ENVIROPACIFIC SERVICES

ASBESTOS REMOVAL PROCEDURE

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PROJECT REVISION STATUS

DATE	COMMENTS	PREPARED BY	APPROVED BY
	Rev 0 – Draft for Tender	Mitch Anthony	Lindsay Killin
Feb 20	Rev 1 - Revised following client comments	Mitch Anthony	Lindsay Killin
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DISTRIBUTION

Issue /Rev	Name	Copies	Issue Date
Rev 0	Daracon	1	
Rev 1	Daracon	1	Feb 20
Rev 2	Daracon	1	May 20

1. PURPOSE AND SCOPE

1.1. THE SITE

The Kurri Kurri Aluminium Smelter has operated at Hart Rd, Loxford, since commissioning by Alcan in 1969. The Smelter includes a plant area of approximately 60 hectares, contained within a 2,000 hectare buffer zone. Hydro Aluminium Kurri Kurri Pty Ltd (HAKK) commenced ownership of the facility in 2002.

Smelting activities ceased at the site in September 2012, and in May 2014 HAKK formally announced the closure of the smelter. HAKK's strategic vision is for the land to play a key role in allowing the Hunter Region to achieve the economic, employment and environmental objectives identified in the NSW Government NSW State Plan 2021 and the Hunter Regional Plan 2036. HAKK aims to achieve this strategic vision by facilitating the remediation of the site.

1.2. PROJECT SCOPE

The general scope of remediation works to be undertaken by Daracon on this project is;

- Preliminaries including preparation of project plans/documentation
- Establishment of temporary site facilities
- Site preparation activities including construction of haul roads, temporary stockpiling areas, fencing and environmental protection measures
- Construction of a permanent creek crossing between the containment cell area and the rest of the site
- Construction of sediment and leachate dams
- Construction of a ~600,000T capacity containment cell in accordance with the GHD design
- The excavation, loading, transport and placement within the cell of waste materials derived from numerous locations on site. Validation of the areas following waste removal will be undertaken by HAKK's Environmental Consultant, Ramboll
- Capping of the containment cell

1.3. SCOPE OF DOCUMENT

The purpose of this document is to outline the specific control measures required to ensure workers and other persons are not at risk when asbestos removal works are being undertaken at the site. This Asbestos Management Procedure will help to ensure the asbestos removal works are well planned and carried out in a safe manner in accordance with the relevant legislation

2. DEFINITIONS

Asbestos Containing Material (ACM)	Any material or thing that, as part of its design, contains asbestos.
Asbestos Contaminated Dust (ACD)	Dust or debris that has settled within a workplace and is (or is assumed to be) contaminated with asbestos.
Asbestos Regulator	The government department responsible for the implementation of asbestos related legislation in the jurisdiction in which the asbestos work will be carried out.
Asbestos removal site	The area comprising the asbestos work area, the buffer zone around the asbestos work area, decontamination facilities, site amenities and storage facilities.
Asbestos Supervisor	A person accredited by the asbestos regulator to supervise the removal of asbestos material who is listed on the asbestos permit and on the Enviropacific asbestos licence and must always be present or readily available during the removal of asbestos material.
Asbestos work area	The delineated area where asbestos removal work will or is being carried out
Licence - Class A – Friable and Non-Friable	Is a licence for the removal of all forms of asbestos -containing material - friable and non-friable.
Licence – Class A specific - Friable	Is a specific friable asbestos licence for the removal of specific types of friable asbestos-containing material (type of “asbestos-containing material” means a description of asbestos-containing material or product e.g. asbestos-containing cement sheeting, cement pipes, vinyl tiles, sprayed insulation, telecommunications pits and pipes, pipe lagging, millboard and gaskets.
Licence - Class B – Non-Friable	Is a licence for the removal of all non-friable asbestos-containing material.
Licence – Class B specific – Non-Friable	Is a specific licence for the removal of non-friable asbestos-containing material e.g. telecommunication pits and pipes, asbestos cement pipes, gaskets.
Competent Person – Harmonised States/Territories	In relation to carrying out clearance inspections under Regulation 473 means a person who has acquired through training or experience the knowledge and skills of relevant asbestos removal industry practice and holds a certification in relation to the specified VET course for asbestos assessor work or a tertiary qualification in occupational health and safety, occupational hygiene, science, building, construction or environmental health. For all other purposes, competent person means a person who has acquired through training, qualification or experience, the knowledge and skills to carry out the task.

Exposure standard	For asbestos is a respirable fibre level of 0.1 fibres/ml of air measured in a person's breathing zone and expressed as a time weighted average fibre concentration calculated over an eight-hour working day and measured over a minimum period of four hours in accordance with the Membrane Filter Method.
Friable Asbestos	Any material that is in a powder form or that can be crumbled, pulverised or reduced to a powder by hand pressure when dry, and contains asbestos.
Health Monitoring	Health monitoring is provided to a worker who is carrying out licensed removal work, other ongoing asbestos removal work or asbestos-related work and there is risk of exposure when carrying out that work. Health monitoring is carried out under the supervision of a registered medical practitioner. The PCBU must pay all expenses for health monitoring, obtain report and keep records for all health monitoring for a minimum of 40 years.
HEPA Filter	High-efficiency particulate air (HEPA) filter utilised in vacuums and negative air units specific to asbestos removal work. Filters should conform to the requirements of **AS 4260-1997** *High efficiency particulate air (HEPA) filters – Classification, construction and performance.*
Licensed Asbestos Removalist	A person conducting a business or undertaking who is licensed under the WHS regulations to carry out class A or class B asbestos removal work (Enviropacific).
Non-Friable Asbestos	Material containing asbestos that is not friable asbestos, including material containing asbestos fibres reinforced with a bonding compound.
Plant	(a) any machinery, equipment, appliance, container, implement and tool, and (b) any component of any of those things, and (c) anything fitted or connected to any of those things
Respiratory Protective Equipment (RPE)	In general, the selection of suitable RPE depends on the nature of the asbestos work, the probable maximum concentrations of asbestos fibres that would be encountered in this work and any personal characteristics of the wearer that may affect the facial fit of the respirator (for example, facial hair or glasses).

3. RESPONSIBILITIES

3.1. ENVIROPACIFIC SERVICES

Enviropacific will provide the following personnel to assist Daracon with the management of asbestos impacted materials throughout the project;

Table 1 – Enviropacific Asbestos Personnel

Description	Project Allocation
Project Director	As required throughout the project. Estimated average of 6 hrs per week including site visits/meetings and offsite support as required
Asbestos Supervisor	1 x full-time Asbestos Supervisor on-site for the duration of asbestos works
Asbestos Labour	1-2 asbestos labourers per asbestos work area throughout the project

The Enviropacific Project Director will be responsible for;

- Review of all project documentation including this Asbestos Removal Procedure and ARCP's;
- Attending project meetings with Daracon and HAKK;
- Undertaking project inspections and audits;
- Reviewing safety reports and inspections and initiating any actions to rectify;
- Participate in accident/incident investigations; and
- Ensure adequate equipment and staff are available to carry out the work.

The Enviropacific Asbestos Supervisor/s will be responsible for;

- Notifying and obtaining approval from SafeWork NSW at least 5 business days prior to commencement of asbestos removal works;
- Providing full-time asbestos supervision throughout the works;
- Ensuring that the procedures outlined in this document are adhered to;
- Preparation of Specific Asbestos Removal Control Plans (ARCP) for each removal area;
- Ensuring the ARCP is readily available, communicated to all parties and regularly reviewed;
- Preparation of Asbestos Awareness Training for Daracon (and Daracon's subcontractor's) personnel;
- Delivering Asbestos Awareness Training to site personnel;
- Training Site Personnel in this Asbestos Management Procedure and the relevant ARCP's;
- The safe removal of ACM, with authority over all labour and equipment on site, to ensure the efficient successful removal without causing contamination of the environment or a risk to personnel or the public;
- Facilitating the preparation of a site-specific SWMS as they relate to ACM removal project;
- Management of decontamination of personnel including overseeing personnel decontamination to ensure the correct procedures are followed
- Visual monitoring of dust levels during removal works;
- Management of decontamination of plant and equipment;
- The overseeing of all documentation as it relates to asbestos removal;
- The security and safety of the asbestos removal site and asbestos work area should be specified in the ARCP;

- Complete the **Asbestos Removal Checklist** once the project is set up and prior to the commencement of asbestos removal work; and
- Ensuring the security and safety of the asbestos removal site and asbestos work area at all times, particularly if the removal process is to take place over several days or an extended period of time.

The Enviropacific Asbestos Labourer's will be responsible for;

- Full-time supervision of the exclusion zone to ensure it is secure at all times;
- Managing asbestos PPE stock;

Maintaining the PPE register;

- Undertaking decontamination of plant and equipment as required;
- Regular cleaning of the decontamination unit;
- Visual monitoring of dust levels during removal works;
- Securing disposed PPE in asbestos bags and ensuring suitable disposal in the containment cell; and
- Cleaning of non-disposable RPE

3.2. DARACON

Daracon's workers and Daracon's Sub-Contractor's workers will be responsible for;

- Ensuring all procedures outlined in this document are adhered to throughout the works;
- Ensuring all site personnel are made aware of the need to understand and adhere to the procedures outlined in this document;
- Provision of all plant, personnel and equipment required to undertake the work in a safe manner;
- Undertaking the required Asbestos Awareness Training presented by the Enviropacific Asbestos Supervisor/s;
- Reviewing the ARCP and sign the acknowledgement sheet stating that they understand the contents of the ARCP and specific risks in relation of the asbestos works;
- Ensuring all works are conducted in a safe manner and without risk to themselves and other workers health;
- Correctly wearing all asbestos related PPE at all times specified within the SWMS for the project;
- Decontaminating correctly every time when leaving the asbestos work area; and
- Not removing plant from the asbestos work area unless it is correctly decontaminated, packed and identified, or correctly contained and identified as asbestos waste.
- Monitoring and controlling dust emissions via watercart dust supression

4. PROJECT WORK AREAS

The following areas require remediation;

4.1. ANODE WASTE PILE

This area involved the loading of approximately 9,360T of anode waste and excavation of approximately 8,000T from under the footprint of the anode waste stockpile for transport and placement in the containment cell. There is no information to indicate asbestos is present within this

material. If encountered any asbestos would be managed under the unexpected asbestos finds procedure outlined in Section 9

4.2. AREA EAST OF PLAYING FIELDS – CONSTRUCTION WASTE

The material comprises approximately 19,200T of construction waste including concrete, refractory brick, metal sheeting, steel reinforcement, plastic sheeting, timber, fence posts, broken glass, electrical wire, steel posts and old cables. This material will either be transported to the cell or disposed offsite to a licensed facility. There is no information to indicate asbestos is present within this material. If encountered any asbestos would be managed under the unexpected asbestos finds procedure outlined in Section 9

4.3. DICKSON RD NORTH STOCKPILE

The Dickson Rd North Stockpile is estimated to be 45,000T and is comprised of a combination of asbestos impacted soils excavated during an early works remediation package. Information provided in the Remedial Action Plans for the sites where the soils originated indicate that friable asbestos is present. For example, the RAP for the Municipal Landfill Site states “ACM fragments were present across the filled area and were encountered through the filled profile, (eight of the 15 test pits contained ACM). The presence of asbestos content within these fragments was confirmed by laboratory analysis as both bonded fragments and degraded, friable fragments” and the RAP for the Rural properties states “The majority of the asbestos that was identified at the land parcels was bonded fibro fragments. Degraded fibro fragments less than 7mm in size (asbestos fines) were detected on Parcel 4 at Lot 442, Dickson Road and on Parcel 10 at Lot 453, 2 Dawes Avenue.”

The Dickson Rd North Stockpile is to be loaded and transported for placement into the containment cell. Due to the presence of friable asbestos within the stockpile this process will be undertaken under friable asbestos removal conditions

4.4. CAPPED WASTE STOCKPILE

The capped waste stockpile consists or the following materials;

- Clean capping of approximately 30,000T which is deemed to be asbestos free and not require placement in the containment cell
- Impacted capping of approximately 4,500T and impacted stockpile material of approximately 225,000T which requires the addition of 10% gypsum per truck load and transport to the containment cell for placement

The Capped Waste Stockpile Report states that “Soil sampling found asbestos fibres in three of the six boreholes. It is recommended that health and safety considerations for asbestos is made prior to any disturbance of the fill material within the stockpile, as well as transporting, and/or crushing the material”. Due to the presence of friable asbestos within the stockpile the excavation, transport and placement of impacted capped waste material will be undertaken under friable asbestos removal conditions

4.5. DICKSON RD SOUTH

The Dickson Rd South Site involves the excavation of approximately 13,200T of smelter waste which has been buried at the site and the transport to the containment cell for placement. The Remedial Action Plan indicates “Although no asbestos containing materials were identified during investigations at the Dickson Road Site, there is potential for asbestos contamination materials,

including friable asbestos, to be present at the site". If encountered any asbestos would be managed under the unexpected asbestos finds procedure outlined in Section 9

4.6. AREA EAST OF CLAY BORROW PIT

The area east of the clay borrow pit is currently covered by a stockpile of ENM derived from the construction of the Hunter Expressway. Once the ENM stockpile is relocated additional test pitting is required in this area to assess the potential for buried wastes. It is anticipated that approximately 4,680T of buried waste will require excavation and transport to the containment cell for placement. There is no information to indicate asbestos is present within this material. If encountered any asbestos would be managed under the unexpected asbestos finds procedure outlined in Section 9

4.7. STORED ASBESTOS CONTAMINATED MATERIAL

-There are several storage locations that consist of bulk asbestos material which has been removed during the demolition phase of the project including bulked ACM, concrete blocks and wrapped asbestos materials. The asbestos materials have generally been adequately sealed/encapsulated in plastic or within containers and the majority is sitting on pallets. Some concrete foundations and plinths that house asbestos conduits are stored unwrapped however the conduits have been painted or sealed at the time of removal

This material is to be loaded and transported to the containment cell for placement

4.8. PROCESS WASTE 7A FURNACE NORTH AND SOUTH TUBS

Approximately 28,800T of process waste has been stored within the North and South Tubs of the 7A Furnace. This material is to be loaded and transported to the containment cell for placement. There is no information to indicate asbestos is present within this material. If encountered any asbestos would be managed under the unexpected asbestos finds procedure outlined in Section 9

4.9. GENERAL WASTE – DEMOLITION WORKS

It is estimated that approximately 21,000T of general waste will be generated during the demolition works that will require transport to the containment cell for placement. There is no information to indicate asbestos is present within this material. If encountered any asbestos would be managed under the unexpected asbestos finds procedure outlined in Section 9

4.10. SURGE PONDS

Approximately 4,500T of sediment from the East Surge Pond and 4,860T of sediment from the West Surge Pond requires dredging, drying and subsequent transport to the containment cell for placement. There is no information to indicate asbestos is present within this material. If encountered any asbestos would be managed under the unexpected asbestos finds procedure outlined in Section 9

4.11. MISCELLANEOUS CONTAMINATED MATERIALS

It is estimated that approximately 36,000T of material from several areas around the site require excavation and transport to the containment cell for placement following the removal of surface structures by the Demolition Contractor. It is unknown whether asbestos is present within these areas. If encountered any asbestos would be managed under the unexpected asbestos finds procedure outlined in Section 9

4.12. CONTAINMENT CELL

The containment cell is to be constructed in the area of the former Clay Borrow Pit and is designed to contain approximately 600,000T of the waste materials described in sections 4.1 – 4.11 above. As asbestos impacted material from a number of areas is being placed within the containment cell the placement of material within the cell will be undertaken under asbestos removal conditions until it can be demonstrated that all asbestos waste within the cell has been capped with clean material

5. PLANNING

5.1. NOTIFICATION TO REGULATOR

Enviropacific will submit the required asbestos removal notification to SafeWork NSW at least 5 business days prior to the commencement of any asbestos removal works at the site. Approval of the notification from SafeWork NSW must be received prior to commencement

5.2. ASBESTOS LICENSE

All asbestos removal works on this project will be undertaken under Enviropacific's SafeWork NSW Asbestos Removal License No AD211328.

5.3. ASBESTOS SUPERVISION

The Asbestos Supervisor/s will be accredited by SafeWork NSW to supervise the removal of asbestos by way of being listed as an accredited supervisor on Enviropacific's Asbestos Removal License. The Asbestos Supervisor/s shall always be present on site during the asbestos removal works

5.4. ASBESTOS REMOVAL CONTROL PLAN

Prior to the commencement of asbestos removal, the Asbestos Supervisor must develop a site specific ARCP. A copy of the ARCP will be provided to Daracon and HAKK and will be readily available on-site during the asbestos removal. Prior to the commencement of removal work the Asbestos Supervisor/s will induct all workers into the ARCP to ensure that work is carried out in accordance with the ARCP.

For this project a specific ARCP will be developed for each asbestos removal area including the containment cell where the placement of asbestos impacted materials will occur.

5.5. HEALTH MONITORING

The "How to Safely Remove Asbestos" Code of Practice states that a person conducting a business or undertaking has a duty to ensure health monitoring is provided to a worker if they are carrying out licensed asbestos removal work, other ongoing asbestos removal work or asbestos-related work and is at the risk of exposure to asbestos when carrying out the work.

Pre-employment asbestos medicals are provided to Enviropacific workers prior to commencing licensed asbestos removal work. Health monitoring is provided to workers at regular intervals after commencing asbestos-related work but at least once every two years. Asbestos health surveillance reports will be maintained for at least 40 years after the records are made. Confidential records are maintained in head office.

A risk assessment shall be undertaken prior to the commencement of the works to determine the requirement for Daracon staff and sub-contractor's to undertake asbestos medicals for this project based on their role on the project and the requirements set out in the Code of Practice.

5.6. CERTIFICATION AND TRAINING

Enviropacific will not direct or allow a worker to carry out asbestos removal work unless they are satisfied that the worker holds a certification that is relevant to the class of licensed asbestos removal work they will be carrying out.

Workers (including the asbestos removal supervisor) directly carrying out licensed asbestos removal work shall have acquired competency certification by completing units of competencies to prove they have the relevant skills to be able to competently and safely remove asbestos or ACM. The units of competency completed will determine what type of asbestos work they can carry out, such as:

- CPCCDE3014A – Remove non-friable asbestos;
- CPCCDE3015A – Remove friable asbestos; and
- CPCCBC4051A – Supervise asbestos removal.

All workers not directly undertaking asbestos removal work but required to work within the asbestos exclusion zone (ie plant operators, surveyors, other ground personnel not in direct physical contact with ACM) will be required to undertake Asbestos Awareness Training as outlined in Section 5.7 below.

Due to the nature of the project it is anticipated that the number of workers directly carrying out asbestos removal work will be minimal and likely limited to the "Asbestos Contaminated Material" area as described in Section 4.7.

5.7. ASBESTOS AWARENESS TRAINING

Enviropacific will provide Asbestos Awareness training to all non-removal workers within the removal zones on the identification and safe handling of asbestos and the appropriate controls in accordance with the asbestos legislation and COP requirements. This presentation includes:

- purpose of the training;
- health risks of asbestos;
- types, uses and likely presence of asbestos in the workplace;
- worker's roles and responsibilities under the asbestos removal control plan;
- where the asbestos register is located, how it can be accessed and how to understand the information contained in it;
- processes and safe work procedures to be followed to prevent exposure, including exposure from any accidental release of airborne asbestos;
- the correct use of PPE including respiratory protective equipment (RPE);
- decontamination procedures for workers, plant and equipment;
- the implementation of control measures and safe work methods to eliminate or minimise the risks associated with asbestos to limit the exposure to workers and other persons;
- exposure standard and control levels for asbestos; and
- purpose of any exposure monitoring or health monitoring that may occur.

5.8. TRAINING RECORDS

Records of all training will be kept while the worker is carrying out the work and for five years after the day the worker stops carrying out the work. These records will also be available for inspection by the asbestos regulator.

5.9. ASBESTOS REMOVAL CHECKLIST

Once the project is set up and prior to the commencement of asbestos removal work, the **Asbestos Removal Checklist** must be completed by the Asbestos Supervisor.

6. EXECUTION OF THE WORKS

6.1. REMOVAL METHODS USED ON THIS SITE

The known asbestos impacted material from the Dickson Rd North Stockpile (Section 4.3) and Capped Waste Stockpile (Section 4.4) will be undertaken using conventional earthmoving equipment. The impacted material will be loaded into off-road dump trucks using excavators and transported to the containment cell. The material will be placed and compacted in layers at the containment cell using conventional earthmoving equipment such as dozers and compactors. Water carts will be utilised at both the removal sites and the containment cell to minimise dust generation.

Asbestos impacted material from the Asbestos Contaminated Material Area (Section 4.7) will be loaded into flatbed trucks and or small tippers using a forklift or Manitou then transported to the containment cell for unloading and placement. Care will need to be taken during loading, transport and unloading to ensure that the existing encapsulation around the asbestos materials remains in tact

6.2. SITE ACCESS, BOUNDARIES, SIGNS AND BARRICADES

The boundaries of the asbestos work area and the asbestos removal site must be determined and defined by a competent person. All stakeholders must agree on the asbestos removal boundaries before any asbestos removal work commences.

In determining the asbestos removal boundaries, consideration shall be given to:

- The use and suitability of various types of enclosures and asbestos removal methods; and
- The impacts of the asbestos removal work, including potential exposures in the surrounding region.

In determining the distance between barriers and the asbestos work area the following should be considered:

- Whether the ACM are friable or non-friable;
- Activity around the asbestos work area (other workers, visitors, neighbours, the public, etc.);
- The methods of ACM removal;
- Any existing barriers (walls, doors, etc.);
- The quantity of ACM to be removed; and
- The type of barrier used (e.g. boarding or tape).

The asbestos removal site boundary must be clearly and securely delineated to ensure persons do not enter inadvertently or without authority. Signage must warn persons that asbestos removal work

is being carried out, of the dangers of exposure to asbestos and of PPE and other site entry requirements. All boundary delineation and warning/danger signs must remain in place until a clearance to re-occupy has been granted. If the security of the boundary is achieved by locked access gates, prompt egress in emergency situations must be maintained.

All warning/danger signage must comply with ***AS 1319*** *Safety signs for the occupational environment*. These signs will be weatherproof, constructed of light-weight material and adequately secured.

In circumstances where the erection of fencing or barricades is not feasible, such as on concrete hard stand or within a building, tape may be used as a barrier to define an asbestos work area (for some types of asbestos removal work of short duration). If a sign is not feasible, tape with the words 'asbestos hazard' repeated along its length may be used instead to delineate and communicate the hazard.

Where security and emergency arrangements are not developed specifically for the asbestos removal project, the overall site-specific security and emergency plans must be obtained and communicated to all workers prior to commencement of the works.

Signage used to identify removed ACM and other asbestos waste must comply with ***AS 1216-2006*** *Class labels for dangerous goods* and the Globally Harmonised System of Classification and Labelling of Chemicals (GHS).

Where asbestos removal is in the open air, barrier mesh/tape must be placed around the entire asbestos work area, where buildings or other structures form part of the boundary; these shall be incorporated into the boundary with all openings sealed to access.

All personnel entering the asbestos work area during the asbestos removal process must comply with the PPE and RPE requirements.

On this project the primary asbestos removal areas will be the areas where asbestos impacted material is being excavated/removed and loaded (ie capped waste stockpile, stored asbestos area, Dickon Rd north storage area) and the containment cell where it is being placed. These areas will be fully fenced with asbestos removal signage erected.

Designated haulage routes will be defined between the removal areas and the cell. These haulage routes will be barricaded, and light vehicle crossover points will be placed at specific locations (limited to the minimum number necessary). Trucks carting material between the removal areas and the cell will adhere to the designated haulage routes at all times. A wheel wash will be constructed at the exit of the capped waste stockpile and the cell with all trucks to exit these areas via the wheel wash prior to entering the haulage route. The Asbestos Supervisor will monitor the haulage route daily and any spills of material on the haulage route will be removed and taken to the cell. Once validation of the asbestos removal areas is achieved the haulage route will also require validation from Ramboll.

Indicative haulage routes are shown in the attached Figure

6.3. AIR MONITORING / EXPOSURE STANDARDS

Air monitoring requirements will vary depending on the type of asbestos being removed, the location and position of the asbestos, if an enclosure is used and whether the asbestos removal work is within a building or outside. The following rules should be applied when determined if air monitoring is required (extract from Safe Work Australia – Code of Practice on How to Safely Remove Asbestos):

- Friable asbestos removal – Air monitoring is mandatory for all friable asbestos removal. This includes prior to dismantling an enclosure and for the purposes of the clearance inspection.
- More than 10 m² of non-friable asbestos removal – Air monitoring is not required but may be considered to be carried out by an independent licensed asbestos assessor or competent person to ensure compliance with the duty to eliminate or minimise exposure to airborne asbestos and to ensure the exposure standard is not exceeded.
- Public Location – Air monitoring should be considered where the asbestos removal work is being undertaken in or next to a public location.
- Exposure air monitoring – Air monitoring should be carried out at other times to determine a worker's exposure to airborne asbestos if, based on reasonable grounds, there is uncertainty as to whether the exposure standard may be exceeded and a risk assessment by a competent person indicates it is necessary. Since most uses of asbestos are prohibited, exposure monitoring should not be required frequently.

Air monitoring of the asbestos work area will be carried out by the hygienist/asbestos assessor and in conjunction with the client. Monitors will be placed at strategic locations by the hygienist/asbestos assessor prior to the commencement of asbestos work.

The results of air monitoring will be made available as soon as possible to all workers on site. The asbestos supervisor will be notified immediately if the fibre count exceeds the recommended level, as set out in Table 2 below.

Table 2 - The exposure standards for asbestos as set out in the national Code of Practice How to Safely Remove Asbestos

Action level (fibres/mL)	Control / Action
<0.01	Continue with control measures
≥0.01	Review control measures, investigate the cause and implement controls to eliminate or minimise exposure and prevent further release
≥0.02 (≥0.05 in Victoria)	Stop removal work, notify the regulator, investigate the cause, implement controls to eliminate or minimise exposure and prevent further release and do not recommence until fibre levels are at or below 0.01 fibres/ml

Once the asbestos removal work has been completed, a clearance inspection will be carried out by the hygienist/asbestos assessor, who will issue a clearance certificate before the workplace is re-occupied.

On this project a third-party NATA Accredited occupational hygienist will be engaged to undertake asbestos air monitoring. Asbestos air monitoring will be undertaken daily at each site where asbestos impacted material is being removed / disturbed including at the containment cell. A minimum of 4 monitors will be used at each area with the exact location of each monitor to be determined by the hygienist.

In addition to asbestos air monitoring, the occupational hygienist will also be engaged to undertake an initial baseline monitoring event and periodical monitoring for the following:

- Ammonia, LEL, Hydrogen, Carbon Monoxide, Oxygen;
- Polycyclic Aromatic Hydrocarbons (PAHs);
- Volatile Organic Compounds (VOCs); and
- Respirable and Crystalline Silica.

In addition to the discrete rounds of monitoring described above, the following monitoring will be undertaken daily throughout the works using a combination of personal and machine-mounted monitoring equipment:

- Ammonia;
- LEL;
- VOCs;
- Carbon Monoxide;
- Oxygen;
- Hydrogen; and
- Asbestos.

This routine monitoring will be utilised on an ongoing basis to ensure a safe work environment is maintained, and to verify the effectiveness of controls. An Occupational Health and Hygiene Management Plan (OHHMP) will be developed to detail the monitoring procedures, controls, and trigger limits.

6.4. MOBILE PLANT AND PLANT FITTED WITH INTERNAL COMBUSTION ENGINES

All mobile plant operating in the asbestos work area must be provided with an air conditioned or fresh air pressurised operator's cabin.

As a minimum, all operators of mobile plant (including truck drivers) must keep the cabin windows closed and air conditioning or cabin pressurising fans set to "recirculate".

Whenever practicable, and when indicated by the project risk assessment, mobile plant provided with an air conditioned or fresh air pressurised operator's cabin will have the air conditioning or pressurising system fitted with HEPA type air inlet filters before the plant is operated in the asbestos work area to minimise the risk of respirable asbestos fibres entering the operator's cabin. Plant fitted with HEPA type air inlet filters on their air conditioning or pressurising systems must be operated with the air conditioning or pressurising systems set to "fresh air" to allow outside air to flow through the HEPA filter into the cabin. Plant incorporating an internal combustion engine that is to be operated in the asbestos work area may be identified during the project risk assessment as being at risk of accumulating ACM in its inlet air filter element. When HEPA filters are fitted to mobile plant provided with an air conditioned or fresh air pressurised operator's cabin or plant internal combustion engine, air inlet filters are considered at risk of asbestos or ACM contamination. A "**Warning Asbestos**" decal/sticker (refer to Figure 1 below) must be attached near to the plant ignition key or start controls before its first use on the site and not removed until the plant is decontaminated under asbestos conditions.

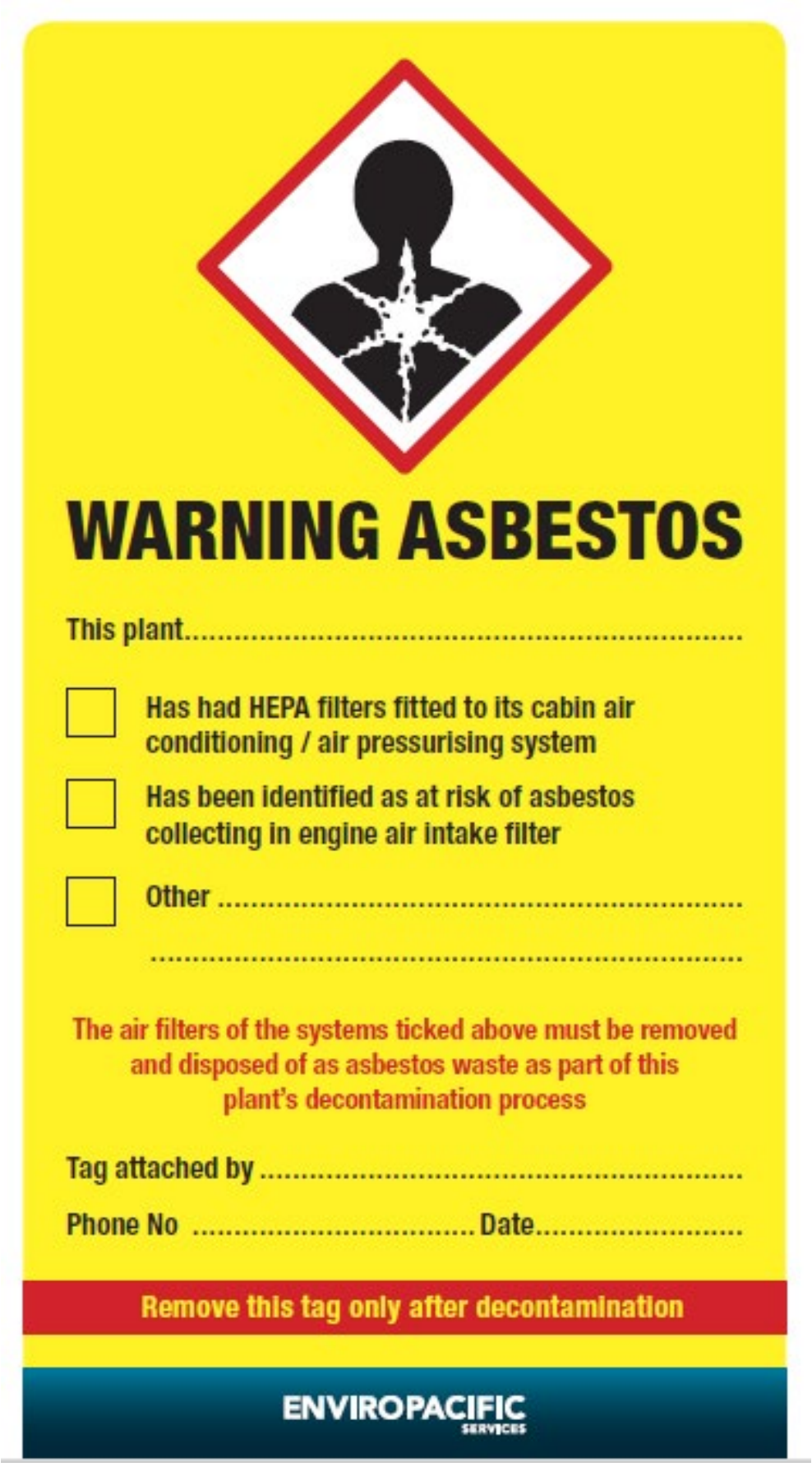

Figure 1 – "Warning Asbestos" Decal Sticker

6.5. PROHIBITIONS

Plant and processes that generate dust should not be used on asbestos. These include:

- high-speed abrasive power and pneumatic tools, for example angle grinders, sanders, saws and high-speed drills;
- brooms and brushes (unless brushes are used for sealing);
- high-pressure water spray, jets, power or similar tools and instruments on asbestos in the workplace;
- compressed air.

The use of equipment and processes that cause the release of asbestos, including power tools and brooms, may be used on asbestos if the equipment is enclosed and/or designed to capture or suppress asbestos fibres and/or the plant is used in a way that is designed to capture or suppress asbestos fibres safely, for example:

- enclosing the plant or tool;
- engineering controls such as extraction ventilation;
- using the plant or equipment within an enclosed removal area (for example, full enclosure or small enclosure).

6.6. ASBESTOS ZONE PLANT REGISTER

An asbestos Zone Plant Register will be maintained throughout the project. The register will record details of all plant working within the asbestos area including;

- Plant description
- Plant model/number
- Date HEPA filter installed
- Maintenance/servicing details
- Date plant entered asbestos area
- Date plant left asbestos area
- Confirmation of decontamination prior to leaving the asbestos area

6.7. INSPECTION AND MAINTENANCE OF PLANT

All plant used for the removal of asbestos should be inspected before the commencement of the asbestos removal work, daily before use and after any repairs. Attention must be given to any dust capture or suppression features of the plant. A register with the details of these inspections, the state of the plant, any repair details and its decontamination upon leaving the asbestos removal site must be maintained. Plant inspections including record keeping will be the responsibility of Daracon.

All refuelling of plant will take place in the designated plant parking area which will be adjacent to the exclusion zone. The fuel truck will park on the outside of the exclusion zone with only the fuel hose to extend within the exclusion zone to fill the plant. The Enviropacific Asbestos Labourer will fill the plant using the fuel hose, whilst wearing the required asbestos PPE for ground personnel within the asbestos area as per Section 6.10.

6.8. MOBILE PHONES

Mobile phones are for emergency use only inside asbestos work zones and must be stored inside a waterproof snap lock bag or similar.

6.9. ASBESTOS VACUUM CLEANERS

Asbestos vacuum cleaners shall comply with the requirements in **AS/NZS 60335.2.69** *Household and Similar Electrical Appliances – Safety - Particular requirements for wet and dry vacuum cleaners, including power brush, for industrial and commercial use* or its equivalent. Filters for the vacuum cleaners shall conform to the requirements of **AS 4260** *High efficiency particulate air (HEPA) filters – Classification, construction and performance.*

Warning: Domestic vacuum cleaners are not suitable and should never be used, even if they have a HEPA filter.

Asbestos vacuum cleaners will only be used for collecting small pieces of asbestos dust and debris (larger pieces should never be broken into smaller sizes, so they can be vacuumed).

Asbestos vacuum cleaners will not be used for vacuuming wet materials as this can damage the HEPA filter.

The correct attachment to the asbestos vacuum cleaner will be used for the type of surface which is being cleaned.

Management of "H" class vacuum cleaners must be in accordance with the *NSW WorkCover Management of "H" class vacuum cleaners for asbestos (High Consequence, Low Frequency program 2015/16)* Guidance Note; *WHS Regulation – Section 471 and 483; and NSW WorkCover How to Safely Remove Asbestos Code of Practice – Section 4.4 and 4.6.*

Asbestos vacuum cleaners shall be cleaned externally with a wet cloth after each task. The vacuum, hose and attachments will be stored in a labelled impervious bag.

Asbestos work PPE and RPE must be worn whenever an asbestos vacuum cleaner is opened to change the bag or filter or to perform other maintenance or decontamination. Asbestos vacuum cleaners must only be emptied by a competent person wearing the correct asbestos work PPE and RPE and the remove waste treated as asbestos waste.

Whenever possible, asbestos vacuum cleaners shall not be hired, as they can be difficult to fully decontaminate. If hiring is necessary, they will be hired only from an organisation that provides vacuum cleaners specifically for work with asbestos.

6.10. DISPERSED OIL PARTICULATE (DOP) TESTING

The Type H HEPA vacuums used for asbestos removal works must be subject to a DOP test on an annual basis or every six months depending on use. The DOP test is performed to ensure that there are no leaks within the HEPA filter or in the seals inside the vacuum or negative pressure unit, ensuring the 99.995% efficiency requirement.

Up to date certificates pertaining to each individual machines DOP test must be kept on file and readily available for viewing. Details of DOP testing dates and results including general vacuum maintenance records are recorded within the Enviropacific National HEPA Vacuum Register.

6.11. PPE AND RPE REQUIREMENTS

All ground personnel (including personnel required to enter the removal site for inspections/testing etc) will be required to wear the following PPE whilst in the asbestos removal area;

6.11.1. Coveralls

Asbestos rated Type 5, Category 3 disposable coveralls must be worn. The coveralls must be made of 100% synthetic material

6.11.2. Boots / boot covers

Should the same pair of boots be worn both outside and inside the asbestos removal area personnel must wear disposable, anti-slip boot covers within the removal area. The boot covers must be covered by the legs of the coveralls and the join between the coverall and boot cover must be duct taped to create a dust seal between them.

Alternatively, personnel may utilise a “dirty” pair of boots which remain within the asbestos removal area for the duration of the removal works. The “dirty” boots must be waterproof, tight fitting and lace less.

6.11.3. Gloves

Tight-fitting, disposable gloves must be worn within the asbestos removal area

6.11.4. Respiratory protective equipment (RPE)

Ground personnel within the asbestos removal area must wear half face non-disposable respirators with P3 filter cartridges fitted. Each respirator will be clearly labelled with the individual’s name.

Non-disposable respirators will be sealed and stored separately from other clothing and in a clean area approved by the asbestos supervisor as being not subject to asbestos contamination. Respirators will be decontaminated by wet wiping. The **Asbestos Mask – Issue, Cleaning and Maintenance Register** shall be maintained to record the frequency of cleaning for each respirator.

Worker’s will receive instruction (i.e. via toolbox talks), from the Enviropacific project manager or asbestos supervisor on the correct method of using and maintenance of the respirator and on the importance of correct facial fit. All personnel within the asbestos work area must be clean shaven.

6.11.5. Plant operators

As plant operators will remain within their cabin (fitted with HEPA filters) with all doors and windows closed they are not required to wear asbestos PPE whilst in their machine. Whilst walking between the decontamination unit and their machine plant operators will be required to wear the following PPE;

- P2 respirator
- Boot covers

Specific detail on the procedures for plant operators to enter/exit their machines are described in Section 7.1.2 below.

7. DECONTAMINATION

Decontamination applies to all personnel exiting the asbestos work area and all plant and equipment used in the asbestos work area.

7.1. DECONTAMINATION OF PERSONNEL

Personal decontamination must be undertaken each time workers exit the asbestos work area (except in extreme emergencies). For this project, at each asbestos removal area a wet decontamination unit will be established at the entry/exit point to the asbestos removal area. The decontamination unit will include the following areas;

Dirty Decontamination Area	Clean Decontamination Area	Clean Change Area

An example schematic of a typical decontamination unit is shown in Figure 2 Below.

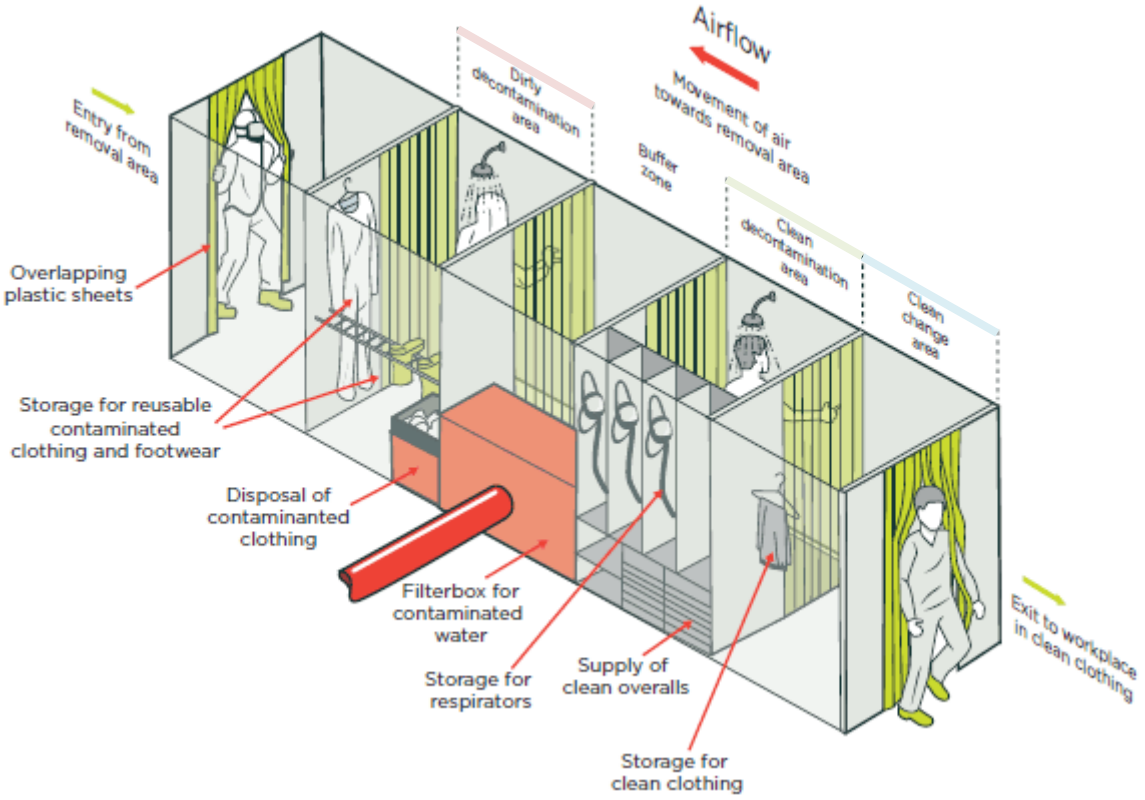

Figure 2 – Example Asbestos Decontamination Unit Schematic

All personnel must enter and exit the asbestos removal area via the decontamination unit. The following procedures will be used on this project;

7.1.1. Ground personnel entering / exiting the asbestos removal area

When entering the asbestos removal area;

Clean Change Area	Enter the decontamination unit into the clean change area. Put on required protective clothing (ie coveralls/boot covers/gloves). Store any removed clothing in dust proof containers. Move into clean decontamination area
Clean Decontamination Area	Put on RPE. Ensure that there is a good facial seal. Move to the dirty decontamination area.
Dirty Decontamination Area	Put on any additional PPE that has been stored in the dirty decontamination area. Move from the dirty decontamination area to the asbestos removal area

When exiting the asbestos removal area;

Asbestos Removal Area	Remove any obvious signs of asbestos from protective clothing. If using "dirty" boots remove and leave inside the asbestos area next to the decontamination unit. Proceed into the dirty decontamination area.
Dirty Decontamination Area	Shower while wearing protective clothing and RPE. Leaving RPE on remove protective clothing (ie coveralls, gloves) and place in asbestos waste bags. Remove wet underclothing while showering and place in the storage unit provided within the dirty decontamination area. Proceed through to the clean decontamination area
Clean Decontamination Area	Shower and remove RPE. Thoroughly wash hands, fingernails, face, head and respirator. Store RPE in a suitable container within the clean decontamination area. Proceed to the clean change area.
Clean Change Area	Change into clean clothing. Proceed out of the decontamination area to exit the asbestos removal area

7.1.2. Plant operators entering / exiting the asbestos removal area

All plant will be parked in the designated plant parking area which will be located adjacent to the Decontamination Unit. Operators will be required to enter asbestos work zone through the decontamination unit. Upon entry in the decontamination unit operator's will be required to put on a P2 Respirator and boot covers before proceeding through the decontamination unit and to their machine located in the plant parking area (operators will be required to be clean shaven) Once at their machine operator's will remove the boot coveralls and place on the ground or hand to a designated ground personnel for bagging and disposal. Once inside the cabin of the machine the respirator can be removed, and the operator traverse the machine from the plant parking area to the work area. When stopping for meal breaks machines are to be tracked back to plant parking area where operator's will be required to put on the P2 respirator and boot coveralls then make their way back through the decontamination unit. Boot coveralls are to be disposed in the asbestos bags provided and respirators are to be removed, cleaned thoroughly using wet wipes and stored in the clean decontamination area.

7.1.3. Emergencies and injured personnel

In the event of emergencies personnel will adhere to the decontamination procedures outlined above only where safe to do so. If undertaking the above decontamination procedures is likely to place workers at greater risk of harm (by delaying evacuation) then evacuating the area will take precedence over the decontamination procedures. Once workers have evacuated to a safe area the Asbestos Supervisor will assist them with decontamination

Should a person be injured within the asbestos removal area they will follow the decontamination procedures outlined above if they are capable of safely doing so. If the injured person is unable to decontaminate themselves due to their injury, assistance will be provided by the Asbestos Supervisor and Daracon personnel where safe to do so. In the instance where attempting to

decontaminate an injured person is likely to cause more harm (ie suspected spinal injuries), project staff will not attempt to decontaminate the injured person and will be guided by the advice of emergency services personnel.

7.2. DECONTAMINATION OF RE-USABLE PPE

PPE that is to be re-used for asbestos removal work, e.g. boots, helmets, non-disposable respirators, must be fully cleaned in a suitable asbestos work area and placed in sealed containers that are labelled 'For asbestos removal work only'. Before removal from the asbestos work area the containers must be decontaminated by vacuuming and/or wiping down with wet cloths. The retained PPE must only be used for asbestos removal work.

7.3. DECONTAMINATION OF MOBILE PLANT

Excavators/Dozers

Prior to excavators/dozers leaving the asbestos removal area it must be decontaminated. This decontamination process will be undertaken with a nominated Plant Decontamination Area. Within this area, plant will be parked on a section of geofabric where all loose soils and debris can be cleaned off the plant before the plant receives a final washdown with a water cart or high-pressure hose.

On completion of decontamination, the section of geofabric will be folded up and removed as asbestos waste.

The occupational hygienist will provide a clearance certification prior to any plant leaving the asbestos removal area.

Trucks

Trucks will exit the capped waste pile and the cell via a wheel wash prior to entering the designated haulage route. Trucks will not leave the designated haulage route or the removal areas / cell for the duration of the works. Prior to a truck leaving the area defined by the haulage route/removal areas/cell it must be decontaminated as per the process outlined in 7.3

7.4. DECONTAMINATION OF EQUIPMENT

At the end of the asbestos removal work, all equipment should be:

- Decontaminated in a suitable asbestos work area;
- Placed in sealed containers that are labelled 'For asbestos removal work only' (and used only for asbestos removal work) or disposed of as asbestos waste.

7.5. DECONTAMINATION OF ASBESTOS WORK AREA

For this project the removal areas will be validated by HAKK's Environmental Consultant (Ramboll) on completion of the removal works. The asbestos removal boundaries/exclusion zones will remain in place until successful validation has been achieved

8. ASBESTOS WASTE TRANSPORT AND DISPOSAL

The scope of work for this project is to place all asbestos waste (including used PPE) in the on-site containment cell. It is not envisaged that any offsite disposal will be required.

9. UNEXPECTED ASBESTOS FINDS

As stated in Section 4 there are several remediation areas where asbestos has not been identified during investigation works. There is still however potential that asbestos may be encountered in these areas during remediation works. All site workers will be made aware of the unexpected finds protocol during the site inductions and the potential for additional asbestos to be encountered in previously unidentified areas. Should asbestos be identified the following procedure shall be implemented;

- Immediately stop work in the area and notify the Daracon PM and Enviropacific Asbestos Supervisor
- Daracon PM to notify HAKK Superintendent
- Enviropacific Supervisor to inspect the potential asbestos and isolate the area (ie flagging/bunting)
- Install asbestos signage on barricading
- Either Ramboll or a third-party hygienist is to inspect the area, sample the potential asbestos (if required) and confirm if it is asbestos and whether it is in a bonded or friable state
- If asbestos is confirmed the Enviropacific Supervisor is to prepare an Asbestos Removal Control Plan for the area
- Safely undertake the removal in accordance with the Asbestos Removal Control Plan

10. REFERENCES

- Work Health and Safety Act NSW
- Work Health and Safety Regulations NSW
- **AS 1216** *Class labels for dangerous goods*
- **AS 1319** *Safety signs for the occupational environment*
- **AS/NZS 1715** *Selection, use and maintenance of respiratory protective equipment*
- **AS/NZS 1716** *Respiratory protective devices*
- **AS 4260** *High efficiency particulate air (HEPA) filters – Classification, construction and performance*
- **AS/NZS 60335.2.69** *Household and Similar Electrical Appliances – Safety - Particular requirements for wet and dry vacuum cleaners, including power brush, for industrial and commercial use*
- Safe Work Australia: How to Manage and Control Asbestos in the Workplace - Code of Practice
- Safe Work Australia: How to Safely Remove Asbestos - Code of Practice
- Guidelines for Asbestos Removal Contractors (2008) - WorkCover NSW
- NSW WorkCover Management of “H” class vacuum cleaners for asbestos (High Consequence, Low Frequency program 2015/16) Guidance Note

11. ATTACHMENTS

- ARCP Template
- Asbestos Awareness Training Template
- Asbestos Mask – Issue, Cleaning and Maintenance Register Template
- Asbestos Removal Checklist
- PPE Register Template