

**1, 1A & 5 AVON ROAD AND 4 BEECHWORTH
ROAD, PYMBLE**

**CONSTRUCTION MANAGEMENT PLAN FOR
DEVELOPMENT APPLICATION**

**NOVEMBER 2012
(REVISION C)**

PREPARED BY

Caverstock Group

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1.00 INTRODUCTION

This Construction Management Plan covers most of the items of construction and is meant to assist in the understanding of the construction process and to minimise construction impacts on the surrounding community, the environment and road network.

The construction time and the methodology will be refined and detailed and is subject to sales/marketing, tendering and the actual contractor being engaged for the work but this Statement can be used as a guide as to normal construction methods. The Project Application with the Department of Planning and Infrastructure and the Conditions will add to the site requirements for constructions and will be maintained by the contractor.

The construction period (subject to engagement of contractor) if completed in one stage could be approximately 27 months. This project is currently programmed for one stage and is subject to sales and the Residential Market which could extend this time period by completing the work in three stages.

Note that this document is based on the scope of work as shown on the Architect's Concept Plans and documents

1.01 The Site

The site of this proposed residential project is located at Avon Road, Pymble, to the south of the railway and west of Pymble Ladies College. It is bound by Avon Road to the east, Beechworth Road to the west and private residences to the south.

The Property area is 23,667m². It is located in a small valley central to the development, the lowest part being approximately RL125m rising to RL145 at Avon Road and RL 155m at Beechworth Road. There is access onto the property and there is also an access track down from Avon Road to the lower part of the site.

There are many trees on the property with a scattering of smaller shrubs, scrubby plants and is heavily weed infested. Trees and vegetation to be retained will be fully protected and fenced off by star pickets and wire as required by the Ku-ring-gai Council Tree Preservation Order.

The Concept Plan and Project Application with the Department of Planning and Infrastructure is for the construction of four buildings consisting of 270 residential apartments and associated underground car parking.

Refer to Site Location Plan (Appendix A).

2.00 SITE CONSTRAINTS

2.01 Authorities/Public Utilities

i. Power Supply

- An ASP consultant is to be engaged to discuss with Ausgrid the following:
 - Any spare capacity in the grid.
 - New substation sizes, access and locations.
- An electrical engineer is to be engaged to review the residential design and to advise on maximum power demands for the project. This advice is then sent to the ASP3 consultant for the determination of the Substation sizing and the type of substations agreed by Ausgrid for the site.

ii. Sewer System

The existing sewer main system is found along Avon Road and Beechworth Roads.

A water services coordinator is to be engaged with the Hydraulics Engineer to investigate and discuss with Sydney Water the following:

- Main sewer - to discuss with Sydney Water and to design new sewer system for the project.
- Capacity of the existing sewer for the development on the site.

iii. Telstra

Telstra has existing services along Avon Road and Beechworth Roads. The Electrical Engineer is to discuss connections to the existing services.

iv. Water Supply

Water supply is located in mains down Avon Road and Beechworth Road.

The water services coordinator is to obtain details from Sydney Water:

- Water Pressure Test.
- Adequacy for residential supply.
- Adequacy for fire services.
- Booster pump requirements.

2.02 Ground Conditions

i. Geotech Investigation

A full geotech investigation by Jeffery and Katauskas Pty Ltd has been completed which assesses the site and summarises the observations:

- Geotechnical Assessment
- Type of substrata material
- Rock strength for structural designs

- Ground water flows
- Risk Assessment

ii. Ground Contamination Assessment

This has been completed by EIS who assessed the site and summarised the observations.

- Search for previous property uses
- Contamination summary
- Contamination requirements

2.03 Landform

The site is fairly steep on both sides with a small valley running parallel to both Avon Road and Beechworth Road. The lowest part is RL 125m. Beechworth Road entry is approximately RL 155m and Avon Road top entry is RL 145m. Access is available to the site at three locations with access to the valley bottom off Avon Road.

2.04 Parking and Delivery Access

Parking for construction and access for deliveries is limited on the surrounding streets. Construction Workers will be required to take public transport or car pool. Deliveries will be made directly on site from both Avon Road and Beechworth Road.

2.05 Construction Noise

Acoustic consideration as to working hours will be an approval condition. Restrictions on construction noise will be maintained as a priority.

3.00 CONSTRUCTION TRAFFIC

- 3.01** A Construction Traffic Management Plan prepared by the builder will be a condition of the approval and is to be approved by Council and completed for the Construction Certificate. Truck movements will be limited and shared by the main roads coming to the site.

General worker construction traffic will peak between 6:50am and 7:00am and between 3:30pm and 4:00pm when the majority of workers arrive or leave the site. Delivery trucks will be spread through the day.

Traffic controllers will supervise all truck movements accessing the site and any works within the roadway and footpath areas (e.g. erecting fences and hoardings, sewer work and other service connections).

Any measures for traffic control in the traffic report by the Traffic Consultant or required by Council are to be adopted by the building contractor.

3.02 Construction Access

- A. Access for demolition, weed and tree removal will be off Avon Road and Beechworth Road.

Note that trucks will remain on site during the loading process and will enter the road in a forward motion.

- B. Access for construction work will be:

1. **Deliveries** are to be made via Avon Road and Beechworth Road. Deliveries will be spread through the day.
2. **Concrete pumping** will be on site and from the road closest to each building. Pumping concrete will commence at 7:30am and continued till the sector is completed.
3. **Truck Routes** for demolition and excavation processes, trucks will approach and depart via Avon Road and Beechworth Road, all trucks will turn around on site.

For the construction and fitout processes, trucks will approach and depart via Avon Road and Beechworth Road.

4. **Truck Movements** will vary throughout the process with the major movements occurring during the site clearing, excavation period and major concrete pours. Indications of truck movements are as follows:

- Site Clearing 8 trucks per day (Approx)
- Demolition 4 trucks per day (Approx)
- Excavation 10 trucks per day (Approx)
- Construction 5 trucks per day (Approx)
- Fitout 5 trucks per day (Approx)

3.03 Construction Certificate Documents

The building contractor will provide a detailed Construction Traffic Management Plan (CTMP) and also the Traffic Control Plans (TCP) will be issued to Council for approval as required during the Construction Process.

Refer to Main Delivery Access Roads (Appendix B).

4.00 CONSTRUCTION PARKING

4.01 Construction Parking

There will be approximately a maximum of 60 building workers on site in the peak period which would generally limit the maximum car numbers parked on the neighbouring streets to be between 20 to 30 cars with some motorbikes and some bicycles.

All construction workers will be encouraged to ride to and from work on public transport or to share vehicles. Trades will require a drop off for tools, materials and equipment then find parking in the neighbourhood.

5.00 CONSTRUCTION HOURS

Generally, a 6 day working week, allowing for no work on site on public holidays, Christmas and fixed roster days off.

Construction hours will be set as a condition of development approval.

A normal work day on this site could be Monday to Friday 7:00am to 5:00pm and Saturday 7:00am to 3:00pm.

Noisy equipment and machinery usually could commence at 7:30am on the above days.

6.00 CONSTRUCTION SITE ESTABLISHMENT, SAFETY, AND HYGIENE

Prior to any work or movement onto the site, the building contractor will complete a detailed and concise photographic dilapidation report of the surrounding roads, footpaths and authority assets and internals/externals of all adjacent buildings and the like.

All temporary sheds (offices, abolitions, lunch, storage, safety and meeting) will be placed in secure, out of the way fenced pockets of the site. All doors to face inwards so that the sheds will assist to buffer any noise.

All site sheds will be locked and in secure fenced compounds with gated access. No unauthorised persons will be allowed in the compound or on the site. The construction site will be made fully secure by regular nightly mobile patrols and locked security fencing.

All construction shed areas are to be maintained in a clean rubbish free state through the duration of the project.

All use of personal safety equipment will be thoroughly monitored by permanent site safety staff responsible for checking that all workers are issued with and wear the regulation safety clothing and personal safety equipment.

All requirements of Workcover NSW, Occupation Health & Safety and Ku-ring-gai Council are to be complied to by the builder.

Currently there are boundary fences around the site but where required site fencing will be a secure chain wire fence 1.8m high with shade cloth covering facing the roads. Access gates will be part of the fencing.

Site environmental protection (refer to Appendix E). The following measures will be complied to during and prior to construction:

- Protection of gutter and street stormwater drains
- Sediment controls
- Soil and water management plan
- Dust control
- Protected stockpiles
- Protected wash areas
- Excavation pump out
- Protected concrete delivery
- Protected services trenches
- Protected waste management
- Protecting vegetation

7.00 CONSTRUCTION - PUBLIC SAFETY

Public safety will be maintained by the following methods:

1. Perimeter security chain wire fencing only where required, where the existing boundary fences are deficient and at the three entry access points. Scaffolding around the new structures with shade cloth covering the scaffold and wire fencing as needed.
2. Truck and all delivery movements are to be assisted by traffic controllers who will be responsible for pedestrian and vehicle safety.
3. Footpath protection for truck movements will be installed where required.
4. Directional signage for drivers will be placed in logical spots along Avon Road and Beechworth Road with advice on placement from Ku-ring-gai Council officers.
5. Works within the Public Domain such as footpaths and pedestrian crossings are to be constructed to Code requirements and are to be built in a way to protect the public by providing safety devices and safety methods to acceptable standards.
6. Public and construction worker safety is a prime requirement for this site, all site safety requirements to protect the public and construction workers will be as per Workcover NSW, Occupation Health & Safety and Ku-ring-gai Council regulations.

8.00 DEMOLITION AND SITE CLEARING

Demolished materials will be recycled to a higher percentage including concrete, bricks, and timber which will be removed to recycling yards. Existing pavements are to remain for as long as possible to reduce dust and mud.

Where required the existing drainage system in the streets will be covered with a terra-firma material held by sand bags which will allow normal drainage to occur but will filter solids allowing clear water to drain.

Where required by the approved design all weeds, scrub and trees are to be removed and loaded onto trucks or chipped for future reuse.

As required by the Flora and Fauna Assessment by Anne Clements and Associates an Environmental Manager will be engaged during the removal of existing scrub and trees and will be onsite during the earthworks period.

Note that the Managed Vegetation Zone will be fenced off with star pickets and a three wire fence with 'Keep Out' signage along the fence.

Trees to be removed by cutting off the external branches then the central trunk prior to grubbing out roots. Trees to be retained on the streets and on site will be fully protected against impact.

Dust is to be suppressed, safety maintained and noise reduced all in accordance with the relevant requirements of Ku-ring-gai Council, OH&S, and NSW Workcover.

Refer to Site Environmental Protection (Appendix F).

9.00 CONTAMINATION AND REMEDIATION

The site has been investigated and assessed by EIS (contamination consultants) and show that contamination in the soil is considered to be minimal and the site can be made suitable for the proposed development usage.

The site will require a Remediation Action Plan for some small areas.

The existing building is to be fully investigated by a specialist contamination consultant and any hazardous material found will be legally removed and disposed of during demolition to suit Workcover NSW to registered tips.

This removal of any contaminated soils will be strictly supervised by a Contamination Consultant. All contaminated materials if found will be loaded onto trucks which will then travel with the load covered. All loads to be registered showing destination and sign off as required.

All demolition and Hazmat removal will be completed in accordance with Workcover NSW and Occupation Health & Safety, Ku-ring-gai Council and all relevant authorities.

The recommendations of EIS are to fully complied with during site excavation phase and after vegetation is removed.

10.00 EXCAVATION AND WASTE WATER MANAGEMENT

As there are a number of underground car parking basements, there will be excavation of part of the site. Excavations will occur for services, stormwater drainage, and the bulk of the carpark areas.

The contractor is to maintain the requirements of contractors "Construction Noise and Vibration Control Strategies". If excessive noise and vibration is to be encountered, the contractor is to nominate methods that will reduce this noise or vibration to an acceptable level.

It is envisaged that the soils above the rock will be excavated and assessed by a Geotechnical Consultant and its removal directed to the appropriate tip. If required the soils above the rock level will be temporarily retained until the structure is completed and any retaining walls are built. The rock is to be cut and removed under the guidance of the Geotechnical Consultant. Rock bolts if required will be used. No excavation or excavation methodology including rock bolts will interfere, protrude or impact in any way on Railcorp's facilities as all works are well clear of the Railcorp boundary. Railcorp's facilities or operations will not be affected.

Roads adjacent to the site are to be checked during the day and immediately cleared of any soil or material carried off site by trucks wheels.

The building contractor is to provide all requirements of the NPC Pty Ltd - 'Erosion and Sediment Control' measures (Appendix E).

Any water to be pumped out of trenches is to be thoroughly filtered by means found in the Sediment Control Measures.

Refer to the Site Environmental Protection Measures (Appendix E) - Stabilised Site Access; Protection of Site Stormwater Pits; Sediment Control; Dust Control; Excavation Pump Out; Protected Services Trenches; Protected Vegetation.

11.00 SEDIMENT CONTROL MEASURES

Refer to 'Stormwater Management and Riparian Issues' by NPC Pty Ltd (Nov 2012) which contains the Sediment and Erosion Control Plan and measures which has been formulated for the construction phase of the project to control the quality of runoff from the site. This plan by NPC Pty Ltd has been designed based on the industry best practice 'Blue Book' guidelines. (Refer Appendix E).

11.01 During Construction

The objectives during construction are to minimise the erosion caused by runoff over the site and maximise the sediment and pollutant control on the site, thereby minimising the sediment load and any pollutant load in runoff which discharges off the site. The controls proposed on the subject site conform to the industry best practice guidelines in the 'Blue Book'.

The main principles of erosion and sediment control are to:

- Minimise the extent of site disturbance
- Rapidly stabilise disturbed areas
- Divert clean runoff around work areas
- Trap eroded sediment prior to discharging to a drainage line or natural waterbody

The proposed Erosion and Sediment Control Plan for the site is detailed (Ref Appendix E).

The Plan conforms to the requirements of the Ku-ring-gai Council Water Management DCP 47.

12.00 NOISE, VIBRATION AND DUST - AIR QUALITY MANAGEMENT

Noise, vibration and dust will be attended to as an absolute priority to reduce nuisance value to the surrounding neighbours.

The contractor is to maintain the requirements of the contractors "Construction Noise and Vibration Control Strategies". If excessive noise and vibration is to be encountered, the contractor is to nominate methods that will reduce this noise or vibration to an acceptable level.

12.01 Measures to be Adhered to on this Site

- All trucks leaving the site loaded will be covered.
- During periods of high winds, dust creating equipment and activities will cease.
- Excavations containing material that may cause dust in high winds to be spray watered.
- No fires on site.
- Equipment to be checked for maintenance and noise. All to be equipped with silencing devices.
- If required, the builder will engage an Acoustic Consultant to check noise generation.

There are specific requirements in place as set out by Workcover NSW and Occupation Health & Safety that this site will adhere to. This will provide a quieter and safer environment for the neighbours, workers and the general public.

Refer to Site Environmental Protection measures (Appendix E - Dust Control).

13.00 CONSTRUCTION WASTE MANAGEMENT

All builders, trade and demolition waste is to be removed to one spot in each of the building sites by forklift, bobcat or crane and from there will be sorted by the builder and subcontractors and tipped as landfill or recycled.

All other waste food, scraps, etc will be removed as required by a waste removal contractor and taken to a waste tip. No food waste rubbish is to be allowed to accumulate, all bins are to be marked and are to have lids.

Most demolished materials will be removed and recycled by the demolisher.

Refer to Site Environmental Protection Measures (Appendix E) - Dust Control; Protected Stockpiles; Protected Waste Management.

14.00 CRANAGE, CONCRETE POURS, MATERIALS HANDLING AND CONSTRUCTION ZONES

It is envisaged that the major cranage may be by mobile cranes located on the sites. This will be subject to the final building contractor's methodology as smaller electric on site cranes may be used.

Some minor deliveries using mobile cranes will occur with lifts from the access roads as needed.

No cranes or equipment working on this site will operate or intrude into the rail corridor air space or over any overhead wires. This item will be strictly supervised and controlled.

Concrete pumping will occur as needed for areas of the site with concrete truck delivery to the access roads.

Refer to the Site Environmental Protection Measures (Appendix E) - Stabilised Site Access; Dust Control; Protected Concrete Delivery.

- Demolition - on site loading by drotts
- Excavation - on site loading by excavators and drotts
- Construction - mobile crane with trucks on access roads
- Fitout - mobile crane with trucks on access roads

Construction zones, if required by the builder, will be applied for by the builder to Council.

15.00 GENERAL CONSTRUCTION SEQUENCING

Construction sequencing is actually subject to the building contractor being engaged through the tender process. Following is indicative construction sequencing by which the buildings could be constructed.

Note - this is based upon the building constructed all at one time. This may change and the project may be staged to suit sales and the Residential Market.

- Site Establishment
- Land Clearing
- Access tracks
- Demolition
- Excavation
- Construct Building 1
- Construct Building 5
- Construct Building 3
- Construct Building 4
- Roadworks
- Landscaping
- Demobilise

Note - this project can be staged if sales require as follows:

Stage 1 - Building 1 and 5

Stage 2 - Building 3 and 4

16.00 ENVIRONMENTAL MANAGEMENT

The aim of this section is to promote sustainable development principals in both the operations of the building and the construction of the building structure. General thoughtful design and product selection will enable the promotion of these principals.

The main item of consideration for demolition and construction of a building is the impact on the amenity of the neighbourhood. The objectives for this proposed demolition will be as follows:

1. Reduce and minimise disruption for the neighbourhood.
2. Waste minimisation.
3. Strictly supervise the Demolition and Construction Works on site.
4. Promote respect for the neighbours and the environment.
5. Strictly control access/egress of construction delivery trucks.
6. Reduce noise, dust and vibration emissions of the demolition and construction process.

Adequate care and supervision of all activities on and off site will be strictly adhered to by the contractor under the contract and by this control the proposed works will achieve the required objectives.

16.01 Care of the Environment

1. Reduce and minimise disruption for the neighbourhood - this would cover site workers, trucks removing recyclable and non-recyclable material from site and entering the site. Fencing the site to contain the works. Restricting times for mechanical equipment commencing in the mornings and supervising site workers to reduce loud early morning conversations.
2. Waste Minimisation - all materials removed from the building are to be sorted into recyclable and non-recyclables and are to be taken to recycling yards if reusable or if absolute waste, to the tip as land fill.
3. Minimise Emissions of noise, dust and vibration from the site by appropriate efficient means and as required by the relevant Codes and Standards of the Authorities.
4. A Hazardous Materials Assessment of the building is to be undertaken for demolition and the environment, if hazardous materials are found, they will be removed as per the relevant Codes and Standards.
5. Remove weeds and protect by fencing off the 'Managed Vegetation Zone'.

16.02 Demolition

1. Demolition of the building will be carried out in accordance with the requirements of AS 2601-1991 where applicable.
2. Any material in the building which contains asbestos will be removed in accordance with the guidelines of the Workcover Authority NSW, the

requirements of the Environmental Protection Authority and Ku-ring-gai Council.

3. Hours of demolition work will be from 7am to 5.00pm Mondays to Fridays inclusive, and from 7am to 3pm Saturdays. No demolition work shall be carried out on Sundays or public holidays.
4. Access to the site will be restricted and the site will be secured and adequately fenced.
5. The demolition site will be provided with measures to mitigate against dust nuisances arising on adjoining sites and roadways. To achieve this and where required, a temporary fence will be erected around the site. The fence will be steel mesh covered with a suitable filtering medium. An effective program of watering the site will be maintained.
6. All demolition and excavation materials are to be removed from the site or if required used on site using methods that comply with relevant environmental protection legislation.

16.03 Design and Construction

1. Builder

Strict supervision will be undertaken by the builder of all construction activities to reduce and minimise disruption for adjoining properties and the neighbourhood. Each person working on the site is to be Site Inducted and are to be advised of All Site Specific requirements and employee responsibilities.

2. Considerations

- Water Conservation - reduce water usage.
- Provide air and light to the building for workers' health.
- Provide economical light fixtures during construction.
- Reduce greenhouse gas emissions through the building construction.
- Reduce disruption to neighbourhood community during the construction phase.
- Maintain control of materials delivery and reduce noise, dust and vibration emissions from the construction site.

3. Actions

- If possible, all lights to be economical LED type.
- Strict supervision of all construction, demolition and excavation activities that affect neighbours - noise, materials handling, unloading and air quality.
- Supervision of subcontractors' water usage.
- Review types of excavation machinery proposed by the building contractor.

16.04 Demolition Waste

The Demolisher will be guided by the principles of the Ku-ring-gai Council's Waste Management requirements.

Demolition will commence by removing all internal furniture, furnishings, doors, windows and flooring and placing items to be recycled into one area.

Roof cladding and roof structure will then be removed and stacked if recyclable. Ceiling and wall linings to be removed to waste, brick/masonry walls are to be demolished and inspected for cement type and recycled to reusable or recyclable as hard stand.

Foundations, if concrete are to be grubbed out and if brick or stone treated as above or if concrete, removed for recovery or waste.

16.05 Construction Waste

A builder would be required to make sure that subcontractors and staff comply with the site rules. The builder must be able to advise the owner on all aspects of the building process. The builder is to monitor use of electricity, lights, security, noise, complaints from residents, water usage, cleanliness, rubbish and transport issues.

1. Considerations

- Waste management within the building site.
- Noise reduction of equipment and tools.
- Noise reduction of garbage bin filling and movement of garbage trucks.
- Maintaining a quiet building site.

2. Actions

- Adequate signage pertaining to filling of garbage bins and recycling.
- Promote quiet access and egress with signage and supervision.
- Provide and police a rigid set of rules for the building site.

16.06 Construction and the Environment

1. The environment and neighbourhood amenity is a priority with the demolition and construction work. Care and strict supervision of all the works is a contractual requirement for this project.

The main concerns are the reduction of waste, neighbourhood disruption, truck movements, machinery start-up and noise, dust and vibration minimisation.

Safety of the public and all workers is an absolute priority.

2. Demolition

Hazardous materials if found will be removed and transported to registered disposal areas under the requirements of Workcover NSW by an accredited contractor. All the required notices and applications will be completed and sent to the authority by the builder.

3. Construction

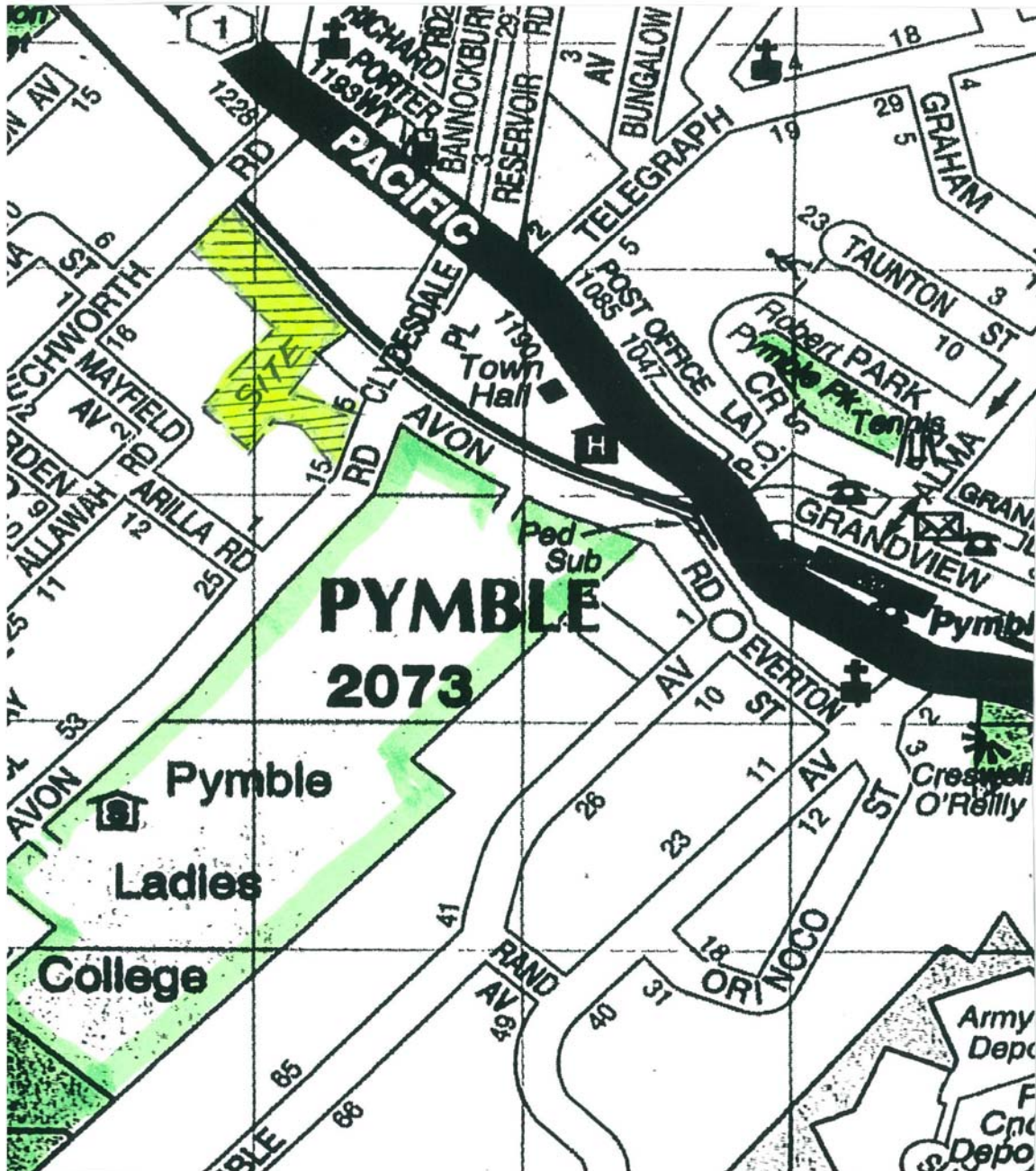
Adequate care through the design phase, site construction works and good asset management will achieve an environmental friendly building.

The design requires high star rated items and an energy efficient building.

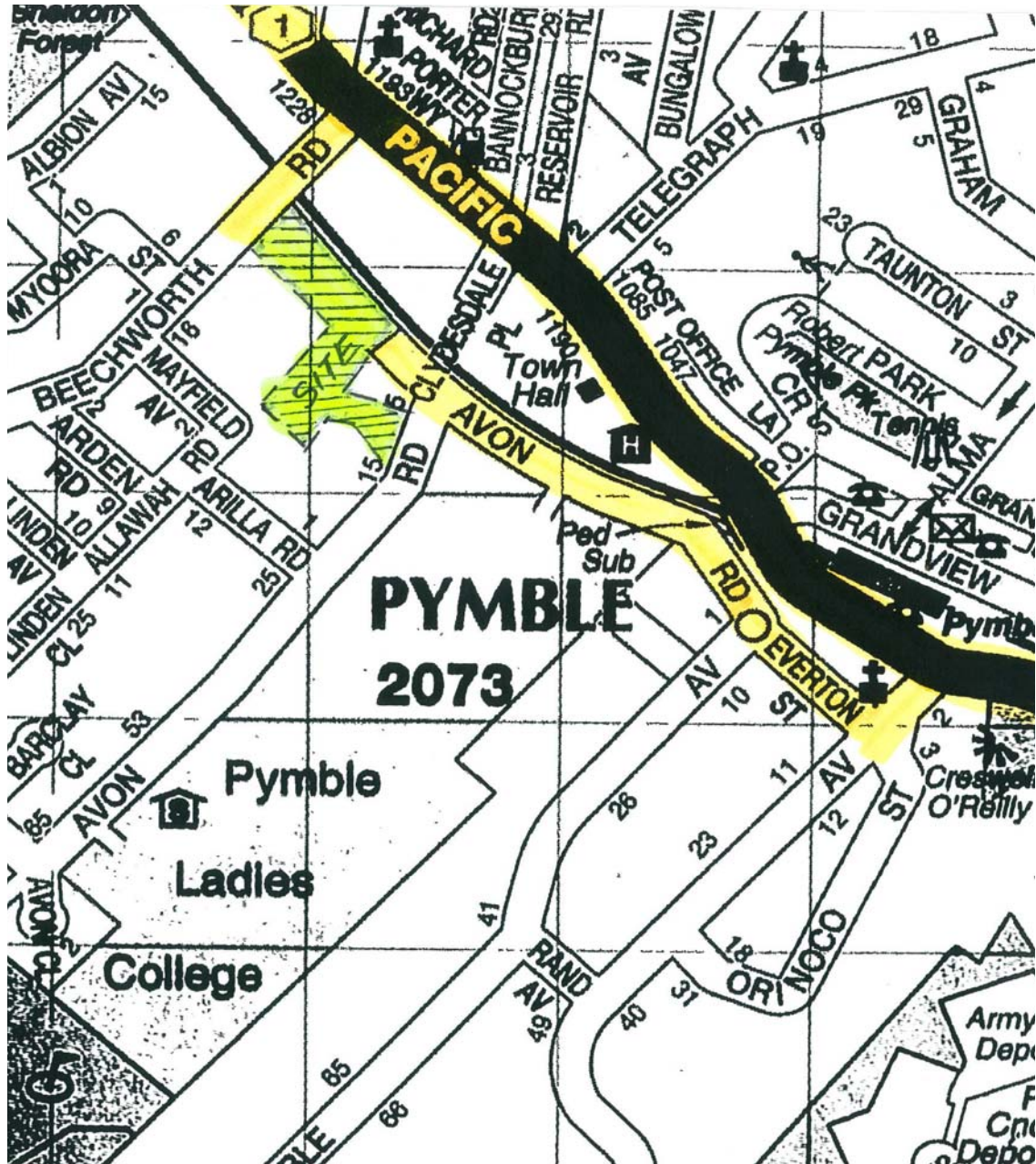
The construction phase is to be strictly supervised and all activities maintained by the builder to provide good construction practices that minimise disruption in the neighbourhood. Maintaining and providing sound building management enables the project to 'fit into' the local area when completed.

These three items will ensure a good outcome for the development.

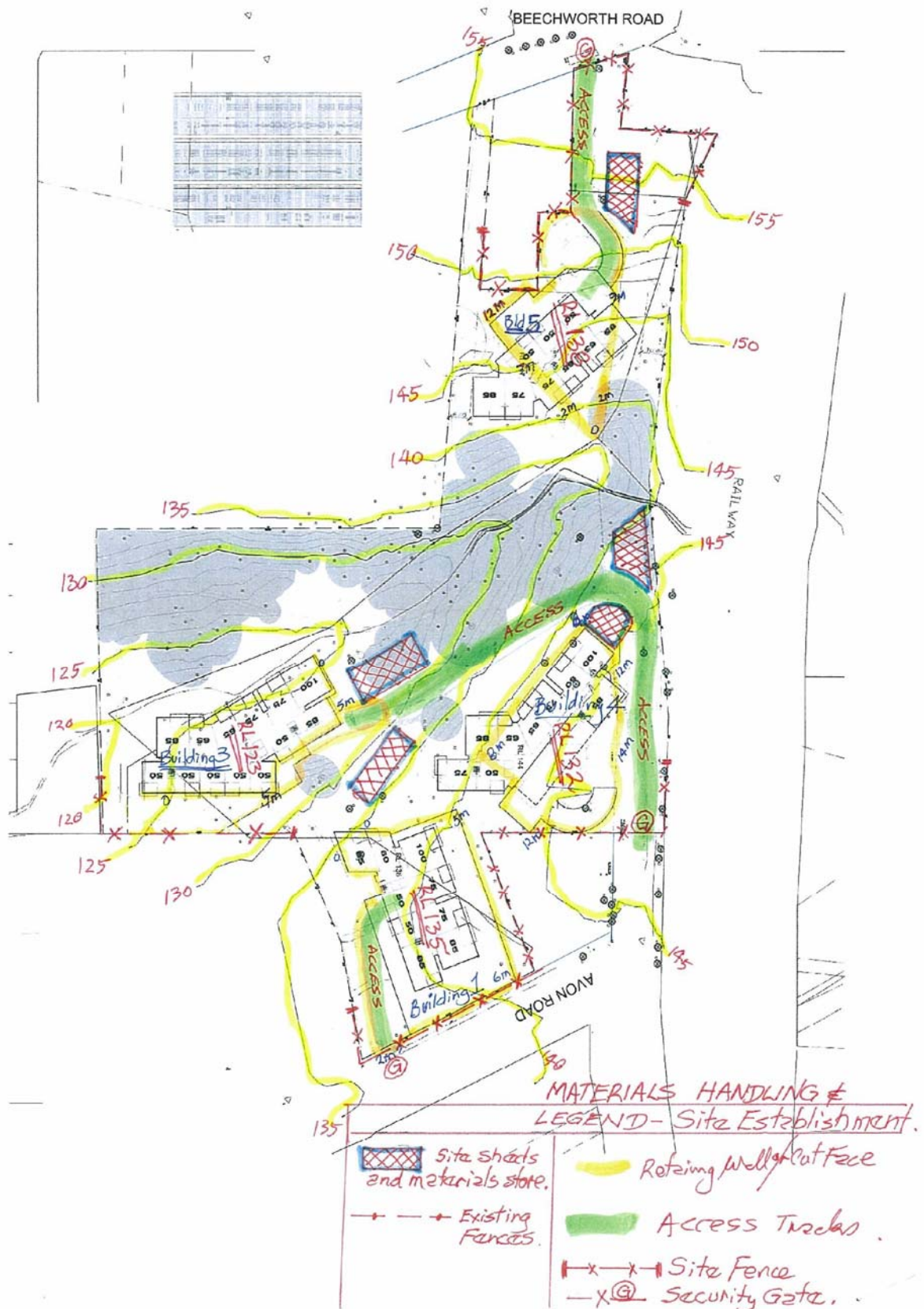
APPENDIX A - FIGURE 1 - THE SITE LOCATION PLAN



APPENDIX B - FIGURE 2 - MAIN DELIVERY ACCESS ROADS



APPENDIX C - FIGURE 3 - CONSTRUCTION MATERIALS HANDLING



APPENDIX D - FIGURE 4 - GENERAL CONSTRUCTION SEQUENCING

- Note - (1) These phasing items overlap and are indicative. A 5% contingency figure will also be added.
- (2) This sequencing is for all buildings constructed at the same time but this is subject to sales and the residential market and the construction may be staged to suit.

Item	Phase	Weeks	
Site Establishment	1	2	
Land Clearing and Access	2	6	
Excavation and Demolition	3	19	
Structure Building 1	4	32	
Complete Building 1	5	24	
Structure Building 5	6	32	
Complete Building 5	7	26	
Structure Building 3	8	32	
Complete Building 3	9	26	
Structure Building 4	10	32	
Complete Building 4	11	26	
Landscape & Externals	12	36	
Demobilise	13	4	

APPENDIX E - SITE ENVIRONMENTAL PROTECTION MEASURES

(Refer to the attached)

APPENDIX F - REFERENCES

- Waste Minimisation Act 1995 (NSW)
- Clean Waters Act 1970
- Clean Air Act 1961
- Urban Erosion and Sediment Control 1992 (CALM)
- Relevant Australian Codes and Standards
- Ku-ring-gai Council Tree Preservation Order
- Sediment and Erosion Control Plan NPC - Nov 2012
- Flora and Fauna Assessment - Anne Clements & Assoc - 11 July 2012
- Bushfire Report - Australian Bushfire Protection Planners - 14 Nov 2012
- Parking and Traffic Report - Varga Traffic Planning - 14 Nov 2012
- Geotechnical Assessment - Jeffery & Katauskas - 19 Nov 2010
- Environmental Site Assessment - EIS - 24 Aug 2010
- Ku-ring-gai Council Water Management DCP 47