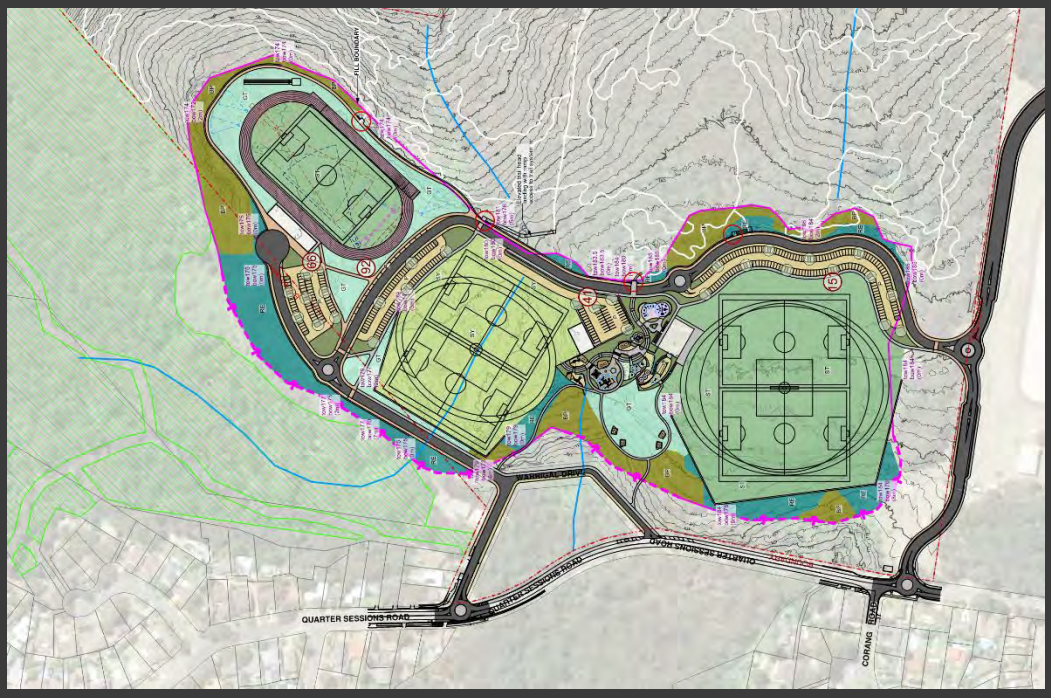
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

WESTLEIGH PARK

62 QUARTER SESSIONS ROAD, WESTLEIGH NSW 2120



Revision 2 – 11/07/2024

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Contents

1.0 Introduction

This preliminary Construction Environmental Management Plan (CEMP) is the prime document for the management of proposed works to be undertaken for the redevelopment of Westleigh Park (the 'Site') located at 62 Quarter Sessions Road, Westleigh NSW 2120. It is intended to be amended and amplified in accordance with the conditions of Development Approval and the further development of the 'For Construction' documentation prior to the issue of a Construction Certificate (CC).

This CEMP has been prepared to address the impact of the construction works associated with the Proposed Development and the surrounding environment and community. The CEMP outlines the procedures that are intended to be implemented to manage construction activities ensuring that unacceptable high levels of environmental or community disturbance do not occur throughout the duration of the works.

Additionally, this CEMP aims to ensure that appropriate measures have been considered for site access, egress, storage and the operation of the site during all phases of the construction process in a manner that respects adjoining owner's property rights, maintains public safety, minimizes disruption to pedestrians and vehicular traffic within this locality and protects services.

1.1 Objectives

The primary objectives of the CEMP are to:

- Provide a methodology within which the excavation and construction activities may be completed in a manner which will not cause environmental or community disturbances above suitable levels;
- Provide a framework for procedures to be adopted when undertaking the construction activities;
- Provide a framework for procedures to be adopted when monitoring the construction performance against agreed criteria, including but not limited to Hornsby Shire Council Guidelines for construction, traffic and pedestrian management and the applicable DA conditions for the development; and,
- Implement statutory requirements in respect to environmental issues associated with the construction of the work.

1.2 References

The CEMP has been created based on the advice and guidelines contained within the following documentation:

- Hornsby Shire Council regulations and guidelines;
- Councils pedestrian and transport policies;
- Likely DA conditions of consent (document to be updated and resubmitted for the construction certificate once these conditions are known); and,
- Environment Protection Legislation.

2.0 Project Overview

Hornsby Shire Council proposes the staged redevelopment of Westleigh Park to provide a parkland comprising formal sports fields, passive recreation (picnics, walking, playground), tracks and trails (bushwalking and mountain biking) and ancillary facilities (roads, carparks, buildings, services, lighting, share ways and stormwater management) at the site. Specifically, the proposal includes the following works at the site:

- Remediation of contaminated land;
- Vegetation removal (including exotic and native species);
- Bushland protection and restoration works;
- Demolition of the former RFS training facility within Lot 68;
- Relocation of an Aboriginal Scarred Tree including landscaped interpretation;
- Bulk earthworks, including construction of retaining walls;
- Construction of three sports field platforms including associated grassed viewing areas, lighting, field drainage and irrigation, fencing, pathways and signage;
- Construction of an amenities building within each of the sports field platforms;
- Provision of a bicycle pump track, children's playground, fitness station, picnic facilities including seating, barbeque facilities and shelters;
- Construction of associated internal road system and four main car parking areas including associated footpaths, fencing, landscaping, tree planting and street lighting;
- Provision of walking tracks and mountain bike trails (MTB) within surrounding bushland including works to:
    - close some of the existing tracks/trails which will be stabilised, vegetated and restored;
    - recycle and upgrade the remaining existing tracks/trails; and
    - construction of new tracks/trails.
- Construction of stormwater infrastructure, including drainage, water quality treatment, on site detention, retention and reuse systems;
- Provision of associated services and utilities; and
- Works to introduce three new vehicular entries to the site as follows:
    - Warrigal Drive entry: Upgrade of Warrigal Drive, including resurfacing of a section of the road reserve, associated drainage works and construction of a new roundabout at its intersection with Quarter Sessions Road;
    - Quarter Sessions Road entry: Construction of a new vehicular entry on Quarter Sessions Road, near Corang Road including the construction of a new roundabout; and
    - Sefton Road entry: Extension of Sefton Road to facilitate a new entrance road across the Thornleigh Reservoir site, being Lot 100 DP 1217395.

3.0 The Site

The Site is located at 62 Quarter Sessions Road, Westleigh NSW 2120 and is adjacent to Thornleigh Water Reservoir (south of the site).

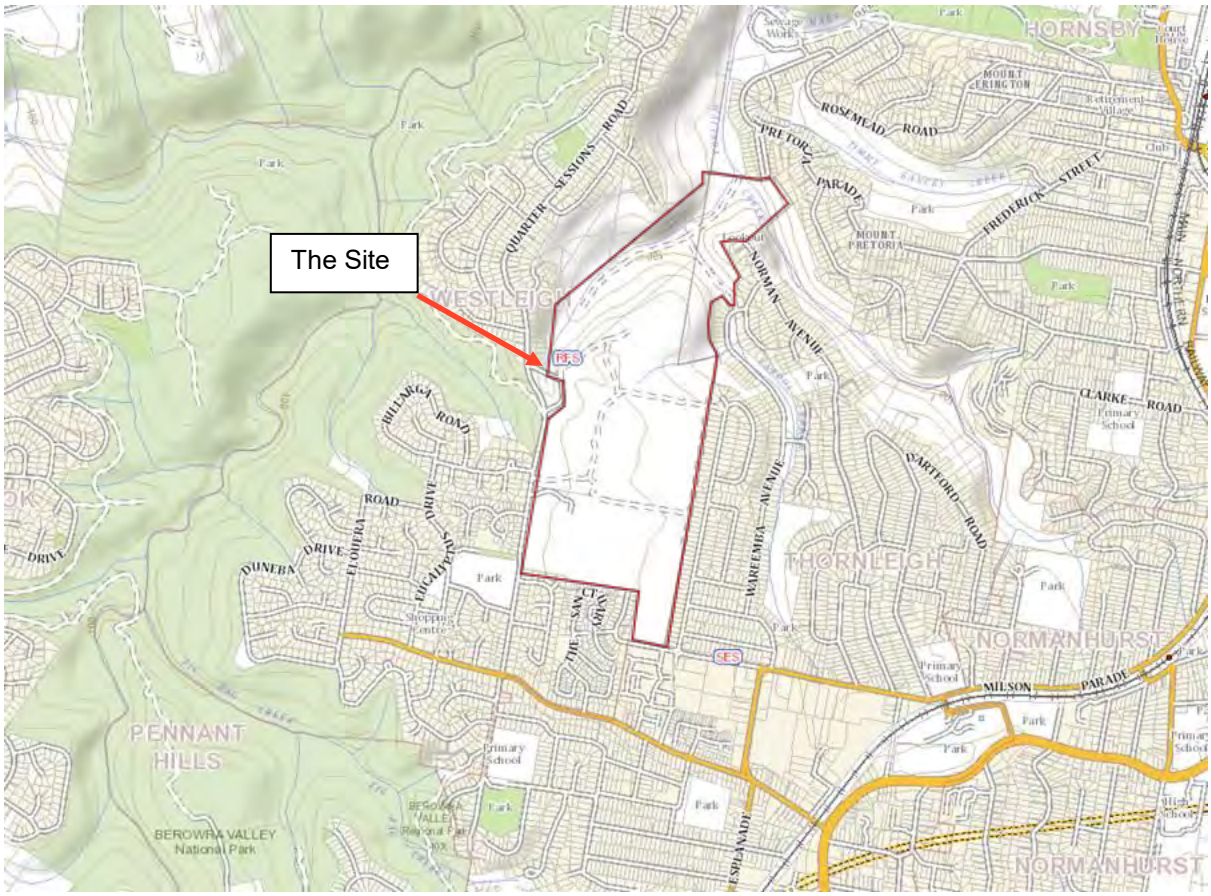

Figure 1: Mark-up of the site (*source: SIX Maps 2023*)

The western and eastern portions of the site are covered in vegetation with bike tracks and bushwalk tracks also present in these areas. A Sydney Water service building for the Thornleigh reservoir is located in the south-west corner of the site. Additionally, there is a demountable building and concrete block building in the north-west of the site, previously used as a training facility by NSW RFS.

4.0 Staging of works

The proposed works are proposed to be undertaken in two separate stages with stage 1 further split into two separate sub-stages. A staging plan has been prepared by TTW and is annexed to this report at **Annexure A**. An extract of staging plan is shown below:

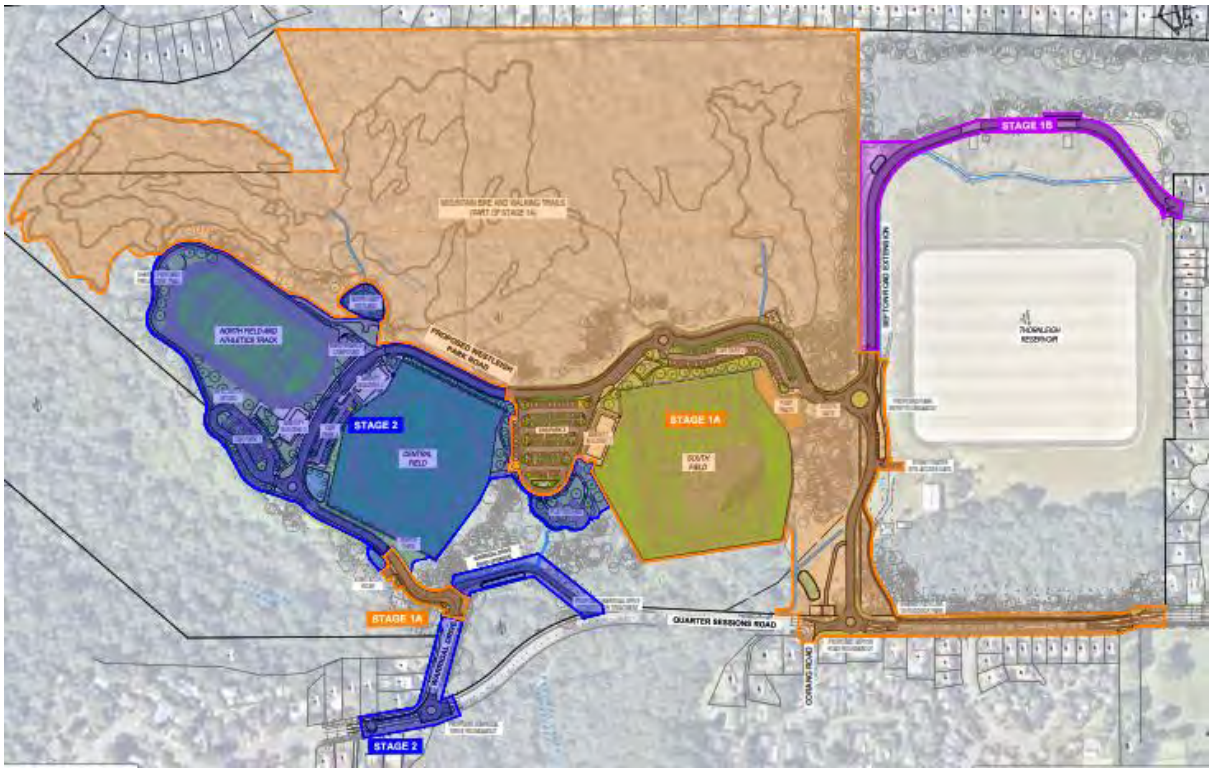

Figure 2: Extract from staging plan (*source: TTW*)

The proposed stages are described as follows:

<u>Stage 1A</u>

Remediation, earthworks, vegetation removal, stormwater management, construction of MTB trails, walking tracks, southern sports field platform including associated amenities building, sections of the internal roads and car parking areas and provision of emergency access, construction of the new vehicular and pedestrian entries on Quarter Sessions Road including associated roundabout and shared path link to Ruddock Park. Bushland restoration and provision of associated services and utilities. The staging of the Stage 1A works can be further broken down into the following:

<u>Sefton Road – Part 1 Extension</u>

- Earthworks;
- Remediation (if required);
- Stormwater pipes;
- Underground services;
- Concrete works;
- Road Base and Subbase;
- Road Asphalt; and,
- Street Equipment and line-marking.

Internal Roads and Carpark

- Earthworks;
- Remediation (if required);
- Retaining walls;
- Stormwater pipes;
- Underground services;
- Concrete works;
- Road Base and Subbase;
- Asphalt and Pavers; and,
- Street equipment and line-marking.

Sports Field

- Earthworks;
- Remediation (if required);
- Drainage;
- Top soil;
- Synthetic turf;
- Natural turf;
- Fencing and sports field equipment (i.e. nets, goals, posts etc.); and,
- Playground equipment.

Amenity building and other structures

- Earthworks;
- Underground services;
- Concrete works; and,
- Building construction.

Construction of Mountain Bike Trials/Walking Tracks

- Earthworks;
- Revegetation;
- Trail construction;

Stage 1B

Earthworks and construction of Sefton Road extension including associated retaining walls, drainage and fencing as follows:

- Earthworks;
- Remediation (if required);
- Stormwater pipes;
- Underground services;
- Concrete works;
- Road Base and Subbase;
- Road Asphalt; and,
- Street Equipment and line-marking.

Stage 2

remediation, earthworks, vegetation removal, stormwater management, construction of the middle and northern sports field platforms including associated amenities buildings, children's play equipment and other facilities, remainder of the internal roads and car parking areas, scarred tree relocation, construction of the new Warrigal Drive vehicular and pedestrian entry including road surface upgrade works and new roundabout at its intersection with Quarter Sessions Road, bushland restoration, and provision of associated services and utilities as follows:

Internal Roads and Carpark

- Earthworks;
- Remediation (if required);
- Retaining walls;
- Stormwater pipes and underground services;
- Concrete works;
- Road Base and Subbase;
- Asphalt and Pavers; and,
- Street equipment and line marking.

Sports Field

- Earthworks;
- Remediation (if required);
- Drainage;
- Top soil;
- Synthetic turf;
- Natural turf;
- Fencing and sports field equipment (i.e. nets, goals, posts etc.); and,
- Playground equipment.

Amenity building and other structures

- Earthworks;
- Underground services;
- Concrete works; and,
- Building construction.

Note: *The above sequence/methodology is not fixed and may change once a Contractor is engaged to improve construction efficiencies and reduce program of the works.*

5.0 Site Establishment

Prior to any works commencing on the Site a 1.8m high temporary chain wire fence shall be erected around the site as shown on the indicative construction site layout plans (refer **Appendix Item B**) with shade cloth and sediment barriers as required. Where possible and practical the existing fixed chain wire fencing is to be used along with the temporary fencing. Worker amenities and site sheds shall be erected by the Contractor as required and as shown on indicative construction site layout plan in **Appendix Item B**.

6.0 Demolition

Refer to the Site Demolition Plan prepared by TTW (Drawing No. C020) and the Demolition Management Plan prepared by Tetra Tech Coffey (reference 754-SYDEN213135 dated 04 June 2021) for details on the demolition works. The demolition contractor must submit a Safe Work Method statement prior to commencing works on site which is to outline all safety procedures for works proposed to be undertaken. Additionally, the demolition contractor is to have demonstrated significant experience for works of a similar nature. The demolition is to occur in line with the conditions of Development Approval (once received).

7.0 Pedestrian and Traffic Methodology during Construction Works

A Construction Traffic Management Plan ('CTMP') has been prepared by Positive Traffic (**Annexure C**) and accompanies this development application. In summary, the plan explores the following items relating to pedestrian and traffic methodology during construction works:

- Council requirements;
- Existing Conditions;
- Overview of construction program;
- Construction Access; and,
- Routes of Travel

As outlined in the CTMP, it has been assumed that all construction vehicles during Stage 1 will access the site via Quarter Sessions Road via the existing vehicular crossing and driveway in the southwest corner of the site. This access point is to be upgraded to provide a new vehicle entry to the site once Stage 1 is complete. In regards to Stage 2, all construction vehicles have been assumed to enter via Warrigal Drive.

8.0 Materials Handling

Given the large size of the site and its parkland nature, all materials handling shall occur within the site boundaries. By handling materials within the site, traffic congestion on Quarter Sessions Road shall ease as well. Detailed materials handling plans and strategies will be developed by Contractors during the tender stage for this project. The successful Contractor will need to ensure that their strategy will is in accordance with the DA conditions of consent.

During site remediation works, all handling shall be in accordance with the Remedial Action Plan prepared by Coffey.

9.0 Works Program

The works program for the project will not be completed until a Development Approval and Construction Certificate have been obtained and the client is ready to proceed to the tender process. At that point a Principal Contractor will be appointed who will be responsible for preparing and completing the works program. Once complete and approved, the works program will be updated progressively, and records kept in project files.

10.0 Working Hours

Working hours will be governed by the Development Consent. Based on a review of Hornsby Shire Council's guidelines and policies, it has been assumed that (subject to final DA approval conditions of consent), construction working hours will be as follows:

- Construction working hours are 7:00am to 5:00pm Monday to Saturday (inclusive);
- Works are not to be carried out on Sundays or Public Holidays; and,
- Safety Inspections are permitted to take place from 6:30am on working days and no work must be carried out on Sundays or public holidays.

Notwithstanding the above, the Principal Contractor must comply with any DA condition regarding working Hours.

11.0 Project Team Contact Numbers

Contact details are included in **Appendix Item D**.

12.0 Construction Site Layout

Refer to **Appendix Item B** for the Site Establishment Plan. This plan details the proposed locations for site office, staff amenities, material storage, and access/egress within the Site.

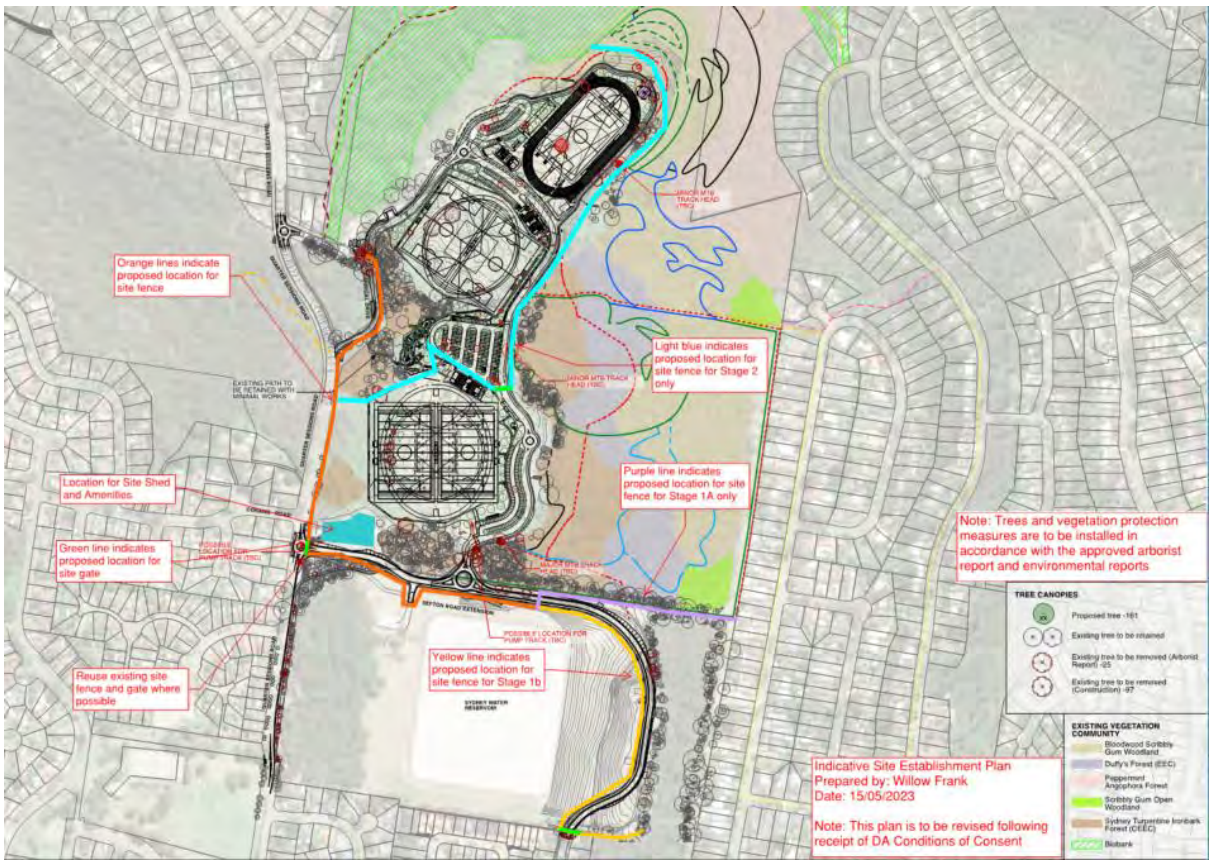

Figure 3: Site mark-up showing indicative locations for site fencing, site sheds, amenities etc.

Stockpiles associated with the construction of the MTB trails are likely to be located within the proposed location of the southern sports field platform.

13.0 Contamination / Remediation

Several areas have been identified in the Remediation Action Plan (prepared by Coffey) as requiring remediation/management. These areas are as follows:

Sports Precinct (Developable Area)

- Tar impact in the southern portion of the site
- Fill across the developable area impacted by asbestos, heavy metals and hydrocarbons
- Potential PFAS in the RFS building and infrastructures
- Derelict/remnant machine parts and anthropogenic materials left on surfaces from past use in various parts of the site.

Environmental Management Zone

- Localised spot dumping and asbestos fragments in various parts of the environmental management zone

All contamination and remediation work are to be carried out under the management of an accredited Site Auditor and occur inline with the methodologies contained in the approved Remediation Action Plan (submitted with this DA).

A disturbance plan has been prepared by TTW and is annexed to this report (**Annexure E**). An extract of the disturbance plan is seen below in Figure 4.

Figure 4: Disturbance Plan (*Source: TTW*)

Construction Footprint – No Capping

The areas highlighted in dark blue above have been identified by TTW as not requiring capping and so typical construction methodology is proposed for these areas as it is external to the RAP boundary.

The proposed remediation areas and strategies are summarised below:

Environmental Management Zone

The areas highlighted in green are known as the environmental management zones. Spot dumping and isolated surface asbestos is to be removed via emu picking and in accordance with the approved remedial action plan. Public access is to be restricted through the use of landscaping features.

Remediation and Vegetation

The extent of remediation and revegetation is highlighted in yellow. Contaminated fill is to be stripped in these areas and rehabilitated with clean material and vegetation. Spot dumping and isolated asbestos is to also be removed. Public access is also to be restricted through the use of landscaping features. Where landscape features are not possible, the general public is to be deterred via administration features.

Construction Footprint over Contaminated Soil

The area highlighted in orange and pink is the extent of the construction footprint over contaminated material with orange representing stage 1a and pink representing stage 2. Contaminated material is to be capped and contained in accordance with the remediation action plan. Additionally, a long-term environmental management plan is to be prepared as per the RAP.

14.0 Vegetation Protection

All tree removal and setup of tree protection zones are to occur in line with the approved arborist reports and under supervision of the project arborist and the vegetation management plan (submitted with this DA).

Scarred Tree

Located at the northern end of the site is an aboriginal scarred tree. This tree is proposed to be relocated as it is currently situated in the centre of the northernmost proposed sports field (refer to red cloud in figure 6 below). An indicative location (clouded in blue below) for the relocated tree has been proposed by Environmental Partnership. The removal, transporting and stabilisation methods are to be determined at detailed design stage in consultation with the relevant Registered Aboriginal Parties (RAPs). This component of the development will more than likely be subject to an Aboriginal Heritage Impact Permit (AHIP).

Figure 5: Mark up of the General Arrangement Plan (*Source: Environmental Partnership*)

15.0 Site Management

Prior to commencement of any works on site the contractor shall:

1. Install temporary site fencing around the permitter of the works zone to ensure safety of public at all times.
2. Implement the stormwater management and control procedures in accordance with an approved Erosion control and Stormwater Management Plan which has been submitted with this development application. Note that these procedures outlined on the drawings must be strictly adhered to, which will ensure that only clean, sediment free stormwater is discharged into the stormwater system.
3. Complete the pre-construction dilapidation reports for neighbouring roads, assets and structures (i.e. Thornleigh reservoir).
4. Setup construction zones, roadway and footpath signage and provide accredited traffic management personnel as per the approved CTMP for the Construction Certificate.
5. Erect all required statutory signage including the name, address and contact details for the PCA and Principal Contractor including an out of hours name and telephone number for the Principal Contractor.
6. Carry out all appropriate 'Dial Before You Dig' searches to determine the existence of all ground services that may be affected by the works, hand excavating as necessary to confirm locations required to be considered.

16.0 Complaints Management

A process involving the Contractor's Project Manager and Site Foreman is to be implemented as follows:

1) All complaints will be directed in the first instance to the contractor's designated Site representative.
2) This person shall have responsibility to ensure that the complaints procedure is enacted.

3) The site is to have prominently displayed the works signboard with the 24 hour contact number of the demolition contractor on site manager.
4) The contractor is to maintain an onsite complaint register and log of actions taken.
5) The register shall include:
    a. A standard complaint pro forma
    b. Date of complaint
    c. Complainant name
    d. Actions taken
    e. Report back to complainant
    f. Close out
6) The management of complaints during the delivery phase will receive high level attention from the Contractor's Project/Site management and the client's management team as required for resolution.
7) Ensuring that complaints are noted, acted upon and closed out shall be a KPI adjudging the successful completion of these works.

Complaints Log Sheet		
Description	Information	Notes
Date of compliant		
Complainants name		
Details of complaint		
Site manager investigation		
Actions taken/implemented		
Reported back to complainant		
Close out date		

17.0 Security

Lockable gates shall be utilised to keep the site secure from unauthorised access. During work periods controllers located at the site entry shall ensure unauthorised access does not occur.

18.0 Waste Management

A waste management plan has been prepared by Willow Frank and accompanies this development application. In summary, the waste management plan explores the following items relating to construction waste management:

- Classification and quantity of waste expected to be generated during any demolition or construction activities for each aspect of the development;
- Detail regarding construction waste management methods on site plans (where necessary);
- Recommendation of appropriate waste contractor to supply waste management equipment and infrastructure for excavation and construction waste; and,
- Recommendation of appropriate facilities for resource recovery and disposal.

Given the site is contaminated, waste management should be in accordance with the approved remedial action plan.

19.0 Construction/Demolition Noise

All works associated with demolition activities shall be conducted in a manner that will minimise noise to the surrounding residents. To this end all noise from construction, plant and the use of vibration equipment shall comply with all relevant conditions of the approved DA.

Unless approved otherwise, construction noise management is to occur in line with the following guidelines and legislation:

- Hornsby Shire Council's Noise Policy;
- NSW EPA Road Noise Policy;
- Australian Standard 2021:2015;
- NSW EPA Noise Policy for Industry (NPfI); and,
- Interim Construction Noise Guideline.

19.1 Minimising Construction Noise

In order to mitigate and minimise noise as a result of demolition/construction works, the following approaches shall be implemented and used:

Design Considerations and Site Layout

- All plant and equipment used on site to be designed and operated in accordance with the requirements of the EPA;
- Noise barriers, such as temporary walls or plies of excavated material, between noisy activities and noise sensitive receivers shall be constructed around these areas; and,
- Site equipment, such as machinery to be kept as far away from adjoining residential properties as possible;

Note: Noise and vibration from construction activities will be mitigated to a large extent as a result of the large distances from the works to the residential properties. However, extra care is to be taken when doing works in close proximity to the residential houses in particular the eastern and the western sides of the site where there are many residential properties. As outlined in the Acoustic Impact Assessment prepared by Marshall Day Acoustics, the following noise mitigation measures are to be implemented and adhered to during construction:

Community consultation and negotiation

- All potentially impacted residents should be informed, reasonably ahead of time, of the nature of works to be carried out, the expected noise levels from noisier activities and their duration, and the measures being taken to minimise noise from the construction.
- Effective channels of communication are to be established between the contractor/developer, Local Authority and affected receivers.
- A site representative responsible for all matters relating to noise should be appointed and contact details of this representative should be readily available. A site information board should be installed in front of the construction site with the name and contact details for the site representative.

Scheduling of activities and providing respite periods

- Scheduling high noise-generating activities to be undertaken when background noise, including local road traffic, is high to provide masking to construction noise.

- All building, demolition and site work, including site deliveries are restricted to Monday to Saturday (7.00am to 5.00pm) and not any time on Sunday & public holidays as per the recommended standard hours detailed in the ICNG.
- The use of large dump trucks or the like represent dominant noise sources on site, and their use during will give rise to adverse noise impacts. Ensuring that periods of respite are provided when noisier activities such as large truck movement take place. Respite periods may be provided by restricting the hours in which the noisiest activities can take place.
- Respite periods may also need to be provided in response to complaints from affected receivers.
- The period of noise impacts will be greatest where the works are closest to residential premises. This will be during the Sefton Road Extension works at connections to Quarter Sessions Road and at the existing Sefton Road northern extent.

Management work practices

- Planning deliveries and access to the site to occur quietly and efficiently. Truck drivers must be kept informed of designated entry and egress points, parking locations and acceptable delivery hours. Vehicle movements outside standard construction hours should be avoided where possible.
- Scheduling vehicle deliveries so that there are no trucks waiting in side streets and ensuring that all delivery vehicles are switched off during loading and unloading activities where close to residences.

Construction noise control measures

- Using any available land form and temporary site structures and material stockpiles as noise barriers
- Reducing the line-of sight from noise source to receiver through erection of barriers as necessary around static, high noise items such as the dump trucks compressors and preferentially locating on-site to use the any land form screening (if applicable) as shielding
- Where practicable, installing broadband noise reversing alarms as an alternative to common 'beeper' alarms for on-site vehicles and vehicles that regularly visit the construction site.
- Siting of noisy plant as far away from sensitive properties as permitted by site constraints

Sequence of Operations

- Noisy operations shall be conducted to occur at the same time, so as to minimise the time would take for these activities to be conducted simultaneously;
- Heavy vehicle activities shall be managed to occur at the time of day that the majority of residents would be away from their residences (e.g. no truck activity first thing of a morning);
- Noisy activities shall be coincided to commence at the times of the day when the majority of residents are away at work;
- Residents shall be consulted and informed when particular noisy activities will occur and what will be done to minimise noisy activities;
- No activities shall be carried out at times other than the working hours approved by Council;
- Regular breaks shall be taken to provide residents with relief when particular noisy activities occur; and,

- All noise generating equipment and machinery shall be monitored and calibrated on a regular basis to ensure that the noise generated by the equipment does not exceed manufacturing standards.

20.0 Construction/Demolition Vibration

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods employed. Operation of construction equipment causes ground vibrations which spread through the ground and diminish in strength with distance. All works associated with demolition and construction activities shall be conducted in a manner that will minimise vibration and shall comply with all relevant conditions of the approved DA.

20.1 Minimising Vibration Noise

The contractor is to implement methods to mitigate and minimise vibration noise during the works. Several approaches that can be used include:

Design Considerations and Project Layout

- Selecting and using low noise vibration equipment, where possible;
- Operate earth moving equipment as far away from vibration-sensitive areas;
- Conduct and manage vibration activities at suitable times of the day;
- Only appropriately trained and licensed workers will be permitted to use vibration equipment.

Sequence of Operation

- Phase excavation, earth-moving and ground-impacting operations so as not to occur in the same time period – the total vibration level produced could be significantly less when each vibration source operates separately;
- Residents shall be canvassed and advised when particular noisy vibration activities will occur;
- No activities shall be carried out at times other than the working hours approved by Council;
- Regular breaks shall be taken to provide residents with relief and respite when particular noisy vibration activities occur; and,
- All noise generating vibration equipment and machinery shall be monitored and calibrated on a regular basis to ensure that the noise generated by the equipment does not exceed manufacturing standards.

21.0 Dust

The contractor shall implement dust control measures throughout the works to ensure dust pollution is kept as low as possible. This shall include but not limiting to:

- Dust Control Mesh on the temporary fencing;
- Areas of exposed soil shall be minimised and long term stockpiles shall be stabilized with vegetation or covered;
- Spraying water directly onto working faces;
- The site compound and haul roads are to be covered with gravel or kept moist (by spraying with water cart) to reduce dust generation;

- Hosing down of trucks leaving site to control dust during transit as necessary;
- Materials transported in open trucks shall be covered to prevent possible dust generation;
- Wheel washing to reduce dust and dirt dragged onto roads.
- Plant and equipment emissions shall be as per the relevant regulations and standards
- No burning of materials on site at any time

High winds or unsuitable environmental conditions may cause delays in demolition activities if dust levels or waste material cannot be controlled safely.

22.0 Sediment and Erosion Control

Sediment and Erosion control measures are to be installed as per the approved Sediment and Erosion Control Plan prepared by TTW as well as the requirements outlined in in the Civil Stormwater Report prepared by TTW which are as follows:

- Clearly visible barrier, site fencing and hoarding shall be installed at the discretion of the Superintendent to ensure site security, safety of the public, manage traffic control and prohibit any unnecessary site disturbance. Vehicular access to the site shall be limited to only what is essential for the construction activities and shall enter the site only through the stabilised access points.
- All disturbed areas are to be stabilised within 14 working days of the completion of earthworks. All disturbed areas are to be protected so that the land is permanently stabilised within six months.
- Proprietary silt fencing shall be installed by the Contractor in accordance with the final approved Sedimentation and Erosion Control Plan and elsewhere at the discretion of the site superintendent to contain sedimentation to as near as possible to the original source.
- Sediment removed from any sediment trapping device shall be relocated where further pollution to downslope lands and waterways cannot occur.
- Stockpiles shall be located by the Contractor in accordance with the final approved Sedimentation and Erosion Control Plan and elsewhere at the discretion of the Project Manager and/or Superintendent. Where stockpiles are to be in place longer than 30 days they shall be stabilised.
- Water shall be prevented from entering the permanent drainage system unless it is sediment free. Drainage pits are to be protected in accordance with the final approved Sediment and Erosion Control Plan.
- Temporary sediment traps located at pits shall be retained throughout the early works stage and until the appropriate replacement measures for the subsequent stages are installed.

23.0 Stormwater Management during Construction

During the transition between stage 1A and stage 2, there will be unfinished stormwater piping and infrastructure that takes care of the stormwater at the transition line between stage 1A and stage 2. Therefore, a temporary stormwater basin is proposed that will comply with council PSD requirements during the time between stage 1A completion and stage 2 construction.

As per the Civil Stormwater Report prepared by TTW, a 315KL rainwater tank will be placed to capture the surface flow from stage 1A development for onsite retention and prevent flow leaving the site during minor storm events. DRAINS calculations were able to demonstrate that constructing Basins 04, 05C, 08, 09A and 11 as part of the Stage 1A works was sufficient for controlling runoff to

pre-development conditions. For Stage 1B, Basins 05A and 05B are to be constructed. All remaining basins are then to be provided for the completed Stage 2 works.

24.0 Helicopter use

As outlined in the Detailed Design Report prepared by DirtArt, helicopter lifting will be utilised sparingly for the construction of the MTB trails and only in situations where the remediation point is not conducive to on-ground carting or transport. It is estimated that approximately 63 out of the 114 1-tonne rock loads required for the MTB trail construction will need to be flown into the respective trail sections. These loads occur on the following trails: N6, N12, N13, N16, and N17. In addition to this, another 31 loads of imported soil will need to be flown into trail N18 due to its isolated location. To reduce overall flight time, the other remaining trails will be accessed via existing trails or adjacent fire trails. Construction of the MTB trails will be undertaken in accordance with the MTB Trail detailed Design Report prepared by DirtArt (submitted with this DA).

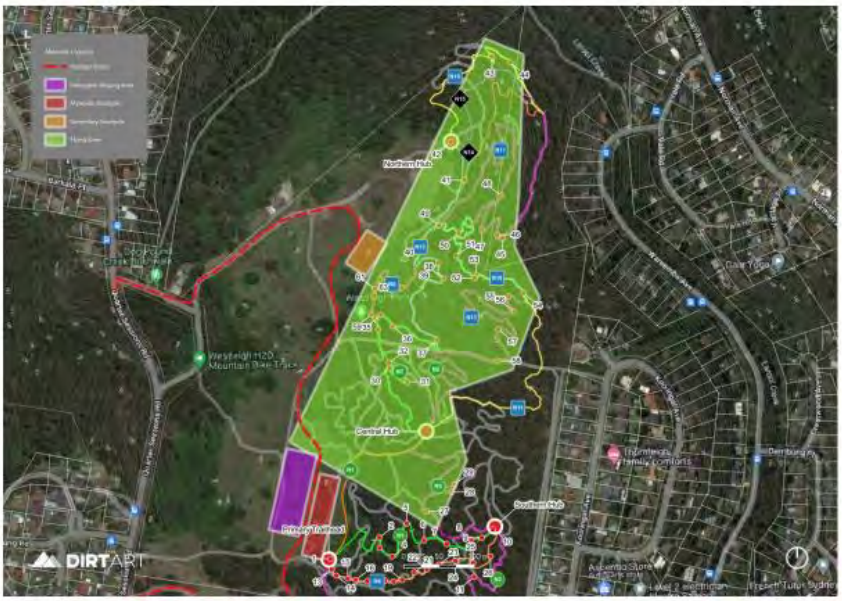

Figure 6: Indicative helicopter flying zone (*source: DirtArt*)

25.0 Appendices

A – Staging Plan

B – Indicative Construction Site Plan

C – Construction Traffic Management Plan

D – Project Team Contact Register

E – Disturbance Plan

25.1 A – Staging Plan

MOUNTAIN BIKE AND WALKING TRAILS
(PART OF STAGE 1A)

LAMOOL CREEK TRIBUTARY

STAGE 1B

SEFTON ROAD EXTENSION

THORNLEIGH RESERVOIR

SHARED PATH AND FIRE ACCESS TRAIL

NORTH EAST WETLAND

NORTH FIELD AND ATHLETICS TRACK

MAINTENANCE COMPOUND

PROPOSED WESTLEIGH PARK ROAD

CAR PARK 4

PUMP TRACK

SOUTH GATE

PROPOSED PARK ENTRY ROUNDABOUT

AMENITY BUILDING 2

SPECTATOR MOUND

AMENITY BUILDING 3

CAR PARK 2

CAR PARK 1

STAGE 2

CENTRAL FIELD

CAR PARK 3

AMENITY BUILDING 1

STAGE 1A

SOUTH FIELD

SYDNEY WATER SITE ACCESS GATE

PLAYGROUND

NORTH GATE

WARRIGAL DRIVE ROAD UPGRADE

SUBSTATION KIOSK

DOG POUND CREEK

PROPOSED WARRIGAL DRIVE INTERSECTION TREATMENT

QUARTER SESSIONS ROAD

SHARED PATH LINK TO RUDDOCK PARK

PROPOSED SEFTON ROAD ROUNDABOUT

CORANG ROAD

WARRIGAL DRIVE

BEROWRA CREEK TRIBUTARY

PROPOSED WARRIGAL DRIVE ROUNDABOUT

STAGE 2

0 15 30 45 60 75 90 105 120m

1:1500 A1 1:3000 A3

FOR APPROVAL

NOT TO BE USED FOR CONSTRUCTION

Rev	Description	Eng	Draft	Date
P5	FOR APPROVAL	DM	WW	27.06.24
P4	FOR APPROVAL	DM	WW	15.09.23
P3	FOR APPROVAL	DM	WW	08.09.23
P2	FOR APPROVAL	DM	WW	01.09.23
P1	FOR APPROVAL	DM	WW	18.08.23

Architect
ENVIRONMENTAL PARTNERSHIP (NSW) Pty Ltd
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TTW Structural Civil Traffic Façade
612 9439 7288 | Level 6, 73 Miller Street, North Sydney, NSW 2060

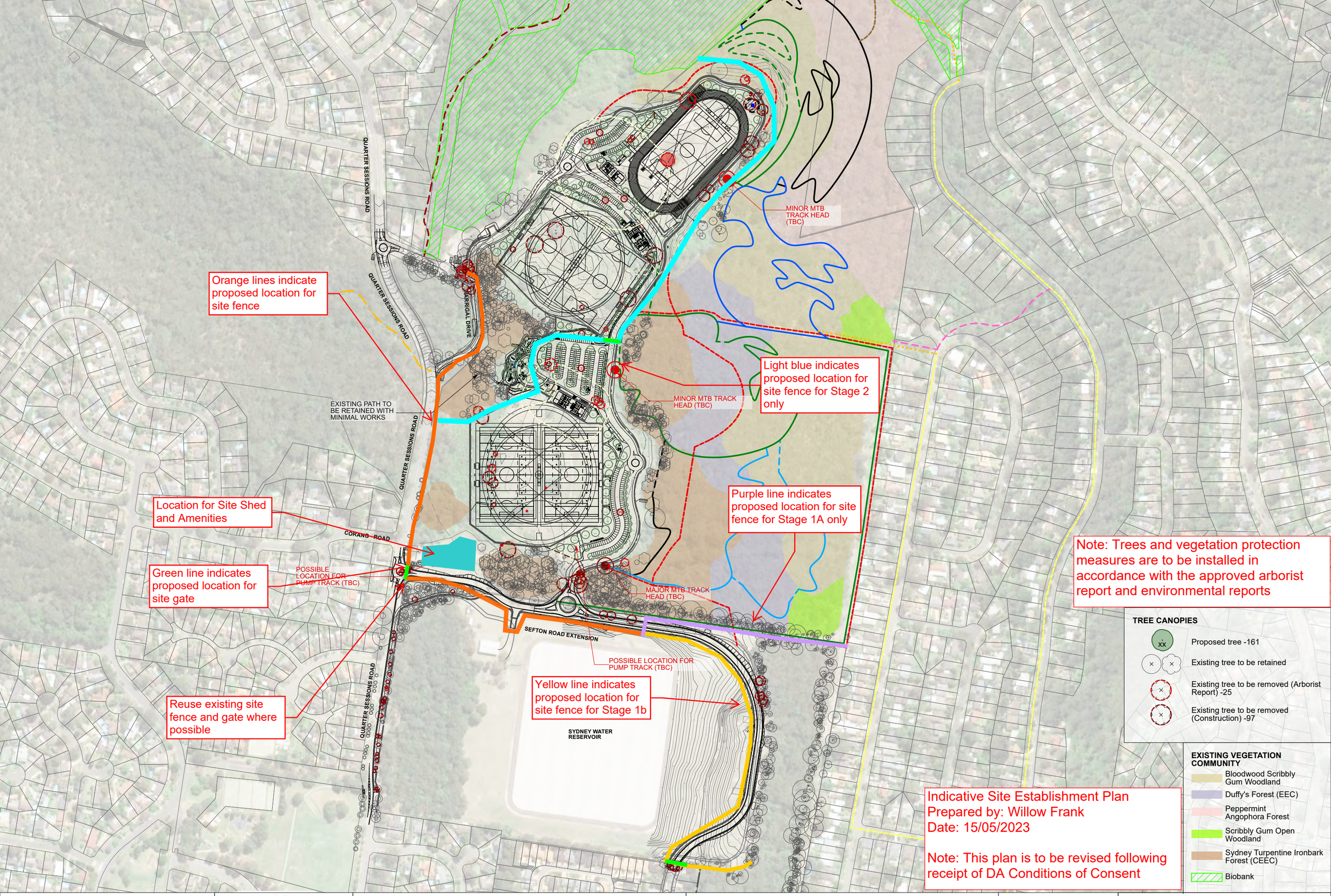
Project
WESTLEIGH PARK,
QUARTER SESSIONS ROAD,
HORNSBY

Sheet Subject
OVERALL STAGING PLAN

Scale : A1	Drawn	Authorised
1:1500	WW	TM

Job No	Drawing No	Revision
201537	C100	P5

25.2 B – Indicative Construction Site Plan



ep environmental partnership

CLIENT
HORNSBY SHIRE COUNCIL

TITLE
GENERAL ARRANGEMENT PLAN
- CONTEXT

Westleigh Park
Development Application

SCALE
1:2000 @ A1
1:4000 @ A3
0 50 100 m

DRAWING
3707.GA.00

DATE
JULY

ISSUE
7

25.3 C – Construction Traffic Management Plan

Westleigh Park Redevelopment

Construction Traffic Management Plan Report

Prepared for: Hornsby Shire Council

July 2024

Report No: PT20017r01_Final_V2

TABLE OF CONTENTS

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List of Tables

1. Introduction

This report has been prepared on behalf of Hornsby Shire Council to present findings of a traffic and access assessment of the potential impacts of the construction of Stage 1A / 1B and Stage 2 facilities within Westleigh Park, Westleigh.

The study has assessed existing traffic conditions, access arrangements, potential traffic impacts and future infrastructure needs for potential options.

The remainder of the report is set out as follows:

- Section 2 describes the existing traffic conditions;
- Section 3 provides a summary of the proposed construction activities;
- Section 4 assesses the potential traffic impacts of the works;
- Section 5 provides information on construction related matters; and
- Section 6 presents findings of this assessment.

This report has been prepared considering the SEARS requirements pertaining to construction which is provided below:

Contaminated Soil Treatment Works
62 Quarter Sessions Road, Westleigh 'Westleigh Park' (Lot 100 and 101 DP1217395, Lot 68 DP752053)
Planning Secretary's Environmental Assessment Requirements (SEAR) 1473

- *details of road transport routes and access to the site*
- *road traffic predictions for the development during construction and operation*
- *an assessment of impacts to the safety and function of the road network and the details of any road upgrades required for the development.*

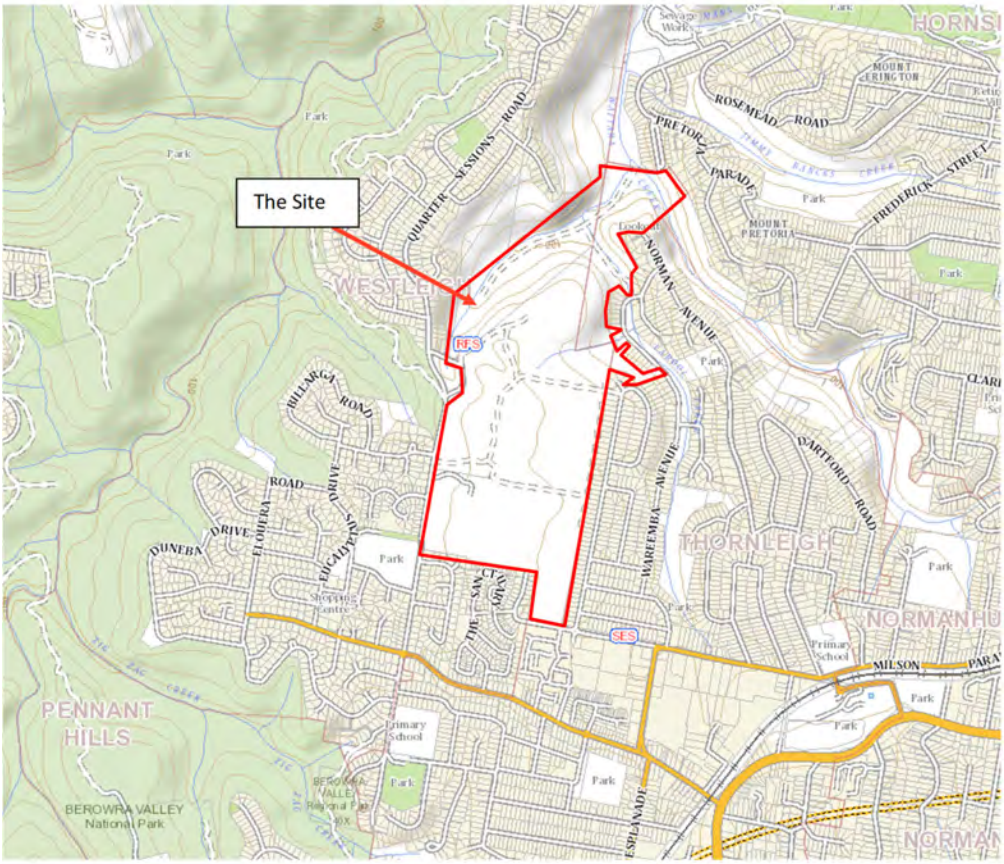
Of note details of transport routes / access to the site along with the assessment of impacts has not been included in this report and has been subject to supporting documentation commissioned by Hornsby Shire Council.

2. Site Location / Existing Traffic / Parking Conditions

2.1 Site Location

The location of Westleigh Park is shown in **Figure 1**.

Figure 1 - Site Location



Source: Hornsby Council

The existing site is bounded by Quarter Sessions Road in the west, Sydney Water Thornleigh Reservoir to the south and residential properties on Kooringal Avenue in the east. Vehicular access to the site is via Warrigal Drive and its three (3) existing intersection connections with Quarter Sessions Road. These are shown below:

Figure 2 – Existing Intersection Warrigal Drive (southern end) with Quarter Sessions Road – Looking North

© Google Maps

Figure 3 – Existing Intersection from Warrigal Drive (southern end) with Quarter Sessions Road – Looking South

© Google Maps

The southern access via Warrigal Drive is located in close proximity to an existing crest within Quarter Sessions Road with poor available sight distance in either direction for exiting traffic.

Figure 4 – Existing Intersection Warrigal Drive (Northern End) with Quarter Sessions Road – Looking North

Figure 5 – Existing Intersection Warrigal Drive (Northern End) with Quarter Sessions Road – Looking South

Figure 6 – Existing Southern Access with Quarter Sessions Road near Corang Road – Looking North

The northern access via Warrigal Drive is a formal street and services adjacent residential properties and Westleigh Rural Fire Station. As with the southern access, site distance in both directions is generally poor.

2.2 Classification Criteria

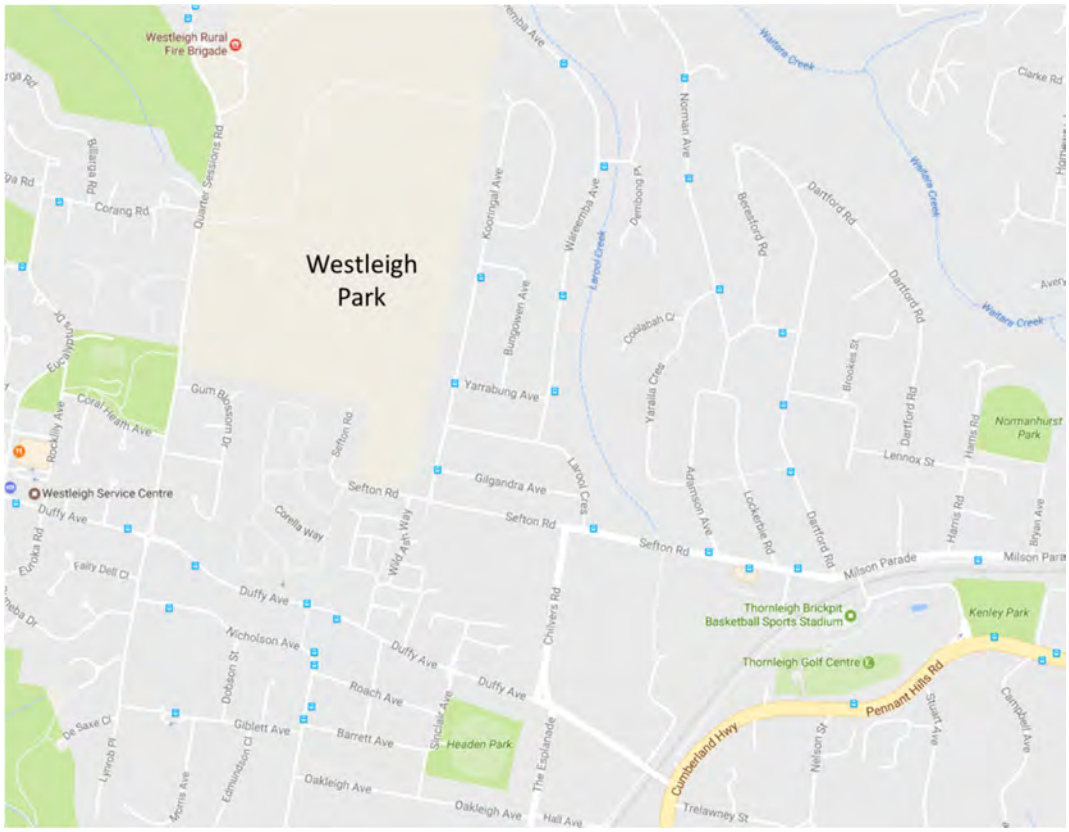
It is usual to classify roads according to a road hierarchy in order to determine their functional role within the road network. Changes to traffic flows on the roads can then be assessed within the context of the road hierarchy. Roads are classified according to the role they fulfil and the volume of traffic they should appropriately carry. The RTA has set down the following guidelines for the functional classification of roads.

- Arterial Road – typically a main road carrying over 15,000 vehicles per day and fulfilling a role as a major inter-regional link (over 1,500 vehicles per hour)
- Sub-arterial Road – defined as secondary inter-regional links, typically carrying volumes between 5,000 and 20,000 vehicles per day (500 to 2,000 vehicles per hour)
- Collector Road – provides a link between local roads and regional roads, typically carrying between 2,000 and 10,000 vehicles per day (250 to 1,000 vehicles per hour). At volumes greater than 5,000 vehicles per day, residential amenity begins to decline noticeably.
- Local Road – provides access to individual allotments, carrying low volumes, typically less than 2,000 vehicles per day (250 vehicles per hour).

2.3 Existing Road Network

The existing road network located in the vicinity of the site is shown in **Figure 7** and described below.

Figure 7 – Existing Road Network Surrounding Westleigh Park



Quarter Sessions Road – is a local collector road linking Duffy Avenue in the south with residential housing in the north. The road forms a cul-de-sac at its northern end. The road generally consists of a single travel lane in each direction with parallel parking on both sides of the street. All intersections along the road are priority controlled intersections except its intersection with Duffy Avenue which is controlled by a single lane roundabout. The road forms the western boundary of Westleigh Park.

Duffy Avenue – is considered a sub arterial road east of Chilvers Road and a local collector road west of Chilvers Road linking residential areas in the west (Peninsula developments) with the main arterial road through the area, Pennant Hills Road. The road generally consists of a single travel lane in each direction with parallel parking on both sides of the street. All intersections along the road are priority controlled intersections except its intersection with Chilvers Road / The Esplanade and Pennant Hills Road which are controlled by traffic signals. The intersection of Duffy Avenue / Sinclair Avenue includes a roundabout. Duffy Avenue includes local bus routes servicing lands to the west and north of Westleigh Park.

Chilvers Road – is a regional road connecting Duffy Avenue in the south with Sefton Road in the north. The road provides access to both a small number of residential dwellings and a small industrial precinct along its western side. The street includes a single lane of travel in each direction and parallel parking on both sides of the street towards its northern end. Southbound towards Duffy Avenue, the southbound lanes widen to three approach lanes and a single northbound lane. The street includes a posted speed limit of 60km/hr. At its northern end, priority is given to northbound into Sefton Road and southbound from Sefton Road into Chilvers Road. This forms part of the parallel route to Pennant Hills Road linking Pennant Hills in the south with Hornsby in the north and is subject to large volumes of traffic during peak periods.

The Esplanade – is a north – south sub-arterial road linking Pennant Hills Road in the south via Yarrara Road with Duffy Avenue in the north. Near Duffy Avenue the road includes two approach lanes northbound and two lanes southbound for a short distance before merging into a single lane. As stated above this road forms part of the parallel route with Pennant Hills Road and includes local bus routes through the area. It generally consists of a single travel lane in each direction and a 60km/hr speed limit. The road also provides direct access to Thornleigh Rail Station and associated commuter car park.

Sefton Road – is an east - west collector road linking Chilvers Road in the south with Hornsby in the north and includes a road width of approximately 12.9m. However, east of Chilvers Road, Sefton Road is considered a sub-arterial road and provides a parallel route to Pennant Hills Road and the railway line. It carries large volumes of traffic during peak periods despite only providing a single lane of travel in each direction. West of Chilvers Road, Sefton Road functions as a local road providing access to a small pocket of industrial developments and residential properties. The road is a posted speed limit of 50km/hr west of Chilvers Road.

Kooringal Avenue – is a north-south local road connecting with Sefton Road in the south and forms a cul-de-sac in the north. The street includes a carriageway width of some 8.0m with unrestricted parking on both sides of the street and a single travel lane in each direction. The street also includes the Route 587/588 bus service and has a posted speed limit of 50km/hr. The intersection of Kooringal Avenue / Sefton Road is controlled via a single lane roundabout.

Larool Crescent – is predominantly a east-west local road connecting Koorginal Avenue in the west with Sefton Road (east of Chilvers Road) in the east. The intersections with Kooringal Avenue and Sefton Road include priority-controlled intersections. The street has a carriageway width of some 8.0m with unrestricted parking on both sides of the street and a single travel lane in each direction with a posted speed limit of 50km/hr.

Warrigal Drive – is a local residential street linking to Quarter Sessions Road in two locations both with priority controlled intersections. At its wester end is presents as a full width street whereas at its southern end it presents as a narrow laneway. The street includes a 9.0m wide carriageway at its western end and kerb on both sides of the street and a posted speed limit of 50km/hr.

2.4 Existing Traffic Flows

Hornsby Shire Council commissioned Bitzio's Consulting Pty Ltd to undertake an area wide assessment of existing conditions and future traffic conditions following ultimate occupation of the redeveloped park.

For consistency and as agreed with Hornsby Shire Council the Bitzios report[1] forms the basis of existing and future traffic conditions assessments of potential construction traffic impacts presented in this report.

To gauge existing traffic conditions, intersection counts were undertaken at the a large number of locations covering all entry / exit routes of traffic generated by the park as shown below in **Figure 8**.

Figure 8 – Bitzio's Consulting Intersection Count Locations

The report found the following existing traffic volumes versus available capacity in each street surveyed as shown in **Table 1**.

[1] Westleigh Park Traffic Impact and Access Study – Bitzio's Consulting 21 July 2022

Table 1 - Existing Traffic Volumes vs Available Capacity

Road Name	Travel Direction	Capacity (veh/hr)	AM Peak Period		PM Peak Period		Weekend Peak	
			AM Peak Demand (veh/hr)	V/C Ratio*	PM Peak Demand (veh/hr)	V/C Ratio*	Weekend Peak Demand (veh/hr)	V/C Ratio*
Pennant Hills Road	Northbound	2,100	1,737	0.83	1,918	0.91	2,024	0.96
	Southbound	2,100	1,697	0.81	1,842	0.88	1,812	0.86
Duffy Avenue East of Chilvers Road	Eastbound	900	333	0.37	526	0.58	390	0.43
	Westbound	900	608	0.68	362	0.40	608	0.68
Duffy Avenue West of Chilvers Road	Eastbound	900	607	0.67	370	0.41	541	0.60
	Westbound	900	322	0.36	523	0.58	393	0.44
Chilvers Road	Northbound	900	742	0.82	523	0.58	628	0.70
	Southbound	900	623	0.69	793	0.88	674	0.75
Sefton Road East of Chilvers Road	Eastbound	900	594	0.66	768	0.85	645	0.72
	Westbound	900	720	0.80	498	0.55	601	0.67
Sefton Road West of Chilvers Road	Eastbound	600	145	0.24	81	0.14	135	0.23
	Westbound	600	123	0.21	103	0.17	125	0.21
The Esplanade	Northbound	900	755	0.84	643	0.71	609	0.68
	Southbound	900	810	0.90	818	0.91	737	0.82
Quarter Sessions Road	Westbound	900	123	0.14	103	0.11	125	0.14
	Southbound	900	246	0.27	123	0.14	222	0.25
Corang Road	Eastbound	500	16	0.03	32	0.06	14	0.03
	Westbound	500	4	0.01	16	0.03	10	0.02
Nicholson Avenue	Eastbound	250	66	0.26	68	0.27	37	0.15
	Westbound	250	81	0.32	39	0.16	32	0.13
Oakleigh Avenue	Eastbound	250	96	0.38	107	0.43	82	0.33
	Westbound	250	42	0.17	23	0.09	26	0.10
Goodlands Avenue	Eastbound	250	90	0.36	87	0.35	41	0.16
	Westbound	250	120	0.48	46	0.18	53	0.21
Sinclair Avenue	Northbound	250	135	0.54	107	0.43	135	0.54
	Southbound	250	60	0.24	46	0.18	60	0.24
Kooringal Avenue	Northbound	250	26	0.10	42	0.17	33	0.13
	Southbound	250	69	0.28	46	0.18	36	0.14
Larool Crescent	Northbound	250	58	0.23	73	0.29	61	0.24
	Southbound	250	83	0.33	35	0.14	67	0.27

**Value of 1 indicates 100% capacity*

Of note, all roads surrounding the park have spare capacity during the morning / afternoon peak periods on a weekday and a Saturday morning.

It is also noted that an assessment on the changes in traffic volumes comparing those recorded in 2019 and those recorded in 2022 was undertaken to gauge the changes in travel behaviour post the Covid pandemic. The Bitzio's report found the following:

Table 3.8: Comparison of 2019 and 2022 Key Intersection Counts

Intersection	Approach	AM (veh/hr)				PM (veh/hr)			
		2019	2022	Diff	% Diff	2019	2022	Diff	% Diff
Duffy Avenue / Chilvers Road / The Esplanade	Chilvers Road SB	765	632	-133	-17%	922	800	122	-13%
	Duffy Avenue WB	289	307	18	6%	469	405	-64	-14%
	The Esplanade NB	687	633	-54	-8%	701	486	-215	-31%
	Duffy Avenue EB	581	607	26	4%	339	370	31	9%
Total		**2,322**	**2,179**	**-143**	**-6%**	**2,431**	**2,061**	**-370**	**-15%**
Pennant Hills Road / Duffy Avenue	Pennant Hills Road SB	1,838	1,735	-103	-6%	1,925	1,880	-45	-2%
	Pennant Hills Road NB	2,493	1,819	-674	-27%	2,280	1,955	-325	-14%
	Duffy Avenue EB	351	407	56	16%	240	288	48	20%
Total		**4,682**	**3,961**	**-721**	**-15%**	**4,445**	**4,123**	**-322**	**-7%**

Duffy Avenue / Chilvers Road / The Esplanade

There was an overall reduction in traffic by between 6% and 15% at this intersection. Traffic volumes on Chilvers Road, Duffy Avenue westbound and The Esplanade reduced substantially. This is most likely due to less 'rat running' following reduced congestion on Pennant Hills Road. Traffic volumes eastbound Duffy Avenue have however increased by between 4% and 9% between 2019 and 2022.

Pennant Hills Road / Duffy Avenue

Traffic volumes along Pennant Hills Road reduced by 2% to 27% between 2019 and 2022. This is most likely due to NorthConnex, however, volumes on Duffy Avenue increased by 16% to 20%.

Traffic Data Comparison Summary

From 2019 to 2022, traffic volumes along Pennant Hills Road, The Esplanade and Chilvers Road reduced by between 2% and 27% . The Pennant Hills Road reduction is attributed to the opening of NorthConnex which improved traffic congestion on Pennant Hills Road. The improved congestion also reduced rat running along The Esplanade and Chilvers Road. However, traffic volumes on Duffy Avenue, which generally services the local traffic, increased by between 4% and 20%. There is insufficient and inconclusive data to suggest that changes in travel behaviour due to COVID-19 have had a significant impact on traffic volumes within the study area.

On this basis, the survey results do not need to be adjusted.

Thus, the traffic assessment conducted by Bitzio's confirmed recorded traffic volumes were appropriate for existing / future year assessments.

2.5 Existing Intersection Operating Conditions

The Bitzio's report also included SIDRA intersection assessments of all intersections surveyed. The results of the analysis is presented below in **Table 2**. Average delay is expressed in seconds per vehicle.

Table 2 – 2022 Weekday AM / PM + Weekend AM Intersection Operating Conditions

Intersection	AM Peak		PM Peak		Weekend Peak	
	Demand (veh/hr)	Delay (s) (LoS)	Demand (veh/hr)	Delay (s) (LoS)	Demand (veh/hr)	Delay (s) (LoS)
Duffy Avenue / Chilvers Road / The Esplanade	2,313	57 (E)	2,088	51 (D)	2,108	43 (D)
Sefton Road / Chilvers Road	1,601	17 (B)	1,429	8 (A)	1,477	11 (A)
Duffy Avenue / Quarter Sessions Road	996	4 (A)	897	3 (A)	909	3 (A)
Duffy Avenue / Pennant Hills Road	3,958	18 (B)	4,094	15 (B)	4,153	16 (B)

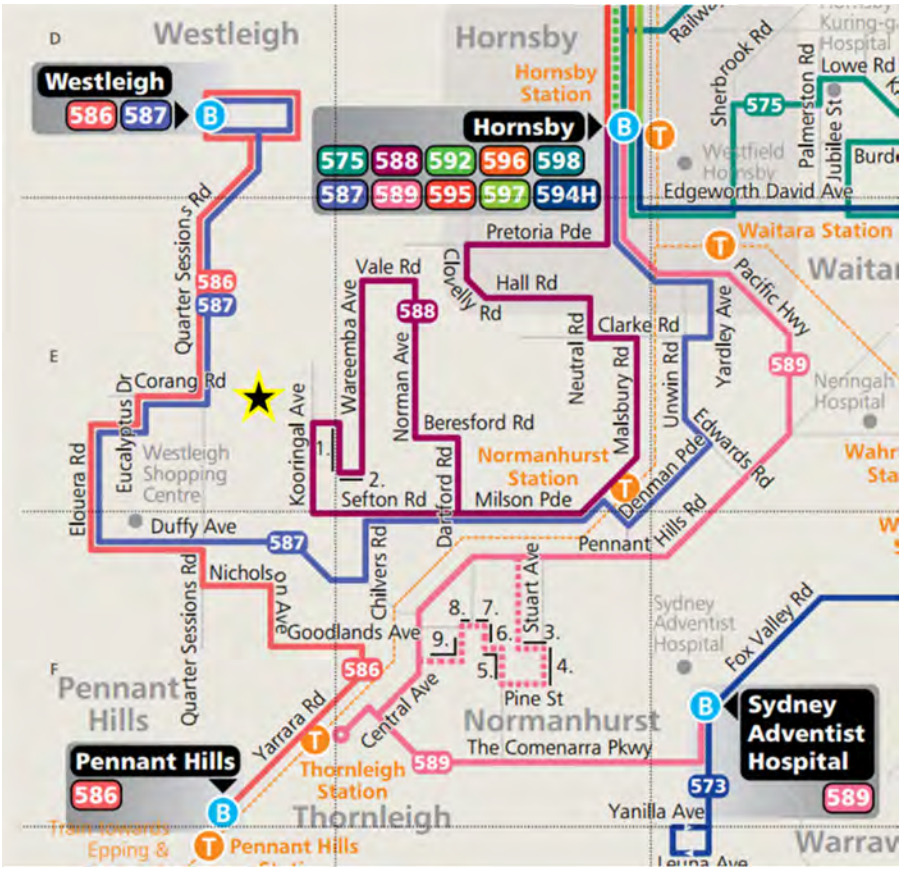
**Red = LoS E or F.*

From **Table 2** it is noted that all intersections surveyed currently operate at an acceptable level of service during both the AM and PM peak periods on a weekday.

2.6 Existing Public Transport Operations

Given the limited access options around Westleigh Park, bus services are focused on the western and eastern edges of the park. All services are operated by Trans Dev Bus Services and all existing bus services in the vicinity are shown in **Figure 9**.

Figure 9 – Existing Bus Stops



A summary of the existing services are provided in **Table 3**.

Table 3 - Existing Bus Services

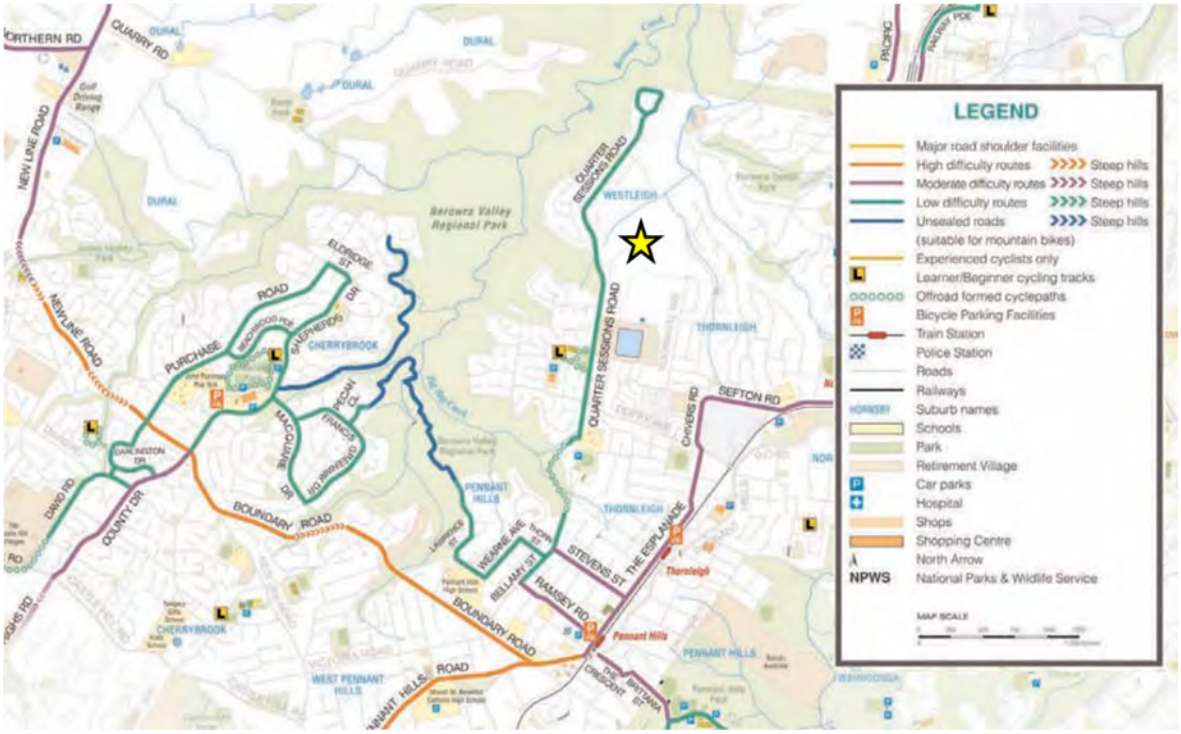
Route No.	Origin	Destination	Via
586	Pennant Hills Station	Westleigh (and return)	Westleigh Shopping Centre
587	Hornsby Rail Station	Westleigh (and return)	Westleigh Shopping Centre
588	Hornsby Rail Station	Hornsby Rail Station (loop)	Kooringal Avenue

From **Table 3** it can be seen that two existing bus services which operate past the western edge of Westleigh Park (via Quarter Sessions Road) provide access to / from major rail stations, namely Hornsby and Pennant Hills. Route 588 which provides bus services to residential areas east of the park would be less attractive given the park does not have access from Sefton Road and Route 587 would provide a better service to the park via Hornsby Station.

2.7 Existing Bicycle Network

It is well known that Westleigh Park itself has been utilised by mountain bikers over a number of years and is a popular location for such activities. The formal bicycle network in the vicinity of Westleigh Park is shown in **Figure 10**.

Figure 10 – Existing Bicycle Network Near Westleigh Park



Quarter Sessions Road includes an on-road identified bicycle route. However, other than on-street parking lanes in areas along Quarter Sessions Road north of Duffy Avenue, no specific signage or linemarking identifying this bicycle route was noted. This corridor is classified as a 'low difficulty' route.

At the southern end of this corridor south of Duffy Avenue, off road bicycle access is available to / from Bellamy Street.

As with Quarter Sessions Road, The Esplanade / Chilvers Road / Duffy Avenue includes an on-road bicycle corridor with little to no formal identification in the form of linemarking or signage. Given the topography along these roads, this corridor is classified as a 'moderate difficulty' route.

Of note, there is no connection between the residential areas of Westleigh near Quarter Sessions Road and those on the eastern side of Westleigh Park near Sefton Road.

3. Proposed Works

3.1 Introduction

The following provides a description of the proposed construction works which will be undertaken in a staged manner. The final timing of the stages would be determined as such time as the finer grain details of construction of fully understood and subject to a construction certificate application in the future.

3.2 Staging Description of Works

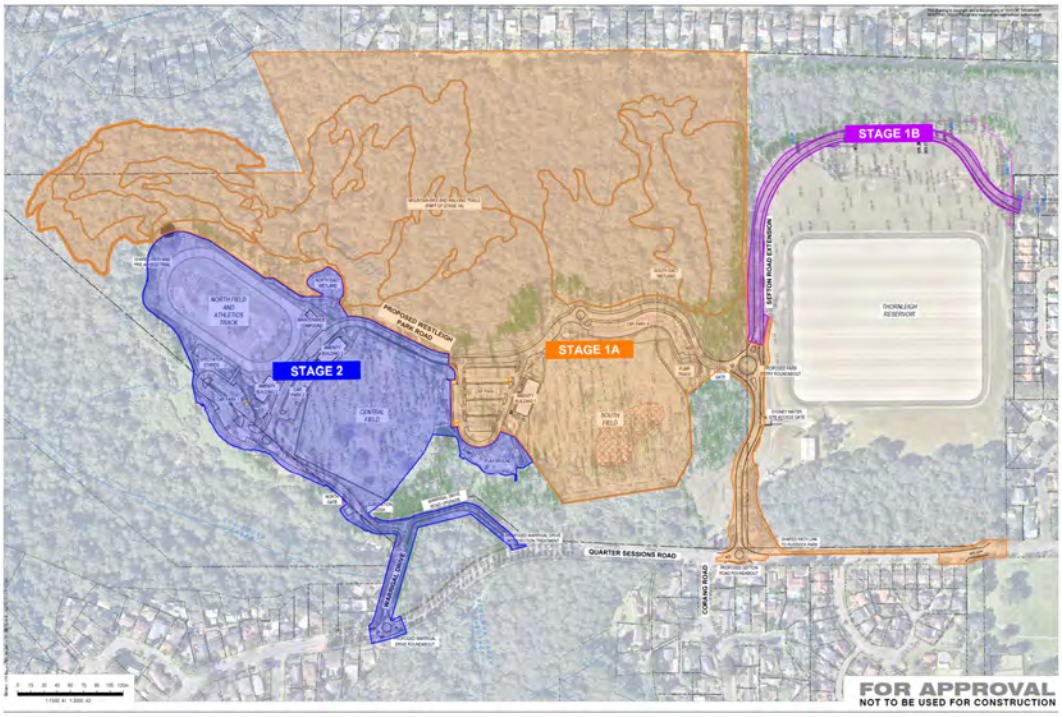
The Operational Management Plan provides the following summary of works associated with the development.

Table 4 – Construction Staging Summary

Stage	Estimated Program	Works
Demolition	**3 months**	Removal of existing structures, provision of worker / office demountable's, installation of fencing
Stage 1a	**18 months (Jan 2025 - Jun 2026)**	Remediation, earthworks, vegetation removal, stormwater management, construction of MTB trails, walking tracks, southern sports field platform including associated amenities building, sections of the internal roads and car parking areas and provision of emergency access, construction of the new vehicular and pedestrian entries on Quarter Sessions Road including associated roundabout and shared path link to Ruddock Park. bushland restoration and provision of associated services and utilities
Stage 1b	**Concurrent with Stage 1a and be operational on completion of Stage 1 construction works**	Earthworks and construction of Sefton Road extension including associated retaining walls, drainage and fencing
Stage 2	**18 months (Jan 2030 - June 2031)**	Remediation, earthworks, vegetation removal, stormwater management, construction of the middle and northern sports field platforms including associated amenities buildings, children's play equipment and other facilities, remainder of the internal roads and car parking areas, scarred tree relocation, construction of the new Warrigal Drive vehicular and pedestrian entry including road surface upgrade works and new roundabout at its intersection with Quarter Sessions Road, bushland restoration, and provision of associated services and utilities.

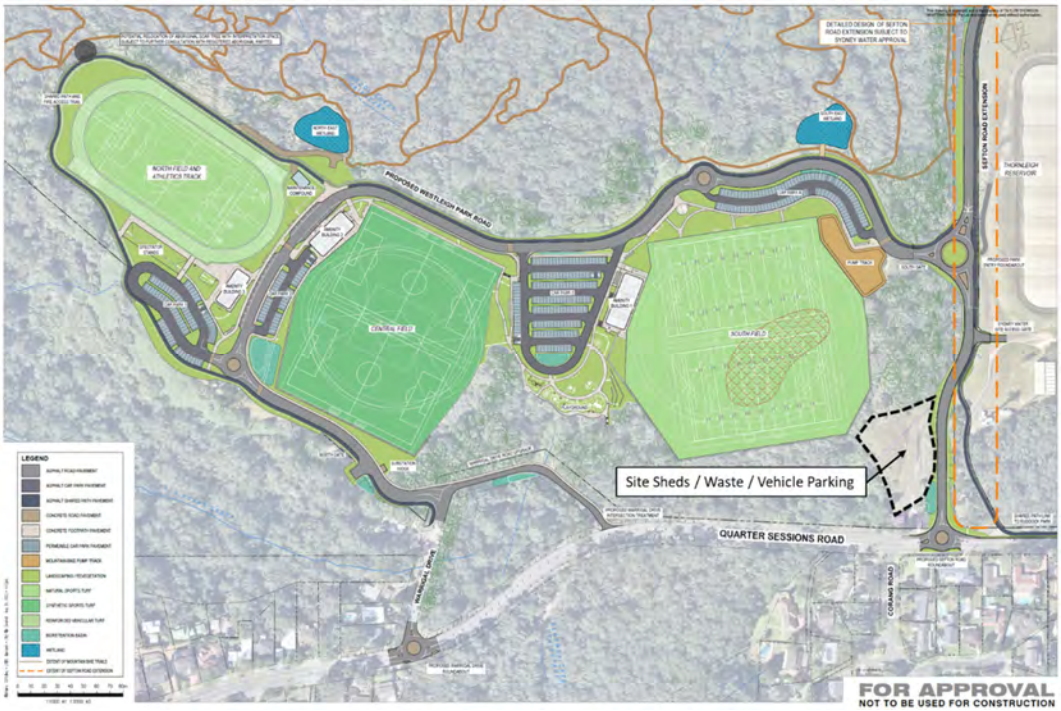
A plan of the areas for each stage is shown below in **Figure 11**.

Figure 11 – Plan of Proposed Construction Stages



The cleared area adjacent to the existing access driveway to Quarter Sessions Road (in the order of 2,300m^2 in area) has been identified as the site office / waste / parking area for all stages of the proposal. This location is shown below in **Figure 12**.

Figure 12 – Site Office / Waste / Parking / Storage Area for Proposed Works



As also detailed in the Detailed Design Report prepared by DirtArt for the construction, this area would also be utilised for the stockpiling of materials during the construction of the mountain bike trails.

It is noted that the intent is to have the Stage 1B works, which involves the internal road construction linking Sefton Road to the site completed at the completion of the Stage 1A works. However, as the Stage 1B works is through land held by Sydney Water adjacent to a major water reservoir which requires careful ongoing consideration of construction impacts, this assessment needs to consider two scenarios which are detailed below.

- Staging Scenario 1 – Completion of all works as per the construction program shown in **Table 4**.
- Staging Scenario 2 – Separate construction of all three (3) stages

These potential impacts of these scenarios are discussed further in **Section 4** of this report.

3.3 Construction Access by Stage

The following access arrangements have been assumed for each stage of construction:

Stage 1

During Stage 1 construction all construction vehicles will access the site via Quarter Sessions Road via the existing vehicular crossing and driveway in the southwest corner of the site (near Corang Road). This access point will also be upgraded to provide a new vehicle entry to the site once the park (Stage 1) is in operation.

Stage 2

During stage 2 construction, all construction vehicles will enter via Warrigal Drive. This access point will also be upgraded to provide a new vehicle entry to the site once the whole site is in operation.

3.4 Construction Demands Scenario Assessment

To provide a robust assessment of potential traffic impacts which accounts for potential variations in the movement of materials to / from the site, for the purpose of calculating traffic demands the following scenarios has been assessed:

Construction Scenario 1 (likely outcome): Represents vehicle movements based on all existing topsoil material being retained or re-used on site. All backfill for retaining walls is to be imported fill.

Construction Scenario 2 (worst case):

Represents vehicle movements based a maximum of 10% topsoil material to be disposed of off site as contaminated material, remaining material to be retained or re-used on site. All backfill for retaining walls is to be imported fill. An additional contingency is added for imported general fill and retaining wall fill to replace the exported topsoil.

Construction Scenario 3 (best case):
Represents vehicle movements based on existing topsoil and fill material is re-used as retaining wall backfill material. This scenario also assumes that all bulk earthworks volumes for each stage are balanced. As such there is no requirement for imported filling material.

Based on the detailed forecasts prepared by Taylor Thomson Whitting Pty Ltd of both each stage and each potential construction scenario outcome described above, the following presents a summary of the resulting average daily / peak hour traffic generation of each stage of construction. It should be noted that generally construction vehicles avoid road network peak periods on efficiency grounds and traffic generation during these periods are generally limited to light vehicle worker traffic. However, it has been assumed 20% of traffic associated with construction activities would travel to / from the site during morning and afternoon peak hour periods.

As per the permissible requirements of Hornsby Council, construction activities are assumed to occur six (6) days a week.

Table 5 - Forecast Heavy / Light Vehicle Traffic Generation by Construction Scenario

Stage	Avg Daily Construction Vehicles* (two way)	Avg. Daily Light Vehicles (two way)	Avg. Peak Hour Construction Vehicles (two way)	Avg. Peak Hour Light Vehicles (two way)
Scenario 1				
Demolition	1.4	20	0.3	10
Stage 1A	44.6	60	8.9	30
Stage 1B	12.1	30	2.4	15
Stage 2	54.7	80	10.9	40
Scenario 2				
Demolition	1.4	20	0.3	10
Stage 1A	47.2	60	9.4	30
Stage 1B	13.1	30	2.6	15
Stage 2	56.3	80	11.3	40
Scenario 3				
Demolition	1.4	20	0.3	10
Stage 1A	36.3	60	7.3	30
Stage 1B	4.1	30	0.8	15
Stage 2	51.1	80	10.2	40

*Includes Truck & Dog, Bogie Truck, Semi Trailer, Concrete Truck, Medium and Heavy Rigid Trucks

From **Table 5** it is noted that the highest potential peak hour demands of construction would occur in Scenario 2 where on average **40** light vehicles and **11.3** construction associated vehicles would be generated in the road network AM / PM peak hours during Stage 2 of construction. Further, a daily traffic generation of up to **56.3** construction associated vehicles and **80** light vehicle movements.

4. First Principles Traffic Impact Assessment of Construction

The following presents a comparison of the anticipated traffic demands of the proposal at ultimate development and the associated future traffic conditions compared to the potential traffic impacts of the construction of each stage of development.

4.1 Traffic Generation of Redeveloped Park

To provide context, the Bitzio's modelling report[3] adopted a total weekday peak hour traffic generation of **176** vehicles during the weekday PM peak one hour and about **360** vehicles during the Weekend peak one hour. The report modelled the following future year scenarios:

Table 6 – Bitzio's Report Modelled Scenarios

Scenario	AM	PM	WE	Traffic	Network
2027 Do Minimum *plus* Upgrade	☑	☑	☑	▪ 2022 Base Demand ▪ + 5-year Traffic Growth	▪ 2022 Base Network ▪ + Chilvers Road / Sefton Road Signals ▪ + Duffy Avenue / Chilvers Road / The Esplanade Upgrade
2032 Do Minimum *plus* Upgrade	☑	☑	☑	▪ 2022 Base Demand ▪ + 10-year Traffic Growth	
2027 Option 1	N/A	☑	☑	▪ 2022 Base Demand ▪ + 5-year Traffic Growth ▪ + 33% Park Demand	▪ 2022 Base Network ▪ + Chilvers Road / Sefton Road Signals ▪ + Duffy Avenue / Chilvers Road / The Esplanade Upgrade
2032 Option 1	N/A	☑	☑	▪ 2022 Base Demand ▪ + 10-year Traffic Growth ▪ + 100% Park Demand	
2027 Option 2	N/A	☑	☑	▪ 2022 Base Demand ▪ + 5-year Traffic Growth ▪ + 33% Park Demand	▪ 2022 Base Network ▪ + Chilvers Road / Sefton Road Signals ▪ + Duffy Avenue / Chilvers Road / The Esplanade Upgrade ▪ + Sefton Road Extension (all traffic access)
2032 Option 2	N/A	☑	☑	▪ 2022 Base Demand ▪ + 10-year Traffic Growth ▪ + 100% Park Demand	
2027 Option 3	N/A	☑	☑	▪ 2022 Base Demand ▪ + 5-year Traffic Growth ▪ + 33% Park Demand	▪ 2022 Base Network ▪ + Chilvers Road / Sefton Road Signals ▪ + Duffy Avenue / Chilvers Road / The Esplanade Upgrade ▪ + Sefton Road Extension (Park traffic access only)
2032 Option 3	N/A	☑	☑	▪ 2022 Base Demand ▪ + 10-year Traffic Growth ▪ + 100% Park Demand	

The report found that the potential traffic impacts of the fully redeveloped park would be satisfactory and not result in future intersection operating conditions which the report did not consider to be unacceptable.

[3] Westleigh Park Traffic Impact and Access Study – Bitzio's Consulting 21 July 2022

Further, the report increased the weekend peak hour traffic generation assessed by account for usage of the nearby Ruddock Park which was not operational at the time of the counts which in turn increased the traffic generation assessed by **48** vehicles during the weekend peak (Section 6.7.1).

As a sensitivity test, the Bitzio's report commissioned by Hornsby Council adopted a doubling of the weekday peak hour traffic generation of the fully redeveloped park and stated the following:

For the traffic volumes shown in Section 5.2, the weekday PM peak park traffic assessment was based on traffic generation of 176 vehicles with 4 teams of AFL (4 x 22 players) or 8 teams of Soccer (8 x 11 players) training. In the event these numbers are doubled, the traffic generation would be similar to that of a Weekend peak (i.e. 360 vehicles). Results from a sensitivity analysis showed that the 2032 road network would be able to accommodate this increased PM peak traffic volumes with the proposed upgrades and the Sefton Road extension.

Of note, Hornsby Shire Council has accepted the findings of the Bitzio's modelling report and conclusions that the traffic impacts of the fully redeveloped site are considered acceptable.

4.1 Construction Traffic Generation

4.1.1 Stage 1A / Stage 1B

As with more major construction projects, the majority of construction generated traffic seeks to avoid weekday AM / PM road network peak periods on efficiency grounds. From **Table 5** above, the peak hour demands under Construction Scenario 2 for either Stage 1A or 1B were on average **30** light vehicles and **9.4** construction associated vehicles.

These volumes are *well below* the peak hour demands of the redeveloped park as a whole of which the Bitzio's modelling report found that future intersection operating conditions would be acceptable. Thus, the potential peak hour construction traffic demands of Stages 1A and 1B would not result in detrimental road / intersection operating conditions during construction.

4.1.1 Stage 2

In a similar manner, the estimated potential peak hour construction traffic generation under Scenario 2 for Stage 2 was estimated to be on average **40** light vehicles and **11.3** construction associated vehicles.

It is noted that following the completion of Stage 1A / 1B works the use of the playing fields / mountain bike trials would occur during the period of construction of Stage 2. However, the use of these facilities, except for the minor generator of the mountain bike trials, would be little to zero at during construction hours. As confirmed in the traffic report, peak demands of the playing fields would occur after 5:00pm on a weekday.

Whilst construction activities on a Saturday would potentially be avoided (or separated completely) from any use of the two (2) playing fields completed in the Stage 1A works, on the basis these fields were *fully* operational, it is estimated the peak traffic generation of these two (2) fields would be some 50% of the total site traffic generation which is presented below from the traffic report in **Table 7**.

Table 7 – Total Site Traffic Generation of Ultimate Park Redevelopment (2 x full size turf soccer / 1 x full size cricket field + 2 x full size synthetic soccer fields)

Winter							
	Organised sport		**Mountain Bikes**		**Playground**		**Total**
Weekend	In	Out	In	Out	In	Out	
8am-9am	160						160
9am-10am	160	160	10	10	10	10	360
10am-11am	160	160	10	10	10	10	360
11am-12pm	88	160	25	25	10	10	318
12pm-1pm	88		10	10	10	10	128
1pm-2pm		88	25	10	10	10	143
2pm-3pm	88		25	25	10	10	158
3pm-4pm		88	10	25	10	10	143
4pm-5pm			10	10	10	10	40
5pm-6pm		88					88
Overall	**744**	**744**	**125**	**125**	**80**	**80**	**1898**
Summer							
	Organised sport		**Mountain Bikes**		**Playground**		**Total**
Weekend	**In**	**Out**	**In**	**Out**	**In**	**Out**	
8am-9am			25				25
9am-10am	100		25	25	10	10	170
10am-11am		100	10	25	10	10	155
11am-12pm			5	10	10	10	35
12pm-1pm	44		5	5	10	10	74
1pm-2pm			5	5	20	10	40
2pm-3pm			10	5	20	20	55
3pm-4pm			25	10	20	20	75
4pm-5pm		44	25	25	10	20	124
5pm-6pm			25	25		10	60
6pm-7pm			15	25			
8pm-9pm				10			
9pm-10pm				5			
Overall	**144**	**144**	**175**	**175**	**110**	**120**	**813**

That is, 80 trips inbound and outbound in the weekend AM peak in the Winter (or 25 movements in the Summer) combined with **40** light vehicles and **11.3** construction associated vehicles generated by construction activities would be *significantly less* than the 408 peak hour trips (360 + Ruddock Park traffic of 48) modelled by the traffic report which was found to not result in detrimental conditions on the surrounding road network or intersections in the vicinity of the park.

Therefore, the traffic impacts of construction activities would not be a to a significant detriment on the operation of the surrounding road network.

5. Other Matters

The following presents other matters for consideration and for inclusion in the Construction Traffic Management Plan (CTMP) report which would be expected as part of the construction certificate application when finer grain knowledge of the proposed construction methodologies are known.

5.1 Routes of Travel

With the existing driveway connection in Quarter Sessions Road, the routes of travel by large vehicles and other vehicles generated by construction activities are expected to be focused on this access.

Large vehicles would also be expected to utilise Pennant Hills Road when travelling to / from the site as it provides the main arterial road through the area. There may be some construction vehicle activity via Sefton Road at the time of its connection with the park but it would not be considered for any Stage 2 construction access as this would require construction vehicles to pass playing fields in operation for sporting activities.

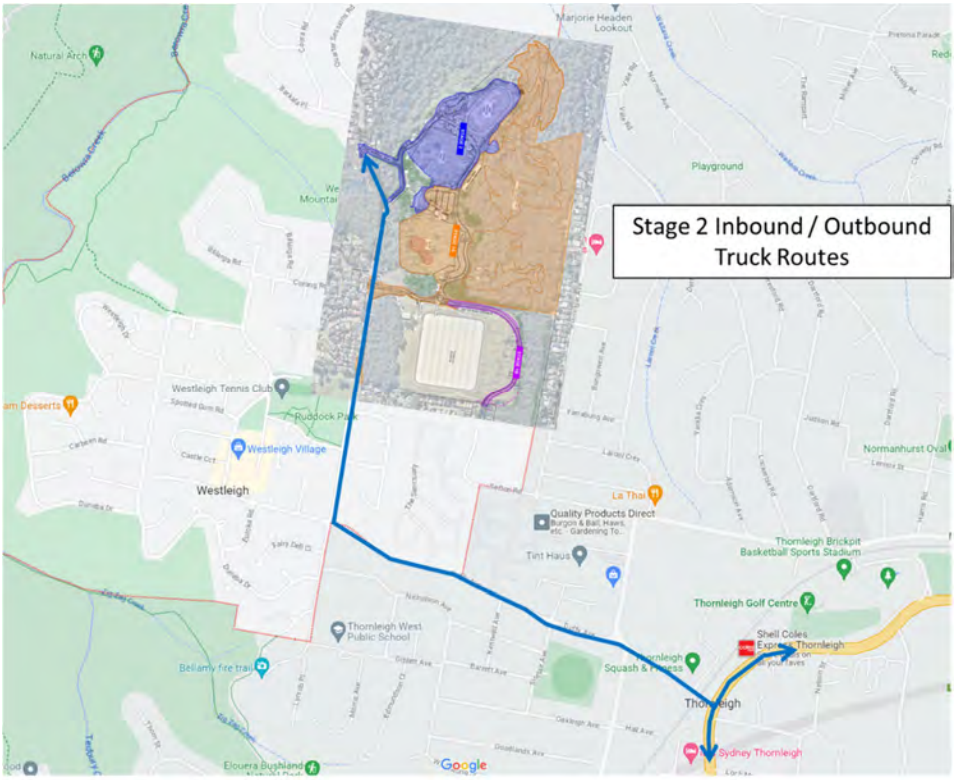
All Stage 2 construction access would be via Quarter Sessions Road.

The routes of travel of construction vehicles by stage is presented below in

Figure 13 - Stage 1A Construction Vehicle Routes

Figure 14 - Stage 1B Construction Vehicle Routes

Figure 15 - Stage 2 Construction Vehicle Routes



5.2 Preparation of Traffic Management Plans (TMP's)

The future CTMP report should include adequate assessments of the road network directly affected by the construction activities, which would be documented in the (TMPs). This assessment will assist in determining the need for specific mitigation measures. The facilities to be assessed would include, but are not limited to:

- Existing on-street parking (including type and associated time limits)
- Existing traffic controls
- Existing junction configurations
- Restrictions on existing traffic movements (right turn bans etc)
- Existing road occupancies
- Public transport (buses, including bus stops, taxis)
- Traffic generating developments, (e.g. schools, shopping centres, churches, industrial areas, sporting complexes, clubs etc)
- Temporary access arrangements or restrictions for local residents, businesses, traffic generating developments, major and special events etc
- Emergency vehicle access points
- Heavy vehicle movement restrictions, including over dimension vehicle loads
- Pedestrians, including disabled persons
- Cyclists, (general road, cycle and share way facilities).

5.3 Public Transport Operations

Existing bus route operations in Quarter Sessions Road are not expected to affected by the work as they will be able to access normal routes. All existing bus stops in Quarter Sessions Road would also not be impacted upon and function as normal.

It would be expected that appropriate measures are taken for any traffic controlling measures if required of vehicle access in Quarter Sessions Road that all public transportation services within vicinity of the worksite will be notified and given priority in and around the project's work area. Notification of all public transportation services should be via one or more of the following procedures:

- A notification letter will be designed and distributed outlining details of road impacts, traffic flow impacts, estimated delay times if there are any, detailed routes were applicable and the location and dates and times such impacts will affect transportation.
- VMS boards placed around the proposed affected work area outlining the location and dates and times transportation services could be affected.
- A notification across the local radio stations outlining the affected roads for a given date and time frame as well as possible alternative routes if applicable.

6. Summary of Findings

This report has assessed the potential traffic impacts of construction activities associated with the redevelopment of Westleigh Park to provide a new sporting complex and ancillary facilities. The findings of this assessment are presented below:

1. The potential peak hour traffic generation of construction activities throughout the life of the project would be low and not result in unsatisfactory road network or intersection operating conditions in the immediate vicinity of the park.
2. This traffic assessment has considered all known potential construction scenarios which may occur to deliver the project and their associated construction vehicle traffic demands / impacts.
3. The traffic generation of the ultimate development of the park which has been considered acceptable by Hornsby Shire Council through area wide traffic impact assessments far exceeds the potential peak hour traffic generation of construction activities.
4. The Construction Traffic Management Plan (CTMP) report submitted as part of a future construction certificate application should include finer grain detail of both staging and management of traffic for all construction activities when known.
5. Routes of travel for larger vehicles would utilise roads to / from the park in most instances which currently include bus routes.

Overall, the potential traffic impacts of the construction of the parking are considered acceptable.

25.4 D – Project Team Contact Register

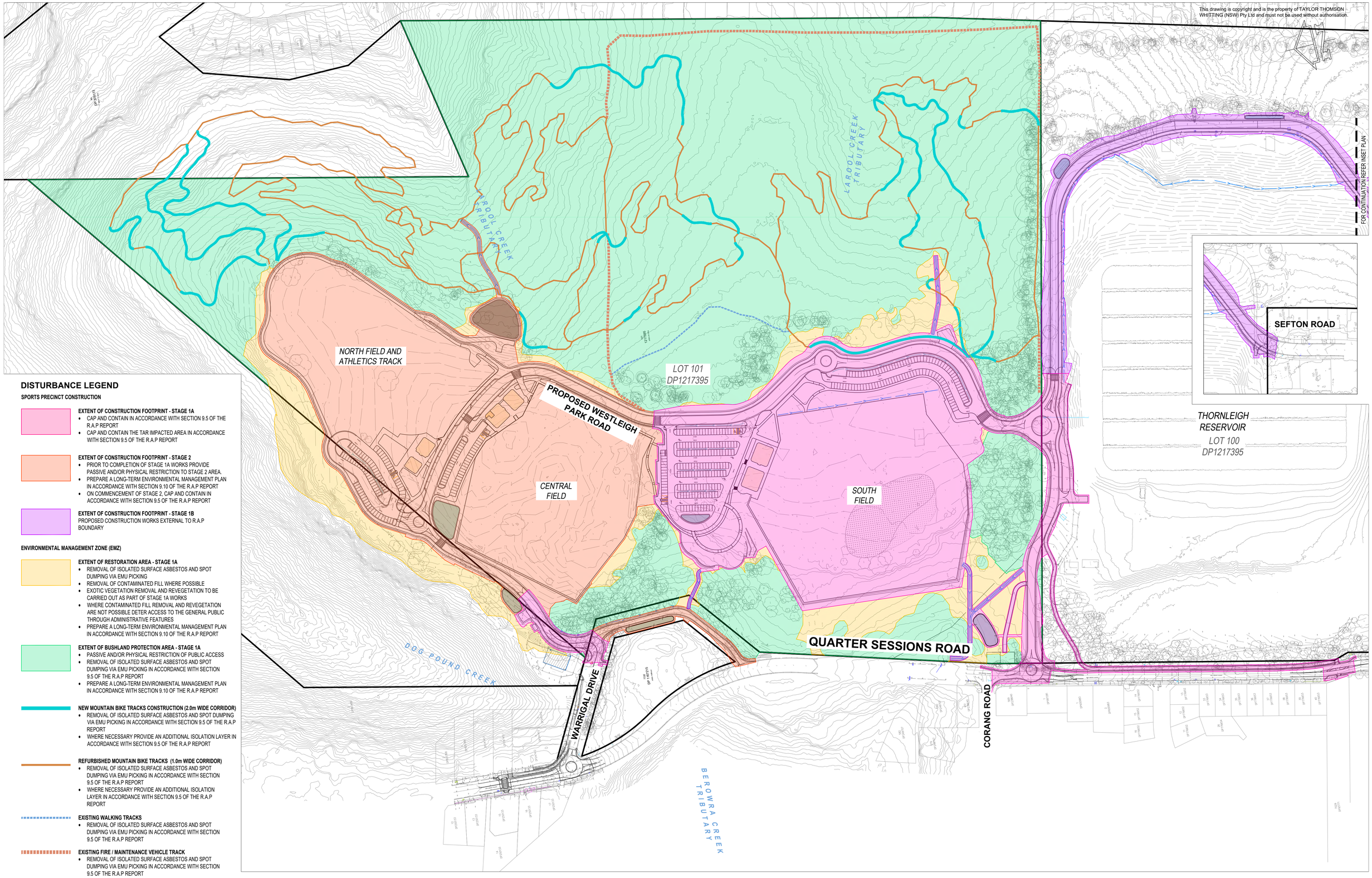
Note: Table to be completed once construction contract entered into with a head contractor.

ORGANISATION DETAILS			
Business or trading name and address:			
ACN/ABN:		Contractor License No.:	
Telephone:		Facsimile:	
Email:		Mobile:	
Name of director or manager:		Telephone:	

PROJECT CONTACT DETAILS		
	Contact Name	**Contact Number**
Emergency Services:		
Ambulance / Fire Brigade / Police	n/a	000
Poisons information	n/a	131 126
First Aiders:	TBC	TBC
	TBC	TBC
Utilities:		
Water		13 20 90
Electricity		13 13 88
Gas		13 14 50
Telephone		13 22 03
Dial Before You Dig	n/a	1100
EPA:		
24 hour Pollution Line	n/a	131 555
Site Manager (*):	TBC	TBC
Works Supervisor (*):	TBC	TBC
OHS Representative:	TBC	TBC
Local Council:	TBC	TBC
Other Contacts:	TBC	TBC
	TBC	TBC

(*) These contracts area available on a 24-hour basis. Both persons have the authority to halt the progress of the works if required.

25.5 E – Disturbance Plan



DISTURBANCE LEGEND

SPORTS PRECINCT CONSTRUCTION

EXTENT OF CONSTRUCTION FOOTPRINT - STAGE 1A
- CAP AND CONTAIN IN ACCORDANCE WITH SECTION 9.5 OF THE R.A.P REPORT
- CAP AND CONTAIN THE TAR IMPACTED AREA IN ACCORDANCE WITH SECTION 9.5 OF THE R.A.P REPORT

EXTENT OF CONSTRUCTION FOOTPRINT - STAGE 2
- PRIOR TO COMPLETION OF STAGE 1A WORKS PROVIDE PASSIVE AND/OR PHYSICAL RESTRICTION TO STAGE 2 AREA.
- PREPARE A LONG-TERM ENVIRONMENTAL MANAGEMENT PLAN IN ACCORDANCE WITH SECTION 9.10 OF THE R.A.P REPORT
- ON COMMENCEMENT OF STAGE 2, CAP AND CONTAIN IN ACCORDANCE WITH SECTION 9.5 OF THE R.A.P REPORT

EXTENT OF CONSTRUCTION FOOTPRINT - STAGE 1B
PROPOSED CONSTRUCTION WORKS EXTERNAL TO R.A.P BOUNDARY

ENVIRONMENTAL MANAGEMENT ZONE (EMZ)

EXTENT OF RESTORATION AREA - STAGE 1A
- REMOVAL OF ISOLATED SURFACE ASBESTOS AND SPOT DUMPING VIA EMU PICKING
- REMOVAL OF CONTAMINATED FILL WHERE POSSIBLE
- EXOTIC VEGETATION REMOVAL AND REVEGETATION TO BE CARRIED OUT AS PART OF STAGE 1A WORKS
- WHERE CONTAMINATED FILL REMOVAL AND REVEGETATION ARE NOT POSSIBLE DETER ACCESS TO THE GENERAL PUBLIC THROUGH ADMINISTRATIVE FEATURES
- PREPARE A LONG-TERM ENVIRONMENTAL MANAGEMENT PLAN IN ACCORDANCE WITH SECTION 9.10 OF THE R.A.P REPORT

EXTENT OF BUSHLAND PROTECTION AREA - STAGE 1A
- PASSIVE AND/OR PHYSICAL RESTRICTION OF PUBLIC ACCESS
- REMOVAL OF ISOLATED SURFACE ASBESTOS AND SPOT DUMPING VIA EMU PICKING IN ACCORDANCE WITH SECTION 9.5 OF THE R.A.P REPORT
- PREPARE A LONG-TERM ENVIRONMENTAL MANAGEMENT PLAN IN ACCORDANCE WITH SECTION 9.10 OF THE R.A.P REPORT

NEW MOUNTAIN BIKE TRACKS CONSTRUCTION (2.0m WIDE CORRIDOR)
- REMOVAL OF ISOLATED SURFACE ASBESTOS AND SPOT DUMPING VIA EMU PICKING IN ACCORDANCE WITH SECTION 9.5 OF THE R.A.P REPORT
- WHERE NECESSARY PROVIDE AN ADDITIONAL ISOLATION LAYER IN ACCORDANCE WITH SECTION 9.5 OF THE R.A.P REPORT

REFURBISHED MOUNTAIN BIKE TRACKS (1.0m WIDE CORRIDOR)
- REMOVAL OF ISOLATED SURFACE ASBESTOS AND SPOT DUMPING VIA EMU PICKING IN ACCORDANCE WITH SECTION 9.5 OF THE R.A.P REPORT
- WHERE NECESSARY PROVIDE AN ADDITIONAL ISOLATION LAYER IN ACCORDANCE WITH SECTION 9.5 OF THE R.A.P REPORT

EXISTING WALKING TRACKS
- REMOVAL OF ISOLATED SURFACE ASBESTOS AND SPOT DUMPING VIA EMU PICKING IN ACCORDANCE WITH SECTION 9.5 OF THE R.A.P REPORT

EXISTING FIRE / MAINTENANCE VEHICLE TRACK
- REMOVAL OF ISOLATED SURFACE ASBESTOS AND SPOT DUMPING VIA EMU PICKING IN ACCORDANCE WITH SECTION 9.5 OF THE R.A.P REPORT

TO BE READ IN CONJUCTION WITH FINAL REMEDIATION ACTION PLAN PREPARED BY TETRATECH COFFEY FOR DETAILED REMEDIATION STRATEGIES

NOTE
THIS DISTURBANCE PLAN HAS BEEN PREPARED FOR THE ASSESSMENT OF BIODIVERSITY IMPACTS

0 15 30 45 60 75 90 105 120m
1:1500 A1 1:3000 A3

FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

Rev	Description	Eng	Draft	Date
P6	FOR APPROVAL	DM	WW	04.06.24
P5	FOR APPROVAL	DM	WW	30.05.24
P4	FOR APPROVAL	DM	WW	15.09.23
P3	FOR APPROVAL	DM	WW	08.09.23
P2	FOR APPROVAL	DM	WW	01.09.23
P1	FOR APPROVAL	DM	WW	18.08.23
P10	FOR APPROVAL	DM	WW	27.06.24
P9	FOR APPROVAL	DM	WW	19.06.24
P8	FOR APPROVAL	DM	WW	14.06.24
P7	FOR APPROVAL	DM	WW	07.06.24

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Project
WESTLEIGH PARK, QUARTER SESSIONS ROAD, HORNSBY

Sheet Subject
BIODIVERSITY ASSESSMENT DISTURBANCE PLAN

Scale : A1	Drawn	Authorised
1:1500	JH	TM

Job No	Drawing No	Revision
201537	C014	P10