4SIGHT CONSULTING

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Ravensdown Contaminated Site Management Plan

For Bluehaven Management Ltd

March 2018

REPORT INFORMATION AND QUALITY CONTROL

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1 INTRODUCTION

1.1 General

4Sight Consulting Ltd (4Sight) has been engaged by Bluehaven Management Limited (Bluehaven) to develop this Contaminated Site Management Plan (CSMP) for the Ravensdown Fertiliser Co-operative Limited (Ravensdown) fertiliser storage and distribution facility located at 51 Smart Road, Waiwhakaiho, New Plymouth (the Site). The location of the Site is shown in Figure 1.

The CSMP has been developed to support the Remedial Action Plan (RAP) which has been prepared for the proposed redevelopment of the Site as Commercial and Retail Complex (including a recontoured Pa site to be used as community/recreation space, large format retail, visitor accommodation, supermarket, offices, food and beverage premises, cinema, other complementary retail, and associated parking and landscaping).

1.2 Background

The Site is zoned 'Industrial C Environment Area' in the New Plymouth District Council (NPDC) District Plan, and is currently utilised by Ravensdown as a fertiliser storage and distribution facility.

Given the long industrial history of the Site, many potentially contaminating activities are known to have occurred, or are likely to have occurred at the Site, including: manufacture, production, storage and distribution of fertilisers / agri-chemicals; bulk storage of hydrocarbon based fuels (including waste oils and likely degreasers); and livestock treatments associated with abattoirs. Anecdotal information also indicates that railway sidings were also historically present at the Site to facilitate the distribution of products from the Site. It is also noted that a number of buildings at the Site contain asbestos / asbestos containing materials (ACM), which is noted to be in a deteriorated condition.

Therefore, the Site is classified as a *Hazardous Activities and Industries List* (HAIL) site (Ministry for the Environment's (MfE's) (October 2001)). As such, the Resource Management (*National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health*) Regulations 2011 (NES-CS) is applicable to certain planned activities at the Site. Because asbestos is present in soil above applicable guideline values for the protection of human health in a commercial/industrial setting (and recreational setting for the Pa), remedial action is required under the NES-CS. The Ministry for the Environment's Contaminated Land Management Guidelines (MfE's CLMG) No. 1 states that a CSMP is required to form part of the documentation to support soil remediation.

1.2.1 Previous Environmental Assessments

4Sight is aware of several previous environmental investigations (and associated reports) being completed at the Site, as detailed in Table 1.

Table 1: Previous Environmental Investigations (and associated reports)

Company	Date	Title
Tonkin and Taylor Limited	*1994*	*Farmers Fertiliser New Plymouth: Monitoring Well Installation Report (Prepared for Fernz Corporation)*
BTW Company Limited	*July 2013*	*Preliminary Site Investigation Report: in accordance with NESCS (Prepared for Ravensdown Fertiliser Co-operative Limited)*
Golder Associates (New Zealand) Limited	October 2013	Detailed Site Investigation: Ravensdown New Plymouth Store – Proposed Lot 1 (Prepared for Ravensdown Fertiliser Co-operative Limited; note "Proposed Lot 1" is the Lower Platform)
Jacobs New Zealand Ltd	*September 2014*	*Ravensdown New Plymouth Store: Sediment, Water and Soil Fieldwork Short Report (Prepared for Ravensdown Fertiliser Co-operative)*
Golder Associates (New Zealand) Limited	November 2015	Detailed Site Investigation: Ravensdown New Plymouth Facility (Prepared for Ravensdown Fertiliser Co-operative Limited)

Company	Date	Title
AECOM New Zealand Limited	May 2017	Ravensdown NES-CS Peer Review of 2013 and 2015 Golder reports for the purpose of assessing a 3-lot subdivision proposal (Prepared for New Plymouth District Council (NPDC).
ERM New Zealand Pty Ltd	June 2017	Asbestos Survey Report: Ravensdown, 51 Smart Road, New Plymouth (Prepared for Bluehaven Ltd).
BTW Company Limited	September 2017	Geotechnical and Foundation Report (DRAFT): Development of Ravensdown Site, Devon Road, New Plymouth (Prepared for Blue Haven Commercial).
Golder Associates (New Zealand) Limited	October 2017	Supplementary Environmental Assessment: Ravensdown, New Plymouth (Prepared for: Bluehaven Management Ltd).

Note:
Italics = report was not available to 4Sight for review as part of the development of this CSMP.

1.3 Description of Enabling Works

The planned enabling works will include:

- Removal of asbestos impacted soils;
- Removal of existing structures, including buildings known to have asbestos cladding;
- Off-site disposal of contaminant impacted soils within contaminant concentrations above adopted guideline / remediation values, when unsuitable for on-site re-use;
- Site reinstatement as required to: prepare for future major earthworks; manage storm water; and minimise generation of dust.

Each of the above listed enabling works steps are briefly described below.

1.3.1 Removal of Impacted Soil

During previous environmental investigations completed by others at the Site, asbestos impacted soil was identified in close proximity to existing buildings and structures on-Site which are cladded with asbestos / ACM. It is noted that other contaminants of potential concern (CoPC) associated with the historical use of the Site may also be present in soil at unacceptable concentrations. However, all sampling and analysis conducted to date has shown that CoPC other than asbestos are present well below guideline values for protection of human health.

A RAP has been developed (provided under a separate cover), to detail the remediation of contaminant impacted soils at the Site; where contaminant concentrations are present above the NES-CS criteria for commercial / industrial land-use. It is estimated approximately 1,600m^3 of contaminated top soil from landscaped areas will require off-site disposal to a suitably licensed facility. Additional impacted soil will be disposed of off-site or placed in an appropriate on-site management area in the designated 'Controlled Area'. A further estimated 9,750m^3 of soil are considered to be geotechnically unsuitable for the proposed development and may require 'cut to waste'. This soil will be assessed for contaminants and disposed of at an appropriately licensed facility.

Approximate areas of proposed soil excavation and remediation are detailed in Figure 2.

1.3.2 Deconstruction of Existing Structures

The existing buildings and structures at the Site will be deconstructed as part of the enabling works. Several of the buildings at the Site have been identified (as detailed by ERM, 2017) to have asbestos cladding (including Super-Six roofing), or have been constructed using ACM. Nikau Contractors have been engaged to undertake the demolition works at the Site and have developed an appropriate *Asbestos Removal Control Plan* which will be the primary plan for utilised for deconstruction.

Aerial imagery sourced from New Plymouth District Council GIS viewer.

Scale 1:2500 @ A4

0 50 100m

AA2773 – Ravensdown New Plymouth

Figure 1: Site Location Plan

Plan prepared for Nikau Contractors Limited by 4Sight Consulting.

Date: 10/10/2017
Version: 1.0
Drawn: Sam Hendrikse
Checked: Terre Maize
Approved: Alice Andrew

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Aerial imagery sourced from New Plymouth District Council GIS viewer.

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Scale 1:2500 @ A4

0 50 100m

AA2773 – Ravensdown New Plymouth

Figure 2: Remedial Action Areas

Plan prepared for Nikau Contractors Limited by 4Sight Consulting.

Date: 27/02/2018
Version: 1.1
Drawn: Sam Hendrikse
Checked: James Blackwell
Approved: Terre Maize

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1.3.3 Site Reinstatement

Following the completion of enabling works, the Site will be reinstated to minimise generation of visible dust, sediment transport from storm water run-off, and other potential adverse environmental effects. Works may include backfilling or covering excavated areas. If stockpiled soils are to remain on-site to be used as part of major earthworks, they will be appropriately covered or wetted and periodically inspected pending re-use to verify that dust and erosion control mechanism are adequate.

1.4 Purpose

The purpose of this CSMP is to document management practices to control potential health and safety and environmental issues related to soil disturbance and potential discovery of previously unidentified contaminated soil during the execution of the proposed works. This CSMP also serves as a management plan in regard to the NES-CS; in addition to detailing appropriate controls for off-site disposal of contaminated soils.

The CSMP, combined with the RAP, also provides controls to avoid / limit dust generation; and run-off / erosion during the execution of the remediation activities outlined in this RAP.

In accordance with the provisions of the *Health and Safety at Work Act* (HSWA, 2015), it is the responsibility of the supervisor of the place of work to communicate to their workers undertaking work on the Site the nature and extent of the identified contamination, and associated hazards associated, including recommended management practices. The CSMP is intended to support this process, and does not relieve the supervisor of the place of work of their responsibility for the health and safety of workers. The CSMP also does not address "general" health and safety, such as working at heights and other physical hazards and is focussed on hazards presented by hazardous substances at the site.

1.5 Scope of Works

The scope of the CSMP includes:

- Site description and background information;
- Current soil contamination status and reasons remediation is required / necessary;
- Site control requirements (signage, access, etc.);
- Storm water management and erosion control;
- Dust control / management;
- Health and safety considerations; and
- Contingency measures, and triggers for implementing those measures.

Where contaminants in soil are present at concentrations above the adopted NES-CS assessment criteria, remedial action is required to protect human health and the environment. The RAP (provided under a separate cover) addresses the requirements related to the remediation of asbestos (and other contaminant) impacted soils at the Site.

General Site controls are addressed in this CSMP, additional controls associated with soil remediation works are outlined in the RAP. This CSMP is a 'live document' and is subject to continual review and update as required, and following any change in Site conditions.

This CSMP should be read in conjunction with the following related documents:

- *Remediation Action Plan*, 4Sight (October 2017);
- *Asbestos Removal Control Plan*, Niaku (September 2017) – included as Appendix A;
- Demolition Noise and Vibration Management Plan, Nikau (September 2017) – included as Appendix B;
- Dust Management Plan, Nikau (September 2017) – included as Appendix C.

2 SITE DETAILS

2.1 Site Description and Features

This CSMP applies to the Ravensdown fertiliser storage and distribution facility located at 51 Smart Road, Waiwhakaiho, New Plymouth (as shown in Figure 1). Site Details are provided in Table 2.

Table 2: Site Details

Site Address	51 Smart Road, Waiwhakaiho, New Plymouth	
Title Description	Lot 1 DP 491841, Lot 1 DP 399878, and Lot 1 DP 440933	
Site Area	7.18 hectares (ha)	
Surrounding Land Use	North:	Devon Road forms the norther boundary of the Site, beyond which is 'The Valley' commercial / retail shopping centre. The Waiwhakaiho River is present beyond 'The Valley' (approximately 195m north of the Site).
	South:	Railway line, including rail freight yards, beyond which are open paddocks / agricultural land, and the New Plymouth District Council's Coulson Road Landfill, south of the railway line.
	East:	Mangaone Stream forms the eastern boundary of the Site, beyond which is a light industrial precinct, including: a New Zealand Couriers distribution facility, building supplies and timber yard; and a garden supplies nursery.
	West:	Light industrial and commercial properties, including a plant and machinery hire outlet, and a petroleum retail service station. The Waiwhakaiho River is present approximately 355m to the west.
Topography	The Site itself is generally flat. However, two distinct levels are present on the Site. The 'Lower Platform' is topographically lower than the 'Upper Platform, separated by a natural ridge (approximately 5m vertical difference).	
Vegetation	Grassed areas are present across the Site, as is the presence of numerous trees, plants and bushes. Vegetation appears to be healthy and not stressed.	
Land Use / Zoning	Industrial C Environment Area	
Proposed Development	Mixed commercial / retail facility, comprising: shopping mall; big-box retail; dining precinct, hotel and associated car-parking.	
Reason for Remediation	Soils impacted by asbestos at concentrations that may pose a risk to human health and thus preclude the proposed redevelopment of the Site. Other contaminants may also be present; however, all laboratory results to date indicate that concentrations are below guideline values for protection of human health.	

2.2 Site History and Contamination Summary

The Site is a large industrial / manufacturing facility with a long history of chemical use and storage. Most notable the Site has been utilised as a fertiliser manufacturing and distribution facility since circa-1930s. Prior to this, it is understood at least a small portion of the Site was used as an abattoir (circa-1920s). Little information is available on the use of the Site prior to the 1920s; however, it is understood that prior to development of the land, the Site was historically part of low-lying swamp and wetlands, with numerous streams feeding the Mangaone Stream. It is understood fertiliser manufacture and production ceased at the Site in the easly-2000s, and since then the Site has been mainly utilised as a storage and distribution facility.

It is understood that fertiliser products manufactured and stored on-site have included: lime based (and other alkali based products); sulphur based; phosphate based; potassium based and nitrogen based. In addition to the presence of fertiliser and fertiliser-based products, other potential contaminants associated with such a long and varied industrial history of the Site include: hydrofluorosilicic acid (fertiliser production by-product); petroleum hydrocarbon and diesel products (in underground storage tanks (USTs) storing petroleum products); sulphuric acid (by-product

from manufacture of sulphur-based fertilisers); polychlorinated biphenyls (PCBs) (oils used in on-site transformers); lead (lead based paints); and asbestos / ACM (building materials and cladding).

Anecdotal information provided during a Site inspection in September 2017 also indicate railway sidings were present at the Site, and were used for distribution from the main-line freight yards located to the south of the Site.

Based on a review of the available data and information in relation to the Site, a number of contaminants and potential contaminants to soil that may pose a risk to human health have been identified, including:

- asbestos and ACM;
- sulphur (as oxidised sulphuric acid, or reduced hydrogen sulphide);
- selenium-based and phosphate-based fertilisers;
- organochloride pesticides (OCPs);
- dichloro-diphenyl-trichloroethane (DDT);
- 2,4-Dichlorophenoxyacetic acid (2-4 D);
- trace elements such as cadmium, fluoride and uranium;
- lead (from lead based paints);
- total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene and xylene compounds (BTEX);
- polycyclic aromatic hydrocarbons (PAHS);
- PCBs; and
- heavy metals (arsenic, boron, chromium, cobalt, copper, nickel, zinc).

2.3 Site Profile

2.3.1 Geology

The Institute of Geological and Nuclear Sciences (GNS) 1:250,000 map series *Map 7 – Taranaki* (2008) indicated the regional geology likely consists of Quaternary aged Pouakai Group (part of the Rangitikei Supergroup): 'Beach Deposits', described as *marine terrace cover beds (conglomerate, sand, peat and clay), and undifferentiated sand deposits and dunes*. The geological cross-section provided on the GNS map descries a complex mix of Quaternary ages lahar flows, marine deposits, and sand dunes in the vicinity of the Site.

Additionally, the regional geology is described in the New Zealand Hydrological Society publication *Groundwaters of New Zealand* (Rosen and White, 2001) as likely being unconfined Marine Terrace aquifers.

Site-specific geology from intrusive investigations completed at the Site indicate the Site is underlain by silty sandy gravel to approximately 2.0 metres below ground level (m bgl), which in turn is underlain by alluvial sands with gravels and cobbles to approximately 4.80 m bgl. Lenses of clay, silt and peat are also noted to be present at the Site, but are not considered to be laterally extensive.

The typical encountered geology at the Site is summarised in Table 3.

Table 3: Encountered Site-Specific Geology

Encountered Depth (m bgl)	Material	Description
0.0 – 0.5	Fill	Light brown to grey, medium to coarse sandy GRAVEL.
0.5 – 2.0	Natural	Light brown SILT with occasional medium to coarse sands and fine to medium gravels.
2.0 – 4.80	Natural	Orange / brown SILT.
4.80 – 20.00	Natural	Medium to coarse Sandy GRAVEL, with occasional cobbles and indications of peat and volcanic ash.

Note:
Maximum depth of investigations undertaken to date by others is 20.00 m bgl.

2.3.2 Hydrogeology

Groundwater at the Site is typically present within the shallow Marine Terrace aquifer, typified by sands, gravels and silts. Five groundwater monitoring wells (MWs) are present on-site (understood to have been installed for investigation purposes). It is understood that groundwater in these MWs is typically encountered between 2.0 and 2.30 m bgl. Regional groundwater flow is generally toward the north toward the Waiwhakaiho River. However, it is noted that localised flows on-site towards the Mangaone Stream (to the east) are likely, particularly in the eastern portion of the Site. Given the relatively shallow groundwater level, groundwater flow may be influenced by the presence of buried storm water drains and other underground utility service conduits.

2.3.3 Hydrology

The nearest surface water body is the Mangaone Stream, which forms the eastern boundary of the Site. Drainage and storm water from the Site (most notably the 'Upper Level' / Lot 2) discharge to the Mangaone Stream. It is noted that the Mangaone Stream is a tributary of the Waiwhakaiho River, which meanders to the west and north of the Site, flowing generally northward to discharge to the Tasman Sea. At its closest point, the Waiwhakaiho River is approximately 200 m from the Site (from northern boundary).

The Waiwhakaiho River is classified by TRC as a resource of regional significance, while the Mangaone Stream is of high ecological value owing to its particularly high native fish diversity.

It is noted that the Site was historically part of a low-lying swamp (prior to industrial development in the 1920s). It is understood that the swamp was likely drained, and material imported onto Site to fill the drained low-lying areas.

3 ENVIRONMENTAL MANAGEMENT PROCEDURES

Environmental management procedures are required to minimise the impacts to human health and the environment. A summary of potential impacts and proposed mitigation measures as they relate to potentially contaminated material as they relate to potentially contaminated material is summarised in Table 4 and are described in more detail in the sub-sections following the table.

Table 4: Potential Environmental Impact and Management / Mitigation Measures.

Potential Impact	Description	Mitigation
Sediment discharge	Potential for discharge of sediment from the works area during earthworks, remediation and demolition.	Sediment and erosion controls will be implemented in accordance with industry best practice and the contents of this CSMP.
Discharge of contaminated storm water runoff	Storm water which has contacted contaminated soil may become contaminated and could enter surface water or storm water drains.	Storm water management and controls will be implemented in accordance with industry best practice and the contents of this CSMP.
Discharges of contaminants from soil	Inappropriate disposal of potentially contaminated soil may result in unpermitted discharge of contaminants to land and water.	Excavated contaminant impacted soils (impacted above applicable guideline values) will either be disposed of off-site at a licensed landfill or stockpiled on-site until laboratory analytical results are evaluated by a suitably qualified and experienced practitioner (SQEP). Following evaluation of laboratory results, the SQEP will advise on appropriate disposal and on-site re-use or containment options. All disposal receipts will be retained and made available if requested.
Discharge of contaminated groundwater	Groundwater in the works area (particularly shallow groundwater) may be contaminated and inappropriate disposal may result in the unpermitted discharge of contaminants to land and water.	The disposal of groundwater, if encountered, will initially be by a licensed waste contractor (tanker truck) with ongoing disposal to be determined based on soil and/or groundwater sampling results. If extracted groundwater is to be discharged to land, evaluation of consent requirements will be undertaken and consent sought from the Taranaki

Potential Impact	Description	Mitigation
		Regional Council if required. In addition, if groundwater is encountered and requires extraction (i.e., dewatering of excavations), consent will be sought from the Taranaki Regional Council if required.
Discharge of contaminants to air	Contaminated soil could be discharged to air as dust during excavation, stockpiling and/or truck loading.	Dust control measures will be implement in accordance with industry best practice, the contractor's dust control plan, and this CSMP.
Public exposure to contaminated soil	Members of the public could be exposed to contaminated soil	Implement Site access, storm water, and dust control measures.
Worker exposure to contaminated soil	Workers could be exposed to contaminated soil	Implement health and safety plan(s), worker training, dust control measures, and enforce Site rules (including use of appropriate PPE as required).

3.1 Management of Unexpected Contamination

The presence of visual / olfactory impacts to soil at the Site may be indicative of possible contamination. As such, immediate steps are required to mitigate the potential adverse effects of such discoveries. Such visual / olfactory indicators of potential contamination include:

- Discoloured soils;
- Visible staining;
- Offensive odours;
- General refuse / anthropogenic material; and/or
- Fibrous materials (e.g. asbestos / ACM).

Should any of the above visual / olfactory indicators of potential contamination to soils be identified works must immediately be stopped in the area of discovery, and the following undertaken:

- The area should be cordoned off until the material has been appropriately characterised and decisions made on the appropriate management.
- The Site Manager should be notified whenever contaminated / suspected contaminated material is identified.
- The Site Manager to contact the SQEP to assess the nature and extent of suspected contaminated material.
- Soil samples may be required to be collected for subsequent laboratory analysis to confirm concentrations of contaminant impact.
- Works to only re-commence in the area once advised by the SQEP.

Discovery of contamination will be recorded (photos and site notes). If a discharge occurs, it will be reported to the New Plymouth District Council (NPDC) and, if required, the Taranaki Regional Council within 24 hours of discovery.

3.2 Asbestos Management

Given the known presence of asbestos and ACM in buildings requiring demolition and in near-surface soils at the Site requiring remediation, all works must be completed by an appropriate qualified asbestos removal specialist, with appropriate asbestos management protocols and controls in place. The Remediation Contractor (Nikau) has developed an *Asbestos Removal Control Plan* (included as Appendix A), which must be followed when undertaking the works at the Site.

Any ACM found in surface soils, excavated soils or stockpiled soils will need to be appropriately handled and managed in accordance with the *Asbestos Removal Control Plan*. Such measures include:

- Double bagging ACM / suspected ACM in heavy duty plastic bags, labelled 'Asbestos Waste' prior to being disposed of at an appropriately licensed waste disposal facility.

- Demarcating identified / suspected ACM prior to removal in accordance with the *Asbestos Removal Control Plan,* and restricting access into area until removal is complete.
- Temporarily storing asbestos / ACM covered on hardstand (concrete or asphalt) or plastic sheeting away from traffic, storm water drains, and amenities buildings pending off-site disposal.
- Ensuring that waste ACM is not placed in any work areas, or areas of potentially contaminated soil.
- Appropriate personal protective equipment (PPE) for working under 'asbestos conditions' as per the requirements of the *Asbestos Removal Control Plan* are correctly worn and utilised during works in areas of suspected / confirmed ACM.
- A sufficient asbestos decontamination area to be set-up in accordance with the *Asbestos Removal Control Plan*.

3.3 Earthworks

When possible, excavated soils that are not re-used on-site will be loaded by the Remediation Contractor (Nikau) directly into suitably licensed haulage trucks for off-site disposal to a suitably licensed waste disposal facility. If immediate disposal of soils is not possible, material will be temporarily stockpiled in accordance with the management controls detailed in Section 3.5.

The following general handling procedures will be followed for all earthworks on-Site:

- Haulage trucks will be loaded with soil as close to the source of the soil (i.e. excavation) as possible, where any run-off and possible spills during loading can be controlled and contained.
- Soil excavation source to be logged, including details of: materials identified; presence of contamination; description of soils; and proposed disposal location(s).
- Waste transport / transfer certificate, signed on-site and collected at the suitably licensed disposal facility will be used to track each load of material. Waste transfer certificates to be provided to 4Sight by the Remediation Contractor.
- Written approval shall be obtained by the Remediation Contractor from the waste disposal destination prior to transportation.
- Haulage trucks will have their loads dampened (always) or covered (if asbestos is present) during the transport of this material to the disposal facility, to avoid generation of dust and other wind-blown contaminants.
- Good house-keeping of the work-site and excavation area shall be maintained to avoid the spread of potentially contaminated material outside of the Site, including tracking or spilling of material onto roadways.
- If soils are inadvertently tracked outside of the perimeter of the Site, that may pose a potential risk and/or hazard to the general public (i.e. visual impact, dust generation, mud on road), a street-sweeper will be engaged to clean the affected area(s).

3.4 Disposal of Excavated Material

3.4.1 Off-Site Disposal

Any material excavated during the Site works that cannot be re-used on site will be disposed of at an appropriately licensed facility. Where contamination is suspected, the selected disposal option will be supported by soil analytical results from a certified analytical laboratory.

Stockpiling of contaminated or potentially contaminated soil shall be avoided where possible. However, if immediate disposal is not possible, the material may be stockpiled on-site in accordance with Section 3.5 of this CSMP or may be segregated and stockpiled at the disposal Site pending receipt of laboratory analytical results and confirmation of soil categorisation.

Suitable tracking documentation for all material taken off-site, including weighbridge tonnage, will be provided to the project manager for recording purposes and made available upon request.

3.4.2 On-Site Disposal and Reuse

If soils are determined to be contaminated, but can remain on-site, they may be disposed of in a 'Controlled Area' or placed under hard stand or buildings as part of a 'Cut and Cover' approach.

The 'Controlled Area' has been chosen as an area of minimal impact to the proposed redevelopment (likely to be covered by customer and staff car-parking). The 'Controlled Area' will be lined with a Geotechnical Liner and 'industrial-grade' polyethylene sheeting prior to depositing any soils. The purpose of the liners is to protect the surrounding soils and nearby Mangaone Stream from potential contamination through surface water infiltration and leaching.

Soils deposited in the 'Controlled Area' will be covered at the end of each working day, and permanently covered at the completion of the soil remediation works with an 'industrial grade' polyethylene sheeting prior to subsequent 'entombment' as part of the construction of a car-park in the area (as part of the proposed redevelopment).

Soils will be tracked to the 'Controlled Area' from the excavation areas by the remediation contractor. The Remediation Contractor will track and document waste soils disposed of in the 'Controlled Area'.

3.4.3 Soil / Waste Movement and Tracking

4Sight will adopt a 'cradle to grave' policy with waste tracking; i.e. 4Sight will work with the contractor to verify that contaminated soil generated on-site during the execution of this RAP are tracked to their final disposal location(s). To facilitate this, 4Sight will implement the following during the remediation program:

- Each stockpile of soil generated will be allocated a unique identifier based on the source excavation location;
- Following receipt of laboratory analysis and classification of the respective stockpiled soils (i.e. 'contaminated - off-site disposal'; 'contaminated - on-site management'; or 'not contaminated – on-site re-use[1]') a decision will be made as to appropriate action. If off-site disposal is required, a waste haulage contractor will be notified;
- The waste haulage contractor will be appropriately licensed to transport the categorised materials (i.e. contaminated soils);
- Soils will be loaded into the haulage truck directly from the respective stockpile. The stockpile identifier, haulage truck identification number, and disposal location will be recorded;
- Truck loads will be covered or thoroughly dampened prior to leaving Site, and during transport to minimise the potential for generation of dusts and spillages during transit to the waste disposal facility;
- If soil is spilt during loading or transport, the area will be immediately cordoned off, with spilled material removed from area for subsequent disposal. If necessary, validation sampling of the spill area will be undertaken to confirm 'contaminated soils' have not cross-contaminated soils in the 'spill area';
- Care will be taken during truck loads to avoid overloading trucks and soil spillage;
- It is proposed to wash down truck wheels prior to leaving Site to minimise the tracking of soil onto roadways;
- All soils will be disposed of to an appropriately licensed facility, licensed to accept the categorised material (i.e. contaminated soil); and
- Waste transport certificated from the disposal facility will be provided to 4Sight and the remediation contractor.

3.5 Stockpiling of Contaminated Soils

Should the need for soils to be stockpiled on-site eventuate, the stockpiled soils will need to be managed to ensure:

- A safe and accessible working area is maintained.
- Sufficient space available for plant and truck movements.
- Stockpiles do not become too large and un-manageable, and have a maximum height of three metres (3.0 m).

[1] Soil to be reused on site will be segregated according to its source and end use. For soil to be used at the Pa Site, recreational land use guidelines will apply for evaluation; for the remainder of the site, commercial / industrial guidelines will apply.

- Control of dust, and dust generation by covering stockpiles to prevent wind-blown and dispersion of asbestos fines to atmosphere.
- Leaching of contaminant impacts (e.g. petroleum hydrocarbons, PCBs, heavy metals, fertilisers and acids) is not an issue.

The following management options are considered appropriate for the mitigation of potential hazards arising from the creation of potentially contaminated stockpiles of soil at the Site:

- Separate stockpiles to be created for 'fill' and 'natural' material through visual identification.
- Additional separate stockpiles will be created for soils that appear to be significantly contaminant impacted based on field screening (visual, olfactory and PID assessment).
- Stockpiles to be created from each excavation location to limit overall maximum size of stockpiles and assist with segregation of contaminated soil.
- Stockpile movement may be necessary during the works to maintain a safe work Site, including safe access / egress from work areas.
- Stockpiles are to be appropriately managed (off-site disposal; controlled on-site disposal; or on-site re-use) immediately following laboratory analysis confirming soil classification / contaminant concentrations.
- Works not to be conducted in adverse weather conditions (where possible).
- Stockpiles to be placed on impervious 'industrial grade' polyethylene sheeting or hard stand.
- Stockpiles to be bunded with bunds covered with impervious 'industrial grade' polyethylene sheeting or geotextile layer.
- Stockpiles will be dampened to limit the potential for dust generation.
- Stockpiles from known or suspected asbestos-contaminated areas will be covered at the end of each work day and during times when soil is not being added or removed.
- Following stockpile removal (for on- or off-site disposal), the underlying plastic will also be:
  - Appropriately disposed of (if stockpiled soils contained contaminants above adopted assessment criteria); or
  - Recycled (if stockpiled soils do not contain concentrations of contaminants above the adopted assessment criteria).

3.6 Storm water and Sediment Control

Erosion and sediment controls shall be put in place to ensure that the generation of potentially contaminated sediment and storm water is minimised and appropriately managed. Protection of nearby surface water bodies (Mangaone Stream) is a primary consideration of all works on-site.

Sediment controls will be undertaken in accordance with industry best practice and this CSMP. Erosion and sediment controls will be adequate to ensure that contaminated soil does not travel off-site, and should include:

- A non-erodible bund for the conveyance of storm water run-off must be constructed to:
  - divert clean up-slope water away from areas to be worked;
  - divert sediment-laden runoff from disturbed areas into sediment treatment facilities (if applicable); and
  - keep sediment from leaving the Site or contaminated areas, or entering storm water drains.
- A non-erodible bund will be established along the adjacent stream to prevent sediment from entering the stream.
- Storm water run-off from materials or soil suspected of being contaminated must be contained and considered contaminated unless demonstrated otherwise through sampling and subsequent laboratory analysis.
- Storm water collection lined sumps may be constructed in areas where it is likely that storm water would leave a potentially contaminated area or materials (such as asbestos-containing building materials).
- Drains for reticulated storm water must be bunded or blocked-off when nearby works are being conducted in areas where run-off could enter the storm water drain(s).

Extra sand bags, silt fences, and bunding materials must be available in the event of severe storms / high rainfall events.

Storm water structures (bunds, sandbags, silt fences, etc.) shall be inspected after installation; at least weekly during the works; and within 24 hours following a rain event. A rain event is defined as 25mm or greater within a 24-hour period or 15mm or greater within a one-hour period.

Daily inspections of erosion and sediment controls and the overall storm water system will be conducted and documented. If the erosion and sediment control system has been breached, the off-site sediment will be immediately cleaned and managed as potentially contaminated soil. If any areas of the Site have potentially been cross-contaminated, soil testing will be undertaken to characterise the potentially impacted area.

All breaches of the erosion control/stormwater management system will be recorded on inspection forms and photos will be taken. An example inspection form has been developed and is provided in Appendix D.

3.7 Dust and Odour Control

Dust must be managed during the excavation works to ensure that it generally complies with the industry best practice and the developed *Dust Management Plan* (Appendix C). To control the generation of dust, the contractor will ensure that:

- A water truck and/or portable water sprays is used in trafficked areas to dampen exposed soil during dry and windy conditions. When utilising water to control dust, the contractor will ensure that:
  - The volume of water used does not exceed soil field capacity of the wetted areas causing surface run-off that could discharge in storm water systems or other waterways; and
  - The application of water does not induce soil erosion and/or soil pugging.
- Stockpiled material is wetted and covered as outlined in Section 3.5;
- Open excavations are lined with geotextile and/or industrial grade' polyethylene sheeting (weighted down), when not being worked on;
- Vehicle access onto the works area is limited;
- Working in windy conditions is avoided (where possible);
- If soil accumulates on the public roadway, a street-sweeper will be engaged by the Remediation Contractor to clear and remove excess soils; and
- Regular inspections and observations are undertaken to evaluate whether visible dust is present, and if additional dust control measure is required (noting that soils at the Site are impacted with asbestos and/or ACM).

Nikau utilises a Dust Fighter[2] system, which uses atomised water to suppress dust and essentially knock small particles and fibres out of the air. The Dust Fighter system will be used to control dust wherever asbestos in soil is expected to be present.

It is not likely that the soil remediation and asbestos removal activities will create odour. However, removal of the underground storage tank (UST), if present, may generate odours. In addition, future excavation and ground disturbance activities could generate odours.

If an excavation generates objectionable odours:

- The excavation will immediately be refilled with removed soil to help stop the odour in the short term.
- Additional clean material may be used to further backfill the excavation.
- Small portions of the excavation will be opened in a staged manner to allow the area to ventilate and the odour to dissipate.
- If the odour persists and may cause off-site impacts, odour suppressants may be used. These may include water or chemical suppressants, depending on the source and type of odour present.

[2] Review and information available at http://www.engineeringnews.co.nz/content/misty-solution-for-worksite-safety/

3.8 Discharge and Complaints Log

A discharge and complaints log will be maintained by the Remediation contractor. The purpose of this log is to record any site discharges (such as breaches of the erosion control system) and complaints (such as regarding odour from members of the public). If complaints are received, the following information will be recorded:

- Time and date of the complaint;
- Name and location of the complainant;
- Weather conditions, description of Site activities, and location of Site activities;
- Nature of the complaint; and
- Mitigation measures undertaken and evaluation of effectiveness.

3.9 Air Monitoring

Air monitoring will primarily be conducted to evaluate the presence of asbestos in air. This air monitoring will be conducted in accordance with WorkSafe and BRANZ Guidelines. Ambient air monitoring will be conducted at the boundary nearest to the works being conducted and at the boundary directly downwind of the works. (Note that personnel monitoring will also be conducted in accordance with WorkSafe requirements.)

Exceedances of acceptable concentrations of asbestos in air samples will require a 'stop works for reassessment', and will be immediately reported to WorkSafe in accordance with their requirements. Taranaki Regional Council will also be notified within 24-hours of exceedance.

3.10 Groundwater Control and Dewatering

Given the shallow nature of groundwater at the Site (approximately 2.0 metres below ground level), the nature of hard-standing areas and aged storm-water management across the Site; water ingress to remediation excavations is possible. Should water ingress into excavations occur during the execution of the remediation strategy and earthworks, it is proposed to remove the water via a vacuum truck for off-site disposal.

Typically, water will be transported and disposed of off-site by a suitably licensed waste contractor to a suitably licensed facility. If the volume of groundwater encountered is greater than expected, an assessment will be conducted to determine whether consent for water take is required from Taranaki Regional Council. In addition, discharge to stormwater or sanitary sewer may be desirable. In this instance, consent will be sought from the appropriate Council, water will be stored in tanks pending analysis, and a sampling and analysis plan initiated.

4 HEALTH AND SAFETY MEASURES

The health and safety measures described in this section of the CSMP shall be implemented by the contractor, in addition to those covered by their own site-specific health and safety plan (SSSP) and associated documents.

4.1 Site Access and Signage

Fencing and/or other suitable barricades will be put in place (where not already available / provided by Site-wide perimeter fencing) prior to the start of the works to provide for Site access control. The following Site access controls will be implemented:

- Only authorised personnel may be allowed to enter the Site.
- All persons entering the Site will 'sign in' / 'sign out', and will be briefing on the contents, requirements and obligations of the SSSP.
- All workers are required to be briefed on the applicable requirements of this CSMP.

Site entrance and exit points will be designated for the Site during the works to minimise vehicle congestion on-site and potential impacts to local roads. Note, that entrance and exit points may be subject to change as the execution of works progresses.

Appropriate signage will be erected at the Site to identify Site hazards, and entrance / exit points. The entire Site is to be treated as a 'No Smoking Area' unless otherwise advised. A designated 'Smoking Area' will be established in a suitable area on-site, away from any potential flammable / combustible materials or contaminants. A designated break and amenities facility will also be established on-site. Other warning signs will be erected around the Site and on the Site boundary as required.

4.2 Identification of Hazards and Management

The following potential hazards may eventuate during the works if contaminated soil is encountered:

- Dermal skin contact with contaminated soil or shallow groundwater;
- Inhalation of contaminated dust; and
- Ingestion of contaminated soil or shallow groundwater.

Further unspecified hazards may be identified during the course of the works. The hazards identified above can be appropriately managed through the wearing of appropriate personal protective equipment (PPE) and the procedures set out in Sections 4.3 and 4.4 of this CSMP.

The primary hazard management method is minimising exposure to contaminated soil and asbestos during excavations and transportation.

4.3 Personal Protective Equipment

The current and historical land use at the Site has led to the potential contamination of shallow soils with asbestos and ACM (in addition to the likely presence of other potential contaminants). The required mandatory PPE for all works in areas of known / suspected presence of ACM is outlined in the *Asbestos Removal Control Plan* (Appendix A).

The following PPE will be mandatory for all personnel involved entering the Site:

- Clothing that covers the body (i.e. neck to toe), with disposable coveralls when working in contaminated areas;
- Steel toe-capped safety footwear capable of being washed (e.g., gumboots) or boot covers;
- Disposable nitrile gloves (if soil is handled);
- Dust masks (P2 dust masks, if there is a potential for the generation of contaminated dust);
- Safety glasses;
- Hard hat (if working around plant and machinery); and
- Hi-visibility vest.

4.4 Hazard Minimisation Procedures

The following procedures to minimise hazards related to contaminated soil will be implemented by the contractor:

- Dust controls, according to the procedures set out in Sections 3.7 and 3.9, with verification air monitoring;
- Contact with potentially contaminated material is expected to be minimal because the excavations are proposed to be undertaken using machinery. However, as a precautionary measure, any worker that is required to manually handle any soil will be required to wear disposable nitrile gloves;
- Use of asbestos decontamination unit, if works have been conducted in areas of known / suspected ACM; and
- Maintaining good personnel hygiene, including:
  - No eating, drinking or smoking in the works area, whilst potentially contaminated soils are being excavated to prevent contaminated soil contacting food or being ingested directly through soiled hands;
  - Avoiding hand to mouth and hand to face contact during work with potentially contaminated soils;
  - Washing boots if contaminated soil has been contacted;
  - Disposing of gloves that have contacted contaminated material; and
  - Hands and face will be washed before eating, drinking and smoking, which is only permitted where Site personnel are off-site or in designated areas.

4.5 Worker Health and Safety

Worker health and safety is addressed through development of site-specific health and safety plans, worker training, and oversight by a SQEP. SSSPs and training must address the steps to be taken to minimise the potential hazards, including (but not limited to):

- Identification of likely contaminants to be encountered based on the past investigations (i.e. asbestos) and any subsequent environmental investigations;
- Identification of potentially contaminated materials, such as odour (organic compounds such as hydrocarbons or solvents), fibrous material (asbestos), refuse or debris;
- Areas where contaminants are present above human health risk based guideline values;
- Soil management and classification, dust, odour, and erosion control measures;
- PPE (as detailed in Section 4.3);
- Instruction on removing outer work clothing (coveralls, boots) before entering their home and washing work clothing separately from family laundry;
- Restricting Site access and prohibiting eating, drinking, or smoking in the construction area;
- Establishing hand / face wash stations and a policy of washing face / hands before eating, drinking, or smoking;
- Establishing wheel wash facilities and other measures required to prevent contaminated soil from leaving the Site;
- Posting notices of potential hazards and limit the presence of ignition sources (e.g., “no smoking” within or adjacent to construction area, no welding or open flame near areas with high concentrations of hydrocarbon contamination); and
- Restricting site access, and on-site use of open flames (e.g., welding) where hydrocarbon vapours are present, and prohibiting eating, drinking, or smoking in areas where works are being undertaken.

4.6 Public Health and Safety

Public health and safety will largely be protected by access controls (no unauthorised Site entry); proper soil classification, management, and disposal; and implementation of dust, odour and storm water control measures. Asbestos in air monitoring will be conducted to verify site conditions.

The risk to the public from contaminated soil and groundwater is considered relatively low provided these measures, along with Site health and safety measures, are implemented.

5 ROLES AND RESPONSIBILITIES

The roles and responsibilities of each personnel involved with works at the Site as detailed in this CSMP (and associated documents) are outlined in Table 5.

Table 5: CSMP Roles and Responsibilities

Role	Organisation	Responsibility
Property Owner / Developer	Bluehaven Management Ltd / Kaitiaki Property	The property owner/developer is responsible for: ▪ Appointing a Principal Contractor who will be responsible for overseeing and ensuring implementation of applicable plans, including this CSMP; ▪ Appointing a specialist land contamination SQEP to advise on management and disposal of contaminated material; ▪ Engaging (or arranging for the Principal Contractor to engage) an appropriately qualified and licensed asbestos removalist; ▪ Reporting releases and spills to regulatory authorities; and ▪ Verifying compliance with plans and consent conditions.
Principal Contractor	Nikau Contractors	The Principal Contractor's Project Manager is responsible for ensuring that all Site control measures and systems are fully and effectively implemented, monitored, and complied with on a day-to-day basis. In meeting these responsibilities, the Contractor's Project Manager shall ensure that all reasonable and practicable steps are taken to: ▪ Verify that health and safety plans and protocols are being followed; ▪ Notifying the SQEP if unexpected contamination is encountered; ▪ Assess sediment and erosion control damage risk associated with the project and develop control measures prior to commencing work on-site; ▪ Development, implement, and monitor health and safety plans, storm water management systems, sediment and dust control measures, and site controls; ▪ Arrange for off-site disposal of contaminated soil and water; ▪ Track soil movements (i.e., to stockpiles or to off-site disposal) and maintain waste disposal documentation; ▪ Require all contractors and subcontractors to comply with statutory, client, contractual and site control requirements; ▪ Establish environmentally safe work practices and provide relevant training in those practices; ▪ Provide for participation of employees in planning and implementing environmental policies and procedures on-site; ▪ Conduct regular inspections of the areas and work practices under their control; ▪ Investigate and arrange for repair of storm water management or dust control measures; ▪ Maintain appropriate signage and notice boards; and ▪ Arrange for training to meet site-specific health, safety, and environmental requirements.
Contractors and sub-contractors	Various TBC	Contractors and subcontractors are responsible for preparing site-specific health and safety plans that comply with regulatory requirements and which address the hazards specific to their scope of work (e.g., excavation, waste transport, pipe removal, building demolition).

Role	Organisation	Responsibility
SQEP	4Sight Consulting Ltd	The SQEP will have expertise in land contamination and will be responsible for: ▪ Advising on soil management and disposal; ▪ Overseeing remediation activities; ▪ Assisting with tracking soil movements and off-site disposal; ▪ Collecting samples, arranging for analysis, and evaluating data; ▪ Air monitoring; and ▪ Reporting unexpected discoveries of contamination or other environmental events to the property owner/developer and advising on subsequent actions.

The main regulatory authorities and contacts to be consulted in respect of the Site management controls proposed in this CSMP; any unexpected discoveries related to potential contamination, and emergencies are listed in ***Table 6***.

Table 6: Contacts

ORGANISATION	CONTACT	TELEPHONE
Nikau Contractors	Diana Stil	0274 537 845
New Plymouth District Council	Environmental Health – Team Leader Monitoring & Compliance	0800 736 222
Taranaki Regional Council	Pollution Hotline	0800 736 222
4Sight Consulting - SQEP	Terre Nicholson	021 837 433
	James Blackwell	022 370 8311
New Zealand Fire and Ambulance Service		111
National Poisons and Hazardous Chemicals Information Hotline		0800 764 766
WorkSafe New Zealand		0800 030 040

6 VALIDATION AND REPORTING

At locations where contaminated material has been excavated, samples of material will be collected at the base and (if applicable) the sides of the excavation. The samples will be submitted for analysis for the identified CoPC. This sampling and analysis will provide validation of removal of contamination of *in-situ* soils underlying and surrounding the excavation works.

Soil testing will be conducted in accordance with MfE *Contaminated Land Management Guidelines* (revised 2011) No. 5 and the Western Australia Asbestos Guidelines. Analytes will be selected based on the potential contamination present. All samples will be analysed by an International Accreditation New Zealand (IANZ) accredited laboratory, and results compared with appropriate risk based human health and ecological guideline values. Selected guideline values are discussed in Section 5.3 of the Remedial Action Plan (RAP) for this Site. More detailed information regarding validation sampling and reporting is also provided in the RAP.

The testing of material being left *in-situ* located at the subgrade layer may, in some locations, indicate that remaining soil is contaminated. These soils will not be remediated if the concentrations of contaminants are below NES Soil SCS or other applicable guidelines protective of human health or if total excavation depth has been reached. It is recognised that if the soil quality at the subgrade depth indicates that contamination above risk based guideline values is left in place, a Long-Term Management Plan (LTMP) will be required for these soils. The LTMP would address worker and environmental protection during maintenance operations that may disturb the in situ contaminated soils. Contaminated soil (above guideline values) left *in-situ* will be demarked by a coloured geotextile fabric before cleanfill is emplaced and the areas will be surveyed and marked on site plans.

REFERENCES

4Sight Consulting, 2017. *Ravensdown – Remedial Action Plan*.

BTW Company, 2017. *Geotechnical and Foundation Report*.

ERM, 2017. *Ravensdown, 51 Smart Road, New Plymouth, Asbestos Survey Report*.

Golder Associates (Golder), 2013. *Detailed Site Investigation, Ravensdown New Plymouth Store, Proposed Lot 1.*

Golder, 2015. *Detailed Site Investigation of Upper Level, Ravensdown New Plymouth Facility.*

Golder, 2017. *Supplementary Environmental Assessment, Ravensdown New Plymouth Facility.*

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MfE (revised 2011) *Contaminated Land Management Guidelines No.1 – Reporting on Contaminated Sites in New Zealand* (CLM No.1, 2011). Ministry for the Environment, Wellington, New Zealand

MfE (revised 2011) *Contaminated Land Management Guidelines No.2 – Hierarchy and Application in New Zealand of Environmental Guideline Val*ues (CLM No.2, 2011). Ministry for the Environment, Wellington, New Zealand

MfE (revised 2011) *Contaminated Land Management Guidelines No.3 – Risk Screening System* (CLM No.3, 2011). Ministry for the Environment, Wellington, New Zealand

MfE (revised 2011) *Contaminated Land Management Guidelines No.4 – Classification and Information Management Protocols* (CLM No.4, 2011). Ministry for the Environment, Wellington, New Zealand

MfE (revised 2011) *Contaminated Land Management Guidelines No.5 – Site Investigation and Analysis of Soil*s (CLM No.5 2011). Ministry for the Environment, Wellington, New Zealand

MfE (1999, amended 2011) *Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand* (PHC, 2011). Ministry for the Environment, Wellington, New Zealand

Ministry for the Environment. 2011. *Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011*. Ministry for the Environment, Wellington, New Zealand.

LIMITATIONS

This document does not include any assessment or consideration of potential health and safety issues under the *Health and Safety at Work Act* (2015), these items will be addressed in the SSSP(s). This CSMP does not address the requirements of a full asbestos management plan, however, Nikau Contractors have developed an *Asbestos Removal Control Plan*, which is included as Appendix A, and should be read and understood in conjunction with this CSMP.

4Sight Consulting has relied upon information provided by the Client and other third parties to prepare this document, some of which has not been fully verified by 4Sight Consulting. This document may be transmitted, reproduced or disseminated only in its entirety.

From a technical perspective, the subsurface environment at any Site may present substantial uncertainty. It is a heterogeneous, complex environment, in which small subsurface features or changes in geologic conditions can have substantial impacts on water, vapour and chemical movement. 4Sight Consulting's professional opinions are based on its professional judgement, experience, and training. No amount of sampling and analysis can guarantee that a Site is free from contamination. These opinions are also based upon data derived from the testing and analysis described in this document. It is possible that additional testing and analysis might produce different results and/or different opinions. This document was prepared based on information provided by others. Should additional information become available, this CSMP should be updated accordingly.

Appendix A:

Asbestos Removal Control Plan

NikauGroup

STRATEGIC DECONSTRUCTION & ENVIRONMENTAL

Asbestos Removal Control Plan –

Ravensdown New Plymouth

51 Smart Road, Waiwhakaiho, New Plymouth

Publication Details

Date	Name & Position	Signature
13.09.17	Helina Stil – Author	
13.09.17	Diana Stil – Peer Review	
13.09.17	Terre Nicholson, Independent Consultant	

Record of amendment

Amendment number	Description of change	Effective date	Updated by
1	Alteration to text on Para 8	14.09.17	HS
2	Alteration to text per Terre Nicholson comments	15.09.17	HS
3	Alteration to Figure 1 lable	05.03.18	HS

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Appendices

1.0 Nikau Contractors Ltd Class A Asbestos License
2.0 Fisiitalia TAUKIUVEA Work Log Book
3.0 Anthony TOUMOHUNI Work Log Book
4.0 Demi Wilcox Work Log Book
5.0 Helina STIL Work Log Book

1.0 Quality Control

Methodology Developed by : **Helina Stil**
Diana Stil
Version: **3**
Date **15.09.17**

2.0 Contacts

Role	Name	Organisation	Phone	Email
Client	Nathan York	CEO, Bluehaven Management Ltd	021 528 951	Nathan@bhml.co.nz
Client Representative / Project Manager	Bryan Perring	Kaitiaki	021 999 733	bryan@kaitiakiproperty.com
Contractor	Diana Stil	Nikau Contractors Ltd	0274 537 845	Diana.stil@nikaugroup.com
Contractor Asbestos Assessor	Terre Nicholson	4Sight Consulting Ltd	021 837 433	terren@4sight.co.nz
Council – Environmental Health	Team leader – monitoring and compliance	Taranaki Regional Council	0800 736 222	

Nikau Contractors Ltd has been engaged by the Client to undertake asbestos removal works for demolition at the Ravensdown site, 51 Smart Road, New Plymouth.

The site is a former fertilizer plant, covering a large area of land, and the asbestos containing materials have been identified as:

1. Asbestos wall and roof flat and corrugated cladding – approximately 1,500tons of material.
2. Surface scrap to approximately a 5m perimeter to a maximum depth of 100mm (first scrap to 50mm) to ACM buildings only.

Some of the asbestos cladding was observed in poor condition, with fibers clearly visible upon inspection.

Nikau will undertake an inspection to determine which ACM structures are Class A and Class B.

2.1 Referenced Documents

The following documents have been referenced:

1. To be added.

2.2 Proposed Durations

The proposed start date for the removal is: January 2018

The duration of works is: One year.

2.3 Notification to Building Occupiers

The removalist shall co-ordinate the investigation process with building occupiers to minimize disturbance.

All correspondence shall be by electronic mail for recording

2.4 Notification to Stakeholders

The client shall be responsible for notifying surrounding businesses and residences of the impending works

3.0 Site Details

The following methodology complies with the Health and Safety at Work Act 2015, Health and Safety at Work (Asbestos) Regulations 2016, The Approved Code of Practice for The Management and Removal of Asbestos (October 2016).

The site is located at 51 Smart Road, New Plymouth,

4.0 Proposed Plant and Equipment

All proposed plant and equipment shall follow all relevant codes, guidelines and regulations. Please note this is an expected guide only and additional materials may be required. Where this is necessary, Nikau will endeavor to source In-House.

4.1 General

- Hazard and Advisory signage, including DANGER ASBESTOS REMOVAL, HAZARD ID Boards.
- Client to supply water and electrical services for duration of project

4.2 Removal Area(s)

- Elevated work platform/s
- Trailerised decontamination unit/s
- Foot baths and trays
- Asbestos labeled 250micron bags
- Sealing tape
- 200 β polythene plastic – clear / black
- Hand tools
- Fire prevention equipment
- Black tape
- H Type HEPA vacuum
- Wet Vacs
- Articulated truck and bin units
- Plywood timber sheeting
- Framing timber
- Non notifiable mobile scaffolding work platforms
- LED portable lighting
- Electrical leads
- Back pack spray units
- Expanding foam
- Water filtration unit
- Compressed gas cutting equipment
- Temporary fencing panels
- Airless spay unit/s
- Encapsulating material
- Water hoses
- Forklift
- Rags
- Portable water atomizer
- 20-40ton excavators with weed bucket attachments.

- Bunding socks / filter fabric silt mesh protection
- 30,000lt water holding tank

4.3 Equipment Inspection and Maintenance

All equipment to be used in the removal of asbestos shall be inspected:

1. Before ACM removal commences
2. After any repairs
3. Every seven days while in use

A record of inspections shall be maintained onsite for the duration of removals

Vacuum Cleaners

Vacuum cleaners used in the removal and clean up of ACM shall comply with the H Class requirements within AS / NZS 60335.2.69 Household and electrical appliances – safety – Part 2.69.

Filters used within the vacuums shall conform to requirements of AS4260 HEPA Filters – classification, construction and performance.

5.0 Proposed Removal Personal Protective Equipment and Clothing

The Contractor will enforce the wearing of the following PPE/C for the Project:

1. P2/3 HEPA half / full face respirators – in removal area
2. Class 5 Full body single use coveralls – in removal area
3. Single use gloves – in removal area
4. Construction hard hat – In and out of the removal area where required
5. Hearing protection – in and out of the removal area where required
6. Steel capped gumboots (no lace up footwear) – in and out of the removal area
7. Safety Glasses – in and out of the removal area where required
8. Full body harnesses and fixed length lanyards.

5.1 Respiratory Protection Programme

Respiratory protective devices shall comply with:

1. AS/NZS 1715 Selection, use and maintenance of respiratory protection devices; and
2. AS/NZS 1716 Respiratory protective devices

The contractor shall put a respiratory protection programme to ensure that workers use the correct respiratory protection safely and correctly. The programme will involve:

1. Appointing a programme administrator – Nikki RAWIRI / Michelle CLEGHORN
2. Correct selection of RPE
3. Health monitoring for workers wearing RPE
4. Training in the use of RPE, including fitting, use, maintenance and storage
5. Record keeping
6. Programme evaluation

6.0 Methodology Brief

Figure 1: Example intended silt mesh protection to be installed to protect Maganone Steam

1. Prior to works commencing, the contractor shall identify all drains that require protection during the works. A combination of filter fabric silt mesh protection shall be installed to the Waiwhakaiho River to the rear of the site and bunding sausages to drains to protect against any surface run off created during the works.
2. The Client shall advise of any live electrical cabling and other hazards within the investigation locations that the removalist needs to be aware of.
3. A 30,000lt water tank shall be installed onsite to capture and treat water through a double filtration system (refer to Item 13.2)
4. The removal works will be under the direct supervision of a Nominated Supervisor as listed in Item 7.0 of this document in co-ordination with the Independent Consultant

5. At all times during the remediation works, independent air monitoring shall be carried out by **4Sight Consulting**. All air monitoring shall be conducted under the specifications of Item 14.0 of this document.
6. All personnel entering and working within the removal area will be required to wear all personal protective equipment and clothing as specified in Item 5.0 of this document.
7. A trailerised five stage personnel decontamination unit with fitted negative air unit shall be installed within the removal enclosure.
8. The Client shall advise of any live electrical cabling and other hazards within the investigation locations that the removalist needs to be aware of.
9. Validations shall be undertaken as outlined in Item 15.0 of this document.

6.3 Cladding removals

1. Individual buildings shall be cordoned off during ACM removal using temporary fencing panels to prevent persons walking into the removal works.

2. Safe access to areas at height will be using elevated work platforms. The platform's working basket shall be lined with polythene plastic. Personnel will be required to wear fall restraint PPE. Harnesses shall remain at all times within the removal area.

3. PPE/C as outlined in item 5.0 of this document shall be worn while inside the removal area.

4. Should the ACM be identified as friable, the contractor shall ensure the suppression of dust and material. This may include the encapsulation of material.

5. Floor slab within removal area shall be lined with polythene plastic.

6. A spotter with water hoses shall wet the ACM sheeting during the removal works and be responsible for fire watch post removal each day.

7. Working from within the building confines, staff shall access areas at height to gas cut fixing bolts and progressing lower these to the ground where it will be wrapped immediately and placed onto dunnage in preparation of offsite disposal.

8. All hot works under permit and conditions complied with. HWPTW's are issued daily to operatives.

9. A HEPA vacuum and wet rags shall be available for cleaning dust and residual material from purlins and trusses.

6.5 Contaminated soil removal

A surface scrap of approximately 5m from the perimeter to the depth of 100mm (50mm scrap first) of each ACM building shall be done to remove any contaminated soils (if present).

The surface scrap shall be to a first depth of 50mm then to 100mm. The asbestos supervisor / independent consultant shall confirm if further scraps are necessary, areas marked out and the Client advised (refer to Item 12.0)

Dust shall be minimised using mobile water atomisers so to not create pooling or site run off.

To prevent dust, stockpiling onsite will be kept to a minimum. If stockpiling is necessary, stockpiles will be covered with impermeable silt fabric and will be in accordance with the projects Dust Management Plan.

Soils shall be placed into lined bins for offsite disposal.

Figure 2: Water 11tomizer units.

7.0 Nominated Supervisors

The Contractor proposes the following Nominated / Licensed Supervisors to undertake the supervision of the removal works on this project:

Name	Contact Details
Fisiitalia TAUKIUVEA	+64 21 719 916
Helina STIL	+64 21 719 055
Diana STIL	+64 21 371 190
Anthony Toumohoni	+64 9 636 5917
Demi Wilcox	+64 9 636 5917

Copies of the Supervisors Experience Log book and COC's are attached to this ARCP in Appendix B.

7.1 Removal Personnel Details

Removal Personnel to be utilized for the project are:

1. TBA
2. TBA

8.0 Nikau General

1. The works proposed are defined as Class A &B works and Worksafe New Zealand has been notified of the works. A copy of the notification will be attached to this document five days prior to site establishment.
2. The contractor will develop a comprehensive site-specific safety plan for the works which, if required, can be peer reviewed by the Client and / or their representatives. This SSSP shall include, but not be limited to:
    a. Site contact details, including first aiders and safety supervisors;
    b. Training and competency requirements of all removal personnel;
    c. Risk / Hazard assessment and control measures to be implemented;
    d. Communication protocols for health and safety matters;
    e. Incident and Accident recording and reporting protocols;
    f. First aid and medical treatment protocols;
    g. Details of any hazardous substances that may be used during the removal process including SDS's;
    h. Site-specific emergency procedures, including procedures for the removal of an injured person from the removal area.
    i. Contingency plans for the discovery of additional ACM
3. Comprehensive SWMS shall be developed for all stages of the works. JSA's are developed for short duration works.
4. All contractor's documentation shall remain LIVE throughout the duration of the works and may be updated to reflect project evolution.
5. The contractor shall conduct health and safety assessments of all proposed subcontractors and copies of their health and safety policies and hazard assessments shall be maintained onsite always. Ongoing evaluation of subcontractor performance in health and safety shall be conducted.

6. A copy of the contractor's health and safety policy shall be maintained onsite always for easy reference by removal personnel. Contractors will be required to notify to Worksafe New Zealand their activities should they be defined as restricted works and a copy maintained onsite always.
7. A copy of all relevant guidelines shall be maintained onsite for reference by all removal personnel and site management. These guidelines will include the Code of Practice for the Management and Removal of Asbestos 2016.
8. A person holding a current certificate of competency in restricted asbestos removal works (or Class A nominated Supervisor) shall be in direct supervision of the removal works and not "on the tools". Due to the extent and nature of the ACM present, there may be multiple working areas, which will each be directly supervised by a person holding a certificate of competency in restricted asbestos removal.
9. All removal personnel shall be assessed by the Class A Nominated Supervisor / manager as competent in the removal of friable ACM.
10. All removal personnel shall be required to have completed a full medical including lung function, and; if necessary chest X Ray within four weeks of start in the removal of friable ACM and every 5 years thereafter. A copy of these medical records shall be maintained onsite.
11. All persons shall undergo fit testing of their RDP's
12. Clean, maintained messing, potable water and personnel storage facilities shall be maintained by the contractor at a clear distance (minimum 25m) away from the removal operations.
13. The site shall be secured with suitable barriers and appropriate signage shall be installed. This will include, but not be limited to:
    a. Site Hazard ID Boards at all site entrances
    b. Danger Demolition signage
    c. Danger Asbestos signage to exterior but also affixed at the entrance to the removal area – lift lobby to individual floors
    d. Any other advisory signage as required
14. The proposed area for removal shall be thoroughly inspected prior to enclosure installation to ensure that there are no further hazardous materials and / or substances present (compressed gases, liquids etc).
15. The removal shall be inspected to ensure no live services are present. A written certificate of isolation shall be required from the client by the contractor prior to works start.
16. The work process will be thoroughly documented and photographed.
17. All other health and safety protocols per NIKAU CONTRACTORS LTD standards and requirements shall be implemented.

9.0 Instruction and Training

The Contractor will provide the instruction and training to competently familiarise all onsite personnel with:

a. The health hazards and risks of working with Asbestos
b. General and specific control measures designed to protect the employee and any other person

c. Correct use, storage and maintenance of PPE / PPC
d. How the control measures should be used to ensure they are effective
e. The purposes and operation of air monitoring
f. The purposes and operation of medical surveillance
g. Decontamination procedures
h. Waste disposal procedures
i. Emergency procedures
j. Their duties under the HSW Act and Regulations with emphasis on:
    - The correct use of protective equipment
    - Personal hygiene
    - Need to attend medical examinations
    - Need to report any defects or inadequacies in the applied control measures.

10.0 Notification Procedures

The Client / PCBU who commissioned the ACM works shall ensure that all stakeholders / affected persons have been informed of the intent to commence ACM removal / intrusive investigation.

Figure 3: Trailerised decontamination unit

11.0 Decontamination Procedures

The decontamination facility shall be situated immediately adjacent to, and joined to, the enclosed removal / investigation area.

All personnel, plant and equipment utilised in the removal of ACM must be effectively cleaned to ensure that all asbestos fibers are removed and no possibility of cross contamination into clean areas occurs.

The contractor proposes wet decontamination procedures during the asbestos removal operations with the trailorised decontamination unit installed directly adjacent to the removal area.

The decontamination unit is divided into five distinct areas:

1. A dirty decontamination area;
2. A clean decontamination area's x 3; and
3. A clean changing area.

These three areas shall be divided with suitable airlocks made of two or more overlapping sheets of plastic, allowing personnel access and an air flow towards the asbestos work area.

All disposable protective clothing, filters and sundry shall be removed after each exit and disposed of in a 200µ plastic bag clearly labelled "DANGER ASBESTOS".

11.1 Exit requirements through the decontamination unit:

1. All personnel who are working in contaminated areas must exit through this unit.
2. All persons must wear applicable respiratory protection, coveralls, steel capped boots / gumboots and suitable construction hardhat, earmuffs.
3. Instructions for the exiting and use of the unit is clearly displayed at the hoarded passage way and on the Unit wall.

11.2 Rules of Entry to the Contaminated Work Area.

1. All persons MUST be fully suited up with the following PPE:
    - New Disposable Coveralls
    - New Bootie Covers
    - The appropriate respiratory protection – full / half face protection
    - New disposable gloves
    - Steel capped construction boots (non lace-up) / gumboots
    - Hard Hat – where necessary
    - Ear Muffs – where necessary
    - Safety glasses – where necessary

11.3 Rules of Exit

When exiting through the decontamination unit, all personnel MUST follow these procedures:

1. Keep all PPE on and do not remove respirator
2. Wash footwear in footbath ensuring all dirt has been removed

3. Using either the HEPA vacuum or the water back pack sprayer unit, remove dust from disposable clothing and footwear.
4. Discard your coveralls, gloves and place in the disposal bag provided. Wipe down your hard hat, external areas of your respirator with the wipes provided and discard the wipes into the disposal bag
5. Change into new PPE / standard clothing stored – Nikau issues all site personnel with overalls.
6. Store your respirator in the appropriate storage container.

11.4 Daily inspections of decontamination facilities

Daily inspections and maintenance of decontamination facilities shall be conducted by a competent person to ensure that the facilities are fit for purpose and operating correctly. All inspections shall be recorded.

11.5 Decontamination of Plant and Equipment

For all non-electrical plant and equipment, these will be hand cleaned down through the decontamination unit. Electrical equipment shall be sealed inside a 250-micron bag labelled “Danger Asbestos – wear respirator when handling contents”.

All large plant and equipment will be thoroughly cleaned down prior to leaving the worksite. Water shall be collected in accordance with Item 13.2 of this document.

11.6 Decontamination of Waste Material

Waste bags and wrapped items need to be decontaminated before leaving the removal enclosure.

Asbestos labelled bags need to be wetted down and not overfilled, to reduce the risk of splitting and tearing. Once they have been wet wiped down in the decontamination unit, they must be transferred to a second asbestos labelled bag and goose neck tied for security and safety.

12.0 Discovery of Additional ACM

If further contaminated materials are discovered during the removal operations (i.e. such as asbestos etc.), the following procedures will be implemented:

1. Site management will conduct a visual inspection of the materials, recording the following aspects;
    a. Location of materials – clearly mark on available site plans where possible
    b. Type of material (i.e. sprayed on or plaster based insulation (limpet), lagging etc.)
    c. Condition of material – damage etc.

   d. Potential Risk – possible mechanical damage from operations, water damage etc, exposure levels to personnel etc.
2. Arrange with the Client or their representative for appropriate sampling of the material will be taken and recorded that is representative of the perceived extent of materials.
3. This information will be conveyed to contract management immediately.
4. A preliminary assessment of the exposure risk to personnel based on information will be done to determine the most appropriate course of temporary actions / controls to E/I/M/P the hazard to personnel until testing results are available. Options include encapsulation and sealing.
5. If results are positive for the presence of asbestos, contract management will develop a method and if necessary safety plans for the safe and effective removal of the materials identified.
6. Contract management or the Client authorizes necessary actions based on information provided.

13.0 Disposal

The contractor will maintain a record and report of material from this site and a comprehensive report provided to the client at the completion of the project.

13.1 Landfill Details

All contaminated materials will be disposed of under license at Colson Road, a registered disposal site to accept such material.

Figure 4: Double filtration water unit 20 to 1 micron capacity

13.2 Waste water management

All waste water that is created as part of these works shall be collected for filtration through a 30,000lt holding tank and double filtration unit (20 & 1 micron) unit and disposal as trade waste.

14.0 Air Monitoring

The independent consultant shall maintain air monitoring to the boundaries of the removal area in accordance with the consultants monitoring plan, conducting daily monitoring until the completion and clearance of asbestos removals.

All air monitoring will be in accordance with the levels set out in the Health and Safety at Work (Asbestos) Regulations 2016 as below:

Airborne Contamination Standard	0.1 respirable asbestos fibers/ml air over any 8hr period
Trace Level	0.01 respirable fibers/ml air over any 8hr period
Notifiable Event	0.02fibers/ml air – during Friable ACM removal

The Independent Assessor undertaking the Air Monitoring is:

Independent Air Monitoring: **4SIGHT CONSULTANTS**

If monitoring detects airborne fibers above these levels, all removal work will stop until the problem can be identified and rectified.

It is important to note that there are no safe exposure limits to asbestos fibres and all practicable steps must be taken to ensure that exposure to asbestos is kept and maintained as low as possible and under no circumstances exceed the Regulations.

14 .1 Air Monitoring Action Levels

The following table outlines the appropriate actions to be taken for air monitoring where respirable asbestos fibers are identified:

Action Level	Control	Action
< 0.01 fibers/ml (trace level)	No new control measures are necessary	Continue with existing control measures
≥0.01 fibers/ml but <0.02 fibers/ml	1.Investigate	Investigate the cause
	2.Implement	Put controls in place to prevent exposure
	3.Prevent	Prevent further fiber release
	1.Stop	Stop asbestos removal work

≥0.02 fibers/ml	2.Notify	Notify Worksafe as soon as possible as a notifiable event (follow the steps in 18.0)
	3.Investigate	Conduct a thorough investigation of the enclosure and associated equipment (follow the steps in 15.2). Review controls. Report shall be required by Worksafe NZ
	4.Put controls in place to prevent exposure and further asbestos fiber release	Extend the isolated / barricaded area around the removal area. Follow the steps in 18.0.
	5.Conduct further air monitoring	Do not re-start works until fiber levels are at or below 0.01 fibers/ml
	6.Retain records for five years	

15.0 Validations

An independent consultant / assessor (**4SIGHT Consultants**) shall be provided by the removalist to undertake the following inspections in accordance with the Health and Safety at Work (Asbestos) Regulations 2016 and the Approved Code of Practice for the Management and Removal of Asbestos:

15.1 Class A Validations

To be conducted by an Independent consultant / assessor in a 4-staged approach:

15.1.1 Stage 1 Visual Clearance – Decontamination Facilities

1. All ACM material removed
2. Decontamination facilities operational, clean and free of debris
3. Decontamination enclosure is secure, free from damage and leaks

15.1.2 Stage 2 Visual Clearance – Removal enclosure

1. All ACM material removed
2. Enclosure clean and free of debris
3. Enclosure is secure, free from damage and leaks

15.1.3 Stage 3 Air Monitoring – Removal Enclosure

Static air monitors to be installed within the Removal enclosure to validate no airborne asbestos fibers present

15.1.4 Recommended sample numbers for Clearance Air Monitoring

If the enclosure is less than 3m high or where exposure is only likely to be at ground level, use the area for calculating the number of samples. In other cases use the volume as the bases for determining the number of samples. If there are large items within the enclosure, subtract their volume from the total before estimating the number of required samples.

Enclosure Area M^2	Enclosure Volume M^3	Recommended No of Samples
50	150	2
200	600	4
500	1,500	6
1,000	3,000	9
5,000	15,000	16
10,000	30,000	20

Figure 5 : Source: Worksafe NZ ACOP Management and Removal of Asbestos 2016

15.1.5 Stage 4 Swab Tests – Pre-Enclosure Removal

Prior to the removal area being dismantled, the Contractor shall spray the polythene linings with PVA spray and allow to dry.

After the removal of the enclosure the independent consultant / assessor to undertake a further visual inspection and take swab samples of surfaces to ensure that there is no ACM residue / dust or debris.

16.0 Complaints

The following procedure shall be followed for all asbestos related complaints:

1. All complaints and concerns should be immediately directed to XXX – Nikau site supervisor.
2. As soon as the complaint is received it will be recorded either on the project complaints register or on the project web page on Nikau Sharefile/Current Contracts/Ravensdown NP/Monitoring/Complaints Log
3. An initial response will be made and recorded. Depending on the nature of the complaint the initial response could be to immediately cease the activity pending investigation, or to replace an item of equipment. However, in some cases it might not be practicable to provide immediate relief. The complainant and council will be informed of actions taken. Contact details for council are recorded in the Introduction section of this plan.
4. Where the initial response does not address the complaint, further investigation, corrective action and follow-up monitoring shall be undertaken

as appropriate. The complainant (and the Client] will be informed of actions taken.

5. All actions will be recorded on the project complaints register or project web page and the complaint will then be closed.

17.0 Documentation

All electronic files relating to the intrusive investigation and monitoring will be kept in: Nikau Sharefile/Current Contracts/Ravensdown NP/Monitoring. This will include:

- Section 1 – Asbestos Removal Control Plans
  - This ARCP and any revisions
  - Asbestos Management Schedules
  - Friable Asbestos induction sheets
- Section 2 – Consultation and complaints registers
- Section 3 – Asbestos monitoring
  - Site survey sheets and associated photographs
  - Site survey summary sheet
  - Survey reports
  - Asbestos control equipment operating procedures
  - Copies of calibration certificates / DOP's

18.0 Emergency Procedures

SITE ADDRESS: 51 SMART ROAD, NEW PLYMOUTH

The following emergency procedures have been identified as potentially occurring during the asbestos removal works:

- Fire
- Electric Shock
- Medical Treatment
- Serious Injury
- Notifiable Event

In the event of an **emergency** and you are required to **evacuate the removal area**, you are NOT required to decontaminate your clothing, however a separate assembly point will be identified for ACM removalists.

NEAREST HOSPITAL : TARANAKI BASE HOSPITAL, DAVID STREET, NEW PLYMOUTH
PHONE: 06 753 6139
NEAREST MEDICAL CENTER: MEDICROSS A&E 8 EGMONT STREET, NEW PLYMOUTH
PHONE: 06 759 8915

EMERGENCY WARDENS / FIRST AIDERS
DEMI WILCOX
ANTHONY TOUMOHUNI
TALI TAU

FIRE

In the event of a fire, the following procedures are to be followed:

1. ONLY IF SAFE TO DO SO, put out the fire using your fire extinguisher then notify your supervisor.
2. IF NOT SAFE, then raise the alarm using the emergency air horn (CONTINUOUS SHORT AIR HORN BLASTS).
3. Evacuate from the removal enclosure using either the PERSONNEL or MATERIALS DECONTAMINATION UNITS (refer to Floor Plan)
4. Assembly Point is located outside of the Personnel Decontamination Unit – EMERGENCY WARDENS shall take names of all personnel at Assembly Point. Ensure adequate access for emergency services.
5. NOTIFY the Client of the emergency
6. DIAL Emergency Services 111 from a cellphone. Clearly describe the address of the site, nature of emergency.
7. DO NOT re-enter the building until the all clear has been given.

ELECTRIC SHOCK

Electric shock can occur when removing electrical cables during asbestos removal. You are to treat ALL CABLES AS LIVE until your supervisor checks them.

1. DO NOT TOUCH the person
2. Switch the power off either at the source or at the main power switch (if available).
3. If you are unable to switch the power off use an insulated object like a broom with a dry wooden handle (or other dry wooden object) to push them clear of the shock.
4. DIAL Emergency Services 111 from a cellphone. Clearly describe the address of the site, nature and type of injury.
5. NOTIFY the Client / Client's representative of the emergency
6. If able to do so safely, carry the victim outside of the removal area using onsite stretcher (inside Personnel decontamination clean area) and lay them down
7. Take mask off and give appropriate first aid such as CPR
8. In all cases of electric shock, even if the victim feels fine, seek medical treatment and advice immediately.
9. All electrical accidents are to be reported to Energy Safety / Worksafe NZ.

MEDICAL TREATMENT

Medical Treatment is when you are required to go either to a doctors or the hospital for short term treatment of a workplace injury.

1. First aid kits are available in the clean areas of both the personnel and materials decontamination units
2. Notify your supervisor / health and safety manager
3. If able to do so, exit the removal area through the personnel decontamination unit.
4. Give appropriate first aid. Stop any serious bleeding by applying direct pressure.
5. Victim to be taken to Taranaki Base Hospital for assessment and treatment
6. Depending on the severity of the injury, this may need to be reported to Worksafe NZ

SERIOUS INJURY

1. Only enter the danger area if safe to do so. You cannot give assistance if you are injured as well.
2. Keep calm so you can effectively give help. Give comfort and assurance to the injured person.
3. Monitor the injured person and maintain breathing
4. Notify your supervisor / health and safety manager
5. Stop any serious bleeding by applying direct pressure and if able, elevating the injured area.
6. Call the first aider to apply temporary first aid and to assess the situation
7. DIAL Emergency Services 111 from a cellphone. Clearly describe the address of the site, nature and type of injury.
8. DO NOT MOVE the injured person unless the person is in danger of further injury as any movement may cause further harm. If able to do so safely, carry the victim outside of the removal area using onsite stretcher (inside Personnel decontamination clean area) and lay them down
9. Ensure adequate access is provided for the ambulance to safely and quickly attend

A SERIOUS ACCIDENT SCENE IS NOT TO BE INTERFERRED WITH UNLESS NECESSARY TO SAVE LIFE, PROPERTY. A SERIOUS HARM INJURY MUST BE REPORTED TO WORKSAFE NZ & INVESTIGATED.

NOTIFIABLE EVENT

This procedure is for the notification through to Worksafe NZ of any of the following:

- **Emergency demolition works on any structure or plant that does or may contain asbestos containing materials**
- **Asbestos removal works where the air monitoring levels are at or exceed 0.02fibers/ml of air**

1. Verbal Notification to Worksafe NZ **(0800) 030 040** must be given as soon as reasonably practicable by the site supervisor / manager.
2. Written Notification to Worksafe NZ will be required along with any reports or plans within 48hrs of verbal notification.
3. In the event of emergency demolition, steps must be taken to reduce the risk of workers and others in the vicinity of exposure to asbestos. Steps may include:
    - Developing an asbestos removal control plan to remove the asbestos materials before demolition (and if necessary identify any further contamination) – only if safe to do so; and
    - Implementing dust suppression measures (containment (scaffolds), water, other measures (foam shield)) during demolition and load out of materials as contaminated; and
    - Implementing constant air monitoring during the demolition works
    - Any other steps that may be required as necessary

    Worksafe NZ approval for any methods will be required prior to start
4. In the event of air monitoring results being at or above 0.02fibers / ml or air, steps must be taken to reduce the risk of workers and others in the vicinity of exposure to asbestos. Steps may include:
    - Stop all works immediately and ascertain the source of the problem this may include, but not be limited to
        - Decontamination facility
        - Fault in NAU's
        - Enclosure damage or defect
        - Personnel not decontaminating correctly
        - Materials / tools not being decontaminated correctly
        - Power failure during asbestos removal
        - Entry into the removal area by non-removal persons
        - Any other areas that the nominated supervisor deems necessary to warrant investigation
    - Should the fault be with the enclosure or any of the above, the enclosure will need to be re-assessed (visual / smoke monitoring) by an independent consultant prior to any works commencing
    - Nominated supervisor is to do an incident report to outline the defects and the steps taken to prevent reoccurrence. This is to be signed off by senior management prior to any works commencing.
    - Sign off and authority to proceed with works may also be required by Worksafe NZ.

FIRST AID

First Aid Kits are available in the Clean Areas of Decontamination Units.

1. Ensure that you fill in the First Aid register when using the first aid kit.
2. If your injury was caused by a hazard onsite – notify your supervisor / health and safety manager so he can assess the hazard and get it fixed.
3. Always keep your wounds clean and free from any dust to prevent the injury from getting infected
4. You may be required to complete an incident form with the OHS Manager.

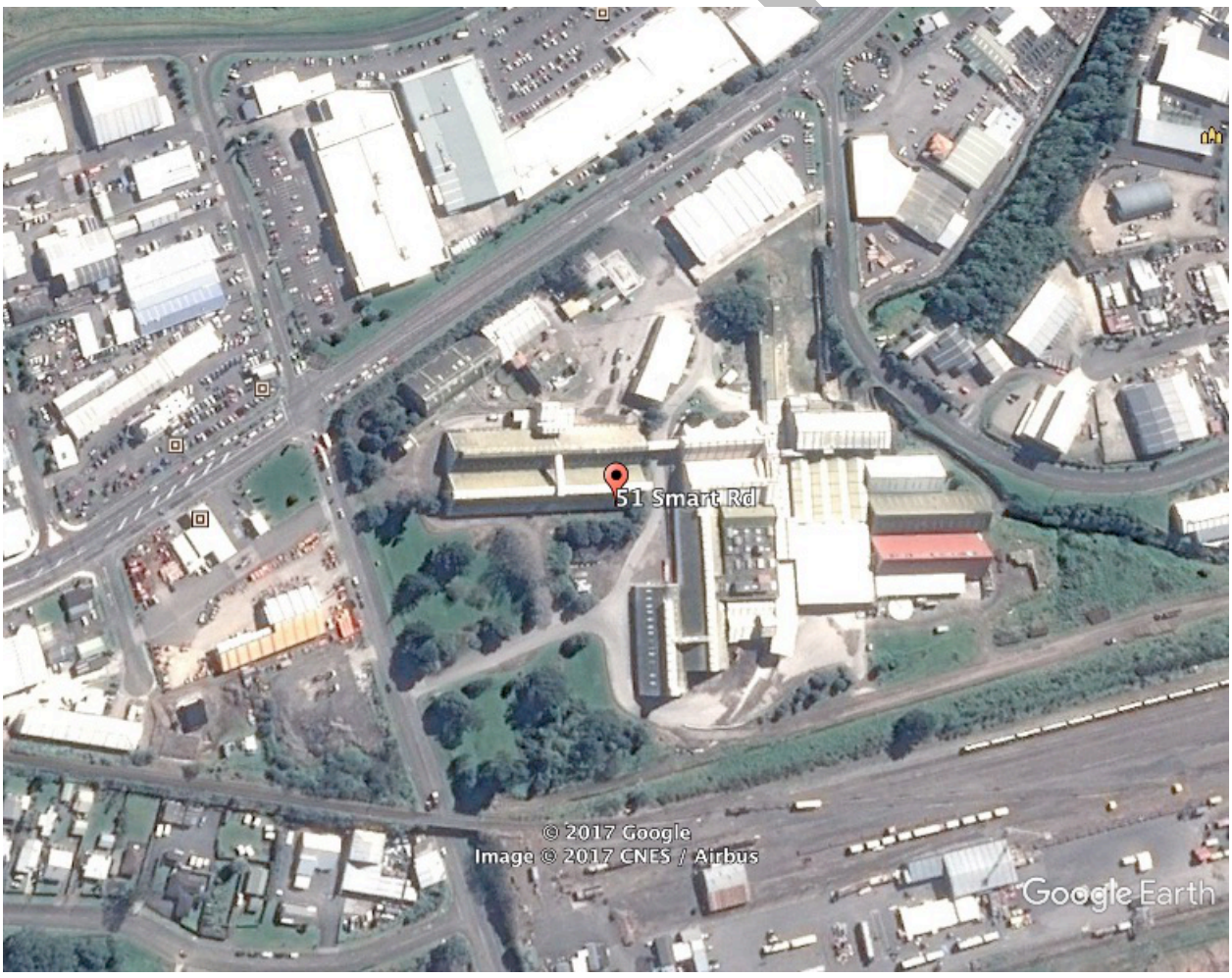
Appendix B:

Demolition Noise and Vibration Management Plan

Demolition noise and vibration management plan

51 Smart Road – Ravensdown New Plymouth

ACM Removal and Demolition Works



Nikau Contractors Ltd

STRATEGIC DECONSTRUCTION & ENVIRONMENTAL

Nikau Contractors Ltd has been awarded the ACM removal and demolition works of the Ravensdown New Plymouth site located at 51 Smart Road, New Plymouth – a large industrial site with multiple structures.

This DNVP is related to the works being conducted by Nikau Contractors Ltd only – being the asbestos removal and demolition works.

The Client and its representative shall be responsible for all monitoring, surveying, consultancy, and communications throughout the demolition works with regards to noise and vibration in compliance with the resource consent.

Record of amendment

Amendment number	Description of change	Effective date	Updated by

Contents

1. Introduction

This construction noise and vibration management plan details noise and vibration criteria, predicted levels, mitigation measures, monitoring requirements, and communication and complaint procedures, for:

- Project: 51 Smart Road, New Plymouth
- Construction location: 51 Smart Road, New Plymouth
- Construction start date: January 2018
- Construction finish date: Twelve months from start
- Council consent number: TBA

The objective of this plan is to provide a framework for construction noise and vibration management to ensure that noise and vibration levels at neighbouring buildings remain within reasonable limits throughout the works.

1.1 Contact details

Table 1. Contacts

Role	Name	Organisation	Phone	Email
Client	Nathan York	Kaitiaki Group	021 528 951	Nathan@bhml.co.nz
Engineer	TBA			
Acoustics advisor	TBA			
Contractor	Diana Stil	Nikau Contractors Ltd	021 371 190	Diana.stil@nikaugroup.com
Contractor's acoustics advisor	NA – by Client			
Council – Noise/ Environmental Health	Team leader – monitoring and compliance	Taranaki Regional Council	0800 736 222	
Public complaint contact number	Nikki Rawiri	Nikau Contractors Ltd	027 66 55 011	Nikki.rawiri@nikaugroup.com

Nikau Contractors Ltd will be responsible for ensuring that this demolition noise and vibration management plan is correctly implemented. He/she will review all documentation relating to construction noise and vibration before it is issued.

All site personnel will be required to read and sign the demolition noise and vibration induction form appended to this plan and any relevant schedules. If required, specific training will be provided for site personnel.

2. Project overview

Asbestos Removal and Demolition multiple structures

2.1 Construction methodology

Please refer to the contractors submitted demolition methodology.

2.2 Timeframe

The proposed timeframe for completion is twelve

2.3 Hours of operation

To comply with the noise and vibration criteria detailed in Section 3, work at the site will only be conducted on Mondays to Fridays between 6:30am and 7pm, Saturdays 7am to 6pm.

There will be no works on Sundays or public holidays

2.4 Location plan

3. Criteria

3.1 Noise

The following conditions relating to construction noise apply to these works:

- **TBA**

In summary, the following [NZS 6803:1999] criteria apply at [one metre from the façades of the nearest neighbours]:

Table 2. Noise criteria – Centres and Mixed Use Zones

Day	Time	$L_{Aeq(8hr)}$
Local Centre and Neighbourhood Centre Zones	0700h - 2200h	60 dB 65 dB at 63Hz 60 dB at 125Hz
City Centre, Metropolitan Centre, Town Centre and Mixed Use Zones	0700h - 2200h	65 dB 70 dB at 63Hz 65 dB at 125Hz
Local Centre and Neighbourhood Centre Zones	2200h – 0700h	50 dB 60 dB at 63Hz 55 dB at 125Hz
City Centre, Metropolitan Centre, Town Centre and Mixed Use Zones	2200h – 0700h	55 dB 65 dB at 63Hz 60 dB at 125Hz

Circumstances where the noise criteria may not be complied with are:

1. Use of heavy demolition and earthmoving equipment onsite including truck and trailer units moving from one location to another onsite
2. Demolition activities including the "dropping" of heavy debris (steel / concrete) structural members from heights
3. Use of impact equipment during slab removals (i.e. rock breakers)
4. Unavoidable or emergency works

The mitigation / management procedures that will be implemented are:

1. Pre-demolition monitoring shall be conducted by the Client
2. Ongoing monitoring shall be conducted by the Client – schedules and methods to be determined by the independent monitoring consultant.

3. Substitution of existing equipment with quieter equipment.
4. Work activity scheduling to prevent combined noisy activities in the same time period.
5. Ongoing inspection and maintenance of existing equipment to prevent unnecessary noise
6. Implementation of noise perimeter zones
7. Not running heavy equipment when not in use
8. Use of site radios (excluding hand held RT units) is strictly forbidden
9. Review of existing demolition methodology
10. In the event of unavoidable works, notification to the necessary identified stakeholders

3.2 Vibration

The following conditions relating to construction vibration apply to these works:

- **TBA**

In summary, the following criteria apply:

Vibration causing damage to adjacent structures, computers and electronic equipment due to their close proximity to the structure to be demolished (within 20m from the structure) due to the proposed demolition activities.

Vibration to neighbours can cause a public nuisance and disturbance to persons.

Table 3. Vibration criteria

Type	Location	Details	Category A	Category B
Occupied PPFs*	Inside the building	Daytime 0630h - 2000h	0.3 mm/s ppv	1 mm/s ppv
		Night-time 2000h - 0630h	1 mm/s ppv	5 mm/s ppv
Other occupied buildings	Inside the building	Daytime 0630h - 2000h	2 mm/s ppv	5 mm/s ppv
All other buildings	Building foundation	Transient vibration	5 mm/s ppv	BS 5228-2 Table B.2
		Continuous vibration		50% of BS 5228-2 Table B.2

*Protected Premises and Facilities as defined in NZS 6806:2010

Circumstances where the vibration criteria may not be complied with are:

1. Use of heavy demolition and earthmoving equipment onsite including truck and trailer units moving from one location to another onsite
2. Demolition activities including the "dropping" of heavy debris (steel / concrete) structural members from heights
3. Unavoidable and emergency works

The mitigation / management procedures that will be implemented are:

1. Pre-demolition monitoring shall be conducted by the Client
2. Ongoing monitoring shall be conducted by the Client – schedules and methods to be determined by the independent monitoring consultant.
3. Operation of heavy equipment away from pre-identified vibration sensitive sites where possible.
4. Phasing of demolition impacting operations so to not occur in the same time period.
5. Scheduling of vibration creating operations such as trucking to periods to minimise impact to surrounding buildings.
6. Site layout to ensure that heavy equipment when not in use is not parked within the vicinity of pre-identified vibration sensitive structures (within 20m)
7. Review of existing demolition methodology

4. Affected persons

- Local businesses and building owners
- Ravensdown employees and contractors
- Members of the public including State Highway 3 road users.
- Client – Kaitiaki Group and representatives
- Local territorial authority – Taranaki Regional Council

4.1 Sensitive receivers

The following sensitive receivers have been identified as the locations for consideration when calculating construction noise and vibration levels, and when preparing management schedules. Where measurements are required (Section 10) they will be conducted at representative locations and not at all receivers listed here.

To Be Advised

Table 4. Sensitive receivers

Reference	Address	Building type/comments	Distance to works

The assessment locations are shown on the following figure.

To Be Advised

5. Stakeholder engagement

A key aspect of this construction noise and vibration management plan is stakeholder engagement. The site contact for the public for the duration of the works will be [Helina Stil / Nikki Rawiri]. There will be the following communication with the community regarding construction noise issues:

Client to advise all Stakeholders of the impending demolition works

- There will always be a contact person available on site, and their contact details will be prominently displayed at the entrance to the site so that they are clearly visible to the public.
- Prior to the works a newsletter or similar will be distributed by the client to all neighbours within at least 100 metres of the works. The newsletter will provide contact details and will detail the overall nature of the works. The same information will also be published in an advertisement in a local newspaper.
- Individual notification will be provided and meetings offered to all neighbours within 50 metres of the works. For any neighbours within approximately 20 metres of the works individual consultation will be continued throughout the works.
- Further information will be regularly provided to all neighbours with an update on the progress of the works, and the specific activities (including locations) due to be undertaken next. This may be provided by newsletters or possibly by email. Updates will be provided every two or three months.
- Prior to any particularly noisy processes identified in a construction noise management schedule, the nearest affected neighbours will be contacted individually. Neighbours will be informed of the proposed timing of the specific works and where practicable any times which are particularly sensitive for neighbours will be avoided.

6. Noise sources

The following table lists all significant equipment proposed to be used on the site. The sound level for each item of equipment has been estimated from library data in British Standard BS 5228-1:2009 and NZS 6803:1999. During initial site noise monitoring the validity of this data will be confirmed and adjusted where necessary for the major items of equipment.

Table 5. Equipment schedule

Equipment	Model	Type	Estimated L_{Aeq} at 10 m	Data reference
Hiab Truck	Isuzu	Truck	84dB	Worksafe NZ Construction Noise Levels
Skidsteer loader	Bobcat	Small Machine	107dB	Worksafe NZ Construction Noise Levels
Flatdeck truck	Isuzu	Truck	84dB	Worksafe NZ Construction Noise Levels
20t excavator	Kobelco	Excavator	120dB	Worksafe NZ Construction Noise Levels
Elevated work platform	Aichi	EWP	98dB	Worksafe NZ Construction Noise Levels
50t excavator	Komatsu	Excavator	120dB	Worksafe NZ Construction Noise Levels
Articulated trucks	Various	Truck	84dB	Worksafe NZ Construction Noise Levels

The following table shows the key activities likely to generate significant noise, and shows the approximate duration of the activity and the equipment that is likely to be used.

Table 6. Key activities

Task	Activities	Overall duration of task	Equipment and % use during that activity
Site establishment	Installation site fencing, install site offices, conduct monitoring and testing with Client, installation of water and other site services	1 week	Skidsteer loader – 65% Hiab truck – 25% Flatdeck truck – 20%

Internal soft strip	Removal of non structural members, transport of debris offsite	2months	Skidsteer loader – 55% 20t excavator – 35% Artic truck – 10%
Asbestos removal	Installation of asbestos controls, removal of identified asbestos materials	5 months	Scissors lift – 55% 20t excavator – 30% Skip bin truck – 25%
Demolition activities	Commence demolition using heavy excavators	5 months	50t excavator – 45% 20t excavator – 35% Skidsteer – 5% Artic truck – 15%

7. Vibration sources

The following table shows key activities likely to generate vibration and details of equipment. Where available, measurements/estimates of vibration from that equipment have been included. The validity of this data will be confirmed and adjusted where necessary once site works have commenced.

Table 7. Key vibration sources

Activities	Equipment	Equipment details	Vibration data
Installation site fencing, install site offices, conduct monitoring and testing with Client, installation of water and other site services	Skidsteer loader – 65% Hiab truck – 25% Flatdeck truck – 20%	Use of skidsteer to move plant and equipment into place. Trucks to transport equipment onto site	TBA
Removal of non structural members, transport of debris offsite	Skidsteer loader – 55% 20t excavator – 35% Artic truck – 10%	Use of skidsteer to mechanically demolish non structural members, transport of debris offsite	TBA
Installation of asbestos controls, removal of identified asbestos materials	Scissors lift – 55% 20t excavator – 30% Skip bin truck – 25%	Use of EWP to access ACM at heights for removal	TBA
Commence demolition using heavy excavators	50t excavator – 45% 20t excavator – 35% Skidsteer – 5% Artic truck – 15%	Use of EWP for separations, use of heavy equipment for mechanical demolitions, transport of debris offsite	TBA

8. Mitigation

Indicative calculations have been conducted for the main items of equipment based on the outline construction methodology and minimum distances to the nearest neighbours. On this basis the following general noise and vibration control measures have been identified as likely to be required to maintain compliance with the construction noise and vibration criteria and conform to good practice.

Table 8. Noise mitigation

Equipment/process	General noise control measures
Excavators	• Personnel PPE • Maintenance and inspection • Use of noise inhibiting attachments • Minimal tracking onsite • Nil idling while not in use • Minimum operation distances from surrounding structures
Skidsteer Loaders	• Personnel PPE • Maintenance and inspection • Nil idling while not in use
Demolition activities	• Client monitoring pre and during demolition activities • Substitution of existing equipment with quieter equipment. • Work activity scheduling to prevent combined noisy activities in the same time period. • Inspection and maintenance of existing equipment to prevent unnecessary noise • Implementation of noise perimeter zones
Trucking activities	• Scheduling of trucking times so not to be conducted before 9am • Maintenance and inspection • Planning of trucking routes to avoid residential areas

Table 9. Vibration mitigation

Equipment/process	General vibration control measures
Excavators	• Maintenance and inspection • Use of noise inhibiting attachments • Minimal tracking onsite • Nil idling while not in use

	• Minimum operation distances from surrounding structures • Not parking machines near vibration sensative structures
Demolition Activities	• Ongoing monitoring shall be conducted by the Client • Operation of heavy equipment away from pre-identified vibration sensitive sites where possible. • Phasing of demolition impacting operations so to not occur in the same time period. • Scheduling of vibration creating operations such as trucking to periods to minimise impact to surrounding buildings. • Site layout to ensure that heavy equipment when not in use is not parked within the vicinity of pre-identified vibration sensitive structures (within 20m)

9. Schedules

For each significant activity/location within 20 metres of neighbours a separate noise and/or vibration schedule will be prepared by the Client. The schedule will identify the potentially affected neighbours and confirm the proposed methodology and equipment to be used, along with specific mitigation.

Predictions of vibration can be made using the guidance in BS 5228-2.

The schedule will detail any specific monitoring or communication requirements.

The schedule will be read and signed by all site personnel involved in the work, prior to the activity commencing.

10. Monitoring

10.1 Noise

THIS SECTION DOES NOT APPLY - ALL MONITORING TO BE PROVIDED BY THE CLIENT'S REPRESENTATIVE

Noise monitoring shall be conducted by the following staff in accordance with NZS 6801:2008 and NZS 6803:1999.

Trained noise monitoring staff:

- TBA – by Client

Noise monitoring will be conducted using the dedicated sound level meter kit detailed below which will be stored in TBA for the duration of the project. The calibrator will be verified by an accredited laboratory annually and the sound level meter and microphone biannually.

Equipment	Make	Model	Serial	Last verification
Sound level meter				
Software				
Microphone				
Calibrator				
Wind shield				
Tripod				
Other				

Monitoring will be conducted as follows,

- When the works start to verify the sound levels assumed for each of the major items of equipment, and to assess the effectiveness of noise control measures and implementation of this plan.
- At regular intervals during the works, at least every two weeks, to check ongoing compliance with the construction noise criteria.
- During critical phases of construction, such as during the use of heavy earth moving machinery, rock breaking, and other noisy activities within 20 metres of neighbours.
- As required by a construction noise management schedule.
- If required, in response to construction noise related complaints.

10.2 Vibration

THIS SECTION DOES NOT APPLY - ALL MONITORING TO BE PROVIDED BY THE CLIENT'S REPRESENTATIVE

Vibration monitoring shall be conducted by the following staff in accordance with TO BE ADVISED BY THE CLIENT.

Trained vibration monitoring staff:

- TBA

Vibration monitoring will be conducted using the equipment detailed below which will be available from TO BE ADVISED BY CLIENT.

Equipment	Make	Model	Serial	Last verification
Vibration meter				[click and type date]
Accelerometer/geophone				[click and type date]
Other				

[The following monitoring requirements need to be customised to the particular project]

Monitoring will be conducted as follows:

- To be advised by the Client's monitoring consultant.

10.3 Building condition surveys

THIS SECTION DOES NOT APPLY - ALL SURVEYS TO BE PROVIDED BY THE CLIENT'S REPRESENTATIVE

Qualified building survey staff who will conduct building condition surveys:

- **TBA by Client**

A report will be prepared for each building surveyed including:

- A description of the building condition and any existing cosmetic and structural damage,
- Sketches and photographs showing the location and extent of any existing damage such as cracks, and
- Verification of the report by the surveyor and building owner.

Following the works all building condition surveys will be repeated. Reports will be prepared including:

- Sketches and photographs of any new damage, and
- Verification of the report by the surveyor and building owner.

11. Complaints

The following procedure shall be followed for all noise and vibration complaints:

1. All noise and vibration complaints should be immediately directed to [Nikki Rawiri/Helina Stil] and the Nikau site supervisor.
2. As soon as the complaint is received it will be recorded either on the project complaints register or on the project web page on Nikau Sharefile/Current Contracts/Ravensdown NP/Monitoring

3. An initial response will be made and recorded. Depending on the nature of the complaint the initial response could be to immediately cease the activity pending investigation, or to replace an item of equipment. However, in some cases it might not be practicable to provide immediate relief. The complainant and council will be informed of actions taken. Contact details for council are recorded in the Introduction section of this plan.
4. Where the initial response does not address the complaint, further investigation, corrective action and follow-up monitoring shall be undertaken as appropriate. The complainant [and local territorial authority] will be informed of actions taken.
5. All actions will be recorded on the project complaints register or project web page and the complaint will then be closed.

12. Documentation

12.1 File

All electronic files relating to construction noise and vibration will be kept in: Nikau Sharefile/Current Contracts/Ravensdown NP/Monitoring. This will include:

- Section 1 – Construction noise and vibration management plans
  - This Construction Noise and Vibration Management Plan and any revisions
  - Construction Noise and/or Vibration Management Schedules
  - Construction noise induction sheets
- Section 2 – Consultation and complaints registers
- Section 3 – Noise and vibration monitoring
  - Site survey sheets and associated aerial photographs
  - Site survey summary sheet
  - Survey reports
  - Survey and equipment operating procedures
  - Current and past equipment kit details and calibration summary
  - Copies of calibration certificates

12.2 Web site

The following information will also be recorded on the project construction noise web page on Nikau Sharefile/Current Contracts/Ravensdown NP/Monitoring

- This Construction Noise and Vibration Management Plan and any revisions,
- Construction Noise and/or Vibration Management Schedules,
- Noise and vibration survey results, and
- Complaints.

The project area on this web site will be administered by Michelle Cleghorn / Nikki Rawiri. It will be made accessible to the following people listed in the contacts table in the Introduction of this plan:

1. Michael Stil
2. Ricardo Bennett
3. Helina Stil

12.3 Reporting – To Be Amended once notified

THIS SECTION DOES NOT APPLY - ALL REPORTING TO BE PROVIDED BY THE CLIENT'S REPRESENTATIVE

As required by designation or consent condition [TBA] the following information will be provided to Team leader – monitoring and compliance –Taranaki Regional Council as listed in the contacts table in Section 1 of this plan, within the timeframes stated.

Table 10. Information reporting requirements

Information	Timeframe
Construction Noise and Vibration Management Plan	At least one week before works commence
Construction Noise/Vibration Management Schedules	At least one week before specific works commence
Noise/vibration survey reports	Within one week of monitoring
Noise/vibration complaint initial report	Within twenty-four hours
Noise/vibration complaint closed	Within one week of closing complaint

This information will all be sent by email with files in pdf format to: TBA – all reports to be provided by the Clients monitoring consultant.

13. Construction noise and vibration induction

Project: 51 Smart Road, New Plymouth

There are several residential and commercial neighbours in close proximity to the works, where noise and vibration criteria apply. To ensure criteria are achieved, all staff are responsible for good noise and vibration management.

1. When arriving at work, please drive slowly on site and keep revs to a minimum. Keep stereos off and do not slam doors.
2. No shouting or swearing on site. Either walk over and talk to somebody or use a radio/phone.
3. Be careful with tools and equipment. Place them down and do not drop them.
4. Do not drag materials on the ground. Place them down when you arrive at the work area.
5. Equipment and vehicles should not be left running when not in use.
6. When loading trucks try not to drop material from a height. Load softer material at the bottom.
7. Stationary equipment such as pumps and generators should be located away from neighbours.
8. All equipment is to be well maintained.
9. No work that could cause noise and/or vibration disturbance shall be conducted outside the hours of 0730h to 1800h Monday to Saturday (and no work at all shall be conducted outside the hours of 0630h to 2000h).
10. If you see anything/anyone making unnecessary noise then stop it/them. If the source cannot be stopped then report it to Michael Stil.
11. It is essential that good relationships are maintained with the local community. Any queries from members of the public should be responded to politely and referred to Nikki Rawiri. Staff shall assist the public to make contact with this person. Staff shall not enter into debate or argue with members of the public.
12. No work that could cause noise and/or vibration disturbance is to be conducted until all staff involved in the task have read and signed the Construction Noise/Vibration Management Schedule for that task.

Acknowledgement from site personnel

Name	Company	Signed	Date

Appendix C:

Dust Management Plan

Nikau Contractors Limited
New Zealand's leading edge in demolition and salvage recovery
Phone toll free (0800) 66 99 11 or e-mail: reception@nikaugroup.com

Nikau Contractors Ltd

STRATEGIC DECONSTRUCTION & ENVIRONMENTAL

Dust Management Plan

Ravensdown New Plymouth
51 Smart Road, Waiwhakaiho

Publication Details

Date	Name & Position	Signature
06.10.17	Helina Stil – Author	

Record of amendment

Amendment number	Description of change	Effective date	Updated by
2	Alteration to document	26.02.18	HS
3	Amendment to document	05.03.18	HS

Table of Contents

Background

Nikau Contractors Ltd has been engaged by the Client to undertake asbestos removal works for demolition at the Ravensdown site, 51 Smart Road, New Plymouth.

The site is a former fertilizer plant, covering a large area of land, and the asbestos containing materials have been identified as:

1. Asbestos wall and roof flat and corrugated cladding – approximately 1,500tons of material.
2. Surface scrap to approximately a 5m perimeter to a maximum depth of 100mm (first scrap to 50mm) to ACM buildings only.

Some of the asbestos cladding was observed in poor condition, with fibers clearly visible upon inspection.

Nikau will undertake an inspection to determine which ACM structures are Class A and Class B.

The Contractor provides below details on the proposed management of dust and respirable airborne fibers that will be generated as part of the proposed Works.

Proposed Activities that will generate dust are:

a) Demolition of the structure, including the lifting of pads, slabs and foundations.
b) Potential processing and screening on Site of demolished material from the existing structure for transport offsite.
c) Loading and unloading of materials
d) Wind generated dust from dry exposed surfaces such as stockpiles and yard areas

Dust management will be focused on reducing factors that influence dust generation within the Site to prevent migration outside of the Site within the greater work Site.

Factors that influence dust emissions from surfaces are:

a) Wind speed across the surface; the critical wind speed for pickup of dust from surfaces is 5m/s, above 10m/s pickup increases rapidly
b) The percentage of fine particles in the material on the surface
c) Moisture content of the material on the surface
d) The area of the exposed surface
e) Disturbances such as traffic, heavy equipment, excavation, crushing, loading and unloading of materials
f) The height of the source above the surrounding ground level.

Figure 1 : Trailer Mounted Water Atomising Unit New Plymouth Power Station

Figure 2 : Atomised water dust and airborne particle suppression

Site Wide Activities

The following dust mitigation methods will be undertaken as required to minimize the overall dust emissions from the Site:

a) All demolition and crushing activities will be located at least 15m from the boundary of the Site
b) The structure shall be thoroughly inspected by the Demolition supervisor and the Demolition Site Supervisor to identify and if necessary, remove before demolition any materials that have the potential to create dust and airborne particles during demolition (carpets, gib board, fiberglass, particle board)
c) Particularly dusty activities will cease when weather conditions are dry and winds are strong and blowing towards other greater Site areas
d) Use of mobile dust atomisers will be used during all identified activities. Water atomisers will suppress dust creation but will not create pooling or water run off from the Site.

Soil Exposure – Lifting of Pads, Slabs and Foundations

a) Exposed surfaces will be kept to a minimum
b) Water will be used as a dust suppressant to keep exposed surfaces and access roads damp where necessary
c) Machinery and vehicle movements on exposed areas will be kept to a minimum – a maximum site speed per the Contractor's SSSP is 20km/hr
d) Vehicle access routes onsite with be defined to avoid disturbed areas

Processing and Screening

The Contractor will:

a) Provide water sprays throughout the processing and screening plant to control the moisture content of the materials
b) Minimise drop heights from conveyors onto stockpiles and when loading and unloading vehicles

Material Stockpiles

The Contractor will:

a) Limit the height of stockpiles to no more than 3 meters
b) Ensure stockpiles are covered and are placed on hardstands or polythene plastic to prevent cross contamination
c) Locate stockpiles at least 15m from the boundary of the Site
d) Keep active stockpiles damp where necessary
e) Minimise drop heights from conveyors onto stockpiles and when loading and unloading vehicles

After Hours Dust Control Measures

At times when the Site is not manned, potential sources of dust may continue to require monitoring and management. The methods that the Contractor will use to minimize dust after hours will include the following:

a) Periodic inspections of the Site by an approved responsible person (to be appointed)

Monitoring

To ensure that dust mitigation measures are implemented and are effective at minimizing dust emissions a dust monitoring plan will be implemented.

The table below outlines the dust monitoring schedule that will be implemented on this Site. The frequency of the monitoring is defined but it is noted that in the instance of strong winds, emissions of dust off-Site, or a complaint, the monitoring programme will be undertaken more regularly.

Monitoring Activities	Frequency
Check weather forecasts for strong winds and rainfall	Daily
Inspect Site exits and adjoining roads for presence of dust deposits from the Site	Daily
Inspect structure, identify and remove materials that could potentially create dust and airborne particles during demolition (carpets, furniture, SMF's, gib board etc)	Pre-Demolition, daily and as conditions change during demolition
Observe weather conditions, wind via observations and information from www.metservice.com and presence of rain and with use of Contractor anemometer.	Daily and as conditions change
Inspect all exposed surfaces for dampness and to ensure that surface exposure is minimised	Daily and as conditions change
Inspect stockpiles to ensure enclosure, covering and stabilization or dampness. Maintain stockpiles below 3m	Daily and as conditions change
Inspect dust generating activities to ensure dust emissions are effectively controlled	Daily and as new activities are commenced
Inspect watering systems (sprays and water carts) to ensure equipment is maintained and functioning to effectively dampen exposed areas	Weekly
Monitor dust generating activities and water application rate	In winds over 5m/s

Contractor Site Contacts

Name	Title	Contact Details
Michael Stil	Project Manager	M: +64 274 537 845 E: michael.stil@nikaugroup.com O: + 64 3 929 0466

Helina Stil	Group EHS/QA Manager	M: +64 21 719 055 E: helina.stil@nikaugroup.com O: +64 9 636 5917
Nikki Rawiri	Onsite EHS / QA Representativie	M: + 64 27 665 6011 E: nikki.stil@nikaugroup.com O: +64 9 636 5917

Appendix D:

Example Inspection Form

Inspection Checklist

Area/Location	Inspection Task	✓ okay X needs action	Comment
Fuelling area	Evidence of spills		
	Diesel refuelling occurring in bunded/designated area		
	Equipment washing occurring in designated wash area		
Asbestos and soil waste skip bins	Bin not overflowing		
	Bin lid on		
	Bin located in right place		
General waste bin	Bin not overflowing		
	Bin lid on		
	Bin located in right place		
Spill kits	Spill kits in correct location		
	Spill kits easily accessible		
	Spill kits stocked		
Stockpiles	Stockpiles properly bunded		
	Stockpiles dampened or covered		
	Stockpiles below maximum height		

Area/Location	Inspection Task	✓ okay X needs action	Comment
Plant/Equipment	Plant/Equipment properly stored		
	Plant/Equipment leaking		
Erosion Control	Silt fences intact		
	Sand bags or other erosion control devices properly placed		
	Silt removal required		
	Discharge through erosion control devices (if discharge occurs, documentation, remedial action and notification are required)		
Stormwater Control	Stormwater drains are protected around fuelling areas		
	Stormwater drains are free of debris		
	Stormwater drains are protected from silt, soil, and debris (if discharge occurs, documentation, remedial action and notification are required)		
Other observations			

SITE MANAGER SIGNATURE:	DATE OF COMPLETING THIS FORM: