WILLOWTREE PLANNING

28 June 2023

Ref: WTJ22-006 Contact: Sally Prowd



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REVIEW OF ENVIRONMENTAL FACTORS

Proposed Stormwater Mitigation Works and Synthetic Football Field

Norman Griffiths Oval, 30 Lofberg Road, West Pymble Lot 6 DP 564939

Prepared by Willowtree Planning Pty Ltd on behalf of Ku-Ring-Gai Council

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Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

I certify that I have reviewed and endorsed the contents of this REF document, and to the best of my knowledge it is in accordance with the *Environmental Planning and Assessment Act 1979*, the *Environmental Planning and Assessment Regulation 2021* and the Guidelines approved under Clause 170 of the *Environmental Planning and Assessment Regulation 2021*, and the information it contains is neither false nor misleading.

Based on the information presented in this REF document, other information available and any relevant advice, it is determined that:

- The proposed activity is not likely to have a significant impact on the environment and therefore an Environmental Impact Statement (EIS) is not required.
- The proposed activity will not be carried out in a declared Area of Outstanding Biodiversity Value (AOBV) and is not likely to significantly affect terrestrial and aquatic threatened species, populations, ecological communities, or their habitats, and a Biodiversity Development Assessment Report (BDAR) or Species Impact Statement (SIS) is not required.
- The proposed activity is not likely to significantly affect Matters of National Environmental Significance (MNES) and is therefore not a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999*. A referral to the Commonwealth Department of the Environment is not required.
- The proposed activity may proceed subject to the mitigation measures outlined in Part F of this REF and the approval conditions outlined in Section F of this REF.

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Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

EXECUTIVE SUMMARY

Overview

Ku-ring-gai Council (Council) has endorsed the development of a synthetic playing field and stormwater mitigation measures.

The facility also meets the planning priorities of the Ku-Ring-Gai Community Strategic Plan 2038 and Local Planning Strategic Framework 2020, through providing a diverse array of sporting facilities to meet the changing needs to the community.

This Review of Environmental Factors (REF) has been prepared on behalf of Ku-Ring-Gai Council to support development for the purpose of a synthetic playing field and stormwater mitigation measures at 30 Lofberg Road, West Pymble. The site is legally described as Lot 6 on DP564939.

The proposal entails the following key components:

- Synthetic field (soccer field)
- Storm water treatment and detention system for 2.4 mega litres
- Associated landscaping and works

The proposed development relates to *Parks and other public reserves* in accordance with the meaning bestowed by Division 12 and *Stormwater management systems* under Division 20 Part 2.3 of the *State Environmental Planning Policy (Transport & Infrastructure) 2021* (SEPP T&I). The site constitutes a public reserve under the control of or vested in the Ku-Ring-Gai Council and accordingly the proposed development for the purposes described in Clause 2.73 and 2.136 may be carried out by or on behalf of Council without consent.

The proposed works constitute an *Activity* within the meaning of Part 5, Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and therefore the consent authority is required to examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of this activity. This REF has been prepared to address the requirements of the EP&A Act by providing an assessment of the environmental impacts of the proposal within the context of Clause 171(2) and 171A of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation).

The environmental assessment undertaken within this REF has considered the potential impacts arising from all phases of the proposal including construction and operation. The assessment concludes that, subject to the implementation of Council's suite of policy controls, guidelines and control measures, along with the recommended mitigation measures, potential environmental impacts can be controlled with no adverse impacts on the health, diversity or productivity of the environment.

Need

Community consultation has been comprehensive and has taken place over a period of three years. Results of Community Engagement were supportive, with some concerns raised by local Bushcare and environmental groups regarding the proximity of the proposal to endangered ecological communities.

Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

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1	Existing Stormwater Services Plan	Ku-ring-gai Council
2	Aboricultural Impact Assessment	Tree Survey Pty Ltd
3	Bulk Earthworks Plan	Turf One Pty Ltd
4	Civil Engineering Plans	Turf One Pty Ltd
5	Supplementary Contamination Investigation	SLR Consulting Australia Pty Ltd
6	Geotechnical Investigation	Ground Technologies Pty Ltd
7	Fire Resistance Certificate	CSIRO
8	Technical Note re: Ecology & Heritage Impacts	SportEng Pty Ltd
9	Technical Memo: Stormwater System	Optimal Stormwater
10	Bushfire Memo	Black Ash
11	Plan of Management	Ku-Ring-Gai Council
12	Heat Testing	SportsLab USA
13	FieldTurf PureFill Brochure	PureFill
14	Risk Mitigation Summary Matrix	Willowtree Planning
15	Flora and Fauna Impact Assessment	Total Earth Care

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GLOSSARY OF TERMS

TERM	MEANING
AEP	Annual Exceedance Probability
Council	Ku-ring-gai Council
EP&A Act	Environmental Planning and Assessment Act 1979
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
FFIA	Flora and Fauna Impact Assessment
KLEP2015	Ku-ring-gai Environmental Plan 2015
REF	Review of Environmental Factors
SEPP	State Environmental Planning Policy
Sqm or m ²	Square metres
Standard Instrument	Standard Instrument - Principal Local Environmental Plan
The Site	Norman Griffiths Oval
Willowtree Planning	Willowtree Planning Pty Ltd

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PART A PRELIMINARY

1.1 INTRODUCTION

This Review of Environmental Factors (REF) has been prepared on behalf Ku-Ring-Gai Council to support development for the purpose of a new synthetic playing field with associated stormwater mitigation measures within the Norman Griffith Oval located at 30 Lofberg Road, West Pymble. The site is legally described as Lot 6 on DP564939.

The proposal entails the following key components:

- Synthetic field (soccer field)
- Stormwater treatment and detention system for 2.4 mega litres
- Associated works

The proposed works constitute an *Activity* within the meaning of Part 5 of the *Environmental Planning and Assessment Act* 1979 (EP&A Act) and therefore the consent authority is required to examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity. This REF has been prepared to address the requirements of the EP&A Act by providing an assessment of the environmental impacts of the proposal within the context of Clause 171 and 171A of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation).

The proposed activity relates to *Division 12 – Parks and other public reserves* and *Division 20 - Stormwater* management systems under Part 2.3 of the State Environmental Planning Policy (Transport & Infrastructure) 2021 (SEPP T&I). The site constitutes a public reserve under the control of Ku-Ring-Gai Council (Council) and accordingly the proposal may be carried out without consent on behalf of Council in accordance with Clause 2.73(3) and Clause 2.136(1) of SEPP T&I.

The environmental assessment undertaken within this REF has considered the potential impacts arising from all phases of the proposal including construction and operation. The assessment concludes that, subject to the implementation of recommended mitigation measures, potential environmental impacts can be controlled with no adverse impacts on the health, diversity or productivity of the environment.

This REF provides an assessment of the proposal against the factors to be taken into account in the consideration of the impact of an activity on the environment as outlined in Clause 171 and 171A of the EP&A Regulation. The document is arranged as follows:

- Part A Introduction
- **Part B** Describes the site and its context
- **Part C** Outlines the details of the proposed activity
- **Part D** Provides an assessment against the relevant policies within the planning framework
- **Part E** Assesses the environmental impact and risk of the proposal
- Part F Details mitigation measures for potential environmental impacts
- **Part G** Provides the conclusions and recommendations

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1.2 CONSULTATION

The proposed activity is exempt from consultation requirements prescribed by Clauses 2.10, 2.11, 2.12, & 2.14 of SEPP T&I in accordance with the exceptions under Clause 2.17. To comply with clause 2.13 Council has consulted with State Emergency Services (SES).

The SES has reviewed the proposal and Council has considered the feedback provided, noting key flood management issues to address.

In response to the feedback relating to the impact on flood hazard and potential increase in risks at the site, the main concerns will be addressed through incorporation of flood detention under the field. As outlined in the Technical Memo (**Appendix 9**) the proposal includes a 2.4ML underground OSD system, designed to detain floods up to the 1% AEP event (where the OSD is modelled to be at approx. 90% capacity). This will result in less frequent inundation of the field surface in comparison to the existing case, and a reduction of flood risk up to the 1% AEP event at the site, as storage is now contained underground.

Specific consideration of events between the 1% AEP and PMF is usually undertaken for more sensitive types of development. This is an existing sporting and recreation facility that is currently impacted by flooding and the creek crossing immediately down-stream of the oval has already been identified for the installation of flood signage. Additional mitigation measures, such as closure of the site during flooding events and education of employees and frequent users of the site, will be further investigated by Council through the Lane Cove Northern Catchments Flood Study that is currently being undertaken and any subsequent Flood Risk Management Study and Plan.

Council has also undergone over three years of community consultation regarding the proposal.

At the OMC on 30/6/20 Council resolved to revisit the installation of a synthetic field at Norman Griffith with the following resolution:

C. Council carry out public consultation on the proposal to convert Norman Griffiths Sportsground to a synthetic surface based on an underground detention option.

Council undertook community consultation between Tuesday, 25 August 2020 and Monday, 21 September 2020 (28 days inclusive). The consultation process was promoted via a letter and information sheet to 813 residents (500m radius from Norman Griffiths Sportsground), an onsite information board, Council's online engagement platform (hosted my <u>OurSay.org</u>), Council's website, Council E-news, a corporate advertisement in the Sydney Observer (September issue) and notification to all key stakeholders including sporting groups, schools and environmental groups such as NSW National Parks and Wildlife Service, local Bushcare groups and Council's Flood Risk Management Committee.

Council received a total of nine (9) written submissions. A further 706 people completed the online survey, and five (5) people asked a question about the proposal via the online discussion forum.

Of the nine (9) submissions received, six (6) were in support for the synthetic field and three (3) objected to the proposal. Of the six (6) submissions in favour of the synthetic field, three (3) responses were from the

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local cricket club, regional cricket association and Cricket NSW advocating for a synthetic pitch to be included in the proposal. National Parks and Wildlife Service (NPWS) were also in support, however, they noted some environmental considerations to be incorporated into design and ongoing operations of the site. As a stakeholder, NPWS have also requested for further consultation throughout the development of the project.

The three (3) submissions that objected to the proposal had environmental concerns for the surrounding vegetation. These submissions noted that if the proposal does proceed, mitigation options to maximise protection should be incorporated in the design to ensure these species are not impacted by the change to a synthetic field.

The proposal was largely supported by those who participated in the consultation process via the online survey. Of the 706 survey participants, 677 (96%) either supported or strongly supported the proposal to convert Norman Griffiths Sportsground to a synthetic field. Of these, 662 (94%) strongly supported the proposal.

Of the people that live within a 500m radius of the proposed facility, 241 (96%) supported or strongly support the proposal. Of these 237 (94%) strongly supported the proposal.

The most common reasons of support include:

- Improve the ground that is often in very poor condition and needs remediation;
- the new ground will encourage and benefit local sport participants;
- reduction in injuries to players;
- reduce cancellation of games;
- positively impacts drainage issues in the area; and
- it will greatly benefit the local community.

A small proportion, being 21 participants (3%) of survey participants indicated opposition to the proposal. Similarly, of local survey participants within 500m, 3% indicated opposition to the proposal.

Some of the reasons listed include:

- environmental impacts;
- impacts on players (heat and injuries);
- flooding issues at site; and
- impact on casual users of site.

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PART B SITE ANALYSIS

2.1 SITE LOCATION AND CHARACTERISTICS

The site is identified as 30 Lofberg Road, West Pymble, being legally described as Lot 6 in DP 564939. The site is part of a larger recreation and open space area within West Pymble that includes the Lofberg Road Netball Courts, Ku-Ring-Gai Fitness & Aquatic Centre, Bicentennial Park, the West Pymble Bowling Club and Lofberg Oval.

Lot 6 DP 564939 has an area of approximately 5.1 hectares. The site fronts Lofberg Road to the North and East with a frontage of approximately 461m. The allotment is bounded to the South by a private driveway/access road and by West Pymble Bowling and Sports Club. Mature vegetation is also scattered throughout the site.

The proposed activity is located on the Southern portion of the site, commonly referred to as Norman Griffiths Oval. Currently, Norman Griffiths Oval is a natural grass oval utilised by the West Pymble Football Club through the winter as a home ground. Rain events often result in waterlogging to the surface of the field, making the field unusable and disrupting the community recreational sport.

The site can be seen in Figure 1 and Figure 2 below.



Figure 1 Cadastre Map (Source: SIX Maps 2020)

SYDNEY I NEWCASTLE I GOLD COAST I BRISBANE

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Figure 2 Aerial Map (Source: NearMap 2020)

2.2 SITE CONTEXT

The site is located in the Ku-Ring-Gai Local Government Area (LGA) in the suburb of West Pymble within an established low-density residential area. To the West of the Site is Ku-Ring-Gai Bicentennial Park, the West Pymble Guide Hall, and Lofberg Oval associated with Killara West Pymble Rugby Union Football Club.

The site is serviced by Lofberg Road with vehicle access gained at the south-east corner of the site. The site is in close proximity to Ryde Road (a State Road). The site is also accessible by public transport with bus stops located along Ryde Road, within easy walking distance to the site.

The site context is illustrated by Figure 3 below.

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Figure 3: Site Context Map (source: Google Maps, 2022)

2.3 SITE FEATURES

2.3.1 Existing Stormwater Infrastructure

The existing playing field is located within a natural valley and accommodates external stormwater flows from the north, east and west which flow to the south/southwest towards Quarry Creek. Existing stormwater infrastructure within the site comprises the following:

- Existing underground 1,050mm pipe, box culvert, headwall and rip rap medium which directs north easterly flows towards a pit to the north of the existing field. Peak rain events overflow the pipe system and are discharged overland through the rip rap medium.
- Underground 1050mm pipe which conveys stormwater flows from the north to the southwest of the field.
- 375mm pipe and associated pits that skirts the western and eastern edges of the existing field to convey flow towards the south west of the field. This network then connects with the 1050mm pipe to discharge stormwater to a headwall at the south west of the field.

During peak storm events, Norman Griffiths Oval acts as a detention basin for upper catchment stormwater flows. The existing stormwater network is shown in **Figure 4** below.

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Figure 4: Existing Stormwater Infrastructure within the Site (Source: Ku Ring Gai Council 2022)

2.3.2 Existing Infrastructure

There is an existing underground sewer pipe that runs through the site as shown in **Figure 5** below. This is accessible via one pit located to the edge of the existing field.

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Figure 5: Existing Sewer Infrastructure within the Site (Source: Sydney Water 2022)

2.3.3 Site Vegetation

Norman Griffiths Oval is surrounded by established vegetation which provides habitat and bio-linkage opportunities for flora and fauna. The Ku-Ring-Gai Bicentennial Park Plan of Management 2011 indicates that surrounding vegetation comprises remnant stands of Sydney Turpentine Ironbark Forest which is considered a Critically Endangered Ecological Community (CEEC).

Figure 6 below provides an extract of Council's vegetation mapping.

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Figure 6: Mapped Vegetation Classes (Source: Ku-Ring-Gai Council Online Map Viewer, 2022)

The site is identified as containing terrestrial biodiversity, which largely follows the existing tree line around the proposed field, as shown in **Figure 7**. The site also contains Category 3a Riparian land, which runs through the centre of the proposed field, as shown in **Figure 8**. It is understood that this is Category 3a Riparian Land which includes the area 10m on each side of a discontinuous or piped watercourse.

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Figure 7: Terrestrial Biodiversity Map (Source: NSW Government, 2022)

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Figure 8: Riparian Lands and Water Courses Map (Source: NSW Government, 2022)

2.3.4 Current Usage

During the winter season, the current field is used approximately 30-40 hours per week, being slightly less during the summer season. The field is currently floodlit to allow for evening activities.

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PART C PROPOSED ACTIVITY

3.1 AIMS & OBJECTIVES OF THE PROPOSED ACTIVITY

The following objectives have been identified as forming the basis of the proposed activity within the site to establish a new synthetic playing field and stormwater treatment and detention system.

- Design the site to accommodate the proposed new synthetic playing field and associated landscaping thereby providing community benefit;
- Revitalise and improve the amenity and useability of the existing open space;
- Provide a new stormwater treatment and detention system to ensure stormwater is managed on site;
- Provide opportunities for social interaction between residents;
- Ensure minimal environmental and amenity impact; and
- Ensure development is compatible with surrounding development and the local context.

The site and proposed design are considered to meet the objectives of the project as it allows for development on land that has been previously developed and is surrounded by compatible uses.

3.2 DESCRIPTION OF THE PROPOSED ACTIVITY

The proposed activity relates to the installation of a new synthetic playing field to replace the existing grassed field and stormwater mitigation measures to manage associated run-off. The proposal entails the following components:

- Tree Removal one (1) tree
- Replacement of two (2) trees
- Minor Demolition and Earthworks,
- Construction of a stormwater mitigation system incorporating:
 - o Continuous Deflective Separation (CDS) Unit,
 - Stormtech Trench and Chamber System for below ground on-site detention at 2.4 mega litre capacity,
 - Bioretention Basin;
- Construction of new synthetic playing field,
- Removal of a tree stump located within the access way to the Site,
- Potential removal of 2 branches of a tree overhanging the proposed Bio-filter garden at the southern end. Additional branches will only be removed if necessary for machinery access
- Closure of one sewer pit, and
- Ancillary landscaping, lighting and fencing.

Each of these components are described in further detail below. **Figure 9** below provides an overview of the proposed field upgrades.

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Figure 9: Overview of Proposed Field Upgrades (Source: Turf One, 2022)

3.2.1 Tree Removal

The proposed activity has been designed and sited to minimise unnecessary tree removal, however, the proposal does requires the removal of one (I) existing White Cedar tree located along the north eastern boundary of the site. The installation of the proposed CDS Unit will result in major encroachments into the Tree Protection Zone which will undermine the integrity of the tree. In addition, a tree stump located within the access way to the Site will also need to be removed. Potential removal of 2 branches of a tree overhanging the proposed Bio-filter garden at the southern end of the site will also occur if necessary to facilitate machinery access.

An Arboricultural Impact Assessment of the proposal has been prepared by Tree Survey and is attached at **Appendix 2**.

Additional trimming of proposed branches will be undertaken under advice and guidance from Council's Tree Management Officer.

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3.2.2 Minor Demolition & Earthworks

The proposal requires minor demolition and earthworks to establish the stormwater management system. Excavation is required to:

- Expose the existing stormwater pit at the north eastern edge of the field,
- Establish trench lines for proposed Stormtech Chambers, and
- Establish a pit for proposed CDS Unit.

Partial demolition of the existing stormwater pit is required to connect the proposed CDS Unit and stormwater system.

Fill works will also be included to raise the surface level of the field above the 1% AEP flood level. This will ensure it is above the 1% AEP flood level and to prevent inundation of the field, thereby preventing any wash of synthetic turf into the catchment. All of the cut will be utilised on site and sandstone logs will be installed along the south western end of the field as retaining walls.

An Earthworks Plan detailing the proposed cut and fill has been provided at **Appendix 3** and an extract of the Plan is provided at **Figure 10**.



Figure 10: Proposed Earthworks (Source: Turf One 2022)

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3.2.3 Stormwater treatment and detention system

The proposed stormwater treatment and detention system involves capture, detention and quality treatment of stormwater run-off associated with the new synthetic playing field and upper-catchment flows. Key components of the proposed stormwater treatment and detention system are as follows:

- CDS Unit to filter upper-catchment flows from the northeast. The proposed CDS Unit will be located along the north-eastern boundary of the site and requires partial demolition of the existing box culvert and pit to connect to proposed diversion chamber. The CDS filters rubbish, debris, sediment, and hydrocarbons from upper catchment stormwater runoff before directing flows into under-field detention basin.
- Inlet pipes along the sides of the field to capture upper-catchment flows from the northwest and southeast.
 Inlet pipes along the sides of the field will allow upper-catchment stormwater flows from the north west and south east to permeate into the under-field detention basin.
- Under-field detention with 2.4 megalitre capacity within sub-surface aggregate layer. The under-field detention basin has sufficient capacity to accommodate stormwater flows from the subject site and upper-catchment areas up to a 1% AEP storm event.
- Two (2) under-field Stormtech SC-740 Chambers.
 The Stormtech Chambers will attenuate stormwater flows and convey flows to the southwest of the site.
- 226m² Bio-Retention Basin
 The proposed Bio-Retention Basin will be located along the southwestern edge of the field and
 will provide quality treatment for stormwater prior to discharging to a pit system which connects
 to the existing 1,050 underground stormwater pipe.
- Retention of existing 1,050mm under field stormwater pipe for integration into proposed system, when flows exceed the capacity of the CDS unit overflow, the CDS weir and be conveyed to the southwest through the existing 1050mm underground stormwater pipe.

It is understood that these rates comply with Councils water quality requirements. Civil Engineering Plans detailing the proposed Stormwater Mitigation System have been provided at **Appendix 4** and in the Technical Memo at **Appendix 9**. An extract of the plans has been provided at **Figure 11**.

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Figure 11: Proposed Stormwater treatment and detention system (Source: Turf One, 2022)

3.2.4 Synthetic Playing Field

The proposal involves the construction and installation of a synthetic playing field to replace the existing natural grass field. The 8,953m² proposed playing surface consists of a proprietary 'FieldTurf' system which comprises World Rugby and FIFA approved synthetic turf with an organic infill made from natural cork. The cork is naturally anti-fungal and anti-microbial and do not require the use of harsh chemicals, algaecides or fungicides for maintenance.

As indicated above, the subsurface of the field comprises a porous aggregate which allows for vertical, filtered drainage and stormwater detention. This results in an all-weather playing surface which retains little to no moisture after rain events. In addition, the proposed field will be surrounded with a 200mm high concrete kerb, shoe cleaning grate and vehicle crossover grate that prevents infill material migration and assists in microplastic containment within the site. No additional chemicals are required to maintain the playing surface. Refer to **Figure 12** and **Figure 13**

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Figure 12: Edge of Field Treatment



Figure 13: Containment Kerb to Skirt Field

3.2.5 Ancillary Works

The proposal includes ancillary lighting structures, landscaping and fencing elements which are detailed as follows:

- Four (4) lighting structures each comprising a 100 Lux LED lighting system.
 - Landscaping and pathways comprising:
 - o Bio-retention planting
 - Sandstone log seating along the northwestern edge of the field.

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- 1.5m wide pathways from car parking area, along northwestern edge of field and towards the aquatic centre.
- Fencing, including:
 - o 1.8m high fence to be installed prior to works by Council Bushland Team.
 - 1.2m high black chainmail fence surrounding field.
 - 6.0m high backdrop fencing to southern edge of field.
 - 4.0m high retractable netting to northern edge of field.
- Closure of a sewer pit.

It is noted that as the field will sit on top of the existing sewer pipe, the existing pit location will be built over, which will require approval from Sydney Water.

3.3 OPERATIONAL DETAILS

The proposed operational details are as follows:

- Access is available to the park at all times,
- Council will accept usage bookings for the field from third parties (such as schools)
- Usage of the field will be dictated by the current Plan of Management.
- The fields will be operational 7:30am to 9:30pm seven days a week.
- Lighting is proposed and will only be utilised when the field is being used during evenings.
- Stormwater treatment and detention systems will be underground and would not be accessible, except for maintenance works.

3.4 CONSTRUCTION & TIMING

Construction is estimated to be undertaken over a 12-month period with works are proposed to commence in early 2023.

The project has an estimated value of \$3.6 million plus GST.

3.5 PROJECT NEED & JUSTIFICATION

The proposed synthetic playing fields and stormwater mitigation measures are proposed at Norman Griffiths Oval. The existing playing fields on the oval currently act as a stormwater detention basin and are often flooded and unavailable for use. The proposed synthetic field subsurface stormwater mitigation measures will raise the fields so that they are above the 1% AEP flood level and allow for stormwater to be captured beneath the fields. This allows the fields to be used more often while still allowing for appropriate stormwater detention to occur on the site.

The *Ku-Ring-Gai* Community Strategic Plan 2038 states that 'recreation, sporting and leisure facilities are available to meet the community's diverse and changing needs'. The proposed sports field will assist in providing diverse and useable facilities for the community. The Bicentennial Park Plan of Management states that Norman Griffiths Oval should retain its use a formal sporting fields, which aligns with the intentions of the proposed development.

The *Ku-Ring-Gai Local Strategic Planning Statement 2020* (LSPS) outlines four planning priorities for open space, recreation and sport, including;

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K17. Providing a broad range of open space, sporting and leisure facilities to meet the community's diverse and changing needs

K18. Ensuring recreational activities in natural areas are conducted within ecological limits and in harmony with no net impact on endangered ecological communities and endangered species or their habitats

K19. Providing well maintained, connected, accessible and highly valued trail networks and recreational infrastructure where locals and visitors can enjoy and connect with nature K20. Developing and managing a network of sporting assets that best meet the needs of a growing and changing community

The proposed synthetic field will assist in meeting the priorities outlined in the LSPS through providing diverse recreational facilities, ensuring they meet the needs of the changing community, while limiting any impacts on endangered ecological communities.

The environmental risk assessment undertaken in **Part E**, concludes that the proposal is consistent and commensurate with state, regional and local planning objectives, the environmental characteristics of the site and the surrounding context.

3.6 CONSIDERATION OF PROPOSAL

The intention of the proposal is to provide a synthetic playing field and stormwater treatment and detention system, to support Council's LSPS in providing a range of open space and sporting facilities. It is considered the proposal:

- Allows for the development as a permissible use within the RE1 Public Recreation zone;
- Responds to Councils strategic vision to provide a diverse range of sporting facilities to meet the communities changing needs;
- Facilitates accessibility for all-abilities;
- Enhances the useability and amenity of the existing public space;
- Activate the existing open space and provide opportunities for social connections;
- Is compatible with surrounding open space context;
- Improves stormwater management and public safety;
- Will result in minimal impact on the environment; and
- Will allow for the implementation of suitable mitigation measures where required.

In view of these objectives, the options considered, and subsequently dismissed, in arriving to the current proposal included:

(a) 'Do Nothing' Scenario

This option was dismissed as the objectives of the project, including the objective of responding to Council's vision to provide a diverse array of sporting facilities, would not be met. This option would hinder the efficient use of the site as a public open space. There are existing issues with the current playing field in this location, being that it is regularly waterlogged or flooded, does not receive enough light to ensure optimum grass growth due to overshadowing of the surrounding trees and as such is largely unable to be used as a sports field. This means that it is not currently able to operate to the capacity required, or for its intended purpose, resulting in the need for action to be taken to allow for the community to utilise this sports facility.

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(b) Development on an Alternative Site

Alternative scenarios were explored including above ground detention to be provided on the Norman Criffiths Oval, but this was not taken forward due to the considerable ecological and aesthetic impacts this would have had on the site and surrounds.

Consideration to an alternative site was given, being Mimosa Oval, however this was dismissed due to concerns over Mimosa Ovals being bushfire prone, the lack of natural grass to the surrounding area in this location, and the increase that a new field would have on traffic generation and issues around sufficient parking. The proposed site resulted in the most beneficial outcomes for the proposal as:

- the proposal will replace an existing soccer field which is currently often waterlogged/flooded and unusable, with a synthetic surface to improve its useability;
- the proposed stormwater system will improve stormwater management on the site;
- the proposed synthetic playing field will be situated within an established residential area, which will enhance the existing open space and provide recreational opportunities and a diverse array of surfaces for the local residents and community;
- the area does not allow for dogs to be off leash in this location;
- the proposal is not anticipated to result in any adverse amenity or visual impacts on the surrounding residential properties;
- all potential environmental impacts of the proposal can be suitably mitigated within the site; and
- the proposal can be developed with appropriate visual amenity given its surrounding context.

The proposal is therefore justified on the basis that it is compatible with the locality in which it is proposed while having no adverse economic, environmental or social impact.

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PART D LEGISLATIVE AND POLICY FRAMEWORK

An assessment of the environmental impacts of the proposed activity has been undertaken in the context of Clause 171 and 171A of the EP&A Regulation.

In doing so, this REF helps fulfil the requirements of Section 5.5 of the EP&A Act; that Ku-Ring-Gai Council must examine and take into account, to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity. The legislative framework relevant to the proposed works and associated approvals is set out in the following sections.

Commonwealth Planning Context

• Environment Protection and Biodiversity Conservation Act 1999

State Planning Context

- Environmental Planning and Assessment Act 1979
- Environmental Planning and Assessment Regulation 2021
- Biodiversity Conservation Act 2016
- National Parks and Wildlife Act 1974
- Protection of the Environment Operations Act 1997
- Rural Fires Act 1997
- State Environmental Planning Policy (Biodiversity and Conservation) 2021
- State Environmental Planning Policy (Resilience and Hazards)
- State Environmental Planning Policy (Transport and Infrastructure) 2021

Local Planning Context

• Ku-Ring-Gai Local Environmental Plan 2015

This planning framework is considered in detail in the following sections:

4.1 ENVIRONMENT PROTECTION & BIODIVERSITY CONSERVATION ACT 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides approval requirements in relation to matters of national environmental significance and for proposals involving the Commonwealth.

The proposal is not considered to impact on any matters of national significance nor on any Commonwealth land, and accordingly the proposal does not require referral to the Commonwealth pursuant to the EPBC Act. The proposed field will not have undue heat impacts that may impact on the microclimate or species in the surrounding area, this is further discussed in **Section 5.3**.

4.2 ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979

The proposed works constitute an *Activity* within the meaning of Part 5 of the EP&A Act and therefore Ku-Ring-Gai Council as the determining authority is required to examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity, in accordance with Section 5.5 of the EP&A Act. To document Council's considerations under Part 5 of the EP&A Act, a Review of Environmental Factors (REF) must be prepared which includes mitigation measures to manage and minimise impacts on the environment. Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

Consideration of the proposal against Section 5.5 of the EP&A Act is provided within **Table 1** below.

Table 1 Section 5.5 of the EP&A Act	
Clause	Comment
(a) For the purpose of attaining the objects of this Act relating to the protection and enhancement of the environment, a determining authority in its consideration of an activity shall, notwithstanding any other provisions of this Act or the provisions of any other Act or of any instrument made under this or any other Act, examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity.	Within this REF, detailed consideration has been given the potential impacts of the proposed development on the environment in the context of Section 5.5 of the EP&A Act and Clause 171 and 171A of the EP&A Regulation. Full assessment of the proposal against Section 5.5 of the EP&A Act and Clause 171 and 171A of the EP&A Regulation is provided within Table 2 and Table 3 of this report. This assessment concludes that the proposed development would exhibit no unacceptable or consequential impact on the environment.
(b) (Repealed)	N/A
(c) Without limiting subsection (1), a determining authority shall consider the effect of an activity on any wilderness area (within the meaning of the Wilderness Act 1987) in the locality in which the activity is intended to be carried on.	The site is not identified as a wilderness area nor is it identified in proximity of any wilderness areas.
(d) (Repealed)	Noted.

4.3 ENVIRONMENTAL PLANNING & ASSESSMENT REGULATION 2021

Clause 171 and 171A of the EP&A Regulation lists the factors to be taken into account for the purposes of Part 5 of the Act when consideration is required of the likely impact of an activity on the environment.

Where the clauses from *State Environmental Planning Policy (Biodiversity and Conservation) 2021* set out in Table 3 (also addressed in Appendix 14) contain matters that a consent authority for Part 4 development must consider, or of which a consent authority must be satisfied, those are matters that a determining authority must take into account for the purpose of Division 5.1.

An assessment of the proposal against the factors identified in Clause 171 and Clause 171A of the Regulation is provided in **Table 2** and **Table 3** below

A further summary of the environmental impacts and risks and mitigation measures is provided at **Appendix 14**.

Table 2 Clause 171(2) of the EP&A Regulation				
Clause		Comment		
(a)	the environmental impact on the community,	The proposed development relates to land that has been developed as a public park and is surrounded by established residential properties. The community raised some concerns over the biodiversity values on the site, and		

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Table 2 Clause 171(2) of tl	ne EP&A Regulation	
Clause	Comment	
	appropriate design changes were made to ensure the proposal has minimal impacts. Accordingly, the proposed development works are not considered to exhibit any significant or adverse environmental impact on a community.	
	Rather, the proposed development presents the opportunity to enhance the existing sports facility and provide an upgraded sporting field which can be utilised in all weather conditions. This connotes positive implications for the community relating to the provision of a new facility that is accessible to all-abilities.	
	Additionally, any potential adverse amenity impact arising through the carrying out of the proposed works would be minimised through adherence to the mitigation measures outlined in Part F of this report.	
	In accumulation of the above, the proposal would exhibit no adverse environmental impact on a community.	
	Impact: Positive.	
	Mitigation:	
	The proposed works are to be undertaken in accordance with relevant planning instruments and mitigation measures (Part F) to avoid any adverse amenity impact on nearby residential, community and educational land uses. The proposed synthetic field will have an overall positive impact on the community.	
(b) the transformation of the locality,	The proposed synthetic field is to be in place of the existing field at Norman Griffiths Oval and is therefore considered to be highly compatible with surrounding land uses in terms of the built form and operations.	
	Accordingly, the proposal would not cause any transformation of the locality but rather would enhance the functionality and accessibility of the site.	
	Impact: Nil	
	Mitigation: Nil	
(c) the environmental impact on the ecosystems of the locality,	The proposed synthetic fields are limited to the boundaries of the site, however it is noted that any run off from this surface may impact on water quality. The surface is proposed to be raised above the flood level to ensure there is limited runoff of any synthetic materials. Furthermore, stormwater will be directed through a bio-retention basin for quality treatment prior to discharge from the site.	
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Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

Table 2 Clause 171(2) of the EP&A Regulation			
Clause	Comment		
	The stormwater detention system has been designed to offset the removal of the grass playing fields as a stormwater detention basin. This should not negatively impact the existing stormwater system in place and has been designed to allow for minimal disturbance of existing trees and ecological systems.		
	The proposal will not involve the excessive removal of trees with only one White Cedar Tree identified for removal. Furthermore, a tree protection zone will be put in place to ensure there are no substantial impacts on the established valuable vegetation within the site, being the CEEC area.		
	Concerns have been raised over the impact to the Black-Hooded Sun Orchid (<i>Thelymitra</i>), which are potentially located on site, from the proposal. The proposed development has been situated within the site to avoid heavily vegetated areas, and away from the grassy bank at the edge of these areas where the Orchid is most likely to occur. Furthermore, a 1.8m high chain wire fence will be erected to delineate the area where the Black-Hooded Sun Orchid may potentially be located, from trafficable areas within the site. Appropriate fencing and tree protection will also be in place to ensure there are no impacts to the CEEC during construction.		
	Impact: Minor		
	<i>Mitigation:</i> The proposed development includes a 1.8m high rail-less security fence located 500mm from the known Orchid location, to be erected prior to construction to separate the potential Black-hooded Sun Orchid zone from trafficable areas within the site (Part F 28).		
	A temporary 1.8m high fence will be installed prior to construction to restrict construction activities from impacting on the CEEC area (Part F 8.2)		
	A tree protection zone will be put in place to ensure trees are not impacted during construction (Part F 8.1).		
	Two (2) replacement trees will be provided to offset the loss of the single tree (Part 30).		
(d) reduction of the aesthetic, recreational, scientific or other environmental quality or value	The proposal would not reduce the aesthetic, recreational, scientific or other environmental quality or value of the locality. Rather the proposal would integrate with the residential character of the locality by improving an existing public recreation resource whilst retaining the overall built form of the facility.		
ofthe locality,	Given the site has been developed and is currently used for public open space and recreational purposes, the site is not considered to comprise any significant scientific or other environmental value. Rather, the proposal will		
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Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

Table 2 Clause 171(2) of the EP&A Regulation		
Clause	Comment	
	 enhance the recreational amenity and functionality of the existing park by mitigating existing flood and stormwater impacts. Given the site specific conditions, choice of surface and other mitigation measures undertaken, the build is not considered to have a significant heat impact on the surrounding environment and users. <i>Impact:</i> Nil <i>Mitigation:</i> Nil 	
	NI	
(e) the effects on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations	 The proposed works are not expected to have a significant adverse impact on any aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social values within the locality. The site and existing field are currently used for public recreation as a playing field, and the proposal will improve upon this use through the installation of better stormwater mitigation measures and an all-weather synthetic playing surface. The upgraded field will be a of social benefit to the community now and into the future. <i>Impact:</i> Positive. Mitigation: Nil 	
(f) the impact on the habitat of protected animals (within the meaning of the Biodiversity Conservation Act 2016).	The proposed upgrades to the existing recreation facility requires the removal of a single White Cedar (<i>Melia Azedarach</i>) tree located along the north eastern boundary of the site. Whilst native to Australia, White Cedar trees are not endemic to the area, however, they are used as a secondary foraging habitat for a number of native fauna species. Furthermore, the species is a prolific seed producer and is considered weed in some high value CEEC areas.	
	A tree stump immediately adjacent to the access way for the site will need to be removed to reduce the potential for damage to occur during truck movements. The tree stump has been inspected and although is within the mapped area of STIF, it does not provide quality flora or fauna habitat. Two branches overhanging the proposed biofilter garden have also been inspected and may require removal to facilitate construction access. Removal will only be undertaken if necessary, however an assessment has been undertaken and although the tree is within the mapped area of STIF in the FFIA, pruning of these branches will not have any substantial impact on the CEEC. The removal will not have any adverse impact on the ecological community. Leaving the stump in place poses a risk of damage to trucks and increases the potential for an incident.	
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Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

Table 2 Clause 171(2) of the EP&A Regulation		
Clause	Comment	
	Impact: Minor Mitigation: The proposed activity will result in the removal of one (1) White Cedar (<i>Melia</i> <i>Azedarach</i>) tree. These trees have been commonly used for streetscape planting in the Ku-Ring-Gai LGA and are often used in private landscaping. As such, the removal of a single individual of this species will not have a significant adverse impact on the habitat of protected fauna. Two (2)	
(g) the endangering of	(Part F 30). The proposed activity for stormwater mitigation works and resurfacing of the	
a species of animal, plant or other form of life, whether living on land, in water or in the air,	playing field is limited to the boundaries of the site. The activity has been designed to avoid impact to high value CEEC within the vicinity of the site and is therefore unlikely to result in a significant adverse impact to the surrounding biodiversity. There are ample similar grasslands in close proximity so it is not considered that there would be any displacement of species that use the field for habitat or foraging.	
	Impact: Negligible	
	<i>Mitigation:</i> The proposed development has been design to avoid impacts high value CEEC within the site and will result in additional protections to CEEC within the site through the installation of fences to separate CEEC during construction and the potential Black-hooded Sun Orchid location from trafficable areas (Part F 8.2 and 28).	
(h) long-term effects on the environment,	The proposed activity for stormwater mitigation works and resurfacing of the playing field is limited to the boundaries of the site. The proposed activity is located within the general footprint of the existing Norman Griffiths Oval and will result in the installation of better management practises for stormwater and protection protocols for high value CEEC within the vicinity of the site.	
	Impact: Positive	
	Mitigation: Construction management control.	
(i) degradation of the quality of the environment,	The proposed activity for stormwater mitigation works and resurfacing of the playing field is limited to the boundaries of the site. The proposed activity is located within the general footprint of the existing Norman Griffiths Oval and will result in the installation of better management practises for stormwater and protection protocols for high value CEEC within the vicinity of the site and to the potential Black -hooded Sun Orchid. No chemicals are proposed	
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Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

Table 2 Clause 171(2) of the EP&A Regulation		
Clause	Comment	
	to be used for the field, and any chemicals that may be required for maintenance would be similar to those already used on the natural grass. No additional heat impacts from the synthetic playing surface are considered to cause harm to the surrounding environment. As such, the proposal will not result in the degradation of the quality of the environment. <i>Impact:</i> Positive Mitigation:	
(j) risk to the safety of the environment	The proposal is not considered to pose any unreasonable risk to the safety of the environment. The safety of site-users and the general public would be protected during the construction phase by employing suitable construction management measures and securing the site to prevent unauthorized access. <i>Impact:</i> Negligible <i>Mitigation:</i>	
	Appropriate safety and management measures are to be implemented during the construction stage of the proposal to ensure the safety of pedestrians. A Construction Environmental Management Plan will be developed prior to the commencement of works (Part F 9).	
(k) reduction in the range of beneficial uses of the environment	The proposal would not reduce the range of beneficial uses of the environment but rather would enhance the utility of the site through the provision a playing field that is able to be used in all-weather events. <i>Impact:</i> Nil <i>Mitigation</i> Nil	
(I) pollution of the environment,	The proposed activity will not result in significant additional pollution to the environment. The proposed synthetic playing surface is produced from natural cork and fibre that will not leach harmful chemicals or micro plastics into the environment. Furthermore, the only chemical pesticides, fungicides or algaecides needed as part of the ongoing maintenance of the field include glyphosate which is a non-persistent herbicide. The pollution of the environment by the development during construction phase can be avoided by the employment of suitable site management and mitigation measures.	
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Table 2 Clause 171(2) of the EP&A Regulation Comment Clause Impact: Negligible Mitigation: Pollution from construction may be controlled through the implementation of Construction Environmental management plan (CEMP), which include stormwater management, erosion and sediment management measures (Part F 12). Additionally, the adoption of standard working hours may minimise any potential adverse impacts arising from the carrying out of the proposed works (Part F 22). A Waste Management Plan will be prepared and implemented prior to the commencement of works to detail measures for waste reduction and minimisation as well as methods of disposal (Part F10). (m) environmental The proposal is not anticipated to result in any problems associated with the problems disposal of waste. associated with the disposal of Impact: waste, Nil Mitiaation: A Waste Management Plan will be prepared and implemented prior to the commencement of works to detail measures for waste reduction and minimisation as well as methods of disposal (Part F10). (n) increased The proposed development would not exert increased demand on resources demands on that are, or are likely to become, in short supply. resources (natural or otherwise) that Impact: are, or are likely to Nil become, in short Mitigation: supply, Nil (o) the cumulative The proposal would not result in any cumulative environment impacts with environmental existing or future activities. The proposal would enhance the functionality effect with other and accessibility of the existing Norman Griffiths Oval. Given that the existing or likely proposal will enhance the useability and quality of the existing facilities, the future activities. proposal is considered to exhibit significant public benefit. Impact: Nil Mitigation: Nil (p) the impact on The site is not located in a coastal location and the proposed is not coastal processes considered to result in any impact on coastal processes or hazards. and coastal
Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

Tab	Table 2 Clause 171(2) of the EP&A Regulation		
Cla	Jse	Comment	
	hazards, including those under projected climate change conditions.	Impact: Nil Mitigation: Nil	
(q)	applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1,	The proposed activity is consistent with the Ku-Ring-Gai Local Strategic Planning Statement and the Bicentennial Park Plan of Management. Furthermore, the project is consistent with relevant regional and district strategic plans. <i>Impact:</i> Nil. <i>Mitigation:</i> Nil	
(r)	other relevant environmental factors.	Not applicable.	

Table 3 Clause 171A of the EP&A Regulation - Activities in catchments Clauses 6.6 - 6.9 of SEPP (Biodiversity and Conservation) 2021		
Clause	Comment	
6.6 (1) In deciding whether to grant development consent to development on land in a regulated catchment [Sydney Harbour Catchment], the consent authority must consider the following —		
(a) whether the development will have a neutral or beneficial effect on the quality of water entering a waterway,	The proposal will protect and improve water quality through the incorporation of a number of water quality treatment measures including; - CDS GPT that treats upstream catchment flows prior to detention in the on site detention system; - Treatment of site surface runoff through stormwater pit filters; and - Treatment of site runoff and catchment flows through the biofilter garden. Treatment of upper catchment frequent flows in addition to the site runoff will help to improve water quality entering Quarry Creek. CEMP Controls will ensure water quality and runoff is controlled during construction activities Impact: Beneficial	
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Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

Table 3 Clause 171A of the EP&A Regulation - Activities in catchments			
Clauses 6.6 - 6.9 of SEPP (Clauses 6.6 - 6.9 of SEPP (Biodiversity and Conservation) 2021		
Clause	Comment		
	<i>Mitigation:</i> Design of the stormwater retention system and treatment system to manage peak flows, maintain low flows and reduce pollutants. Operation and maintenance requirements will be specified in the Operation and Maintenance Plan (Part F 32).		
(b) whether the development will have an adverse impact on water flow in a natural waterbody,	During peak storm events, Norman Griffiths Oval acts as a detention basin for upper catchment stormwater flows. Upgrades to the stormwater system are proposed to retain flood detention capacity and enable better management of all flows on an ongoing basis. The design helps to reduce peak flow rates into Quarry Creek and reduce the impacts of urban stream high flow discharges, whilst enabling lower flows to be treated and maintained. (refer Section 3.2.3). <i>Impact:</i> Negligible		
	<i>Mitigation</i> : Design of the stormwater retention system to manage peak flows and maintain low flows.		
(c) whether the development will increase the amount of stormwater run-off from a site	Greater control of more frequent upper catchment flows will help to offset any increases in runoff from the site. In addition the field has been designed to manage runoff by infiltrate flows through the field media into the detention system prior to controlled discharge via the biofilter garden. <i>Impact:</i> Negligible <i>Mitigation:</i> Design of the stormwater retention system to manage peak flows and maintain low flows.		
(d) whether the development will incorporate on-site stormwater retention, infiltration or reuse,	Stormwater management will be undertaken in accordance with the Civil Engineering Plans (Appendix 4) prepared by Turf One Pty Ltd. The project includes an on-site detention system to continue the management of upper catchment flows and retention through the Biofilter garden. Infiltration is not considered appropriate at the site due to uncontrolled fill from the previous sports field construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system.		
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Table 3 Clause 171A of the EP&A Regulation - Activities in catchments		
Clauses 6.6 - 6.9 of SEPP (Biodiversity and Conservation) 2021		
Clause	Comment	
	Negligible	
	Mitigation:	
	Design of the stormwater retention system to manage peak flows and	
(e)	The project will not have any significant impacts on the level and quality of	
the impact of the	the water table. There is no ongoing pump-out, de-watering or groundwater	
development on the	re-charge included in the proposal.	
level and quality of the		
water table,	Impact:	
	Negligible	
(6)		
(T)	The proposed activity for stormwater mitigation works and resurfacing of the	
environmental impact	located within the general footprint of the existing Norman Griffiths Oval and	
of the development on	will result in the installation of better management practises for stormwater	
the regulated	and providing treatment and detention for upper catchment flows and	
catchment,	addressing existing urban stormwater impacts. The project also improves	
	protection protocols for high value CEEC within the vicinity of the site.	
	Impact:	
	Beneficial	
	Mitigation:	
	Design of the stormwater retention system and treatment system to manage	
	peak flows, maintain low flows and reduce pollutants.	
(g)	The proposal will protect water quality through the installation of the	
whether the	stormwater system, and will have no significant impact on quality or quantity	
development makes	of groundwater in this heavily urbanised catchment.	
adequate provision to	Impact	
augntity of around	Negligible	
water		
6.6 (2)		
Development consent must not be granted to development on land in a regulated catchment unless		
the consent authority is satisfied the development ensures –		
(a)	The proposed will result in the installation of better management practises	
the effect on the quality	for stormwater, treating upstream flows as well as site run-off, providing	
ot water entering a		
· · · ·		

Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

Table 3 Clause 171A of the EP&A Regulation - Activities in catchments		
Clauses 6.6 - 6.9 of SEPP (Biodiversity and Conservation) 2021		
Clause	Comment	
natural waterbody will	improved water quality treatment and addressing existing urban	
be as close as possible	stormwater impacts.	
to neutral or beneficial,		
and	Impact:	
	Beneficial	
	Mitigation	
	Operation and maintenance requirements will be specified in the Operation	
	and Maintenance Dlan (Dart E 32)	
<i>(b</i>)	During peak storm events. Norman Criffiths Oval acts as a detention basin for	
the impact on water	upper catchment stormwater flows. Upgrades to the stormwater system are	
flow in a patural	proposed to retain flood detention capacity and enable better management	
waterbody will be	of all flows on an ongoing basis. The design beins to reduce peak flow rates	
minimised	into Quarry Creek and reduce the impacts of urban stream high flow	
	discharges whilst enabling lower flows to be treated and maintained (refer	
	Section 3.2.3).	
	Impact:	
	Negligible	
	Mitigation:	
	Operation and maintenance requirements will be specified in the Operation	
C T (1)	and Maintenance Plan (Part F 52).	
6.7 (1)	ant development concept to development on land in a requilated catchment	
the consent outbority mu	and development consent to development of hand in a regulated catchment,	
(a)	The site contains a previously piped watercourse identified as Category 3a	
(a) whether the	Diparian Land and the proposal does not include any further nining	
development will have a	channelisation or impacts on the waterway or riparian land. The	
direct, indirect or	development is restricted to the existing sports field area and includes	
cumulative adverse	additional protection measures for other terrestrial babitats surrounding	
impact on terrestrial,	the site. Further consideration of the impacts to all other potentially	
aquatic or migratory	threatened species is provided in Section 57	
animals or vegetation,	threatened species is provided in Section 3.7 .	
	Impact	
	Negligible	
(b)	The site contains a previously piped watercourse, identified as Category 3a	
whether the	Riparian Land, and the proposal does not include any further piping,	
development involves	channelisation or impacts on the waterway or riparian land. The proposal will	
the clearing of riparian	protect water quality through the installation of the stormwater system, and	
vegetation and, if so,	will have no impact on aquatic and riparian species or habitats	
11 1 11		

Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

Table 3 Clause 171A of the EP&A Regulation - Activities in catchments		
Clauses 6.6 - 6.9 of SEPP (Biodiversity and Conservation) 2021	
Clause	Comment	
whetherthedevelopmentwillrequire—(i)a controlledactivityapprovalundertheWaterManagementAct 2000, or (ii)a permitundertheFisheriesManagementAct 1994,(c)whetherthedevelopmentwillminimiseor avoid - (i)theerosionofland	No Controlled activity approval is required pursuant to the Water Management Act 2000 and no permit is required under the Fisheries Management Act 1994. <i>Impact:</i> Negligible Erosion and sediment controls would be implemented throughout the construction period to prevent soil loss from within the proposal boundary. The on-site detention system and stormwater treatment system will help manage upper catchment flows and help to reduce peak flow rates.	
abutting a natural waterbody, or (ii) the sedimentation of a natural waterbody,	Impact: Negligible Mitigation: Pollution from construction may be controlled through the implementation of Construction Environmental management plan (CEMP), which include stormwater management, erosion and sediment management measures (Part F 12). Design of the stormwater retention system and treatment system to manage peak flows, maintain low flows and reduce pollutants. Operation and maintenance requirements will be specified in the Operation and Maintenance Plan (Part F 32) .	
(d) whether the development will have an adverse impact on wetlands that are not in the coastal wetlands and littoral rainforests area,	There are no identified wetlands near the site that could be impacted by the proposal. Erosion and sediment controls would be implemented throughout the construction period to prevent soil loss from within the proposal boundary. <i>Impact:</i> Negligible <i>Mitigation:</i> Pollution from construction may be controlled through the implementation of Construction Environmental management plan (CEMP), which include stormwater management, erosion and sediment management measures (Part F 12).	

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Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

Table 3 Clause 171A of the EP&A Regulation - Activities in catchments		
Clauses 6.6 – 6.9 of SEPP (Biodiversity and Conservation) 2021		
Clause	Comment	
(e) whether the development includes adequate safeguards and rehabilitation measures to protect aquatic ecology,	The site is identified as containing a Category 3a riparian zone, which runs through the site. The proposal will protect water quality through the installation of stormwater treatment and flow management system, and will have no negative impacts on aquatic and riparian species or habitats. <i>Impact:</i> Negligible <i>Mitigation:</i> Design of the stormwater retention system and treatment system to manage peak flows, maintain low flows and reduce pollutants.	
(f) if the development site adjoins a natural waterbody-whether additional measures are required to ensure a neutral or beneficial effect on the water quality of the waterbody.	The proposed development incorporates a water quality treatment train and detention system designed to help improve the water quality and provide benefits to Quarry Creek. This will improve upon current stormwater management processes by establishing onsite detention that is capable of storing up to 2.4 megalitres of run-off to accommodate onsite and upper-catchment flows. Furthermore, the proposal will minimise pollutants through the integration of a CDS unit for large materials and a bio-retention basin to treat suspended pollutants. <i>Impact:</i> Beneficial <i>Mitigation:</i> Design of the stormwater retention system and treatment system to manage peak flows, maintain low flows and reduce pollutants. Operation and maintenance requirements will be specified in the Operation and Maintenance Plan (Part F 32).	
6.7 (2) Development consent must not be granted to development on land in a regulated catchment unless		
(a) the direct, indirect or cumulative adverse impact on terrestrial, aquatic or migratory animals or vegetation will be kept to the minimum necessary for the carrying out of the development,	The site contains a previously piped watercourse, identified as Category 3a Riparian Land, and the proposal does not include any further piping, channelisation or impacts on the waterway or clearing of riparian land. The development is restricted to the existing sports field area and includes additional protection measures for other terrestrial habitats surrounding the site. Only one tree will be removed to facilitate the works and additional trimming will only be undertaken if necessary. Further consideration of the impacts to all other potentially threatened species is provided in Section 5.7 .	
	Impact:	
IIII		

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Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

Table 3 Clause 171A of the EP&A Regulation - Activities in catchments		
Clauses 6.6 – 6.9 of SEPP (Biodiversity and Conservation) 2021		
Clause	Comment	
(b) the development will not have a direct, indirect or cumulative adverse impact on aquatic reserves,	Negligible Mitigation: Vegetation and tree protection controls in the Construction Environmental management plan (CEMP)(Part F 12). The proposed will result in the installation of better management practises for stormwater, treating upstream flows as well as site run-off, providing improved water quality treatment, maintaining and improving flow management, and addressing existing urban stormwater impacts. No adverse impacts on aquatic reserves will result from the proposal. Impact: Negligible	
	Mitigation: Design of the stormwater retention system and treatment system to manage peak flows, maintain low flows and reduce pollutants. Operation and maintenance requirements will be specified in the Operation and Maintenance Plan (Part F 32).	
(c) if a controlled activity approval under the Water Management Act 2000 or a permit under the Fisheries Management Act 1994 is required in relation to the clearing of riparian vegetation— the approval or permit has been obtained,	The site contains a previously piped watercourse, identified as Category 3a Riparian Land, and the proposal does not include any further piping, channelisation or impacts on the waterway or riparian land. The proposal will protect water quality through the installation of the stormwater system, and will have no impact on aquatic and riparian species or habitats No Controlled activity approval is required pursuant to the Water Management Act 2000 and no permit is required under the Fisheries Management Act 1994. <i>Impact:</i> Negligible	
(d) the erosion of land abutting a natural waterbody or the sedimentation of a natural waterbody will be minimised,	Erosion and sediment controls would be implemented throughout the construction period to prevent soil loss from within the proposal boundary. The on-site detention system and stormwater treatment system will help manage upper catchment flows and help to reduce peak flow rates. <i>Impact:</i> Negligible Mitigation: Pollution from construction may be controlled through the implementation of Construction Environmental management plan (CEMP), which include	
III		

Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

Table 3 Clause 171A of the EP&A Regulation - Activities in catchments			
Clauses 6.6 – 6.9 of SEPP (Clauses 6.6 - 6.9 of SEPP (Biodiversity and Conservation) 2021		
Clause	Comment		
	stormwater management, erosion and sediment management measures (Part F 12). Design of the stormwater retention system and treatment system to manage peak flows, maintain low flows and reduce pollutants. Operation and maintenance requirements will be specified in the Operation and Maintenance Plan (Part F 32).		
(e) the adverse impact on wetlands that are not in the coastal wetlands and littoral rainforests area will be minimised.	The proposed will result in the installation of better management practises for stormwater, treating upstream flows as well as site run-off, providing improved water quality treatment, maintaining and improving flow management, and addressing existing urban stormwater impacts. <i>Impact:</i> Negligible <i>Mitigation:</i> Design of the stormwater retention system and treatment system to manage peak flows, maintain low flows and reduce pollutants. Operation and maintenance requirements will be specified in the Operation and Maintenance Plan (Part F 32).		
6.8 (1) In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider the likely impact of the development on periodic flooding that benefits wetlands and other riverine ecosystems.	The upper Quarry Creek catchment is characterised by extensive residential development that has led to the current altered flooding regime associated with urbanisation. The on-site detention system and field infiltration has been designed, in response to flood investigations, to help provide improved control of flooding and reduce urban flow impacts. <i>Impact:</i> Negligible <i>Mitigation:</i> Design of the stormwater retention system and treatment system to manage peak flows, maintain low flows and reduce pollutants. Operation and maintenance requirements will be specified in the Operation and Maintenance Plan (Part F 32).		
6.8(2) Development consent must not be granted to development on flood liable land in a regulated			
(a) if there is a flood, result in a release of pollutants that may have an adverse impact on the water quality of a natural waterbody, or	The site is not considered a hazardous industry or hazardous storage establishment that requires containment of materials in the event of a flood. This project has been designed to keep the field flood free up to and including a 1% AEP event, to prevent export of surface materials during frequent flood events. Design of the field to be flood free at the 1% AEP, a rarer event than the current field and most sporting fields on flood liable land.		

Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

Table 3 Clause 171A of the EP&A Regulation - Activities in catchments Clause 171A of the EP&A Regulation - Activities in catchments		
Clauses 6.6 - 6.9 of SEPP	(Biodiversity and Conservation) 2021	
Clause	Comment	
	Cork infill material was chosen over rubber infill in response to the evidence that rubber crumb can introduce heavy metals and other hydrocarbon contaminants into the environment. Noting the design features to prevent surface runoff from the field and choice of materials, potential loss of field surface materials during very rare flood events (above the 1%AEP and up to the PMF) is not considered to have an adverse impact on the water quality of Quarry Creek under those circumstances.	
	Storage of flood flows in the detention system will also help to filter out pollutants from upstream prior to discharge back into Quarry Creek.	
	Impact: Negligible	
	<i>Mitigation:</i> The design of the field to be flood free to be above 1% AEP as well as other measures such as stormwater pollution devices and high flow bypass. Operation and maintenance requirements will be specified in the Operation and Maintenance Plan (Part F 32).	
(b) have an adverse impact on the natural recession of floodwaters into wetlands and other riverine ecosystems.	Quarry Creek catchment is characterised by extensive residential development that has led to the current flooding regime associated with urbanisation. The on-site detention system and field infiltration has been designed to help control flooding during more frequent events and reduce urban flash flooding impacts. Overland flow paths have been incorporated into the deign to allow for excess surface flows, including those during and above a 1% event to be preferentially directed around the field. Water from the detention system will be released back into Quarry Creek and will not cause any adverse impacts to the system as a whole.	
	Impact: Negligible	
	<i>Mitigation:</i> Design of the stormwater retention system to manage peak flows and maintain low flows and reduce pollutants. Operation and maintenance requirements will be specified in the Operation and Maintenance Plan (Part F 32).	
6.9(1) In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider—		
(a) the likely impact of the development on	The development will improve the usability of Norman Griffiths Playing field and provide an all-weather recreation surface to the community.	

Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

Table 3 Clause 171A of the EP&A Regulation - Activities in catchments		
Clauses 6.6 - 6.9 of SEPP (Biodiversity and Conservation) 2021		
Clause	Comment	
recreational land uses	Impact:	
in the regulated	Nil.	
catchment, and		
	Mitigation:	
	Nil	
<i>(</i> b)	The development is not being undertaken in a foreshore area and does not	
whether the	change or impact the existing access to Ouarry Creek and its associated	
development will	riparian vegetation.	
maintain or improve		
public access to and	Impact:	
around foreshores	Nil.	
without adverse impact		
on natural waterbodies,	Mitigation:	
watercourses, wetlands	Nil	
or riparian vegetation.		
6.9(2) Development cons	sent must not be granted to development on land in a regulated catchment	
uniess the consent autho	rity is satisfied of the following—	
(a)	The development does not change or impact the existing access to Quarry	
the development will	Creek and its associated riparian vegetation	
maintain or improve		
public access to and	Impact:	
from natural	Nil.	
waterbodies for		
recreational purposes,	Mitigation:	
including fishing,	Nil	
swimming and boating,		
without adverse impact		
on natural waterbodies,		
watercourses, wetlands		
or riparian vegetation,	The development does not change at impact the evicting access to Querry	
(D)	Creek and it's associated rinarian vogetation	
new of existing points of	Creek and it's associated riparian vegetation.	
pablic access between	Impact	
and the site of the	Nil	
development will be		
, stable and safe,	Mitigation:	
	Nil	
(c)	N/A	
if land forming part of		
the foreshore of a		
natural waterbody will		
be made available for		
public access as a result	•	
. dr.		

Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

Table 3 Clause 171A of the EP&A Regulation - Activities in catchments Clauses 6.6 - 6.9 of SEPP (Biodiversity and Conservation) 2021		
Clause	Comment	
of the development but is not in public ownership—public access to and use of the land will be safeguarded.		

The site is not located in relevant mapped areas, including:

- Special area under the Water NSW Act 2014
- Sydney Drinking Water Catchment
- Sydney Harbour Catchment, Foreshores and Waterways Area

As the activity is not being undertaken in the above mapped areas, clauses 171A(2), (3) and (4)of the EP&A Regulation - Activities in catchments do not apply.

Further to mitigation measures provided in **Table 2** and **Table 3** above, more detailed mitigation measures to be employed in all phases of the development are provided in **Part F** of this REF.

4.4 BIODIVERSITY CONSERVATION ACT 2016

The *Biodiversity Conservation Act 2016* (BC Act) aims to maintain a healthy, productive and resilient environment of the community through supporting biodiversity conservation in nature and establishing a legal framework to avoid, minimise and offset the impacts of proposed development on biodiversity.

Part 7 of the BC Act provides for the biodiversity assessment in relation to approvals under the EP&A Act. Section 7.8 of the BC Act states that, for the purposes of Part 5 of the EP&A Act, an activity is to be regarded as an activity likely to significantly affect the environment if it is likely to significantly affect threatened species. As shown by **Figure 14**, the subject site is mapped as containing Biodiversity Values under the BC Act which comprise a Critically Endangered Ecological Community (CEEC) identified as the 'Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion' by the Office of Environmental Heritage Mapping.

Whilst Norman Griffiths Oval is located within close proximity to mapped CEEC and biodiversity values, the proposed activity does not involve vegetation clearing within these significant areas of the site and is thereby unlikely to significantly affect the environment and local ecology. A 'Test of Significance' under Section 7.3 of the BC Act has been undertaken within the Flora and Fauna Impact Assessment (FFIA) at **Appendix 15**, which confirms it is unlikely the proposal will have a significant impact on protected vegetation species.

Further consideration of the impacts to all other potentially threatened species is provided in Section 5.7.

Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)



Figure 14 Biodiversity Values Map (Source: NSW Legislation 2022)

4.5 NATIONAL PARKS AND WILDLIFE ACT 1974

The National Parks and Wildlife Act 1974 (NPW Act) seeks to conserve nature and cultural heritage, including places, objects and features of significance to Aboriginal people.

As outlined in **Part E** of this report, the proposed development is not considered to exhibit an adverse impact on any items of Aboriginal significance. In accordance with the mitigation measures provided in **Part F 20**, if any item of Aboriginal archaeological significance is discovered during the works, works shall cease immediately and the National Parks and Wildlife Service along with the Aboriginal Heritage office shall be notified.

4.6 BIOSECURITY ACT 2015

The *Biosecurity Act 2015* (BS Act) aims to manage diseases and pests that may cause harm to human, animal or plant health or the environment. Two exotic weed species were identified on the subject site (as outlined in **Appendix 15**), including the Asparagus aethiopicus (Ground Asparagus) – WoNS and Priority Weed and the Olea europeae subsp. cuspidata (African Olive) – Priority Weed. These two species require management under the BS Act (**Part F 31**).

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Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

4.7 PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997

The Protection of the Environment Operations Act 1997 (POEO Act) seeks to protect, restore and enhance the quality of the environment in NSW. Pursuant to Section 48 of the POEO Act, the carrying out of scheduled activities, as set out in Schedule 1 of the Act, requires a license.

The proposed works are not a scheduled activity under Schedule 1 of the POEO Act, and accordingly a licence is not required.

4.8 RURAL FIRES ACT 1997

The *Rural Fires Act 1997* seeks to prevent, mitigate and suppress bushfires for the protection of persons from injury or death and property from damage arising from fires. The site has been mapped as within the vegetation buffer for Category 2 Bushfire Threat Vegetation as indicated by **Figure 15** below.

The proposed activity is limited to the existing footprint of the Norman Griffiths Oval and will be constructed of flame-resistant materials. The Fire Resistance Certificate is attached at **Appendix 7.** As such, the proposed activity is unlikely to result in an increased bushfire risk.

To ensure that any bushfire is mitigated, and to ensure the synthetic field is protected, travelling irrigators will be used that would be able to stop the burn.

A Bushfire Report (**Appendix 10**) has been undertaken, which outlines that bushfire risk to the oval is low, with readily available access and water mains for fire fighting purposes. Further, the report states that there are no standards for synthetic fields within the Planning for Bushfire Protection Guide 2019 (PBP 2019). Therefore, no further consideration under the PBP 2019 is required. It is noted that the synthetic materials are fire resistant as detailed within the Fire Resistance Certificate (**Appendix 7**). A Bushfire Evacuation Plan is required to ensure there is no risk to human life (**Part F 29**).

Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)



Figure 15: Bushfire Prone Land Maps (Source: NSW Planning Portal, 2022)

4.9 STATE ENVIRONMENTAL PLANNING POLICY (BIODIVERSITY & CONSERVATION) 2021

The State Environmental Planning Policy (Biodiversity & Conservation) 2021 (SEPP B&C) and absorbs the provisions of the following former instruments that are relevant to the proposed activity:

- State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017;
- State Environmental Planning Policy (Koala Habitat Protection) 2020.

4.9.1 Chapter 2 - Vegetation in Non-Rural Areas

Chapter 2 of SEPP B&C aims to protect the biodiversity values of trees and other vegetation in non-rural areas of the State and to preserve the amenity of these locations through the preservation of vegetation. The Chapter identifies vegetation clearing that requires a permit or development approval from a local council.

In this case, the proposed activity is being undertaken under Part 5 of the EP&A Act, and as such, a permit/approval is not required in accordance with Section 2.7(1) of SEPP B&C.

Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

4.9.2 Chapter 3 - Koala Habitat Protection

Chapter 4 of SEPP B&C requires that development of land within a listed Koala Management Area must be consistent with any approved Koala Plan of Management (KPoM) for that area.

The Ku-Ring-Gai Local Government Area is within the Central Coast Koala Management Area, however, there is no approved KPoM currently in place for the locality of the Site.

4.10 STATE ENVIRONMENTAL PLANNING POLICY (RESILIENCE & HAZARDS) 2021

The State Environmental Planning Policy (Resilience & Hazards) 2021 (SEPP R&H) absorbs the provisions of the former State Environmental Planning Policy No 55 - Remediation of Land within Chapter 4. Chapter 4 aims to mote the remediation of land for the purpose of reducing the risk of harm to human health or any other aspect of the environment.

This Policy indicates that an approval authority must not give approval to the carrying out of any development or activity on land unless it has considered whether the land is contaminated, and 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.

The site has been used for public recreation as part of Ku-Ring-Gai's Bicentennial Park since 1987, however, prior to this the site was utilised as a quarry and waste incineration. Accordingly, Council commissioned a Contamination Investigation (refer to **Appendix 5**) in 2017 to be carried by SLR Consulting to ensure the site was suitable for continued use as a sports field. The Contamination Investigation detected small concentrations of known contaminants, however these concentrations are considered to be unlikely to present an adverse impact on human health.

Based on the above, the contamination risk of the site does not present a significant adverse impact to the ongoing use of the site for public recreation. Further recommendations of the Contamination Investigation are examined in **Part F 19** of this report.

Any top spoil with potential contamination would be removed and appropriately disposed of as required. Appropriate management will be provided within the Waste Management Plan, as outlined in **Part F 10.**

4.11 STATE ENVIRONMENTAL PLANNING POLICY (TRANSPORT & INFRASTRUCTURE) 2021

Chapter 2 of the State Environmental Planning Policy (Transport & Infrastructure) 2021 (SEPP T&I) relates to the provision of infrastructure in NSW and absorbs the provisions of the former State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP). The SEPP simplifies the planning process for providing essential infrastructure like hospitals, roads, railways, emergency services, water supply and electricity delivery.

SEPP T&I provides for the development of certain activities for a range of infrastructure types. SEPP T&I indicates whether an activity is permissible with or without consent and on what land the activity is permissible.

Part 2.2, Division 1 - Consultation

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Part 2.2 Division 1 of SEPP T&I provides requirements for consultation with Council and other public authorities.

In accordance with Clause 2.10, consultation with Council is required where development would have substantial impact on stormwater management services provided by Council. It is noted that this proposal is not considered to have substantial impacts on the stormwater management services provided and the exceptions prescribed by Clause 2.17 is applicable to the proposal.

Pursuant to Clause 2.17 of SEPP T&I, the consultations requirements prescribed by Clauses 2.10, 2.11, 2.12, 2.14, 2.15 and 2.16 do not apply with respect to development to the extent that such clauses would require notice to be given to a Council or public authority from whom an approval is required for the development to be carried out lawfully; or notice to be given to a Council or public authority that is carrying out the development or on whose behalf it is being carried out.

Council has consulted with State Emergency Service (SES) as per Clause 2.13.

Part 2.3, Division 12 - Parks & Other Public Reserves

The proposed activity relates to *Parks and other public reserves* in accordance with the meaning bestowed by Division 12 of SEPP T&I. The site constitutes a public reserve under the control of or vested in the Ku-Ring-Gai Council (Council) and accordingly the proposed development for the purposes described in Clause 2.73(3) may be carried out by or on behalf of Council without consent.

Pursuant to Clause 2.73(3), any of the following development **may be carried out by or on behalf of a council without consent on a public reserve under the control of or vested in the council**—

- (a) development for any of the following purposes-
 - (i) roads, pedestrian pathways, cycleways, single storey car parks, ticketing facilities, viewing platforms and pedestrian bridges,
 - (ii) **recreation areas** and recreation facilities (outdoor), but not including grandstands,
 - (iii) visitor information centres, information boards and other information facilities,
 - (iv) **lighting**, if light spill and artificial sky glow is minimised in accordance with the Lighting for Roads and Public Spaces Standard,
 - (v) **landscaping**, including landscape structures or features (such as art work) and irrigation systems,
 - (vi) amenities for people using the reserve, including toilets and change rooms,
 - (vii) food preparation and related facilities for people using the reserve,
 - (viii) maintenance depots,
 - (ix) portable lifeguard towers,
- (b) environmental management works,
- (c) demolition of buildings (other than any building that is, or is part of, a State or local heritage item or is within a heritage conservation area).

Pursuant to the *Standard Instrument – Principal Local Environmental Plan* (Standard Instrument), a 'recreation area' is defined as:

a place used for outdoor recreation that is normally open to the public, and includes—

- (a) a children's playground, or
- (b) an area used for **community sporting activities**, or
- (c) a public park, reserve or garden or the like,

and any ancillary buildings, but does not include a recreation facility (indoor), recreation facility (major) or recreation facility (outdoor).

As such, the proposed activity may be carried out without development consent in accordance with the provisions of Clause 2.73(3).

Part 2.3, Division 20 - Stormwater Management Systems

The proposed development also relates to Division 20 Stormwater management systems in accordance with the meaning bestowed by SEPP T&I. The site constitutes a public reserve under the control of or vested in the Ku-Ring-Gai Council (Council) and accordingly the proposed development for the purposes described in Clause 2.136(1) may be carried out by or on behalf of Council without consent.

Pursuant to Clause 2.136(1), development for the purpose of **stormwater management systems** may be carried out by or on behalf of a public authority without consent on any land.

Clause 2.135 of SEPP T&I defines a 'stormwater management facility' as follows:

- (a) works for the collection, detention, harvesting, distribution or discharge of stormwater (such as channels, aqueducts, pipes, drainage works, embankments, detention basins and pumping stations), and
- (b) stormwater quality control systems (such as waste entrapment facilities, artificial wetlands, sediment ponds and riparian management), and
- (c) stormwater reuse schemes.

The proposed stormwater system is consistent with this definition and are sought to be carried out on public land under the control of or vest in the Council. As such, the proposed activity may be carried out without development consent in accordance with the provisions of Clause 2.136.

4.12 KU-RING-GAI LOCAL ENVIRONMENTAL PLAN 2015

Ku-Ring-Gai Local Environmental Plan 2015 (KLEP2015) is the primary environmental planning instrument regulating the development of the site.

The relevant provisions of KLEP2015 as they relate to the subject site are considered below.

4.12.1 Land Use Definition under KLEP 2015

The proposed upgrades to Norman Griffiths Oval are consistent with the existing land use of the site as a 'recreation area'. The proposed stormwater mitigation works are considered ancillary to this use.

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4.12.2 Zoning and Permissibility under KLEP 2015

The site is zoned RE1 Public Recreation and partly C2 Environmental Conservation under KLEP2015 (**Figure 16** however the development area within the site is zoned only RE1 Public Recreation. 'Recreation Areas' are permitted with consent in the RE1 zone and are prohibited in the C2 zone. Notwithstanding, the proposed activity is permissible under the provisions of SEPP T&I (refer to **Section 4.9** of this report).



Figure 16: Zoning Map (Source: NSW Legislation 2020)

The objectives of the REI Public Recreation zone are:

- To enable land to be used for public open space or recreational purposes.
- To provide a range of recreational settings and activities and compatible land uses.
- To protect and enhance the natural environment for recreational purposes.
- To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values.

The proposed activity will maintain and improve upon the existing use of the land as a recreation area by upgrading the playing surface of Norman Griffiths Oval to an all-weather synthetic playing surface. In addition, the proposal will improve upon current stormwater management processes by establishing onsite detention that is capable of storing up to 2.4 megalitres of run-off to accommodate onsite and



upper-catchment flows. Furthermore, the proposal will minimise pollutants through the integration of a CDS unit for large materials and a bio-retention basin to treat suspended pollutants. As such, the proposed activity is considered to be consistent with the objectives of the zone.

Height of Buildings

The site is not subject to a building height limit under Clause 4.3 of KLEP2015. Therefore, further consideration is not required in this regard.

Floor Space Ratio

The site is not subject to a maximum floor space ratio (FSR) under Clause 4.4 of KLEP2015. Hence, further consideration is not required in this regard.

Land Reservation

The site is not identified as being subject to any land reservation acquisitions in the relevant KLEP2015 map.

Environmental Heritage

Council Heritage Officer consulted and has advised on the heritage significance of the site.

The site adjoins land identified as an item of local environmental heritage under the KLEP 2015 as part of the Ku-Ring-Gai Bicentennial Park. However, the proposal is unlikely to have a significant impact on the heritage value of this item as works are limited to the existing footprint of the Norman Griffith Oval and will not encroach into the heritage curtilage of Bicentennial Park. Furthermore, construction vehicles and workers will access the site via the existing driveway which appears to be of a design capable to support the construction phase of the proposal. As such, the proposed activity is unlike to have a significant adverse impact on the heritage value of Bicentennial Park.

Flood Planning

The site has not been mapped within the flood planning level by Council online mapping, however, it is understood that Norman Griffiths Oval currently acts as a detention basin for upper catchment stormwater flows, resulting in a tendency for the site to periodically flood. The proposed activity has been designed to mitigate flood impacts to the site through the following means:

- 2.4 megalitre onsite detention capacity to accommodate stormwater flows up to the 1% AEP event;
- Raising of the surface level of the field to bring the playing surface to RL 71.91m AHD and above the 1% AEP storm event;
- System bypass mechanism to direct flows greater than the 1% AEP storm event through the existing stormwater drain and towards receiving waters.

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The Drains modelling shows proposed stormwater systems conveys the 1% AEP Existing flood flows are managed by the 2.4ML OSD, and overland flow is neutral or minimised, further detail is provided in the Technical Memo at **Appendix 9**.

It is therefore considered that the proposed activity compatible with the flood risk of the site and will not result in and increased flood risk to person or property within the locality.

Riparian Lands and Watercourses

The site is identified as containing a Category 3a riparian zone, which runs through the site. The proposal will protect water quality through the installation of the stormwater system, and will have no impact on aquatic and riparian species or habitats. The proposal is considered to meet the relevant objectives of the riparian lands and watercourses under the KLEP2015.

Terrestrial Biodiversity

The site is identified as containing terrestrial biodiversity, and the proposed development will only require the removal of one (1) tree. The proposed development will avoid impacts on the surrounding ecological communities, as they will be fenced off. The majority of the development sits outside the area identified as containing biodiversity.

4.13 DRAFT ENVIRONMENTAL PLANNING INSTRUMENTS

There are no draft Environmental Planning Instruments applicable to the proposed development on the subject site.

4.14 KU-RING-GAI STRATEGIC DOCUMENTS

The proposal for Norman Park Oval playing field and stormwater mitigation meets the objectives of Council's Planning local strategies and policies, including but not limited to:

- Ku-Ring-Gai Local Strategic Planning Statement 2020
- Community Strategic Plan 2018 (Our Ku-Ring-Gai 2038)
- Ku-Ring-Gai Play Space Strategy
- Ku-Ring-Gai Bicentennial Park Plan of Management 2011

4.15 KU-RING-GAI DEVELOPMENT CONTROL PLAN 2021

The subject site contains Core Biodiversity Lands, Support for Core Biodiversity Lands and Biodiversity Corridors and Buffer, as identified within the Greenweb Mapping categories of the *Ku-ring-gai Development Control Plan 2021* (KDCP 2021).

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PART E ENVIRONMENTAL IMPACTS & RISK

A summary of the environmental impacts and risks and mitigation measures is provided at **Appendix 14**.

5.1 DESIGN & APPEARANCE

A high-quality design and construction would be adopted for the proposed works in order to complement and enhance amenity for residential uses and public spaces out in the aims and objectives outlined in KLEP2015.

The proposal will provide a new playing surface and improved stormwater retention system for Norman Griffiths Oval that will improve the useability of the fields. Through the incorporation of well-designed recreation facilities, the proposal is not inconsistent with the existing residential character of the locality and is compatible with surrounding education and recreational land uses.

The design will be reflective of the local character of the area and will consider accessibility for all users. The Ku-Ring-Gai project manager will be responsible for ensuring the design is of a high standard and meets the relevant requirements outlined by this REF.

The proposal will retain the low-density residential character of the locality. The provision of high quality and well-designed recreation facilities will enhance the functionality of the site as a public park and would be consistent with the streetscape and general presentation of the area. No adverse impacts would be incurred with respect to design and appearance.

5.2 HERITAGE

It is noted that there is an existing heritage item I1096 in close proximity to the proposed development. This local heritage item is identified as Bicentennial Park (former Quarry). The site contains two war memorials on the NSW War Memorials Register, the West Pymble War Memorial Community Hall and the Ku-ring-gai Bicentennial Park War Memorial. Quarry sandstone walls rise in semi-circular arrangement on the site.

The existing sports fields have no impact on the local heritage item, and it is not considered that the proposed change to a synthetic field would impact on the heritage item or its significance.

5.3 HEAT ISLAND EFFECT

The synthetic surface is to be infilled with granulated cork, of which surface temperatures have been measured to be 20° cooler on the hottest days, than standard synthetic surfaces (infilled with rubber). Heat testing has been undertaken on synthetic surfaces as attached at **Appendix 12**, which supports that the synthetic surface temperature does not largely effect the surrounding air temperatures when exposed to heat from the sun. Furthermore, trees surrounding the subject site would provide shadow to the field reducing the impacts of the heat island. There are alternative sources of natural turf surrounding the site which would also work to reduce the overall heat island effect and there is ample separation between the

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facility and residential dwellings. On extreme heat days, there is potential to utilise the travelling irrigators if required to cool the area providing a mitigation for potential additional impacts on extreme heat days.

As per FFIA 4.2.5, an increase in temperature on the synthetic surface is likely to have a minor impact on resident fauna as they are highly mobile and would favour the more-suitable surrounding habitat situated away from the urban field. The potential impacts to native flora are highly unlikely given there is a buffer of exotic species directly adjacent the proposed synthetic turf field.

5.4 TRAFFIC & TRANSPORT

The proposed activity will not adversely impact existing traffic and vehicular access arrangements relating to the site. The proposed fields will largely be utilised outside of peak hours for the community, schools or local clubs and as such it is anticipated that traffic demand would be spread throughout the day and in the evening periods. There is already sufficient parking surrounding the fields which can be utilised. There is no proposed intensification to the use of the fields and as such sufficient parking is available. No further traffic management is considered to be required, as there would be a negligible increase in useage.

Construction traffic will be managed through a Construction Traffic Management Plan (Part F14).

5.5 CIVIL ENGINEERING

As indicated in **Section 3** above, the proposal includes a new stormwater system to be installed below ground (under the synthetic playing field). Stormwater management will be undertaken in accordance with the Civil Engineering Plans (**Appendix 4**) prepared by Turf One Pty Ltd. The management measures of stormwater drainage and environmental site management are outlined within the Civil Engineering Plans. The final bioretention basin design and materials are to be approved by Council's Environmental Engineer during construction.

The proposal also includes bulk earthworks at the north eastern corner of the site (proposed location of the recreation facilities). Details of the proposed cut and fill works are provided in the Civil Engineering Plans.

5.6 GEOTECHNICAL INVESTIGATION

A Geotechnical Investigation has been undertaken by Ground Technologies to assess the surface and subsurface conditions and to provide comments and recommendations relating to key geotechnical constraints as well as excavation conditions and methodology.

The Geotechnical Investigation involved soil profile sampling of nine (9) test pits scattered throughout the site to determine the subsurface soil profile. Analysis of these samples indicates that the subsurface conditions of the site are generally suitable for the construction of the proposed development, despite the detection of uncontrolled fill within the site.

A number of recommendations are provided by the Geotechnical Investigation to be implemented during the site preparation phase of construction. These include recommendations relating to:

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	•••

- Stripping of topsoil, and identification and removal of unsuitable subgrade materials
- Replacement of excavated material with engineered fill.
- Impact rolling and associated vibration monitoring.
- Bring the impact rolled surface to design subgrade levels with engineered fill.
- Fill material and design specifications, including the identification of unsuitable fill material.
- Pavement design criteria.

A copy of the Geotechnical Investigation has been provided at Appendix 6.

5.7 FLORA AND FAUNA

As indicated in **Part B** of this report, the development area of the site is cleared land that has been used for public open space and recreational purposes for almost 40 years. Notwithstanding, the surrounding vegetation has been identified as 'Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion' which is considered a CEEC. It is understood that the flora and fauna species outlined within **Table 4** (Source: Kur-Ring-Gai Council 2022) may be present on or within proximity to the site. The FFIA at **Appendix 15** further considers all species and potential impacts to these species from the proposal. It is considered that the proposal will result in the clearing of 1.05ha of exotic dominant lawn vegetation and remove one historically cultivated White Cedar tree, which is not representative of the locally occurring STIF. The Black-hooded Sun Orchid may occur within the surrounds of the subject site, but not be directly impacted by the proposal, nor its potential habitat (**Part F 28**).

There are records of the Black Sun Orchids (Thelymitra atronitida) occurring on site, although onsite surveys undertaken in December did not identify the species (**Appendix 15**). To ensure its protection there will be a permanent fence installed as outlined in **Part F 28** and shown in the Architectural Plans (**Appendix 4**). Council Bushland Services Team will be supervising fence installation to ensure the Orchid population is adequately protected.

Table 4 Flora and Fauna Species					
Species	Common Name	NSW BC Act	EPBC Act	Native	
		Status	Status		
Flora					
Acacia pubescens	Downy Wattle	V	V	Υ	
Callistemon	Netted Bottle Brush	V		Y	
linearifolius					
Darwinia biflora		V	V	Y	
Darwinia peduncularis		V		Υ	
Deyeuxia appressa		E	E	Υ	
Epacris purpurascens		V		Y	
var. purpurascens					
Eucalyptus camfieldii	Heart-leaved Stringybark	V	V	Υ	
Eucalyptus nicholii	Narrow-leaved Black	V	V	Y	
	Peppermint				
Grammitis stenophylla	Narrow-leaf Finger Fern	E		Υ	
Grevillea caleyi	Caley's Grevillea	CE	CE	Y	
				(Unlikely)	
Grevillea juniperina	Juniper-leaved Grevillea	V		Y	
subsp.					

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Haloragodendron		E	E	Y
lucasii				
Hibbertia spanantha	Julian's Hibbertia	CE CE		
Lasiopetalum joyceae		V	V	Υ
Leptospermum deanei		V	V	Y
Melaleuca deanei	Deane's Paperbark	V	V	Y
Pimelea curviflora var.		V	V	Υ
curviflora				
Rhodamnia rubescens	Scrub Turpentine	CE	CE	Υ
Syzygium paniculatum	Magenta Lilly Pilly			Y (Highly)
Tetratheca glandulosa				Y Y
Thelymitra atronitida	Black-hooded Sun			γ
	Orchid			
Fauna				
Artamus cyanopterus		V		
cvanopterus				
Botaurus poiciloptilus	Australasian Bittern	F	F	
Callocephalon	Gang-gang Cockatoo	VFP		
fimbriatum	Carly garly cockatoo	♥,∟1		
Calvotorbynchus	Glossy Black-Cockatoo	V		
lathami				
	Fastern Dygmy-possum	V		
Chalipolobus dwyeri	Large-eared Died Bat	V		
Climacteris picumpus	Brown Treecreeper	V	V	
Daphoenositta	Varied Sittella	V		
chrysoptera	Varied Sittelia	v		
Dasvornis	Eastern Bristlebird	E		
brachypterus	Lastern Bristlebild			
	Spotted_tailed Quall	V		
Ealsistrollus	Eastern False Dipistrelle	V		
tasmaniensis	Eastern Faise Pipistrelle	v		
Final Deriod				
	Little Lerikeet	V		
	White ballied See Fagle	V	Migraton	
Hanaeetus leucogaster	Little Fagle	V	Migratory	
merabasidas	Little Eagle	v		
Hirundanus	M/bite threated		Vulnerable Migratery	
audacutus	Needlotail		vullerable, Migratory	
	Southorn Brown		Endangered	
abosulus	Bandicoot (astorn)		Endangered	
besulus	Bandicoot (eastern)	V		
	Swift Derret	V F	Critically	
Lathamus discolor	Swift Parrot	E	Critically	
	Green and Calden Dall		Endangered	
Litoria aurea	Green and Golden Bell	E	vuinerable	
	Frog			
Litoria verreauxii alpina			vuinerable	
Lophoictinia isura	Square-tailed Kite	V		
	Eastern Coastal Free-	V		
nortoikensis				
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Miniopterus australis	Little Bent-winged bat	V	
Miniopterus orianae	Large Bent-winged Bat	V	
oceanensis			
Myotis macropus	Southern Myotis	V	
Neophema pulchella	Turquoise Parrot	V	
Nettapus	Cotton Pygmy-Goose	E	
coromandelianus			
Ninox connivens	Barking Owl	V	
Ninox strenua	Powerful Owl	V	
Pandion haliaetus	Osprey		
Petroica multicolor	Pacific Robin		
Polytelis swainsonii	Superb Parrot	V	Vulnerable
Pseudophryne	Red-crowned Toadlet	V	
australis			
Pteropus	Grey-headed Flying-fox	V	Vulnerable
poliocephalus			
Ptilinopus superbus	Superb Fruit-Dove	V	
Saccolaimus	Yellow-bellied	V	
flaviventris	Sheathtail-bat		
Scoteanax rueppellii	Greater Broad-nosed Bat	V	
Varanus rosenbergi	Rosenberg's Goanna	V	

*Abbreviations: V- Vulnerable; E - Endangered; CE - Critically Endangered

The site is currently a grass field and may be utilised for hunting and roosting for a number of species in the area. The proposed synthetic field would impact on these activities, however given the surrounding area is of similar grassy areas, it is considered there is ample space in close proximity to ensure species can continue to use the area for foraging, hunting, nesting and as habitat if required. It is considered that there would not be any significant displacement of species, given there is ample opportunity in the surrounding area for the continuation of these activities. It is not considered that the proposed synthetic field would have an overall small impact on the activities of locally occurring fauna species. As it is not proposed for the intensity of use or lighting to be impacted, it is not considered there would be any other additional impacts to species.

Stormwater works including the partial demolition of a box culvert, has potential to impact on roosting habitat for microbat species (as detailed at **Appendix 15**). It is considered that these impacts would result in a low and short term impact to these species.

The proposed activity does not require the removal of any vegetation within mapped Biodiversity Value or CEEC areas located within the site. A single White Cedar (*Melia Azedarach*) tree is required for clearing to accommodate the proposed CDS Unit along the north eastern boundary of the site, however this is a common street tree within the locality and the ecological impacts of its removal is considered negligible. Some landscaping comprising native species and to be approved by Council, will be implemented within the proposed bioretention basin, however, these species will be in keeping with the natural ecological value of the surrounding area (**Part F 8.3**). Two (2) replacement trees will be required to be provided elsewhere on the site to offset this (**Part F 30**).

An Arboricultural Impact Assessment (**Appendix 2**) has been prepared by Tree Survey which confirms that the proposed works have been designed to ensure there is no loss of significant trees or impact on the CEEC. Throughout construction works, it should be considered that any works outside or in close proximity to the adjoining CEEC facilitates appropriate protection of these assets, including both tree canopy and

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root systems. Furthermore, there will be a temporary fence in place during construction to ensure these trees are not impacted (**Part F 8.2**). In support of this, SportEng have issued a Technical Note (**Appendix 8**) which verifies the design intent for minimal impact to surrounding ecological values.

The removal of one (1) White Cedar tree, will be offset through the planting of two similar trees on site, as detailed in **Part F 30**.

The potential for spread or increase in pests or pathogens during construction phase, will be managed through appropriate measures included in the Construction Management Plan (**Part F 9**). It is understood that spread of pests or pathogens can be appropriately managed and mitigated through various construction techniques and appropriate site containment and site management practices. In particular, Phytophthora hygiene protocols should be implemented during construction as detailed in the FFIA Appendix F.

As such, the proposed works are not anticipated to result in adverse impacts on any the biodiversity or any ecological communities.

5.8 ACOUSTIC IMPACT

The operation of the proposed sports field improvements will not result in any additional adverse noise impacts above as the proposal is not anticipated to significantly intensify the use of the site for public recreation, but rather upgrade existing facilities for the benefit of the community. Noise generation will be limited to operational hours and will be consistent with the existing level of noise generation. The Plan of Management (**Appendix 11** and **Part F 27**) will ensure noise impacts are considered throughout operation.

Additional short-term noise impacts may be generated during the construction phase of the project due to the operation of machinery, however, these activities will be limited to standard construction times (**Part F 22**) and managed through the mitigation measures of **Part F 11 and 16**. As such, significant adverse noise impacts are not expected from the proposed activity.

5.9 AIR QUALITY

Civen that the proposal relates to the provision of recreation facilities, the operation of the development is not considered likely to exhibit any significant air quality. As there is no significant heat island effect anticipated from the synthetic surface, due to the cork base, there would not be any off-site air odour impacts expected. The synthetic surface is also fire resistant and as such would burn out after a while and therefore emissions would be limited. Given the field is set in a large open space area, any smell that may occur due to the new field installation would be dispersed and not of a level that would impact surrounding neighbours. Furthermore, the synthetic field smell is often associate with rubber based turf which is not proposed in this instance.

Emissions generated as a result of the development may include dust from construction activities, emissions from the operation of machinery during construction and vehicle-generated emissions from trucks entering the site during construction.

During the construction phase, the carrying out of works in accordance with the mitigation measures outlined in **Part F 21** will minimise air quality impacts, whilst vehicle-related emissions are considered to

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cause an inconsequential impact given the high volumes of traffic currently utilising the surrounding road network.

5.10 LIGHTING

The proposal involves the upgrade of old lighting with new LED lighting which are considered to allow for more targeted light distribution and less light spill. The lighting will continue to be operated in accordance with the existing lighting arrangements in the evenings and as such it is not considered there would be any additional impacts from light spill.

5.11 CONTAMINATION

A Contamination Investigation of the site was undertaken by SLR Consulting and is provided at **Appendix 5.** This investigation involved a review of existing contamination reports and Dial Before You Dig data in relation to the site, a site walkover and soil sampling and laboratory analysis of thirty-four (34) samples from sixteen (16) test pits across the site.

The Investigation detected concentrations of identified contaminants, however, the observed contaminant were unlikely to present an unacceptable risk to:

- Human health through contact, inhalation or contact with soil vapour;
- Inground infrastructure, fire/explosive hazards or light aqueous phase liquid; or
- Aesthetic of the site.

SLR made the following recommendations based on their investigations:

- Should material need to be imported to the site, an appropriate management plan should be prepared and implemented to control the type/s of fill being imported, and to mitigate land contamination risks associated with uncontrolled imported fill; and
- Should material on the site need to be excavated and disposed of, a waste classification for that material should be prepared beforehand in accordance with NSW EPA (2014) 'Waste Classification Guidelines, Part 1: Classifying Waste'.

The above recommendations have been integrated into Part F19 of this report.

5.12 WASTE MANAGEMENT

It is anticipated that the proposal will not generate significant waste, and that any waste generation would be in line with existing waste generation associated with the sporting field on site. Operation is to be inline with the existing Plan of Management and waste facilities will continue to be provided as per the current arrangements. No additional operational waste management will be required due to this proposal. The field will continue to operate in accordance with the Plan of Management (**Appendix 11**) for the park.

Consideration has been given to the potential for pollutants from the synthetic field including the grass, such as microplastics. Design strategies have been adopted to minimise dispersion of microplastics from the field. These include:

 Construction of a 200mm high concrete upstand around the entire perimeter of the synthetic playing surface.

- Construction of highly effective boot and wheel cleaning grates (similar to those installed in food processing plants) at all pedestrian and maintenance gateways.
- All water collected onsite will be directed to a filter device prior to discharge from the site.

The synthetic surface is made from recycled turf and thermoelastomers, and at the end of its life, the fields will be recycled to be reused for additional turf fields (**Appendix 13**). The remaining components would be required to be reused, recycled or disposed of as required.

In relation to construction stage, the construction related waste streams are identified to arise from demolition, excavation, construction and workforce. **Table 3** below identifies the handling methodology of the construction waste.

Table 5 Handling methodology of construction waste			
Action	Material Handling Methodology		
General Waste	Segregation into multiple recycling bin stores for transportation to licensed tipping/disposal facility. Non-recyclable materials to be held in a central location for disposing to a licensed disposal facility.		
Putrescent Waste	Retained in storage for pump out to licensed disposal or direct connection to sewer.		
Contaminated Soils	A contamination assessment has indicated that the contamination risk of soils within the site is compatible with the ongoing recreational use of the site. Notwithstanding, should any significantly contaminated soils be found on site during works then these materials will be excavated and taken to suitably qualified recycling facility for remediation.		
Chemical Stores	All chemicals on site will be contained in EPA approved containers and facilities appropriate to the manufactures and Safe Work NSW. Including secure housing with ventilation and bunding as specified.		
Excavation Spoil	All spoil during construction must be stockpiled with site mitigation to prevent airborne contaminates from leaving site.		

A recommendation has been made in **Part F 10** below for the preparation and implementation of a Construction Waste Management Plan prior to the commencement of works.

5.13 MAINTENANCE

The synthetic field requires minimal maintenance, and does not require regular chemicals to be used on the field. Any weed growth that does occur will be treated with a glyphosate, non-persistent herbicide. There is an extremely low risk of this material leeching into the environment as there will be a fully-welded impermeable membrane installed on the surface of the sub-grade, under the porous aggregate layer. Clyphosate is only to be used around the edges of the turf to kill weeds as they cannot be manually removed due to potential to dislodge the turf. Currently, there is pest and weed control measures across the existing turf field, and as such it is considered that the proposed synthetic field would not have any additional pollution impacts to the surrounding area.

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The cork also contains suberin, which is a naturally occurring antimicrobial constituent, that is much more hygienic than other infill materials and as such will reduce any requirement for additional chemicals to be used to clean the field (**Appendix 13**).

A gross pollutant trap is included in the onsite detention system to reduce the maintenance requirements. Council will inspect for any accumulation of gross pollutants in the StormTech isolation chambers after severe storm events by means of the maintenance chambers to be constructed at the eastern end of the field. Accumulations of gross pollutants can be removed from these isolation chambers by high pressure jetting and suction equipment. Equipment required to undertake this maintenance will be positioned in the Loftberg Road carpark, with no need to traverse any environmentally sensitive areas.

5.14 CONSTRUCTION

Construction activities would be undertaken in accordance with the relevant planning instruments. Appropriate measures would be undertaken to mitigate any potential impacts from the construction including dust, noise, odours, traffic impact and erosion.

In particular construction should have regard to the adjoining CEEC and any impact that works both on site and off-site may have and should ensure there are necessary mitigation measures in place.

There may be temporary and short term noise, lights and vibration impacts during construction, which could affect fauna. However, given the existing surrounding sources of light and noise, it is anticipated that fauna would be accustomed to these impacts.

A as detailed in **Part F 9** it is required that a Construction Management Plan is prepared and implemented prior to the commencement of works

5.15 CUMMULATIVE IMPACTS

The proposed synthetic field and associated stormwater infrastructure proposed is not considered to have any significant negative cumulative impacts. During construction there may be minor cumulative impacts on noise, traffic and amenity to nearby residential receivers, however these are anticipated to be mitigated by the implementation of a Construction Management Plan (**Part F 9**).

All relevant environmental impacts considerations, including potential cumulative impacts, are addressed in section 4.3.

5.16 SUMMARY

The potential impacts from the proposed synthetic field are considered to be minor indirect impacts to species that may have previously used the field for foraging. These impacts are considered to be negligible due to the proximity of similar grasslands and through the implementation of both a Construction Management Plan and the ongoing implementation of the Operation and Maintenance Plan along with the Plan of Management. On balance, it is considered that there would be minor impacts, being largely

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direct impacts during construction that are short term and can be mitigated. Longer term impacts and residual impacts are thought to be in general positive, as it results in a useable playing surface for the community and better stormwater management on site.

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PART F MITIGATION MEASURES

The following Mitigation Measures are recommended to ensure that any development activity is carried out in accordance with the plans, documentation and any amendment approved under Part 5 of the EP&A Act. A summary of the environmental impacts and risks and mitigation measures is provided at **Appendix 14**.

GENERAL MEASURES

1. Development in Accordance with Plans and Documentation

The proposal must be carried out generally in accordance with the Review of Environmental Factors dated 28 June 2023 and prepared by Willowtree Planning on behalf of Ku-Ring-Gai Council (including accompanying appendices) and generally in accordance with the following plans/documentation as modified below and by any of the under-mentioned measures:

Drawing Title	Ref	Revision	Date	Prepared by
Proposed layout plan for Norman Griffith Oval	LD-01A MW640	А	21/05/21	Field Turf
Field Roll layout plan for Norman Griffith Oval	LD-02A	-	21/05/21	Field Turf
Sports Field Base Profile On-Site Detention - Schematic Layout	TO-003-010	Rev I	1/02/23	Turf One
Sports Field Base Profile On-Site Detention - Schematic Layout	TO-003-011	Rev I	1/02/23	Turf One
Erosion and sediment control plan	TO-003-012	Rev C	31/01/23	Turf One
Concrete paving & drainage plan	TO-003-014	Rev B	31/01/23	Turf One
Fencing layout plan	TO-003-015	Rev A	19/10/22	Turf One
Sports Field Base Profile On-Site Detention - Schematic Layout	TO-003-020	Rev K	1/02/23	Turf One
Sports Field Base Profile On-Site Detention - Schematic Layout	TO-003-021	Rev G	20/09/22	Turf One
Sports Field Base Profile On-Site Detention - Section	TO-003-022	Rev G	20/09/22	Turf One
Sports Field Base Profile On-Site Detention - OSD Volumetric Calculations	TO-003-023	Rev H	20/09/22	Turf One
Sports Field Bio Retention Basin - Schematic Layout	TO-003-024	Rev J	21/10/22	Turf One
Sports Field Bio Retention Basin - Schematic Layout	TO-003-025	Rev G	1/02/23	Turf One
Sports Field Bio Retention Basin - Schematic Section	TO-003-026	Rev E	7/11/22	Turf One
Pits 01 & 02 Isometric	TO-003-027	Rev A	29/09/22	Turf One
Pits 03 & 04 Isometric	TO-003-028	Rev A	29/09/22	Turf One
Fencing Details	TO-003-050	Rev A	31/10/22	Turf One

Proposed Stormwater Mitigation Works & Synthetic Football Field Upgrades Norman Griffiths Oval, 30 Lofberg Road, West Pymble (Lot 6 DP 564939)

Safety Fencing & Retaining Wall	TO-003-051	Rev A	31/10/22	Turf One
Emergency Vehicle Gates	TO-003-052	Rev A	31/10/22	Turf One
Sandstone Bleachers	TO-003-053	Rev A	31/10/22	Turf One
Existing Plan	21N74 SK C003	02	Oct 2021	Optimal
	2	02	000 2021	Stormwater
Existing Section	21N74 SK COO4	02	Oct 2021	Optimal
	211174_31(_0004	02	000 2021	Stormwater
Ceneral Arrangement	21N74 SK C100	07	Oct 2021	Optimal
General Analigement	211174_31_0100	07	0012021	Stormwater
Detail Plan	21N7/ SK C101	0/	Oct 2021	Optimal
	211174_31_0101	04	0012021	Stormwater
Sections Sheet 1 of 3	21N7/ SK C200	05	Oct 2021	Optimal
Sections Sheet 1 of S	21N/4_3K_C200	03	000 2021	Stormwater
Sections Sheet 2 of 3	21N7/ SK C201	03	Oct 2021	Optimal
Sections Sheet 2 of 5	211174_31	05	000 2021	Stormwater
Sactions Shoot 7 of 7	21117/ 51/ 2202	05	Oct 2021	Optimal
Sections Sheet 5 of 5	2111/4_3K_C202	03	000 2021	Stormwater
Proposed Cut Fill Farthworks	\$22-008	SG-001	06/04/22	Turf One
	522 000	R02	00,04/22	
Flora and Fauna Impact			Jan 2023	Total Earth
Assessment			301 2023	Care

2. Building Code of Australia and Australian Standards

All building work is to be undertaken in accordance with the Building Code of Australia and referenced Australian Standards.

3. Approvals

- 3.1 Prior to construction, approval should be granted from Sydney Water for the decommission of the existing sewer pit, which will be located under the field and no longer accessible.
- 3.2 Any other necessary approvals considered required by legislation (including Commonwealth) and/or relevant Council policies are to be obtained. A copy of all approvals is to be kept on site.

4. Long Service Levy

For work costing more than \$250,000, the Long Service Levy is to be paid. For further information please contact the Long Service Payments Corporation on their Helpline 13 14 41.

PRIOR TO COMMENCEMENT OF WORKS

Note: The following Measures are to be complied with prior to the commencement of works on the site, and at other stages where stated.

5. Community Notification

5.1 Prior to commencement of work, Council must notify in writing the occupier of any land within 40 metres of the boundary of the site works. The notification should outline the project, the expected timing for commencement and completion of construction works.

- 5.2 Complaints received prior to and during the undertaking of works shall be recorded and attended to promptly. On receiving a complaint, works shall be reviewed to determine whether issues relating to the complaint can be avoided or minimised. Feedback shall be provided to the complainant explaining what remedial actions were taken.
- 5.3 The Council shall develop a complaints management system and record details of all complaints received and the means of resolution of those complaints.
- 5.4 A site notice board must be located at the entrance or other appropriate location on the site in a prominent position and must including the following:
 - (a) 24-hour contact person for the site;
 - (b) Telephone, facsimile numbers and email addresses;
 - (c) Site activities and time frames.
- 5.5 The site notice must be erected no less than 7 days prior to the commencement of works.

6. Geotechnical, Contamination and Arboricultural Reports

Works to be in accordance with and following recommendations contained within the following reports:

- Geotechnical Investigation Report prepared by Ground Technologies Pty Ltd on 1st October 2015 (ref: GTE634-R001)
- Supplementary Contamination Assessment prepared by SLR Consulting Australia Pty Ltd on 25th July 2017 (ref: 610.17191.R02-v1.0)
- Arboricultural Impact Assessment Version 2 prepared by Tree Survey Pty Ltd on 28th March 2022

7. Dilapidation Report

Council is to receive a Dilapidation Report prepared by the Proponent recording any and all assets which may be impacted by works prior to commencement of construction.

7.1 Council is to receive an Environmental Assessment Snapshot, detailing the current state of the natural environment, to be carried out immediately prior to the commencement of works and on completion of works.

8. Biodiversity/ Tree Protection

- 8.1 Contractor to abide by Council's Tree Protection requirements. Trees retained on site are to be protected in accordance with Australian Standard AS4970-2009 and Aboricultural Impact Assessment prepared by Phil Witten (Tree Survey Pty Ltd), and an Environment Management Plan prepared for the site.
- 8.2 A 1.8m high temporary construction fence to be installed prior to the commencement of works and remain in place until the works are complete. The location of the fence should protect the no go zone and be approved by Ku ring gai Council prior to installation.
- 8.3 All vegetation to be retained will be appropriately protected during the entire extent of the works, e.g. temporary fencing, flagging and tree protection. This includes fencing around the No-Go Zones identified in Figure 8 of the FFIA, excluding all existing footpaths and roads. If clearing is to occur outside the assessed area within this report, this document will be amended by a suitably qualified Ecologist to include all new scope, prior to works commencing.
- 8.4 A Landscaping species schedule will be developed and approved by Ku Ring Gai Council prior to the installation of any additional landscape elements into the bioretention basin.

- 8.5 A pre-clearing inspection must be completed by a suitably qualified Ecologist, targeting the box culvert within the Subject Site for inhabiting Microbats. If Microbats are identified, a Microbat Translocation Plan will be prepared and any residing individuals will be safely relocated (nocturnally) prior to the commencement of works.
- 8.6 Vegetation will be inspected for potential fauna prior to clearing or trimming. A two staged approach will be used for removing non-habitat vegetation to enable fauna to move away. An Ecologist will be engaged if clearing vegetation with potential fauna habitat or assistance is required to move fauna.
- 8.7 If any fauna are identified during works and require rescue, a qualified Ecologist, or fauna rescue volunteer, will be notified. Works will not continue until the animal has been rescued. Call either Sydney Metro Wildlife on 9413 4300 or WIRES on 1300 094 737.
- 8.8 Additional branches over the bioretention basin will only be trimmed if essential for access. Branches will try to be kept in the first instance.

9. Construction Management Plan

A detailed Construction Management Plan is to be prepared prior to the commencement of works and implemented during the undertaking of works. This is to be approved by the Bushalnd technical officer and Council environmental staff prior to implementation. The Construction Management Plan is to include, but not be limited to:

- a) How compliance with the environmental controls and mitigation measures detailed in this REF is to be achieved.
- b) Construction noise management measures.
- c) Vibration management measures.
- d) Sediment and erosion control measures.
- e) Phytophora Hygiene Protocols (Appendix F of FFIA)
- f) Construction site management measures.
- g) Construction traffic management measures.
- h) Air quality and dust management measures.
- i) Restrictions on hours during construction.

10. Construction Waste Management Plan

- 10.1 A Construction Waste Management Plan shall be prepared by an appropriately qualified contractor prior to the commencement of works. The Waste Management Plan should be prepared in accordance with DECCW's "Waste Classification Guidelines (2008)" and the *Protection of the Environment Operations Act 1997.*
- 10.2 The Construction Waste Management Plan is to include the following requirements and details:
 - (a) The type and volume of all waste materials (e.g. excavation material, green waste, bricks, concrete, timbers, plasterboard and metals) is to be estimated prior to the commencement of works, with the destination for each waste identified. Waste should be re-used or recycled as much as practicable. Where not practicable, the location of a suitable waste disposal facility is to be identified.
 - (b) Cleaning out of batched concrete mixing plant is not permitted within any construction compound.
 - (c) Non-recyclable waste and containers are to be regularly collected and disposed of at a licensed disposal site. Frequency of collection should be identified.
 - (d) No burning or burying of waste is permitted on the site.



(e) Any bulk garbage bins delivered by authorised waste contractors are to be placed and kept within the property boundary.

11. Noise Management Measures

- 11.1 During preparation of the construction program, consult with the facility to determine what areas (if any) of the facility is particularly noise sensitive, and at what time (primary schools, childcare centres etc.).
- 11.2 Identify feasible acoustic controls or management techniques (use of screens, scheduling of noisy works, notification of adjoining land users, respite periods) when excessive levels may occur.
- 11.3 For activities where acoustic controls and management techniques still cannot guarantee compliant noise levels, implement a notification process whereby nearby development is made aware of the time and duration of noise intensive construction processes.
- 11.4 Deliveries to be within construction hours where feasible and reasonable.

12. Erosion and Sediment Control

- 12.1 An Erosion and Sediment Control Plan is to be prepared to manage any potential runoff resulting from the proposed works.
- 12.2 Erosion and sediment control measures are to be maintained regularly and after rainfall events in accordance with Landcom's 'Managing Urban Stormwater, Soils & Construction Guidelines (The Blue Book)'
- 12.3 Erosion and sediment control measures are not to be removed until disturbed areas have stabilised.

13. Services and Utilities

Prior to the commencement of works, any services and utilities that may be impacted by the works are to be appropriately relocated.

14. Construction Traffic Management Plan

A Construction Traffic Management Plan shall be prepared in consultation with Council prior to commencement of works.

DURING CONSTRUCTION/UNDERTAKING OF WORK

Note: The following Conditions are to be complied with during the approved construction/the undertaking of works.

15. Construction Site Management

- 15.1 Construction site fencing is to be installed around the construction site. Vehicle and workforce access points and roads to the construction compounds are to be clearly designated and controlled for authorised access only. Vegetation clearance is to be minimised.
- 15.2 The worksite should be left tidy and rubbish free each day prior to leaving the site and at the completion of works.
- 15.3 No hazardous materials or dangerous goods are to be used or stored on site. Where contaminated soil is stored on site, follow all conditions as set out in the Soil Contamination Report.

- 15.4 No plant and equipment storage areas or bunded areas for storage of petroleum, distillate and other chemicals are permitted on the site.
- 15.5 All materials on-site or being delivered to the site must be wholly contained within the site. The requirements of the *Protection of the Environment Operations Act 1997* are to be complied with when placing/stockpiling loose material or when disposing of waste products or during any other activities likely to pollute drains or watercourses.
- 15.6 The public way must not be obstructed by any materials, vehicles, refuse, skips or the like, under any circumstances.
- 15.7 All equipment and machinery should be secured against vandalism outside of working hours.
- 15.8 No batching plant is permitted on the site.
- 15.9 A copy of the approved and certified plans, specifications and documentation shall be kept on site at all times and shall be available for perusal by any authorised officer of Council.
- 15.10 Any contractor(s) must meet all workplace safety legislation and requirements.
- 15.11 No vehicle maintenance is permitted in the demolition and construction areas except in emergencies.
- 15.12 Any loose material stockpiles are to be stored within the temporary construction compound(s) and are to be protected from possible erosion.
- 15.13 During any clearing works or construction works, if threatened flora or fauna species are identified, works will stop immediately and a qualified Ecologist will be contacted.
- 15.14 All site workers shall be informed of areas of high ecological value, including the presence of CEEC and potential threatened species habitat before entering the work site.

16. Construction

- 16.1 No blasting shall be permitted during construction.
- 16.2 The use of any rock excavation machinery or any mechanical pile drivers or the like is restricted to the hours of 8.00am to 5.00pm (maximum) on Monday to Friday only, to minimise the noise levels during construction and loss of amenity to the surrounding area.
- 16.3 Bioretention basin construction hold points requiring approval of Council's Environmental Engineer include:
 - Completion of set-out and excavation, prior to installation of liner;
 - 2Drainage pipe connection inspection prior to backfill with any material;
 - Drainage Gravel Layer Level, prior to fill with filter media; and
 - Finished Surface Level prior to planting.

17. Services

- 17.1 All services and utilities in the area of construction must be appropriately disconnected and reconnected as required. The contractor is required (if necessary) to consult with the various service authorities regarding their requirements for the disconnection of services.
- 17.2 Where services are found not to be adequate to support the development they shall be appropriately augmented.

18. Traffic Management

Existing traffic access and arrangements should be maintained during construction as much as practicable.
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19. Contamination

- 19.1 Should any new soil contamination information or contaminants be identified during the undertaking of works which have the potential to alter previous conclusions about site contamination, then the Managing Contractor and Council must be immediately notified and works must cease.
- 19.2 Works must not recommence on site until the site is remediated in accordance with an approved Remediation Action Plan and a Validation, in accordance with the requirements of *State Environmental Planning Policy Resilience and Hazards 2021* where applicable.
- 19.3 Any works involving the removal and disposal of asbestos must only be undertaken by contractors who hold a current WorkCover Asbestos or "Demolition Licence" and a current WorkCover "Class 2 (Restricted) Asbestos Licence and removal must be carried out in accordance with the NOHSC "Code of Practice for Safe Removal of Asbestos".
- 19.4 Construction works should not result in the contamination of the site.

20. Heritage and Aboriginal Archaeology

- 20.1 If any item of Aboriginal archaeological significance is discovered during the works, work shall cease immediately and the National Parks and Wildlife Service and Aboriginal Heritage Office shall be notified.
- 20.2 If any item of European heritage is discovered during works, work shall cease immediately and the project heritage consultant or Office of Environment and Heritage notified.
- 20.3 Work shall not recommence until the significance of the find is established.

21. Air Quality and Dust Management

- 21.1 Spraying of paint and other materials with the potential to become air borne particulates is only to be undertaken on days with still or light wind conditions.
- 21.2 No burning of materials is permitted.
- 21.3 Dust generated during construction activities is to be controlled to avoid impact on surrounding properties.
- 21.4 All necessary maintenance for construction vehicles and equipment is to be undertaken during the construction period.
- 21.5 Excessive use of vehicles and powered construction equipment is to be avoided.
- 21.6 Exposed areas are to be progressively revegetated as soon as practical.
- 21.7 Vehicle wash down areas are to be established to ensure all mud and soil from construction vehicles is not carried onto public roads.
- 21.8 All vehicles involved in any excavation and/or demolition and departing the site with demolition materials, spoil or loose matter must have their loads fully covered before entering the public roadway.
- 21.9 Any mud deposited on the road network due to truck movements to and from the site is to be cleaned up immediately.

22. Restriction on Hours During Construction

22.1 The undertaking of any construction activity on the subject site is to be limited to the hours of 7am to 5pm Monday to Friday and 7am to 1pm Saturdays.

22.2 Variation to the above working hours may be considered in extenuating circumstances only with the prior approval of Ku-Ring-Gai Council.

23. Noise Management

- 23.1 Contractors are to implement the requirements of the Office of Environment "Interim Construction Noise Guideline (July 2009)" as far as practicable.
- 23.2 Construction is to be carried out in accordance with the Building Code of Australia deemed-tosatisfy provisions with respect to noise transmission.
- 23.3 All reasonable, practicable steps are to be undertaken to reduce noise and vibration from the site.
- 23.4 Plant and equipment is to be maintained, checked and calibrated in accordance with the appropriate design requirements and to ensure that maximum sound power levels are not exceeded.
- 23.5 Plant and equipment (where possible) is to be strategically positioned on site to reduce the emission of noise from the site to the surrounding area, users of the site and on-site personnel.
- 23.6 Unnecessary noise is to be avoided when carrying out manual operations and operating plant.
- 23.7 Any equipment not used for extended periods is to be switched off.

24. Access and pedestrian movements

- 24.1 Safe pedestrian access and movement to the Bicentennial Park and surrounding buildings outside the construction zone shall remain unimpeded at all times.
- 24.2 Appropriate signage and directional information shall be provided.

PRIOR TO COMMENCEMENT OF OPERATION

Note: The following Conditions are to be complied with prior to commencement of operation of the facility.

25. Works as Executed

Prior to use of the facilities, "Works as Executed" drawings are to be submitted to Ku-Ring-Gai Council.

26. Travelling Irrigators

Travelling irrigators will be available on-site to use in the case of bushfire or extreme heat.

27. Plan of Management

The Bicentennial Park Plan of Management (**Appendix 10**) should be adhered to throughout ongoing operation.

Biosecurity Fence

28. A 1.8m fence to be installed by Councils Bushland Services Team for protection of Orchids.

Bushfire Evacuation Plan

29. A Bushfire Evacuation Plan to be prepared and followed on site to minimise risk to human life and ensure safe evacuation procedures in case of a bushfire.

Replacement Planting

30. Two (2) replacement trees shall be planted on site to offset the removal of one (1) tree. This tree should be a native species that is capable of growing to a similar height of the White Cedar (*Melia Azedarach*) tree that is being removed.

Weed Management

- **31.** Manage biosecurity in accordance with:
 - Biosecurity Act 2015 (see NSW Weedwise)
 - Best practice bush regeneration techniques, including disposal of sealed bagged weeds to a licenced waste disposal facility.
 - Best practice hygiene will be implemented to prevent the spread of invasive weeds. Vehicles and plants will be inspected for mud and soils before entering and leaving site. Stockpiles of materials containing invasive weed plant matter will be covered and bunded to prevent spread.

Operation and Maintenance Plan

32. The Operation and Maintenance Plan (O&M Plan) of the synthetic field and all associated elements is to be provided to Council prior to the handover of the project and then managed in accordance with the O&M Plan.

PART G CONCLUSION

The proposed synthetic playing field and stormwater mitigation measures at 30 Lofberg Road, West Pymble, will provide upgrades to the existing recreation area known as Norman Griffiths Oval. The proposed works are permissible without consent pursuant to Division 12 Parks & Other Public Reserves and Division 20 Stormwater Management Systems under Part 2.3 SEPP Transport & Infrastructure and are to be carried out on behalf of Ku-Ring-Gai Council.

The environmental assessment undertaken within this REF has considered the potential impacts arising from all phases of the proposal including construction and operation that, subject to the implementation of recommended mitigation measures, potential environmental impacts can be controlled with no significant adverse impacts on the health, diversity or productivity of the environment. As outlined in the FFIA (Appendix 15), the proposed activity does not require the preparation of an EIS, and the report demonstrates that there would be no significant impacts to threatened species, populations, ecological communities or their habitats and as such no BDAR or Species Impact Statement has been prepared. These mitigation measures include, but are not limited to:

- A Construction Management Plan (CMP) should be prepared to outline the proposed safety methods for workers, pedestrians and vehicles.
- Pollution from construction may be controlled through the preparation and implementation of a Construction Management Plan, Stormwater Management Plan and an Erosion and Sediment Control Plan. Additionally, the adoption of standard working hours may minimise any potential adverse impacts arising from the carrying out of the proposed works. The hours proposed to implemented are 7am to 5pm Monday to Friday, 7am to 1pm Saturday and no work Sundays and public holidays.
- During both construction and operation stages, a Waste Management Plan providing measures for waste reduction and minimisation as well as methods of disposal should be adhered to.

Overall, the proposed development for the purpose of a synthetic playing field and stormwater mitigation measures is not considered to exhibit significant or adverse environmental impacts. Rather the proposal would provide significant public benefit related to the provision of upgraded sporting facilities within the existing Norman Griffiths Park and improved stormwater management on site.

APPENDIX 14: RISK MITIGATION			
actors addressing Clause 171 of	the EP&A Regulation and 171A of the EP&A Regulation - Act	tivities in catchments (Clauses 6.6 – 6.9 of S	EPP (Blodiversity a
Factor	Potential impact	Mitigation measures	Impact
P&A Regulation 171(2)	•	•	•
(a) the environmental impact on the community	The proposed development relates to land that has been developed as a public park and is surrounded by established residential properties. The community raised some concerns over the biodiversity values on the site, and appropriate design changes were made to ensure the proposal has minimal impacts. Accordingly, the proposed development works are not considered to exhibit any significant or adverse environmental impact on a community. Rather, the proposed development presents the opportunity to enhance the existing sports facility and provide an upgraded sporting field which can be utilised in all weather conditions. This connotes positive implications for the community relating to the provision	The proposed works must be carried out in accordance with a detailed CMP (Part F 9). The development must be designed and constructed in accordance with the plans provided and adhere to the conditions outlined in Part F .	X Low Medium High
	of a new facility that is accessible to all-abilities. Additionally, any potential adverse amenity impact arising through the carrying out of the proposed works would be minimised through adherence to the mitigation measures outlined in Part F of this report. In accumulation of the above, the proposal would exhibit no adverse environmental impact on a community.		
Ъ)	The proposed synthetic field is to be in place of the existing field at Norman Griffiths Oval and is therefore	Nil.	X Low

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APPENDIX 14: RISK MITIGATION SUMMARY MATRIX				
Factors addressing Clause 171 of	the EP&A Regulation and 171A of the EP&A Regulation - Act	tivities in catchments (Clauses 6.6 – 6.9 of SE	PP (Biodiversity and	
Factor	Potential impact	Mitigation measures	Impact	
EP&A Regulation 171(2)	•	-	•	
the transformation of the locality	considered to be highly compatible with surrounding land uses in terms of the built form and operations.		🗌 High	
	Accordingly, the proposal would not cause any transformation of the locality but rather would enhance the functionality and accessibility of the site.			
(c) the eenvironmental impact on the ecosystem of the locality	The proposed synthetic fields are limited to the boundaries of the site, however it is noted that any run off from this surface may impact on water quality. The surface is proposed to be raised above the flood level to ensure there is limited runoff of any synthetic materials. Furthermore, stormwater will be directed through a bio- retention basin for quality treatment prior to discharge from the site. The stormwater detention system has been designed to offset the removal of the grass playing fields as a stormwater detention basin. This should not negatively impact the existing stormwater system in place and has been designed to allow for minimal disturbance of existing trees and ecological systems.	A temporary 1.8m high fence will be installed prior to construction to restrict construction activities from impacting on the CEEC area (Part F 8.2) A tree protection zone will be put in place to ensure trees are not impacted during construction (Part F 8.1). Two replacement trees will be provided to offset the loss of the single tree (Part F 30).	X Low Medium High	
	The proposal will not involve the excessive removal of trees with only one White Cedar Tree identified for removal. Furthermore, a tree protection zone will be put in place to ensure there are no substantial impacts on the			
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APPENDIX 14: RISK MITIGATION SUMMARY MATRIX				
Factors addressing Clause 171 of the EP&A Regulation and 171A of the EP&A Regulation - Activities in catchments (Clauses 6.6 – 6.9 of SEPP (Biodiversity and				
Conservation) 2021)				
Factor	Potential impact	Mitigation measures	Impact	
EP&A Regulation 171(2)				
	established valuable vegetation within the site, being the CEEC area.			
	Concerns have been raised over the impact to the Black- Hooded Sun Orchid from the proposal. The proposed development has been situated within the site to avoid heavily vegetated areas and a 1.8m high chain wire fence will be erected to delineate the area where the Black- Hooded Sun Orchid may be located, from trafficable areas within the site. To ensure there are no impacts to the CEEC during construction.			
(d) reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	The proposal would not reduce the aesthetic, recreational, scientific or other environmental quality or value of the locality. Rather the proposal would integrate with the residential character of the locality by improving an existing public recreation resource whilst retaining the overall built form of the facility. Given the site has been developed and is currently used for public open space and recreational purposes, the site is not considered to comprise any significant scientific or other environmental value. Rather, the proposal will enhance the recreational amenity and functionality of the existing park by mitigating existing flood and stormwater impacts. The proposed synthetic field is not considered to increase the heat island effect.	Nil.	X Low Medium High	
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APPENDIX 14: RISK MITIGATION SUMMARY MATRIX				
Factors addressing Clause 171 of the EP&A Regulation and 171A of the EP&A Regulation - Activities in catchments (Clauses 6.6 - 6.9 of SEPP (Biodiversity and				
Conservation) 2021)				
Factor	Potential impact	Mitigation measures	Impact	
EP&A Regulation 171(2)				
(e)	The proposed works are not expected to have a	Nil.	X Low	
the effects on any locality,	significant adverse impact on any aesthetic,		🗌 Medium	
place or building that has—	anthropological, archaeological, architectural, cultural,		🗌 High	
(i) aesthetic, anthropological,	historical, scientific or social values within the locality. The			
archaeological, architectural,	site and existing field are currently used for public			
cultural, historical, scientific	recreation as a playing field, and the proposal will			
or social significance, or	improve upon this use through the installation of better			
(ii) other special value for	stormwater mitigation measures and an all-weather			
present or future generations,	synthetic playing surface. The upgraded field will be a of			
	social benefit to the community now and into the future.			
(f)	The proposed upgrades to the existing recreation facility	Two (2) replacement trees on site will be	X Low	
the impact on the habitat of	requires the removal of a single White Cedar (Melia	required to offset the removal of this	🗌 Medium	
protected animals, within the	Azedarach) tree located along the north eastern	tree (Part F 30).	🗌 High	
meaning of the Biodiversity	boundary of the site. Whilst native to Australia, White			
Conservation Act 2016,	Cedar trees are not endemic to the area, however, they			
	are used as a secondary foraging habitat for a number of			
	native fauna species. Furthermore, the species is a prolific			
	seed producer and is considered weed in some high			
	value CEEC areas.			
(g)	The proposed activity for stormwater mitigation works	The proposed development has been	X Low	
the endangering of a species	and resurfacing of the playing field is limited to the	design to avoid impacts high value CEEC	🗌 Medium	
of animal, plant or other form	boundaries of the site. The activity has been designed to	within the site and will result in additional	🗌 High	
of life, whether living on land,	avoid impact to high value CEEC within the vicinity of the	protections to CEEC within the site		
in water or in the air,	site and is therefore unlikely to result in a significant	through the installation of fences to		
	adverse impact to the surrounding biodiversity. There are	separate CEEC during construction and		
	ample similar grasslands in close proximity so it is not			
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APPENDIX 14: RISK MITIGATION SUMMARY MATRIX				
Factors addressing Clause 171 of t	the EP&A Regulation and 171A of the EP&A Regulation - Act	tivities in catchments (Clauses 6.6 – 6.9 of SE	PP (Biodiversity and	
Conservation) 2021)				
Factor	Potential impact	Mitigation measures	Impact	
EP&A Regulation 171(2)				
	considered that there would be any displacement of	the Black Sun Orchid location from		
	species that use the field for habitat or foraging.	trafficable areas (Part F 8.2 and 28).		
(h)	The proposed activity for stormwater mitigation works	Nil	X Low	
long-term effects on the	and resurfacing of the playing field is limited to the		🗌 Medium	
environment	boundaries of the site. The proposed activity is located		🗌 High	
	within the general footprint of the existing Norman			
	Griffiths Oval and will result in the installation of better			
	management practises for stormwater and protection			
	protocols for high value CEEC within the vicinity of the			
	site.			
<i>(i)</i>	The proposed activity for stormwater mitigation works	Nil	🛛 Low	
degradation of the quality of	and resurfacing of the playing field is limited to the		🗌 Medium	
the environment	boundaries of the site. The proposed activity is located		🗌 High	
	within the general footprint of the existing Norman			
	Griffiths Oval and will result in the installation of better			
	management practises for stormwater and protection			
	protocols for high value CEEC within the vicinity of the			
	site. No chemicals are proposed to be used for the field.			
	As such, the proposal will not result in the degradation of			
	the quality of the environment.			
()	The proposal is not considered to pose any unreasonable	The proposed works must be carried	X Low	
risk to the safety of the	risk to the safety of the environment. The safety of site-	out in accordance with a detailed CMP	🗌 Medium	
environment,	users and the general public would be protected during	(Part F 9).	🗌 High	
	the construction phase by employing suitable			

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Factor	Potential impact	Mitigation measures	Impact
EP&A Regulation 171(2)	-		•
	construction management measures and securing the		
(J	site to prevent unauthorized access.	N/1	N I
(K)	The proposal would not reduce the range of beneficial	NII.	X LOW
reduction in the range of	uses of the environment but rather would enhance the		
beneficial uses of the	utility of the site through the provision a playing field that		🗌 High
environment,	Is able to be used in all-weather events.		
(1)	The proposed activity will not result in significant	Pollution from construction may be	X Low
pollution of the environment,	additional pollution to the environment. The proposed	controlled through the implementation	∐ Medium
	synthetic playing surface is produced from natural cork	of stormwater management and erosion	📙 High
	and fibre that will not leach harmful chemicals or micro	and sediment management measures	
	plastics into the environment. Furthermore, the only	(Part F 12). Additionally, the adoption of	
	chemical pesticides, fungicides or algaecides needed as	standard working hours may minimise	
	part of the ongoing maintenance of the field include	any potential adverse impacts arising	
	glyphosate which is a non-persistent herbicide.	from the carrying out of the proposed	
		works (Part F 22).	
	The pollution of the environment by the development		
	during construction phase can be avoided by the	A Waste Management Plan will be	
	employment of suitable site management and	prepared and implemented prior to the	
	mitigation measures.	commencement of works to detail	
		measures for waste reduction and	
		minimisation as well as methods of	
		disposal (Part F 10).	
(m)	The proposal is not anticipated to result in any problems	A Waste Management Plan will be	X Low
environmental problems	associated with the disposal of waste.	prepared and implemented prior to	🗌 Medium
associated with the disposal		the commencement of works to detail	🗌 High
of waste		measures for waste reduction and	-

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APPENDIX 14: RISK MITIGATION SUMMARY MATRIX			
Factors addressing Clause 171 of	the EP&A Regulation and 171A of the EP&A Regulation - Act	tivities in catchments (Clauses 6.6 - 6.9 of S	EPP (Biodiversity and
Conservation) 2021)			
Factor	Potential impact	Mitigation measures	Impact
EP&A Regulation 171(2)			1
		minimisation as well as methods of	
		disposal (Part F 10).	
(n)	The proposed development would not exert increased	Nil.	X Low
increased demands on	demand on resources that are, or are likely to become, in		🗌 Medium
natural or other resources	short supply.		🗌 High
that are, or are likely to			
become, in short supply,			
(0)	The proposal would not result in any cumulative	Nil.	X Low
the cumulative	environment impacts with existing or future activities.		🗌 Medium
environmental effect with	The proposal would enhance the functionality and		🗌 High
other existing or likely future	accessibility of the existing Norman Griffiths Oval. Given		
activities,	that the proposal will enhance the useability and quality		
	of the existing facilities, the proposal is considered to		
	exhibit significant public benefit.		
(p)	The site is not located in a coastal location and the	Nil.	X Low
the impact on coastal	proposed is not considered to result in any impact on		🗌 Medium
processes and coastal	coastal processes or hazards.		🗌 High
hazards, including those			
under projected climate			
change conditions,			
(q)	The proposed activity is consistent with the Ku-Ring-Gai	Nil.	X Low
applicable local strategic	Local Strategic Planning Statement and the Bicentennial		🗌 Medium
planning statements,	Park Plan of Management. Furthermore, the project is		🗌 High
regional strategic plans or			
			1
	.uh.		

SYDNEY I NEWCASTLE I GOLD COAST I BRISBANE

APPENDIX 14: RISK MITIGATION SUMMARY MATRIX			
Factors addressing Clause 171 of	the EP&A Regulation and 171A of the EP&A Regulation - Ac	tivities in catchments (Clauses 6.6 - 6.9 of SI	EPP (Biodiversity and
Conservation) 2021)			
Factor	Potential impact	Mitigation measures	Impact
EP&A Regulation 171(2)			
district strategic plans made	consistent with relevant regional and district strategic		
under the Act, Division 3.1,	plans.		
(r)	All other relevant factors have been considered in this	Nil.	X Low
other relevant environmental	report.		🗌 Medium
factors.			🗌 High
171A of the EP&A Regulation - Ac	tivities in catchments (Clauses 6.6 - 6.9 of SEPP (Biodiver	rsity and Conservation) 2021)	
6.6(1)(a)	The proposal will protect and improve water quality	Design of the stormwater retention	X Low
whether the development will	through the incorporation of a number of water quality	system and treatment system to manage	🗌 Medium
have a neutral or beneficial	treatment measures including;	peak flows, maintain low flows and	🗌 High
effect on the quality of water		reduce pollutants. Operation and	
entering a waterway,	- CDS GPT that treats upstream catchment flows prior to	maintenance requirements will be	
	detention in the on site detention system;	specified in the Operation and	
	- Treatment of site surface runoff through stormwater pit filters; and	Maintenance Plan (Part F 32).	
	- Treatment of site runoff and catchment flows through the biofilter garden.		
	Treatment of upper catchment frequent flows in addition to the site runoff will help to improve water quality entering Quarry Creek. to the drainage pathways should office as a result of the proposal.		
	CEMP Controls will ensure water quality and runoff is controlled during construction activities		

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Factors addressing Clause 171 of the EP&A Regulation and 171A of the EP&A Regulation - Activities in catchments (Clauses 6.6-6.9 of SEPP (Biodiversity and Conservation) 2021) Factor Potential impact Impact EP&A Regulation 171(2)	APPENDIX 14: RISK MITIGATION SUMMARY MATRIX				
Conservation) 2021) Factor Potential impact Mitigation measures Impact EPEA Regulation 171(2) During peak storm events, Norman Criffiths Oval acts as whether the development will have an adverse impact on water flow in a natural waterbody, During peak storm events, Norman Criffiths Oval acts as detention basin for upper catchment stormwater flows. Upgrades to the stormwater system are proposed to the design helps to reduce peak flow rates into Quary Creek and reduce the impacts of urban stream high flow discharges, whilst enabling lower flows to be treated and maintained. (refer Section 3.2.3). Design of the stormwater retention system to manage peak flows and maintained (refer Section 3.2.3). X Low G.6.(1)(c) Greater control of more frequent upper catchment flows system to manage peak flows and addition the field has been designed to manage runoff by inflirtate flows through the field media into the deteinion system prior to controlled discharge via the biofilter garden. X Low 6.6.(1)(d) Stormwater management will be undertaken in accordance with the Civil Engineering Plans (Appendix 4) maintain low flows. Design of the stormwater retention system to manage peak flows and maintain low flows. 6.6.(1)(d) Stormwater management will be undertaken in accordance with the Civil Engineering Plans (Appendix 4) maintain low flows. X Low whether the development will incorporate and uncontrolled fill from the previous sportsfield to uncontrolled fill from the previous sportsfield to uncontrolled fill from the previous sportsfield to uncontrolled fill from the	Factors addressing Clause 171 of the EP&A Regulation and 171A of the EP&A Regulation - Activities in catchments (Clauses 6.6 – 6.9 of SEPP (Biodiversity and				
Factor Potential impact Mitigation measures Impact EPBA Regulation 171(2) G.6 (1)(b) During peak storm events. Norman Criffiths Oval acts as a detention basin for upper catchment stormwater flows. a detention basin for upper catchment stormwater flows. a detention basin for upper catchment stormwater flows. Upgrades to the stormwater system are proposed to the water flow in a natural design helps to reduce peak flow rates into Quary Creek and reduce the impacts of urban stream high flow discharges. while tenabling lower flows to be treated and maintained. (refer Section 3.2.3). Design of the stormwater retention system to manage peak flows and maintained. (refer Section 3.2.3). X Low 6.6 (1)(c) Greater control of more frequent upper catchment flows will help to offset any increases in runoff from the site. In addition the field has been designed to manage peak flows and maintain low flows. X Low stormwater run-off from a site Stormwater management will be undertaken in biofilter garden. Design of the stormwater retention system are proper to controlled discharge via the biofilter garden. X Low system to edvelopment will will not prepared by Turf One Pby Ltd. The project includes ano nit incorporate on-site stormwater retention system to continue the management of upper catchment flows and retention through the Biofilter garden. Design of the stormwater retention system are proper at the site due to uncontrolled fill from the previous sportsfield construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system. Design of the stormwater retention system are properiment of upp	Conservation) 2021)				
EPEA Regulation 171(2) 6.6 (1)(b) During peak storm events, Norman Griffiths Oval acts as a detention basin for upper catchment stormwater flows. Design of the stormwater retention system to manage peak flows and maintain low flows. Image: Comparison of the stormwater retention maintain low flows. water flow in a natural waterbody, Upgrades to the stormwater system are proposed to the design helps to reduce peak flow rates into Quary Creek and reduce the impacts of urban stream high flow discharges, whilst enabling lower flows to be treated and maintained. (refer Section 3.2.3). Design of the stormwater retention system to manage peak flows and maintained. (refer Section 3.2.3). 6.6 (1)(c) Creater control of more frequent upper catchment flows will help to offset any increases in runoff from the site. Design of the stormwater retention system to manage peak flows and maintain low flows. stormwater run-off from a site Creater control of more frequent upper catchment flows by infiltrate flows through the field media into the detention system prior to controlled discharge via the biofilter garden. Design of the stormwater retention system to manage peak flows and maintain low flows. 6.6 (1)(d) Stormwater management will be undertaken in reproject includes an on-site detention system to continue the management of upper catchment flows and retention through the Biofilter garden. Design of the stormwater retention maintain low flows. Medium incorporate on-site stormwater retention site detention system to considered appropriate at the site due to uncontrolled fill from the previous sportsfield construction and there are not	Factor	Potential impact	Mitigation measures	Impact	
6.6 (1)(b) During peak storm events, Norman Griffiths Oval acts as a detention basin for upper catchment stormwater flows. Upgrades to the stormwater system are proposed to the stormwater flow in a natural water flow in a natural water flow in a natural water biology, whilst enabling lower flows to be treated and maintained. (refer Section 3.2.3). Design of the stormwater retention system to manage peak flows and maintained. (refer Section 3.2.3). X Low 6.6 (1)(c) Greater control of more frequent upper catchment flows will help to offset any increases in runoff from the strem high flow didition the field has been designed to manage run for stormwater run-off from a site Creater control of more frequent upper catchment flows system to manage peak flows and maintain low flows. X Low 6.6 (1)(d) Whether the development will by infiltrate flows through the field media into the detention system prior to controlled discharge via the biofilter garden. Design of the stormwater retention system to manage peak flows and maintain low flows. X Low 6.6 (1)(d) Stormwater management will be undertaken in retention in storms and retention through the field appropriate at the site due to uncontrolled fill from the previous sportsfield construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system. Design of the stormwater retention maintain low flows. 8.6 (1)(d) Whether the development will Stormwater are not sufficient demand in the immediate vicinity to incorporate are use system. Design of the stormwater retention system for the set with the Civil Engineering Plans (Appendix A) preper (atchment flows and retention	EP&A Regulation 171(2)				
whether the development will have an adverse impact on water flow in a natural water body, a detention basin for upper catchment stormwater system are proposed to the design helps to reduce peak flow rates into Quary Creek and reduce the impacts of urban stream high flow discharges, whilst enabling lower flows to be treated and maintained. (refer Section 3.2.3). Sestem to manage peak flows and maintained. (refer Section 3.2.3). 6.6 (I)(c) whether the development will increase the amount of stormwater run-off from a site Creater control of more frequent upper catchment flows will help to offset any increases in runoff from the site. In addition the field has been designed to manage runoff by infiltrate flows through the field media into the detention system prior to controlled discharge via the biofilter garden. Design of the stormwater retention maintain low flows. X Low Medium 6.6 (I)(c) whether the development will incorporate on-site stormwater retention, infiltration or reuse, upper catchment flows and retention through the Biofilter garden. Stormwater management will be undertaken in accordance with the Civil Engineering Plans (Appendix 4) prepared by Turf One Pty Ltd. The project includes an on- site detention system to continue the management of upper catchment flows and retention through the Biofilter garden. Storm X Low	6.6 (1)(b)	During peak storm events, Norman Griffiths Oval acts as	Design of the stormwater retention	X Low	
have an adverse impact on water index and interval Upgrades to the stormwater system are proposed to the design helps to reduce peak flow rates into Quarry Creak and reduce the impacts of urban stream high flow discharges, whilst enabling lower flows to be treated and maintained. (refer Section 3.2.3). maintained. (refer Section 3.2.3). 6.5 (1)(c) Greater control of more frequent upper catchment flows addition the field has been designed to manage runoff form the site. In addition the field has been designed to manage runoff by infiltrate flows through the field media into the detention system prior to controlled discharge via the biofilter garden. Design of the stormwater retention system Control of the stormwater retention is the detention system prior to controlled discharge via the biofilter garden. X Low 6.5 (1)(c) Stormwater management will be undertaken in accordance with the Civil Engineering Plans (Appendix 4) incorporate on-site stormwater retention system to continue the management of upper catchment flows and retention through the Biofilter garden. Design of the stormwater retention system to manage peak flows and maintain low flows. Medium Implication or reuse. Stormwater management will be undertaken in stor considered appropriate at the site due to uncontrolled fill from the previous sportsfield construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system. Design of the stormwater retention system is not considered appropriate at the site due to uncontrolled fill from the previous sportsfield construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system.	whether the development will	a detention basin for upper catchment stormwater flows.	system to manage peak flows and	🗌 Medium	
water flow in a natural water flow in a natural water flow intermination of the store in the impacts of urban stream high flow discharges, whilst enabling lower flows to be treated and maintained. (refer Section 3.2.3). design helps to reduce peak flow rates into Quarry Creek and reduce the impacts of urban stream high flow discharges, whilst enabling lower flows to be treated and maintained. (refer Section 3.2.3). 6.6 (1)(c) Creater control of more frequent upper catchment flows will help to offset any increases in runoff from the site. In addition the field has been designed to manage runoff by infiltrate flows through the field media into the detention system prior to controlled discharge via the biofilter garden. Design of the stormwater retention maintain low flows. X Low 6.6 (1)(d) Stormwater management will be undertaken in accordance with the Civil Engineering Plans (Appendix 4) prepared by Turf One Pty Ltd. The project includes an onsite ide detention system to continue the management of upper catchment flows and retention through the Biofilter garden. Design of the stormwater retention maintain low flows. X Low	have an adverse impact on	Upgrades to the stormwater system are proposed to the	maintain low flows.	🗌 High	
waterbody. and reduce the impacts of urban stream high flow discharges, whilst enabling lower flows to be treated and maintained. (refer Section 3.2.3). Section 3.2.3). 6.6 (I)(c) Creater control of more frequent upper catchment flows will help to offset any increases in runoff from the site. In addition the field has been designed to manage runoff by infiltrate flows through the field media into the detention system prior to controlled discharge via the biofilter garden. Design of the stormwater retention system prior to controlled discharge via the biofilter garden. X Low 6.6 (I)(d) Stormwater management will be undertaken in accordance with the Civil Engineering Plans (Appendix 4) incorporate on-site stormwater retention site detention system to continue the management of upper catchment flows and retention through the Biofilter garden. Design of the stormwater retention system to manage peak flows and maintain low flows. Infiltration or reuse, retention, infiltration or reuse, retention, infiltration is not considered appropriate at the site due to uncontrolled fill from the previous sportsfield construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system. Medium Infiltration is not considered appropriate at re-use system. Image: Imag	water flow in a natural	design helps to reduce peak flow rates into Quarry Creek			
discharges, whilst enabling lower flows to be treated and maintained. (refer Section 3.2.3). discharges, whilst enabling lower flows to be treated and maintained. (refer Section 3.2.3). 6.6 (1)(c) Creater control of more frequent upper catchment flows will help to offset any increases in runoff from the site. In addition the field has been designed to manage runoff by infiltrate flows through the field media into the detention system prior to controlled discharge via the biofilter garden. Design of the stormwater retention system of manage peak flows and maintain low flows. Medium 6.6 (1)(d) Stormwater management will be undertaken in accordance with the Civil Engineering Plans (Appendix 4) prepared by Turf One Pty Ltd. The project includes an on-site detention system to continue the management of upper catchment flows and retention through the Biofilter garden. Design of the stormwater retention system of manage peak flows and maintain low flows. X Low	waterbody,	and reduce the impacts of urban stream high flow			
6.6 (1)(c) Creater control of more frequent upper catchment flows will help to offset any increases in runoff from the site. In addition the field has been designed to manage runoff by infiltrate flows through the field media into the detention system prior to controlled discharge via the biofilter garden. Design of the stormwater retention system to manage peak flows and maintain low flows. Medium 6.6 (1)(d) Stormwater management will be undertaken in corporate on-site stormwater retention system to controlled discharge via the biofiltration or reuse, retention is not considered appropriate at the site due to uncontrolled fill from the previous sportsfield construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system. Design of the stormwater retention system to manage peak flows and maintain low flows. X Low		discharges, whilst enabling lower flows to be treated and			
6.6 (1)(c) Creater control of more frequent upper catchment flows Design of the stormwater retention X Low whether the development will will help to offset any increases in runoff from the site. In addition the field has been designed to manage runoff Besign of the stormwater retention Medium stormwater run-off from a site will help to offset any increases in runoff from the site. In addition the field has been designed to manage runoff Besign of the stormwater retention Medium 6.6 (1)(d) Stormwater management will be undertaken in accordance with the Civil Engineering Plans (Appendix 4) Design of the stormwater retention Stormwater retention system to continue the management of upper catchment flows and retention through the Besign of the stormwater flows and Medium incorporate on-site stormwater retention system to considered appropriate at the site due to uncontrolled fill from the previous sportsfield system to manage peak flows and Medium Infiltration is not considered appropriate at re-use system. Infiltration is not considered appropriate a re-use system. Image: Stormwater are use system. Image: Stormwater are use system.		maintained. (refer Section 3.2.3).			
6.6 (1)(c) Greater control of more frequent upper catchment flows Design of the stormwater retention X Low whether the development will addition the field has been designed to manage runoff by infiltrate flows through the field media into the detention system prior to controlled discharge via the biofilter garden. Design of the stormwater retention X Low 6.6 (1)(d) Stormwater management will Stormwater management will be undertaken in accordance with the Civil Engineering Plans (Appendix 4) prepared by Turf One Pty Ltd. The project includes an on-site detention system to continue the management of upper catchment flows and retention through the Biofilter garden. X Low Incorporate on-site stormwater maintain low flows. X Low incorporate on-site stormwater prepared by Turf One Pty Ltd. The project includes an on-site detention system to continue the management of upper catchment flows and retention through the Biofilter garden. Medium Infiltration is not considered appropriate at the site due to uncontrolled fill from the previous sportsfield construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system. Image: Stormwater					
whether the development will increase the amount of stormwater run-off from a site will help to offset any increases in runoff from the site. In addition the field has been designed to manage runoff by infiltrate flows through the field media into the detention system prior to controlled discharge via the biofilter garden. system to manage peak flows and maintain low flows. Image: High maintain low flows. 6.6 (1)(d) Stormwater management will incorporate on-site stormwater retention, infiltration or reuse, is detention system to continue the management of upper catchment flows and retention through the Biofilter garden. Design of the stormwater retention system to manage peak flows and prepared by Turf One Pty Ltd. The project includes an on- site detention system to continue the management of upper catchment flows and retention through the Biofilter garden. Design of the stormwater retention system to manage peak flows and maintain low flows. X Low	6.6 (1)(c)	Greater control of more frequent upper catchment flows	Design of the stormwater retention	X Low	
increase the amount of stormwater run-off from a site addition the field has been designed to manage runoff by infiltrate flows through the field media into the detention system prior to controlled discharge via the biofilter garden. maintain low flows. High 6.6 (1)(d) Stormwater management will be undertaken in accordance with the Civil Engineering Plans (Appendix 4) prepared by Turf One Pty Ltd. The project includes an on-site detention system to continue the management of upper catchment flows and retention through the Biofilter garden. Design of the stormwater flows and maintain low flows. X Low Image: the development will incorporate on-site stormwater retention, infiltration or reuse, interview of the storm of the storm and there are not sufficient demand in the immediate vicinity to incorporate a re-use system. Design of the stormwater retention manage peak flows and maintain low flows. X Low	whether the development will	will help to offset any increases in runoff from the site. In	system to manage peak flows and	🗌 Medium	
stormwater run-off from a site by infiltrate flows through the field media into the detention system prior to controlled discharge via the biofilter garden. Design of the stormwater retention 6.6 (1)(d) Stormwater management will be undertaken in accordance with the Civil Engineering Plans (Appendix 4) prepared by Turf One Pty Ltd. The project includes an on-site detention system to continue the management of upper catchment flows and retention through the Biofilter garden. Design of the stormwater retention X Low Infiltration or reuse, Infiltration is not considered appropriate at the site due to uncontrolled fill from the previous sportsfield construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system. Design of the stormwater retention X Low	increase the amount of	addition the field has been designed to manage runoff	maintain low flows.	🗌 High	
detention system prior to controlled discharge via the biofilter garden. Design of the stormwater retention 6.6 (1)(d) Stormwater management will be undertaken in accordance with the Civil Engineering Plans (Appendix 4) prepared by Turf One Pty Ltd. The project includes an on-site stormwater retention or reuse, upper catchment flows and retention through the Biofilter garden. Design of the stormwater retention manage peak flows and maintain low flows. Infiltration or reuse, upper catchment flows and retention through the Biofilter garden. Infiltration is not considered appropriate at the site due to uncontrolled fill from the previous sportsfield construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system. Medium	stormwater run-off from a site	by infiltrate flows through the field media into the			
6.6 (1)(d) Stormwater management will be undertaken in accordance with the Civil Engineering Plans (Appendix 4) prepared by Turf One Pty Ltd. The project includes an onsite detention system to continue the management of upper catchment flows and retention through the Biofilter garden. Design of the stormwater retention manage peak flows and maintain low flows. X Low Infiltration or reuse, Infiltration is not considered appropriate at the site due to uncontrolled fill from the previous sportsfield construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system. Design of the stormwater retention system to manage peak flows and maintain low flows. X Low		detention system prior to controlled discharge via the			
6.6 (1)(d) Stormwater management will be undertaken in accordance with the Civil Engineering Plans (Appendix 4) prepared by Turf One Pty Ltd. The project includes an onsite detention system to continue the management of upper catchment flows and retention through the Biofilter garden. Design of the stormwater retention X Low Infiltration or reuse, Infiltration is not considered appropriate at the site due to uncontrolled fill from the previous sportsfield construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system. Design of the stormwater retention system to manage peak flows and maintain low flows. X Low		biofilter garden.			
6.6 (1)(d) Stormwater management will be undertaken in accordance with the Civil Engineering Plans (Appendix 4) prepared by Turf One Pty Ltd. The project includes an on-site stormwater retention system to continue the management of upper catchment flows and retention through the Biofilter garden. Design of the stormwater retention X Low Infiltration or reuse, incorporate on-site stormwater incorporate on-site stormwater Prepared by Turf One Pty Ltd. The project includes an on-site detention system to continue the management of upper catchment flows and retention through the Biofilter garden. Infiltration is not considered appropriate at the site due to uncontrolled fill from the previous sportsfield construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system. Image: Non-structure indicate in the immediate vicinity to incorporate a re-use system.					
whether the development will incorporate on-site stormwater retention, infiltration or reuse, accordance with the Civil Engineering Plans (Appendix 4) prepared by Turf One Pty Ltd. The project includes an on- site detention system to continue the management of upper catchment flows and retention through the Biofilter garden. Infiltration is not considered appropriate at the site due to uncontrolled fill from the previous sportsfield construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system. system to manage peak flows and maintain low flows. Image: High	6.6 (1)(d)	Stormwater management will be undertaken in	Design of the stormwater retention	X Low	
incorporate on-site stormwater retention, infiltration or reuse, prepared by Turf One Pty Ltd. The project includes an on- site detention system to continue the management of upper catchment flows and retention through the Biofilter garden. maintain low flows. Infiltration is not considered appropriate at the site due to uncontrolled fill from the previous sportsfield construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system. maintain low flows.	whether the development will	accordance with the Civil Engineering Plans (Appendix 4)	system to manage peak flows and	∐ Medium	
retention, infiltration or reuse, site detention system to continue the management of upper catchment flows and retention through the Biofilter garden. Infiltration is not considered appropriate at the site due to uncontrolled fill from the previous sportsfield construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system.	incorporate on-site stormwater	prepared by Turf One Pty Ltd. The project includes an on-	maintain low flows.	∐ High	
upper catchment flows and retention through the Biofilter garden. Infiltration is not considered appropriate at the site due to uncontrolled fill from the previous sportsfield construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system.	retention, infiltration or reuse,	site detention system to continue the management of			
Biofilter garden. Infiltration is not considered appropriate at the site due to uncontrolled fill from the previous sportsfield construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system.		upper catchment flows and retention through the			
Infiltration is not considered appropriate at the site due to uncontrolled fill from the previous sportsfield construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system.		Biofilter garden.			
to uncontrolled fill from the previous sportsfield construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system.		Infiltration is not considered appropriate at the site due			
construction and there are not sufficient demand in the immediate vicinity to incorporate a re-use system.		to uncontrolled fill from the previous sportsfield			
immediate vicinity to incorporate a re-use system.		construction and there are not sufficient demand in the			
		immediate vicinity to incorporate a re-use system.			
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APPENDIX 14: RISK MITIGATION SUMMARY MATRIX			
Factors addressing Clause 171 of t	the EP&A Regulation and 171A of the EP&A Regulation - Ac	tivities in catchments (Clauses 6.6 – 6.9 of SI	EPP (Biodiversity and
Conservation) 2021)			
Factor	Potential impact	Mitigation measures	Impact
EP&A Regulation 171(2)		1	
6.6 (1)(e)	The project will not have any significant impacts on the	N/A	X Low
the impact of the development	level and quality of the water table. There is no ongoing		
on the level and quality of the	pump-out, de-watering or groundwater re-charge		L] High
water table,	Included in the proposal.		
6.6(1)(f)	The proposed activity for stormwater mitigation works	Design of the stormwater retention	X Low
the cumulative environmental	and resurfacing of the playing field is limited to the	system and treatment system to	🗌 Medium
impact of the development on	boundaries of the site. The proposed activity is located	manage peak flows, maintain low flows	🗌 High
the regulated catchment,	within the general footprint of the existing Norman	and reduce pollutants.	
	Griffiths Oval and will result in the installation of better		
	management practises for stormwater and providing		
	treatment and detention for upper catchment flows and		
	addressing existing urban stormwater impacts. The		
	project also improves protection protocols for high value		
	CEEC within the vicinity of the site.		
6.6(1)(g)	The proposal will protect water quality through the	N/A	X Low
whether the development	installation of the stormwater system, and will have no		🗌 Medium
makes adequate provision to	significant impact on quality or quantity of groundwater		🗌 High
protect the quality and quantity	in this heavily urbanised catchment.		
of ground water			
6.6(2)(a)	The proposed will result in the installation of better	Operation and maintenance	X Low
the effect on the quality of water	management practises for stormwater, treating	requirements will be specified in the	🗌 Medium
entering a natural waterbody	upstream flows as well as site run-off, providing improved	Operation and Maintenance Plan (Part F	🗌 High
		32).	
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APPENDIX 14: RISK MITIGATION SUMMARY MATRIX				
Factors addressing Clause 171 of the EP&A Regulation and 171A of the EP&A Regulation - Activities in catchments (Clauses 6.6 - 6.9 of SEPP (Biodiversity and				
Conservation) 2021)				
Factor	Potential impact	Mitigation measures	Impact	
EP&A Regulation 171(2)	1	1		
will be as close as possible to	water quality treatment and addressing existing urban			
neutral or beneficial, and	stormwater impacts.			
6.6(2)(b)	During neak storm events Norman Criffiths Oval acts as	Operation and maintenance	XLow	
the impact on water flow in a	a detention basin for upper catchment stormwater flows	requirements will be specified in the		
natural waterbody will be	Ungrades to the stormwater system are proposed to	Operation and Maintenance Plan (Part F		
minimised	retain flood detention capacity and enable better	32)		
	management of all flows on an ongoing basis. The design			
	helps to reduce peak flow rates into Ouarry Creek and			
	reduce the impacts of urban stream high flow discharges.			
	whilst enabling lower flows to be treated and			
	maintained. (refer Section 3.2.3).			
6.7(1)(a)	The site contains a previously piped watercourse,	N/A	X Low	
whether the development will	identified as Category 3a Riparian Land, and the proposal		🗌 Medium	
have a direct, indirect or	does not include any further piping, channelisation or		🗌 High	
cumulative adverse impact on	impacts on the waterway or riparian land. The			
terrestrial, aquatic or migratory	development is restricted to the existing sports field area			
animals or vegetation,	and includes additional protection measures for other			
	terrestrial habitats surrounding the site. Further			
	consideration of the impacts to all other potentially			
	threatened species is provided in Section 5.7.			
6.7(1)(b)	The site contains a previously piped watercourse,	N/A	X Low	
whether the development	identified as Category 3a Riparian Land, and the proposal		∐ Medium	
involves the clearing of riparian	does not include any further piping, channelisation or		∐ High	
vegetation and, if so, whether	Impacts on the waterway or riparian land. The proposal			
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APPENDIX 14: RISK MITIGATION SUMMARY MATRIX			
Factors addressing Clause 171 of t	he EP&A Regulation and 171A of the EP&A Regulation - Ac	tivities in catchments (Clauses 6.6 – 6.9 of SE	PP (Biodiversity and
Conservation) 2021)			
Factor	Potential impact	Mitigation measures	Impact
EP&A Regulation 171(2)			
the development will require—(i)	will protect water quality through the installation of the		
a controlled activity approval	stormwater system, and will have no impact on aquatic		
under the Water Management	and riparian species or habitats		
Act 2000, or (ii) a permit under			
the Fisheries Management Act	No Controlled activity approval is required pursuant to		
1994,	the Water Management Act 2000 and no permit is		
	required under the Fisheries Management Act 1994.		
6.7(1)(c)	Erosion and sediment controls would be implemented	Pollution from construction may be	X Low
whether the development will	throughout the construction period to prevent soil loss	controlled through the implementation	∐ Medium
minimise or avoid - (i) the	from within the proposal boundary. The on-site detention	of Construction Environmental	📙 High
erosion of land abutting a	system will help manage upper catchment flows and	management plan (CEMP), which include	
natural waterbody, or (ii) the	help to reduce peak flow rates.	stormwater management, erosion and	
sedimentation of a natural		sediment management measures (Part F	
waterbody,		12).	
6 7(1)(-1)		Dellution from construction recy be	Vilouv
6.7(1)(a)	he impacted by the properal	controlled through the implementation	
bayo an advarso impact on	be impacted by the proposal.	of Construction Environmental	
wetlands that are not in the	Erosion and sediment controls would be implemented	management plan (CEMD) which include	
coastal wetlands and littoral	throughout the construction period to prevent soil loss	stormwater management erosion and	
rainforests area	from within the proposal boundary	sediment management measures (Part E	
		12)	
		/·	
6.7(1)(e)	The site is identified as containing a Category 3a riparian	Design of the stormwater retention	X Low
	zone, which runs through the site. The proposal will	system and treatment system to manage	🗌 Medium
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APPENDIX 14: RISK MITIGATION SUMMARY MATRIX			
Factors addressing Clause 171 of the EP&A Regulation and 171A of the EP&A Regulation - Activities in catchments (Clauses 6.6 – 6.9 of SEPP (Biodiversity and			
Conservation) 2021)			
Factor	Potential impact	Mitigation measures	Impact
EP&A Regulation 171(2)			
whether the development	protect water quality through the installation of	peak flows, maintain low flows and	📙 High
includes adequate safeguards	stormwater treatment and flow management system,	reduce pollutants.	
and rehabilitation measures to	and will have no negative impacts on aquatic and		
protect aquatic ecology,	riparian species or habitats.		
6.7(1)(f)	The proposed development incorporates a water quality	Design of the stormwater retention	X Low
if the development site adjoins	treatment train and detention system designed to help	system and treatment system to manage	🗌 Medium
a natural waterbody—whether	improve the water quality and provide benefits to Quarry	peak flows, maintain low flows and	🗌 High
additional measures are	Creek.	reduce pollutants. Operation and	
required to ensure a neutral or		maintenance requirements will be	
beneficial effect on the water	This will improve upon current stormwater management	specified in the Operation and	
quality of the waterbody.	processes by establishing onsite detention that is	Maintenance Plan (Part F 32).	
	capable of storing up to 2.4 megalitres of run-off to		
	accommodate onsite and upper-catchment flows.		
	Furthermore, the proposal will minimise pollutants		
	through the integration of a CDS unit for large materials		
	and a bio-retention basin to treat suspended pollutants.		
6.7(2)(a)	The site contains a previously piped watercourse,	Vegetation and tree protection controls in	X Low
the direct, indirect or	identified as Category 3a Riparian Land, and the	the Construction Environmental	🗌 Medium
cumulative adverse impact on	proposal does not include any further piping,	management plan (CEMP) (Part F 12).	🗌 High
terrestrial, aquatic or migratory	channelisation or impacts on the waterway or clearing		
animals or vegetation will be	of riparian land. The development is restricted to the		
kept to the minimum necessary	existing sports field area and includes additional		
for the carrying out of the	protection measures for other terrestrial habitats		
development,	surrounding the site. Only one tree will be removed to		
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Conservation) 2021)			
Factor	Potential impact	Mitigation measures	Impact
EP&A Regulation 171(2)	1		
	facilitate the works and additional trimming will only be		
	undertaken if necessary. Further consideration of the		
	impacts to all other potentially threatened species is		
	provided in Section 5.7 .		
6.7(2)(b)	The proposed will result in the installation of better	Design of the stormwater retention	X Low
the development will not have	management practises for stormwater, treating	system and treatment system to manage	Medium
a direct, indirect or cumulative	upstream flows as well as site run-off, providing improved	peak flows, maintain low flows and	📙 High
adverse impact on aquatic	water quality treatment, maintaining and improving flow	reduce pollutants. Operation and	
reserves	management, and addressing existing urban stormwater	maintenance requirements will be	
	impacts. No adverse impacts on aquatic reserves will	specified in the Operation and	
	result from the proposal.	Maintenance Plan (Part F 32).	
6 5(0)(.)			<u> </u>
6.7(2)(c)	The site contains a previously piped watercourse,	N/A	X LOW
if a controlled activity approval	Identified as Category 3a Riparian Land, and the proposal		
under the Water Management	does not include any further piping, channelisation or		
Act 2000 or a permit under	impacts on the waterway or riparian land. The proposal		
the Fisheries Management Act	will protect water quality through the installation of the		
the clearing of ringrian	and rinarian species or babitate		
vegetation, the approval or	and riparian species of habitats		
permit has been obtained	No Controlled activity approval is required pursuant to		
permit has been obtained,	the Water Management Act 2000 and no permit is		
	required under the or Eisbories Management Act 1004		
6 7(2)(d)	Frosion and sediment controls would be implemented	Pollution from construction may be	XLOW
\mathbf{v} , \mathbf{z}	throughout the construction period to provent soil loss	controlled through the implementation	
natural waterbody or the	from within the proposal boundary. The on-site detention	of Construction Environmental	

APPENDIX 14: RISK MITICATION SUMMARY MATRIX			
Factors addressing Clause 171 of t	the EP&A Regulation and 171A of the EP&A Regulation - Ac	tivities in catchments (Clauses 6.6 – 6.9 of SI	EPP (Biodiversity and
Conservation) 2021)			
Factor	Potential impact	Mitigation measures	Impact
EP&A Regulation 171(2)			
sedimentation of a natural	system and stormwater treatment system will help	management plan (CEMP), which include	
waterbody will be minimised	manage upper catchment flows and help to reduce peak	stormwater management, erosion and	
	flow rates.	sediment management measures (Part F	
		12).	
		Design of the stormwater retention	
		system and treatment system to manage	
		peak flows, maintain low flows and	
		reduce pollutants. Operation and	
		maintenance requirements will be	
		specified in the Operation and	
		Maintenance Plan (Part F 32).	
6.7(2)(e)	The proposed will result in the installation of better	Design of the stormwater retention	X Low
the adverse impact on	management practises for stormwater, treating	system and treatment system to manage	Medium
wetlands that are not in the	upstream flows as well as site run-off, providing improved	peak flows, maintain low flows and	🗌 High
coastal wetlands and littoral	water quality treatment, maintaining and improving flow	reduce pollutants. Operation and	
rainforests area will be	management, and addressing existing urban stormwater	maintenance requirements will be	
minimised.	impacts.	specified in the Operation and	
		Maintenance Plan (Part F 32).	
6.8 (1)	The upper Quarry Creek catchment is characterised by	Design of the stormwater retention	X Low
the likely impact of the	extensive residential development that has led to the	system and treatment system to manage	
development on periodic	current altered flooding regime associated with	peak flows, maintain low flows and	L] High
flooding that benefits wetlands	urbanisation. The on-site detention system and field	reduce pollutants. Operation and	
ana other riverine ecosystems.	inflitration has been designed, in response to flood	maintenance requirements will be	
	investigations, to help provide improved control of	specified in the Operation and	
	flooding and reduce urban flow impacts.	Maintenance Plan (Part F 32).	

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Factors addressing Clause 171 of t	the EP&A Regulation and 171A of the EP&A Regulation - Ac	tivities in catchments (Clauses 6.6 – 6.9 of SI	EPP (Biodiversity and
Conservation) 2021)			
Factor	Potential impact	Mitigation measures	Impact
EP&A Regulation 171(2)			
6.8(2)(a)	The site is not considered a hazardous industry or	The design of the field to be flood free to	X Low
if there is a flood, result in a	hazardous storage establishment that requires	be above 1% AEP as well as other	
release of pollutants that may	containment of materials in the event of a flood.	measures such as stormwater pollution	L] High
nave an adverse impact on the	This project has been designed to keep the field fleed	devices and high flow bypass. Operation	
water quality of a hatural	free up to and including a 1% AED event to prevent	and maintenance requirements will be	
waterbody, or	export of surface materials during frequent flood events	Maintenance Dlan (Dart F 32)	
	export of surface materials during frequent hood events.		
	Design of the field to be flood free at the 1% AEP, a rarer		
	event than the current field and most sporting fields on		
	flood liable land.		
	Cork infill material was chosen over rubber infill in		
	response to the evidence that rubber crumb can		
	introduce heavy metals and other hydrocarbon		
	contaminants into the environment. Noting the design		
	features to prevent surface runoff from the field and		
	choice of materials, potential loss of field surface		
	materials during very rare flood events (above the I%AEP		
	and up to the PMF) is not considered to have an adverse		
	impact on the water quality of Quarry Creek under those		
	Storage of flood flows in the detention system will also		
	help to filter out pollutants from upstream prior to		
	discharge back into Quarry Creek.		

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Factors addressing Clause 171 of the EP&A Regulation and 171A of the EP&A Regulation - Activities in catchments (Clauses 6.6 – 6.9 of SEPP (Biodiversity and				
Conservation) 2021)				
Factor	Potential impact	Mitigation measures	Impact	
EP&A Regulation 171(2)				
have an adverse impact on the natural recession of floodwaters into wetlands and other riverine ecosystems.	residential development is characterised by extensive residential development that has led to the current flooding regime associated with urbanisation. The on-site detention system and field infiltration has been designed to help control flooding during more frequent events and reduce urban flash flooding impacts. Overland flow paths have been incorporated into the deign to allow for excess surface flows, including those during and above a 1% event to be preferentially directed around the field.	system to manage peak flows and maintain low flows and reduce pollutants. Operation and maintenance requirements will be specified in the Operation and Maintenance Plan (Part F 32).	A Low Medium High	
	Water from the detention system will be released back into Quarry Creek and will not cause any adverse impacts to the system as a whole.			
<i>6.9(1)(a)</i> the likely impact of the development on recreational land uses in the regulated catchment, and	The development will improve the usability of Norman Griffiths Playing field and provide an all-weather recreation surface to the community.	N/A	X Low Medium High	
6.9(1)(b) whether the development will maintain or improve public access to and around foreshores without adverse impact on natural waterbodies,	The development is not being undertaken in a foreshore area and does not change or impact the existing access to Quarry Creek and it's associated riparian vegetation.	N/A	X Low Medium High	

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Factors addressing Clause 171 of the EP&A Regulation and 171A of the EP&A Regulation - Activities in catchments (Clauses 6.6 - 6.9 of SEPP (Biodiversity and			
Conservation) 2021)			
Factor	Potential impact	Mitigation measures	Impact
EP&A Regulation 171(2)			
watercourses, wetlands or			
riparian vegetation.			
6.9(2)(a)	The development does not change or impact the existing	N/A	X Low
the development will maintain	access to Quarry Creek and it's associated riparian		∐ Medium
or improve public access to and	vegetation.		📙 High
from natural waterbodies for			
recreational purposes,			
including fishing, swimming			
and boating, without daverse			
Impact on natural waterboales,			
riparian vegetation			
npanan vegetation,			
6.9(2)(b)	The development does not change or impact the existing	Ν/Α	XIow
new or existing points of public	access to Ouarry Creek and it's associated riparian		☐ Medium
access between natural	vegetation.		 ∏ High
waterbodies and the site of the			
development will be stable and			
safe,			
6.9 (2)(c)	N/A	N/A	N/A
if land forming part of the			
foreshore of a natural			
waterbody will be made			
available for public access as a			

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APPENDIX 14: RISK MITIGATION SUMMARY MATRIX Factors addressing Clause 171 of the EP&A Regulation and 171A of the EP&A Regulation - Activities in catchments (Clauses 6.6 – 6.9 of SEPP (Biodiversity and			
Factor	Potential impact	Mitigation measures	Impact
EP&A Regulation 171(2)			
result of the development but is			
not in public ownership–public			
access to and use of the land			
will be safeguarded.			

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