

PROPOSED KELLYVILLE SOUTH PUBLIC SCHOOL DEVELOPMENT

Preliminary Construction Management Plan

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1. INTRODUCTION

1.1 Overview

This Preliminary Construction Management Plan outlines the methodologies and strategies anticipated for the construction of a new Public school development at 21 & 23 Fairway Drive Kellyville NSW 2155 – proposed name Kellyville South Public school development.

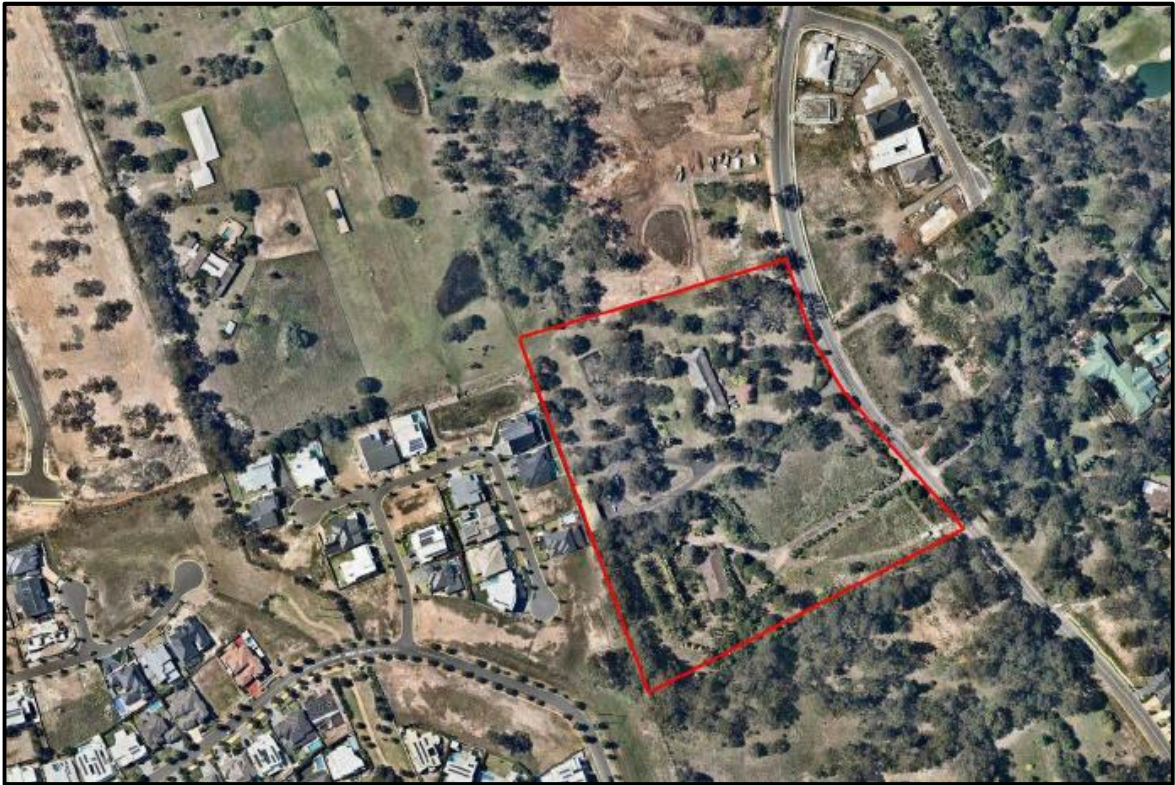


Figure 1- Existing Site

1.2 Site Description

The subject site is located within the Western Sydney suburb of Kellyville and is situated off Fairway Drive currently occupied as residential Lots Nos 21 & 23 comprising of circa 3.5 ha and consisting of existing dwellings with associated estate grounds and access roads off Fairway Drive. The land falls steeply West to East across the Lots with circa 8-12m falls and there are a number of mature trees across the Lots, separate Arboricultural & Ecological reports have been developed identifying the plan for the development. A Preliminary Traffic Management plan has also been prepared and incorporated into this plan.

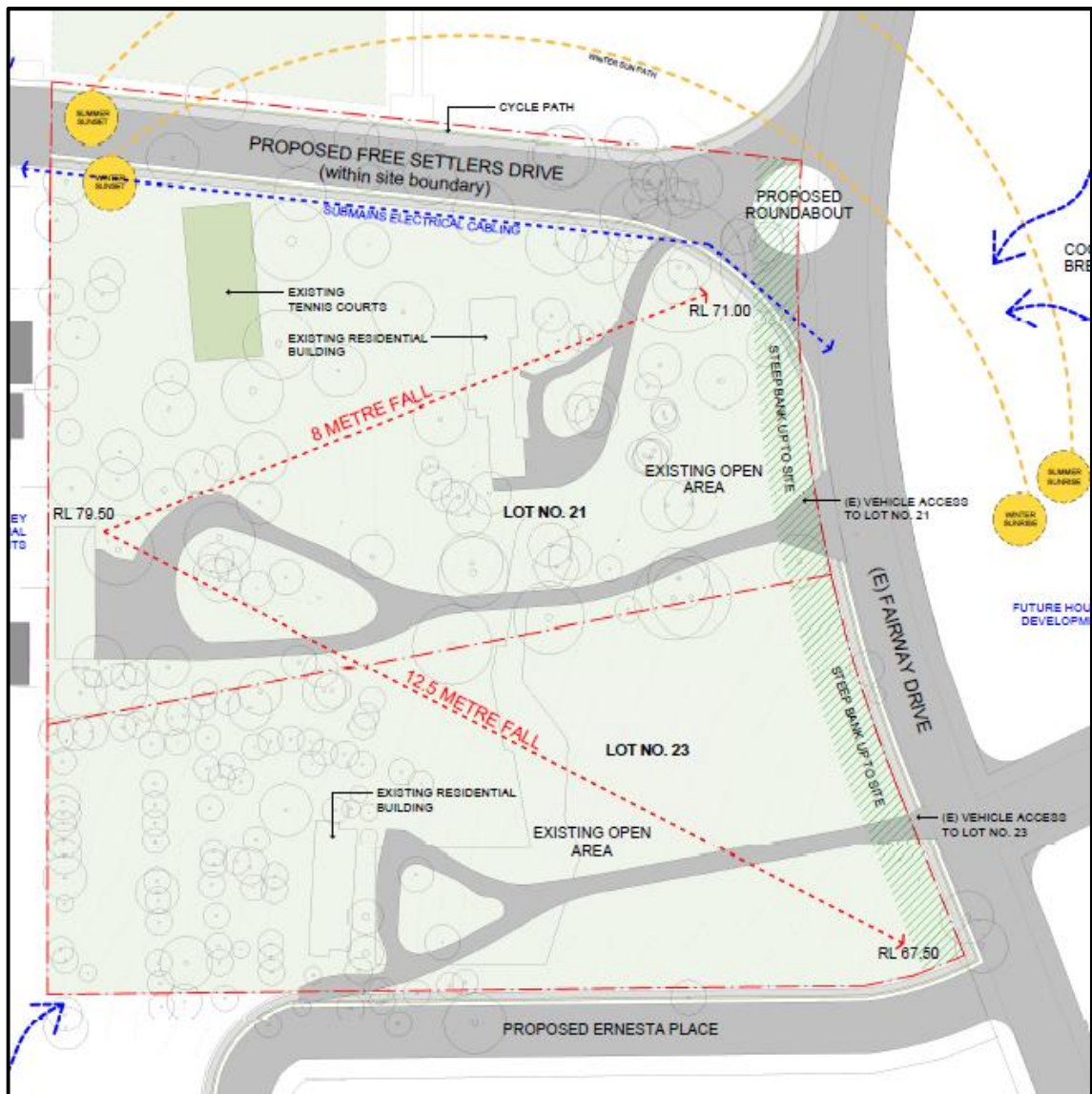


Figure 2 - Site Location

2. PROPOSAL

The proposed development consists of the Construction of a new Public School and associated sports facilities, site services and landscaping.

This construction management plan (CMP) is a preliminary report, and the measures contained within it are subject to change during the detailed design phase. A more detailed CMP will be developed following appointment of a construction contractor.

2.1 Project Staging

The project will be broken into the following stages:

2.1.1 Pre-construction

- Project preparation works including surveys, due diligence and approvals
- Site preparation and set up including accommodation etc...

2.1.2 Enabling works

- Demolition of existing dwellings to Lots 21 & 23 Fairway Drive including associated structures and driveways.
- General site clearance including removal of existing trees, shrubs and vegetation.
- Topsoil strip and bulk earthworks cut/fill to grade.

2.1.3 Main Construction Works

- Construction works for new Public School 2 storey buildings - Blocks A, B & C
- Construction of New Sports Hall
- Construction of New Sports field
- Construction of Retaining structures to accommodate New facilities
- Installation of associated Site Services
- Hard and Soft Landscaping.

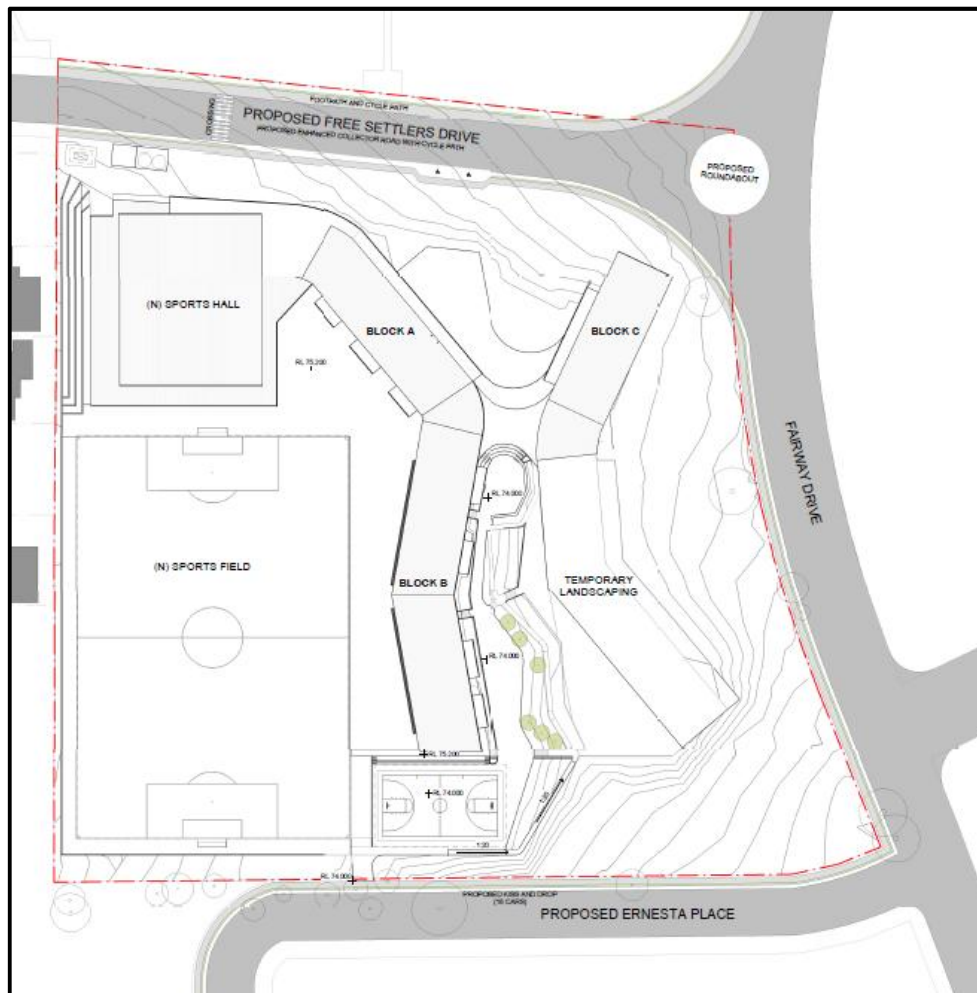


Figure 3 – Main Construction Works Layout

2.2 Construction Methodology

The following explains the proposed staging, methodology, sequencing and specific requirements to be adopted during construction of the proposed works.

2.2.1 Pre-construction

Prior to construction works being undertaken on site, all necessary planning and investigations will be undertaken to mitigate and control impacts arising from the proposed works:

1. Existing Condition and Dilapidation Survey

A detailed dilapidation survey will be performed on surrounding areas including:

- Roads, kerb & gutter, footpath
- Street signs, street furniture, light poles, trees etc.
- Infrastructure installations (pits, bollards etc.)

2. Existing Infrastructure Due Diligence

Infrastructure investigations including:

- Location of services in ground (including marking of location)
- Establish dialogue and liaise with authorities to make relevant applications.

3. Authority Approvals

Approvals applications (aside from planning requirements) including:

- Utility diversions and/or protection works
- Traffic Management Plan

It is envisaged to utilise the existing residential paved roads off Fairway Drive for the majority of the works until a point in time when new permanent access roads are installed. Any requirements detailed in the Traffic Management Plan will be installed and incorporated to enable safe access and egress to the site for material vehicular deliveries.

Temporary silt fencing and sedimentation drainage will also be installed where necessary prior to construction earthworks commencing. Site accommodation and stores compounds as well as site car parking facilities will be installed at this stage, it is anticipated these will be located at the North East of the site adjacent to the proposed Block C in the existing open area utilising the existing access to Lot 21.

2.2.2 Enabling works

Demolition

Contractors undertaking demolition works during this phase will be required to develop and implement specific plans to ensure works appropriately deal with safety and environmental issues. Contractor works will include:

- Removal of hazardous materials present within the existing residential properties that are to be demolished as part of the works. Noting that the initial Hazardous building materials survey has highlighted harmful substances ie; Asbestos.
- Demolition of existing internal building finishes, including existing building services not required in the new development.

All demolition materials will be loaded into road trucks and removed offsite and deposited at a designated waste facility.

Site Clearance and Bulk Excavation

All existing trees identified to be removed will be undertaken by an approved specialist Arborist contractor, it is envisaged at this stage that all removed trees will be transported off site to a registered waste disposal recycling facility.

Topsoil strip will be progressed utilising on site dump trucks and deposited to a designated onsite Topsoil storage area for use during later Soft Landscaping works.

Bulk excavation cut and fill operations will generally progress West to East to the required reduced levels and proposed profiles. Where fill material is to be placed on existing ground this will be proof rolled prior to filling operations, placement of fill will then proceed with compaction to the required specification and levels required. Piling platforms will be installed where necessary prior to piling rigs mobilised for piling operations.

Western Piled Retaining Wall

Concurrent with Bulk earthworks operations piling will commence to the proposed Western retaining wall to the Soccer field western perimeter. A continuous pile cap will be installed progressively as Piling is completed allowing final bulk excavation to the face and follow on shotcreting activities. The excavation will be removed in maximum 1500mm layers as specified, shotcrete and associated reinforcement installed, excavation will progress to the next level once sufficient concrete curing has been attained. Once excavation to the required reduced levels is complete a strip footing will be installed prior to the installation of the blockwork facing, where necessary temporary scaffold will be installed to allow safe access for the installation of blockwork facing. Associated drainage and perimeter fencing to the top of the wall will be installed fully completing this retaining structure.

Site Stormwater Services

Once bulk earthworks operations are completed site drainage will commence, working from the lowest outfall point and connecting to the existing mains the drains will be laid to falls in excavated trenches as specified, suitable bedding, surround and backfill material will be compacted to final reduced levels. Where necessary trench supports will be installed to ensure safe working conditions during all excavation and drainage installation works. Proposed retention tanks will also be constructed connected to the drainage where required, again temporary supports will be installed if required during excavation and construction.

2.2.3 Main Construction Works

Associated Retaining Walls

Associated retaining walls to the North West and South West areas of the site will be progressed as Bulk earthworks operations allow, these structures comprise of typically reinforced foundations and blockwork construction with associated drainage and fencing as required. These retaining structures will be progressively constructed in conjunction with bulk earthworks operations with cut and fill operations allowing stepped construction as specified.

Main Building Blocks

Once the required reduced levels have been attained following the bulk earthworks operations, works will progress on the construction of the proposed Blocks A, B and C progressively in that sequence. Piling platforms will if required be installed for piling to be installed for the proposed piled foundations working progressively from North to South of the site. At this stage a single piling rig is envisaged however a secondary rig could be mobilised if required to progress Piling on 2 fronts. Block C will require the construction of a separate retaining wall to its Western perimeter prior to the installation of piled foundations, therefore this is sequenced to be the last Block to be constructed at this stage.

Reinforced pile caps will then be installed and Ground floor slabs progressed sequentially incorporating the required construction and movement joints as specified. Reinforced concrete columns and shear walls will then be constructed to first floor levels as noted. It is anticipated that Concrete mobile pumps be used for the construction of floor slabs, columns and walls where required. Mobile craneage will also be required for the installation of reinforcement and lifting of formwork where necessary.

1st floor slabs will be constructed utilising formed tables which will be installed as soffit formwork allowing reinforcement and concrete to be placed by mobile cranes and pumps. It is envisaged at this stage that the 1st floor structure and roof is constructed of steelwork columns and beams which will be erected utilising mobile cranes. Steelwork will be delivered to site and lifted into place lined and levelled and grouted into their final position.

Note Block C Lower Ground floor foundations and floor slab, Columns to and including Ground Floor and above works are to be completed in Stage 1 works. Completion of Lower Ground non-structural walls and fitout works will be installed during Stage 2.

Scaffold will be erected directly off the pre-laid concrete slabs or levelled formation allowing erection of the external facades, walls and windows. Again craneage will be used where necessary to install panels in a safe and secure method.

Similarly roofing will be delivered and installed utilising mobile craneage to ensure a watertight structure allowing follow on installation of internal services and finishes.

Services, internal partitions and ceilings will be progressed once a weather tight structure allows with finishes including flooring, painting, tiling and final fittings to the rooms at each level progressing in a sequential manner throughout the blocks.

Sports Hall

Works will progress on the proposed Sports hall once earthworks and retaining structures to the western perimeter have been completed. Generally the reinforced concrete foundations and ground slabs will progress followed by the installation of the structural steel metal deck structure forming the roof of the building. Mobile cranes will be utilised to erect the structural steelwork and roofing as required. External scaffolding will be temporarily erected to construct the external walls prior to services installation, internal partitions, ceilings and finishes including flooring, painting and fittings installed to the amenity rooms and main sports hall area.

Soccer field & Amenities

Once the retaining structure and earthworks operations are complete to the perimeter of the sports field filtration drainage will be installed across the full area of the proposed soccer field followed by the installation of layered compacted subbase material as specified and artificial turf laid as required to specified falls. Line marking, lighting columns and equipment will then be installed to fully complete the facility.

Site Services

All service routes ie; sewers, firemain, water, communications and security will be installed following installation of the drainage routes and as earthworks and building works allow.

Courtyard Landscaping including Amphitheatre

External landscaping including paved and planted areas will progress once external walls and roofing is complete to Blocks B & C and temporary scaffolding has been removed allowing access for plant to complete the landscaping works. The central amphitheatre area will be shaped with final earthworks operations and retaining structures installed.

Finishes

External security fencing will be installed to the perimeter of the proposed school grounds, final finishes including lighting, equipment and fittings installed, the clearing of the site compound, car parking areas and storage areas will be completed prior to final landscaping completion and handover of the proposed school facilities.

2.3 Hours Of Operation and Programme

The proposed working hours for this project are as follows:

- Monday to Friday- 7:00am to 5:00pm
- Saturdays- 8:00am to 1:00pm
- Sundays and Public Holidays - No work

If required, after hours permits will be sought from the relevant authorities.

The overall Construction Programme period for the proposed development works is circa 16 months which includes 2 weeks Christmas shutdown, standard public holidays and Rostered Days Off (RDO's) as well as a 15% weather risk contingency. A copy of the Preliminary Construction Programme is attached in Appendix A which shows the phases of works detailed herein, the durations of the proposed works as well as staging and sequencing.

An indicative Manpower histogram is also included in Appendix B indicating the anticipated number of labour on site required to construct the works. It is anticipated that this project will create a number of opportunities for employment to the local and surrounding communities. The estimated job creation opportunities during the Construction and Occupation stages is expected to be in the region of circa 350nr and 70nr respectively.

2.4 Materials Handling Strategy

Prior to commencement of works, a Traffic Management Plan will be developed and traffic controls installed to manage the flow of traffic on and around the proposed site. See Section 2.5 for more details regarding the Traffic Management Plan.

During the demolition phase, the handling of materials will be controlled by the demolition contractor with specific considerations for the handling of hazardous materials. See Section 2.7 for further details on the handling of Hazardous Materials.

In constructing the new Building blocks and Sports hall facilities the bulk of vertical handling will be undertaken utilising mobile cranes, specific tasks where lifting by craneage is anticipated are:-

- Reinforcement bars/cages & formwork panels to Columns
- Table formwork to 1st Floor Building.
- Structural Steelwork to 1st Floor and Roofing
- Façade & Roof Cladding panels
- Heavy services plant installation
- Deliveries of bulk materials and lifting into storage areas
- Lift installation

Prior to any lifting as above provisions will be made to ensure levelled ground bearing formations are in place for mobile crane lifting pads to ensure a safe operation and working zone is maintained.

3. ENVIRONMENTAL MANAGEMENT

3.1 Public Safety and Protection

Appropriate signage will be placed on areas at the entrance to the site along Fairway Drive indicating the works area and restricted access to the site. The entry to the site will have a security guard to control entry of authorised personnel only.

All works will be undertaken in accordance with the requirements of Workcover NSW as well as the relevant standards and codes of practice to ensure the safety of personnel on and around the site.

Contractors will be required to undertake a thorough induction specific to the site and to hold on-site briefings periodically as the project and site evolves.

3.2 Dust Control Measures

A detailed Air Quality Management Plan will be provided by the contractor once appointed. This will be submitted to the Hills Shire Council prior to the commencement of works.

All demolition works will be undertaken by appropriately licensed and experienced contractors, utilising the relevant codes of practice with regards to the generation of dust.

Regular daily monitoring will be undertaken throughout the construction phase and, mitigation measures will be undertaken on an as-needs basis.

3.3 Stormwater Management Measures

A Storm Water and Erosion Management Plan will be provided by the contractor once appointed. This will be submitted to the Hills Shire Council prior to the commencement of works.

A continuous sedimentation drain and silt fence will be installed to the low side perimeter of the site as specified to prevent any spoil washing from the site. The drains and pits will be inspected regularly and maintained such that they remain effective.

A sediment control trap for vehicles will also be established at the vehicle entry to assist with preventing spoil from being deposited onto adjoining roads.

3.4 Noise and Vibration Control Measures

A Construction Noise and Vibration Management Plan (CNVMP) will be provided by the contractor once appointed. This will be submitted to the Hills Shire Council prior to the commencement of works. All works have been planned within the proposed working hours as outlines in Section 1.6.

Control of noise and vibration will be achieved through ongoing and effective monitoring systems.

Plant and equipment utilised during demolition and construction will meet conditions of consent with regard to noise levels. If required, mufflers and acoustic screening will be used to reduce levels of noise on plant and equipment where possible.

Vibration disturbance will be kept at a minimum and these works will be undertaken during suitable times of the day.

3.5 Traffic Management

A separate Preliminary Construction Traffic Management Plan (PCTMP) has been provided identifying the proposed vehicular routes, points of access/egress and vehicular and pedestrian controls, this will be updated by the Principal contractor once appointed. The Construction Traffic Management Plan will be submitted to the Hills Shire Council prior to the commencement of works.

An on site traffic and pedestrian route plan will be maintained for the identification and management of work zones, material deliveries and which will manage the flow of vehicle and pedestrian traffic on and around the proposed works zones to alleviate congestion. Also, signage and directions will be clearly identified to assist safe movements and manoeuvres.

At this stage it is envisaged the demolition and excavation activities be serviced utilising standard Medium Rigid Vehicles (MRV) and Truck and Dog Vehicles which will be loaded on site utilising tracked excavators. Following the demolition and excavation, it is expected that deliveries will increase due to the construction of the structures and internal fit out works.

Bulk deliveries will be unloaded into predefined storage and materials deliveries areas prior to being distributed to the workface for installation. Authorised traffic controllers will be utilised as required to facilitate movements on and off site.

Appendix C shows indicative daily truck deliveries anticipated throughout the construction period.

3.6 Waste Management

The proposed Enabling works will involve demolition of the existing residential buildings. This will include removal of existing hazardous materials as identified during pre-surveys, this material will be carefully removed, packaged and distributed to a licensed waste facility offsite by specialist

contractors. HAZMAT materials management details will be provided by the contractor once appointed, this will be submitted to the Hills Shire Council prior to the commencement of works.

The remaining structures will be demolished in a controlled manner loaded into bins/trucks and deposited offsite to a licensed waste facility for landfill or recycling.

It is anticipated that the materials in the table below will be generated from the demolition activities in approximate proportions.

Material	Demolition waste % estimates	Destination
Brick	50-75%	Recycled/Reused
Concrete	15-20%	Recycled/Reused
Timber	5-10%	Recycled/Reused
Metal	0-2%	Recycled/Reused
Plasterboard	5-10%	Recycled/Reused
Roof Tiles	5-10%	Recycled/Reused
General Waste	0-5%	Landfilled
Asbestos	0-5%	Landfilled

Figure 3 - Demolition Waste Estimates and Destinations

The Australian Reusable Resource Network and the Sydney Waste Exchange will be used where possible for any excess materials that are reusable. These organisations allows people to list recyclable and reusable items they either wish to dispose of or obtain on the following websites <http://www.arrnetwork.com.au> and <http://www.sydneywaste.com.au>.

A Waste Management Strategy for the construction works will be provided by the contractor once appointed. This will be submitted to the Hills Shire Council prior to the commencement of works. It will outline the best practise to re-use and recycle hard and soft waste material generated on the site to reduce/ avoid waste to landfill.

Indicative Manpower Histogram

