- The footprint of the Site will require sampling and analysis to confirm that it does not have a deleterious effect on the proposed structure. This can also be carried out during sampling of VENM material (either in-situ or ex-situ);
- Control monitoring to determine the presence of airborne asbestos fibre will be carried out on Site whilst soil disturbance activities are conducted. The frequency of monitoring will be determined at commencement of the works and following review of results of initial static and ABS (Activity Based Sampling);
- Placement of a geotextile marker layer to identify subgrade surfaces that terminate on fill material, followed by placement of either concrete slab or 0.50 m of soil cover over a geotextile marker; and
- The remedial strategy will take into consideration the issues of environmental sustainability, including minimisation of energy usage, greenhouse gas generation, appropriate waste management and beneficial reuse, where possible.
- All underground service trenches are to be excavated during the remedial works where possible.

9.3.2 Surface Carpark Areas 1 to 3

The remedial strategy for surface carpark areas will be in accordance with the above **Section 9.3.1**, however, as no intrusive assessment works have been carried out in these areas, a sampling program for in-situ waste classification will be required prior to the excavation of this material. This will avoid delays in the project in the event that impacted soil (such as ACM, incinerator waste, medical waste, etc) is uncovered. An inspection of the ex-situ material by the Consultant will also be required prior to off-site disposal, under appropriate controls.

The Carpark Areas will also require an intrusive assessment to classify any material to go off site and to confirm that the material remaining on Site is suitable for the proposed land use. These surface carpark areas are within close proximity to the general public and will require strict supervision both from the Consultant and Contractor to minimise any risk of exposure.

9.4 Remedial Extent

From client supplied Site survey plans (included in **Appendix A)** and for the purposes of the preparation of this RAP, ENSR has estimated the extent of excavation required for the proposed Site development comprises a volume of approximately 20,000 m^3 of material to be removed (excluding bulking factors) from the footprint of the Primary Civil Works Area.

The total volume of the three Surface Carpark Areas was estimated by Northrop to be approximately 300 m^3.

9.4.1 Primary Civil Works

Based on ENSR's estimate, of the 20,000 m^3 of material to be excavated, it is estimated that the volume of asbestos impacted fill is approximately 9,600 m^3 which will be disposed of in accordance with **Section 9.3**. The remaining volume of excavated fill will be classified for off-site disposal in accordance with **Section 9.3**. It is noted that these volumes are preliminary estimates and should not be relied upon by remediation contractors or for budgetary purposes.

The minimum elevation of the proposed Hospital Extension is 89.6 m AHD, and the minimum elevation of the excavation is approximately 0.5 m deeper at 89.1 m AHD. Refer to the section view plans provided in **Appendix A**. Currently the Site varies in height between 90.38 and 98.08 m AHD (an elevation difference of 7.7 m).

The actual extent of remediation works will be surveyed on completion of excavation and recorded on figures in the Validation Report. The figures will show the vertical and lateral extent of the remedial works including excavations, geotextile capped areas (marking fill material remaining on the Site) and validation sample locations.

9.4.2 Surface Carpark Areas

The client supplied estimated volume of material to be excavated is approximately 300 m^3 from the three carpark areas identified in the architectural site plan SK101 in **Appendix A** and **Figure 1** supplied by Suters Architects.

9.5 Intrusive Assessment / Waste Classification

Waste classification of the Primary Civil Works Area was covered by the scope of the in-situ sampling of the Preliminary Environmental Site Assessment, November 2006 (excluding VENM), however further sampling is required in the three Surface Carpark Areas prior to the commencement of Site development activities. Refer to **Figure 1** for the location of the Surface Carpark Areas.

The following in-situ sampling plan is required for the three Surface Carpark Areas:

- The collection of surface and sub-surface soil samples (within 0-0.5 m profile within fill and a minimum of 0.5 m into natural soil) on a nominal 20 m systematic grid and equivalent to 1 sample per 25 m^3 for waste classification. Samples will be analysed for:
  - asbestos fibres;
  - TPH/BTEX, PAHs;
  - 8 Heavy Metals (As, Cd, Cr, Cu, Ni, Pb, Zn); and
  - OCPs/PCBs.
- Waste Classification sampling in accordance with the NSW DECC Waste Classification Guidelines, April 2008. Sample results are to be supplied to the Contractor prior transport of the material off Site for confirmation with the receiving facility.
- If the material is identified as Excavated Natural Material (ENM), then ENSR will conduct sampling in accordance with the DECC Excavated Natural Material Exemption, 2008.
- Results of material remaining on site (fill and/or natural) will be compared with the Commercial/Industrial (SIL_4) identified in **Section 7.1**.

9.6 Site Validation Activities

Validation activities that will be completed at the Site will include:

- Visual confirmation of a fill or natural sub-grade surface at the completion of excavation in an area. If fill material is encountered, this is noted and the area is to be marked using a geotextile marker layer. The geotextile marker layer will then be capped with 0.5 m of VENM or paving / concrete hardstand;
  - In areas where trees/shrubs are to be planted over the geotextile marker that will grow to a height of greater than 1.5 m, the capping layer shall be 1.0 m thick. Tree/shrub selection will ensure shallow tap root species are utilised.
- If natural material is encountered at the limit of excavation, soil validation sampling will be completed with analysis for asbestos fibres in soil and assessment for contaminant that may cause deleterious effects on building structures; and
- Validation of the quality of imported fill that may be used at the site.

Validation sampling procedures, including sample collection, preservation, equipment decontamination, sample transportation and documentation will be required to be in accordance with the NSW EPA *Sampling Design Guidelines* (NSW EPA, 1995), the NEPC National Environment Protection (Assessment of Site Contamination) Measure (1999), and are to be provided in a Site Validation Report. All sampling procedures are to be documented in the Site Validation Report. A Site Validation Report will be prepared subsequent to the completion of soil remediation and validation activities.

9.6.1 Soil Validation

Base of Excavation

Soil validation to be undertaken at the termination of excavation at sub-grade levels will include:

- Where natural material is encountered, previously classified as VENM, the collection of surface soil samples (0-100 mm from the surface) on a nominal 20 m systematic grid. Samples will be analysed for the presence of:
  - asbestos fibres.

Where fill material is still present or the material could not be classified as VENM, then the following sampling should be carried out:

- the collection of surface soil samples (0-100 mm from the surface) on a nominal 20 m systematic grid.:
  - asbestos fibres,
  - 8 Heavy metals;
  - TPH/BTEX.

Access to the base of excavation will be in accordance with the Contractor's requirements and **Section 11.0** of this report.

Imported Fill

Any imported fill material to be used on-site that are not previously certified as VENM, will be;

- sampled at a minimum rate of 1 per 100m^3; and
- samples will be analysed for TPH, BTEX, 8 heavy metals, OCPs, PCBs, PAHs and asbestos to confirm their suitability for use on the site.

Should reliable certification of the VENM material be available;

- no soil sampling will be required; and
- an inspection of the source site/quarry may be undertaken by the Consultant to confirm its VENM classification.

9.7 Quality Assurance/Quality Control (QA/QC)

The following field and laboratory QA/QC measures will be implemented for all waste classification and soil validation activities.

Field QA/QC

All soil sampling programmes will include;

- Intra-laboratory duplicate soil samples will be analysed at a rate of 1 per 10 primary samples;
- Inter-laboratory duplicate samples (i.e. triplicate samples) will be analysed at a rate of 1 per 20 primary samples; and
- Rinsate or equipment blank samples will be obtained and analysed at a rate of 1 sample per day of sampling activities.

Analytical Procedures

All laboratory analysis will be conducted by a NATA accredited laboratory utilising methodologies that adhere to the international standard methods referred to in the ANZECC (1996) and NEPC (1999) guidelines.

Laboratory detection limits will be lower than the assessment criteria adopted for the investigation.

Specifically, the following data quality indicators for the analytical results will be considered:

- Accuracy: 75 to 125% recovery;
- Precision: not exceeding 50% relative percentage difference (RPDs) in primary and duplicate results; and
- Completeness: minimum of 95%.

Sample Handling and Preservation

For soil sampling a new pair of disposable nitrile sampling gloves will be donned between each sampling location and depth.

For soil analyses, other than asbestos fibres (if characterisation analysis is required), soil samples will be placed immediately into laboratory prepared and supplied jars with screw top Teflon-lined lids. Sample jars will be filled so that no headspace remains (to the extent practical).

Soil samples will be placed either in a chilled, insulated container with ice or in a sample refrigerator between sampling and analysis. Samples will be preserved for the various contaminants of concern in accordance with the requirements of NEPC (1999) as detailed in the **Table 2**.

Table 2: NEPC Preservation Requirements

Matrix	Analyte	Container	Preservation
Soil	All analytes	250 mL Glass screw top jar	Unpreserved, 4^{o}C

Soil samples that are collected for asbestos fibre analyses will be double bagged and appropriately labelled.

Sample numbers, depths, preservation and analytical requirements will be recorded on the chain-of-custody documentation.

Decontamination and Rinsate Blanks

Where sampling equipment is required (eg hand-auger) it will be cleaned in phosphate free detergent (eg "Decon" 90) solution, and double rinsed in potable water prior to use and between each sampling location.

Rinsate blanks will be collected using laboratory supplied rinsate water poured over decontaminated equipment. During the sampling program, a new pair of disposable nitrile gloves was used for the collection of discrete samples to reduce potential for transfer of contaminants between samples.

9.7.2 Placement of Visual Marker Layer

At the completion of excavation activities where the sub-grade level terminates on fill material, a highly coloured (eg red) geotextile marker layer should be placed on the sub-grade surface. This will provide a visual marker to assist in future management of the Site and to act as a warning layer to minimise the potential for future disturbance of subsurface fill material.

9.7.2.1 Relevant Guidelines and Work Instructions

All necessary precautions for the management of ACM identified during the site assessment should be adopted for this activity. The placement of the geotextile marker layer is a manual physical activity that will be undertaken at the interface of the contaminant containing layer. As such it represents a potential risk of exposure to persons involved in the management of the ACM if not conducted in a suitable manner.

The measures to be adopted are identified in the following documents in addition to this document:

- Code of Practice for the Management & Control of Asbestos in Workplaces [NOHSC: 2018(2005)].
- Code of Practice for the Safe Removal of Asbestos, 2nd Edition [NOHSC: 2002(2005)].
- Schedule B(8) Guideline on Protection of Health and the Environment During the Assessment of Site Contamination (NEPC, 1999).

9.7.2.2 Application of the Geotextile Barrier Layer

The primary function of the barrier marker layer is to provide a clear and effective visible marker that will identify the interface between VENM/clean fill and the historical ACM fill below the barrier. The marker has been designed to serve as a warning to anyone undertaking future works / excavations on the Site.

A highly coloured (e.g. red) geotextile material should physically cover all areas of known impact and areas expected to contain contamination. An overlap of 300 mm is recommended when adjoining lengths of geotextile material are placed together. The geotextile marker layer should be permeable to allow tree/shrub roots to penetrate.

Site Specific Application of the Geotextile Barrier Layer

There are four specific Site applications of the marker layer where impacted fill may remain, detailed as follows:

1 *Excavation required to reach sub-grade*. In this application when excavations have been finalised to the sub-grade levels and terminate on fill material, then the marker layer geotextile is placed in position with at least a 300 mm overlap between adjoining textile.

2 *Existing surfaces at sub-grade*. In this application where the existing surface is at the sub-grade level with underlying fill the marker layer geotextile is placed in position with at least a 300 mm overlap between adjoining textile.

3 *Existing surfaces to be filled*. In this application where the existing surface contains fill material and is required to be elevated to achieve the sub-grade level the marker layer geotextile is placed in position prior to filling with at least a 300 mm overlap between adjoining textile.

4 All other surfaces including cuttings, walls and embankments that contain fill material should also be covered with the geotextile marker layer. This includes service trenches excavated prior to placement of the marker layer or in situations where excavations are performed post placement of the marker layer.

5 The geotextile fabric must be permeable and allow root penetration by trees/shrubs over 1.5 m in height.

Specific documentation requirements for all marker layer placement activities are presented below.

Specific Documentation Requirements

To provide suitable information for future site activities it is appropriate that documentation is included in the Environmental Management Plan (EMP) (to be prepared by the Consultant) that details inter alia, the locations, placement methods and site levels associated with the geotextile marker layer. These records will provide a description of the lateral and vertical location of the barrier marker layer.

The following documentation will be collected by the Consultant to support the EMP:

- A photographic record of the placement of the geotextile material.
- Record of representative locations to provide spot levels on the RL (m AHD) of key capping layers (ie top of fill, top of protective cap, etc.).
- A daily field activity log of the laying of the marker layer.
- A Site plan identifying the location of the marker layer across the Site.

Geotextile Marker Barrier Penetrations

Should the geotextile marker layer be penetrated, the Principal should be contacted to determine the nature of the remedial works and to ensure reinstatement works are consistent with the requirements of the Guidance and Work Instructions outlined in **Section 11.11**.

The geotextile marker barrier must be replaced ensuring a minimum of 300 mm overlap over areas of damaged/penetrated marker barrier.

9.7.2.3 Summary

The key points of guidance in relation to the placement and application of the geotextile marker layer on existing fill areas of the Site are as follows:

- Safety requirements for application of the geotextile marker and all asbestos related works.
- Placement of the geotextile marker layer over all areas of identified contaminated fill.
- Overlap of adjoining marker lengths of 300 mm.
- Capping of geotextile marker layer with 0.5 m of clean fill.
- Photographic record of application.
- Spot levels of the marker layer to be recorded on site map.
- Provision of suitable documentation to be included in the EMP to provide a clear description of the site if future works are undertaken.

9.8 Contingency Plan

The purpose of the contingency plan is to identify unexpected situations that could occur during the remediation works, and specify procedures that can be implemented to manage such situations and prevent adverse impacts to the environment and human health, and manage unexpected situations.

In the event that any unknown areas of contamination or a new type of contaminated material is identified during the remediation works or during future excavations (after the remedial works), the Principal will be notified and the material will be inspected by a suitably qualified and experienced practitioner in the management of contamination. Sampling and analysis of the material may be conducted. If the results indicate concentrations that require remediation, then the material will be remediated in accordance with this RAP.

9.8.1 Failure of Remedial Strategy

In the event that unexpected contamination is identified during the remediation work, and/or in the unlikely event that the proposed remediation strategy fails, the Principal will be notified immediately and an alternative strategy will be developed in conjunction with the other stakeholders (Site Auditor, NSW Agencies, adjoining land owners etc). This selection of a suitable remedial strategy would include a full project review, including practices and procedures, site emplacement methods and off-site transport and disposal methods.

Development of the suitable alternative strategies would depend on the nature and extent of the strategy failure.

9.9 Interim Site Management

The Site is currently fenced with temporary construction fencing which will remain in place until the commencement of development activities. This fencing will act as the interim site management until the proposed works have been completed and the Site has been validated as suitable for the proposed development.

9.10 Site Management Plan

The following sections comprise an outline of the components of a Site Management Plan (SMP) that describes measures to be implemented during the remedial activities to minimise the environmental impact of the clean up activities. This component of the works should sit under the Contractor's construction management plans for the redevelopment works of the Site.

This SMP provides guidance and methodology, to be implemented during site works where workers may be exposed to the materials and in relation to the requirements for protecting the surrounding environment.

It should be noted that the site management plan has also been developed, to provide institutional controls and responsibilities to alert occupiers on the contamination at the Site and to prevent uncontrolled exposure to contaminated soils during possible future works at the Site, where contaminated fill is to remain on Site.

The Principal will be responsible for ensuring that the Contractor involved in conducting the remedial works develops a Project Specific Plan for the Site, incorporating relevant items within this RAP.

9.10.1 Stormwater Management Plan

Runoff from excavated fill or exposed soil surfaces should not be allowed to enter stormwater, or nearby waterways. Such runoff should be prevented by either covering the excavated material or containing any run-off onsite for appropriate treatment (if required) before discharge or disposal.

Measures as outlined in the Soil Management Plan (below) should be included to minimise the sediment load of runoff entering the collection system.

Stormwater should be managed in accordance with Managing Urban Stormwater - Soils and Construction (Department of Housing, 1998).

9.10.2 Soil Management Plan

Sediment control structures (i.e. silt fencing and/or hay bales) should be implemented in accordance with Managing Urban Stormwater - Soils and Construction (Department of Housing, 1998). This would include strategic placement of such structures down-gradient of stockpiles and slopes to minimise sediment transport. These measures should also be placed on the up-slope side of any stormwater collection channels.

Should stockpiling of imported fill materials be required, the stockpiles should be placed either upon concrete or upon appropriate sheeting and will be physically separated from stockpiles of other non-contaminated materials.

Vehicular access to the Site should only be given to vehicles directly involved in the removal works.

9.10.3 Noise Control Plan

The Site is located nearby to a regional hospital and bushland; it is also close to a residential area. Noise associated with remediation works will be controlled by the following means:

- Vehicles, machinery and equipment will be fitted with appropriate mufflers to ensure that no vehicles, machinery or equipment generate noise levels beyond applicable guidelines.
- Restrict the activities generating high noise levels, to normal working hours.
- Monitor works to ensure nuisance noise impacts are minimised.

9.10.4 Dust Control Plan

Measures to minimise the potential for dust generation will include:

- Adherence to the requirements documented in **Section 11.10, 11.11 and 11.12** of this RAP, including programming of potentially dusty works during low wind conditions, to the extent practical;

- Access to a water cart/spray throughout the remediation phase to wet down exposed soil surfaces as/if required; and
- All dust control measures will be kept in good operating condition and operable at all times, with regular maintenance.

It is not expected that odorous materials will be encountered during the excavation works. If odours do arise, works will be stopped, the Site will be made safe and an appropriate strategy will be developed prior to recommencement of works.

9.10.5 Traffic Control Plan

Vehicles accessing the Site are required to take appropriate caution with due consideration to the visibility along the second access road, the speed limit and the accessibility restrictions of the Site.

The Contractor shall ensure that appropriate facilities are in place to ensure that vehicles do not track dirt and mud onto the roadway (eg cobbles, truck wash).

The Contractor shall provide traffic control personnel and appropriate signage where required for the duration of the remedial works.

9.10.6 Occupational Health and Safety Plan

A site specific Occupational Health and Safety Plan must be provided to the Principal by the Contractor prior to the commencement of work at the Site.

9.10.7 Complaint Reporting and Resolution

It is anticipated that potential complaints regarding the proposed works may be derived from one or more of the following sources:

- Complaints from adjoining sites and passing motorists regarding noise or excessive dust generation.

All complaints should be directed in the first instance to the Contractor's Site Supervisor, who will investigate the complaint by discussion and consultation with the complainant.

The Contractor's Site Supervisor will then resolve the complaint by issuing an instruction to the appropriate personnel. Such instructions might typically deal with (for example), installation of a dust suppression system. A report on complaints and how they were addressed will be provided to the Principal in a timely manner.

10.0 General Remediation Requirements

10.1 Extent of Contract

The Contractor shall supply an AS1 Competent Supervisor to supervise all asbestos removal work to be undertaken at the Site. In addition, all labour, decontamination facilities and materials required to ensure the Principal's contractors are equipped to undertake the movement of the ACM at the Site. The Contractor will be responsible for all labour to operate the excavation equipment at the Site, cartage, waste disposal, plant and equipment.

The Principal will give the Contractor complete access to the affected areas on the agreed commencement date.

10.2 Direction to Contractor

Directions, Instructions and the like given in this RAP, whether or not they include the expression "the Contractor shall" or equivalent, shall be deemed to be given to and accepted by the Contractor under authorisation from the Principal, except where the context otherwise requires. Any potential conflicts or uncertainties in this RAP should be immediately discussed with the Principal.

10.3 Contractor Responsibility

Inspection of the areas containing asbestos contamination must be carried out in a manner which will not cause contamination to the adjacent buildings and its occupants, or the environment.

It is the responsibility of the Contractor to assess the amount of ACM that is to be removed and the work required to supervise all asbestos removal work to be undertaken at the Site.

Notwithstanding anything in the documents provided for completion of the Works the method used for removal shall at all times be by a process in accordance with this RAP and the requirements of the NSW WorkCover Authority.

10.4 Safety

The Contractor shall be appointed Principal Contractor pursuant to the NSW Occupational Health & Safety Regulation 2001.

The Contractor shall conduct his work in a safe manner in conformity with the requirements of the:

- WorkCover Authority of NSW;
- NSW Department of Environment and Climate Change; and
- Any other relevant body or authority.

All personnel required to Work on the Site must have attended and hold a certificate for the OHS General Construction Induction. All personnel are to attend the Site Specific Induction prior to commencing work on the Site.

In addition to the requirements of the NSW Occupational Health & Safety Act 2000, and all associated Acts, Regulations and Codes, the Contractor shall promptly advise the Principal of:

- All accidents involving death or personal injury; and
- All accidents involving loss of time or incidents with accident potential such as equipment failure, slides, cave-ins and the like.

In addition the Contractor shall give such information as may be required by the Consultant and if requested, furnish a written report in the form directed.

The Contractor is to obey all safety directions given by the Principal and the Consultant.

The Contractor shall not at any time leave any work in an unsafe condition or in a condition which might cause damage to other existing work, plant, machinery or equipment, but shall continue that work until it is at a safe state.

The Contractor shall take every precaution to ensure the safety and protection at all times of all persons on or about the Site, including all workmen and others employed on the work(s), and to this end shall provide and maintain all facilities both necessary and proper to comply with the safety rules and regulations of any body or authority have jurisdiction thereto.

The Contractor shall take adequate precautions against fire and explosion hazards. The Principal Contractor must provide an approved fire extinguisher within the Asbestos Work Area at all times.

10.5 Hours of Operation

Performance of the remediation works (subject to any Council/government agency determination or other agreement with neighbouring parties) will be as follows:

- 7:00 to 5:00 Monday to Saturday.
- No work on Sundays or public holidays.

10.6 Licensing/Approvals

The land to which this RAP relates is affected by environmental planning instruments including, but not limited to, the Newcastle Council Local Environmental Plan (LEP) and the State Environmental Planning Policy (SEPP) 55.

A preliminary assessment of the remedial works proposed within this RAP, indicates that such works are considered likely to constitute Category 2 remediation works per SEPP 55 clause 14. This RAP and the works detailed herein will be undertaken in accordance with the guidelines and regulations required under the Contaminated Land Management Act 1997. Consistent with SEPP 55 Category 2 remediation works, Council are to be given 30 days notice by the Principal or his delegate, prior to remedial works commencing on-site.

The proposed development is considered to be in accordance with the aims, objectives and provisions of State Government and Newcastle City Council's planning instruments.

10.7 Operation of Vehicles and Machinery

The Contractor's vehicle drivers and operators of plant and machinery shall:

- Comply with all safety, direction and speed signs;
- Ensure that vehicle loads are properly secured to vehicles; and
- Restrict parking to the area designated within the site car park.

In addition:

- Unlicensed persons shall not be permitted to control or drive vehicles on the Site.
- The Contractor shall not permit its employees or employees of its Sub-Contractor to operate equipment or mobile plant without appropriate qualifications and certifications.
- All vehicles which are required by law to be registered for use on public roads and which will be used by the Contractor on the Site shall be registered.
- All vehicles used by the Contractor on the Site shall be maintained to appropriate and acceptable standards.
- The Contractor shall be solely responsible for the safety and security of all of its vehicles (including private vehicles) on the Site.
- All vehicles shall be operated in accordance with the requirements of the relevant statutory bodies, including without limiting the generality of the above, those requirements relating to overloading and to securing of loads.

The Contractor shall provide evidence to the Principal that all road vehicles or mechanical equipment of any kind which are to be used in carrying out the Works, comply with the requirements of the above prior to that equipment being brought onto the Site.

10.8 Requirements of Contractor

10.8.1 Licences/Approvals

The Contractor shall be approved by the WorkCover Authority as an asbestos removalist and shall be the holder of an AS1 Asbestos Removal Licence issued by the WorkCover Authority in accordance with the Occupational Health & Safety Act.

A copy of the licence shall be displayed in a prominent position outside the decontamination unit for the duration of the asbestos removal Works.

Asbestos waste will require to be disposed of at a waste facility licensed to receive asbestos. A copy of the waste disposal docket will be retained by the contractor for inclusion in the Consultant's Validation Report. The transporting contractor will also be licensed to transport asbestos material.

10.8.2 Notification

Prior to commencement of removal, the Contractor shall notify:

- The Chief Inspector of the WorkCover Authority and supply a copy of the "Permit to Work" to the Consultant.
- Any other local authority requiring notification including the local waste authority.

10.9 Environmental Control

The Contractor must:

- Comply with the provisions of this Clause and any other environmental protection provisions in the Contract and with the requirements of any statute, by-law, standard and the like related to environmental protection.
- Submit proposal for temporary structures, (including Asbestos Removal Contractor Site Area), cleaning, demolition and the like. Observe the agreed proposals.

- Not form new tracks, alter existing tracks, erect camps, remove trees or shrubs, cut fences, water, sewerage or power lines or any other such things without approval.

10.10 Smoking

There will be no smoking in any of the buildings or in the Asbestos Work Area. The Contractor will erect "No Smoking" signs in the lunchroom and enforce this requirement. Personnel who do not observe this requirement will not be permitted access to the Site.

10.11 Security

- Nothing in this clause shall relieve the Contractor of his responsibility for the care and execution of the works.
- The Contractor (any subcontractors) and employees shall comply with the Principal's security requirements at all times.
- The Contractor shall give 24 hours notice to the Principal for any work to be performed outside normal working hours.
- The Contractor is to supply the Principal with keys for its work area or any other locked areas under its control.
- The Contractor shall be responsible for arranging and providing its own security control over the works and any materials, plant, equipment, tools etc. stored on the site.
- Only suitably marked bags will be used for the disposal of hazardous materials waste.

10.12 Existing Structures – Contractors Liability

The Possum Place Child Care Facility, second access road (Jacaranda Drive) and adjacent hospital buildings (Kingston Building, Croudase Building, Medical Centre and Rehabilitation Building) will be in continuous use during the project. The Contractor shall conduct the works in such a manner to ensure that there will be no interference or interruptions to the normal activities and no inconvenience to staff and customers.

The Contractor shall not cause any damage to those elements of the adjacent buildings and structures. Any damage caused by the Contractor (or his subcontractors) to the structure, finishes, services, equipment or contents of the buildings, including water damage, staining of finishes or contamination, shall be made good at the Contractor's expense to the satisfaction of the Principal.

Any damage caused by the Contractor, which is not rectified to the satisfaction of the Principal, will be rectified by the Principal and the associated costs recovered from the Contractor.

10.13 Contractor Amenities

The Contractor shall provide all required toilet, change room and crib facilities to be positioned in a location as determined on Site in consultation with the Principal. The Contractor is to supply all tables, chairs and equipment necessary.

10.14 Advertising and Publicity

The Contractor shall not use or cause to be used any advertising or publicity matter, photographs, notice boards or other media in connection with the Contract Works without the prior approval in writing of the Principal.

The Contractor shall not issue any information, publication, document or article for publication concerning the Contract or the Works in any media without prior written approval of the Principal. The Contractor shall refer any media enquiries to the Principal.

10.15 Employee Approval

The Consultant has the right to review the qualifications of all employees working in the Asbestos Work Area. Approval is to be granted/rejected by the Consultant after receiving a statement of the employee's previous experience.

Contractor's Supervisors must have a minimum of five (5) years experience in removing ACM and have attended an approved Asbestos Removal Course for Supervisors. Contractor's Employees satisfying the latter requirements will be approved; those employees not satisfying the latter requirements may still be approved by the Consultant. All other employees shall have attended an approved Asbestos Removal Course and hold appropriate training certification.

Employees not approved by the Consultant are not to be employed to work in the Asbestos Work Area however they may be permitted to work on Site. A list of each employees work experience is to be presented to the Consultant prior to the commencement of work for review. No employee can start on the Site until agreed by the Consultant in consultation with the Principal.

Prior to the commencement of work on the Site, relevant Site inductions must be provided by the Contractor and undertaken by all the personnel required to work on the Site.

Site inductions will be at the time and cost of the Contractor who shall be responsible for their implementation. Site inductions must include relevant elements of the Site Specific Management Plan, the Environmental Management Plan and any express instruction(s) issued by the Principal or Consultant.

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11.0 Asbestos Remediation Requirements

The Contractor shall remove from Site ACM and asbestos contaminated materials as detailed below and dispose of them in the approved manner.

The Contractor shall ensure that surrounding areas are not contaminated during the asbestos removal process.

The Contractor is to satisfy himself as to the Scope of Work.

The Contractor shall display a copy of their licence wherever they are carrying out asbestos removal work in accordance with the NSW Government legislative requirements. The licence is only to be displayed whilst asbestos removal is in progress.

All asbestos Works are to be performed in accordance with the following documents:

- The NSW Occupational Health & Safety Act 2000;
- The NSW Occupational Health & Safety Regulation 2001;
- Code of Practice for the Management & Control of Asbestos in Workplaces [NOHSC: 2018(2005)];
- Code of Practice for the Safe Removal of Asbestos, 2nd Edition [NOHSC: 2002(2005)];
- Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres" 2nd Edition [NOHSC:3003 (2005)];
- Protection of the Environment Operations (Waste) Regulation 2005; and
- This RAP.

In the case of conflict between this RAP and any Regulation or Act, then the more stringent requirement shall apply.

Signs are to be placed in areas agreed by the Consultant with the words "Asbestos Work Area, Do Not Enter" or similar, approved signage. This sign is only to be displayed whilst asbestos removal is in progress. It is to be placed at the Asbestos Work Area boundaries and at the entry to the decontamination unit. Appropriate signs are to be displayed in the areas and locations agreed with the Consultant.

The Contractor shall provide instruction to all employees who may be exposed to asbestos in the course of employment regarding the danger to health and the statutory requirements that are required to provide safe working conditions. Staff involved with asbestos removal work must also be trained in safe working procedures and in the wearing and maintenance of protective clothing and equipment in accordance with NSW WorkCover requirements.

The Principal wishes to promote full consultation, involvement and information sharing between themselves, the Principal and the Contractor in regards to all removal and disposal methods. When requested, the Contractor will assist the Consultant in the development of effective plans of action to protect all employees and nearby building occupants from potential asbestos exposures.

All work shall be subject to review by of the Consultant. Work shall not proceed until such review is complete.

Transport and final disposal of asbestos waste material shall be carried out by the Contractor in a manner, which will prevent the liberation of asbestos dust into the atmosphere. Vehicles licensed for the transportation of asbestos waste shall only be used.

The waste material shall be disposed at a site and in a manner as approved by the Local and State Authorities. Documentary evidence for the disposal shall be provided to the Consultant by the Contractor immediately following each tipping event, this will include name of authorised landfill, weighbridge docket and registration number of vehicle for every disposal.

Pending disposal of the waste material, provision shall be made by the Contractor for the storage of the containers in a safe area ensuring that all containers are properly marked and covered.

The removal of all asbestos waste materials from the site shall be conducted between the hours as stated in this RAP.

The Contractor shall provide proof of medical examinations to the Consultant for each employee within the last twelve months. The Contractor shall maintain a register of all staff involved in asbestos removal on the Site and ensure that all employees are scheduled for regular medical examination and the results provided upon request by the Consultant.

The Contractor will be responsible for signing off Inspection and Test Checklists (ITCs). The Consultant will sign off the ITCs if satisfied the Contractor has met the stated requirements. ITCs to be used for this Project are to be Project specific and supplied by the Consultant. The Consultant will require that the person signing be in a supervisory role. Copies of the ITC's are provided in **Appendix B**.

Asbestos removal shall not commence until all appropriate checklists are completed. It is the Contractor's responsibility to ensure that the checklists are completed.

11.1 Inspections

The Principal and his nominated officers: (Consultant/architect/engineer/hygienist) shall have the authority to enter the Site and work areas at any time to inspect and check on the progress of the Works and may be performed at any time without notice to the Contractor. The Contractor is to provide optimum assistance to the inspecting personnel and comply with any directives issued by the Principal. The Principal must confirm any directions given by the nominated officers in writing.

In addition to the inspections of the Works by the Principal or nominated officer, there are three compulsory inspections as outlined below which will be performed by the Consultant during the process of the Works. The Contractor is not to proceed to the next stage of the Works until each inspection has been completed and passed, and written approval issued by the Principal. The compulsory inspections are as follows:

11.1.1 Initial Inspection

The initial inspection will be performed at the completion of the establishment of the decontamination unit and site barriers and prior to the commencement of the asbestos removal Works.

11.1.2 Asbestos Clearance Inspections

The asbestos clearance inspections shall be carried out by the Consultant following completion of the asbestos removal works and prior to dismantling of the Asbestos Work Area. Soil samples will be collected where necessary for validation purposes as outlined in **Section 10.15**.

11.1.3 Final Inspection

At the completion of the dismantling of the Asbestos Work Area and decontamination unit, the Consultant will conduct a final inspection and provide a clearance certificate prior to hand over to the Principal. This inspection will be performed by the Consultant in conjunction with Contractor. The inspection will involve visual examination of the Asbestos Work Area.

11.2 List of items

The following list of items shall be furnished by the Contractor prior to the commencement of work:

- Copy of Friable Asbestos Removal Licence;
- Confirmation of Health Register; and
- Detailed Work methodology.
- WorkCover "Permit to Work";
- Receipts for payment of fees;
- Site specific Occupational Health And Safety Plan as detailed in **Section 9.10.6**;
- Employee list and employee qualifications for approval; and
- Details of employee medical details.

11.3 Scope of Work

Summarised herein is the proposed Scope of Work for the Contractor for the handling and removal of asbestos contamination from the Site. This proposed scope of work should be used by the Contractor to develop their specific documentation.

All work is to be undertaken during the hours specified.

The Contractor is to satisfy himself as to the Scope of Work, which will be further detailed at a Site inspection.

The Scope of Work to be carried out by the Contractor includes but is not limited to the following:

- Supervise the removal of asbestos contaminated soil and debris for disposal. This will include the provision of a Supervisor that satisfies the requirements detailed in **Section 10.15**.
- Supply of labour that satisfies the requirements detailed in **Section 10.15** to undertake any work on the Site necessary with the exception of the operation of plant and equipment which will be undertaken by the Principal's or Consultant's personnel. Work will include the lining of trucks with impervious plastic prior to the removal of asbestos waste from the Site, watering-down of the Site during excavation work and other work undertaken within the Asbestos Work Area to assist with the excavation.
- Supply of a decontamination unit as detailed in **Section 11.13**.
- Supply of all personal protective equipment including respiratory equipment as detailed in **Section 11.12** for use by the Principal and Contractor's personnel.
- Supply of all asbestos consumables including but not limited to:
  - 0.2 mm impervious plastic;
  - Tape;

- Asbestos bags for asbestos waste and soiled PPE;
- Hoses and fittings for wetting down and vehicle washing;
- Signage and barriers; and
- Vacuum cleaners and bags, if required.

11.4 Existing Services

Identification and protection of existing services at the Site is the responsibility of the Principal. The Contractor is to assist where necessary and is to provide all labour for protection if required.

11.5 Electrical and Data Communications

The Contractor shall be responsible for the identification, isolation and protection of electrical and data communications that may exist at the Site. The Contractor is to assist where necessary and is to provide all labour for protection if required.

11.6 Availability of Utilities

Interruption to any service in the Hospital environment can have serious consequences unknown to the person doing it. Always seek the Principal's advice before connection/alteration including but not limited to power, light, water, phones, communications, alarms, etc.

11.6.1 Electrical Power Supply

The Principal will supply 240 V 10 amp general-purpose outlets (GPO) as they exist in and around the Site at no cost to the Contractor, for the Contractor's use in either maintaining his Site or for the removal of asbestos work.

Where 3-phase power is required by the Contractor, the Principal will supply 3-phase power at no cost and only where it is presently located. However the following conditions will apply:

- The Contractor's electrician is to make the connection to the Principal's electrical board and provide all necessary protective devices as required by all statutory regulations; and
- The use of 3 phase power from any electrical board or outlet must be approved by the Principal.

The Contractor is to run his cables from the supplied GPO's or electrical board in a safe and tidy manner which will not hinder or prevent access for users of the building or provide any form of danger to personnel or equipment safety.

Connections must only be made to non-essential power circuits. The selection of outlets and the running of cables may be reviewed by the Consultant.

11.6.2 Water Supply

The Principal will supply town water from outlets as they exist in and around the Site at no cost to the Contractor for the use in either maintaining his Site or for the removal of asbestos work.

The Contractor is to run his water hoses from the supplied outlets in a safe and tidy manner which will not hinder or prevent access for users of the Site or provide any form of danger to personal or equipment safety.

The selection of outlets and running of hoses must be approved by the Principal.

The Contractor is to supply a non-return valve at the hose cock.

11.6.3 Sewer

The Contractor is responsible for running wastewater to the existing sewer system. The "cut in" to the existing sewer system is to be made by the Contractor at an existing opening or otherwise approved by the appropriate wastewater agency.

At completion of the work, all sewer pipes are to be repaired to the satisfaction of the Principal. The above work is to be carried out by a qualified Plumber.

All water waste is to be treated to the requirements of the Local Council, DECC, DoP and the WorkCover Authority and is the responsibility of the Contractor.

11.6.4 Telephone

No telephones owned by the Principal or the Consultant will be available to the Contractor unless an emergency exists and is agreed by the Principal.

A nominated representative of the Contractor must be contactable 24 hours per day by telephone.

11.7 Establishment of Site

All construction and planning requirements shall be in accordance with the relevant industry legislative requirements, standards and guidance notes. In addition, special consideration is given to the requirements of working in an asbestos contaminated area and additional precautions observed.

11.8 Requirements for Mobile Plant and Equipment

Mobile plant and equipment may include, but not be limited to:

- Trucks for the transport of asbestos contaminated waste;
- Front-end loaders and excavators for the transfer of the asbestos contaminated material to the trucks;
- Service Vehicles; and
- Water Carts.

Mobile plant and equipment will be modified to enable its safe use in an asbestos containing environment and to comply with this RAP.

All mobile equipment will be supplied or modified to enable use of the recirculating air function only. Air conditioning filters will be fitted with High Efficiency Air Particulate (HEPA) filters and all air vents will be fitted with HEPA filters. Should the function of the air conditioning system be affected by the use of HEPA filter material, the system shall be switched off and the air vents sealed with tape whilst operating in the Asbestos Work Area. An assessment of the heat related risks to operators must be included in the project risk assessment should the air conditioning system be inoperable.

All windows will be sealed closed to prevent use.

Two-way radios are to be provided in all mobile plant and equipment.

11.9 Maintenance of Mobile Plant and Equipment

The Contractor will maintain the mobile plant and equipment on a regular basis.

The Contractor is responsible for ensuring that the vehicle is cleaned regularly.

The key elements of the maintenance and cleaning of Mobile Plant and Equipment includes:

- All vehicles washed down at the Asbestos Work Area at the end of each shift to remove any accumulated dust.
- All vehicle cabins to be vacuumed internally at the end of each shift to remove any accumulated dust.
- All vehicles to be washed down and vacuumed internally immediately prior to having any repair or maintenance work carried out.

Note: Vacuum cleaners must be fitted with HEPA filters and conform to AS3544-1988 *Industrial Vacuum Cleaners for Particulates Hazardous to Health.* Vacuum cleaner bags are to be disposed of as asbestos waste.

11.10 External Dust Suppression

Dust suppression is crucial to the operation of the Site. Dust will be generated by several factors including:

- Vehicle movement.
- Shovelling and digging in the Asbestos Work Areas.
- Wind.

To ensure that dust generation is minimised all sources of dust are to be suppressed by the use of fine mist sprays of water. Disturbance of work areas and working faces are to be minimised to the extent practical.

Mist spray procedures will be employed at the Asbestos Work Areas whenever materials are being disturbed or moved.

The sprays will provide minimal amounts of water applied to the work areas in a mist form to minimise water run-off.

Water will be applied to all roads on a continual basis during work hours.

The use of the Wash Bays will ensure that dust is minimised and not transported around the Site.

The ongoing Asbestos Monitoring Program will be used to assist in determining if additional dust suppression techniques are required.

11.11 Asbestos Removal Procedures

The following procedures are an outline of the asbestos removal methodology to be used for the Works. Alternative methods of asbestos removal may be considered, however these must be reviewed and agreed to by the Consultant prior to the commencement of the ACM removal.

These procedures are a guide only and do not override the requirements of the WorkSafe Australia *Code of Practice for the Safe Removal of Asbestos, 2nd Edition* [NOHSC:2002(2005)] or accepted minimum standards, which apply for asbestos removal Work.

11.11.1 Excavation and Soil Removal Work

The Contractor's Work methodology must comply with the following:

- The Contractor is to be an AS1 licensed Asbestos Removal Contractor in accordance with the NSW Occupational Health & Safety Regulation 2001. A copy of the current license is to be furnished by the Contractor prior to the commencement of Work and displayed in a prominent position during the asbestos removal project.
- The Contractor is to apply for and supply a copy of a "Permit to Work" issued by the NSW WorkCover Authority in accordance with the Regulation. A copy of the "Permit to Work" is to be furnished by the Contractor to the Principal prior to the commencement of Work and displayed in a prominent position during the asbestos removal project.
- All personnel employed by the Principal and the Contractor are to be appropriately trained in asbestos removal. Copies of the appropriate certificates are to be supplied to the Consultant prior to the commencement of Work.
- Approved vacuum cleaners are to be utilised at all times during the asbestos removal process for cleaning and decontamination of plant and equipment. Vacuum cleaners used during the process are to be approved for use with asbestos and are to be fitted with HEPA filters in accordance with AS3544-1988 *Industrial Vacuum Cleaners for Particulates Hazardous to Health* and AS 4260-1997 *High Efficiency Particulate Air Filters (HEPA) – Classification, Construction and Performance*. Standard domestic or industrial vacuum cleaners are not permitted. The vacuum collection bags and filters are to be disposed of as asbestos waste.
- A dry decontamination area is to be established. Entry to the Asbestos Work Area for plant operators is to be via the Decontamination Area where personnel will change into the required personal protective equipment (PPE).
- The decontamination area is also the area in which contaminated PPE must be removed prior to personnel leaving the Asbestos Work Area. It is set up as a temporary adjunct to the Asbestos Work Area. It should be adjacent to the Asbestos Work Area but must not be used for purposes other than decontamination.
- Disposable coveralls, respirator filters and gloves must be disposed of as asbestos waste within this area. Hard hats, boots and glasses must be wiped with a damp cloth to remove dust and other contamination.
- Dry decontamination procedures are to be as follows:
  - Workers are to don the PPE at the decontamination area. One set of disposable coveralls are to be worn over the plant operators work clothing whilst operating in the Asbestos Work Area and while asbestos removal work is being carried out.
  - Upon leaving the Asbestos Work Area, the coveralls and boot covers are to be removed and placed into 0.2mm polyethylene low-density plastic bags labelled as 'Asbestos Waste' ('Asbestos Bags').
  - Remaining PPE is to be removed at the decontamination area and personnel are to decontaminate or wash any exposed parts of the body. Hard hats, boots and glasses must be wiped with a damp cloth to remove dust and other contamination.

- A wet decontamination unit is to be established at the Asbestos Work Area boundary for use by the Contractor's personnel and for use by the Principal's personnel should an emergency arise. Entry to and exit from the Asbestos Work Area for the Contractor's personnel shall only be permitted via the decontamination unit. The decontamination unit shall also have a clean change area adjacent to and separate from the clean end of the decontamination unit.
- The Asbestos Work Area boundaries are to be established and warning signs are to be affixed to the boundaries in accordance with the *Code of Practice for the Safe Removal of Asbestos, 2nd Edition* [NOHSC:2002(2005)].
  For example – ***"Asbestos Work Area – Do Not Enter"***.
- All drains at ground level that may be affected by the removal process should be covered with filter material to prevent asbestos residue entering the drainage system. Filter material shall be removed and disposed of as asbestos waste at completion of the removal process.
- Suitable silt fencing and filtration is to be used at the Asbestos Work Area boundaries to prevent run-off to adjoining property.
- A visual inspection will be undertaken by the Consultant to assess the completion of the establishment of the Asbestos Work Area and decontamination facilities prior to accessing the Asbestos Work Areas. Access to the Asbestos Work Areas will only be permitted following satisfactory completion of the visual inspection.
- The appropriate PPE must be worn when accessing Asbestos Work Areas and when undertaking any asbestos removal work. All PPE is compulsory and must be worn by all personnel entering the Asbestos Work Areas.
- All existing services, electrical and data cabling is identified by the Principal and protected prior to asbestos removal work.
- To ensure that dust generation is minimised the ground surface and all other sources of dust are to be suppressed by the use of sprays of water. The sprays will provide minimal amounts of water applied to the Asbestos Work Area in a mist form to minimise water run-off and with consideration given to slips and falls. Spraying must also be undertaken when removing the soil and debris from the ground.
- The ACM and asbestos contaminated material and debris from the site may be removed using excavators or front-end loaders. The material is to be placed into trucks or bins that are double lined with 0.2 mm impervious plastic and not dropped or thrown. Care is to be taken and water sprays applied to avoid the generation of dust when placing the material into the trucks or bins. When filled, the trucks or bins are to be sealed using 0.2 mm impervious plastic and tape prior to transportation from the Site.
- Some materials may need to be removed by hand and placed into 0.2 mm polyethylene low density plastic bags labelled as 'Asbestos Waste' or placed directly into trucks or bins lined with 0.2 mm impervious plastic. Care is to be taken not to scrape the surface of AC sheeting and not to drop the AC sheets into the bins.
- All equipment and machinery used within the Asbestos Work Area shall only be used in that area and when removed from the designated area shall be thoroughly washed. Tools used in the Asbestos Work Area are to be sealed in 'Asbestos Bags' for transport to and from the Asbestos Work Area or must be thoroughly cleaned and decontaminated before being taken from the Asbestos Work Area.

- Operators of mobile plant and equipment required to operate within the Asbestos Work Area must wear the appropriate PPE and the operators' cabin must be completely closed and the air conditioning system must only be operated on a recirculating air function.
- Where 'Asbestos Bags' are used for waste, they are to be sealed, placed into a second bag and sealed again and thoroughly washed clean of dust as they are passed through the decontamination unit. Bags are to be filled to no more than 1/2 full, or so that the weight is manageable and does not result in manual handling injury or bag rupture. The bagged material is to be placed into trucks or bins that are double lined with 0.2mm impervious plastic.
- All soiled PPE shall be placed into 0.2 mm polyethylene low-density plastic bags labelled as 'Asbestos Waste'. Bags are to be filled to no more than 1/2 full, sealed, placed into a second bag and sealed for appropriate disposal.
- Asbestos waste and other waste material is to be disposed of in the appropriate manner at an approved waste disposal facility. Permission to dump the asbestos waste is to be obtained from the appropriate authority prior to the commencement of Works and dumping dockets are to be provided to the Consultant following each dumping event.
- The Asbestos Work Area will be inspected by the Consultant to ensure that all waste and debris from the Asbestos Work Area is removed from the Asbestos Work Area and that no visible asbestos contamination remains. The Consultant is to be accompanied by the Contractor at all times during clearance inspections. Soil validation will be undertaken in accordance with **Section 9.5**.
- Air monitors are to be placed around the Asbestos Work Area by the Consultant during all stages of the work. All air monitoring and clearance inspections will be carried out by the Consultant using NOHSC and NATA Standards.
- Upon receipt of satisfactory air and soil validation results, the Asbestos Work Area barriers may be dismantled.
- A final inspection will be carried out by the Consultant and the Principal to ensure all work has been carried out and areas cleaned satisfactorily.

11.11.2 Asbestos Contaminated Waste Transportation Procedure

Requirements for the transportation and storage of asbestos waste are detailed in Section 29 of the Protection of the Environment Operations (Waste) Regulation 2005 – Special Requirements Relating to Asbestos Waste.

This procedure is a guide only and does not override the current legislative requirements relating to the transport and disposal of asbestos waste. The following procedure will apply:

- All asbestos removal works undertaken at the Site are to be performed in accordance with this RAP.
- The trucks must be leak-proof and licensed for the transport of hazardous waste.
- The trucks are to be lined internally with 0.2 mm impervious plastic prior to loading with asbestos contaminated waste.

- ACM is to be placed into the truck and not dropped. All loaded material will be wetted sufficiently to prevent the emission of any dust during loading and unloading. Loader buckets will only be loaded to ¾ capacity and trucks will only be loaded to a level below the height of the tipping body. The bucket will be shaken above the tipping body after each bucket is emptied. This will also prevent asbestos contaminated material from being spilt on the truck bodies and subsequently being dropped on route to the waste disposal facility.
- Trucks are to be covered with 0.2 mm impervious polyethylene sheeting and sealed for the journey to the waste disposal facility. Tailgates are to be sealed closed.
- Trucks are to be washed prior to leaving the Asbestos Work Area to remove any residual dust and debris.
- Trucks will be inspected prior to departing the Asbestos Work Area to ensure that the load is adequately covered and any spillage is contained.
- Proceed directly to the Waste Management Centre where drivers will be directed to the disposal area. Prior arrangements may be necessary with the Waste Management Centre for the Receival of the asbestos waste.
- The waste management facility may decide to suspend unloading of the asbestos waste due to unfavourable weather conditions. If suspension of unloading occurs, all trucks and bins are to return to or remain at the Site with loads covered and sealed until permitted to unload.
- Trucks are to reverse up to the disposal point and slowly tip the trailers or bins. If required by the waste disposal facility, the waste is to be hosed with water at all times while being unloaded.
- Drivers are to request a dumping receipt for each dumping event and supply to the Consultant following each dumping event.
- Air monitoring may be carried out periodically at the disposal point to assess and determine levels of airborne asbestos fibre during the unloading of the asbestos waste. Air monitoring will be undertaken by the Consultant Occupational Hygienist in conjunction with the monitoring conducted at the Site.

11.12 Protective Clothing

All persons engaged in asbestos removal processes shall wear approved personal protective equipment (PPE).

Supply of PPE to workers, other trades and to the Principal and Consultant personnel shall be provided by the Contractor as required.

11.12.1 Protective Clothing

Protective clothing for all personnel entering the Asbestos Work Area for any purpose shall include as a minimum, disposable overalls, steel-capped safety boots, hard hats and safety vests. All PPE is compulsory and must be worn by all personnel entering the Asbestos Work Area.

No items of protective clothing shall be laundered for re-use unless agreed to by the Consultant. Where approved, laundering of protective clothing shall be carried out in accordance with the *Code of Practice for the Safe Removal of Asbestos 2nd Edition* [NOHSC:2002(2005)].

Underwear and towels may be laundered under approved conditions and re-used. Procedures must be submitted to the Consultant for review prior to the commencement of Work.

11.12.2 Respiratory Protection

Approved types of respiratory protection devices shall be used by all personnel entering the Asbestos Work Area. During the asbestos removal process, a half-face cartridge type particulate respirator fitted with Class P3 or HEPA filters shall be used.

Plant operators are to use a disposable type Class P1 respirator at all times when operating within the Asbestos Work Area.

The quality and type are to comply at all times to the NSW Occupational Health & Safety Regulations *"Guidelines for the Management & Removal of Asbestos"* and AS1715 and AS1716.

Respiratory protection devices shall be issued on a personal basis with the user's name clearly marked on any non-disposable type.

Note: Effective seal of respirators cannot be made over beards, long facial growth or spectacles. Personnel with facial growth will not be permitted to work in the Asbestos Work Area.

Respirators, which have become contaminated, shall be vacuumed and washed at each shift break. Cartridges shall be changed at the end of each shift. When not in use the respirator shall be stored or carried in a clean plastic bag.

Disposable respirators are to be disposed of as asbestos waste each time the operator leaves the Asbestos Work Area. A new disposable respirator is to be used whenever plant operators enter the Asbestos Work Area.

All respiratory equipment shall be checked and maintained in good condition by persons who are trained for the above work.

A maintenance record shall be kept covering pertinent details of all respiratory protective equipment.

11.13 Decontamination Area

A decontamination facility shall be used with showers that can be divided into three distinct areas, namely a dirty decontamination area, a clean decontamination area and a clean changing area.

From commencement of the works, a decontamination facility shall be situated immediately adjacent to and directly connected to the Asbestos Work Area.

A change area is to be constructed immediately adjacent to and directly connected to the decontamination unit on the opposite side of the Asbestos Work Area. The Contractor's personnel are to don their PPE in this area before entering the Asbestos Work Area. At the completion of shift and at shift breaks, personnel are to shower through the decontamination unit and change into their normal work clothes in the change area.

All personnel will be required to use the decontamination facility for access to and egress from the Asbestos Work Area with the exception of the Principal's plant operators who will utilise a dry decontamination area. Water supply to the decontamination unit is to be taken from the nearest supply point. Wastewater is to be filtered of all asbestos using a filter capable of capturing particles down to 5 µm and disposed of to the sewerage system or recycled for use in the Asbestos Work Area:

- No more than six persons shall use one decontamination unit.
- Personnel must not smoke, eat or drink in any part of the decontamination facility.
- The decontamination facility is to be cleaned daily by personnel equipped with the appropriate PPE.

11.14 Disposal of Asbestos Contaminated Materials

Asbestos waste including waste from vacuum cleaners and soiled PPE shall be placed into marked plastic bags which, are to be sealed by wire ties or tape and then suitably washed. The bags shall then be conveyed in leak-proof vehicles for disposal at approved regional asbestos waste disposal depots.

Should it be necessary to temporarily store asbestos waste prior to burial then all asbestos waste shall be held in leak-proof metal containers or bins suitably marked and held in a secured area displaying appropriate warning signs.

Solid asbestos waste shall be collected and double bagged in heavy duty, low-density polyethylene 0.2 mm thick bags or wrapped in 0.2 mm polyethylene sheeting and sealed with duct tape. A maximum bag size of 1,200 mm (length) x 900 mm (width) shall be observed and bags shall be filled to no more than 50 per cent capacity or so that the weight is manageable and does not result in manual handling injury or bag rupture.

To reduce bag rupture and to minimise asbestos contamination, asbestos waste shall be double bagged; once at the workface and a second time away from the workface but prior to leaving the Asbestos Work Area.

Each bag or other container shall be labelled on its outermost surface with warning statements.

Bags or primary containers which have held asbestos contaminated material shall not be re-used, and containers marked as above shall not be used for any other purpose.

Transport of asbestos waste material shall be conveyed in leak-proof vehicles covered so that no spillage or dispersal of the waste to the atmosphere occurs.

Care must be taken to ensure that the integrity of the containment is not damaged during handling or transportation. In particular, bags of asbestos waste shall not be thrown or dropped from a height, which may rupture the bag. Vehicles may be checked for cleanliness prior to leaving the disposal site.

Controlled wetting of waste shall be employed, where practicable, to reduce asbestos dust emission during bag sealing and in cases of accidental bag rupture during transportation. Excessive water logging shall be avoided as the excess of contaminated water may leak out of the bags, thereby creating a future source of airborne asbestos dust.

The asbestos waste shall be disposed of at a site and in a manner as approved by the Local and State authorities. Documentary evidence of the disposal shall be provided. This will include name of the authorised tip, weighbridge docket and registration number of vehicle for every disposal. This information is to be supplied to the Consultant.

11.15 Clearances and Dismantling of Work Area

After the asbestos removal work has been completed, the Asbestos Work Area will be inspected by the Consultant to determine whether the asbestos contaminated material has been removed to a satisfactory standard.

A comprehensive visual inspection shall be undertaken by the Consultant to ensure removal has been satisfactorily completed and that no visible source of asbestos contamination remains in the Asbestos Work Area. Where sub-grade ACM fill is to remain at the Site, the excavation surface will be covered with a geotextile marker layer as detailed in **Section 9.7.2**.

Soil sampling and analysis will be undertaken by the Consultant for validation purposes.

The barriers surrounding the asbestos removal area and plastic used for sealing purposes may only be dismantled when the subject area has been cleared by the Consultant.

11.16 Air Sampling

Para-occupational (static) air sampling will be carried out by the Consultant employed by, and at the cost of the Principal to ensure that the procedure used has kept the concentration of airborne asbestos dust to the minimum practical level and, below the prescribed threshold limit values (TLV) stated in current Regulations.

Limits applicable to this project include:

- **<0.01 fibres/mL - acceptable limit** (equal to background and detectable limits. Level to achieve for air clearances).
- **≥0.01 fibres/mL - alert level** (locate source and rectify).
- **≥0.02 fibres/mL - action level** (Cease Work, locate source and rectify. Work may only recommence following receipt of air clearance monitoring results of <0.01 fibres/mL).

Where a result of personal or control sampling is considered high and/or is outside the site acceptable limits, the cause of the high reading is to be ascertained by the Contractor and the Consultant with the Contractor responsible to take all remedial action at his own expense to ensure that further high readings are not repeated. Procedures to be followed in the event of elevated air sampling readings are outlined in **Appendix C**.

Air sampling and filter analysis will only be carried out by the Consultant.

The minimum requirement for a large-scale asbestos material removal process is as follows:

- Control monitoring will be taken at the barriers of the Asbestos Work Area to determine whether the barriers are correctly located.
- Control monitoring will be undertaken in the clean end of the decontamination unit, in the lunchroom, in the laundry and at areas nominated by the Consultant.
- Personal samples shall be taken on staff in the area as required by the Consultant.
- On completion of the clean-up process and before the Asbestos Work Area barriers are removed, further air sampling will be carried out by the Consultant after the surfaces have dried out in the Asbestos Work Area, together with a visual inspection, to confirm that final detail cleaning has removed all asbestos dust.

A copy of all air monitoring results will be supplied to the Principal and a copy posted in a location accessible to Site staff.

General surveys, including visual inspection and/or air sampling, shall be carried out periodically as determined by the Consultant having regard to the amount of, and condition of, asbestos material at the site.

11.17 Emergency Procedure

Emergency procedures on Site will cover actions to be taken when asbestos is inadvertently uncovered, catastrophic events occur or air monitoring indicates high levels of airborne asbestos fibre. The procedures contained in **Appendix C** shall be followed in an emergency.

It is important to remember that the first priority must always be the safety of any persons either Workers or others involved in the events. Uncovering of asbestos may occur due to human error or to catastrophic event. Catastrophic events may include but not limited to:

- Explosion.
- Industrial Accident.
- Failure of construction structures.
- Failure of a number of control structures.
- Failure of single control structures.
- Earthquake.
- Flood.
- Fire.

In order to ensure that the occupational health impact of unavoidable catastrophic events is minimised, emergency procedures are to be followed. These include:

- The Consultant will make available a Site Occupational Hygienist who will be available at all times when asbestos related Works are in progress.
- In the event of an emergency situation the Site Occupational Hygienist will be contacted.
- The Contractor will take whatever action is necessary to make good the situation.
- Following rectification of the situation a full report and clearance certification will be presented to the Principal, or nominated representative by the Consultant's Site Occupational Hygienist within 24 hours.
- The Consultant or nominated representative will arrange for appropriate external government authorities to be contacted without delay if necessary (i.e. WorkCover NSW, DECC, DoP).

All emergency action should take place as soon as possible after the event and the first priority is to stabilise the situation and to prevent further hazard or employee exposure.

11.18 Site Contacts

The Site contact for any issues with the remediation processes is the Principal's representative, nominated as:

Peter Allen
Project Manager (work: 4928 7600 or Mobile: 0404 812 336)
APP Corporation Pty Ltd
Level 4, 6 Newcomen St
Newcastle NSW 2300

12.0 Conclusions

The remedial action plan (RAP) for the NPH Extension Site located off Lookout Road, New Lambton Heights describes the strategy proposed for remediation of contamination of soils identified by previous investigations carried out by HLA (now ENSR) and others. Remediation is required before the Site can be considered suitable for the proposed (Hospital/Carpark) land use development to proceed.

Based on the assessment activities completed to date, the proposed remedial strategy involves the following general components:

- Prior to any redevelopment works, the Carpark Areas (Areas 1 to 3) will require an intrusive assessment to classify any material to go off site and to confirm that the material remaining on Site is suitable for the proposed land use.
- Soils within the excavation footprint of the NPH Extensions (including Areas 1 to 3) identified to contain impacted fill material will be either removed from the Site and disposed of in an approved manner to a landfill licensed to receive the waste, or capped by a geotextile marker layer, with an ongoing management plan.
- All removal work will be carried out in accordance with the relevant Acts and Regulations.
- Validation of the successful completion of the removal works, in accordance regulatory protocols described within this RAP.
- Any imported fill that may be required to reinstate excavation levels will be classified as virgin excavated natural material (VENM) or excavated natural material (ENM) as per the recently published NSW DECC (2008) Waste Classification Guidelines.
- Asbestos air monitoring will be carried out on-site whilst any soil remediation activities are conducted. The rates of asbestos air monitoring required will be determined by the Consultant in discussions with the Principal.
- Implementation of a site management plan during remedial activities will ensure the works are undertaken in a responsible manner that is protective of the environment.
- Preparation of an Environmental Management Plan to ensure the ongoing integrity of the capping system

Following the completion of the above activities, a Validation Report will be prepared by the Consultant documenting the remediation and validation works and confirming that the Site is suitable for the proposed future (Hospital/Carpark) land use.

This report has considered the requirements of the Director General's Environmental Assessment Requirements (ref: MP 08_0170, dated 29th September 2008).

The interim of opinion letter "*Review Advice No.4 – Site Audit for Newcastle Private Hospital Extension, New Lambton Heights, NSW"* dated 25 February 2009 is located in **Appendix D**.