wells Main Street and proposed schooling and local centre.

0 150 300 600m
Scale

Key

- Country Living - 1500m2 - 1Ha Lots
- Residential
- Medium Density
- School - Reception - Year 12
- Local Centre / Community
- Open Space / Recreation

Note: The Two Wells Draft Concept Plan has been developed to respond to the site characteristics & investigations findings at the time. The Concept Plan should also continue to have a level of flexibility to respond to any changing conditions.

