Development Application

Statement of Environmental Effects

Jordan Springs Village 5

Subdivision

Submitted to Penrith City Council
On Behalf of Maryland Development Company

July 2014 ■ 14176

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JBA operates under a Quality Management System that has been certified as complying with ISO 9001:2008. This report has been prepared and reviewed in accordance with that system. If the report is not signed below, it is a preliminary draft.

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1.0 Introduction

This Statement of Environmental Effects (SEE) is submitted to Penrith City Council in support of a Development Application (DA) for subdivision and civil works at Jordan Springs Village 5.

More specifically the subject DA for Village 5 seeks development consent for:

- subdivision of Lot 3997 DP 1179646 to create 271 residential lots, one lot for the future development of the Eastern Lake, one lot for the future open space lot, and future public roads;
- design and construction of proposed internal minor roads, including the roadway, pedestrian and cycle ways, road reserve landscaping, services and stormwater drainage infrastructure;
- continued utilisation of the temporary sediment and detention basin on the site;
- provision of temporary piping / channelling connecting the permanent stormwater infrastructure to the temporary sediment and detention basin;
- bulk earthworks for the grading of residential lots and roads; and
- associated tree removal and landscaping.

The SEE has been prepared by JBA on behalf of Lend Lease, and is based on the Design and Concept Plans prepared by Lend Lease (**Appendix A**) and Plan of Subdivision prepared by RPS (**Appendix B**), other supporting technical information appended to the report (see Table of Contents).

This report describes the site, its environs, the proposed development, and provides an assessment of the environmental impacts and identifies the steps to be taken to protect or lessen the potential impacts on the environment.

1.1 Concurrences and Referrals

Clause 44 of SREP 30 applies to land adjacent to the Regional Park. Given the proposal involves the subdivision of land which abuts the Regional Park, referral of this DA to the Director-General of National Parks and Wildlife for comment is required.

The proposed development is also 'integrated development' in accordance with section 91 of the EP&A Act. Therefore in addition to development consent, the development requires:

- A bushfire safety authority issued by the Commissioner of the Rural fire Service, in accordance with section 100B of the *Rural Fires Act 1997;*
- A controlled activity permit issued by the NSW Office of Water, in accordance with section 91 of the *Water Management Act 2000*; and

Referral to Roads and Maritime Services (RMS) is also required as the proposal is classified as traffic generating development under Schedule 3 of State Environmental Planning Policy (Infrastructure) 2007 (ISEPP).

1.2 Pre-Lodgement Meetings with Council

Two pre-lodgement meetings have been held with Council regarding this proposal. Most recently a meeting was held with Council on 8 May 2014. Issues raised at these meetings, with regards to lot layout, bushfire and traffic have been considered in preparing the proposal and are addressed in this report.

1.3 Background

St Marys site

The former Australian Defence Industries (ADI) site at St Marys (St Marys site) was endorsed by the NSW Government for inclusion on the Urban Development Program (UDP) in 1993. With a total site area of 1,545ha, the St Marys site is located approximately 45km west of the Sydney CBD, 5km north-east of the Penrith City Centre and 15km west of the Blacktown City Centre. Refer to **Figure 1.**

Since 1993 (over 21 years) the St Marys Site has been earmarked to provide housing for Sydney's growing population within an environmentally sustainable framework. Development of the site has been underway since 2004.

Following the St Marys site's inclusion on the UDP in 1993, it was agreed between Blacktown and Penrith Councils (as the relevant local government authorities for the land) and the State Government that any rezoning of the St Marys site for urban development would occur via a Sydney Regional Environmental Plan (SREP) process.

Prior to preparing the SREP, in accordance with the provisions of the *Environmental Planning Assessment Act 1979*, a Regional Environmental Study (RES) was first prepared.

The time between 1994 and 2000 reflects a period in which numerous and extensive investigations were undertaken into the environmental values and development capacity of the St Marys site. This period also involved input and consultation with Penrith and Blacktown Councils, relevant state agencies, and the general public.

The first significant body of work involved preparing the Regional Environmental Study. The RES for the St Marys site, which investigated the key planning issues of biodiversity, Aboriginal heritage, decontamination, total water cycle management, transport, urban form, air quality, and business/employment development, was exhibited for public comment in October 1995, and finalised in May 1996.

The RES concluded that the St Marys site was suitable for some urban development subject to further assessment.

The further assessments and investigations included Aboriginal heritage, biodiversity, and flooding. This additional information helped inform the joint State and local government Section 22 committee formed at the time (under the EP&A Act) to determine areas across the St Marys site which should be conserved for biodiversity and Aboriginal heritage purposes and areas suitable for urban development.

Following the preparation of additional studies and management plans and further consultation with State and local government and the general public, the SREP and accompanying Environmental Planning Strategy (EPS) for the St Marys site were finally made in 2001. The gazettal of the SREP formally set in motion the achievement of sustainable development outcomes at the St Marys site.

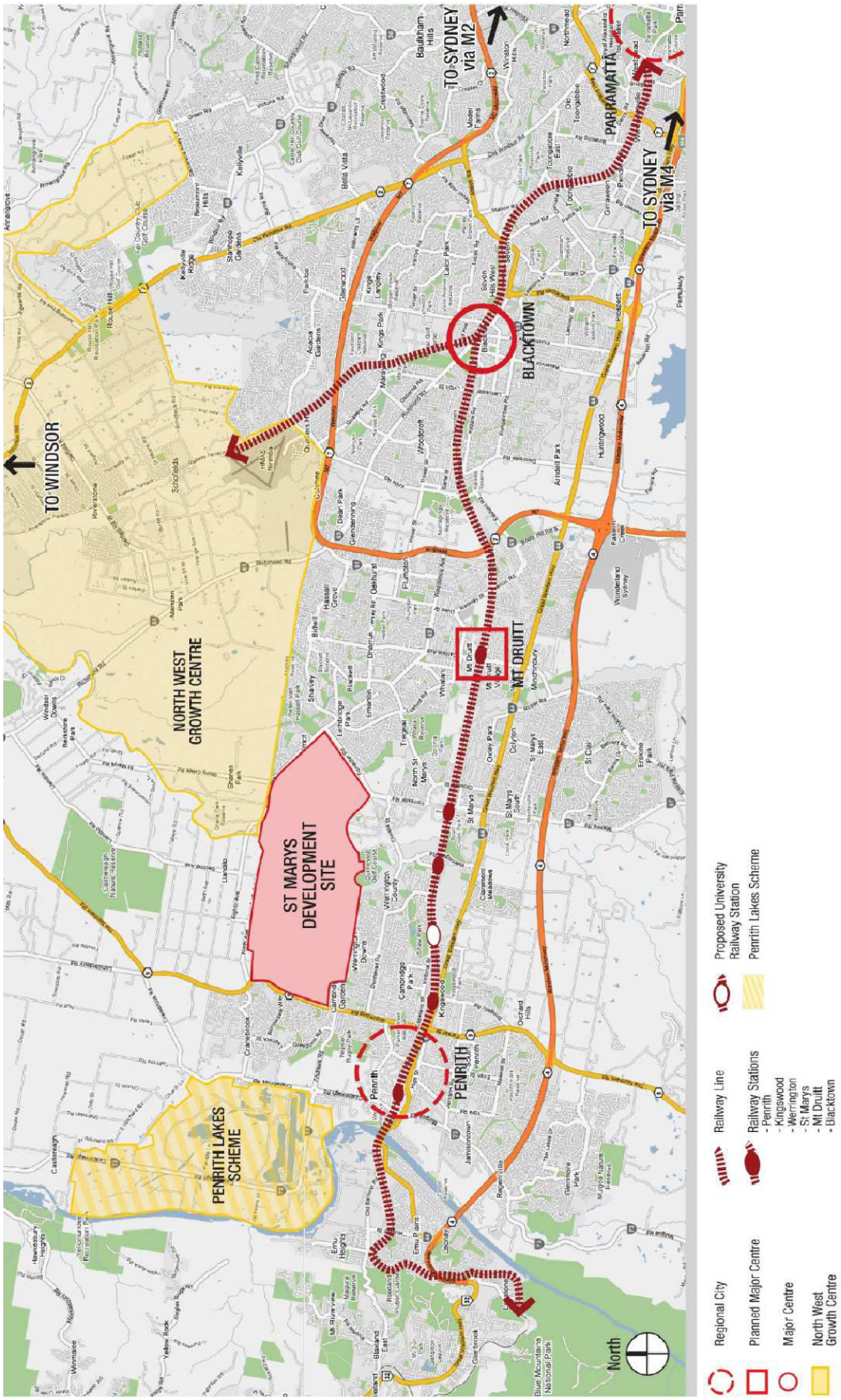

Figure 1 – Overall St Marys site location plan

Sydney Regional Environmental Plan No 30 – St Marys (SREP 30)

SREP 30 is the main statutory planning framework document for the St Marys site. It contains planning principles, objectives, zoning and other provisions to control development.

At the time of the SREP's original gazettal, the planning strategy for development of the St Marys site included:

- Establishing a 630 hectare regional park;
- Dedicating 48 hectares of regional open space for parks and passive and active recreation areas; and
- Developing approximately 730 hectares of land for urban uses.

There have subsequently been two amendments to SREP 30, most noteworthy (from a biodiversity conservation perspective) was the increase in the area zoned for Regional Park (reflecting the Commonwealth Government's decision to conserve all land listed by the Australian Heritage Commission on the Register of the National Estate). This particular amendment resulted in the protection of a further 220 hectares of Cumberland Plain Woodland (bringing the area of land zoned as Regional Park to nearly 900 hectares), and conversely reduced the development potential of the St Marys site (from providing around 8,000 dwellings to now providing around 4,900 dwellings).

The land set aside for urban development (outside of the future 900ha Regional Park) is included within one of six (6) development precincts established under SREP 30 (refer to **Figure 2**). The subject site is located within one of the development precincts, referred to as the Western Precinct (or now more commonly known as Jordan Springs).

Prior to consent being able to be granted for development within a precinct, SREP 30 requires that the Minister first declare land as a release area, and following this a Precinct Plan is prepared and adopted for the precinct. In this regard, the Western (and Central) Precinct were declared release areas by the then Minister for Planning on 29 September 2006. These releases follow earlier declarations from the Minister for the release of other precincts, including the Eastern, North Dunheved and South Dunheved Precincts.

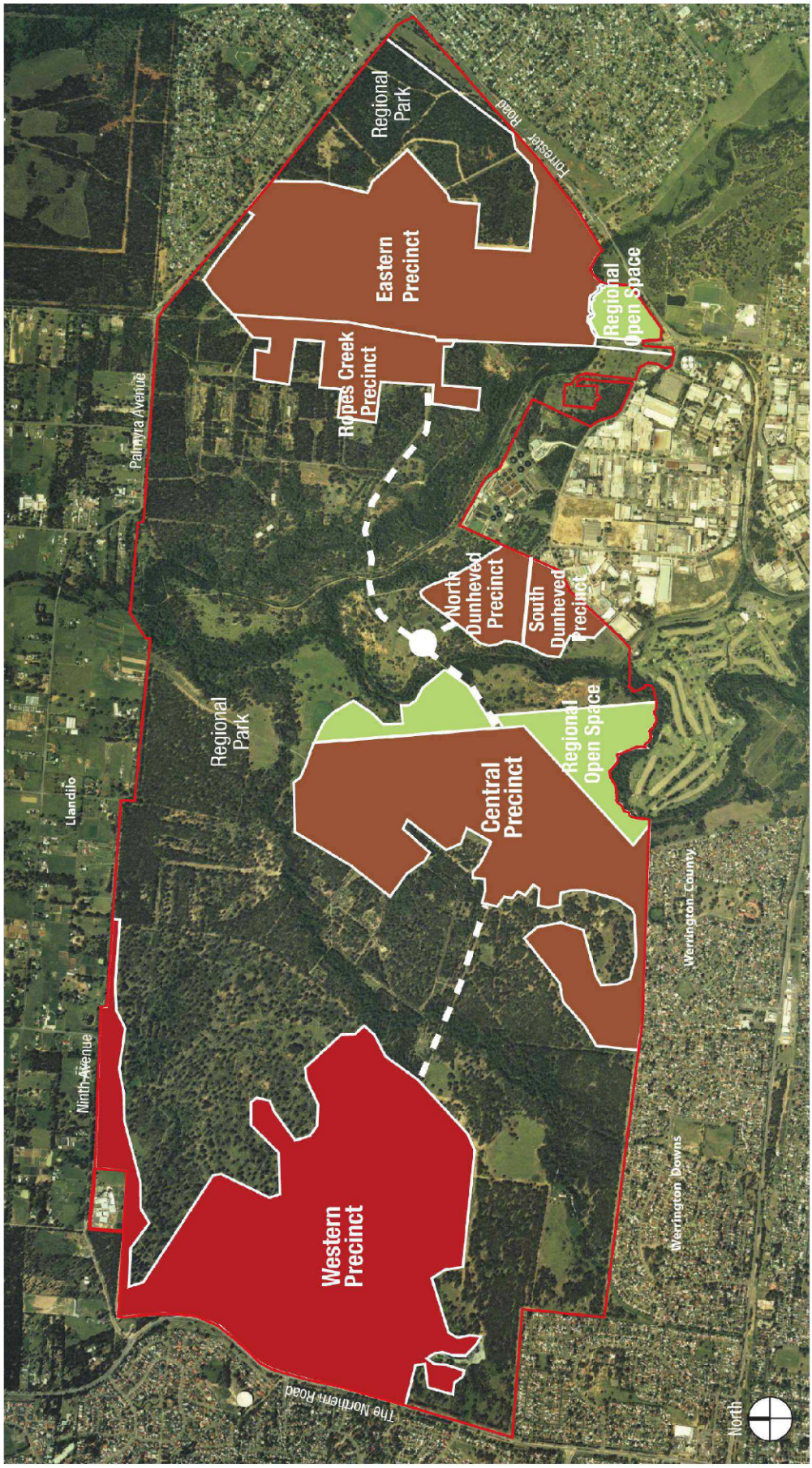

Figure 2 – Overall site plan of St Marys

The Western Precinct Plan and DCS

Upon gazettal of Amendment No. 2 of SREP 30 in February 2009, the Western Precinct was wholly zoned Urban. Land zoned Urban is intended to primarily accommodate residential uses, with some limited non-residential development, such as local retail and commercial uses. The Western Precinct Plan (WPP) and accompanying Development Control Strategy (DCS) have been prepared and were adopted by the Council at its ordinary meeting on 23 March 2009. These are to guide the future development of the Western Precinct/Jordan Springs.

The WPP illustrates the manner in which the Western Precinct (Jordan Springs) is to be developed. A copy of the approved overall Framework Plan, which sets the direction for the development of the precinct, is reproduced at **Figure 3.**

As illustrated in the Framework Plan, the proposed development of the Western Precinct/Jordan Springs entails:

- a Village Centre, comprising a mix of retail, commercial, community, open space and residential uses, in the southern part of the precinct;
- predominantly residential development in the remainder of the precinct;
- construction of roads, including external connections to The Northern Road and Ninth Avenue and east to the Central Precinct; and
- provision of local open space, riparian corridors and stormwater basins.

It is anticipated that once fully developed Jordan Springs will accommodate some 3,000 dwellings with a residential population in the order of 6,500.

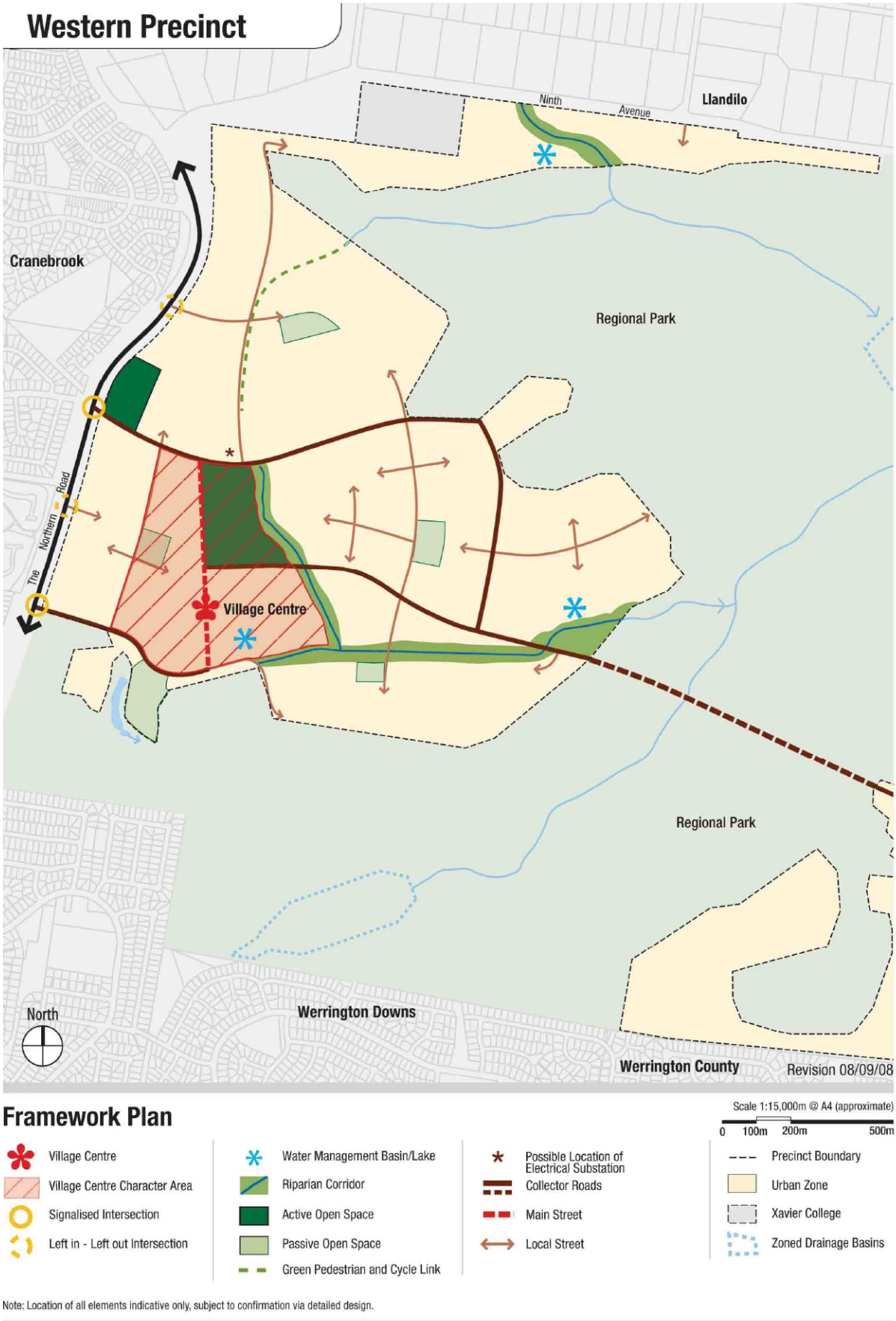

Figure 3 – Western Precinct Framework Plan
Source: Western Precinct Plan

Channel Construction & Earthworks Development Application

On 25 January 2013, Lend Lease submitted a development application to Council for the construction of the east-west Riparian Corridor within Jordan Springs, Western Precinct, St. Marys, including the following:

- construction of a stormwater channel; and
- associated civil works including bulk earthworks and tree removal.

The application was approved on 5 July 2013 (DA13/0065) and works associated with the consent have commenced.

In preparing the subject DA consideration has been given to the scope and relationship of these works undertaken by Lend Lease. This is particularly relevant to the riparian corridor temporary basin that was approved.

Previous DAs

This DA must be considered within the context of the other key DA's for Jordan Springs already lodged, proposed to be lodged to or approved by Penrith City Council. Of particular importance to the subject DA are the following:

- proposed riparian channel construction and associated earthworks – DA13/0065;
- permanent trunk sewer EIS – DA12/0910;
- riparian Corridor subdivision – DA11/1088;
- Village Lake DA/EIS - DA10/0851;
- subdivision that connects with Main Street - DA 10/0208; and
- the town Square, main street, and southern entry boulevard landscaping and embellishment DA - DA10/0680

Commonwealth Approvals

The Commonwealth environmental assessment of the development of the St Marys site was completed under the (now repealed) *Commonwealth Environment Protection (Impact of Proposals) Act 1974* (EPIP Act) with certification provided under the *Environmental Reform (Consequential Provisions) Act 1999*.

As the St Marys project as a whole was assessed under the EPIP Act, no further assessment in relation to Commonwealth threatened species and ecological communities is required under the *Environment Protection & Biodiversity Conservation Act 1999*.

In addition, the development of the St Marys site has been assessed by the Australian Heritage Commission pursuant to the requirements of the *Australian Heritage Commission Act 1975*.

1.4 Planning Agreements

A Planning Agreement was finalised between St Mary's Land Ltd and Penrith Council in December 2006. This Planning Agreement principally related to the development of the South Dunheved Precinct, it also sets out traffic and transport contributions relating to the development of the Central and Western Precincts.

The Planning Agreement was updated in 2009 to include human services, open space and stormwater infrastructure contributions resulting from the development of the Central and Western precincts. A deed of variation was agreed to in December 2008.

An agreement has also been made between the National Parks and Wildlife Services (NPWS) and Lend Lease with regards to contributions towards various embellishments of the Regional Park. This agreement includes commitments with regards fencing, access and the urban/Regional Park interface.

2.0 Site Analysis

2.1 Site Location and Context

The site forms part of the Western Precinct, or Jordan Springs as it is more commonly now known. The two terms are used interchangeably within this SEE. The site which is the subject of this application is referred to as Village 5.

The site is located within the south-eastern portion of Jordan Springs and adjoins the Regional Park. A location plan of the site in the context of Jordan Springs and the 900ha Regional Park is provided below at **Figure 4**. The site is irregular in shape and located approximately 1.4km to the east of The Northern Road.

The site is approximately 5km north-east of the Penrith City Centre and 12 km west of the Blacktown City Centre. The Great Western Highway is located another 1 kilometre south and the M4 Motorway a further 1.5 kilometres south.

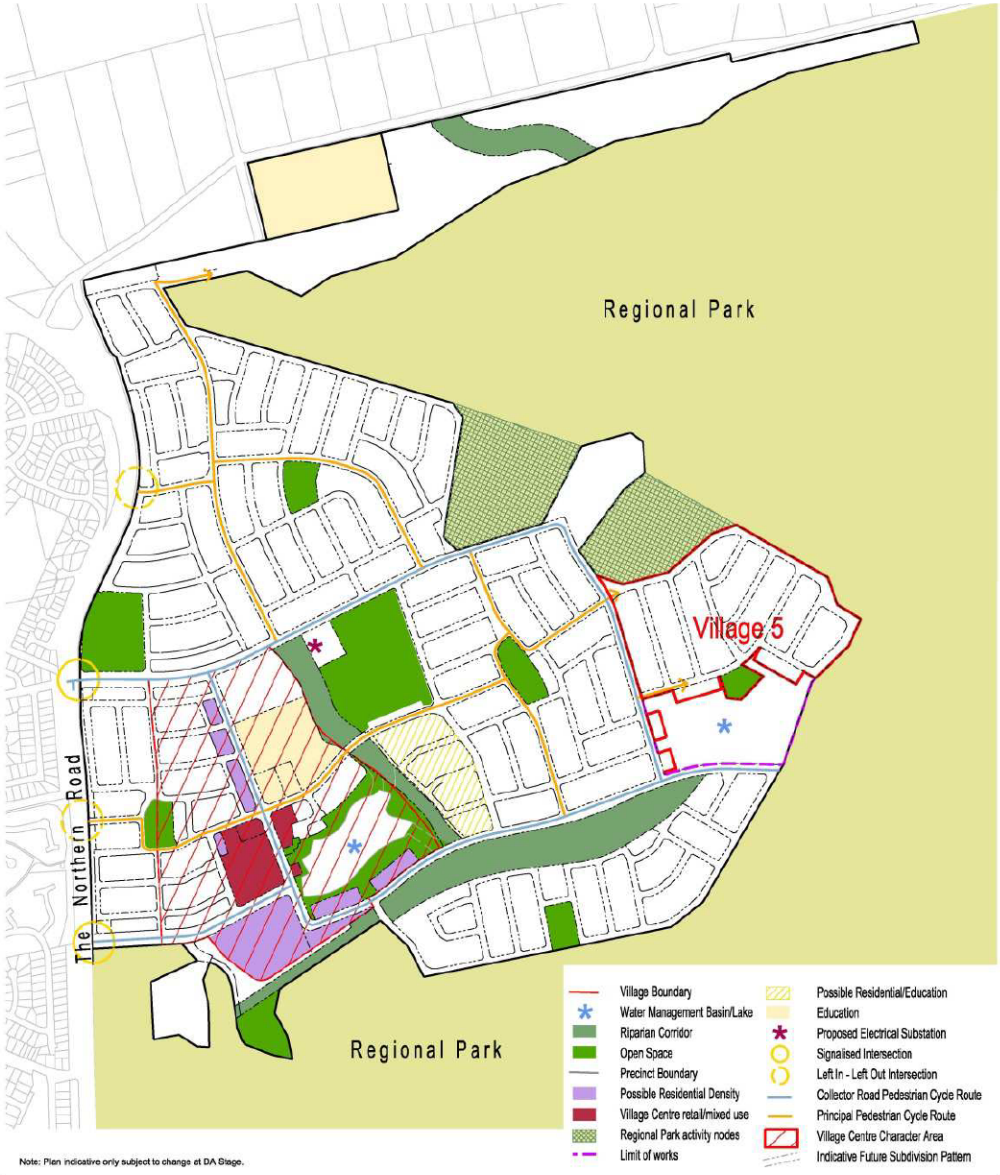

Figure 4 – Jordan Springs Concept Plan
Source: Lend Lease

2.2 Ownership & Legal Description

The site is owned by St Marys Land Limited and is being developed by Lend Lease the applicant for the proposed development application. St Marys Land Limited is a subsidiary of ComLand Limited. Maryland Development Company is the joint venture company that was established by ComLand and Lend Lease development to develop the larger St Marys Site.

The site is legally described as Lot 3997 DP 1179646.

2.3 Existing site conditions

The site comprises cleared pasture with stands of trees and scattered vegetation (**Figure 5)**, with earthworks currently underway in the south of the site for the riparian corridor temporary basin approved under DA13/0065 (approved by PCC 5 July 2013) (**Figure 6**). The land slopes from the north-western corner to the south-eastern portions of the site. There are also drainage lines/depressions located across the site. **Appendix C** includes an Existing Conditions Plan, which provides further details.

Figure 5 – The site from Greenwood Parkway looking east

Figure 6 – Temporary detention basin under construction

2.3.1 Flora and Fauna

Flora and fauna within the Western Precinct (including the site) has been well documented in numerous Ecological Assessments and Surveys undertaken in support of the development of the St Marys site, the Western Precinct as a whole (chiefly the Western Precinct Biodiversity Assessment) and more specifically in relation to the various development stages and works to date. These assessments have been completed by numerous consultants representing a large variety of agencies and organisations under both Federal and State processes over a prolonged period.

Cumberland Ecology has assessed the impact of the proposed development on the flora and fauna species and ecological communities located within the site. On a precautionary basis, it has been agreed with Penrith City Council that all DAs for the Jordan Springs development area, that will involve the removal of *Threatened Species Conservation Act 1995* (TSC Act) listed species and communities, will be accompanied by a Species Impact Statement (SIS). For this reason, although the impacts of the current DA are not generally considered to be significant, a SIS has nonetheless been prepared by Cumberland Ecology (see **Appendix D**) in accordance with the TSC Act and the requirements of the Director General of the Department of Premier and Cabinet (Office of Environment and Heritage).

It should be noted that the southern portion of Village 5 has been assessed in the SIS report prepared for the Riparian Corridor subdivision DA11/1088, for which consent has been granted by Council. The SIS submitted with this DA assesses the impacts of the future development across the Village 5 site.

An overview of the flora and fauna species and ecological communities documented within the SIS to be present on the subject site provided below.

Flora

The plant communities that predominantly occur on the subject site include patches of regenerating Cumberland Plain Woodland (CPW) (refer to as 'derived native grassland') and patches of mature and regenerating CPW. There are minor occurrences of other communities onsite including the River flat Eucalypt Forest (RFEF), Freshwater Wetlands and Regenerating RFEF.

CPW (which includes derived native grasslands) is listed as a 'Critically Endangered Ecological Community' (CEEC) under the *Threatened Species Conservation Act 1995* (TSC Act). RFEF and Freshwater Wetlands are listed as Endangered Ecological Communities (EEC) under the TSC Act.

A small number of threatened flora species are present within the Western Precinct, including *Grevillea juniperina* subsp. *juniperina, Pimelea spicata*, and *Pultenaea parviflora*. Other threatened flora species have been recorded in close proximity to the Western Precinct, including M*arsdenia viridiflora subsp. viridiflora*. None of these species are within the site or on land directly adjacent to the site.

Cumberland Plain Woodland (CPW)

Mature CPW refers to well established vegetation that typify CPW. It generally contains a higher diversity of native species and is generally more intact structurally than CPW elsewhere in the Western Precinct.

Regenerating CPW refers to both the regeneration of sapling and juvenile *Eucalyptus moluccana* (Grey Box) and also the generally reduced diversity of native ground cover species that typify CPW, being a grassy open woodland community.

Derived native grassland in this context refers to grassland that has resulted from past activities associated with the clearing of CPW.

CPW within the site exists predominantly in the form of Derived Native Grassland although scattered patches of mature regenerating CPW in the form of mature canopy trees surrounded by juvenile eucalyptus and native groundcover species also occur.

River Flat Eucalypt Forest

River Flat Eucalypt Forest (RFEF) is found on coastal floodplains and has a tall canopy of eucalyptus. It has a limited occurrence in the Western Precinct, but occurs in the south east corner of the site connected with a larger area of RFEF (in the form of Alluvial Woodland) in the Regional Park. The majority of the vegetation is unvaried in composition from the surrounding woodland.

Freshwater Wetlands

Freshwater Wetlands occur in very small local patches throughout the Western Precinct. These wetlands, which are generally artificially created by a small scraping of the soil that has resulted in a depression, have native plant species present (e.g. Carex appressa, Juncus sp. and *Persicaria decipiens*).

This community does not occur on the subject site, but is present within nearby parts of the Regional Park adjacent to the site.

Fauna

The main fauna habitats within the subject site include grassland, woodland, riparian vegetation associated with minor tributaries and drainage lines, and wetland. In general the extent of historic disturbance and land management activities has significantly limited the suitability of the site and Western Precinct to provide habitat for native species, whilst the Cumberland Plain Land Snail

which is a Threatened Species, has been found within the Regional Park, no threatened fauna species were recorded on the site.

2.3.2 Heritage

Indigenous

An Archaeological Assessment of Indigenous Heritage Values in the Western Precinct (Jo McDonald, 2008) forms part of the adopted WPP. As discussed in the Archaeological Assessment, site surveys have identified a total of 39 surface archaeological sites, with almost 250 artefacts recorded within the Western Precinct.

Within Jordan Springs, about 130 ha of land has been identified as having moderate to very high potential for containing intact archaeological evidence (i.e. being within Zones 1, 2 or 3 in the Archaeological Assessment / WPP).

As outlined in the attached Aboriginal Heritage Report (**Appendix E**), seven salvage areas within the Western Precinct are identified by the Archaeological Assessment / WPP as requiring archaeological salvage works prior to development taking place. Permits allowing testing and salvage excavations of Aboriginal objects or places on the site have been issued by the Director General of the Department of Environment Climate Change and Water (DECCW) under section 90 of the *National Parks and Wildlife Act 1974* (NPW Act) (AHIP No. 10996059). The subject site coincides with one (WP6) of the 7 target sub-surface investigation sites recorded across the Western Precinct. Sub-surface investigations within location WP6 have uncovered a total of 3,233 cultural lithics.

Salvage works in WP6 have completed and completion of the excavation fulfilled Condition 2(a) of the AHIP. The archaeological investigations were undertaken in accordance with the terms of the AHIP relating to Aboriginal Objects. No further archaeological investigations are be required at the site, and work in this precinct may commence.

European

In relation to non-indigenous heritage, there are four heritage items listed under SREP 30 located within the Western Precinct (Sites 9, 14, 15 and 16). A comprehensive Archaeological Assessment of these four heritage items was undertaken as part of the preparation of the WPP, prepared by Casey & Lowe Pty Ltd. None of the four heritage items are located within or are in the vicinity of the subject site.

2.3.3 Bushfire Hazard

Land within the Western Precinct including the site, is largely classified as Bushfire Prone Land due to the proximity of large areas of unmanaged bushland within the adjacent Regional Park. Specific bushfire management, protection and mitigation strategies are included in the adopted WPP. These have been incorporated into the proposal as shown in on the plans at **Appendix A** and discussed further in the Bushfire Protection Assessment at **Appendix F.**

2.3.4 Water and Drainage

A detailed analysis of the existing drainage characteristics of the Western Precinct is contained in the Water, Soils & Infrastructure Report (2009) prepared by SKM that forms part of the WPP. The report concludes that the entire Jordan Springs / Western Precinct is outside of the Probable Maximum Flood (PMF) level of South Creek. As such, it is not at risk of flooding in the 100 year annual recurrence interval (ARI) storm event.

2.3.5 Contamination

Throughout the 1990s Jordan Springs was the subject of extensive investigation and remediation and subsequently a NSW EPA accredited Site Auditor issued the following Site Audit Statements (SAS) for the precinct:

- Part Western Sector covered by SASs CHK001/1; and
- Part Southern West Sector covered by SASs CHK001/1, 001/6 and 001/7.

The information presented in the remediation and validation reports for these sectors has been used to develop a Contamination Management Plan for Jordan Springs which is included in the adopted WPP. The majority of the precinct, including the subject site, has been assessed by the site auditor to pose a negligible risk to the public or the environment with regard to chemical contamination or explosive ordnance.

2.3.6 Soil and Groundwater

Extensive groundwater and salinity investigations have been carried out across the St Marys site over the years. A summary and review of the previous studies and investigations relevant to the Western Precinct was undertaken by SKM within their Water, Soils Infrastructure Report (2009) forming part of the WPP. A further review was undertaken in 2010 by Geotech Testing Pty Ltd which is included at **Appendix G**. In summary, the Western Precinct has the following subsurface conditions:

- The site is underlain by Triassic Bringelly Shale (from the Wianamatta Group) and Pleistocene to Tertiary alluvial sediments.
- The site comprises two alluvial soil landscape types – Luddenham soils (moderate salinity potential) and South Creek soils (high salinity potential).
- Two groundwater-bearing systems are present within the St Marys site.
- Apparent electrical conductivity (ECa) was identified to be generally low in the Western precinct.
- The alluvial clays are highly silty and of medium plasticity.
- Soil analysis shows that the clays are of generally low salinity.
- Shallow groundwater occurs at depths of 3 – 6m and is of low salinity.

2.4 Transport and Access

The main collector road network through Jordan Springs consists of a loop road system around the Western Precinct. The main road entry to the precinct is Jordan Springs Boulevard, which connects to Lakeside Parade. The site's main access is off Greenwood Parkway.

These act as collector roads through the precinct. Jordan Springs Boulevard is the connecting road to Northern Road, which is a Classified Road serving the northern portion of the Penrith LGA. Northern Road is the subject to upgrades at the moment, which are due for completion by mid-2015.

Bus route 783 currently serves the precinct by providing services at 30 minute intervals between 5.31am and 8.48pm on a typical weekday. This route provides access to the Penrith Railway Station.

2.5 Surrounding Future Development

The site predominantly surrounded by woodland zoned as Regional Park to the east, south and north. West of the site is Village 2 which is currently under development (**Figure 7**)

The site adjoins Greenwood Parkway to the west (**Figure 7**) and Lakeside Parade to the south. Greenwood Parkway is a major loop road within Jordan Springs which links Village 2, 3 and 5 to Lakeside Parade.

The Village Centre of Jordan Springs (which includes a Woolworths supermarket) is located some 700m west of the site (see **Figure 8**).

Following the development of the Western Precinct in accordance with the WPP, the site will be surrounded by:

- urban residential development comprising predominately single dwellings to the west with the Village Lake (**Figure 9**) and ;
- Regional Park to the south, east and north; and
- the Eastern Lake (currently approved temporary basin) to the south.

The adjoining 900ha Regional Park, which is to be established under the *National Parks and Wildlife Act 1974* as a reserve, is of strategic importance to the State government and Office of Environment and Heritage.

Figure 7 – Greenwood Parkway to the west of the site

Figure 8 – View of Village Centre shops and car park from Jordan Springs Boulevard

Figure 9 – Residential development west of the site

2.6 Site Opportunities and Constraints

The main planning and design opportunities presented by the Site are that it:

- is zoned for low density residential development;
- is of a suitable size to accommodate development;
- is well located in relation to public transport within walking distance of the Village Centre;
- has utility services available to support development;
- fronts and has direct access from both Greenwood Parade and Lakeside Parade;
- is adjacent to high quality open space areas within the Regional Park, and later the Riparian Corridor /Parkland C and the Eastern Lake as identified in the WPP; and
- has subsoil conditions suitable for development.

The main constraints to development are that the Site:

- has a number of trees; and
- is bushfire prone, requiring an APZ of 25m under the WWP.

The opportunities and constraints applying to the site have been addressed in the by the proposal, which is described in the subsequent chapters of this report.

3.0 Description of Proposed Development

This application seeks approval for the following development:

- subdivision of Lot 3997 DP 1179646 to create 271 residential lots, one lot for the future development of the Eastern Lake, one lot for the future open space lot, and future public roads;
- design and construction of proposed internal minor roads, including the roadway, pedestrian and cycle ways, road reserve landscaping, services and stormwater drainage infrastructure;
- continued usation of the temporary sediment and detention basin on the site;
- provision of temporary piping / channelling connecting the permanent stormwater infrastructure to the temporary sediment and detention basin;
- bulk earthworks for the grading of residential lots and roads; and
- associated tree removal and landscaping.

It is noted that whilst the application only relates to the area covered by Village 5, ancillary works (mainly earthworks and stormwater drainage infrastructure) proposed to be undertaken as part of this DA may extend beyond the boundary of Village 5 into surrounding roads or urban area. This SEE covers the potential impacts associated with all physical works being proposed and is not just limited to the area proposed to be subdivided for Village 5. There are no physical works proposed within the Regional Park.

Subdivision Plans prepared by RPS are included at **Appendix B**. Engineering Plans showing the Village 5 subdivision site within the context of the overall future structure of the Western Precinct is provided at **Appendix H**.

Figure 10 – Proposed subdivision
Source: RPS

3.1 Subdivision

The proposed subdivision will create 271 residential lots within Village 5, together with expanding the internal local road network. The proposed subdivision is to be staged in 3 stages to allow Lend Lease to release future stages according to market demands.

The subdivision, whilst for 271 lots, includes 3 gallery lots, or "semi-detached" lots in line with the Development Control Strategy (DCS) typologies, thus the development will support 274 dwellings in total.

The area of each proposed lot is shown on the Subdivision Plans at **Appendix B**. A residue lot will also be created in the south of the site for the Eastern Lake (Proposed Lot 5000), which will be the subject of separate DAs in the future for use, excavation works and embellishment. **Table 1** below contains an overview of the various components of the proposed subdivision.

Table 1 – Numeric and Staging Overview

Stage	Subdivision
5A	Subdivision of Lot 3997 in DP 1179646 into: ▪ 1 open space lot (5000) – Future Eastern Lake ▪ 24 residential lots (5001- 5024) ▪ 1 residue lot (5025)- Future Stage 5B
5B	Subdivision of Lot 5025 into: ▪ 124 residential lots (5025-5148) ▪ 1 open space lot (5149) ▪ 1 residue lot (5150) – Future Stage 5C
5C	Subdivision of Lot 5150 into: ▪ 123 residential lots (5120-5272)

The proposed residential subdivision has been designed to meet the subdivision layout principles at Section 4.4 of the adopted WPP. A Building Envelope Plan prepared by Lend Lease is included at **Appendix A**. The Building Envelope Plan illustrates the area of each proposed future residential allotment that may be built upon in accordance with the controls for the siting and design of housing contained within the Western Precinct DCS. It demonstrates that the subdivision layout allows for future dwellings to comply with the siting and design of housing controls set out in the WPP.

The proposed subdivision proposes the following lot yields outlined in **Table 2**.

Table 2 – Village 5 lot yields

Size	No. Lots	% total lots
270-500m^2	248	91.51%
501-999m^2	23	8.49%
Total	271	

The larger proportion of lots of 270-500m^2 is in response to market demands, and to provide affordable housing choices and diversity in housing product to reflect the needs of the current local housing market.

3.2 Earthworks

Engineering Plans prepared by J Wyndham Prince illustrating the areas of the site subject to earthworks including cut and fill are included at **Appendix H**. Proposed earthworks include grading for the provision of residential and road allotments, whereas road grading is predominantly determined by stormwater drainage requirements. Most of the future residential lots will require regrading to shed stormwater to roadways and the temporary detention basin. Earthworks have been designed to comply with Councils Development Control Plan 2010 and with the main aim of minimising the volume of certified fill imported to the site.

The following provides a preliminary estimate of the earthworks volumes for Village 5 by J Wyndham Prince:

- Assumptions and exclusions:
  - Volumes are raw (surface to surface) with no bulking factor applied
  - Assumed topsoil stripping = 100mm
  - Assumed road boxing/pavement depth = 500mm
  - No allowance has been made for drainage or utility trenches
- Based on the proposed grading, and the above assumptions and exclusions, it is expected that earthworks volumes will be in the vicinity of:
  - Approximate cut = 30,000m^3
  - Approximate fill = 120,000m^3
  - Approximate balance (import material) = 90,000m^3

Batter works are proposed to occur within the site boundaries as the site is predominantly adjoining the Regional Park. This is in order to grade and match existing levels with the surrounding site and aims to minimise impacts on the adjoining Regional Park.

Whilst the development and embellishment of the Eastern Lake (Lot 5000) will form part of a future separate DA, the basic engineering parameters (e.g. grading and drainage) have been worked up to ensure that it will continue to function adequately as a temporary detention basin (as approved under DA13/0065) and integrate with surrounding development and infrastructure (refer to details included within the Engineering Plans at **Appendix H**).

The proposed subdivision comprises the use of around 90,000m^3 of fill which is likely to occur over an eight to ten week period. Fill will be brought in from The Northern Road via the main collector roads within Jordan Springs of Jordan Springs Boulevard, Lakeside Parade and Greenwood Parkway (**Figure 11**).

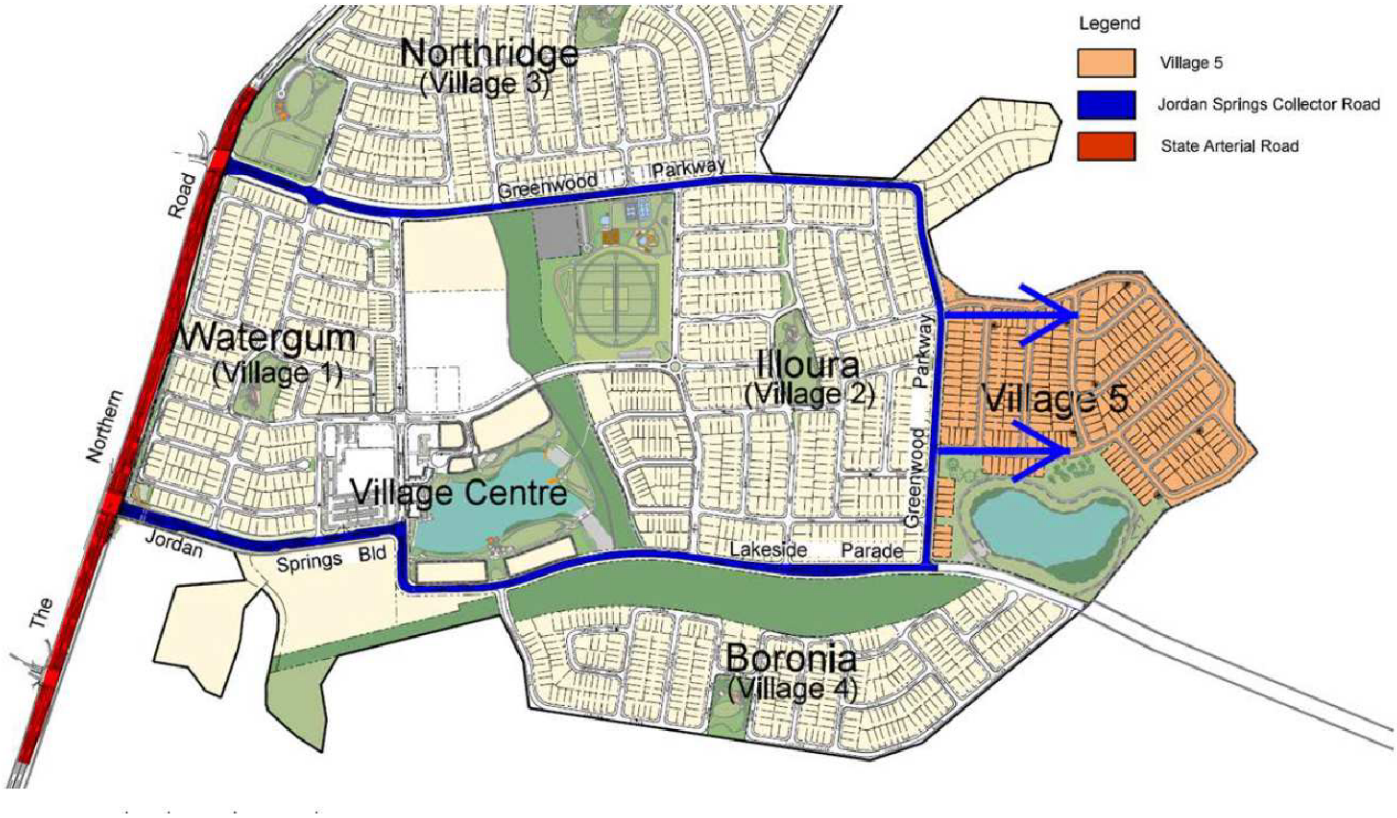

Figure 11 – Proposed truck routes for importation of fill
Source: Lend Lease

3.3 Access and Movement

3.3.1 Road Hierarchy and Design

Western Precinct

The Western Precinct Framework Plan contained in the approved WPP (and reproduced at **Figure 3**) shows the indicative road layout for the entire Western Precinct. The collector road system consists of a loop around the centre of the precinct (Greenwood Parkway and Lakeside Parade). Two roads lead off from the loop road in a westerly direction to connect with The Northern Road, with another leading east through the Regional Park to the St Mary's Central Precinct. Greenwood Parkway is the collector road loop will form part of the main street providing access through the Village Centre.

The Site

The Street Hierarchy Plan prepared by Lend Lease (refer **Appendix A**) includes the roads proposed within the proposed subdivision. Eight (8) new roads are proposed to be constructed within the proposed subdivision layout. These roads form the basis for potential development staging as further discussed in Section 3.5.

The proposed roads have been designed in accordance with the road typologies described in the WPP and DCS. The local roads for which consent is sought by this DA will be dedicated to Council as public roads.

Referring to the Engineering Plans and Sections prepared by J Wyndham Prince (included at **Appendix H**) the majority of roads proposed in this DA will be minor local roads, with the following characteristics:

- 15.6m reserves;
- 8m carriageways;
- 3.8m verges on each side; and
- 1.5m wide footpaths within the verge on both sides of the road.

The perimeter roads of the subdivision, including Road 1, Road 2 and Road 8 have the following typical characteristics:

- 17.6m reserve;
- 8.0m carriageways;
- variable verge widths; and
- 2.5m shared path wide on one side of the road.

As discussed in the Traffic Impact Assessment at **Appendix I**, the Village 5 subdivision will be predominantly accessed from The Northern Road from Greenwood Parkway or Jordan Springs Boulevard. A future road is also planned in SREP 30 which connects Jordan Springs with the future Central St Marys Precinct

The Plans at **Appendix A** show the proposed footpaths, cycle route and bus route networks throughout the Western Precinct and the manner in which the site connects with those networks.

3.4 Landscaping and Tree Removal

The proposed subdivision has been designed and located in order to retain a number of ecologically and landscape significant trees within the future Village Park and Eastern Lake. The attached Tree Plan and Existing Tree Schedule outline the proposed trees to be removed and retained within the subdivision area (**Appendix A**).

New street tree planting options include the following tree species as shown in the Street Tree Plan (**Appendix A**):

- *Corymbla Citriodora* (Blue Spotted Gum) – Australian native which grows up to 35m high*;*
- *Lagerstrowmia Indica 'Tuscarora' (*Coral-Red Crepe Myrtle) – Deciduous tree with 5-6m high and 4m canopy; and
- *Acer Negundo '*Sensation' (Sensation Maple) – Deciduous tree typically grows 8-9m high and 6m canopy.

The proposed street tree planting locations consider:

- public safety and the need to avoid hazards that may result from leaf and branch drop or obstacles in vehicular sight lines;
- provision of canopy shade; and
- scale and form of trees within the streetscape.

The proposed trees are consistent with the WPP Bushland Edge Character Area and aim to support the goals of ecologically sustainable development identified under Section 4.8 of the WPP.

3.5 Stormwater Management

Village 5 is located directly adjacent (east) to the existing Village 2 development. The existing site conditions generally consist of grasslands and scattered trees. The existing terrain is dissected by existing tracks and natural crests which generally direct surface runoff in a south easterly direction. The stormwater management strategy for Village 5 will be implemented in two stages as follows.

Interim Stormwater Management Strategy (Construction Phase)

The subdivision construction phase includes any construction activity within the catchment that causes disturbance to the ground surface. The construction phase includes the construction of subdivision civil works and the subsequent construction of dwellings which may occur over an extended period of time after the issue of Subdivision Certificate.

The SKM report "Riparian Corridors – Soil and Water Management Plan Report" dated February 2014 provides an interim stormwater management strategy that satisfies the Construction Phase requirements of Villages 2, 4 and 5. The report proposes a temporary sediment basin at the location of the future East Lake to receive dirty water discharge from upstream catchments for treatment. The construction of the temporary sediment basin was completed recently, and the entire Village 5 catchment will drain into the temporary basin which will remain in place until Village 5 dwelling construction is substantially complete.

The greatest disturbance to the Village 5 catchment will occur during the construction of subdivision civil works, and appropriate soil and water management controls will be implemented in accordance with drawing 9343/03DA14 Soil and Water Management Plan by J Wyndham Prince (**Appendix H**).

Ultimate Stormwater Management Strategy (Operational Phase)

The Operational Phase commences once dwelling construction is substantially complete and the ground surface within the catchment has been stabilised. The interim sediment basin will ultimately become a permanent water quality and quantity control lake at some time in the future, subject to a future development application.

A development application for the construction of the permanent water body will be prepared in the future, with the proposal triggering designated development under the EP&A Act. The development application will be supported by an ultimate stormwater management strategy by SKM detailing water quality and quantity measures to be implemented at East Lake. This strategy will form part of the overall total catchment management strategy which is being implemented across the Western Precinct and Central Precinct to ensure no net increase in pollutants at a designated point on South Creek.

Both the Interim and Ultimate Stormwater Management Strategy for Jordan Springs East Lake will deliver the required water quality and quantity treatments to ensure that the requirements of the Penrith City Council Water Sensitive Urban Design guidelines are met.

Erosion and Sediment Control

In accordance with *St Marys Project Western Precinct Plan – Water, Soils Infrastructure Report (2009*) forming part of the WPP, erosion and sediment control measures are to be implemented during the proposed works as shown on the stormwater plans at **Appendix H**. Measures to be implemented on site will be further detailed in the Construction Management Plan prior to issue of a Construction Certificate and will include:

- use of silt fences to direct stormwater and trap silt;
- use of barrier fences;
- use of straw bales as sediment filters;
- use of filter rolls; and
- inlet sediment traps.

3.6 Soil Salinity

The attached Soil Salinity Review (**Appendix G**) outlines that testing of recovered soil samples throughout the Western Precinct indicated:

- about 52% of the results were less than 4dS/m or non-saline to slightly saline;
- about 50% of the results were in the range of 4 – 8 dS/m or moderately saline;
- one result indicated very saline soil (ECe = 9.90dS/m); and
- the topsoil was generally non-saline and increasing in salinity with depth.

The Soil Salinity Review recommends that implementation of a Soil and Water Management Plan is essential to maintain current conditions of the site.

The Soil and Water Management Plan forming part of the WPP includes recommended strategy measures to be implemented to address potential soil salinity issues, should they occur.

Specific measures to prevent the proposed development resulting in increased soil salinity to be implemented on the site are detailed on the Engineering Plans prepared by J Wyndham Prince at **Appendix G**. These measures are consistent with WPP recommendations and aim to reduce rainwater infiltration in locations at which recharging of the water table is likely to result in saline minerals rising up through the soil. These measures include:

- The shaping of landform so as to affect the rapid shedding of water to roadways and underground stormwater drainage systems;
- Collection of stormwater from paved areas and roofs for conveyance directly through sealed drains to approved discharge points along natural drainage lines/stormwater detention basins;
- The impervious lining of permanent stormwater detention structures and wetlands;
- Planting and retention of native deep-rooted large flora species;
- Ensuring individual house blocks easily drain to catchment wide stormwater system to ensure salt does not accumulate in the garden beds, adjacent to building foundations or other salt sensitive infrastructure; and
- Minimisation of disturbance during construction and the implementation of appropriate erosion and sediment control strategies.

3.7 Contamination Management

The proposed development will be carried out in accordance with the conditions and procedures set out in site audit statements prepared for the WPP.

3.8 Utility Services

Consultation with relevant utilities service providers was undertaken in the preparation of the WPP (documentation of which is provided at Appendix F of the WPP) and by the applicant in relation to previous DAs for the subdivision of the Western Precinct for urban land uses. From these consultations, it is concluded that the site is serviceable with water, sewer, electricity and telecommunications, subject to extensions/augmentation of utilities infrastructure as part of the future development of the Western Precinct.

3.9 Waste Management

Proposed measures to maximise reuse and recycling and minimise waste during the construction and use phases of the proposed development are set out in the Waste Management Plan at **Appendix J**.

3.10 Development Staging

Should the current high housing demand and market remain, the construction of Village 5 and its associated roads will be undertaken in one stage. In the event that the market conditions changes, the village will be delivered in three stages; 5a, 5b and 5c as outlined in **Table 1** and the staging plans below in **Figure 12.**

The proposed staging plan takes into account the road layout and servicing provision.

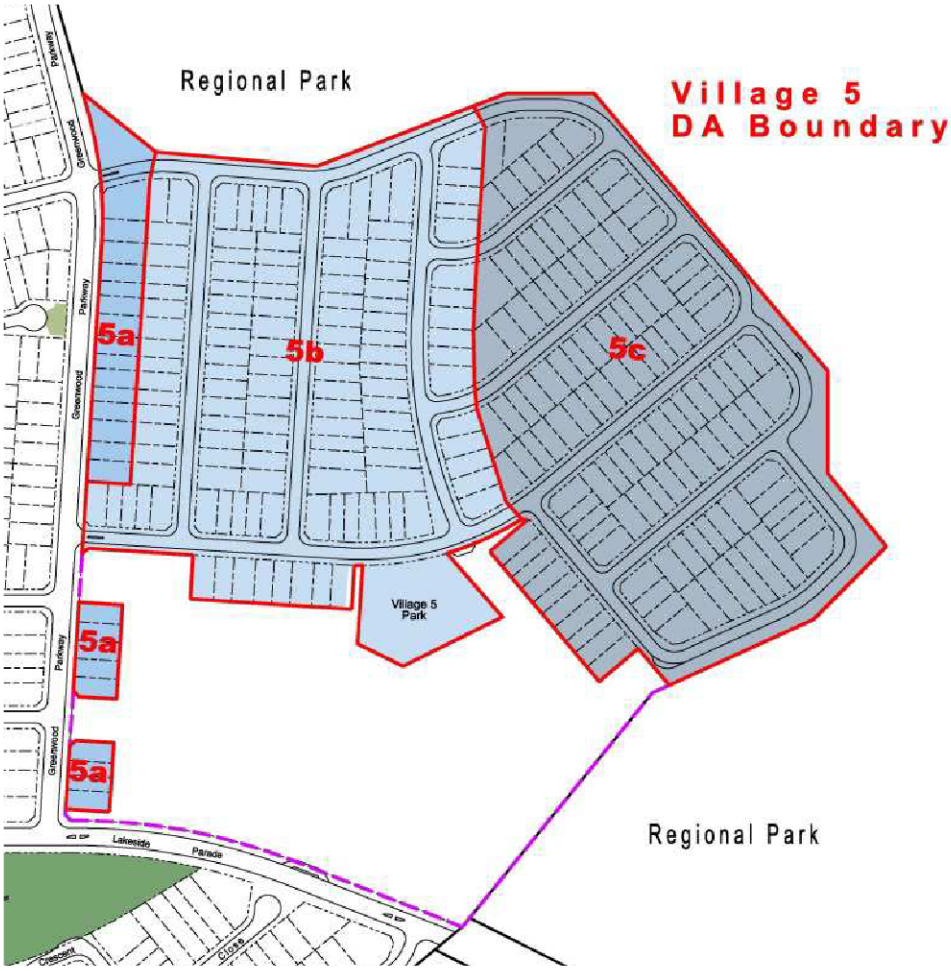

Figure 12 – Village 5 Staging Plan
Source: Lend Lease

3.11 Construction Management

Construction activities would be undertaken between 7:00am and 6:00pm Monday to Friday and 7:00am to 1:00pm Saturday, if inaudible on neighbouring residential properties, otherwise 8am to 1pm. No work is to take place on Sunday or public holidays.

Any construction work outside of these hours will be subject to prior consultation with PCC and the RMS.

Further details on construction management will be provided in a Construction Management Plan to be completed prior to the issue of a Construction Certificate.

4.0 Assessment of Environmental Impacts

This chapter contains our assessment of the environmental effects of the proposed development as described in the preceding sections of this report.

Under Section 79C(1) of the EP&A Act, in determining a development application the consent authority has to take into account a range of matters relevant to the development including the provisions of environmental planning instruments, impacts to the built and natural environment, social and economic impacts of the development; the suitability of the site; and whether the public interest would be served by the development.

The assessment includes only those matters under Section 79C(1) that are relevant to the proposal.

4.1 Compliance with Relevant Strategic and Statutory Plans and Policies

4.1.1 SREP 30 – St Marys

The proposed development is consistent with the Performance Objectives set out in the clauses 22 to 35 of SREP 30 for the following reasons:

- the proposed development is in accordance with the ecologically sustainable development of the land, as prescribed by the WPP;
- the proposed subdivision works will not result in adverse impacts to air quality, with appropriate management measures to be incorporated during construction;
- the subdivision design aims to retain significant trees where possible;
- proposed works are confined to the Urban Zone, with the conservation significance of the Regional Park accordingly being protected;
- appropriate consents and approvals to disturb Indigenous heritage items have been obtained to allow for development to occur;
- the proposal represents a further stage in creating a new residential community within the Western Precinct, which will be serviced by a full range of both hard and soft infrastructure;
- the future dwellings within the proposed subdivision will have convenient access to a range of open space and recreation areas, including the future Village Oval, the park adjoining the future Eastern Lake, and the Regional Park to the north and east;
- the interim and long term Stormwater Management Systems to be implemented ensure appropriate water cycle management in relation to the proposal;
- the road layout of the proposed subdivision is consistent with the design and street hierarchy established within the WPP, linking into the approved surrounding road network;
- the proposal contributes towards the provision of an attractive and safe built environment which satisfies a diverse range of community needs;
- the development supports the provision of a range of building types and forms within Jordan Springs, in close proximity to public transport, community and recreation facilities, and retail; and

- the subdivision layout ensures an appropriate delineation of private and public spaces.

The Western Precinct as a whole is zoned 'urban' in accordance with clause 36 of SREP 30. The proposal is consistent with the objectives for the Urban Zone set out in clause 40 (1) of SREP 30 as it will ensure that the zone is primarily used for residential purposes and associated facilities.

Also in accordance with clause 40 (2) of the SREP, 'housing', 'roads' and 'drains' are permissible in the Urban zone, subject to consent.

Clause 20 of the SREP requires the consent authority to take the Precinct Plan for the Western Precinct into account when assessing the proposed development. The Precinct Framework Plan, which was lodged with the Stage 1A DA, is reproduced at **Figure 3.** The proposed development does not affect road alignments, road typologies or the location of open space and is consistent with the layout of the Precinct Plan.

4.1.2 St Marys Environmental Planning Strategy 2000 (St Marys EPS)

The St Marys EPS contains performance objectives for future development of the St Mary's site (i.e. the area covered by SREP 30). In order to adopt a precinct plan for the St Mary's site, Council must ensure such a plan is consistent with the aims and objectives of the St Marys EPS. The proposed development is consistent with the WPP, with residential development envisaged within the Urban Zone.

The consistency of this DA with the aims and performance objectives of the EPS has therefore been addressed by Council in its consideration and subsequent adoption of the WPP in relation to conservation (particularly in relation to the conservation of natural values within a regional park), cultural heritage, transport, urban form, energy and waste, potential impacts to flora and fauna, human services, soil salinity and contamination.

Performance objectives for water and soils (as set out in Section 6 of the St Mary's EPS) will be satisfied through the implementation of measures set out in the Stormwater Management Plan (**Appendix H**) and implementation of recommendations within the Salinity Review (**Appendix G**).

The Waste Management Plan at **Appendix J** will promote the minimisation of waste and maximisation of reuse and recycling both on and off site as far as practicable, consistent with performance objectives for energy and waste set out in Section 9 of the EPS.

4.1.3 Western Precinct Plan (Development Control Strategy)

The proposal complies with the WPP and DCS, in particular:

- through developing land for residential purposes in accordance with the Framework Plan;
- providing a subdivision pattern that supports housing diversity and mix within neighbourhoods;
- supporting the establishment of a well connected street network, allowing for high levels of permeability for pedestrians, cyclists and motorists;
- creating a legible street hierarchy that supports the future residential character and expected low volume of traffic;

- promoting ease of movement and walkability through short and well connected block lengths;
- providing landscape treatments that support the residential neighbourhood identity and ensures that the landscape character dominates the street;
- designing a road layout that provides sufficient space for street planting, landscape treatments, and paths;
- supporting the achievement of the dwelling density target for the Western Precinct, through providing a range of lot sizes suitable for detached dwellings and accommodating a number of semidetached dwellings;
- undertaking development in accordance with the indicative phasing strategy;
- ensuring the development connects with the external road network; and
- designing a street network in accordance with the adopted street types.

4.1.4 Development Agreements

The development of the Western Precinct supports the implementation of, and is consistent with the St Marys Development Agreement (including the establishment and management of the Regional Park) and the St Marys Penrith Planning Agreement for the delivery of regional and local services and infrastructure/facilities to support the project.

4.1.5 Water Management Act

The proposal involves works within 'waterfront land' as defined under the *Water Management Act 2000*. Accordingly, a Controlled Activity Approval is required to be obtained. Proposed works relate to work within 40m of a water course, being the east-west riparian corridor.

The proposed subdivision is in accordance with the Western Precinct Plan and recommendations outlined by the then Department of Water and Energy as part of the precinct planning process. Further, these works, in the broader context of the Western Precinct, will assist with ensuring appropriate outcomes are achieved with respect to water quality and quality objectives, and in terms of improving the natural values of the site. Appropriate measures will also be carried out to ensure potential impacts on the water course during construction are minimised.

4.2 Subdivision Design

4.2.1 Yield & Density

The adopted WPP requires each residential stage subdivision to indicate the total number of dwellings proposed in the subdivision, the cumulative dwelling yield of all proposed and approved subdivisions, and the proposed dwelling density for the subdivision. **Table 2** over the page identifies the cumulative dwelling yield and dwelling density of DAs that have been lodged to date within the Western Precinct.

As evident within the **Table 2**, the density achieved for proposed Village 5 (Stage 5) is 17.76 dwellings per hectare, meeting the density target of 15 dwellings per hectare established within clause 30(6) of the SREP. Further, the cumulative density achieved including all previous Stages 1 – 4 also meet the density target. The target is neither a minimum or a maximum, but a target set in the SREP 30 to ensure future St Marys development optimises the opportunities and initiatives presented to the site such as public transport, accessibility to a range of commercial, community and open space land uses within each precinct, and safe and usable pedestrian and cycle paths.

Section 4.5 of the WWP outlines that the dwelling density in clause 30(6) of the SREP is to be applied on the basis of:

a) The overall St Marys development, ie, dwelling density is measured across all areas zoned Urban under SREP 30 rather than individual precincts;

b) The net density achieved, ie, dwelling density is measured according to net developable area rather than gross developable area; and

c) The density being clearly expressed as a target, rather than a fixed requirement.

In this manner, the target of 15 dwellings per hectare is to be taken as a benchmark or goal to be applied across the cumulative total of St Marys. Given much of the St Marys site is undeveloped, the overall dwelling density remains a target which will continue to be observed in future applications. This development exceeds the target as the proposal optimises the high amenity provided by the site's bushland location, proximity to the Eastern Lake, and good transport, pedestrian and cycle networks.

Im accordance with the site's urban area/neighbourhood character under the WWP housing types consist predominantly of detached dwellings.

Table 3 – Western Precinct cumulative dwelling yield and density

Stage	No. of dwellings	Density / ha	Cumulative yield	Average cumulative density / ha	% Detached Dwelling						Integrated Housing						Apartments	
					270-500sqm		500-999sqm		1000sqm +		Attached		Semi-detached		Detached			
					no. of dwellings	% of total (Target 60-70%)	no. of dwellings	% of total (Target 20-25%)	no. of dwellings	% of total (Target 1-2%)	no. of dwellings	% of total (Target 3-4%)	no. of dwellings	% of total (target 1-2%)	no. of dwellings	% of total (Target 6-8%)	no. of dwellings	% of total (target 1%)
1A	31	15.69	31	15.69	21	67.74	10	32.26	0	0.00	0	0.00	0	0.00	0	0.00	0	0
1B	40	17.66	71	16.74	34	85.00	6	15.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0
1C	38	15.84	109	16.42	26	68.42	12	31.58	0	0.00	0	0.00	0	0.00	0	0.00	0	0
1D	18	15.23	127	16.24	12	66.67	6	33.33	0	0.00	0	0.00	0	0.00	0	0.00	0	0
1E	98	16.61	225	16.40	77	78.57	21	21.43	0	0.00	0	0.00	0	0.00	0	0.00	0	0
1F	25	18.68	250	16.60	24	96.00	1	4.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0
1G	17	15.64	267	16.54	13	76.47	4	23.53	0	0.00	0	0.00	0	0.00	0	0.00	0	0
1H	29	33.26	296	17.39	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	29	100.00	0	0
Stage 1 Total	296	17.39	296	17.39	207	69.93%	60	20.27%	0	0.00%	0	0.00	0	0.00	29	9.80	0	0
2A	75	16.22	371	17.14	59	78.67	16	21.33	0	0.00	0	0.00	0	0.00	0	0.00	0	0
2A Living Street	22	17.12	393	17.14	18	81.82	4	18.18	0	0.00	0	0.00	0	0.00	0	0.00	0	0
2B	70	15.77	463	16.92	43	61.43	27	38.57	0	0.00	0	0.00	0	0.00	0	0.00	0	0
2C	111	17.90	574	17.10	84	75.68	27	24.32	0	0.00	0	0.00	0	0.00	0	0.00	0	0
2D (incl. resub lots)	107	18.64	681	17.32	97	90.65	10	9.35	0	0.00	0	0.00	0	0.00	0	0.00	0	0
Stage 2 Total	385	17.27	681	17.32	301	78.18%	84	21.82%	0	0.00%	0	0.00	0	0.00	0	0.00	0	0
3A	138	17.25	819	17.31	113	81.88	25	18.12	0	0.00	0	0.00	0	0.00	0	0.00	0	0
3B	149	19.41	968	17.60	132	88.59	17	11.41	0	0.00	0	0.00	0	0.00	0	0.00	0	0
3C1	210	17.42	1178	17.57	185	88.10	25	11.90	0	0.00	0	0.00	0	0.00	0	0.00	0	0
3C2	166	17.76	1344	17.60	150	90.36	15	9.04	1	0.60	0	0.00	0	0.00	0	0.00	0	0
3C3	203	17.62	1547	17.60	180	88.67	22	10.84	1	0.49	0	0.00	0	0.00	0	0.00	0	0
Stage 3 Total	866	17.82	1547	17.60	760	87.76%	104	12.01%	2	0.23%	0	0.00	0	0.00	0	0.00	0	0
4A	70	17.34	1617	17.59	61	87.14	9	12.86	0	0.00	0	0.00	0	0.00	0	0.00	0	0
4B	52	19.10	1669	17.63	50	96.15	2	3.85	0	0.00	0	0.00	0	0.00	0	0.00	0	0
4C	75	18.90	1744	17.68	70	93.33	5	6.67	0	0.00	0	0.00	0	0.00	0	0.00	0	0
4D	52	16.51	1796	17.65	42	80.77	10	19.23	0	0.00	0	0.00	0	0.00	0	0.00	0	0
4E	43	14.74	1839	17.56	31	72.09	12	27.91	0	0.00	0	0.00	0	0.00	0	0.00	0	0
Stage 4 Total	292	17.39	1839	17.56	254	86.99%	38	13.01%	0	0.00%	0	0.00	0	0.00	0	0.00	0	0
Stage 5 Total	274	17.78	2113	17.59	248	90.51%	20	7.30%	0	0.00%	0	0.00	6	2.19	0	0.00	0	0
V12	91	24.17	2204	20.32	68	74.73%	14	15.38%	0	0.00%	9	9.89	0	0.00	0	0.00	0	0
VC C (Isaac Site)	94	237.60	2298	21.11	0	0.00%	0	0.00%	0	0.00%	0	0.00	0	0.00	0	0.00	94	100
VC Sites total	185	44.46	2298	1.70	68	36.76%	14	7.57%	0	0.00%	9	4.86	0	0.00	0	0.00	94	51
Jordan Springs Total	2298	18.17	2298	18.17	1838	79.98%	320	13.93%	2	0.09%	9	0.43%	6	0.26%	29	1.38%	94	4.48%

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4.2.2 Safety

This DA is for subdivision, earthworks, construction of roads, landscaping and drainage infrastructure. Details of future built form and the manner in which it addresses the principles of Crime Prevention Through Environmental Design (CPTED) will be addressed in subsequent applications for the construction of buildings and structures.

However, it is important to note that the proposed subdivision has been designed to facilitate the development of the site in a manner that can achieve the utmost in safety and design. The proposal considers such principles, in particular through:

- street designs that provide safe, well lit pedestrian routes;
- providing appropriate lighting and well lit paths on street kerbs;
- landscaping that allows for view corridors and clear sight lines; and
- the siting and design of the proposed Eastern Lake ensures that opposite/ adjoining dwellings overlook it, thereby maximising casual passive surveillance by residents. Future DAs for Lots 5016-5024, 5141-5148 and 5263-5272 adjoining the lake will address building frontages and include controls relating to the interface between the lake and proposed residential dwellings. Passive surveillance opportunities are provided through providing a walking/cycle track around the basin in addition to surveillance from the road through the view corridors provided between lots.

4.3 Streetscape and Public domain

The proposed development has been assessed with regard to the Open Space and Landscape Strategy, which forms part of the approved WPP. The proposal is considered consistent with the Strategy in that it:

- supports the even distribution of open space which is within 5 minutes walk of residences;
- retains, where possible, existing trees and incorporates them into open space, landscaping and road reserves;
- effectively integrates landscaping and subdivision layout with that of proposed stormwater works;
- effectively uses existing topography and natural systems to visually enhance future adjoining development;
- uses native vegetation to assist in efficient water use;
- enhances and ecologically supports existing native vegetation within and adjoining the site, particularly that of the regional park and existing trees within the future Village Park and Eastern Lake; and
- promotes 'quality' open space and recreation experiences rather than quantity only.

4.4 Ecology

A Species Impact Statement for the site has been undertaken by Cumberland Ecology (refer to **Appendix D**). The assessment considers the potential impacts arising from the proposed development. It also identifies flora and fauna species and ecological communities known or likely to occur on the site and includes 'seven part tests' in accordance with s.94(2) of the *Threatened Species Conservation Act 1995* (TSC Act) and Part 5A of the EP&A Act.

Direct Impacts

The proposed development (Village 5) will result in the clearance of around 14.89ha of CPW comprising 4.01ha of mature CPW, 5.04ha of regenerating CPW, and 5.84ha of derived native grasslands. In addition, the proposed works will result in the clearance of 0.58ha of river-flat eucalyptus.

CPW is a Critically Endangered Ecological Community (CEEC) under the TSC Act and the Commonwealth *Environmental Protection and Biodiversity Act 1999* (EPBC Act). Cumberland Ecology advise that the proposed development will occur within a landscape that has been extensively altered since European settlement took place. Further, the assessment concludes that with due consideration of the restricted distribution of CPW in the region, the proposed development is not likely to have a significant impact on CPW such that the viable representatives in the Regional Park would be placed at risk of extinction.

Indirect impacts

Land adjoining the subject site (apart from the Regional Park) may experience some disturbance in parts associated with the provision of ancillary works (such as battering, retaining walls and stormwater drainage works). There is also the chance of indirect effects, such as the spread of weeds, to impact on native vegetation in this area.

The proposed removal of regenerating CPW on the site also has the potential to indirectly impact on CPW through the increase of edge effects on the adjoining Regional Park. Potential indirect impacts can be minimised through the implementation of mitigation measures as detailed within the Western Precinct Biodiversity Assessment (Cumberland Ecology, 2009c). Cumberland Ecology recommends site specific mitigation measures such as the continued mowing of a buffered edge between the residential development area and the Regional Park (with mowing favouring the establishment of native grass and herb species). Overall, Cumberland Ecology advise that in combination with the comprehensive mitigation measures for the St Marys site (namely the protection and conservation of approximately 900ha of the highest quality native vegetation within the Regional Park), minimal indirect impacts are likely to occur as a result of the proposed development.

Threatened Flora Species

A Seven Part Test, in accordance with Section 5A of the EP&A Act, concludes that only one threatened flora species found near the site (*Pimelea spicata – Spiked Rice Flower*), and the Test confirms that the proposed development is not considered to have significant impact on the species or any other threatened flora species.

Threatened Fauna Species

Impacts to native fauna will primarily result from the removal and reduction of woodland and grassland habitat. Cumberland Ecology advise that the vegetation within site is fragmented and mostly very young regrowth and therefore its value as a habitat for native fauna has been significantly reduced.

Assessments of significance (Seven Part Tests) for fauna species recorded in the locality indicate that no significant impact is expected to occur to threatened bat or bird species, or invertebrates. While the development will contribute cumulatively to the removal of woodland habitat in the Western Precinct, which may impact the Cumberland Plain Land Snail, it is not considered likely to constitute a significant impact in terms of the seven part test. The Species Impact Statement concludes that the proposal will not result in any local populations of threatened species or occurrences of ecological communities becoming extinct.

Mitigation Measures

Extensive mitigation measures will be implemented across the Western Precinct to minimise the impacts from future development. Foremost amongst these is the protection and conservation of approximately 900ha of the highest quality native vegetation within the Regional Park. Impact resulting from the development of the Western Precinct will be offset by the major conservation outcome of the Regional Park and by a series of management strategies to be implemented for management of weeds, feral animals, macrofauna and bushfire in the Western Precinct.

The provision of the East Lake and surrounding open space vegetation and street green space (where some trees will be retained) will also provide some canopy connection between foraging resources for bats and birds while also maintaining the genetic diversity of the plant species of the locality.

Conclusion

Overall the Cumberland Ecology concludes:

> *When weighed against the conservation benefits, both direct and indirect, that will be derived from the 900ha Regional Park, together with the various mitigation measures afforded by the management strategies for weeds, feral and domestic animals and macrofauna, the relatively small areas of natural and semi-natural vegetation to be cleared as a result of the proposal are considered to be of minor consequence. The proposal is unlikely to result in any threatened species or ecological community becoming extinct. Known occurrences of threatened flora and fauna within the SMP* [St Marys Precinct] *are predicted to be secure in the long term as a result of the creation of the 900ha Regional Park and numerous supporting mitigation measures that are enshrined in the legal, statutory planning framework.*

It is therefore considered that the proposal will have limited impacts on the flora and fauna within the site, and that no further assessment of the ecological impacts of the proposal is required in relation to the development of the subject land.

4.5 Contamination

As discussed in the WPP, the St Mary's Precinct has been subject to extensive investigation and remediation, where necessary, throughout the 1990s. The Environmental Protection Agency (EPA), now DECCW, has been involved throughout this process and an EPA accredited Site Auditor issued Site Audit Statements for the St Mary's site.

Nevertheless, in order to ensure the appropriate management of any sub-surface contamination that may be encountered during future works in the Western Precinct, a Contamination Management Plan (CMP) has been adopted by the Council as part of the WPP. The CMP outlines the measures to be undertaken should contamination and/or explosive ordnance material be uncovered during the proposed works.

No further Site Audit Statements are required to be issued in relation to the development of the subject land.

4.5.1 Chemical Contamination

In the case of suspected chemical contamination being uncovered during earthworks, the measures that will be implemented, in accordance with the CMP include:

- quarantining or suspected contamination by a suitably qualified Environmental Consultant to protect the workforce from exposure to the contaminants and prevent the spread of contamination;
- suspected asbestos containing materials should be managed in accordance with the relevant Work Cover requirements and a site specific Asbestos Management Plan.
- a suitably qualified Environmental Consultant is to be contacted to assess the nature and extent of the suspected contaminant and determine the appropriate remedial actions, which may include removal of the material to a licensed facility.
- the report on the remediation and validation will be undertaken in conjunction with an independent auditor. The auditor must issue a Site Audit Statement to indicate that the site is suitable for its intended use. Upon receipt of this the quarantine barriers can be removed and earthworks continue.
- a Sampling Analysis Plan is to be prepared if the contamination is found to be extensive.
- it may be possible to move and stockpile the contaminated material should it be critical to the project schedule. Validation sampling is required before earthworks can commence.
- if the environmental consultant determines that the material is not contaminated the quarantine restrictions can be lifted and earthworks in that area can continue.

4.5.2 Explosive Ordnance Material

Should potential explosive ordnance debris or other suspicious foreign debris be uncovered, earthworks will cease immediately and the area affected will be quarantined by an appropriate barrier to prevent access and protect the workforce from potential injury. The following measures, as detailed in the CMP undertaken:

- the Site Manager will make a preliminary assessment of whether material is miscellaneous debris, fragment or explosive ordnance or complete piece of explosive ordnance;
- where the Site Manager confidently identifies objects(s) as non-explosive ordnance debris, or to be minor harmless fragments of ordnance debris, the material is to be removed from the excavation and disposed of appropriately;
- where an object or material is considered to be a potentially explosive device, the Site Manager will contact an appropriately qualified Ordinance Contractor to assess the item and affected area;
- should the Ordinance Contractor determine material is harmless, the object(s) can be removed and disposed of appropriately, the quarantine lifted and earthworks continue;
- if the Ordinance Contractor determines material to be explosive, it is to be disposed of in an appropriate way; and
- it may be necessary to carry out further surveys in accordance with QA/Validation procedures.

4.6 Bushfire

The subject site is identified as bushfire prone land. A Bushfire Safety Authority from NSW Rural Fire Service is therefore required in relation to the proposed development (subdivision), in accordance with Section 100B of the *Rural Fires Act 1997*.

A Bushfire Protection Assessment (BPA) has accordingly been prepared in relation to the proposed development by EcoLogical Australia (refer to **Appendix F**). The BPA has had due regard to the requirements contained in the *Bushfire Protection Assessment – St Marys Western and Central Precincts'* prepared by BES (2009), which forms part of the WPP.

The BPA concludes that subject to the implementation of the below recommended bushfire protection requirements, an adequate standard of bushfire protection for the proposed development will be provided, which is appropriate for the issue of a Bushfire Safety Authority:

- Asset Protection Zones (APZ) of 21m for north, eastern and south western corner boundaries, which comply with the AS3959-2009 Method 1 setbacks for BAL-29 in FDI 100,
- all permanent APZs are to be established and maintained in accordance with the Inner Protection Area Performance requirements of *Planning for Bushfire* (PBP), published by the RFS. In terms of 100m Temporary APZs, grassland is to be slashed as quarterly intervals;
- the provided BAL map is to be submitted to the RFS for endorsement to enable identified BAL ratings to be utilised for the future development of residential dwellings within the subdivision, as part of the Post-Subdivision BAL Certificate process; and
- public roads, reticulated water, parking, fire hydrants, electricity and gas are to comply with the relevant sections of PBP and Australian Standards.

4.7 Heritage

4.7.1 Indigenous

An Aboriginal Archaeological Assessment has been undertaken by Godden Mackay Logan (GML) Heritage Consultants in relation to the proposed development (refer to **Appendix E**). This Assessment builds upon an extensive amount of studies and investigations previously undertaken on the St Marys site.

As noted in Section 2.3.2, an Aboriginal Heritage Impact Permit (No. 10996059) has been issued by DECCW under Section 90 of the *National Parks and Wildlife Act 1974* which covers the site, including along with all 39 archaeological sites scattered across the Western Precinct.

Salvage excavation of the site (WP6) was undertaken and completed in July and August 2011 fulfilling Condition 2(a) of AHIP#10996059. The OEH was notified in writing of the completion of this excavation (letter, 29 August 2011, Ms Lou Ewins), which fulfilled Condition 2(b) of AHIP#10996059. GML confirm in their attached letter (**Appendix E**) that Lend Lease may commence development works within the Village 5 area (WP6) with no further archaeological constraints or requirements.

4.7.2 European

As stated in Section 2.3.2, there are 4 heritage items listed under SREP 30 located within the Western Precinct (Items 9, 14, 15 and 16). None of these four heritage items are located in the vicinity of the subject site, consequently, the subdivision and development of Village 5 is unlikely to have any impact on these items.

4.8 Traffic and Access

Traffic and access impacts relating to the proposed subdivision and earthworks have been assessed by GTA in the appended:

- Construction Traffic Management Plan (CTMP) (**Appendix K**), which examines and considers the proposals likely impact on the surrounding road network during the construction phase of the development;
- Concept Design and Road Safety Audit (RSA) (**Appendix L**), which identifies potential safety risks for road uses and to ensure that measures to eliminate or reduce the risks are fully considered; and
- Traffic Impact Assessment (**Appendix I**), which assesses the anticipated traffic implications of the proposed development with regards to pedestrian and bicycle requirements, traffic generation, site suitability and access, and transport impacts on the surrounding road network.

The following section provides an assessment of the traffic impacts of the development during the construction and operational phases of the proposed development, based on the above reports.

Further to this, as the proposal is for subdivision of over 200 lots and connecting to a public road, it is classified as traffic generating development to be referred to RMS under Schedule 3 of the ISEPP.

4.8.1 Construction Traffic Impacts

The CTMP (**Appendix K**) has assessed the associated traffic impacts from the bulk earthworks and construction to be undertaken under this proposal. As the works include the importation of over 100,000 tonnes of fill, the CTMP provides details and an assessment of:

- construction vehicle routes;
- construction vehicle generation;
- operating hours; and
- access arrangements.

The CTMP estimates that approximately 115 (one-way) truck movements per day, or 10-11 per hour will be generated by the importation of fill over a period of 60 days. This is also considered in the context of other development within Jordan Springs during the planned time of construction of Village 5, including Village 3C Stage 2, Village 3C Stage 3, and the Riparian Corridor.

The CTMP includes Traffic Control Plans in accordance with the RMS Traffic Control at Work Sites manual, and provides detail on appropriate signage and footway closures to occur at the sure during construction. Further the CTMP provides a number of mitigation measures such as site inductions, site inspections and record keeping, and the enforcement of driver protocols, vehicle access and truck routes will reduce potential traffic impacts on the surrounding road network and local area during construction.

The CTMP concludes that these measures will adequately address potential impacts associated with the proposed construction, and that the surrounding road network can satisfactorily accommodate the additional temporary construction vehicle movements to and from the site.

4.8.2 Concept design

The RSA included at **Appendix L** provides a Pre-construction Concept Design Road Safety Audit of the proposed development. The RSA gives a formal examination of the future roads performance with regards to crash potentials and safety. Key elements identified and examined include:

- path width;
- kerb ramps;
- pedestrian facilities and protection;
- sight distance and visibility;
- readability of alignment and intersections; and
- road network layout and geometry.

The risk matrix provided in the RSA assesses each of these elements within the proposed subdivision in terms of likelihood and severity of a resultant crash. The majority of the design elements identified received a likelihood rating of improbably, severity rating of moderate and risk rate of low, meaning that whilst the likelihood of an incident occurring is less than one within a 10 year period, the severity of such a crash would be likely to result in minor injuries or large scale property damage. This included elements such as road alignments, traffic management devices and pedestrian infrastructure.

Only one element received a risk rating of medium, being the road alignment and traffic management devices at Road 1, as the road will not include any road calming devices and due to the geometry of the road may encourage drivers to speed. The RSA recommends that the intersection with Road 5 include a paved or different pavement finish as a traffic calming design.

It is considered that through the implementation of the report's designer's responses into the final design finishes for the development that the subdivision road layout will satisfactorily eliminate or reduce the potential road safety risks of the proposed subdivision

4.8.3 Traffic impacts

The TIA (**Appendix I**) evaluates the anticipated transport implications of the proposed development. The TIA assesses the proposed development against the relevant standards provided in the DCS and the WPP, and concludes the proposed development is generally consistent with the typologies set out in the DCS.

The report provides an assessment of the subdivision layout, trip forecasting, intersection operation and road capacity surrounding road network.

Subdivision Layout

GTA concludes that the proposed road layout of Village 5 will generally discourage high vehicle speeds due to the limited road lengths and kerb side parking. Further they identify that the swept path analysis for 8.8m service vehicles and 12.5 rigid trucks demonstrate satisfactory access to the subdivision from Greenwood Parkway.

Traffic generation

The TIA identifies that Village 5 will generate 0.75 vehicles per hour (vph), with approximately 199 peak AM and PM movements, and a Saturday trip generation of 180 movements and trip rate of 0.68vph in line with other Stage 2, 3 and 4 Villages. Compared with the total Jordan Springs 1,984 AM peak movements and 2,387 PM peak movements, the additional trip generation of Village 5 is considered to be relatively minor. Further the TIA demonstrates that the road

networks and road layout proposed has capacity to accommodate the forecasted traffic generation.

Surrounding road networks

The WPP and the TIA (**Appendix F**) identifies that traffic volumes as presented in the report, are to be divided between Jordan Springs Boulevard, Watkins Street, Greenwood Parkway and the Stage 3C access. The TIA traffic modelling analysis indicates that the proposed The Northern Road signalised intersections at Greenwood Parkway/Borrowdale Way and Jordan Springs Boulevard will satisfactorily cater for the estimated traffic flow for all Jordan Springs development. Additionally, the Lakeside Parade/ Jordan Springs Boulevard intersection will operate satisfactorily.

The TIA concludes that the traffic impacts associated with the proposed development and subdivision layout generally reflect the findings of the SKM report submitted with the WPP, and no significant traffic impacts will be caused by the proposed development.

4.9 Water Management

A Soils, Groundwater and Salinity Management Strategy for the Western Precinct was adopted by Council as part of the WPP. The implementation of the measures set out in the Soil and Water Plan included in the Engineering Plans at **Appendix H** will ensure the proposal is consistent with the WPP, specifically:

- appropriate sediment and erosion controls measures will be implemented during the construction and earthworks phase of development, as described at Section 3.5. These measures will be in accordance with the NSW Department of Housing's Managing Urban Stormwater – Soil and Conservation ('The Blue Book') and the requirements of Council;
- post development flows will be consistent with the WPP water cycle management provisions;
- sufficient interim and long term stormwater detention is provided for 2, 10 and 100 Average Recurrence Interval (ARI) rainfall events; and
- adequate measures to prevent the proposed development resulting in or being impacted upon by increased soil salinity.

Given consistency of the proposed development with the management strategies incorporated within the WPP, the proposed development is considered to be appropriate with regard to water management.

4.10 Salinity

Salinity has been well documented in the Western Precinct. A review of previous salinity investigations undertaken and reports prepared by others for the Western Precinct has been undertaken by Geotech Testing Pty Ltd (refer to **Appendix G**). A summary of Geotech Testing's review of the investigations is provided within **Table 4** below.

Table 4 – Western Precinct Salinity Review Summary of Results

Investigation	Result
Electromagnetic Induction (EMI) Survey	Generally low saline profile in the Western Precinct (with the exception of moderate saline anomalies)
Soil Salinity	Salinity publication indicates that the soils on the site are potentially moderately saline. Electrical Conductivity testing reveals that: About 52% of the results were non-saline to slightly saline; About 50% of the results were moderately saline; One result indicated very saline soil
Soil Ph	Majority of soils are residual in nature and are not expected to be acidic.
Dispersive Soil	Surface soils on site are likely to be slightly to moderately dispersive, while the deeper soils are likely to be highly dispersive.
Regional Hydrogeology & Groundwater Salinity	Groundwater on site is moderately saline.

Geotech Testing conclude that based on the investigations undertaken to date, the moderately saline conditions encountered on site are typical of the area in general. Further, Geotech Testing acknowledge that the implementation of a Soil and Water Management Plan is imperative to maintain current conditions. In this regard, a Soil and Water Management Plan has accordingly been prepared as part of the WPP and will be implemented.

The measures and recommendations outlined by Geotech Testing (consistent with subdivision stages 1A, 1B, 1C, and 1D) are proposed to be adopted and implemented as part of the proposed development and ultimate construction of future dwellings. These measures will complement the Soil and Water Management Strategy (prepared by SKM/EIS) that forms part of the Western Precinct Plan.

4.11 Construction and Waste Management

The Waste Management Plan (WMP) that accompanies this DA (**Appendix J**) will ensure that reuse and recycling of construction materials is maximised both on and off the site and that waste is minimised as far as practicable.

4.12 Site Suitability

The proposed development is considered to be entirely appropriate in that:

- it is adequately serviced by roads, utilities and stormwater infrastructure, as proposed/approved by separate DAs lodged/approved with Council;
- the proposed development conforms with and supports the Precinct Plan;
- it seeks to deliver residential dwellings in accordance with lodged/approved DAs for the Western Precinct;
- the works will support the built form and public domain objectives for the Western Precinct;
- the site is zoned to accommodate the proposal in accordance with SREP 30; and
- will help to stimulate the housing and employment market in the local and regional area of Penrith.

4.13 Social and Economic Issues

The proposed development of urban land for residential purposes provides further housing choice within the region that is well connected to community services, public transport, parks and open spaces.

Further, the proposed development will support a number of construction jobs as well as longer term economic benefits associated with flow on effects from establishing a new residential community.

4.14 Public Interest

The proposal conforms to the Western Precinct Plan and Development Control Strategy, which have been subject to public exhibition and comment and subsequently adopted by Council. It therefore represents Council's planning objectives for the Western Precinct, which has been subject to review by the Community. The proposed development, through the provision of new housing and the resulting increase in population, will support and stimulate economic activity in the local area.

5.0 Conclusion

The proposed development is consistent with the aims, objectives and planning strategies for the St Marys site set out in SREP 30, the St Marys EPS and the WPP.

The proposed development facilitates the development of the Western Precinct including the creation of future allotments for housing, the Eastern Lake, open space, and roads. In doing so, it will deliver substantial economic and social benefits, including providing additional housing opportunities and choice for the Penrith area.

The impacts of the proposed development have been assessed by specialist consultant studies and throughout this report. This assessment demonstrates that the proposal adequately considers the environment, cultural heritage, watercycle and soils, transport and access, contamination, and bushfire. Based on this assessment, the proposed development will not result in adverse impacts in relation to these matters.

In light of the merits of the proposal, and in absence of any significant adverse environmental, social or economic impacts, we have no hesitation in recommending that the proposed development be approved, subject to appropriate conditions of consent.