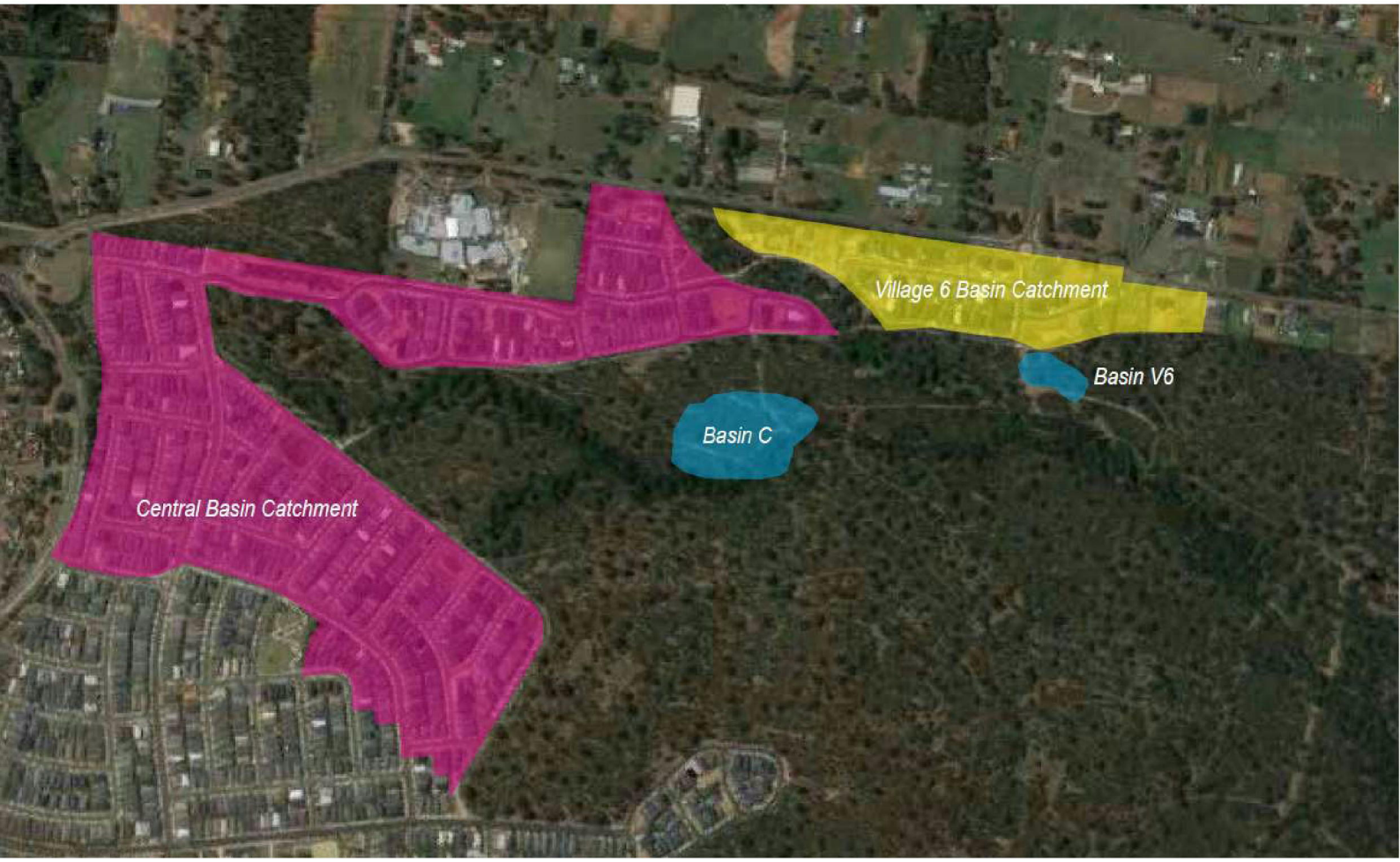
Environmental Impact Statement

Regional Detention Basins C and V6
St Marys Development Site, Penrith



Prepared for Maryland Development Company Pty Ltd

Submitted to Penrith City Council

November 2019

Certification of Environmental Impact Statement

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Proposed development

Applicant	Maryland Development Company Pty Ltd
Applicant's address	PO Box 4 Parramatta NSW 2121
Land to be developed	St Marys Development Site, Penrith local government area
Legal description	Lot 4 and Lot 5 DP 1216994
Project description	Construction of Regional Detention Basins C and V6.

Declaration

We certify that the contents of the Environmental Impact Statement, to the best of our knowledge, has been prepared in accordance with the requirements of clauses 6 and 7 of Schedule 2 of *Environmental Planning and Assessment Regulation 2000*; contains all available information that is relevant to the assessment of the development and that to the best of our knowledge the information contained in this report is neither false nor misleading.

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21 November 2019

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Cover image: Location of Basins C and V6 (Source: Clouston Associates)

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Abbreviations

AACAM	Aboriginal Archaeological and Cultural Assessment Methodology
AEC	Areas of Environmental Concern
AHIP	Aboriginal Heritage Impact Permit
ADI site	Australian Defence Industries munitions site (former)
AQIA	Air Quality Impact Assessment
BCS&T Regulation	*Biodiversity Conservation (Savings and Transitional) Regulation 2017*
BPA	Bushfire Protection Assessment
CNVMP	Construction Noise and Vibration Management Plan
DPIE	Department of Planning, Industry and Environment
DSI	Detailed Site Investigation
EIS	Environmental Impact Statement
Environment SEPP	Draft *State Environmental Planning Policy (Environment)*
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPI	Environmental Planning Instrument
ESD	Ecologically Sustainable Development
HIS	Heritage Impact Statement
ICNG	Interim Construction Noise Guideline
LCVIA	Landscape Character and Visual Impact Assessment
LGA	Local Government Area
NCA	Noise Catchment Area
NP&W Act	*National Parks and Wildlife Act 1974*

NPI	Noise Policy for Industry
NVA	Noise and Vibration Assessment
PAH	Polycyclic aromatic hydrocarbons
PDCP 2014	Penrith Development Control Plan 2014
PLEP 2010	*Penrith Local Environmental Plan 2010*
RNP	Road Noise Policy
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SEPP 19	*State Environmental Planning Policy No. 19 – Bushland in Urban Areas*
SEPP 33	*State Environmental Planning Policy No. 33 – Hazardous and Offensive Development*
SEPP 55	*State Environmental Planning Policy No. 55 – Remediation of Land*
SIS	Species Impact Statement
SREP 30	*Sydney Regional Environmental Plan No. 30 – St Marys*
SWQA	Surface Water Quality Assessment
TSC Act	*Threatened Species Conservation Act 1995*
VENM	Virgin Extracted Natural Material
WM Act	*Water Management Act 2000*
WMP	Waste Management Plan
WSUD	Water Sensitive Urban Design

Executive Summary

This Environmental Impact Statement (EIS) has been prepared by KEYLAN Consulting Pty Ltd on behalf of Maryland Development Company Pty Ltd (the Applicant) to support a development application for the construction of two stormwater quality basins, referred to as 'Basins C and V6' on land within the former Australian Defence Industries (ADI) munitions site (referred to as the 'St Marys Development Site') in the Penrith local government area (LGA).

The development meets the criteria of 'designated development' under Schedule 3, clause 4(1)(a)(i) of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) as it involves the creation of an artificial waterbody that has a maximum aggregate surface area of water of more than 0.5 hectares and is located within 40 metres of a natural waterbody.

The proposed development also meets the criteria of 'designated development' under Schedule 3, clause 4(1)(c) of the EP&A Regulation as it involves the creation of an artificial waterbody requiring the excavation of more than 30,000 m^3 of material.

The development is also 'integrated development' under section 4.46(1) of the *Environmental Planning and Assessment Act 1979* (EP&A Act) as it will require an Aboriginal heritage impact permit (AHIP) to be issued under the *National Parks and Wildlife Act 1974* (NP&W Act) and a controlled activity approval to be obtained under the *Water Management Act 2000* (WM Act) for works on waterfront land.

The EIS has been prepared in accordance with the Secretary's Environmental Assessment Requirements (SEARs) issued by the Department of Planning, Industry and Environment (DPIE) on 29 July 2019 and in accordance with Clause 3 of Schedule 2 of the EP&A Regulation. The SEARs were re-issued by the DPIE on 14 October 2019 to remove the specific requirement for a Biodiversity Development Assessment Report (BDAR).

Penrith City Council (Council) is the consent authority for the application. The EIS has also been prepared with regard to the issues raised by Council in the pre-lodgement meeting held on 7 November 2019.

The site and locality

Basins C and V6 are proposed on land to the south of Ninth Avenue in Jordan Springs, within the St Marys Development Site. The site is located in the Hawkesbury-Nepean River Catchment in the Penrith LGA and is formally described as Lot 4 and Lot 5 in Deposited Plan (DP) 1216994.

The broader St Marys Development Site extends across both the Penrith and Blacktown LGAs and is approximately 45 kilometres (km) west of the Sydney central business district, 12 km west of the Blacktown city centre and 5 km north-east of the Penrith city centre. The site in its entirety comprises 1,545 hectares (ha) and extends approximately 7 km from east to west and 2 km from north to south.

The St Marys Development Site comprises 6 development precincts, referred to as the North Dunheved Precinct, South Dunheved Precinct, Ropes Crossing Precinct, Eastern Precinct, Central Precinct, Northern Precinct and Western Precinct. Basins C and V6 would be located directly north-east of the Western Precinct (now known as the suburb of Jordan Springs) and north-west of the Central Precinct.

Land uses in the area near Basins C and V6 includes the Wianamatta Regional Park to the east and established low density residential development to the south-west and north in Jordan Springs. Recently constructed low and medium density residential development, town centre and open space in the Western Precinct (the suburb of Jordan Springs) is located further to the south west.

The proposal

The proposal involves the construction of two detention basins (Basins C and V6) to detain, treat and attenuate stormwater runoff from the Village 3 and Village 6 residential developments in Jordan Springs. Basins C and V6 will act as constructed wetlands with provisions for active stormwater detention during high flows.

Basin C will have a surface area of approximately 1.8 ha and an approximate depth of 1.7 metres (m). Basin V6 will have a surface area of approximately 0.3 ha and an approximate depth of 1.6 m.

Physical works required to construct Basins C and V6 include:

- the clearing of existing vegetation
- the removal of existing stormwater infrastructure including stormwater pipes and pits
- construction of a haul road between the basins to be used by construction vehicles, with primary access provided from Delany Circuit
- bulk earthworks to create the required shape and dimensions of the basins
- creation of diversion berms (Basin C only)
- the creation of hydraulic controls at the inlet and outlet of the basins
- construction of a permanent 4 m wide vehicular access track around the perimeter of the basins for servicing and maintenance activities
- landscaping works including the establishment of macrophyte aquatic plantings on the water's edge to facilitate nutrient removal, suspended solids removal and to provide habitat for wildlife.

Both Basins C and V6 are designed to meet the watercycle management objectives under *Sydney Regional Environmental Plan No. 30 – St Marys* (SREP 30) and in accordance with Council's Water Sensitive Urban Design Policy (December 2013).

The basins will incorporate the features for both water quality treatment and detention including a drainage inlet point, low level culvert outlet, spillway with erosion protection and vegetated slopes to provide effective nutrient removal.

The Applicant will construct and maintain the basins for a period of three years, after which ownership will be transferred to Council via a formal Deed of Agreement, at no cost to the Applicant.

The proposed development is described in further detail at Section 3.

Permissibility

SREP 30 provides the framework for the redevelopment and management of land across the St Marys Development Site including performance objectives to achieve environmental, social and economic outcomes, the zoning arrangement of site and development controls.

Under clause 111A of *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP), development for the purpose of a 'stormwater management system'

may be carried out by any person with consent on any land. Basins C and V6 are consistent with the definition of a 'stormwater management system', which is defined under clause 110 of the Infrastructure SEPP as works for the collection, detention or discharge of stormwater (including detention basins). The development is therefore permissible under the Infrastructure SEPP.

Further, Basins C and V6 are proposed on land that is currently zoned part 'Drainage' and part 'Regional Park' under the SREP 30. Development for the purpose of stormwater drainage is permissible in the 'Drainage' zone. However, this use is not permissible in the 'Regional Park' zone.

Notwithstanding the above, amendments are currently proposed to SREP 30 involving revisions to the zoning arrangement for land zoned 'Drainage' to reflect the proposed relocation of drainage infrastructure including the on-site detention basins.

The proposed amendments to SREP 30 were publicly exhibited by DPIE from 4 April 2018 to 11 May 2018. No strategic planning issues were raised during the exhibition period in relation to the amended zone boundaries. Once formalised, the amendments will result in Basins C and V6 being contained entirely on land zoned 'Drainage' and will therefore be wholly permissible under the SREP 30.

Strategic context

The relevant strategic plans that relate to the development are addressed at Section 5 of the EIS. The following strategic plans are addressed:

- NSW Making it Happen
- State Infrastructure Strategy
- Greater Sydney Region Plan
- Western City District Plan
- Penrith Economic Development Strategy – Building the New West
- Penrith Urban Strategy Managing Growth to 2031

Statutory context

The relevant statutory requirements that relate to the development, including environmental planning instruments (EPIs) and other planning and environmental policies are addressed at Section 6 of the EIS. The following NSW legislation is addressed:

- *Environmental Planning and Assessment Act 1979*
- *Environmental Planning and Assessment Regulation 2000*
- *Water Management Act 2000*
- *National Parks and Wildlife Act 1974*
- *Threatened Species Conservation Act 1995*
- *Biodiversity Conservation Act 2016.*

Section 6 of the EIS also addresses the following EPIs:

- *Sydney Regional Environmental Plan No. 30 – St Marys*
- *Sydney Regional Environmental Plan No. 20 – Hawkesbury-Nepean River (No 2–1997)*
- *State Environmental Planning Policy (Infrastructure) 2007*
- *St Marys Environmental Planning Strategy 2000*
- *State Environmental Planning Policy No. 19 – Bushland in Urban Areas*

- *State Environmental Planning Policy No. 55 – Remediation of Land*
- *Draft State Environmental Planning Policy (Environment)*
- *Draft State Environmental Planning Policy (Remediation)*
- *Penrith Local Environmental Plan 2010*.

Environmental assessment

A detailed assessment of the potential environmental impacts of the proposal is contained in Section 7. The key issues of consideration relate to:

- Stormwater management
- Geotechnical
- Contamination
- Noise and vibration
- Biodiversity
- Construction traffic
- Air quality
- Aboriginal heritage
- Visual impacts
- Bushfire.

The assessment finds that the proposed development will not result in any significant environmental impacts, subject to the implementation of a range of mitigation measures, primarily during the construction phase of the development.

Conclusion

The EIS provides a comprehensive assessment of the potential impacts associated with the creation of regional detention Basins C and V6 on land within the St Marys Development Site. The conclusions and recommendations provided in the accompanying technical reports confirm the proposal will not have a detrimental impact on the surrounding environment.

Basins C and V6 will provide significant water quality improvements to surface water runoff from the Village 3 and Village 6 residential development areas in Jordan Springs, prior to entering tributaries to South Creek within the Wianamatta Regional Park. The development is, therefore, expected to improve water quality conditions across the St Marys Development Site and the Hawkesbury-Nepean River catchment more broadly.

The application is therefore considered to be in the public interest and warrants approval.

1 Introduction

This Environmental Impact Statement (EIS) has been prepared by KEYLAN Consulting Pty Ltd on behalf of Maryland Development Company Pty Ltd (the Applicant) to support a development application for the construction of two stormwater detention basins, referred to as 'Basins C and V6' on land within the former Australian Defence Industries (ADI) munitions site (referred to as the St Marys Development Site) in the Penrith local government area (LGA).

Basins C and V6 will detail, treat and attenuate stormwater runoff from the Village 3 and Village 6 residential developments in Jordan Springs and will also act as constructed wetlands with provisions for active stormwater detention during high flows.

Basin C will have a surface area of approximately 1.8 ha and an approximate depth of 1.7 metres (m). Basin V6 will have a surface area of approximately 0.3 ha and an approximate depth of 1.6 m.

The development meets the criteria of 'designated development' under Schedule 3, clause 4(1)(a)(i) of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) as it involves the creation of an artificial waterbody that has a maximum aggregate surface area of water of more than 0.5 hectares and is located within 40 metres of a natural waterbody.

The proposed development also meets the criteria of 'designated development' under Schedule 3, clause 4(1)(c) of the EP&A Regulation as it involves the creation of an artificial waterbody requiring the excavation of more than 30,000m^3 of material.

The development is also 'integrated development' under section 4.46(1) of the *Environmental Planning and Assessment Act 1979* (EP&A Act) as it will require an Aboriginal heritage impact permit (AHIP) to be issued under the *National Parks and Wildlife Act 1974* (NP&W Act) and a controlled activity approval to be obtained under the *Water Management Act 2000* (WM Act) for works on waterfront land.

This EIS provides a comprehensive environmental assessment of the proposed works. In doing so, it identifies the subject sites, the proposed development, project justification and public benefits and assesses the proposal against relevant matters set out in relevant State legislation, environmental planning instruments (EPIs) and strategic planning policies.

The structure of this EIS is summarised in Table 1.

Section no.	Section Heading	Description
	Executive summary	A summary of the EIS and its findings.
1	**Introduction**	Overview of the EIS, the proposed development and project objectives.
2	**Site analysis**	Description of the site and surrounding locality.
3	**Proposed development**	Description of the project and consultation undertaken with key stakeholders
4	**Project justification**	Need for the proposal and consideration of project alternatives.
5	**Statutory planning framework**	Identifies the key legislation that this EIS must address and the legislative criteria the project must comply with.
6	**Environmental assessment**	Provides an assessment of the key environmental issues associated with the proposal.

Section no.	Section Heading	Description
7	**Conclusion**	A summary of the key findings.

Table 1: Structure of the EIS

1.1 Project team

The project team formed to deliver the application is outlined in Table 2.

Supporting documentation	Consultant	Appendix no.
Environmental Impact Statement	Keylan Consulting	N/A
Secretary's Environmental Assessment Requirements	N/A	Appendix A
Civil Design Drawings	ADW Johnson	Appendix B
Stormwater Management Plan	ADW Johnson	Appendix C
Geotechnical Report	Construction Sciences	Appendix D
Detailed Site Investigation	JBS&G	Appendix E
Remedial Action Plan	JBS&G	Appendix F
Waste Management Plan	JBS&G	Appendix G
Aboriginal Archaeological and Cultural Assessment Methodology	GML Heritage	Appendix H
Species Impact Statement	Cumberland Ecology	Appendix I
Noise and Vibration Impact Assessment	Wilkinson Murray	Appendix J
Air Quality Report	Wilkinson Murray	Appendix K
Bushfire Assessment Report	Petersen Bushfire	Appendix L
Construction Traffic Management Plan	McLaren Traffic Engineering	Appendix M
Landscape Character and Visual Impact Assessment	Clouston Associates	Appendix N

Table 2: Project team

1.2 Secretary's Environmental Assessment Requirements

The Department of Planning, Industry and Environment (DPIE) issued Secretary's Environmental Assessment Requirements (SEARs) for the proposal on 29 July 2019 (SEARs No. 1360). The SEARs were reissued on 14 October 2019 to remove the specific requirement for a Biodiversity Development Assessment Report (BDAR).

The SEARs are included at Appendix A. The requirements and where they are addressed in the EIS are set out in Table 3.

Secretary's Environmental assessment Requirement	EIS reference	Technical report
General Requirements		
The Environmental Impact Statement (EIS) must meet the minimum form and content requirements in clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000.	The EIS meets the requirements of the EP&A Regulation, as discussed at Section 6.2.	N/A
Key Issues		
The EIS must include an assessment of all potential impacts of the proposed development on the existing environment (including cumulative impacts if necessary) and develop appropriate measures to avoid, minimise, mitigate and/or manage these	Potential impacts of the development are assessed at Section 7.	N/A

Secretary's Environmental assessment Requirement	EIS reference	Technical report
potential impacts. As part of the EIS assessment, the following matters must also be addressed:		
***Strategic context** – including:* • *a detailed justification for the proposal and suitability of the site for the development;* • *a demonstration that the proposal is consistent with all relevant planning strategies, environmental planning instruments, development control plans (DCPs), or justification for any inconsistencies; and* • *a list of any approvals that must be obtained under any other Act or law before the development may lawfully be carried out; and*	Justification for the proposal is discussed at Section 4. Consistency with relevant strategic planning strategies, EPIs and DCPs is discussed at Section 5 and Section 6.	N/A
***Waste management** – including:* • *details of the type, quantity and classification of material to be received at the site and to be disposed off-site* • *details of waste handling including, transport, identification, receipt, stockpiling and quality control; and* • *the measures that would be implemented to ensure that the proposed development is consistent with the aims, objectives and guidelines in the NSW Waste Avoidance and Resource Recovery Strategy 2014-21.*	Waste management is discussed at Section 7.7.	Waste Management Plan (**Appendix G**).
***Hazards and risk** – including:* • *an assessment of the risk of bushfire, including addressing the requirements of Planning for Bush Fire Protection 2006 (RFS). Any proposed Asset Protection Zones must not adversely affect environmental objectives (e.g. buffers). Provision is to be made for their appropriate management into the future;* • *any geotechnical limitations that may occur on the site and if necessary, appropriate design considerations to address this; and* • *an assessment of flood risk on the site. The assessment should determine: the flood hazard in the area; address the impact of flooding on the proposed development, and the development's impact (including filling) on flood behaviour of the site and adjacent lands; and address adequate egress and safety in a flood event*	Hazards and risk are discussed at Section 7.2 and Section 7.10.	Bushfire Assessment Report (**Appendix L**) Geotechnical Report (**Appendix D**) Stormwater Management Report (**Appendix C**)
***Air quality** – including:* • *a description of all potential sources of air and odour emissions;* • *an air quality impact assessment in accordance with relevant Environment Protection Authority guidelines; and* • *a description and appraisal of air quality impact mitigation and monitoring measures.*	Air quality is discussed at Section 7.8.	Air Quality Report (**Appendix K**)

Secretary's Environmental assessment Requirement	EIS reference	Technical report
Noise and vibration *– including:* • *a description of all potential noise and vibration sources during construction and operation, including road traffic noise;* • *a noise and vibration assessment in accordance with the relevant Environment Protection Authority guidelines; and* • *a description and appraisal of noise and vibration mitigation and monitoring measures.*	Noise and vibration is discussed at Section 7.4.	Noise and Vibration Impact Assessment (**Appendix J**)
Aboriginal cultural heritage *– including:* • *identification and description of the Aboriginal cultural heritage values that exist across the whole area that will be affected by the proposal. This may include the need for surface survey and test excavation. The identification of cultural heritage values must be conducted in accordance with the Code of practice for Archaeological Investigations of Aboriginal Objects in NSW (OEH 2010), and should be guided by the Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (DECCW 2011) and consultation with OEH regional branch officers;* • *where Aboriginal cultural heritage values are identified, consultation with Aboriginal people must be undertaken and documented in accordance with the Aboriginal culture heritage consultation requirements for proponents 2010 (DECCW). The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be documented in the EIS;* • *impacts on Aboriginal cultural heritage values are to be assessed and documented in the EIS. The EIS must demonstrate attempts to avoid impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the EIS must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to OEH;* • *the assessment of cultural heritage values must include a surface survey undertaken by a qualified archaeologist in areas with potential for subsurface Aboriginal deposits. The result of the surface survey is to inform the need for targeted test excavation to better assess the integrity, extent, distribution, nature and overall significance of the archaeological record. The results of surface surveys and test excavations are to be documented in the EIS;* • *where harm to an Aboriginal object or declared Aboriginal place cannot be avoided, an Aboriginal Heritage Impact Permit (AHIP) will be required from OEH under the National Parks and Wildlife Act 1974. You must apply to OEH for an AHIP prior to commencing works that will*	Aboriginal cultural heritage is discussed at Section 7.9.	Aboriginal Archaeological and Cultural Assessment Methodology (**Appendix H**).

Secretary's Environmental assessment Requirement	EIS reference	Technical report

directly or indirectly harm and Aboriginal object or a declared Aboriginal place;
• *outline of procedures to be followed:*
  ○ *in the event Aboriginal burials or skeletal material is uncovered during construction to formulate appropriate measures to manage the impacts to this material, and*
  ○ *if Aboriginal objects are found at any stage of the life of the proposal.*		

***Soil and water** – including:* • *a description of local soils, topography, drainage and landscapes;* • *details of water usage for the proposal including existing and proposed water licencing requirements in accordance with the Water Act 1912 and/or the Water Management Act 2000;* • *an assessment of potential impacts on floodplain and stormwater management and any impact to flooding in the catchment;* • *details of sediment and erosion controls;* • *a detailed site water balance;* • *a description of the measures proposed to ensure the development can operate in accordance with the requirements of any relevant Water Sharing Plan or water source embargo;* • *an assessment in accordance with ASSMAC Guidelines for the presence and extent of acid sulfate soils (ASS) and potential acid sulfate soils (PASS) on the site and, where relevant, appropriate mitigation measures;* • *an assessment of potential impacts on the quality and quantity of surface and groundwater resources;* • *details of the proposed stormwater management systems (including sewage), water monitoring program and other measures to mitigate surface and groundwater impacts;* • *address any issues relevant to the principles under Clause 5(2) of the Water Management Act 2000;* • *consider the proposal in terms of any relevant floodplain Management Plan, or if no plan, the principles (Clauses 5(2) and 5(6) of the Water Management Act 2000) and a flood study to demonstrate minimal impacts to other uses and property;* • *characterisation of the nature and extent of any contamination on the site and surrounding area; and* • *a description and appraisal of impact mitigation and monitoring measures.*	Soil and water is discussed at Section 7.1 and Section 7.2 Groundwater is discussed at Section 7.1.2. Acid Sulfate Soils is discussed at Section 7.2.3. Contamination is discussed at Section 7.3.	Stormwater Management Plan (**Appendix C**). Geotechnical Report (**Appendix D**) Detailed Site Investigation (**Appendix E**).
***Traffic and transport** – including:* • *details of road transport routes and access to the site;*	Construction traffic is discussed at Section 7.6.	Construction Traffic Management Plan (**Appendix M**).

Secretary's Environmental assessment Requirement	EIS reference	Technical report
• *road traffic predictions for the development during construction and operation; and* • *an assessment of impacts to the safety and function of the road network and the details of any road upgrades required for the development.*		
***Biodiversity** – including:* • *an assessment of impacts of biodiversity in accordance with the applicable biodiversity legislation;* • *accurate predictions of any vegetation clearing on site or for any road upgrades;* • *a detailed assessment of the potential impacts on any threatened species, populations, endangered ecological communities or their habitats, groundwater dependent ecosystems and any potential for offset requirements;* • *details of weed management during construction and operation in accordance with existing State, regional or local weed management plans or strategies;* • *a detailed description of the measures to avoid, minimise, mitigate and offset biodiversity impacts; and* • *the hydrology of the wetland in relation to the ecological and hydrological function of the wetland, including drainage through the wetland, particularly changes to the depth of standing water and any effects on survival of the wetland plants*	Biodiversity is discussed at Section 7.5.	Species Impact Statement (**Appendix I**)
***Visual** – including an impact assessment at private receptors and public vantage points.*	Visual impacts are discussed at Section 7.10.	Landscape Character and Visual Impact Assessment (**Appendix N.**
***Heritage** – including Aboriginal and non-Aboriginal cultural heritage.*	Aboriginal heritage is discussed at Section 7.9.	Aboriginal Archaeological and Cultural Assessment Methodology (**Appendix H**)
Environmental Planning Instruments and other policies		
State Environmental Planning Policy (Infrastructure) 2007	Refer Section 6.7.3	N/A
Sydney Regional Environmental Plan No. 30 – St Marys	Refer Section 6.7.1	N/A
State Environmental Planning Policy No. 55 – Remediation of Land	Refer Section 6.7.7	N/A
State Environmental Planning Policy No. 19 – Bushland in Urban Areas	Refer Section 6.7.5	N/A
Relevant development control plans and section 7.11 (formerly section 94) plans	Refer Section 6.8	N/A
Consultation		
During the preparation of the EIS, you must consult the relevant local, State and Commonwealth government authorities, service providers and community groups, and address any issues they	Consultation is discussed further in Section 3.2.	N/A

Secretary's Environmental assessment Requirement	EIS reference	Technical report
may raise in the EIS. In particular, you should consult with the: • *Natural Resources Access Regulator (NRAR)* • *Office of Environment and Heritage* • *Environment Protection Authority* • *Roads and Maritime Services* • *Penrith City Council* • *the surrounding landowners and occupiers that are likely to be impacted by the proposal.* *Details of the consultation carried out and issues must be included in the EIS*		
Further consultation after 2 years		
If you do not lodge an application under Section 4. 12(8) of the Environmental Planning and Assessment Act 1979 within 2 years of the issue date of these SEARs, you must consult with the Secretary in relation to any further requirements for lodgement.	N/A	N/A

Table 3: Secretary's Environmental Assessment Requirements

2 Site analysis

2.1 Site location and context

Basins C and V6 will be located on land within the north-western extent of the St Marys Development Site in the Penrith LGA. The site is located approximately 45 kilometres (km) west of the Sydney central business district, 12 km west of the Blacktown city centre and 5 km north-east of the Penrith city centre.

The broader St Marys Development Site extends across both the Penrith and Blacktown LGAs and includes the suburbs of Ropes Crossing, Jordan Springs and parts of Llandilo and St Marys. The Penrith and Blacktown LGA boundary bisects the site and generally follows the alignment of South Creek in a north-south direction.

In its entirety, the site comprises 1,545 hectares (ha) and extends approximately 7 km from east to west and 2 km from north to south. The broader site area is physically bound by:

- Ninth Avenue in Jordan Springs (formerly Llandilo) and Palmyra Avenue in Shanes Park to the north;
- Palmyra Avenue in Willmot and Shalvey and Forrester Road in Lethbridge Park, Tregear and North St Marys to the east;
- Dunheved Golf Club and the suburbs of Werrington County, Werrington Downs and Cambridge Gardens to the south; and
- The Northern Road in Cranebrook to the west.

The St Marys Development Site in context to the surrounding locality is shown in Figure 1.

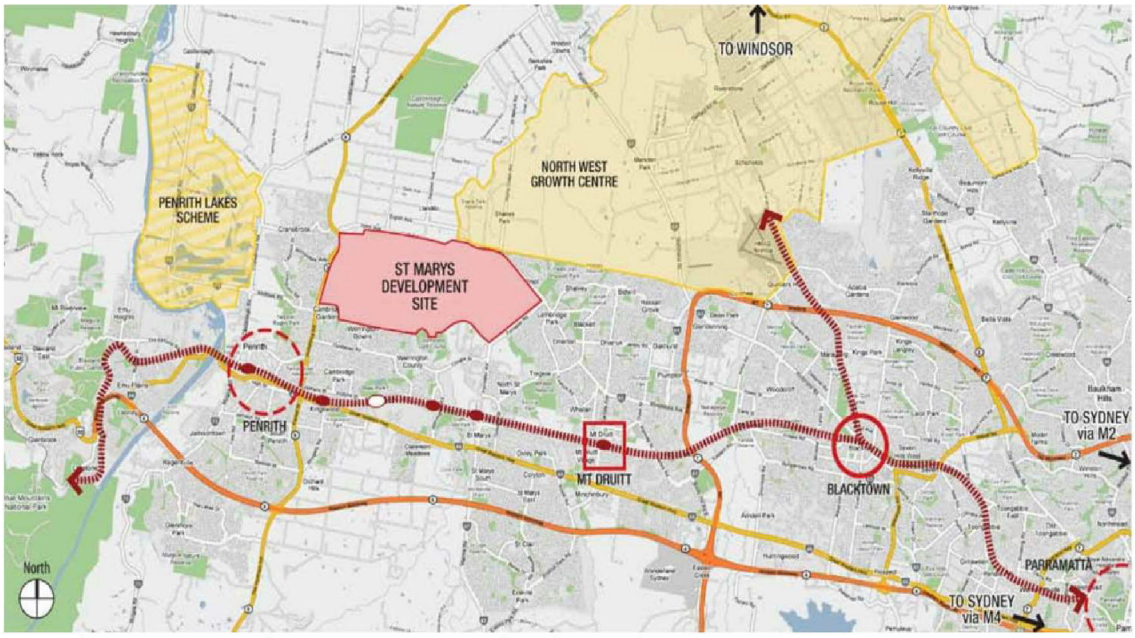

Figure 1: Location Map – St Marys Development Site (Source: Central Precinct Plan)

The broader St Marys Development Site is bisected by the boundary of the Penrith and Blacktown LGAs which generally follows the alignment of South Creek in a north-south direction. It comprises 6 development precincts referred to as the North Dunheved Precinct, South Dunheved Precinct, Ropes Crossing Precinct, Eastern Precinct, Northern Precinct and Western Precinct.

The Wianamatta Regional Park adjoins each of the development precincts and the areas of the proposed basins. The surrounding land use is predominately low density residential development recently established within Jordan Springs.

Basins C and V6 are proposed on land located within the Hawkesbury-Nepean River Catchment and will be positioned approximately 2.5 km west of South Creek which traverses the St Marys Development Site in a north-south alignment.

The proposed basins are both located to the immediate south of existing residential development in Jordan Springs with access provided via Agnes Way (for Basin C) and Delany Circuit (for Basin V6) – refer Figure 2. Images of the site are provided at Figure 3 to Figure 5.

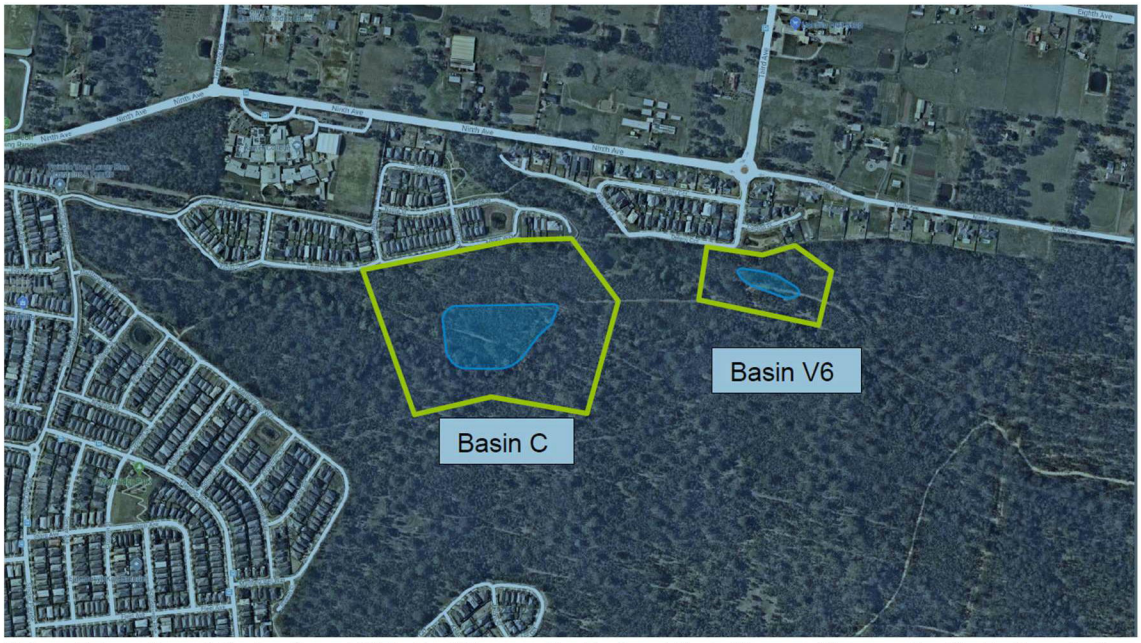

Figure 2: Location of Basins C and V6 in the Wianamatta Regional Park (Source: McLaren Traffic Engineering)


Figure 3: View toward the proposed Basin C in the Wianamatta Regional Park (Source: Keylan)

Figure 4: View toward the proposed Basin C in the Wianamatta Regional Park (Source: Keylan)

Figure 5: Residential development along Delany Circuit adjacent to the Wianamatta Regional Park, near Basin V6 (Source: Keylan)

As outlined above, the St Marys Development Site comprises 6 development areas, referred to as development precincts. These precincts and current status of each are summarised below.

Eastern Precinct:

- Declared a release area under SREP 30 by the then Minister Assisting the Minister for Infrastructure and Planning on 16 June 2003
- Precinct Plan adopted by Blacktown City Council on 2 February 2004
- Currently being developed as the suburb of Ropes Crossing.

Ropes Creek Precinct:

- Declared a release area under SREP 30 by the then Minister for Planning on 29 September 2006
- Precinct Plan adopted by Blacktown City Council on 11 March 2011
- Currently being developed as the suburb of Ropes Crossing.

North and South Dunheved Precincts:

- Declared a release area under SREP 30 by the then Minister Assisting the Minister for Infrastructure and Planning on 16 June 2003
- Precinct Plan adopted by Penrith City Council on 8 December 2006 and Blacktown City Council on 12 January 2007
- Development Applications have been approved by both Councils and development anticipated to commence shortly.

Central Precinct:

- Declared a release area by the then Minister for Planning on 29 September 2006
- Precinct Plan adopted by Penrith City Council on 23 March 2009
- Several Development Applications have been approved for development within in the precinct and bulk earthworks/civil works have commenced.

Western Precinct:

- Declared a release are a by the then Minister for Planning on 29 September 2006
- Precinct Plan adopted by Penrith City Council on 23 March 2009
- Currently being developed as the suburb of Jordan Springs.

The site also includes an area of approximately 900 hectares of land zoned 'Regional Park' under SREP 30, as well as areas zoned 'Regional Open Space', 'Drainage' and 'Roads'. Figure 6 (below) shows the location of each development precinct in context to the broader St Marys Development Site as well as the approximate location of Basins C and V6.

2.2 Surrounding development

Existing 1-2 storey detached dwellings are located to the immediate north of the basins. Xavier College is situated to the north-west on Ninth Avenue. Further north of Ninth Avenue is semi-rural land generally used for primary production in the suburb of Llandilo.

The Wianamatta Regional Park is located to the west, south and east of the basins. The broader Jordan Springs suburb, comprising residential development, open space areas and the Jordan Springs town centre, is located to the south-east.

The southern end of the North West Priority Growth Area is located to the immediate north-east of the St Marys Development site. The North West Priority Growth Area includes the suburbs of Riverstone, Vineyard, Schofields, Rouse Hill, Kellyville, Marsden Park and Colebee, and has been identified for the provision of 33,000 new homes by 2026. Penrith Lakes is located approximately 3 km west of the site. Penrith Lakes covers an area of approximately 450 hectares and is zoned for a variety of parkland, environmental protection, tourism and employment opportunities and residential areas.

Figure 6: Location of Basins C and V6 in context to the broader St Marys Development Site (Source: Clouston Associates)

3 Proposed development

3.1 Development description

The proposal involves the construction of two detention basins (Basins C and V6) to detain, treat and attenuate stormwater runoff from the Village 3 and Village 6 residential developments in Jordan Springs.

Basins C and V6 will act as constructed wetlands with provisions for active stormwater detention during high flows. Each basin will be designed to meet the watercycle management objectives under the *Sydney Regional Environmental Plan No. 30 – St Marys* (SREP 30) and in accordance with Penrith City Council's (Council) Water Sensitive Urban Design (WSUD) Policy (December 2013) and Penrith Development Control Plan 2014 (PDCP 2014).

Details for each basin are summarised in Table 4 below and discussed in further detail at Section 3.1.1 (Basin C) and Section 3.1.2 (Basin V6).

Detail	Basin C	Basin V6
Lot and DP description	Lot 4 DP 1216994	Lot 5 DP 1216994
Catchment area	89.69 ha	26.53 ha
Basin surface area	1.8 ha	0.3 ha
Detention volume	39,400 m³	10,200 m³
Permanent water level	RL 29.9	RL 26.8
Earthworks (total cut volume)	54,590 m³	6,960 m³
Earthworks (total fill volume)	5,940 m³	1,000 m³
Material to be exported	48,650 m³	5,960 m³
Access for maintenance and servicing	Via Agnes Way, Jordan Springs	Via Delany Circuit, Jordan Springs

Table 4: Summary of Basins C and V6

3.1.1 Basin C

Basin C will have a surface area of approximately 1.8 ha and a water detention volume of 39,400 m³.

Physical works required to construct Basin C include:

- the clearing of existing vegetation
- the removal of existing stormwater infrastructure including stormwater pipes and pits
- construction of a haul road linking to Basin V6 for construction vehicle access
- bulk earthworks to create the required shape and dimension of the basin, including the creation of diversion berms (refer Table 4 for total cut/fill volumes)
- the exportation of material elsewhere within the St Marys Development Site (where possible) or otherwise recycled at a licenced off-site waste processing facility
- construction of hydraulic controls at the inlet and outlet of the basin that are adequately lined to prevent erosion (rock lining)

- construction of a permanent vehicular access track from the existing access gate at Agnes Way
- construction of a 4 m wide vehicular access track around the perimeter of the basin for servicing and maintenance activities
- landscaping works including the establishment of macrophyte aquatic plantings on the water's edge to facilitate nutrient removal, suspended solids removal and to provide habitat for wildlife.

The indicative layout for Basin C is shown in Figure 7. Detailed civil engineering plans, earthworks plan and landscape concept plan are included in the Civil Design Drawings package at Appendix B.

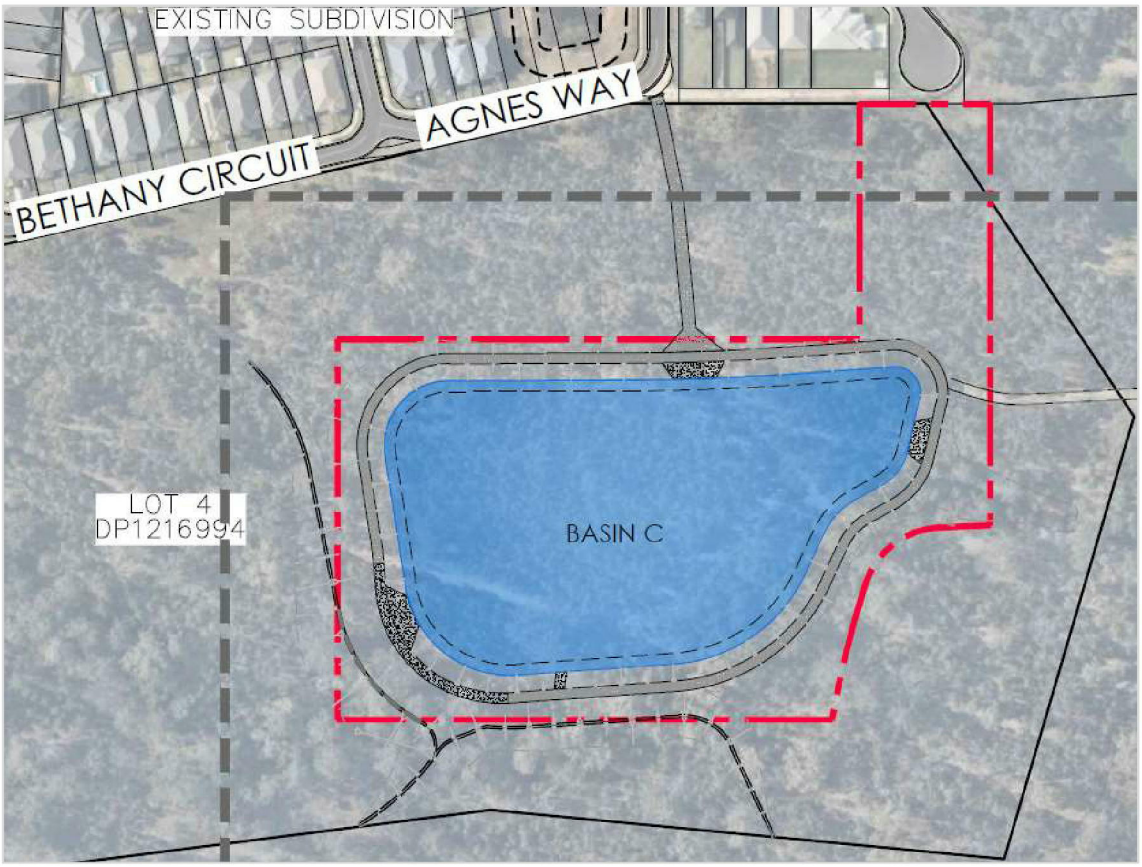

Figure 7: Proposed Basin C layout (Source: ADW Johnson)

3.1.2 Basin V6

Basin V6 will have a surface area of 0.3 ha and a water detention volume of 10,200 m³.

Physical works required to construct Basin V6 include:

- the clearing of existing vegetation
- the removal of existing stormwater infrastructure including stormwater pipes and pits
- construction of a haul road that links to Basin C for construction vehicle access
- bulk earthworks to create the required shape and dimension of the basin (refer Table 4 for total cut/fill volumes)

- the exportation of material elsewhere within the St Marys Development Site (where possible) or otherwise recycled at a licenced off-site waste processing facility
- construction of hydraulic controls at the inlet and outlet of the basin that are adequately lined to prevent erosion (rock lining)
- construction of a permanent vehicular point from Delany Circuit
- construction of a 4 m wide vehicular access track around the perimeter of the basin for servicing and maintenance activities
- landscaping works including the establishment of macrophyte aquatic plantings on the water's edge to facilitate nutrient removal, suspended solids removal and to provide habitat for wildlife.

The indicative layout for Basin V6 is shown in Figure 8. Detailed civil engineering plans, earthworks plan and landscape concept plan are included in the Civil Design Drawings package at Appendix B.

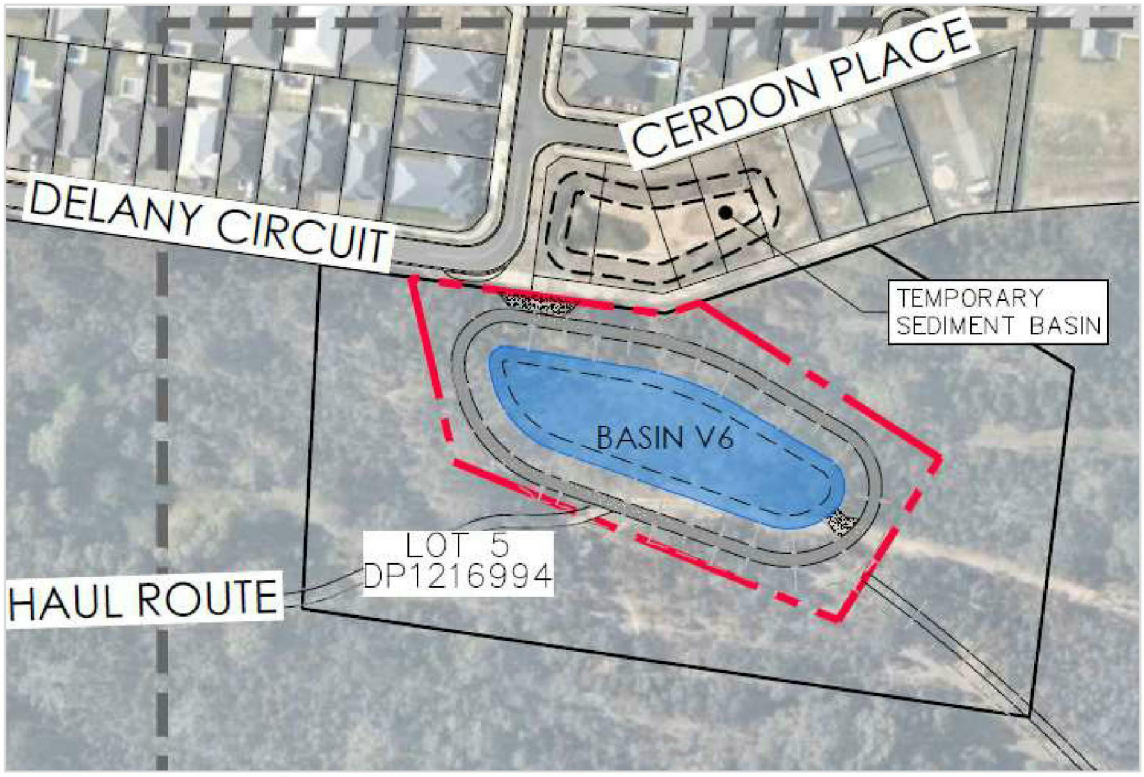

Figure 8: Proposed Basin V6 layout (Source: ADW Johnson)

3.1.3 Stormwater infrastructure

Basins C and V6 will incorporate the features for both water quality treatment and detention including a drainage inlet point, low level culvert outlet, spillway with erosion protection and vegetated slopes to provide effective nutrient removal.

Stormwater flows would be discharged from the development sites through gross pollutant traps which provide primary treatment measures including the removal of gross pollutants (general litter, rubbish and some organics) and coarse sediments. Stormwater runoff will then flow through the Wianamatta Regional Park via the existing natural drainage channels to each of the basins.

3.1.4 Access and maintenance

Vehicular access comprising a 4 metre wide concrete access path and associated ramps will be provided to each basin to allow for regular inspection and maintenance activities to be carried out.

Access to Basin C will be provided via an existing concrete hardstand area and secured gate located at Agnes Way in Jordan Springs. The access road generally follows the alignment of an existing drainage pipeline through the Wianamatta Regional Park. Access to Basin V6 will be provided directly from Delany Circuit in Jordan Springs. The access locations to each basin are shown in the Civil Design Plans at Appendix B.

Each basin will have inlet zones to enable easy clearing of coarse sediment and outlet structures that can dewater the basins via a series of sealed screw caps. Scour protection will be provided at all points where erosion is considered likely.

3.1.5 Ownership

The Applicant will construct and maintain both Basins C and V6 for a period of three years, after which ownership and all ongoing maintenance responsibilities for the basins will be transferred to Council via a formal Deed of Agreement, at no cost to the Applicant.

3.2 Consultation

The EIS has been prepared in consultation with key stakeholders. The comments provided in response to the consultation have been carefully considered and have informed this proposal. Further consultation will be carried out with the key stakeholders as part of the formal exhibition process.

A summary of the consultation undertaken is detailed in Table 6.

Stakeholder	Consultation summary
Penrith City Council	A pre-lodgement meeting was conducted with Penrith City Council on 7 November 2019 at Council's offices (Council reference: PL19/0079). The meeting was attended by officers from various Council departments, representatives of the Applicant (Lendlease) and the Applicant's project consultants including project managers (TLP Consulting), town planners (Keylan) and civil engineers (ADW Johnson). Key items of discussion at the pre-lodgement meeting included the following: • engineering considerations for both basins • access arrangements including vehicle access and boat access • maintenance activities including weed removal • water quality monitoring procedures • management of environmental impacts during construction including noise, dust and construction traffic • assessment of contamination and biodiversity impacts • planning matters including exhibition requirements, agency referral processes, the relevant consent authority and the proposed amendments to SREP 30.

Stakeholder	Consultation summary
	A recommendation outlined in Council's pre-lodgement advice (letter dated 12 November 2019) was for the application for Basins C and V6 to be lodged once the proposed amendments to SREP 30 are finalised. As discussed at Section 6.7.4 of the EIS, the application seeks consent for works categorised as a 'stormwater management system', which is permissible under *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP). Therefore, the permissibility of the development is not dependant on the finalisation of the proposed amendments to SREP 30. Further, it is noted that no strategic planning issues were raised during the public exhibition period in relation to the amended zone boundaries for land zoned 'Drainage'. Council also requested that the basins be assessed against the Dam Safety Committee requirements for a prescribed dam. Part 2, clause 4 of the *Dams Safety Regulation 2019* declares a prescribed dam as being: ○ a dam having a dam wall that is more than 15 metres high ○ a dam that Dams Safety NSW is reasonably satisfied would result in a major or catastrophic level of severity of damage or loss were there to be a failure of the dam ○ a dam or proposed dam that is a prescribed dam within the meaning of the *Dams Safety Act 1978* immediately before the repeal of that Act. The Stormwater Management Plan prepared by ADW Johnson (refer Appendix C) confirms in Section 7.1 of the report that the basins are not a prescribed dam on the basis that: • the basins have an embankment height that is significantly less than 15 m (in the order of 2 m to 4 m is proposed) • the risk of catastrophic damage or loss is unlikely given the risk of failure is low due to several stability features including a clay core, stabilised outlets and emergency weirs incorporated into the design • the basins were not previously prescribed under the former *Dams Safety Act 1978*.
Registered Aboriginal Parties	Aboriginal community consultation has been carried out during preparation of the EIS, in accordance with *Aboriginal cultural heritage consultation requirements for proponent* (DECCW) and consistent with DPIE's recommended process for Aboriginal consultation. A list of the 11 Aboriginal groups and/or individuals who registered an interest in project is provided in Section 3 of the Aboriginal Archaeological and Cultural Assessment Methodology (AACAM) Report (refer Appendix H). These groups and/or individuals will be consulted throughout the preparation of the Aboriginal Heritage Impact Permit application. The Aboriginal community consultation process is further detailed in the AACAM Report and discussed at Section 7.9.2.

Table 5: Stakeholder consultation

4 Planning justification

This section addresses the need for the proposal, considers potential alternatives to the development and assesses the proposal against the principles of ecologically sustainable development (ESD).

4.1 Need for the proposal

Basins C and V6 are primarily required to ensure the water quality performance objectives set out under SREP 30 and the St Marys EPS will be achieved.

The detention basins are intended to be used as water quality wetlands with provision for active stormwater detention during high flows. They will receive runoff from an existing channel that conveys surface runoff from the urban areas west and north to the site (Village 3 and Village 6 of the Jordan Springs residential area) and eventually discharges to South Creek.

Potential downstream impacts of existing and future urban development will be offset by the provision of a suitable stormwater detention volume provided by Basins C and V6. Further, the proposal contributes to the overall stormwater management regime envisioned of the broader St Marys Development Site.

4.2 Proposal alternatives

The construction of Basins C and V6 is considered the most appropriate method of managing stormwater flows from existing urban development in Village 3 and Village 6 of the Jordan Springs residential area.

Schedule 2, Part 3 of the EP&A Regulation requires an analysis of any feasible alternatives to the carrying out of a development, activity or infrastructure, including the consequences of not carrying out the development, activity or infrastructure. The alternatives to the proposal include:

- **Not providing Basins C and V6**

  Basins C and V6 are designed to detain, treat and attenuate stormwater runoff from impervious areas in the Village 3 and Village 6 residential developments in Jordan Springs. Not providing Basins C and V6 would have environmental consequences on the St Marys Development Site and the broader Hawkesbury-Nepean River catchment area.

  In the absence of Basins C and V6, stormwater flows would enter the existing tributaries in the Wianamatta Regional Park untreated. These smaller tributaries eventually flow to South Creek, which is a significant tributary of the Hawkesbury-Nepean River. Basins C and V6 are designed to reduce total suspended solids, total nitrogen and total phosphorus, prior to discharge to South Creek. The detention, treatment and attenuation of stormwater flows within the basins will result in a significant environmental benefit to both the existing tributaries in the Wianamatta Regional Park and the broader Hawkesbury-Nepean River system.

- **Locating Basins C and V6 elsewhere in the St Marys Development Site**

  SREP 30 identifies specific locations across the St Marys Development Site that are suitable for the provision of drainage infrastructure including stormwater detention basins. These locations have been selected based on an assessment of the site topography, proximity to existing watercourses that flow to South Creek and consideration of environmental constraints such as the location of Aboriginal heritage items, areas of significant vegetation and endangered ecological communities (EECs).

  The amendments currently proposed to SREP 30 involves the relocation of Basin C2, to be replaced with proposed Basins C and V6. The proposed location of Basins C and V6 has been selected following various comprehensive studies and investigations on the most appropriate locations for drainage infrastructure. These studies considered locations that would least impact on areas of significant and endangered vegetation and areas of Aboriginal cultural significance.

  Locating Basins C and V6 elsewhere in the St Marys Development Site may, therefore, result in impacts on items of Aboriginal heritage significance, significant vegetation and/or EECs.

  Further, relocating the detention basins away from tributaries that flow to South Creek may result in the full extent of stormwater flows from future development in the Western Precinct not being sufficiently detained and/or treated prior to entering existing watercourses across the site.

The alternatives described above are considered sub-optimal development outcomes that would undermine the site's capacity to provide stormwater drainage infrastructure on land that is appropriately zoned for such use.

4.3 Ecologically Sustainable Development

ESD principles are set out in Schedule 7, Part 7(4) of the EP&A Regulation. The ESD principles and how they relate to the development are addressed in Table 6.

ESD principles	Comment
Precautionary principle	The construction and operation of Basins C and V6 will not result in serious or irreversible environmental damage. The assessment of water quality impacts finds that Basins C and V6 will provide water quality improvements to surface water runoff from the Village 3 and Village 6 residential areas in Jordan Springs, prior to entering the existing tributaries within the Wianamatta Regional Park. The detention basins will facilitate nutrient and suspended solids removal, while also providing habitat for a variety of fauna species. Further, the basins will result in water quality improvements consistent with the performance objectives of SREP 30, the St Marys EPS and Council's WSUD Policy. The assessment of biodiversity impacts finds that the impacts of Basins C and V6 are unlikely to result in the extinction of any threatened species or ecological communities and will be balanced by the major conservation outcome resulting from of the creation of the 900 ha Wianamatta Regional Park.

	Environmental impacts of the development, including recommended mitigation measures, are discussed in further detail at Section 7.
Inter-generational equity	The mitigation measures proposed as part of the development (detailed in Section 7 of this report) will ensure that the health, diversity and productivity of the environment is maintained, and enhanced, for the benefit of future generations. In particular, the development will improve the quality of stormwater flows entering tributaries within the Wianamatta Regional Park, including South Creek.
Conservation of biological diversity and ecological integrity	The conservation of biological diversity and ecological integrity were fundamental considerations in the preparation of the EIS, as demonstrated and discussed in further detain in Section 7.
Improved valuation, pricing and incentive mechanisms	Environmental goals including water quality targets are outlined in SREP 30 and the *St Marys Environmental Planning Strategy 2000* (EPS). The development has been designed to ensure the performance objectives and targets out in SREP 30 and the EPS are achieved.

Table 6: Ecological sustainable development principles

5 Strategic planning framework

This section addresses the relevant strategic plans and documents that relate to the development, including State-wide strategic plans and local government strategies.

5.1 NSW Making it Happen

NSW Making it Happen sets out the NSW Premier's priorities to grow the economy, deliver infrastructure, and improve health, education and other services across NSW. It outlines the Government's program of investing $68.6 billion over 4 years in transport, roads, schools, hospitals and renewed sports and cultural infrastructure.

Although *NSW Making it Happen* relates to investment in public infrastructure and services, the provision of the proposed detention basins will enhance drainage services and stormwater management for the surrounding residential area. The artificial waterbody will provide sufficient infrastructure, enabling the growth of the St Marys Development Site.

5.2 State Infrastructure Strategy

The *State Infrastructure Strategy* sets out the NSW Government's Rebuilding NSW Plan, which involves the investment of $20 billion in new infrastructure across the state.

Basins C and V6 are intended to be used as water quality wetlands with the provision for active stormwater detention during high flows. The proposal is consistent with the Strategy as the proposed drainage basins contribute to flood mitigation and stormwater management of the Hawkesbury Nepean River.

5.3 Greater Sydney Region Plan

The *Greater Sydney Region Plan* outlines how Greater Sydney will manage growth and change in the context of social, economic and environmental matters. It sets the vision and strategy for Greater Sydney, to be implemented at a local level through District Plans.

The Region Plan replaces *A Plan for Growing Sydney* as the leading region plan for Greater Sydney and provides various *Priorities and Actions* which focus on the following 4 key themes:

- *Infrastructure and collaboration*
- *Liveability*
- *Productivity*
- *Sustainability*

There are a number of Directions and Objectives that are of particular relevance to the Proposal and these are addressed below:

Direction 8: A city in its landscape
Objective 26: A cool and green parkland city in the South Creek corridor

Management of the South Creek corridor is essential to its ongoing ecological health. Basins C and V6 will address potential downstream impacts from surrounding residential development through the treatment of stormwater flows, contributing to the protection of South Creek from potentially harmful runoff.

5.4 Western City District Plan

The Western City District Plan manages growth in the context of economic, social and environmental matters in the Western City. It provides the district level framework to implement the goals and directions outlined in the *Greater Sydney Region Plan* for the Western City District.

The proposed development is consistent with the District Plan as it will:

- contribute to the careful management to enhance and improve the health of South Creek by managing the downstream impacts arising from increase impermeable surfaces within the Central Precinct.
- contribute to the infrastructure required to support continued urban development of the Central Precinct.
- receive runoff from an existing open channel, that conveys surface runoff from an urbanised Penrith City Council catchment area which does not currently have any water quality controls.

5.5 Penrith City Council Strategy Documents

Penrith Economic Development Strategy – Building the New West

The *Penrith Economic Development Strategy* (January 2017) provides a strategic framework for how Council can best support economic development, foster greater investment and grow jobs in Penrith. It provides Council with target sectors for jobs growth and areas of focus to stimulate economic development across the LGA.

The goal for Penrith is to achieve an increase in total local jobs of between 42,000 and 55,000 by 2031. This target can be met by growing new jobs in a range of areas with a focus on health, education, tourism, arts and culture, advanced manufacturing, and advanced logistics. This will be complemented by growth in service activity in the night-time economy, small business (including start-up activity) and residential services.

The St Marys Development Site comprises a mix of residential and employment uses. The provision of sufficient infrastructure is essential for servicing the future population of the site, which further caters for a growing economy in the St Marys Development Site.

Penrith Urban Strategy Managing Growth to 2031

The *Penrith Urban Strategy Managing Growth to 2031* (PUSMG) sets out a framework to provide equity in access to a range of services and facilities, encourage increased diversity in housing stock and promote a range of lifestyle opportunities within established and new release areas. The PUSMG includes eight Guiding Principles for Penrith:

- A Diverse City meeting the needs of the people (in housing, built form and urban and rural uses), economy and environment.
- A Healthy and Vibrant City with quality spaces and recreation areas. A city that is integrated and whose residents have well-being. A city comprising strong neighbourhoods that build social capital.

- An accessible City that is integrated and interconnected, where communities have access to shops, services, education, employment and transport, etc.
- A Cultural City that is a creative place with self-sustaining arts and culture.
- A Regional City that embraces its economic and service role for the region with strong links to the surrounding regions and metropolitan area.
- A Safe City where people feel confident in living.
- A Lifestyle City that is attractive and well designed, fun for all ages and abilities and creates cohesive communities.
- A City with a Unique Identity that enables lifelong learning, research and development and has a viable economy.

The proposal is generally consistent with the Strategy. The proposed detention basin will be used as a water quality wetland and will off-set the potential downstream by providing treatment prior to discharge into an existing creek lines in the Wianamatta Regional Park.

The proposal contributes to realising the planned vision for the St Marys Development Site, providing the required stormwater management for future development.

6 Statutory planning framework

This section addresses the relevant statutory requirements that relate to the development, including EPIs and other planning and environmental policies.

6.1 Environmental Planning and Assessment Act 1979

The EP&A Act aims to promote the orderly and economic use and development of land and to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment.

Section 4.10 of the EP&A Act specifies designated development as development that is declared to be designated development by an EPI or the EP&A Regulation. The development meets the criteria of designated development under Schedule 3, clause 4(1) of the EP&A Regulation and is discussed further at Section 6.2 of this report.

As the project meets the criteria of designated development, this report requests the Planning Secretary issue SEARs for the project under section 4.12 of the EP&A Act.

The development also meets the criteria of integrated development under section 4.46(1) of the EP&A Act as it requires an AHIP to be issued under the NP&W Act. A controlled activity approval is also required to be obtained under the WM Act.

Section 4.15 of the EP&A Act outlines the matters that a consent authority is to take into consideration in determining a development application. This report provides the planning assessment against the key statutory EPIs and Development Control Plans relevant to the development. The following assessment of the proposal is provided, based on the heads of consideration contained in Section 4.15 of the EP&A Act and addressed in Table 7 below.

Section 4.15 provisions		Comment
(a) the provisions of: *(i)*	*any environmental planning instrument, and*	The relevant environmental planning instruments are addressed at Section 6.7.
(ii)	*any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved), and*	The relevant draft environmental planning instruments are addressed at Section 6.7.
(iii)	*any development control plan, and*	The Penrith Development Control Plan 2014 is addressed at Section 6.8.
(iiia)	*any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4, and*	Not applicable.
(iv)	*the regulations (to the extent that they prescribe matters for the purposes of this paragraph), and*	The EP&A Regulation is addressed at Section 6.2.

Section 4.15 provisions	Comment
(v) (Repealed)	Not applicable.
(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality,	Environmental impacts of the proposal are assessed at Section 7.
(c) the suitability of the site for the development,	The suitability of the site for the development is addressed at Section 4.
(d) any submissions made in accordance with this Act or the regulations,	Any submissions made on this subject development application will be considered and addressed. In addition, Council will consider any public submissions relating to the proposal during its assessment of the application.
(e) the public interest.	The development is considered to be in the public interest as it will improve water quality conditions across the St Marys Development Site.

Table 7: Response to section 4.15(1) provisions of the EP&A Act

6.2 Environmental Planning and Assessment Regulation 2000

The EP&A Regulation contains key operational provisions for the NSW planning system. This includes procedures relating to development applications, requirements for environmental assessments, environmental impact assessments, building regulations and other miscellaneous matters.

Schedule 3 of the EP&A Regulation identifies the type of development that is designated development. The proposal meets the criteria of clause 4(1)(c) of Schedule 3 as it is an artificial waterbody from which more than 30,000 m^3 per year of material is to be removed. The creation of Basins C and V6 would require the removal of approximately 54,590 m^3 and 6,960 m^3 of material, respectively, to create the required shape and dimensions of the basins.

This EIS has been prepared in accordance with the form and content requirements outlined under Schedule 2, Part 3 of the EP&A Regulation. An overview of where these requirements are satisfied in the EIS is included in Table 8.

Schedule 2, Part 3 requirements	Comment
(a) a summary of the environmental impact statement,	A summary of the EIS is provided at the Executive Summary.
(b) a statement of the objectives of the development, activity or infrastructure,	A statement of the objective of the development is provided at Section 4.1.
(c) an analysis of any feasible alternatives to the carrying out of the development, activity or infrastructure, having regard to its objectives, including the consequences of not carrying out the development, activity or infrastructure,	An analysis of proposal alternatives is provided at Section 4.2.
(d) an analysis of the development, activity or infrastructure, including:	
(i) a full description of the development, activity or infrastructure, and	A full description of the development is provided at Section 3.

Schedule 2, Part 3 requirements	Comment
(ii) a general description of the environment likely to be affected by the development, activity or infrastructure, together with a detailed description of those aspects of the environment that are likely to be significantly affected, and	A general description of the environment likely to be affected by the development is provided at Section 7.
(iii) the likely impact on the environment of the development, activity or infrastructure, and	The likely impacts on the environment is provided at Section 7.
(iv) a full description of the measures proposed to mitigate any adverse effects of the development, activity or infrastructure on the environment, and	Mitigation measures are outlined at Section 7.
(v) a list of any approvals that must be obtained under any other Act or law before the development, activity or infrastructure may lawfully be carried out,	No relevant approvals required.
(e) a compilation (in a single section of the environmental impact statement) of the measures referred to in item (d) (iv),	Refer to Section 7.
(f) the reasons justifying the carrying out of the development, activity or infrastructure in the manner proposed, having regard to biophysical, economic and social considerations, including the principles of ecologically sustainable development set out in subclause (4).	Justification for the development is provided at Section 4. Ecologically sustainable development is addressed at Section 4.3.

Table 8: Response to Schedule 2, Part 3 provisions of the EP&A Regulation

6.3 Water Management Act 2000

The WM Act aims to provide for the sustainable and integrated management of the water sources of the State for the benefit of both present and future generations. In particular, the WM Act regulates the protection, enhancement and restoration of water sources and associated ecosystems, ecological processes, biological diversity and water quality.

In accordance with section 4.46(1) of the EP&A Act, the development is integrated development as a controlled activity approval is required to be issued under the WM Act. Under section 91(2) of the WA Act, a controlled activity approval as the development involves any works defined as a 'controlled activity' on 'waterfront land'.

Controlled activities include:

- the removal of material (whether or not extractive material) or vegetation from land, whether by way of excavation or otherwise, and/or
- the carrying out of any other activity that affects the quantity or flow of water in a water source.

Waterfront land includes the bed of any river, lake or estuary and all land within 40 m of the highest bank of the river, lake or estuary.

The proposal would affect the quantity or flow of water to tributaries of South Creek which is defined as waterfront land. In accordance with the activity approvals requirements under the

WM Act, it is therefore necessary to refer the application to the NSW Department of Primary Industries (Water) for approval.

6.4 National Parks and Wildlife Act 1974

The NP&W Act is the main piece of legislation for managing and protecting Aboriginal cultural heritage. In accordance with section 4.46(1) of the EP&A Act, the development is integrated development as an AHIP is required to be issued under the NP&W Act.

Under section 90 of the NP&W Act an AHIP is required if an Aboriginal object is to be destroyed, damaged or defaced. An AHIP may be issued by the Chief Executive of the Office of Environment and Heritage (OEH) and may be subject to conditions.

The AHIP application and determination process requires an assessment of impact carried out by the Applicant and an evaluation of the Aboriginal heritage values to be carried out by OEH. It is therefore necessary to refer the application to OEH to issue the AHIP.

An Aboriginal Cultural Heritage Assessment Report has been prepared to support an application to OEH for an AHIP under section 90 of the NP&W Act. The submission of an AHIP firstly requires development consent to be obtained under Part 4 of the EP&A Act.

6.5 Threatened Species Conservation Act 1995

The *Threatened Species Conservation Act 1995* (TSC Act) aims to conserve biological diversity, promote ecologically sustainable development and protect the critical habitat of threatened species, populations and ecological communities.

The TSC Act has been repealed and subsequently replaced by the *Biodiversity Conservation Act 2016* which came into effect on 25 August 2017.

Notwithstanding, under clause 28(1) of the *Biodiversity Conservation (Savings and Transitional) Regulation 2017* (BCS&T Regulation), the former planning provisions continue to apply to the determination of a 'pending' or 'interim' planning application (meaning Part 7 of the *Biodiversity Conservation Act 2016* does not apply). A 'pending' or 'interim' planning application is defined under clause 27(1) of the Regulation as:

(f) in the case of development (except State significant development) within ***an interim designated area*** *under subclause (3)—an application for development consent under Part 4 of the Environmental Planning and Assessment Act 1979 (or for the modification of such a development consent) made within 15 months after the commencement of the new Act (but only if any species impact statement that is to be submitted in connection with the application is submitted within 18 months after the commencement of the new Act).*

Interim designated areas are listed under clause 27(3) of the Regulation and includes the Penrith LGA. The application, being for development located within the Penrith LGA, is considered to be an interim planning application in accordance with the savings and transitional arrangements and is therefore subject to assessment under the TSC Act.

A Species Impact Statement (SIS) has been prepared by Cumberland Ecology and has been prepared in accordance with the requirements of the TSC Act. The SIS determined that the relatively small areas of natural and semi-natural vegetation to be cleared as a result of the proposed development are considered to be of minor consequence. Further, the proposed

development is not expected to result in any local populations of threatened species or occurrences of ecological communities becoming extinct. Impacts on biodiversity are further discussed at Section 7.5.

6.6 Biodiversity Conservation Act 2016

As discussed at Section 6.5, the *Biodiversity Conservation Act 2016* came into effect on 25 August 2017 and replaces the TSC Act. However, in accordance with the savings and transitional arrangements for interim planning applications (set out under the BCS&T Regulation), the BC Act does not apply to this application. Accordingly, the assessment of biodiversity impacts has been carried out in accordance with the TSC Act.

6.7 State Environmental Planning Policies

6.7.1 Sydney Regional Environmental Plan No. 30 – St Marys

SREP 30 is a deemed State Environmental Planning Policy under the EP&A Act and is the primary statutory planning framework for the redevelopment and management of land across the St Marys Development Site.

SREP 30 outlines the desired performance objectives for all development across the site including, but not limited to, environmental outcomes relating to air quality, heritage, watercycle, soils, transport and waste management.

The zoning arrangement for the St Marys Development Site under SREP 30 consists of 6 zones, including:

- Regional Park
- Regional Open Space
- Employment
- Urban
- Road and Road Widening
- Drainage.

Basins C and V6 are proposed on land currently zoned 'Regional Park' under the SREP 30. Development for the purpose of stormwater drainage is not permissible in the 'Regional Park' zone.

Amendments are currently proposed to SREP 30 involving revisions to the zoning arrangement for land zoned Drainage to reflect the proposed relocation of drainage infrastructure including the on-site detention basins. The proposed amendments to SREP 30, if supported by the Minister for Planning and Public Spaces, will result in Basins C and V6 being contained entirely on land zoned Drainage and will therefore be wholly permissible under SREP 30. Notwithstanding, the development is also permissible under the Infrastructure SEPP as it is for the purpose of a stormwater management system (discussed further at Section 6.7.3).

Draft amendment No. 3 was publicly exhibited between 4 April 2018 and 11 May 2018 and a Response to Submissions Report was lodged with DPIE in August 2018. There were no strategic planning issues raised during the exhibition period in relation to the amended zone boundaries. It is anticipated the amendments to SREP 30 will be soon finalised and formally made.

The development is located wholly upon land within the Penrith LGA. As specified under Part 4 of SREP 30, Penrith City Council is the consent authority for development applications relating to land within the Penrith LGA and on land to which the SREP applies. An assessment against the SREP 30 Performance Objectives are provided in Table 9 below.

SREP 30 Performance Objectives	Comment
21 Required outcomes for any development	• The proposal is consistent with the performance objectives outlined in the columns below.
22 Ecologically sustainable development	• The proposal is consistent with the principles of ESD, which is discussed further at Section 4.3.
23 Air quality	• As discussed in Section 7.8, the proposed works are considered minor in terms of overall air quality impacts. • A dust management plan will be prepared prior to construction, to describe proposed air quality impacts and any required management or mitigation measures.
24 Conservation	• The proposal has been designed and located to minimise potential adverse impacts on the conservation values of the land and on the park's natural values. • The proposed development will require the removal of 4.5 ha of endangered vegetation. Biodiversity has been addressed in Section 7.5
25 Heritage	• As discussed in Section 7.9, the proposal will not result in any adverse impacts on Aboriginal or European heritage.
26 Community services	• The proposal is for stormwater detention basins, and therefore clause 26 is not applicable.
27 Open space and recreation	• The proposal is for stormwater detention basins, and therefore clause 27 is not applicable.
28 Watercycle	• Water quality and groundwater has been discussed in Sections 7.1. • There will be minimal groundwater impacts and the proposal will result in water quality improvements consistent with this performance objective.
29 Soils	• As discussed in Sections 7.3 the proposal is not subject to soil constraints. • The detention basins will facilitate nutrient and suspended solids removal while also providing habitat for a variety of fauna species. • Remediation works are not considered necessary for soils located within the extent of the basin's boundaries.
30 Transport	• The proposal is for stormwater detention basins, and therefore clause 30 is not applicable.
31 Urban form	• Clause 31 relates to urban development. The proposal is for stormwater detention basins, and therefore clause 31 does not relate to the proposal. • However, the modest scale, character and catchment of the site will not result in adverse visual impacts. • Visual impact has been addressed in Section 7.10.
32 Employment and business development	• The proposal is for stormwater detention basins, and therefore clause 32 is not applicable.
33 Housing	• The proposal is for stormwater detention basins, and therefore clause 33 is not applicable.

SREP 30 Performance Objectives	Comment
34 Energy efficiency	• The proposal is for stormwater detention basins, and therefore clause 34 is not applicable.
35 Waste management	• Waste has been addressed in Section 7.7. • A waste management plan for the site has been prepared by JBS&G and is included at Appendix G. The WMP identifies potential waste types that are present within the proposed Basins C and V6 and provides appropriate waste management procedures • Waste material excavated from the site will mostly comprise vegetation waste and excavated soils • Both garden waste and virgin extracted natural material (VENM) will be re-used within the St Marys Development Site (where possible) or otherwise recycled at a licenced off-site waste processing facility.

Table 9: Assessment against SREP 30 - Performance Objectives

Part 7 of SREP 30 sets out development controls as they relate to development within the St Marys Development Site. The development controls in context to Basins C and V6 are addressed in Table 10 below.

SREP 30 Part 7 – Development controls	Comment
44 Consultation with National Parks and Wildlife Service	• Clause 44(2) requires the consent authority to refer a copy of the development application to the Director-General of National Parks and Wildlife Service (NPWS) for comment. • It is anticipated that Council will refer a copy of the application and EIS to NPWS and that any comments received from NPWS will be considered by Council as part of its assessment of the application.
45 Subdivision	• N/A – subdivision is not proposed.
46 Development near zone boundaries	• Clause 46(1) allows for development that would be prohibited in a zone to be carried out (with development consent) within 30 m of the boundary between that zone and another zone (if it is allowed in the other zone with or without development consent). Notwithstanding, clause 46(2) does not allow consent to be granted for development within the 'Regional Park' zone. • Amendments are currently proposed to SREP 30 involving revisions to the zoning arrangement for land zoned 'Drainage' to reflect the proposed relocation of drainage infrastructure including the on-site detention basins.
47 Demolition	• N/A – demolition is not proposed as part of the application.
48 Interim uses	• N/A – interim uses are not proposed as part of the application.
49 Land below the PMF level	• The application does not propose the erection of a building or development for residential or industrial purposes. • Basin C and V6 will contribute to flood mitigation and stormwater management of the broader St Marys Development Site.
50 Filling of land	• Minor filling is proposed for Basin C (5,940 m^3 of fill material) and Basin V6 (1,000 m^3 of fill material). A hydrological analysis is discussed in further detail in the Stormwater Management Report (Appendix C).

SREP 30 Part 7 – Development controls	Comment
51 Salinity and highly erodible soils	• Soils are discussed in further detail in the Geotechnical Report (Appendix D) and Detailed Site Investigation (Appendix E).
52 Tree preservation	• Clause 52(1) requires consent to remove or wilfully destroy any tree. • Basins C and V6 will be constructed in a landscape that has been extensively altered since European settlement. Impacts on biodiversity including impacts associated with the clearing of existing vegetation is discussed in further detail at Section 7.5.
53 Items of environmental heritage	• It is noted that items of environmental heritage are identified on the Heritage Map.
54 General heritage considerations	• An Aboriginal Archaeological and Cultural Assessment Methodology has been prepared as part of the EIS (Appendix H) and will be discussed at Section 7.9. Basins C and V6 are not within the area of any items of historical (European) archaeology.
55 Conservation of items of environmental heritage	• Basins C and V6 are not within the area of any items of historical (European) archaeology.
56 Demolition of items of environmental heritage	• N/A – demolition is not proposed as part of the application.
57 Access	• N/A – the proposal does not provide vehicular access to The Northern Road, Palmyra Avenue or Forrester Road.
58 Certain development prohibited	• N/A – development along The Northern Road and/or development for the purpose of housing is not proposed as part of the application.
59 Retail and commercial development restricted	• N/A – retail and/or commercial development is not proposed as part of the application.
60 Services	• The application proposes development for the purpose of providing stormwater drainage infrastructure.
61 Subdivision without consent	• N/A – subdivision is not proposed as part of the application.
62 Bush fire hazard reduction works	• N/A – bushfire hazard reduction works are not proposed as part of the application.

Table 10: Assessment against Part 7 of SREP 30 – Development controls

6.7.2 St Mary Environmental Planning Strategy 2000

The St Marys EPS accompanies SREP 30. One of the aims of SREP 30 (clause 3(a)) is to support the St Marys EPS by providing a framework for the sustainable development and management of the land.

The St Marys EPS identifies:

- the aims for the future use and management of the site
- specific performance objectives
- actions to be undertaken by local and State governments
- development controls the obligations of developers

The St Marys EPS, together with SREP 30 and the St Marys Development Agreement establish the planning, urban design and environmental conservation principles to guide the long-term development and conservation of the site. The EIS includes an assessment of the proposal against the Performance Objectives of the St Mary's EPS.

6.7.3 Sydney Regional Environmental Plan No 20 – Hawkesbury-Nepean River (No 2–1997)

Sydney Regional Environmental Plan No 20 – Hawkesbury-Nepean River (No 2–1997) (SREP 20) aims to protect the environment of the Hawkesbury-Nepean River system by ensuring that the impacts of future land uses are considered in a regional context.

Basins C and V6 would be located within the Hawkesbury-Nepean catchment where South Creek is a tributary of the Hawkesbury-Nepean River. Clause 6 of SREP 20 sets out specific planning policies and recommended strategies for the catchment, including recommendations relating to environmentally sensitive areas and water quality.

Section 7 of this EIS addresses the matters outlined under clause 6 of SREP 20 as they relate to surface water and water quality impacts (refer Section 7.1), biodiversity including impacts on flora and fauna and environmentally sensitive areas (refer Section 7.5) and cultural heritage (refer Section 7.9).

6.7.4 State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 identifies the environmental assessment category into which different types of infrastructure and services development fall.

Section 110 of the SEPP categorises works for the collection, detention and discharge of stormwater (such as detention basins) as a 'stormwater management system'. Under section 111A of the SEPP, development for the purpose of a stormwater management system may be carried out by any person with consent on any land.

This EIS supports a development application seeking consent for works categorised as a stormwater management system and is therefore permissible with consent under the Infrastructure SEPP.

6.7.5 State Environmental Planning Policy No. 19 – Bushland in Urban Areas

State Environmental Planning Policy No. 19 – Bushland in Urban Areas (SEPP 19) aims to protect and preserve bushland within the urban areas to enable existing plant and animal communities to survive in the long term including rare and endangered flora and fauna species. The Penrith LGA is identified as an area to which SEPP 19 applies.

The provisions of SEPP 19 will be consolidated into draft *State Environmental Planning Policy (Environment)* (Environment SEPP). The draft Environment SEPP is discussed further at Section 6.7.8 of this report.

6.7.6 State Environmental Planning Policy No. 33 – Hazardous and Offensive Development

The SEARs require an assessment of the proposal against the provisions of *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development* (SEPP 33). SEPP 33 aims to ensure that, in determining whether a development is a hazardous or offensive industry, any measures proposed to be employed to reduce the impact of the development are taken into account.

The development proposes the construction of stormwater detention basins and does not constitute hazardous or offensive development, as defined under SEPP 33.

6.7.7 State Environmental Planning Policy No. 55 – Remediation of Land

State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55) applies to the State and aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment by specifying when consent is required, and when it is not required, for a remediation work.

Clause 7(1) of SEPP 55 states that where a development application is made concerning land that is contaminated, the consent authority must not grant consent unless:

(a) It has considered whether the land is contaminated, and
(b) If the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and
(c) If the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.

A Detailed Site Investigation (DSI) has been prepared by JBS&G and is included at Appendix E. The DSI includes the results of soil sampling carried out at the site to determine to extent and nature of contamination at the site.

The DSI recommended that a Remedial Action Plan (RAP) be prepared to remediate and validate contamination impacts and for an unexpected finds protocol to be included in the RAP for implementation during the construction of the basins.

A RAP for the site has subsequently been prepared by JBS&G and is included as part of the application (refer Appendix F).

Subject to the implementation of the recommendations set out in the DSI and RAP, the site is considered suitable from a contamination perspective for its intended future use as detention basins. The development is, therefore, consistent with the requirements of SEPP 55.

6.7.8 Draft State Environmental Planning Policy (Environment)

The draft Environment SEPP aims to promote the protection and improvement of key environmental assets for their intrinsic value and the social and economic benefits they provide. Once adopted it will consolidate the following existing EPIs:

- *State Environmental Planning Policy No.19 – Bushland in Urban Areas*
- *State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011*
- *State Environmental Planning Policy No.50 – Canal Estate Development*
- *Greater Metropolitan Regional Environmental Plan No.2 – Georges River Catchment*
- *Sydney Regional Environmental Plan No.20 – Hawkesbury-Nepean River (No.2-1997)*
- *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005*
- *Willandra Lakes Regional Environmental Plan No.1 – World Heritage Property*

A Species Impact Statement (SIS) has been prepared as part of the application and is included at Appendix I. The SIS has determined that biodiversity impacts of the proposed development will be more than balanced by the major conservation outcome resulting from of the creation of the 900 ha Wianamatta Regional Park.

6.7.9 Draft State Environmental Planning Policy (Remediation of Land)

Draft *Remediation of Land State Environmental Planning Policy* (Remediation SEPP) aims for better management of remediation works by aligning the need for development consent with the scale, complexity and risks associated with the proposed works.

Once adopted, the Draft Remediation SEPP will:

- provide a state-wide planning framework for the remediation of land
- require consent authorities to consider the potential for land to be contaminated when determining development applications
- clearly list the remediation works that require development consent
- introduce certification and operational requirements for remediation works that can be undertaken without development consent.

As discussed in Section 6.7.7, the DSI and RAP submitted as part of the application provide recommendations to ensure the site is suitable, from a contamination perspective, for its intended future use as detention basins.

6.7.10 Penrith Local Environmental Plan 2010

The *Penrith Local Environmental Plan 2010* (PLEP 2010) regulates development throughout the Penrith LGA. As SREP 30 applies to the St Marys Development Site, the PLEP 2010 does not apply.

6.8 Penrith Development Control Plan 2014

A detailed assessment of the proposal against the relevant provisions of the PDCP 2014 is provided in Table 11.

PDCP 2014 provision	Assessment	Complies
3.3 Watercourses, Wetlands and Riparian Corridors	• The proposal comprises development for the purposes of a Regional Detention Basins, which will affect the quantity and flow of water to South Creek to the north of the site, and requires approval under section 91 of the *Water Management Act 2000*. • A tributary of South Creek traverses through the site of the proposal, which collects runoff from the existing urban area south of the site and flows north along South Creek. • Stormwater and water quality, both during and post construction will be suitable managed.	Yes
3.7 Water Retention Basins/Dams	• The design and location of the basins has been carefully considered within the catchment area of the site to protect natural flows to natural waterways and river systems.	Yes
13.4 Engineering Works and Construction Standards	• The works will be undertaken in accordance with the provisions of the relevant Council guidelines.	Yes

Table 11: Assessment against the relevant PDCP 2014 provisions

7 Environmental assessment

7.1 Stormwater management

A Stormwater Management Plan (SMP) has been prepared by ADW Johnson and is included at Appendix C. The SMP provides analysis and modelling for the design of Basins C and V6 to demonstrate that the post development flows leaving the site are equal to or less than the existing flows.

The SMP provides an assessment of water quality impacts in accordance with the relevant requirements under SREP 30 for watercycle management, Council's WSUD Policy and the PDCP 2014.

An Erosion and Sediment Control Plan (ESCP) is included as part of the SMP to address and minimise the risk of erosion to disturbed areas and to limit the transfer of sediments from the site to downstream waterways during construction.

7.1.1 Existing conditions

The SMP describes the site and surrounding area as consisting of low density residential development bordering on undeveloped bushland (the Wianamatta Regional Park). The site contains various ridgelines and gullies that convey overland flows to the east, towards South Creek. This site is relatively flat with a gradient of around 2 per cent.

There are four temporary detention basins currently servicing the Village 3 and Village 6 residential catchments in Jordan Springs. The provision of regional detention Basins C and V6, proposed as part of this application, will provide for the four temporary detention basins to be decommissioned (as part of a separate development approval process).

The location of the existing detention basins area shown in Figure 9. The location of Basins C and V6 in context to existing watercourses, surrounding residential development and drainage catchments is shown in Figure 10.

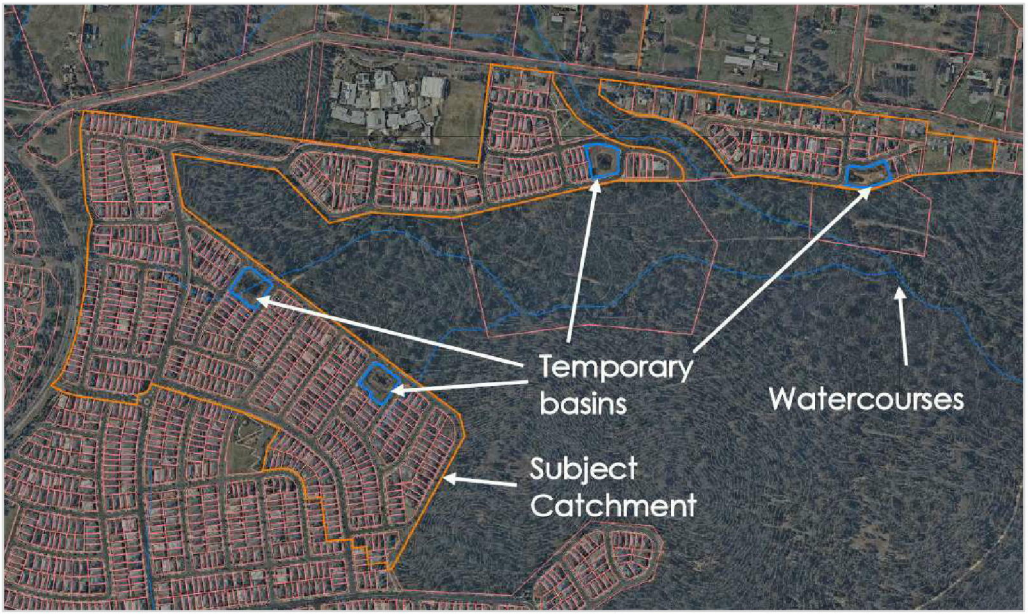

Figure 9: Existing temporary basins servicing Village 3 and Village 6, Jordan Springs (Source: ADW Johnson)

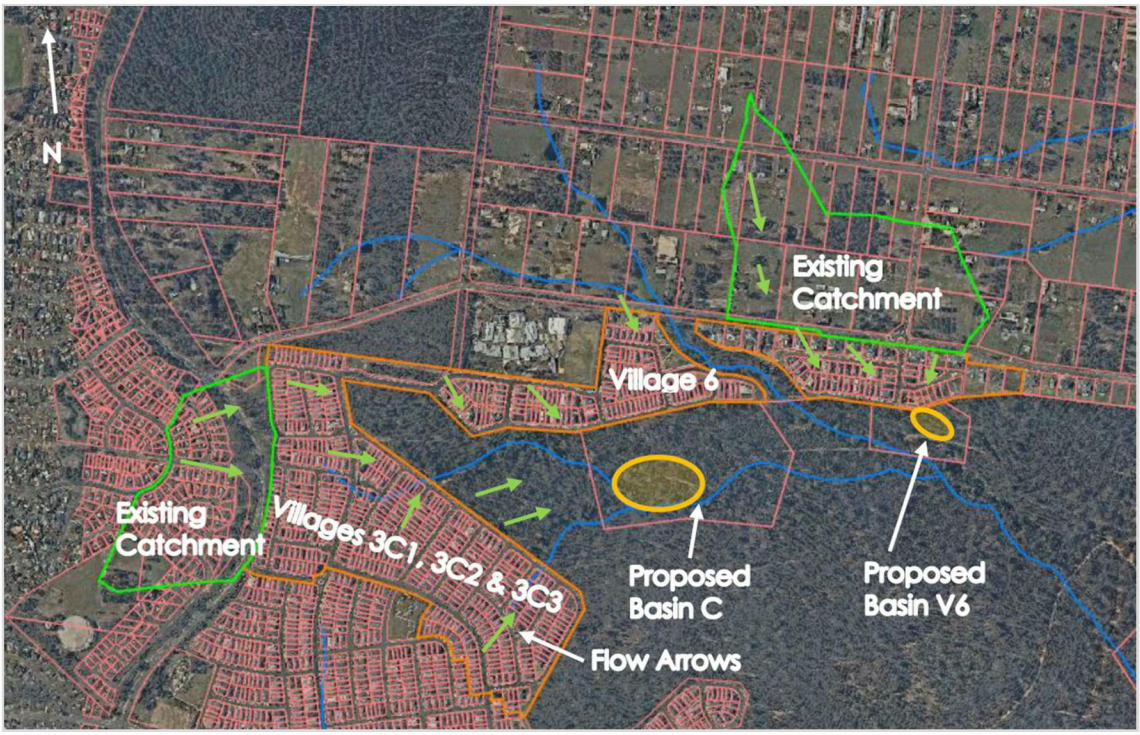

Figure 10: Proposed location of Basins C and V6 (Source: ADW Johnson)

7.1.2 Groundwater

The SMP states that the groundwater level for the area of the proposed basins is situated at a depth of between 3.0 m and 3.6 m from the surface.

The maximum extent of excavation works associated with both Basins C and V6 will be at, or above, the existing groundwater table. Consequently, any impacts of the project on existing groundwater conditions are expected to be minimal.

7.1.3 Water quality targets

Council's requirements for stormwater management, as set out in the WSUP Policy (December, 2013), include the following:

- post-development peak flows to be limited to less than or equal to pre-development peak flows
- management of volume and duration of stormwater flows entering local waterways to protect the geomorphic values of those waterways
- reduced pollutant loads in accordance with specific treatment targets

The pollutant reduction targets for stormwater flows is shown in Table 12.

Pollutant	Target Reduction
Gross Pollutants	90%
Total Suspended Solids	85%
Total Phosphorus	65%
Total Nitrogen	45%

Table 12: Council's pollutant reduction targets (Source: ADW Johnson)

The SMP includes the results of MUSIC modelling to demonstrate compliance with the water quality objectives and pollutant reduction targets set out in Council's WSUD Policy and PDCP 2014.

The results of the modelling for each basin are shown in Table 13 (for Basin C) and Table 14 (for Basin V6). The SMP confirms that the key performance for water quality targets are met or otherwise exceeded.

Basin 3C				
Pollutant	Without Treatment (kg/yr)	With Treatment (kg/yr)	Modelled Reduction (%)	Target Reduction (%)
GP	7820	22.7	99.7	90
TSS	50800	5990	88.2	85
TP	82.6	21.5	73.9	65
TN	616	281	54.4	45

Table 13: Pollutant loads and reductions for Basin C (Source: ADW Johnson)

Basin 6				
Pollutant	Without Treatment (kg/yr)	With Treatment (kg/yr)	Modelled Reduction (%)	Target Reduction (%)
GP	1580	3.07	99.8	90
TSS	10900	1530	85.9	85
TP	17.7	5.25	70.4	65
TN	132	62.5	52.8	45

Table 14: Pollutant loads and reductions for Basin V6 (Source: ADW Johnson)

7.1.4 Water quality monitoring

The SMP states that a Water Quality and Hydrological Monitoring Program for the proposed basins is required by Council, for the three year period where the basins are in private ownership. The Applicant is satisfied for this requirement to be included as a condition of consent.

The SMP further recommends that surface water monitoring be conducted twice a year and twice within two days of a minor rainfall event (i.e. <50 mm in the prior 24 hour period).

The SMP also recommends that a dedicated water sampling be prepared which is to include the location of suitable sampling points and the laboratory analysis for total suspended solids, total recoverable hydrocarbons and heavy metals. The Applicant is satisfied for this requirement to be included as a condition of consent.

7.1.5 Conclusion

Basins C and V6 will act as constructed wetlands that will receive surface runoff from the Village 3 and Village 6 residential developments in Jordan Springs. The basins will detain, treat and attenuate stormwater runoff, prior to entering the existing tributaries within the Wianamatta Regional Park.

The basins will facilitate nutrient and suspended solids removal, while also providing habitat for a variety of fauna species. Overall, Basins C and V6 will result in water quality improvements that are consistent with the performance objectives set out in SREP 30, the St Marys EPS, Council's WSUD Policy and the PDCP 2014.

7.2 Geotechnical

A Geotechnical Investigation has been prepared by Construction Sciences Pty Ltd and is included at Appendix D. The Geotechnical investigation provides further advice on the in-situ ground conditions to be encountered during as part of the development and use of Basins C and V6.

Fieldworks for the investigation were carried out comprising of the following sequence of activities:

- a Dial Before You Dig underground service search was undertaken
- the drilling of six boreholes
- the drilling of two boreholes for the haul road investigation
- collection of disturbed and undisturbed soil samples for laboratory testing
- installation of two standpipes to undertake in0situ falling head test to assess permeability of soils on BH01 and BH03.

7.2.1 Existing conditions

The subject site and surrounds are primarily comprised of the residual Blacktown soil landscape which are typically acidic and have low permeability. Minor intertounges of the Alluvial South Creek landscape are also present on site, mainly on the floodplains of the area, derived from upstream weathering of Wianamatta Shales and Hawkesbury Sandstone.

The following subsurface profiles were encountered on site:

- topsoil: comprising of silty sand underlain by;
- residual soil: consisting of silty clay and silty sand.

The subsurface conditions within the investigated areas of Basins C and V6 were generally uniform, consisting of thin veneers of topsoil, varying between 200-400mm thick, overlying residual clay stratum to a maximum target depth of 4.5m below surface level. The moisture content of the soils generally ranged between 13.6% and 65%.

Groundwater was generally encountered in boreholes located across the site at depths of approximately 3.0 m to 3.6 m from the surface.

7.2.2 Impact assessment

All soil considered unsuitable for use as structural fill (grass and root material) may be stockpiled for possible future landscaping purposes. Any existing fill encountered is to be removed and replaced with fill to the standards specified in the Geotechnical Report (Appendix D).

Excavation works at the site are likely to encounter stuff to hard clay, with conventional earthmoving equipment such as hydraulic excavator (with bucket attachment) to be used.

In-situ clay soils can be used as liners for the basins, however, further testing and inspections will be required at the time of construction. Given the plastic nature of the majority of the soils encountered on site, handling and subsequent compaction difficulties may be experienced during the earthworks phase of construction. However, considering the low permeability properties, the material be may used in the proposed basins or other open areas

of the site, provided the excavation and placement be carried out during the dry season to minimise construction issues.

It is recommended that the placement of all structural fill be inspected, tested and certified by suitably qualified geotechnical engineers to Level 1 requirements, during the earthworks operations to ensure that all fill is placed in a 'controlled manner', in accordance with AS 3798-2007.

Effective erosion and sediment control measures are to be installed and maintained during construction are detailed further within the stormwater management plan (refer Appendix C). Adequate draining is to be maintained throughout the period of construction to ensure run-off water without the complications of unwanted ponding.

7.2.3 Acid sulfate soils

An acid sulfate soil investigation has been undertaken with the following parameters of the works assumed:

- volume of soil to be disturbed >1000 tonnes
- maximum depth of disturbance is likely 3.3 mBGL associated with excavation and keying of basins
- soil disturbance to be predominantly permanent, with excavation and construction of basins
- excavated soils are likely to be stockpiled onsite prior to disposal
- construction sciences are not aware of any existing acid sulfate soil issues at the site

The report concluded Actual Acid Sulfate Soils are unlikely to be present based on the field pH being less than 3.5pH, with the range of ASSS ranging from 6.2 (slightly acidic) and 9.3 (highly alkaline). Potential Acid Sulfate Soils are unlikely to be present based on the oxidised pH values found on site.

Detailed analytical results from the acid sulfate soil investigation can be found in Appendix E of the Geotechnical Report (Appendix D).

7.2.4 Conclusion

The Geotechnical Report concluded the site preparation works should be carried out in accordance with AS 3798-2007 *Guidelines on Earthworks for Commercial and Residential Developments*.

In addition, it is recommended that works on the site be inspected, tested and certified by a Geotechnical Engineer to ensure recommendations made within the report are complied with. Further discussion on soils and contamination are addressed in the Detailed Site Investigation (DSI) and RAP provided as part of the application and at Section 7.3.

7.3 Contamination

The St Marys Development Site was previously used for various munition testing, filling and storage activities until 1994. A DSI has been prepared by JBS&G to assess the potential for contamination in the area where Basins C and V6 will be constructed and to provide recommendations to address any identified contamination issues.

The DSI was prepared in accordance with the relevant Environmental Protection Authority (EPA) technical guidelines for contaminated land and is included at Appendix E.

7.3.1 Existing conditions

Site inspections of the Basin C and Basin V6 locations were carried out on the 4th and 5th of November 2019 in order to inform the DSI. A summary of the site descriptions is provided below.

Basin C

This portion of the site mostly comprised low density bush as part of the Wianamatta Regional Park. The site was flat with only a slight depression on the banks of a creek that runs through the southern portion of the site in an easterly direction. An unsealed access road transects east–west through this section of the site. Other infrastructure was observed in this area related to drainage, such as a stormwater pipe and a drain box allowing runoff to flow under the access road.

Basin V6

This portion of the site mostly comprised low density bush with intermittent trees within the Wianamatta Regional Park, near Delany Circuit and Village 6 of the Jordan Springs residential development. An unsealed access road runs north-south from the entrance of the site until it reaches a T-junction and extends east-west. This section of the site is mostly flat, with the exception of an access ramp at the entrance of the site.

No staining or odours were identified during the site inspection. Asbestos containing material in the form of non-friable fragments were identified within the access track located on the western portion of Basin C. Other notable features identified included two old wells and an old steel pipe fragment.

Potential areas of environmental concern

Based on a review of the site history and the investigation works carried out to inform the DSI, areas of environmental concern (AEC) were identified. The AEC and associated contaminants are outlined in Table 15.

Area of Environmental Concern (AEC)	Contaminants of Potential Concern (COPC)
Former ADI commercial/industrial use	Heavy metals*, OCPs, PCBs, PFAS, TPH/BTEX, PAHs and asbestos
Access roads including imported fill and associated infrastructure	Heavy metals*, OCPs, PCBs, PFAS, TPH/BTEX, PAHs and asbestos
Creeks running through the site	Heavy metals*, PFAS, Nutrients, and Major Ions

Table 15: Areas of environmental concern and associated contaminants (Source: JBS&G)

7.3.2 Sampling results

The DSI provides a detailed assessment of potential contamination risk at the site including soil sampling and laboratory analysis. In summary, the DSI found that:

- heavy metal concentrations are reported to be below the human health and ecological criteria adopted in all samples analysed

- Polycyclic aromatic hydrocarbons (PAHs) were reported to be below the laboratory limits and below the human health and ecological criteria adopted, with the exception of two limited locations:
  - concentrations of benzo(a)pyrene B(a)P and total recoverable hydrocarbons (TRHs) were identified at location BC04.01 to represent a potential ecological risk
  - concentrations of B(a)P toxic equivalency also at location BC04.01 was identified to present a potential health risk
  - non-friable fragments of asbestos containing material were identified in the western portion of the access track to Basin C that presents a potential health risk and an aesthetic issue
- surface water and groundwater were not identified to present a potential risk to the basins.

7.3.3 Recommendations

Based on the sampling results provided in the DSI it is recommended that a RAP is prepared to remediate and validate contamination impacts identified at the site and for an unexpected finds protocol to be included in the RAP for implementation during construction of the basins.

To address the recommendations of the DSI, a RAP has been prepared as part of the application and is included at Appendix F.

7.4 Noise and vibration

A Noise and Vibration Impact Assessment (NVA) has been prepared by Wilkinson Murray and is included at Appendix J. The NVA has assessed construction noise impacts for both Basins C and V6 from the following sources:

- noise from on-site construction activities (including site establishment works, excavation, civil and landscaping works)
- noise from construction vehicle movements along the identified haulage routes
- ground-borne vibration from on-site construction activities.

Noise and vibration impacts have been assessed in the NVA in consideration of the following EPA guidelines:

- Noise Policy for Industry (NPI);
- Interim Construction Noise Guideline (ICNG);
- Road Noise Policy (RNP); and
- Assessing Vibration: A Technical Guideline.

Construction is proposed to be carried out during the hours of 7:00 am and 6:00 pm Monday to Friday and 8:00 am to 1:00 pm on Saturday. No works are proposed on Sunday and public holidays.

A construction programme of approximately 34 weeks is anticipated, as outlined in Table 16.

Construction stage	Duration
Site establishment	2 weeks
Excavation and haulage	12 weeks
Civil works and landscaping	16 weeks
Commissioning and testing/finishing	4 weeks

Table 16: Construction staging and duration (Source: Wilkinson Murray)

Basins C and V6 will not require the use of any mechanical assistance (such as pumps) to operate, and therefore, no operational noise impacts are anticipated. Accordingly, the NVA has assessed impacts during the construction stage only.

7.4.1 Existing conditions

The immediate area surrounding both Basins C and V6 is land zoned regional parkland within the Wianamatta Regional Park. The closest residential receivers are typically one to two storey detached dwellings located to the north of each basin, with the nearest residences located approximately 40 m north of Basin V6 (along Delany Circuit and Cerdon Place).

Xavier College is the nearest educational receiver. Active recreation area associated with the school grounds is located approximately 250 m north-west of Basin C, with the nearest school classroom located approximately 350 m from the site. It is noted that Xavier College is shielded by residential receivers.

In determining the existing ambient noise levels (required to establish appropriate noise management levels (NMLs) for the development) data was used from previous unattended noise monitoring that was carried out at four locations within the St Marys Development Site.

The noise monitoring locations are considered representative of the existing ambient noise levels at those residences nearest to the location of Basins C and V6, and particularly locations L1 and L2 which are low density residential environments in Jordan Spring that adjoin the Wianamatta Regional Park.

The unattended noise monitoring locations are shown in Figure 11. The rating background level (RBL) at each monitoring location for the day-time period (7:00 am to 6:00 pm) is outlined in Table 17. It is noted that the NVA provides RBLs for the day-time period only, given the construction works will occur during this time period.

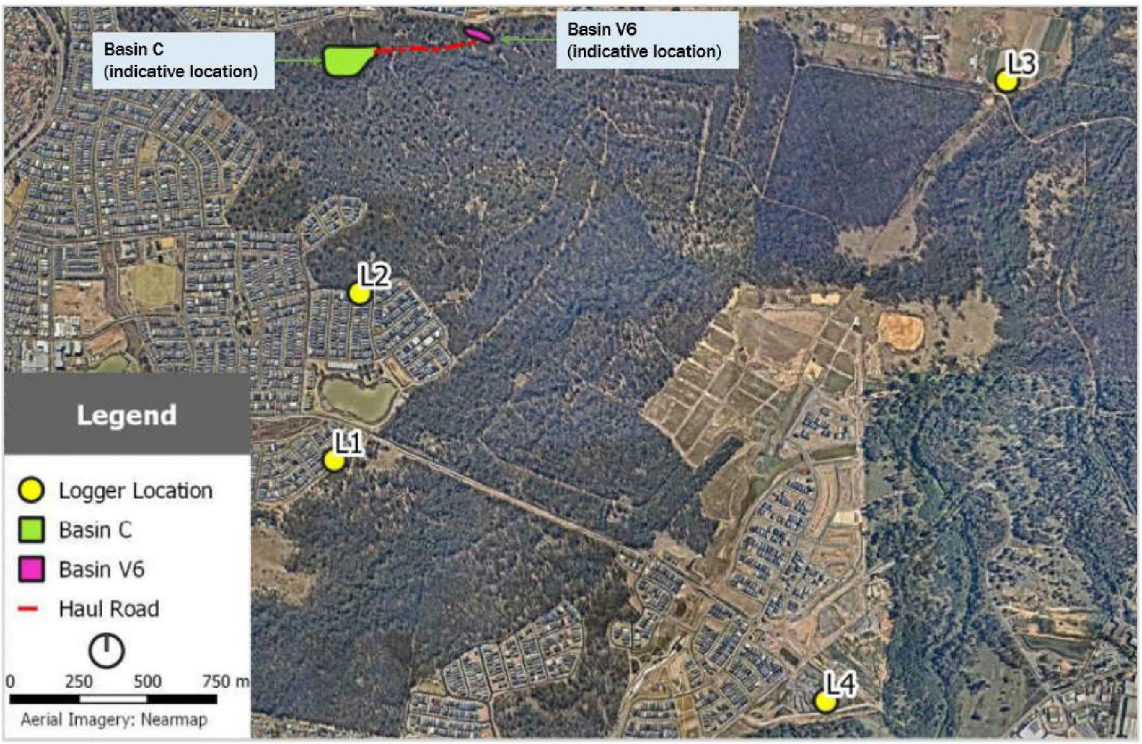

Figure 11: Location of unattended noise monitoring (Base source: Wilkinson Murray)

Logger ID	Address	RBL
L1	158 Jubilee Drive, Jordan Springs	34
L2	20 Callistemon Circuit, Jordan Springs	30
L3	321 Ninth Avenue, Llandilo	34
L4	North of Dunheved Golf Club	34

Table 17: Existing rating background levels (Source: Wilkinson Murray)

7.4.2 Impact assessment

The NVA provides an assessment of:

- airborne noise from on-site construction activities
- airborne noise from construction traffic vehicle movements
- ground-borne vibration from on-site construction activities.

Impacts have been assessed on residential receivers (identified as R1 to R4) and an education receiver (identified as R5) shown in Figure 12 and listed in Table 18.

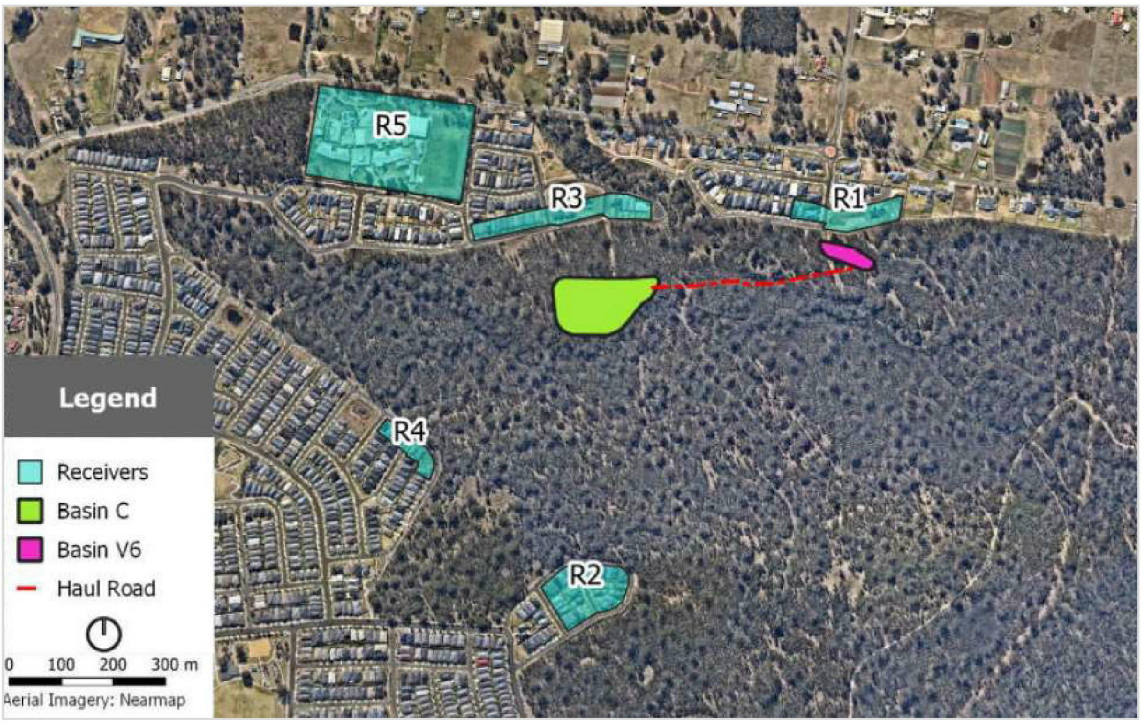

Figure 12: Noise sensitive receivers (Source: Wilkinson Murray)

Receiver ID	Address	Orientation	Approx distance to works
R1	Delany Circuit and Cerdon Place	North from Basin V6	40m (30m to access road)
R2	Izaac Circuit	South-west from Basin V6	720m
R3	Agnes Way and Bethany Circuit	North from Basin C	105m
R4	Matthew Bell Way	South-west from Basin C	320m
R5	Xavier College	North-west from Basin C	250m (active recreation area) 350m (classrooms)

Table 18: Noise sensitive receivers (Source: Wilkinson Murray)

Impacts from on-site construction activities

Impacts from on-site construction activities have been assessed for the excavation and haulage stage (12 weeks) and the civil works and landscaping stage (16 weeks). The predicted noise levels and subsequent exceedances of the NMLs at affected receivers are shown in Table 19.

Receiver	NML	Predicted $L_{Aeq, 15min}$ Noise Level (dBA)	
		Excavation & Haulage Scenario	Civil Works & Landscaping Scenario
R1. Delany Ct & Cerdon Pl	45	***65-75***	***58-69***
R2. Izaac Ct	45	***50-52***	43-45
R3. Agnes Wy & Bethany Ct	45	***58-65***	***52-59***
R4. Matthew Bell Wy	45	***50-54***	43-***47***
R5. Xavier College grounds	65	50-54	43-47
R5. Xavier College classrooms	55	48-52	41-45

Note: Values in bold italics exceed the NML.

Table 19: Predicted airborne noise from on-site construction works (Source: Wilkinson Murray)

Noise levels experienced at both the school grounds and classrooms at Xavier College are predicted to comply with the project NMLs during construction. However, the NVA finds that exceedances of the residential NMLs may occur, and therefore, reasonable and feasible mitigation measures shall be assessed and implemented. The proposed mitigation measures are outlined in Section 7.4.3.

Impacts from construction traffic

Noise impacts from construction traffic is assessed in accordance with the RNP, which sets out a day-time criteria of 55 dBA ($L_{aeq\ 1hr}$) for existing residences that affected by additional traffic on existing local roads (generated by land use development).

Construction vehicle access for heavy vehicles to both basin sites will be from Delany Circuit which is categorised as a local road (the proposed construction traffic haulage routes are shown in Figure 14, Section 7.6.2).

An exceedance of 6 dBA is predicted, above the RNP criteria, as a result of construction traffic passing residences along Delany Circuit. The NVA acknowledges that, while the increased noise levels from construction vehicles will be noticeable, this will only to occur during the project's excavation and haulage stage (12 weeks), after which the construction traffic movements and associated noise levels along all local and sub-arterial roads will be lower and in accordance with the RNP criteria.

The proposed mitigation measures to address noise impacts from construction traffic are outlined in Section7.4.3 .

Vibration impacts

The only vibration-intensive activity during construction is associated with the compacting activities during the civil works and landscaping stage (16 weeks).

The NVA assumes that a vibratory roller in the order of 10 tonne capacity will be used at each basin site. The roller would potentially operate within a minimum distance of 40 m of a residential receiver during works on Basin V6. A minimum distance of 105 m is expected when such works occur at Basin C.

The predicted vibration levels, as set out in the NVA, are well below the trigger for building damage expected for a typical residential dwellings. The NVA concludes that the risk of damage (even cosmetic) is considered negligible at the predicted vibration levels and that there is a low risk that vibration limits associated with human discomfort. Consequently, no specific mitigation measures are necessary to address vibration impacts during construction.

7.4.3 Mitigation measures

The NVA concludes that a detailed Construction Noise and Vibration Management Plan (CNVMP) is required to be prepared once a contractor has been secured. The following mitigation measures are to be considered as part of the CNVMP:

- Measures to address noise from on-site construction activities:
    - a solid barrier fence (constructed from 18 mm thick ply of acoustically similar) approximately 40 m in length on either side of the access to the site. The barrier shall be a minimum of 1.8 m in height and to be located on the road side
    - ensure that plant locations, particularly associated with Basin V6, are located as from nearby residential receivers as practical and not concentrated in one location where possible
    - inform all impacted residential receivers (in particular those in R1) when Basin V6 works are occurring
    - prepare a community liaison plan that incorporates a complaints management procedure.

- Measures to address noise from construction traffic:
    - all trucks used are in good working order and the truck speed is minimised to between 40 and 50 km/hr until at sub-arterial/arterial road is reached
    - the access to Delany Circuit is well maintained to limit pot holes
    - respite hours along Ninth Avenue (Route 1) during school drop-off and pick-up
    - alternate access for light construction vehicles
    - continued communication with impacted residences, particularly along and near Delany Circuit near the site access.

7.4.4 Conclusion

Noise impacts associated with the construction of Basins C and V6 are found to be acceptable, subject to the inclusion of the mitigation measures listed in Section 7.4.3 above (to be included as part of a CNVMP).

The CNVMP will be prepared once a contractor has been secured and the construction approach finalised. The CNVMP will detail all feasible and reasonable noise and vibration mitigation measures to be implemented during construction of the basins to minimise impacts at the receiver locations.

7.5 Biodiversity

A SIS for the site has been prepared by Cumberland Ecology and is included at Appendix I. The purpose of the SIS is to identify threatened species on the site that may be impacted by the proposal and recommend appropriate strategies to minimise adverse impacts.

7.5.1 Relevant biodiversity legislation

As discussed at Section 6.5, the TSC Act was repealed and replaced by the BC Act on 25 August 2017. However, the associated BCS&T Regulation includes a transitional period which allows development applications within the Penrith LGA to be assessed as an 'interim planning application' in accordance with the provisions of the (former) TSC Act.

The interim arrangements are in place for an additional fifteen months from the commencement of the BC Act (25 August 2017) and then a further 12 months from 25 November 2018. As this application is submitted prior to the cut-off date of 25 November 2019, the assessment of all ecological matters required under NSW legislation is assumed to be conducted under the TSC Act. The SIS has been prepared on this basis.

7.5.2 Existing conditions

The extent of the works includes approximately 4.5 ha for construction of the basins. Ancillary works are considered temporary and include minor track upgrade works within the Regional Park, to a width of no greater than 10 m, centred on the existing tracks between the two proposed basins. The tracks will be restored to the satisfaction of NPWS (the future land manager of the Regional Park) at the conclusion of construction.

Vegetation across the study area is separated into various sub-units of Cumberland Plain Woodland and derived native grassland, Shale Gravel Transition Forest, River-flat Eucalypt Forest and Freshwater Wetlands.

The study area in context to the broader St Marys Development site is shown in Figure 13.

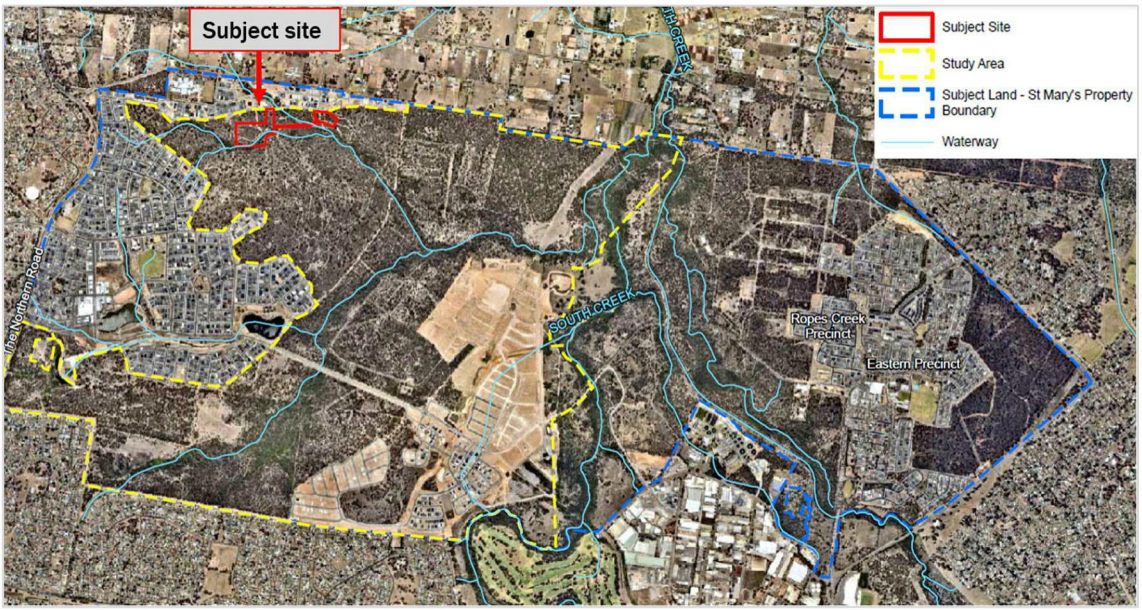

Figure 13: SIS study area (Base source: Cumberland Ecology)

The following Critically Endangered and Endangered Ecological Communities (CEECs and EECs), as listed under the TSC Act, would be impacted by the development:

- Cumberland Plain Woodland (in the form of Shale Plains Woodland, as mapped by OEH, 2013)

- Shale-Gravel Transition Forest
- River–flat Eucalypt Forest (in the form of Alluvial Woodland, as mapped by OEH, 2013)
- Swamp Oak Floodplain Forest (in the form of Alluvial Woodland, as mapped by OEH, 2013)
- Freshwater Wetlands on Coastal Floodplains.

Impacts of the development are described at Section 7.5.3.

7.5.3 Impact assessment

Flora

Construction of the proposed basins will require the removal of approximately 4.5 ha of vegetation classified as either CEEC or EEC. Table 20 identifies the impacted vegetation types and the total area proposed to be removed.

Vegetation Community	Present in the Study Area (ha)	Removed from the Subject Site (ha)
River-flat Eucalypt Forest (EEC)	113.05	0
Regenerating River-flat Eucalypt Forest (EEC)	14.22	0
Cumberland Plain Woodland (CEEC)	254.42	0.8
Regenerating Cumberland Plain Woodland (CEEC)	163.41	3.7
Low Diversity Derived Native Grassland (CEEC)	15.91	0
Freshwater Wetland (EEC)	2.20	0.00
Freshwater Wetland (Degraded)	0.33	0.3
Shale Gravel Transition Forest (EEC)	17.20	0.00
Regenerating Shale Gravel Transition Forest (EEC)	2.18	0.00
Weeds	0.05	0.00
Rural / Undetermined	117.63	0.00
Total	**700.59**	**4.5**

Table 20: Existing vegetation and extent of removal (Source: Cumberland Ecology)

Fauna

The major affected fauna species impacted by the proposed development is the Cumberland Plain Land Snail. The mature and regenerating Cumberland Plain Woodland, and to a lesser extent the River-flat Eucalypt Forest (RFEF), provides habitat for this species. However, this area of habitat is considered to be degraded and of a lesser importance due to the increased level of disturbance, sparse nature and its comparatively small in size. Therefore, the loss of this habitat is not considered to be significant.

Direct impacts

Table 21 below provides a summary of the assessment of likely direct impacts on existing vegetation communities and threatened species at the site.

Impact	Description
Vegetation communities	*The proposed development will occur within a landscape that has been extensively altered since European settlement took place. The RFEF present on the subject site consists of a degraded form of the community, which is heavily weed infested, but adjoins more intact RFEF within the South Creek riparian corridor of the Regional Park. All RFEF conforms to the endangered ecological community listing under the TSC Act. The CPW vegetation on the subject site consists of a mix of mature woodland, young, woodland in various stages of*

	regeneration and derived native grassland which collectively conforms to the critically endangered listing under the TSC Act. A conservative approach has been taken for this SIS and it is assumed that all vegetation within the subject site will be removed for the purposes of the proposed development, although replanting will occur in association with the constructed basins, and temporary access tracks will be restored post construction (SIS, Cumberland Ecology).
Threatened species	*The clearing of vegetation mentioned within the subject site will directly remove habitat for threatened species such the Cumberland Plain Land Snail (Meridolum corneovirens). The Cumberland Plain Land Snail was recorded within RFEF in the central area of the subject site and has a high potential to occur within other parts of this community, and within adjoining scattered patches of woodland within the subject site. Several individuals are likely to be removed given that habitat is to be cleared.* *Some highly mobile fauna species such as microbats, and some small woodland birds that are known from the study area may experience minor habitat loss, however, the subject site generally lack important habitat features, such as hollow-bearing trees. This paucity of habitat features suggests that it would be unlikely for these species to be dependent on the habitats present. The Regional Park also provides substantial habitat for these species* (SIS, Cumberland Ecology).

Table 21: Assessment of impacts on vegetation communities and threatened species

7.5.4 Mitigation measures

The SIS states that the foremost mitigation measure associated with the proposed development is the dedication of land for the creation of the Wianamatta Regional Park, which is already established within the statutory planning framework provided by SREP 30, the St Marys EPS and the State Deed. This is supplemented by the provision of funding under the State Deed for the ongoing conservation, enhancement, management and rehabilitation of this land, which, together with proposed open space areas, will total over 900 ha of retained and improved habitat.

The SIS finds that the biodiversity impacts associated with Basins C and V6 will be balanced by the major conservation outcomes resulting from of the creation of the Wianamatta 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 development is considered to be of minor consequence.

7.5.5 Conclusion

The SIS concludes that the proposed development will not result in any local populations of threatened species or occurrences of ecological communities becoming extinct. Known occurrences of threatened flora and fauna within the SMP are found to be secure in the long term as a result of the creation of the 900 ha Wianamatta Regional Park and numerous supporting mitigation measures that are enshrined within the statutory planning framework.

7.6 Construction traffic

A Construction Traffic Management Plan (CTMP) has been prepared by McLaren Traffic Engineering and is included at Appendix M. The CTMP addresses the proposed construction vehicle routes, construction vehicle traffic generation, construction operating hours and site access arrangements.

Vehicular access to the Basin C site will be provided from two locations:

- for light vehicles: the cul-de-sac of Nagle Street and/or Delany Circuit, via a temporary haul road between the two sites
- for heavy vehicles: Delany Circuit only, via a temporary haul road between the two sites.

Vehicular access to the Basin V6 site will be provided from Delany Circuit which will be designed to accommodate vehicles up to 23 m in length (B-Doubles vehicles).

Both Nagle Street and Delany Circuit are unclassified, two-way local roads with a 50 km/hour speed limit.

In addition to the established road network, a temporary haulage road is proposed to provide a connection between the two sites.

7.6.1 Construction traffic volumes and duration

Construction of Basins C and V6 is expected to occur over a period of 34 weeks. Construction is expected to be carried out between the hours of 7:00 am and 5:00 pm Monday to Saturday. No construction works will be carried out on Sunday or Public Holidays.

The duration of construction and the maximum number of staff expected on the site at any one time is shown in Table 22.

Activity	Duration	Maximum staff on-site
Site establishment	2 weeks	6
Excavation	12 weeks	12
Civil and landscape works	16 weeks	12
Finishing works	4 weeks	6

Table 22: Duration of construction and staff numbers (Source: McLaren Traffic Engineering)

Peak construction traffic movements will occur during the expected 12 week excavation stage of the project. During this time, it is expected that 2,000 m^3 of material will be removed from the site each day.

Based on a truck capacity of 14 m^3 (on average), this will result in approximately 140 to 150 daily truck movements over a 10-hour period. On an hourly basis, this equates to approximately 32 truck movements (16 trucks in and 16 trucks out of the site).

7.6.2 Construction vehicle haulage routes

Construction vehicle access for heavy vehicles to both basins will be from Delany Circuit. Access to Basin C will be provided via a temporary haul road linking the two sites through the Wianamatta Regional Park.

Material from the basins will be exported to the Dunheved Precinct via one of two routes outlined below (and also shown in Figure 14).

Route 1: to be used by all vehicles up to 28 m long B-Doubles:

- Delany Circuit via Ninth Avenue, The Northern Road, Dunheved Road, Christie Street, Forrester Road to Links Road into Dunheved Precinct.

Route 2: to be used by all vehicles up to 19 m long Articulated Vehicles:

- Delany Circuit via Third Avenue, Eighth Avenue, Palmyra Avenue, Forrester Road to Links Road into Dunheved Precinct.

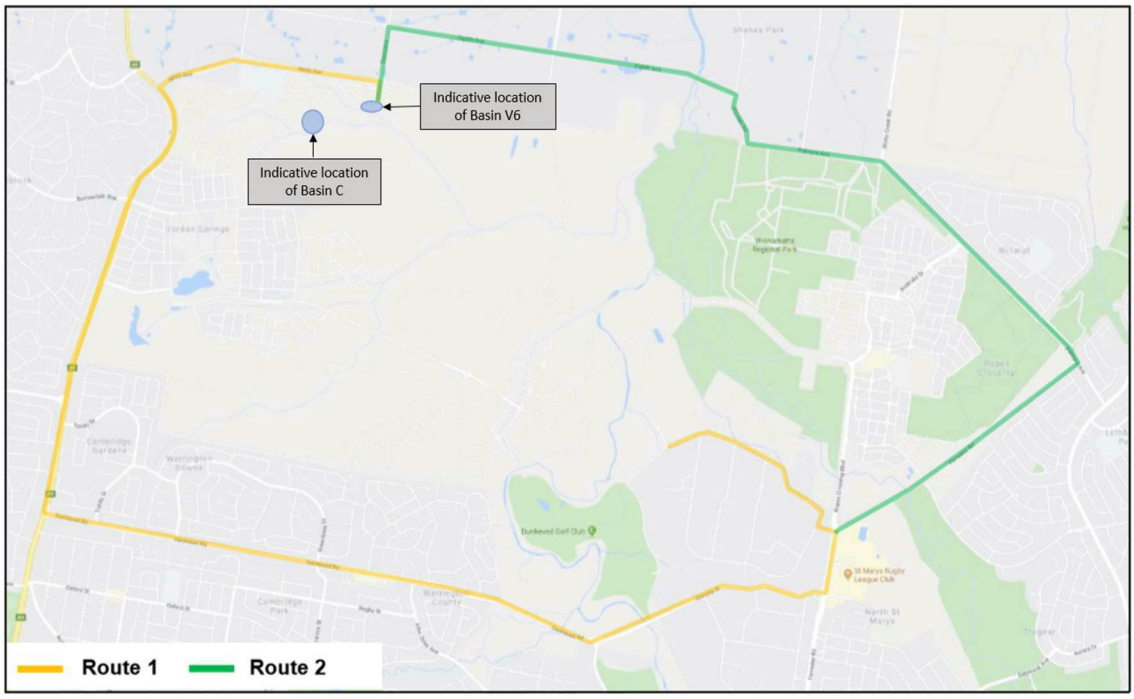

Figure 14: Proposed Haulage Routes (Base source: McLaren Traffic Engineering)

7.6.3 Construction traffic impacts

Intersection performance

The increase in traffic at the intersections along the two proposed haulage routes as a result of the peak-hourly construction traffic has been evaluated based on the traffic volume plots (provided at Appendix C of the CTMP).

The CTMP finds that construction traffic will cause between 1% and 4% increase on any given single intersection, assuming that all construction traffic is utilising the one route (rather than being distributed between the two routes).

On this basis, most intersections will experience only a 1% increase in traffic volumes during the AM and PM peak periods. The greatest level impact is anticipated at the intersection of Palmyra Way and Eighth Avenue where an increase of 4% is expected during the PM peak. The CTMP states that this level of traffic generation will have no noticeable effect on the existing intersections. Consequently, construction traffic movements will have a negligible impacts on existing traffic conditions.

A summary of the existing traffic volumes (during the AM and PM peak periods) and the anticipated increase in traffic generated during construction of the basins is provided in Table 23.

Intersection	Route	Existing		During Construction[1]		Change	
		AM	PM	AM	PM	AM	PM
Third Avenue/Eighth Avenue	2	1201	1003	1233	1035	+3%	+3%
Ninth Avenue/Terrybrook Road	1	1221	973	1253	1005	+3%	+3%
Ninth Avenue/The Northern Road	1	2676	2437	2708	2469	+1%	+1%
The Northern Road/Dunheved Road	1	3804	4547	3836	4579	+1%	+1%
Dunheved Road/Christie Street	1	2655	2947	2687	2979	+1%	+1%
Christie Street/Forrester Road	1	3210	3416	3242	3448	+1%	+1%
Forrester Road/Links Road	1&2	2949	2857	2981	2889	+1%	+1%
Forrester Road/Palmyra Avenue	2	2525	2501	2557	2533	+1%	+1%
Palmyra Avenue/Stony Creek Road	2	1718	1509	1750	1541	+2%	+2%
Palmyra Avenue/Eighth Avenue	2	956	768	988	800	+3%	+4%

Table 23: Impact on intersection performance (Source: McLaren Traffic Engineering)

Pedestrian management

The site frontage along Nagle Street and Delany Circuit have existing pedestrian footpaths which are to remain open to pedestrian access at all times. These frontages on the outside of the construction fence are to be free of any waste, construction material or trip hazards associated with the development.

Modifications to line marking – Eighth Avenue/Third Avenue intersection

The CTMP identifies a minor modification that is required to the existing line marking at the intersection of Eighth Avenue and Third Avenue in Llandilo. The minor modification involves relocation of the stop line on the eastern side of Eighth Avenue by approximately 6.5 m to the east to allow 19 m long articulated vehicles to successfully traverse the intersection without crossing into the opposing traffic lane.

The existing stop line, shown in context to the proposed location of the new stop line and swept path analysis for a 19 m long articulated vehicles, is shown in Figure 15.

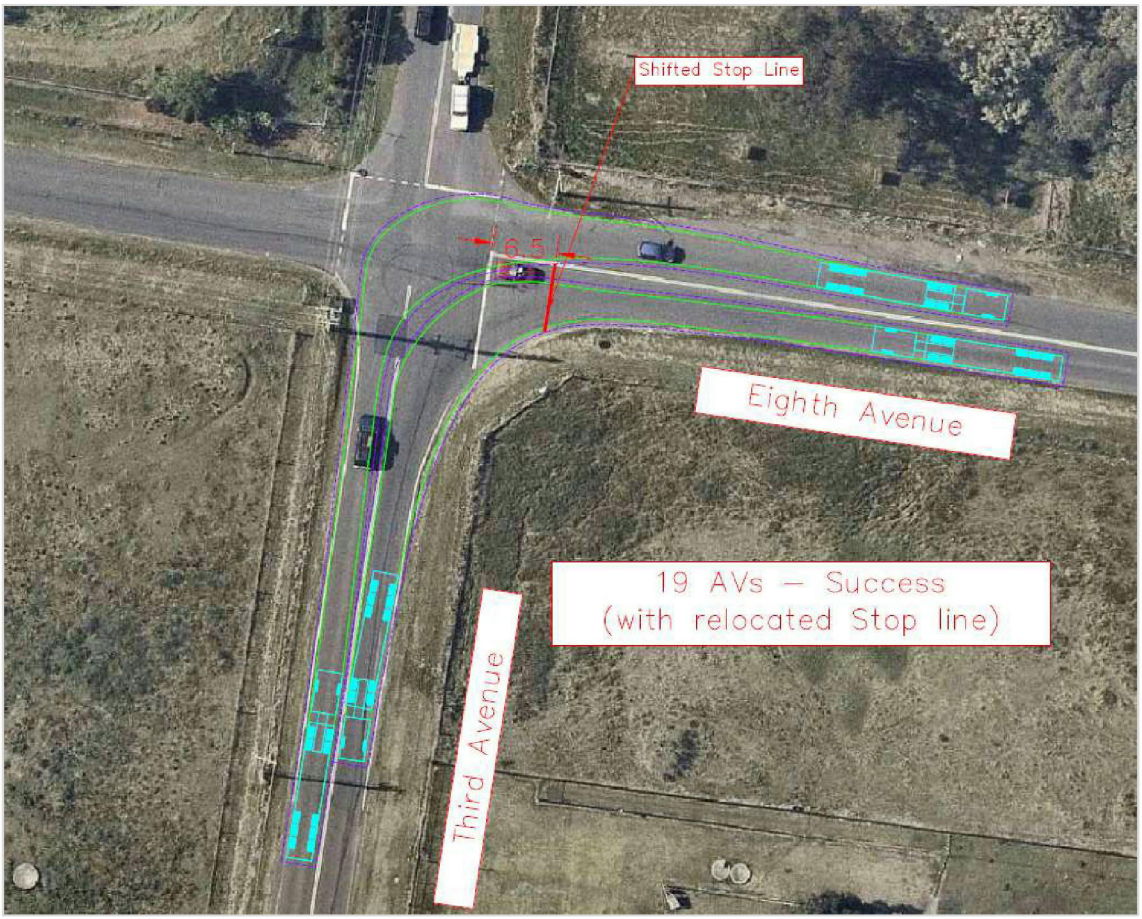

Figure 15: Proposed relocation of the stop line – Eighth Avenue/Third Avenue intersection (Source: McLaren Traffic Engineering)

Conclusion

The CTMP finds that the expected generated construction traffic is relatively low and is not expected to measurably increase expected delays or impacts on the surrounding network performance during the AM and PM peak periods. The current traffic flow conditions are expected to remain unaltered during the construction activities, and therefore, no impact on existing traffic flows along local and arterial roads will be evident.

The site is also located close to the arterial road of The Northern Road, therefore minimising infiltration to local residential streets and avoiding impacts on residential amenity. Further, public transport infrastructure (i.e. bus stops) and services will not be affected by the proposed works.

The CTMP finds construction traffic impacts to be acceptable and has recommended the stop line marking at the intersection of Eighth Avenue and Third Avenue be relocated to accommodate 19 m long articulated vehicles, without the need to cross into the opposing traffic lane.

7.7 Waste management

A Waste Management Plan (WMP) for the site has been prepared by JBS&G and is included in Appendix G. The WMP identifies potential waste types that are present within the proposed Basins C and V6 site and provides appropriate waste management procedures.

Waste material from the site will generally comprise vegetation waste and excavated soils. The WMP classifies waste product consistent with the EPA's classification of 'garden waste' for vegetation material which includes grass, leaves, branches, tree trunks, stumps and similar materials. Surplus soil is classified as 'general solid waste (non-putrescible)' and 'virgin excavated natural material (VENM)' including clay, gravel, sand, soil and rock fines that does not contain sulfidic ores, soils or any other waste.

Asbestos impacted fill materials were identified in the western portion of the Basin C access track. Appropriate remediation procedures will be provided throughout the excavation and construction process to ensure no further contamination (discussed further at Section 7.3). Construction materials associated with service infrastructure including concrete and steel was also found on site.

The sequencing of waste removal will initially involve the removal and stockpiling of all surface vegetation, prior to the excavation of soils. Both garden waste and VENM will be re-used within the St Marys Development Site (where possible) or otherwise recycled at an off-site waste processing facility. It is likely any garden waste will need to be processed (i.e. chipped) prior to its re-use within the site.

Waste that is unsuitable for re-use will be removed in accordance with the relevant regulatory and EPA requirements for the transportation of waste products. Fill materials impacted with asbestos will require disposal offsite to a facility suitably licensed to accept the waste in accordance with EPA (2014). This includes adequately coverage of waste loads to prevent spillage on to the road and prevention of dust, litter or damage to other vehicles. Waste transportation will be undertaken by an appropriately licensed contractor and disposed of at a lawful place, in accordance with the *Protection of Environment Operations Act 1997*.

There is the potential for contaminants of potential concerns to be encountered across the site including fill materials not consistent with the definition of VENM, asbestos-containing materials and fragments, chemicals and ash or slag contaminated soils. The WMP states that a review of historical activities indicates there is a low possibility for such contaminants to be present at the location where Basin C and V6 are proposed.

Notwithstanding the above, the WMP includes an Unexpected Finds Protocol as a precautionary measure to ensure the protection of workers and the surrounding community. It will be the responsibility of the construction contractor to ensure the protocol is followed during construction of both Basins C and V6.

7.8 Air Quality

An Air Quality Report (AQR) has been prepared by Wilkinson Murray Pty Ltd and is included in Appendix K. The AQR provides a qualitative assessment of the potential dust impacts during construction activities associated with excavation and remediation of the basins. The assessment has been prepared in accordance with the *Guidance on the assessment of dust from demolition and construction* (IAQM, 2014).

7.8.1 Existing conditions

The AQR selected observations of wind speed and direction of OEH's nearest air quality monitoring station to represent typical wind patterns in the area surrounding the site. The nearest air quality monitoring station is located approximately 9 km south of Basins C and V6. Southerly and south-westerly winds are the most prevalent conditions in the area.

The AQR states that no odours have been identified from the existing temporary basins in Jordan Springs (refer temporary basin locations in Figure 9 at Section 7.1.1). It is, therefore, expected that there will be odour impacts associated with the new detention Basins C and V6.

7.8.2 Impact assessment

Potential air pollutants generated during construction may include dust and particulate matter, inclusive of:

- total suspended particulates;
- particulate matter; and
- deposited dust.

The air quality assessment found that the proposed haulage activities are considered to have a high risk of dust soiling impacts and a low risk of human health impacts. The proposed earthworks are considered to have a low risk of both dust soiling and human health impacts. These impacts are considered based on current conditions without mitigation measures in place.

Accordingly, mitigation measures have been recommended within the report to minimise impacts associated with dust from the proposed construction of the basins onto the nearest residential receivers and the nearest educational receiver (Xavier College). The location of the nearest sensitive receivers in context to the proposed basins are shown in Figure 12 (at Section 7.4.2).

7.8.3 Mitigation measures

The AQR recommends a Dust Management Plan (DMP) be prepared prior to the commencement of construction works to address potential air quality impacts.

The report also recommends the following mitigation measures to minimise impacts associated with dust from the proposed basin works with reference to:

- communication
- site management measures
- monitoring procedures
- preparing and maintaining the site
- construction vehicle usage and sustainable travel
- measures for general construction activities
- measures specific to haulage activities.

Further detail on the above listed mitigation measures can be found in the AQR at Appendix K.

7.8.4 Conclusion

The AQR proposes a range of management and mitigation measures to minimise dust and air quality impacts during construction of the basins. The AQIA finds that dust impacts during construction on the nearest residential and educational receivers would not be significant and presents a low risk of generating unacceptable air quality impacts, subject to the implementation of the recommended mitigation measures as part of a DMP.

7.9 Aboriginal heritage

An Aboriginal Archaeological and Cultural Assessment Methodology (AACAM) Report has been prepared by GML Heritage and is included at Appendix H.

The purpose of the AACAM Report is to provide Registered Aboriginal Parties with information about the proposed detention basins, and to afford an opportunity to provide input into the project methodology and Archaeological Research Design.

The AACAM Report confirms that an Aboriginal Cultural Heritage Assessment Report (ACHAR) will be prepared at a future stage of the project to support an application for an Aboriginal Heritage Impact Permit (AHIP) under section 90 of the NP&W Act.

7.9.1 Study area

The study area assessed in the AACAM Report is situated in the north-western extent of the Wianamatta Regional Park and adjoins the Jordan Springs residential area to the north. The study area is adjacent to the boundary of the Jordan Springs AHIP No. C0000362 (formerly known as the Western Precinct) which forms its northern boundary.

For the purpose of the Aboriginal heritage assessment, a wide study area has been assessed that is beyond the area of impact associated with the construction of the basins. The study area in context to the broader St Marys Development Site is shown in Figure 16. The area of impact associated with the construction of the basins in shown in Figure 17.

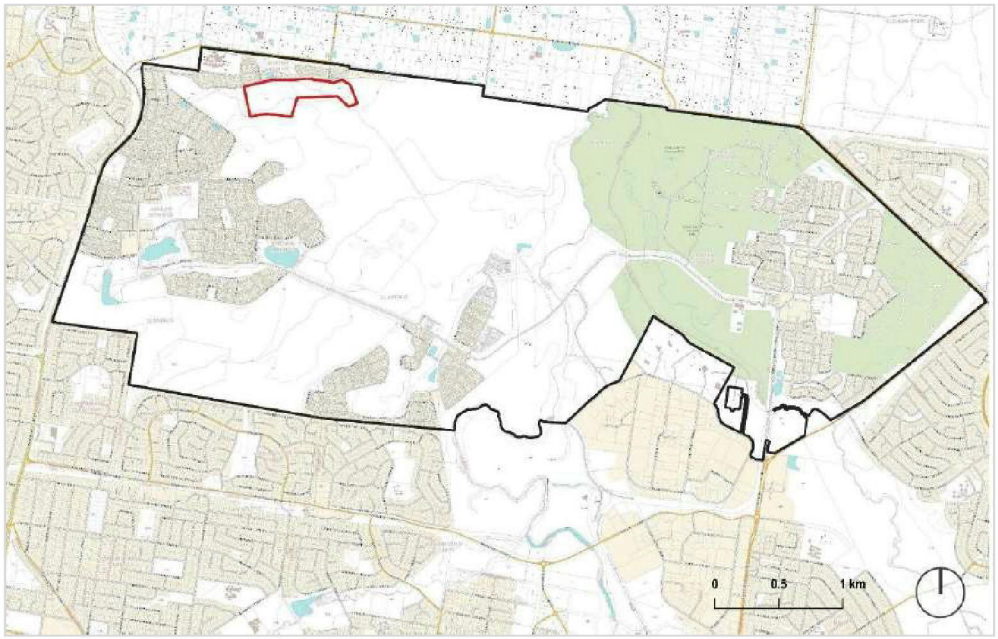

Figure 16: Study area in context to the broader St Marys Development Site (Source: GML Heritage)

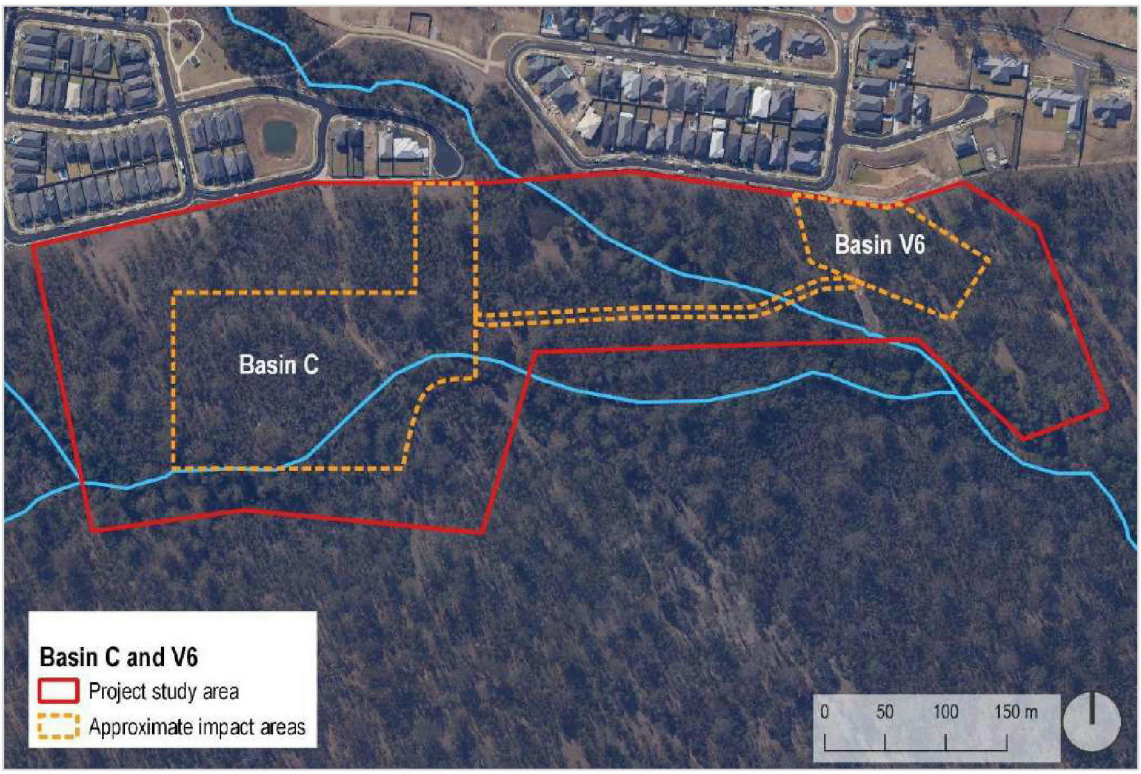

Figure 17: Area assessed (in red) and approximate impacted areas during construction (Source: GML Heritage)

7.9.2 Aboriginal community consultation

Aboriginal community consultation has been undertaken in accordance with the Department of Environment, Climate Change and Water (DECCW) consultation requirements. Letters were sent on 2 October 2019 to the following statutory bodies requesting the contact details for Aboriginal people who may have an interest in the proposed works within the study area:

- the DPIE
- Deerubbin Local Aboriginal Land Council
- Office of The Registrar, Aboriginal Lands Rights Act 1983
- National Native Title Tribunal
- Native Titles Service Corporation
- Penrith City Council
- Greater Sydney Local Land Services.

Following the responses from these letters, potential stakeholders were identified and letters were sent to the identified Aboriginal people on 16 October 2019 and an advertisement placed in the Penrith Press on 3 October 2019. Invitations were made to Aboriginal people with an interest in the site to register as a stakeholder to be involved in consultation. A number of interested parties became Registered Aboriginal Parties (these parties are listed in Appendix H).

DECCW consultation requirements have a number of responsibilities and expectations for both the Aboriginal community and the proponent regarding the assessment of the site's cultural heritage. The Registered Aboriginal Parties are responsible for providing information relating to Aboriginal cultural heritage relevant to the study area to assist in managing

cultural significance in an appropriate and respectful manner. The proponent is then responsible for ongoing consulting with the Aboriginal community and managing the consultation process in accordance with the DECCW requirements.

7.9.3 Aboriginal Cultural Assessment Methodology

In order to access and manage Aboriginal heritage it is proposed to further consult with the Registered Aboriginal Parties, undertake field surveys within the study area and undertake a program of archaeological test evacuation zones.

The archaeological survey will be undertaken in order to identify, record and assess the condition of any unrecorded Aboriginal sites within the study area. The investigation will be undertaken by an archaeologist with experience in Aboriginal cultural heritage assessment and a representative from the Registered Aboriginal Parties. Newly identified areas will have their location recorded and their extent mapped on topographic maps.

Archaeological test excavation methodology has been developed in accordance with the DPIE guidelines and Aboriginal community consultation. Figure 18 shows the proposed location of test units (0.5m x 0.5m) within areas expected to contain Aboriginal archaeological deposits. Archaeological data sampling will require the collection of information on standard archaeological excavation parameters and will be used to assess the significance of Aboriginal cultural heritage.

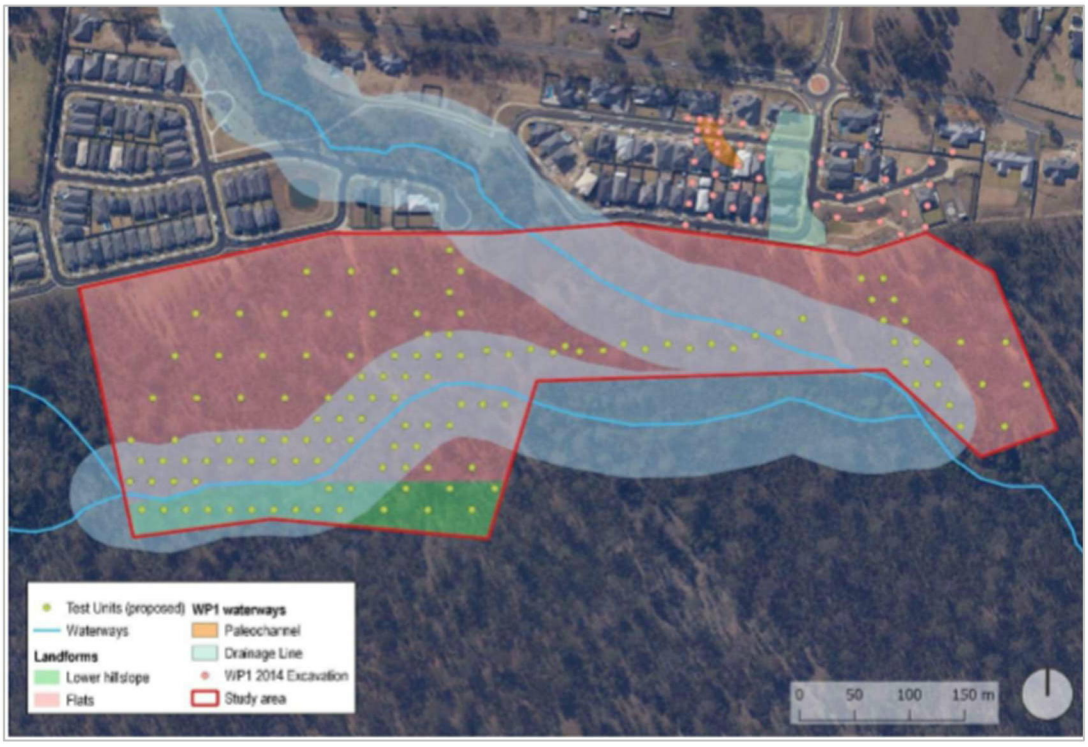

Figure 18: Location of test units proposed within the study area (Source: GML Heritage)

The potential impact of the construction of the basins on identified Aboriginal cultural values would be assessed and statements of impact will be providing within the Aboriginal Cultural Heritage Assessment Report (ACHAR). Management strategies will then be produced in consultation with the RAPs and considered as final management recommendations for the site.

The Aboriginal cultural assessment methodology will be documented in a report detailing the results of the archaeological assessment produced in accordance with the consultation requirements. The report will be provided to the Registered Aboriginal Parties for their review and comment prior to finalisation.

7.10 Visual

A Landscape Character and Visual Impact Assessment (LCVIA) for the site has been prepared by Clouston Associates and is included at Appendix N. The LCVIA address the potential for impacts on the existing landscape character and visual amenity from the nearest residences to the proposed basins and includes potential mitigation measures to reduce visual impacts.

The LCVIA describes the location of Basin C and V6 as an area occupied of weedy freshwater wetlands, moderate quality River Flat Eucalypt Forest and small areas of exotic grassland.

The landscape character of the surrounding area is a contrast between the remaining mature vegetation within Wianamatta Regional Park where the basins will be located and surrounding, low-density suburban development including the residential areas of Jordan Springs and Llandilo. The LCVIA notes there are no significant public or private views in the immediate vicinity of Basins C and V6.

Visual impacts have been assessed from eight vantage points surrounding the site, shown in Figure 19. The viewpoints are shown in Figure 20 to Figure 35 below. The anticipated visual impact at each of the viewpoints, including the expected impact rating as outlined in the LCVIA, is also provided.

Figure 19: Visual impacts assessed from the following 8 vantage points (Source: Clouston Associates)

Viewpoint 1: Looking south east from the corner of Bethany Circuit and Agnes Way (distance of 85 m).

Figure 20: Viewpoint 1 looking south east (Source: Clouston Associates)

Figure 21: Viewpoint 1 looking south east (Source: Clouston Associates)

Visual impact: *As a result of significant mature vegetation within the Wianamatta Regional Park and the position of Basin C, views of the basin will not be possible, and its presence will be indiscernible to either road or footpath users, or occupants of the dwellings facing the direction of the basin* (Clouston Associates, 2019).

Impact rating: The LCVIA has assessed the visual impact from Viewpoint 1 to be **negligible**.

Viewpoint 2: Looking south from the public park on Nagle Street (distance of 170 m).

Figure 22: Viewpoint 2 looking south (Source: Clouston Associates)

Figure 23: Viewpoint 2 looking south (Source: Clouston Associates)

Visual impact: *As a result of the mature vegetation within the Wianamatta Regional Park views of Basin C will not be possible from this location and its presence will be indiscernible in the wider view* (Clouston Associates, 2019).

Impact rating: The LCVIA has assessed the visual impact from Viewpoint 2 to be **negligible**.

Viewpoint 3: Looking south west from public walkway on Agnes Way (distance of 80 m).

Figure 24: Viewpoint 3 looking south west (Source: Clouston Associates)


Figure 25: Viewpoint 3 looking south west (Source: Clouston Associates)

Visual impact: *As a result of vegetation clearing which forms an informal access way within Wianamatta Regional Park, a highly framed view of Basin C will be possible from this location. In order to accommodate the basin a number of existing vegetation will be removed which will result in a number of trees currently visible in the distance being removed.*

Although a number of trees will be removed, these will be replaced by views of mature trees beyond the basin which will minimise the visual impact caused by any vegetation removal and maintain the currently unbroken tree line view in the distance (Clouston Associates, 2019).

Impact rating: The LCVIA has assessed the visual impact from Viewpoint 3 to be **negligible**.

Viewpoint 4: Looking south west from Nagel Street (eastern end turning head) (distance of 100 m).

Figure 26: Viewpoint 4 looking south west (Source: Clouston Associates)

Figure 27: Viewpoint 4 looking south west (Source: Clouston Associates)

Visual impact: *Due to existing mature vegetation within Wianamatta Regional Park, views of Basin C will not be possible from this location and its presence will be indiscernible in the wider view* (Clouston Associates, 2019).

Impact rating: The LCVIA has assessed the visual impact from Viewpoint 4 to be **negligible**.

Viewpoint 5: Looking east from Delany Circuit (distance of 170 m).

Figure 28: Viewpoint 5 looking east (Source: Clouston Associates)

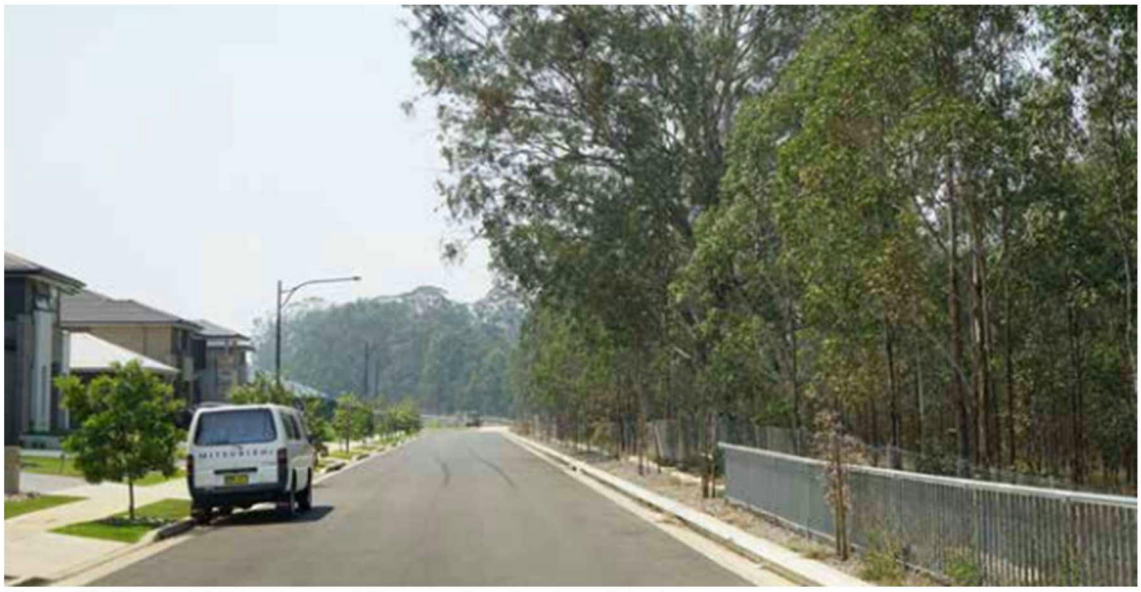

Figure 29: Viewpoint 5 looking east (Source: Clouston Associates)

Visual impact: *As a result of mature vegetation within the Wianamatta Regional Park to the right of the view, the presence of Basin V6 will be largely obstructed from this location. In order to accommodate the basin a number of trees will need to be removed, and this will be visible in the far distance (at the end of road in this view).*

Although the removal of a small number of trees will occur, views of existing trees beyond this will result in the continued unbroken view of vegetation in the distance and a negligible visual impact (Clouston Associates, 2019).

Impact rating: The LCVIA has assessed the visual impact from Viewpoint 5 to be **negligible**.

Viewpoint 6: Looking south from Ninth Avenue Roundabout (distance of 150 m).

Figure 30: Viewpoint 6 looking south (Source: Clouston Associates)


Figure 31: Viewpoint 6 looking south (Source: Clouston Associates)

Visual impact: *A number of mature trees will be removed in order to accommodate Basin V6 and this will be noticeable from this position given the basins position on the very northern edge of Wianamatta Regional Park.*

Although a reduction in vegetation in the centre of the view at the edge of the Regional Park will occur, views over the basin to the distance means that vegetation beyond the basin will be visible, therefore maintaining the unbroken band of vegetation currently visible (Clouston Associates, 2019).

Impact rating: The LCVIA has assessed the visual impact from Viewpoint 6 to be **low**.

Viewpoint 7: Looking south east from Delany Circuit (approximately number 10) (distance of 10 m).

Figure 32: Viewpoint 7 looking south east (Source: Clouston Associates)

Figure 33: Viewpoint 7 looking south east (Source: Clouston Associates)

Visual impact: *As a result of the proximity of the viewpoint to Basin V6, the basin will dominate the view. Existing mature vegetation currently visible will be removed and replaced by the basin resulting in a more open foreground and visual scene.*

Views over the basin will be possible and will allow for visual access to mature vegetation beyond the basin, helping to lessen the impact of the removal of vegetation in the foreground (Clouston Associates, 2019).

Impact rating: The LCVIA has assessed the visual impact from Viewpoint 7 to be **high**.

Viewpoint 8: Looking south west from Cerdon Place (distance of 70 m).

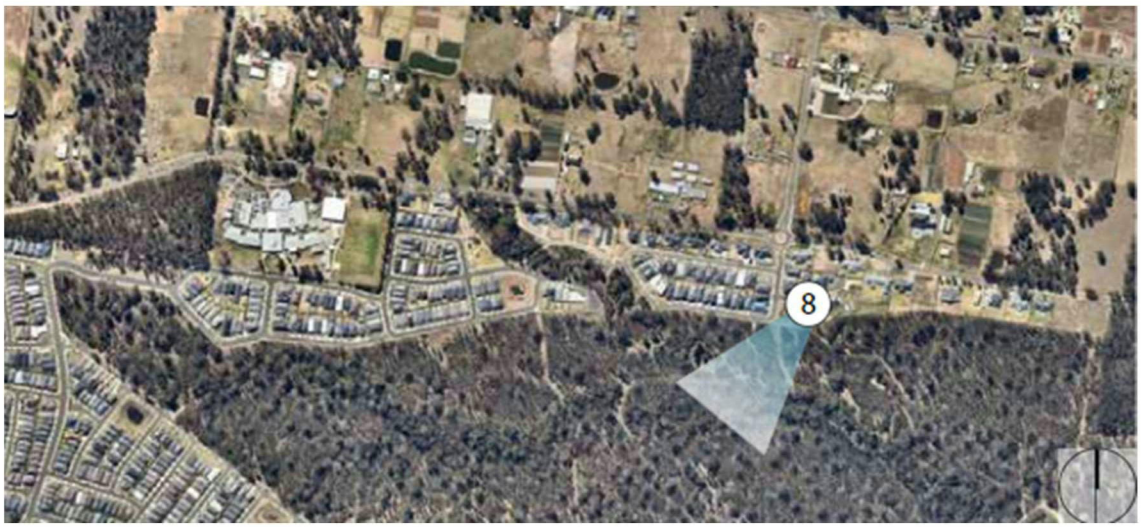

Figure 34: Viewpoint 8 looking south west (Source: Clouston Associates)


Figure 35: Viewpoint 8 looking south west (Source: Clouston Associates)

Visual impact: *In order to accommodate Basin V6, a number of mature trees will be removed from the northern border of Wianamatta Regional Park in the mid-ground of the view. This will result in a more open border of the park as opposed to the largely unbroken line of mature trees that currently runs along the border.*

Views of mature vegetation beyond the basin will be possible which will maintain the green band that is visible and minimise the impact of the removal of the existing vegetation in order to accommodate the basin (Clouston Associates, 2019).

Impact rating: The LCVIA has assessed the visual impact from Viewpoint 8 to be **moderate**.

Summary and mitigation measures

A summary of the visual impact assessment from the eight viewpoint locations is provided in Table 24.

VIEWPOINT LOCATIONS	RECEPTOR SENSITIVITY	MAGNITUDE					IMPACT RATING
		DISTANCE	QUANTUM OF VIEW	PERIOD OF VIEW	SCALE OF CHANGE	OVERALL MAGNITUDE RATING	
1. Corner of Bethany Circuit & Agnes Way.	L	H	N	N	N	N	NEGLIGIBLE
2. Public Park on Nagle Street.	M	M	N	N	N	N	NEGLIGIBLE
3. Public Walkway on Agnes Way.	L	H	N	N	N	N	NEGLIGIBLE
4. Nagle Street (eastern end turning head).	L	M	N	N	N	N	NEGLIGIBLE
5. Delany Circuit.	L	M	N	N	N	N	NEGLIGIBLE
6. Ninth Avenue Roundabout.	L	M	L	N	L	L	LOW
7. Delany Circuit (approx. Number 10)	M	H	H	L	H	H	HIGH/MODERATE
8. Cerdon Place.	L	H	L	L	M	M	MODERATE/LOW

Table 24: Summary of visual impact assessment (Source: Clouston Associates)

The LCVIA recommends mitigation measures in the form of vegetation plantings around the basins to help provide filtered views. Vegetation plantings will also help to mitigate the removal of existing vegetation that is required to construct Basin V6.

As the basins will not extend above the existing ground level, the adoption of a carefully considered planting plan will help to minimise the visual impacts of Basin V6 from both close proximity as well as from more distant views along Delany Circuit.

Conclusion

As stated in the LCVIA, Basin C will not be visible from surrounding residential areas and Basin V6 will be visible only from a small number of residential properties bordering the Wianamatta Regional Park. These properties are located along Delany Circuit and Cerdon Place in Jordan Springs.

Low to high/moderate visual impacts are only expected from directly adjacent Basin V6 with the most noticeable visual impact being the result of vegetation removal to be replaced with the detention basin.

The LCVIA concludes that the modest scale, character and catchment of the visual impacts are such that they would not constitute reasons for the proposed basin not to proceed on visual impact grounds and recommends the use of planting around the proposed basin site to provide filtered views.

7.11 Bushfire

A Bushfire Assessment Report (BAR) was prepared by Peterson Bushfire. The BAR was prepared in accordance with *Planning for Bush Fire Protection 2006* (RFS, 2006) and is included at Appendix L.

The BAR considers Basin C and V6 will not increase the bushfire hazard for nearby residential areas. Construction of the detention basins will require the removal of shale plains woodland vegetation that will reduce the level of hazard for existing development in proximity to the site.

The impact of fire initiating at the site and spreading to surrounding residential areas has been rated 'low' for Jordan Springs and 'medium' for Jordan Springs East, with the difference being the longer distance of fire spread 'downwind' possible for Jordan Springs East.

The BPA states that the proposal does not require the establishment of asset protection zones as the proposal only involves construction of detention basins and creation of access roads (to be used during construction). The construction traffic access roads do not constitute perimeter roads or designated fire trials.

7.11.1 Mitigation measures

The BAR includes recommendations to minimise ignition risk and are listed in Table 25.

Factors affecting ignition risk	Action to minimise risk
Cigarette butts	• Correct disposal of cigarette butts where smoking is permitted. • On-going toolbox talks conducted.
Welding and maintenance	• Maintain high level of employee awareness (e.g. toolbox talks) • Ensure adequate buffer zone between activities and fuel source • All hot work activities to have a spotter and a fire extinguisher within work zone • No hot work activities on Extreme or Catastrophic Fire Danger Days or days of Total Fire Ban.
Fuel and exhaust fires	• Maintain high level of employee awareness (e.g. toolbox talks) • Ensure adequate buffer zone between activities and fuel source • Ensure all plant or equipment have spark arrestors and are operating without causing backfiring etc.
Employees and contractors	• Maintain high level of employee/contractor awareness (e.g. toolbox talks) • Consideration of fire in risk assessment prior to commencing works • Availability of fire suppression equipment, where appropriate
Clearing ignitions	• Maintain high level of employee awareness (e.g. toolbox talks) • Do not undertake mechanical clearing works on Extreme and Catastrophic fire danger days • Ensure suppression equipment is available at work sites with appropriately trained staff.

Table 25: Recommendations to minimise ignition risk (Source: Peterson Bushfire)

7.11.2 Conclusion

The BAR concludes that the development complies with the aims and objectives of *Planning for Bushfire Protection 2006* and, by adopting the recommendations (listed in Table 25), will be at an acceptable level of bushfire risk. The BAR raised no further concerns regarding bushfire hazard.

8 Conclusion

This EIS addresses the matters outlined in the SEARs issued by DPIE on 14 October 2019 and has been prepared in accordance with the requirements of Schedule 2 of the EP&A Regulation.

The EIS provides a comprehensive assessment of the potential impacts associated with the creation of a regional detention Basins C and V6 on land within the St Marys Development Site. The conclusions and recommendations provided in the accompanying technical reports confirm the proposal will not have a detrimental impact on the surrounding environment.

Basins C and V6 will provide significant water quality improvements to surface water runoff from the Village 3 and Village 6 residential development areas in Jordan Springs, prior to entering tributaries to South Creek within the Wianamatta Regional Park. The development is, therefore, expected to improve water quality conditions across the St Marys Development Site and within the Hawkesbury-Nepean River catchment more broadly.

The application is therefore considered to be in the public interest and warrants approval.