ANNEXURE L:

DRAFT CONSENT CONDITIONS (PROPOSED BY APPLICANT)

The Car Distribution Group

Draft Site Management Conditions

Note:

The following site management conditions are provided by the applicant as a draft intended to recognise those matters which may need conditions along with suggested solutions. They are not intended to be full and final clarified. They are a starting point.

CONTENTS:

1. PURPOSE OF THE CONSENT

Consent Holder:	Car Distribution Group Ltd
Lapsing of Content:	In accordance with section 125 of the RMA, this consent shall lapse (5) years after the date on which it was granted unless it has been given effect to before the end of that period.
Purpose of Consent:	To allow the Car Distribution Group to construct and operate a distribution and storage base for vehicles including an office, staff facilities and cleaning bay for the car carriers.

2. CONSENT ACTIVITY

2.1 Except where varied by the conditions of this consent the proposal shall be carried out in accordance with the information and details submitted with the application numbered RMA_____ by the City Council including:

a) **Site Plans being**:

(i)	Site Plan Drawing	Cardno	C802 – Issue 7
(ii)	View Lines Drawing	Cardno	C803 – Issue 7
(iii)	Car Storage Facilities Building	Cardno	RC01 – Issue 2
(iv)	Building Elevations	Cardno	RC02 – Issue 2
(v)	Site Plan (Building)	Cardno	RC03 – Issue 2
(vi)	Land Ownership Plan	Graham Surveying	Issue 3
(vii)	Surface Contour Plan	O'Callaghan Design	Issue 4
(viii)	Cut Fill Plan	O'Callaghan Design	Issue 4
(ix)	Catchment Plan	O'Callaghan Design	Issue 8
(x)	Existing Site Contours	O'Callaghan Design	Issue 1
(xi)	Site Access (Info. Only)[1]	O'Callaghan Design	Issue 2

b) Landscape plans being:

(i)	Typical Planting Layout	Cardno	Issue 7
(ii)	Planting Palette	Cardno	Issue7

c) Planting Schedule:

(i)	As per typical Planting Layout Plan	Cardno	Issue 7
(ii)	In accordance with Rule 6.11.9 (Proposed Christchurch City Replacement Plan) – Refer draft Condition 12.		

3. BUILDINGS AND FENCING

3.1 The building will be as designed and located in accordance with plans:

[1] This plan illustrates the various access options. The applicant is proposing access and egress only via Sawyers Arms Road.

(i)	Car Storage Facilities Building (RC01)	Cardno	Issue 2
(ii)	Building Elevations (RC02)	Cardno	Issue 2
(iii)	Site Plan (Buildings) (RC03)	Cardno	Issue 2

3.2 The security fence is to be located on the boundary of the property as shown on the site plan being Cardno Landscape Plan C8019 - Issue 7 dated 27.03.2017. This fence shall be a maximum height of 2.2m.

7.3 The outer perimeter (boundary) of the site along Johns Road and Waimakariri Road is to be fenced with post and wire, maximum height 1.2m.

7.4 Private offices within the proposed office building shall be constructed to achieve an aircraft noise attenuation of 19 for the external walls and roof and 16 for glazing with the construction being undertaken as follows:

Façade Element	**Aircraft Noise Attenuation (AS 2021:2015)**	**Source**
Roof – 0.4 mm profiled steel, minimum 200 mm cavity, 13 mm plasterboard ceiling	29	Insul software version 8.0.4 with adjustment from Appendix G Section 3.2 in AS2021:2015
Wall – 0.4 mm profiled steel, 140 mm timber framing, 10 mm plasterboard	28	Insul software version 8.0.4 with adjustment from Appendix G Section 3.2 in AS2021:2015
External glazing – 4 mm float glass	24	Insul software version 8.0.4 with adjustment from Appendix G Section 3.2 in AS2021:2015

A report from a suitably qualified Acoustics Engineer will be submitted at the time of the building consent to confirm that the requirements outlined in Rule 6.1.7.2.2 of the District Plan are achieved.

4. HOURS OF OPERATION

4.1 The site hours of operation will be 8.00am to 6.00pm Monday to Friday except that car transporters can arrive and depart the site outside of these hours as follows.

(i) Monday to Friday:

2300 – 0100hrs	2 transporters arrive and depart
0200 – 0300hrs	3 transporters depart
0400hrs	6 transporters depart
0600hrs	2 transporters arrive

(ii) Saturday and Sunday

A maximum of two transporters will return to site on Saturday and Sunday.

4.2 Other than staff no other vehicles are to access or exit the site between 6.00pm and 8.00am.

5. NOISE

5.1 That the development shall provide for perimeter and on-site noise attention as follows being:

- 3m high bund along the Waimakariri Road boundary,
- 2m high bund along all other boundaries including along the access way, and
- An acoustic barrier alongside the loading area being a minimum of 2m in height and 75m long.

5.2 Reversing beepers must be disabled or replaced and an alternative warning system used on-site.

5.3 All loading and unloading of vehicles must take place to the north of the acoustic barrier and alongside of the office.

5.4 No air breaks are to be used on-site or on Waimakariri Road.

5.5 There shall be no use of any water blaster for truck cleaning during night time hours (2200 – 0700 hours).

5.6 Noise emissions from activities on the site received at the national boundaries of any dwellings and measured in accordance with NZS6801:2008 Acoustics – Measurement of Environmental Sound and assessed in accordance with NZS6802:2008 Acoustics – Environmental Noise, shall not exceed the following levels:

Hours	**dBA $L_{Aeg\ (15min)}$**	**dBA L_{AFmax}**
Daytime: 07.00 – 22.00	50	N/A
Night time: 22.00 - 07.00	45	75

5.7 Within 3 months of the activity opening, the consent holder shall submit to the Team Leader Compliance & Enforcement at the Christchurch City Council, the results of a noise measurement survey conducted by a suitably qualified and experienced acoustic engineer confirming that the operation complies with the noise limits outlined in Condition 5.4.

5.8 Measurements shall be undertaken in accordance with NZS6801:2008 Acoustics – Measurement of Environmental Sound and assessed in accordance with NZS6802:2008 Acoustics – Environmental Noise at the boundaries of the site.

5.9 The noise level survey shall, at a minimum, describe measured noise levels at the boundary of the site during periods of peak occupation during both the day and night time with three measurements taken at locations at the east and west end of the Waimakariri Road site frontage including at the vehicle access point to Waimakariri Road.

5.10 These measurements are to be provided to the Team Leader Compliance & Enforcement of the City Council on request.

Noise Mangement Plan (NMP)

5.11 Prior to the site becoming operational, the consent holder shall submit to the Resource Consents Unit Manager at the Christchurch City Council, a Noise Management Plan (NMP) prepared by a suitably qualified and experienced person in consultation with Council's Environmental Health Team to address the effective management of noise emissions from the site.

5.12 The objective of the NMP is to ensure that operation of the site activity is performed in a manner that minimises potential disturbance to neighbours and how compliance with condition 5 of consent will be demonstrated.

5.13 The NMP shall include the following methods, measures, techniques to achieve this objective:

(i) The NMP shall describe in detail the proposed management measures to be used to control noise generated by the activity. At a minimum, noise from the following sources must be addressed:

(a) Movement on site

(b) Truck washing

(c) Truck loading and unloding

(d) Vehicles access points

(ii) The NMP shall describe the role of staff in the management of noise, and nominate the specific staff member(s) responsible for overseeing the implementation and upkeep of the Plan.

(iii) The NMP shall also specify procedures should any complaint in relation to noise be received.

5.14 The consent holder shall submit the NMP to the Resource Consents Unit Manager at the Christchurch City Council for certification that it complies with the consent conditions prior to the Adventure Park being opened to the Public. If the Adventure Park is opened in stages, then the NMP must address all activities that approval to operate is being sought.

5.15 The consent holder shall comply with the certified NMP at all times.

6. LIGHT SPILL AND GLARE

6.1 (a) Subject to conditions 6.2 and 6.3, the development shall comply with the requirements of the Christchurch District Plan (Operative date) as follows.

(i) Rule 6.3.4 – Activity Status tables – "Control of Glare": Permitted lux spill (horizontal and vertical) not greater than 2.5 lux into any part of a major or minor arterial road or arterial route, and

(ii) Rule 6.3.6 Rules – "Light Spill Standards by Zone" (Rural Zones, all other): Permitted lux spill (horizontal and vertical) 10.0 lux.

6.2 The applicant shall prepare a lighting plan *(Lighting Plan),* identifying all Exterior Lighting and Security Lighting, to clearly identify the proposed lighting solution. In particular, the Lighting Plan shall ensure:

(i) all exterior lighting (e.g. car storage area, car transport truck unloading area, building mounted and security fence lighting) *(Exterior Lighting)* shall be restricted to Type 6 LED luminaires in accordance with Table 2.10: Classification of Luminaires and Associated Criteria for Control of Glare and Upward Waste Light (AS/NZS 1158:3.1:2005); and

(ii) all external security fence lighting *(Security Fence Lighting)* shall have luminaires aimed away from adjacent boundaries and shall be fitted with backlight shields adjacent to the southern Rural Urban Fringe (RuUF) Zone boundaries; and

(iii) all car transport truck unloading area lighting poles shall be a maximum height of 7 metres and all security fence lighting poles shall be a maximum height of 5 metres.

6.3 A copy of the Lighting Plan shall be provided to the Christchurch City Council for certification 1 month prior to commencing activities under this consent. A copy of the plan shall, at the same time, be provided to Christchurch International Airport Limited.

7. SECURITY, PUBLIC SAFETY AND FIRE FIGHTING

7.1 Vehicle access control barriers (gates) will remain closed (except for the purpose of vehicles accessing or exiting the site) to prevent public vehicles driving on to the site.

7.2 A perimeter security fence is to be located in accordance with Condition 3.2.

7.3 All security lighting is to be located and designed to comply with the light and spill conditions, Condition 6.

7.4 Three 30,000 litre water tanks ($90m^3$) will be installed on site alongside the office complex for the purpose of fire fighting.

8. TRAFFIC MANGEMENT

8.1 Trucks shall only approach and depart the site from the eastern end of Waimakariri Road

8.2 Truck drivers shall not operate vehicle compression breaking or reversing beepers on the site or on that section of Waimakariri Road which accesses the site.

8.3 All loading and unloading of car transporters shall take place behind (north) of the acoustic barrier located alongside of the office/maintenance building. This is to ensure all on-site activity complies with the City Plan noise levels.

8.4 Vehicle access points will remain closed at all times with access points being opened by card holder or similar electronic system.

8.5 (For consideration without prejudice)

(i) review the need for increasing the sealed surface on particular sections of Waimakariri Road to achieve a minimum seal width of 7m.

(ii) extension of the footpath on the south side of Waimakariri Road to a point adjoining Sawyers Arms Road.

(iii) to create an addiational pedestrian crossing safety refuge on Waimakariri Road close to the intersection with Harewood Road.

(iv) to place an additional “school zone’ warning sign on Waimakriri Road at the approach to Harewood Road.

9. EARTHWORKS AND CONSTRUCTION

9.1 The maximum extent of earthworks to be undertaken on the site is 36,000m^2 (cut and fill) being for the creation of the car park. No material is to be removed from the site.

9.2 No earthworks shall exceed a depth of 0.6m except for an area of 2000m^2 where the maximum depth of cut is 0.9m and, where compaction of the site is required to compact soft soil materials.

9.3 The earth mounds shall be formed and vegetated to prevent dust nuisance. The mounds are to be 2m in height (north, west and east boundaries of the site) and 3m in height along the south boundary (Waimakariri Road) of the site (Refer Site Plan - Cardno Drawing C802 – Issue 7).

9.4 The car parking area and all vehicle access areas shall be chip sealed (or similar) and maintained in good condition to prevent any unnecessary noise from car transporters.

10. CONSTRUCTION MANAGEMENT

10.1 Construction activity shall be confined to the hours of 7.00am to 6.00pm, Monday to Friday and 7.00am to 1.00pm Saturday.

10.2 All construction noise shall comply with NZS6803:999 Acoustics – Construction Noise so that construction noise does not exceed the limits set out in Table 2 and 3of the standard.

CONSTRUCTION MANAGEMENT PLAN - GENERAL

10.3 Prior to the commencement of any construction activity, the consent holder shall submit to the Resource Consents Unit Manager at the Christchurch City Council, a Construction Management Plan (CMP) prepared by a suitably qualified and experienced person in consultation with Council's Subdivision Engineer relating to the proposed construction activity for certification.

10.4 Unless addressed by the terms of any other certified management plan, the CMP shall set out the practices and procedures to meet the following particular objectives:

(i) Construction activities shall be managed so that dust nuisance does not arise beyond the boundaries of the site;

(ii) The consent holder shall ensure that sediment/debris is not carried on to Waimakariri Road by construction vehicle movement.

10.5 The CMP shall include the following methods, measures and techniques:

(i) to assign roles and responsibilities, including appointment of a representative to be the primary contact person in regard to construction management;

(ii) a complaints procedure that specifies actions to be taken following receipt of a complaint, including records to be kept and responses to any complaints including remedial action taken;

(iii) a monitoring regime for evaluating compliance with the conditions of this consent;

(iv) measures to prevent nuisance from dust from construction activities;

(v) measures for ensuring that sediment/debris are not carried by construction vehicles on to Waimakariri Road;

(vi) measures for ensuring the security of any fuel storage and the provision of emergency spill kits at all times during construction;

(vii) procedures for the safe and efficient management of heavy vehicle movements to, from, and within the site including a communications regime to manage truck driver behaviour;

(viii) procedures for the management of the movement of construction vehicles to and from the site to avoid conflict between these vehicles and other vehicles using Waimakairiri Road;

(ix) procedures for complaint recording, resolution and feedback;

(x) procedures for the review and updating (by the Consent Holder) of the CMP to address any effects issues.

10.6 The consent holder shall submit the CMP to the Resource Consents Unit Manager at the Christchurch City Council for certification that it complies with the consent conditions prior to the development.

Erosion and Sediment Control / Stormwater Management Works

10.7 Any work involving or requiring disturbance of soil shall only be allowed with Erosion Sediment Control (ESC) measures in place, as provided for in a certified Erosion and Sediment Control Plan (ESCP).

10.8 Prior to any work starting on site involving or requiring the disturbance of soil the ESCP shall be prepared and submitted for certification to either a CCC building consent officer (if activity is deemed to be approved under a building

consenting process), or the subdivision engineer (CCC – Resource Consent Unit).

10.9 A separate ESCP shall be prepared and certified for every area that is affected by proposed works (ie building platforms, parking areas).

10.10 The ESCP is to be designed by a suitably qualified and experienced person (civil or environmental engineer).

10.11 The ESCP is to include (but is not limited to):

- Site description, i.e. topography, vegetation, soils etc
- Details of proposed activities.
- A report including the method and time of monitoring to be undertaken.
- A development map to show location within the larger development area.
- Drawings showing the site, type and location of sediment control measures, onsite catchment boundaries and offsite sources of runoff.
- Drawings and specifications showing the positions of all proposed mitigation areas with supporting calculations (if appropriate).

10.12 The implementation of ESCP measures shall be certified by the site engineer responsible for earthworks and construction activity on site.

10.13 The ESCP shall be subject to the terms and conditions of any discharge consent obtained from the Canterbury Regional Council, as provided for in Condition 11.1.

10.14 The consent holder shall submit the ESCP to the Resource Consents Unit Manager at the Christchurch City Council for certification that it complies with the consent conditions prior to the Development being open.

11. STORMWATER MANAGEMENT

11.1 Authorisation for the construction and operational phase of the stormwater discharge shall be obtained from the Canterbury Regional Council prior to any works taking place on the site.

11.2 Subject to any terms and conditions of any such resource consent, the surface water management and mitigation facilities shall be designed in general accordance with Christchurch City Council requirements including the Waterways, Wetlands and Drainage Guide (WWDG – 2003, including Chapters 6 and 21 updated in 2011/12), Infrastructure Design Standard (IDS - 2013), CCC Civil Engineering Construction Standard Specifications (CSS - 2013).

11.3 The surface water management and mitigation facilities shall meet the following conditions:

(i) Stormwater runoff resulting from the first 25mm of rainfall from new hardstand areas shall be captured and treated in a first flush sedimentation basin or vegetated swale

(ii) The design of basins or swales shall be in general accordance with the WWDG. In particular the basins will be designed with a 150mm layer of material made up of 75% 2A sand and 25% topsoil with a good organic content, followed by 250mm of 19mm premix underneath to transition into the native gravels, with in-situ infiltration rates through this media between about 75mm/hr and 300mm/hr. Any silt layers found between the bottom of their treatment media and the natural gravels shall be excavated and replaced with clean gravels.

(iii) Stormwater runoff from storms in excess of the first flush volume and up to the two percent annual exceedance probability critical duration storm event shall discharge to a detention basin.

(iv) Runoff from roofs of buildings shall be detained either in detention basins or using rain tanks. The sizing of detention basins or rain tanks and outlet configurations shall be determined by Council Engineers at detailed design phase.

(v) The surface water mitigation system shall be designed with sufficient capacity to ensure that peak flows from the site do not exceed pre-developed peak flows up to and including the two percent annual exceedance probability 36-hour duration storm event.

11.4 Prior to the commencement of any construction activity, the consent holder shall submit to the City Council Assets and Networks Planning Engineer for acceptance a report demonstrating how stormwater runoff will be managed and how any proposed filling or development will be mitigated without displacing flood waters onto on neighbouring properties.

12. LANDSCAPE PLANTING MANAGEMENT

12.1 In addition to Conditions 14.1 and 14.2 landscape planting and management shall be undertaken in accordance with the landscape plans and plant species list described below. Planting in each zone shall comprise a selection of plants from the planting list for the relevant planting zone, and shall be planted at the specified spacings and minimum heights.

(i) Landscape Plans being:

- Typical Planting Layout (Cardno) C8019 – Issue 7
- Planting Palette (Cardno) C8018 – Issue 7

(ii) Rule 6.11.9 (Proposed Christchurch Replacement Plan), Plant Species for Water Bodies and Stormwater Basins in the Bird strike Management Area, Appendix 6.11.7.5 (Attached)

12.2 The construction of the earth bund will be undertaken as follows.

i. Topsoil depth to be 350mm;
ii. Tree pits to a depth of 1m x 1m x1m for plants 1.5m high;
iii. All planting to be mulched to suppress weed growth;
iv. Irrigation to be provided along the length of the bund during establishment period; and
v. All planting to be managed and maintained in the future to ensure its longevity and sustainability.

6.11.9 Plant Species for Water Bodies and Stormwater Basins in the Bird strike Management Area in Appendix 6.11.7.5

Edge of Water body / Stormwater basin	
Botanical name	Common name
Schoenoplectus validus / tabernaemontani	lake club rush / kapungawha
Eleocharis acuta	spike sedge
Carex germinata	makura
Schoenus pauciflorus	bog rush
Polystichum vestitum	prickly shield fern
Juncus pallidus	tussock rush / wiwi
Cyperus ustulatus	umbrella sedge
Lower Bank	
Botanical name	Common name
Anemanthele lessoniana	wind grass
Astelia fragrans	bush lily / kakaha
Coprosma propinqua	mikimiki
Dianella nigra	ink berry / turutu
Plagianthus divaricatus	swamp ribbonwood
Upper Bank	
Botanical name	Common name
Aristotelia serrata	makomako / wineberry
Carpodetus serratus	marbleleaf / putaputaweta
Coprosma rotundifolia	roundleaved coprosma
Dodonea viscosa (frost tender)	akeake
Eleocarpus hookerianus	pokaka
Griselinia littoralis	kapuka / broadleaf
Hebe salicifolia	koromiko
Hoheria angustifolia	narrow leaved lacebark
Kunzea ericoides	kanuka
Leptospermum scoparium	manuka
Lophomyrtus obcordata	rohutu / NZ myrtle
Myrsine australis	mapou
Myrsine divaricata	weeping mapou
Pittosporum eugenioides	lemonwood
Pittosporum tenuifolium	matipo
Plagianthus regius	lowland ribbonwood
Podocarpus totara	totara
Prumnopitys taxifolia	matai
Pseudowintera colorata	peppertree
Sophora microphylla	kowhai

13. GROUND CONTAMINATION

13.1 A Site Management Plan (SMP) shall be prepared by a suitably qualified environmental practitioner for the site works to manage any risks to workers or the surrounding environment. The Site Management Plan is to be submitted to the relevant person at the City Council for approval.

14. BIRD MANAGEMENT

14.1 Where any stormwater basins are proposed these shall be designed, operated and managed (including all margins and plantings) to avoid bird species which constitute a hazard to aircraft.

14.2 Without limiting condition 14.1 the applicant, in consultation with Christchurch International Airport Ltd shall develop a Bird Management Plan which shall include:

- The design of the stormwater basins (size and side slope dimensions) that are not attractive to birds;
- The use of grass and plant species as set out on the Landscape Plan Typical Planting Layout (Cardno) C8019 – Issue 7 and in Appendix 6.11.7.5 of the Replacement City Plan (refer draft condition 12.1):
- The methods of on-site Management to minimise the creation of bird habitat including avoiding the accumulation of any litter that might encourage insects, rodents and hence birds as well as avoiding the feeding of birds; and
- Ensuring that during construction, changes in bird numbers are monitored, recorded and reported to the Christchurch International Airport Company.

15. REVIEW CONDITION

15.1 Pursuant to section 128 of the Resource Management Act, the City Council may, at any time, serve notice on the consent holder of its intention to review the conditions of the consent in order to:

(i) respond to any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage. The effects include (but are not limited to) those that may arise in relation to any site access point, (vehicle, pedestrian or cycle) on-site parking, noise, hours of operation, external lighting (glare), stormwater management, bird management, erosion and sediment control, public safety and neighbourhood security;

(ii) deal with any unanticipated adverse effects on the environment which may arise from the exercise of the consent, which it is appropriate to deal with at a later stage;

(iii) require the consent holder to adopt the best practicable option to mitigate any adverse effect on the environment; and

(iv) ensure that the conditions are effective and appropriate in managing the effects of the activities authorised by this consent.

ANNEXURE M:

INFORMATION REQUREST RESPONSE RE 13.07.17

(I) AMENDED LANDSCAPE PLAN

(II) N.E.S. – SITE MANGEMENT PLAN

(III) REPORT RE WASTEWATER, EARTHWORKS AND TRUCK WASH

(III) REPORT RE WASTEWATER, EARTHWORKS AND TRUCK WASH

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21st July 2017

Kim McCracken & Associates
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CHRISTCHURCH

Attention: Kim McCracken

JOHNS ROAD CAR STORAGE PROJECT – SECTION 92 RESPONSE – ENGINEERING MATTERS

Further to CCC's letter dated 13th July, we set out our response to the various engineering questions below.

Earthworks Matters

1. What is the proposed maximum depths of excavation across the site?

The proposed earthworks to shape the site are shown by drawing W16008 C302 Rev3, as attached to Annexure F in the Application. As shown by this drawing, the site will be shaped with a high "ridge" along the middle of the site running "east-west" with the surface sloping to the outside edges adjacent to Johns Road and Waimakariri Road. The crest will be at a level of approximately RL34.6m and the outer edges at a level of RL 33.5-33.6m.

The existing levels of the site are shown by drawing W16008 C305 Rev1. This plan shows the existing sit levels to be generally varying between RL33 – RL34.6m across the site. The eastern end of the site rises from RL33.2m up to RL34.6m, within a distance of 100m. The land is generally at a level of RL34.6 – RL34 across the site for a further 200m. The land then is at a slightly lower level (RL33.2 – RL34m across the site for the western portion of the Stage 1 area.

An earthworks design is shown by drawing W16008 C303 Rev4. This plan shows the area of cut is in the eastern portion of the site, where the existing land varies in level up to RL34.6m. The cut depth is typically only 0.2-0.4m in depth and is really a re-shaping of the surface to create the surface drainage system.

The maximum depth of cut is where the stormwater ponds are to be formed as the surface re-shaping earthworks will not involve cuts exceeding 0.6m in depth. The deepest cut to form the stormwater basins will be in the sub-catchment 5 area where the existing ground level is RL34m. The design surface level on the pavement adjacent to the sub-catchment 5 pond is approximately RL33.6m. The bottom of the pond will be formed at a depth of approximately RL32.5m. Thus, the cut depth to form the pond in this area will be approximately 1.5m.

The area to the west, which has existing levels typically below RL34m, will be filled to create the surface drainage slopes. The depth of filling is up to 1.5m in the crest of the site, but is typically much less over the fill area.

3. Please outline the source of all fill and describe contamination and treatment protocols.

All fill associated with re-shaping the site to the required surface drainage shape will be sourced from the on-site cut material. It is not proposed to import any fill material.

The protocols for testing and dealing with any on-site contaminated materials have been described by others. Those protocols will apply to the earthworks operation on this site and only on-site fill material meeting their requirements will be used as fill.

Once the earthwork area has been re-shaped to formed the subgrade new surface, the entire area (excluding the area occupied by the bunds and stormwater ponds) will have a layer of approximately 200mm thick roading metal applied and a final surface of 30 -40mm thick asphalt. The roading metal and asphalt will provide further separation between the surface and the fill material.

All roading metal imported into the site for the carpark pavement structure will be from an approved quarry source and will be free from contamination.

4. The revised stormwater concept would appear likely to alter the proposed earthworks volumes. Please confirm these.

The volume of excavation required to form the stormwater treatment facilities has changed from those contained in the application (drawing W16008 C303 Rev4), which stated an expected cut of 8,000m^3 for the construction of the ponds.

The stormwater treatment and disposal system has changed in concept design to the use of a 450m^3 first flush basin and a high soakage partial attenuation basin, in place of the former attenuation larger surface attenuation basin. The first flush basins on sub-catchments 1, 2 & 3 are in areas of fill and so there is only a small volume of cut required to form these. The facilities on sub-catchments 4, 5 & 6 require some cutting to the deign level and then the excavation of the basins. An assessment of the total volume of cut required to form the stormwater basins indicates a cut volume of 5,500m^3 will be required.

This volume is 2,500m^3 less than the previous solution. This change will not require the volume to be made up with imported material as the final design level over the 8.5Ha car park area will merely be lowered by approximately 30mm to achieve a revised cut/fill balance.

Wastewater

A review of the wastewater reticulation in the local area has confirmed that there is a 150mm diameter public sewer in Waimakariri Road, at the entrance to the site, as indicated by the attached Wastewater Services Plan. We note that the sewer in Waimakariri Road has a manhole near the entrance to the site that has an invert level that is sufficiently deep to receive gravity flow from the car storage yard site.

The facilities on the car storage yard site will include a staff building. As described in the application, it is anticipated that the facility will be operated with up to 10 staff. The majority of these will be on site during normal office operating hours, with a small number on site outside normal hours.

NZS1547 recommends a design wastewater flow rate of 50l/p/d for a person working in a rural factory or shopping area. The nature of the work at this site will be similar to a rural factory as there are no special operations on site that generate additional wastewater flow. This design flow rate is therefore a reasonable estimate for this site. We therefore anticipate that the flow rate discharged to the public

sewer will be approximately 500l/d, which is less than that expected from a normal residential dwelling with 4 occupants.

Truck Wash Issues

Council has requested additional information on the details of the type/frequency for the truck wash facility.

A similar truck wash facility installed at the Applicant's Wellington car storage yard is shown by the photograph below:

This facility has a retaining wall on the far side due to site constraints, but the facility on the Johns Road site would be free standing.

At the Wellington site, the truck wash discharges to the public sewer during dry weather. The drain from the truck wash has rain-activated valves which shut the discharge to the sewer and open the discharge to the stormwater system when it rains. This prevents surface water ingress into the sewer during wet weather. However, this was installed at the Wellington site because the stormwater discharge is to a nearby stream and it was desirable to avoid discharge to the stream during dry weather.

On the Johns Road site, the stormwater discharge from the overall site is to ground, via the stormwater pre-treatment devices and storm retention devices. The truck wash discharge can also be to ground

with appropriate pre-settlement prior to discharge. This would avoid any un-necessary discharge to the public sewer.

The wash water from the truck wash will drain to a settlement tank to separate solids and grit prior to discharge to ground. The settlement tank will be a baffled tank with a 4,000l capacity, which is greater than 2 days detention during busy weekday periods to achieve good solids settlement. The outlet from the settlement tank will be to a suitable sized soakage trench. This solution avoids a discharge from the truck wash to the public sewer.

The truck wash at the Johns Road site is expected to be used approximately 20 times per week. The truck wash uses approximately 0.2m^3 of water for each wash, resulting in a weekly use of 4m^3. This water will be supplied from the on-site water storage tank.

Yours faithfully

Ray O'Callaghan
CPEng
O'Callaghan Design Ltd

New Zealand Government

Christchurch City Council

Waimakariri Road

SCIRT
Rebuilding Infrastructure

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Printed: 21/07/2017 14:41

(II) N.E.S. – SITE MANGEMENT PLAN

27 July 2017

McCracken & Associates Ltd
PO Box 2551
Christchurch
Canterbury 8140

Attention: Kim McCracken

Dear Mr McCracken

RE: Detailed Environmental Site Investigation of 711 Johns Road, Christchurch
(Our Reference: 13396.000.000_05)

1 Introduction

ENGEO Ltd was requested by McCracken & Associates to prepare a letter in response to the additional Christchurch City Council queries for 711 Johns Road, Christchurch ("the site"), outlined in 'Application for Resource Consent', dated March 2017. The location of the site is indicated on Figure 1 attached.

This letter should be read in conjunction with our Preliminary Environmental Site Investigation (reference: 13086.000.000_03, dated 10 February 2017) Detailed Site Environmental Site Investigation (reference: 13086.000.000_04, dated 29 June 2017).

2 Additional CCC Comments and Responses

The resource consent applicant for the site received additional comments regarding the Detailed Environmental Site Investigation at 711 Johns Road (ENGEO, 2017a) from Christchurch City Council (CCC) member Andrew Long on 13 July 2017. The CCC questions generally pertain to sampling methodology during investigative activities and construction methodology during the planned earthworks. Responses are detailed in the following sections.

2.1 Response

1. Please discuss reasons that no samples need to be taken in the areas with stockpiles or areas that have received fill material, which were all undocumented / uncontrolled.

As the site has a history of sporadic, uncontrolled filling, there was no documentation of potential locations of asbestos-containing material (ACM) prior to the intrusive investigation (ENGEO, 2017a). Locations of test pits excavated during the intrusive investigation were chosen to provide general information on the fill material so it can be managed effectively during the site works and prior to it being capped under hardstanding. The locations were chosen to provide a worst case scenario and were based on the documentation available from the Christchurch City Council and provided by the client on past site activities or were selected by the field technician based on site conditions observed at the time of the investigation.

Where potential asbestos-containing material (PACM) was observed in test pits, it was collected and analysed. Likewise, asbestos in soil was analysed only at locations where it was suspected to be present based on visual observations (i.e., only where PACM was observed).

Two test pits (TP13 and TP14) were excavated at the location of a stockpile. No PACM was observed in these test pits, therefore the soils were not analysed for asbestos.

2. What is the proposed maximum depth of excavation across the site?

As the proposed earthworks involve general levelling of the site, no excavations will occur below the present minimum site elevation. Current site elevations range from approximately 31 to 35 metres above sea level (m asl) (see Attachment 1 – Existing Site Contours).
The proposed site elevations range from approximately 33 to 35 m asl (see Attachment 2 – Cut and Fill Plan).

3. Please provide a remedial action plan for asbestos removal, or confirm how it will be contained and the methods for doing so.

A Remedial Action Plan, which includes construction protocols concerning disturbance of asbestos-impacted soils, is included as Attachment 3.

4. Please outline the source of all fill and describe contamination and treatment protocols.

No material is planned to be brought on to the site with the exception of virgin quarry material to help construct the permanent hard standing. A cut of 36,000 m^3 is planned for the site (see Attachment 2 – Cut and Fill Plan); the material will be re-used on-site as fill.

3 References

1. ENGEO 2017a: Detailed Environmental Site Investigation of 711 Johns Road, Christchurch. 29 June.

2. ENGEO 2017b: Preliminary Environmental Site Investigation of 711 Johns Road, Christchurch. 10 February.

4 Limitations

i. We have prepared this report in accordance with the brief as provided. This report has been prepared for the use of our client, McCracken & Associates, Ltd, their professional advisers and the relevant Territorial Authorities in relation to the specified project brief described in this report. No liability is accepted for the use of any part of the report for any other purpose or by any other person or entity.

ii. The recommendations in this report are based on the ground conditions indicated from published sources, site assessments and subsurface investigations described in this report based on accepted normal methods of site investigations. Only a limited amount of information has been collected to meet the specific financial and technical requirements of the Client's brief and this report does not purport to completely describe all the site characteristics and properties. The nature and continuity of the ground between test locations has been inferred using experience and judgement and it should be appreciated that actual conditions could vary from the assumed model.

iii. Subsurface conditions relevant to construction works should be assessed by contractors who can make their own interpretation of the factual data provided. They should perform any additional tests as necessary for their own purposes.

iv. This Limitation should be read in conjunction with the IPENZ / ACENZ Standard Terms of Engagement.

v. This report is not to be reproduced either wholly or in part without our prior written permission.

We trust that this information meets your current requirements. Please do not hesitate to contact the undersigned on (03) 328 9012 if you require any further information.

Report prepared by

Jenna Lohmann

Environmental Engineer

Report reviewed by

Dave Robotham, CEnvP CL Specialist

Principal Environmental Engineer

FIGURES

ENGEO
Expect Excellence

Date	July 2017	**Client**	**McCracken & Associates Ltd**		
Drawn by	JL	**Project**	**711 Johns Road, Belfast, Christchurch**		
Approved by	DR	**Description**	**Site Layout Plan**		
Scale	NTS	**Figure Number**	1	**Project Number**	13396

ATTACHMENTS

NOTES

1. CONTOUR INTERVAL = 0.20m
2. LEVELS ARE IN TERMS OF THE CHRISTCHURCH DRAINAGE DATUM (CDD)
3. TOPOGRAPHIC SURVEY BY CARDNO - APRIL 2016

Issue	Date	Description	Des.	Veri.	App.
1	13/05/2016	FOR CLIENT REVIEW	MOD	ROC	ROC

		Date
Drawn	MOD	13/05/2016
Checked	DVB	13/05/2016
Designed	DVB	13/05/2016
Verified	ROC	13/05/2016
Approved	ROC	13/05/2016

O'Callaghan Design Limited
3 Lochiel Road, Khandallah, Wellington

Client: THE CAR DISTRIBUTION GROUP

Project: HAREWOOD CAR STORAGE YARD
HAREWOOD
CHRISTCHURCH

Title: EXISTING SITE CONTOURS

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DATUM: MTPL2000 | Council Ref: | Scale: 1:1000 | Original Size: A1

Drawing Number: W16008-C305 | Issue: 1

DO NOT SCALE DRAWING 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

DATE: 29 August 2016 12:52 PM
Reference Files: X-W16008-BDY; X-W16008-EWORKS-FSL; X-W16008-CONTOUR_EX; X-W16008-PONDS-02; NZ0110217-X-LANDSCAPE-02
Drawing File: P:\W16008\cad\W16008-C300-EWORKS.dwg

NOTES

1. CONTOUR INTERVAL = 0.25m
2. LEVELS ARE IN TERMS OF THE CHRISTCHURCH DRAINAGE DATUM (CDD)

1	4/02/2016	FOR CLIENT REVIEW	ROC	DVB	DVB

Drawn	CBR	28/04/2016
	DVB	28/04/2016
Designed	ROC	28/04/2016
	DVB	28/04/2016
	DVB	28/04/2016

THE CAR DISTRIBUTION GROUP

HAREWOOD CAR STORAGE YARD
HAREWOOD
CHRISTCHURCH

CUT/FILL PLAN

PRELIMINARY

DATUM MTPL2000 | Council Ref: | 1:1000 | A1

W16008-C303 | 1

ENGEO

Expect Excellence

Remedial Action Plan

711 Johns Road

Harewood

Christchurch

Submitted to:

McCracken & Associates Ltd
PO Box 2551
Christchurch City
Christchurch 8140

ENGEO Limited
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27.07.2017
13396.000.000_06

ACENZ

Contents

Tables

Appendices (at the rear of this report)

ENGEO Document Control:

Report Title	Remedial Action Plan - 711 Johns Road, Harewood			
Project No.	13396.000.000	Doc ID	06	
Client	McCracken & Associates Ltd	Client Contact	Kim McCracken	
Distribution (PDF)	Digital Copy – McCracken & Associates Ltd Digital Copy – ENGEO Ltd (file copy)			
Date	Revision Details/Status	WP	Author	Reviewer
27/07/2017	Final	LL	JL	DR

1 Introduction

ENGEO Ltd was engaged by McCracken & Associates Limited to prepare a Remedial Action Plan for the management of asbestos-impacted soils at 711 Johns Road, Harewood in Christchurch (herein referred to as 'the site'). A Detailed Environmental Site Investigation completed by ENGEO for the site in June 2017 included soil sampling from test pits that identified the presence of asbestos fibres and asbestos containing material (ACM) at two locations at the site.

This Remedial Action Plan (RAP) incorporates observations and testing completed in our previous investigations, and includes recommendations for management of asbestos identified on-site, and protocols to protect the health and safety of workers, the public and the environment. This RAP was reported in general accordance with the Ministry for the Environment (MfE) Contaminated Land Management Guidelines (CLMG) No. 1: Reporting on Contaminated Sites in New Zealand (MfE, 2011a) and should be read in conjunction with previous reports issued for the site.

Figure 1 indicates the location of the property and investigation area. The proposed development consists of an approximately 7.8 hectare carpark with a small administrative building, part of a larger 13.2-hectare site; a plan is provided in Appendix 2. Associated earthworks consist of levelling the site using existing on-site soils. No soils are planned to be brought onto the site; however, 36,000 m^3 of soil are planned to be cut and used as fill elsewhere on-site. Based on this volume, the site is required to obtain consent under the Resource Management (*National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health*) Regulations 2011 (hereafter referred to as the NES) for earthworks.

1.1 Objectives

This Remedial Action Plan (RAP) was completed to provide procedures for the handling, management and disposal of contaminated soils when undertaking ground remediation at the site. It also presents supporting information for the resource consent application. The scope of the document provides procedures for:

- Excavation and removal of soils
- Management of work to avoid uncontrolled asbestos fibre releases from the site
- Management of stormwater discharges (including erosion and sediment control)
- Health and safety requirements for personnel
- Disposal of asbestos-impacted soils
- Validation / monitoring of the works

2 Site Information

2.1 Site Location

Site information is summarised in Table 1 below:

Table 1: Site Information

Item	Description
Location	711 Johns Road, Harewood, Christchurch
Legal Description	Section 1 SO 455212
Site Area	7.8 hectares to be disturbed, of a larger 13.2-hectare site
Current Land Use	Vacant
Proposed Land Use	Commercial

2.2 Previous Assessments

ENGEO issued a Detailed Environmental Site Investigation for the site in June 2017 (ENGEO, 2017). The report identified ACM and asbestos fibres in soil above all site end use guideline criteria as outlined by the *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Site in Western Australia* (herein referred to as WA DOH Guidelines) (DOH, 2009).

The investigation included advancement of 20 test pits across the site; potential asbestos containing material (PACM) was observed in two of these test pits, TP08 and TP12 (Figure 2). The PACM identified was submitted for analysis to determine if asbestos was present. Soils surrounding the PACM were submitted for semi-quantitative analysis for percentage of asbestos fibres / fibrous asbestos in soil.

Both building materials sampled were confirmed to contain asbestos. The associated soils sampled were found to contain asbestos fibres, one with an asbestos percentage above and one below WADOH Guideline values.

Additional analysis was run for heavy metals, polycyclic aromatic hydrocarbons and polycyclic aromatic hydrocarbons. All results indicated that chemical concentrations were present below the commercial / industrial soil contaminant standards, and do not need to be remediated.

2.3 Contamination Distribution and Volume

The investigation identified two different types of contamination, as shown in Table 2.

Table 2: Contamination Type and Remediation Implications

Contaminant of Concern	Remediation
Asbestos Fibres	Asbestos Fibres (AF) present a high risk to human health in an easily disturbed and potentially respirable form. Disposal costs for AF are higher than most other forms of contamination.
Asbestos Containing Material	ACM undisturbed and in good condition is unlikely to present a high risk to human health. Unlike AF it can be manually removed from the soil. Disposal costs for ACM are the same as AF and are higher than most other forms of contamination.

Asbestos fibres were detected in site soils between 0.2-1.7 m bgl at two locations of the twenty investigated during the May 2017 intrusive investigation (ENGEO, 2017). ACM was also found in both of those test pits. Although ACM was not observed in the remaining 18 test pits, fill material was observed to be heterogeneously distributed on-site, and further attempts at delineation of asbestos-impacted soils would likely not provide conclusive evidence of its location on the site. It is ENGEO's understanding that all of the site soils will remain on-site and will be encapsulated. Based on the 36,000 m^3 of soil planned to be excavated and used as fill material on the site, the proposed site works would not be a permitted activity under the NES and resource consent would be required in accordance with these Regulations.

3 Regulatory Framework and Assessment Criteria

The regulatory frameworks and rules relating to the management and control of contaminated sites in the Canterbury region are specified in two documents; the National Environmental Standard (MfE, 2012) and Environment Canterbury (ECan) Regional Plan (ECAN, 2011).

The remediation areas are proposed to be used for commercial land use. Therefore, the guideline values for commercial / industrial site use from the Western Australia Department of Health *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (herein referred to as the 'WA DOH Guidelines') (DOH, 2009) have been selected as evaluation criteria.

3.1 Evaluation Criteria

Currently there are no national guidelines provided by the MfE on the acceptable concentration of asbestos in soil. There are well established exposure levels for airborne occupation exposure limits (NZ Workplace Exposure Standards (WSNZ, Workpace Exposure Standards and Biological Exposure Indices, 2016b)) regarding asbestos, however these are not directly comparable as Tier 1 soil acceptance criteria. However, the MfE does provide a framework (*Contaminated Land Management Guideline No.2*) (MfE, 2011b) for adopting international guideline values where required.

Our RAP therefore has been prepared in accordance with the Western Australian Department of Health *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (herein referred to as the 'WA DOH Guidelines'). The WA DOH guidelines are recognised by WorkSafe as suitable for the assessment of asbestos in soil. ENGEO understands that the proposed development will consist of a warehouse with associated office building and

parking, and minimal landscaping; therefore, the guideline value for a commercial / industrial land use scenario has been adopted for the site.

The WA DOH Guidelines adopt a risk assessment approach to asbestos in soil that considers the type and quantity of asbestos present. The WA DOH soil guideline values are provided Table 3.

Table 3: Adopted Asbestos Investigation Criteria

Asbestos Type	Soil Asbestos Investigation Criteria	Site End Use
Asbestos fibres / fibrous asbestos	0.001 % w/w asbestos for FA and AF	All site uses
Asbestos containing material	No ACM in surface soils (0 – 0.1 m)	All site uses
Asbestos containing material	0.05 % w/w asbestos for ACM	Commercial / Industrial

Notes:

ACM: Asbestos-containing material i.e. asbestos bound in a matrix; material that cannot pass through a 7 mm x 7 mm sieve.

FA: Fibrous asbestos. Encompasses friable asbestos material, such as severely weathered ACM, and asbestos in the form of loose fibrous material such as insulation products. Friable asbestos is defined here as asbestos material that is in a degraded condition, such that it can be broken or crumbled by hand pressure.

AF: Asbestos fines. It includes free fibres of asbestos, small fibre bundles and also ACM fragments that pass through a 7 mm x 7 mm sieve.

Both FA and AF have the potential to generate or be associated with free asbestos fibres, which can pose a considerable inhalation risk if made airborne.

It is not intended to remove the contamination from the site but to provide earthwork controls during the site works to ensure workplace standards are not breached during the works.

3.2 NES

The Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NES) came into effect on 1 January 2012.

The NES introduced 12 soil contaminant standards (SCSs) for priority contaminants for the protection of human health at a variety of land use scenarios. The NES requires that the Contaminated Land Management Guideline No.2 – Hierarchy and Application in New Zealand of Environmental Guideline Values be used where an NES SCS is not available. The NES do not consider environmental receptors, accordingly the application of guidelines relevant to environmental receptors shall be implemented according to the MfE Contaminated Land Management Guideline No.2 and any relevant rules in Regional Plans.

According to the NES regulations (8.3), disturbing the soil of the piece of land is a permitted activity while the following requirements are met:

(a) controls to minimise the exposure of humans to mobilised contaminants must—

(i) be in place when the activity begins:

(ii) be effective while the activity is done:

(iii) be effective until the soil is reinstated to an erosion-resistant state:

(b) the soil must be reinstated to an erosion-resistant state within one month after the serving of the purpose for which the activity was done:

(c) the volume of the disturbance of the soil of the piece of land must be no more than 25 m^3 per 500 m^2:

(d) soil must not be taken away in the course of the activity, except that, —

(i) for the purpose of laboratory analysis, any amount of soil may be taken away as samples:

(ii) for all other purposes combined, a maximum of 5 m^3 per 500 m^2 of soil may be taken away per year:

(e) soil taken away in the course of the activity must be disposed of at a facility authorised to receive soil of that kind:

(f) the duration of the activity must be no longer than two months:

(g) the integrity of a structure designed to contain contaminated soil or other contaminated materials must not be compromised.

In this instance it is considered that the intended works do not constitute a Permitted Activity and consent is required for the earthworks.

3.3 Canterbury Land and Water Regional Plan

Although the Canterbury Land and Water Regional Plan (LWRP) does not have specific rules relating to the excavation of contaminated land, the presence of contaminated land may impose consent requirements for stormwater discharges from the site to the underlying groundwater, as per LWRP Section 5.9.6 Part 2a. Section 15 of the Resource Management Act prohibits discharge of contaminants to surface water or groundwater unless specifically allowed for in a regional plan rule.

4 Remedial Work

ENGEO has designed the following methodology to ensure the safety of workers and the surrounding population, and to prevent adverse impacts on the environment, during earthworks at the site. As the subsurface investigation has identified fill material, some of which contains ACM and asbestos fibres in soil, to be heterogeneously distributed across the site, controls detailed in the following sections will need to be implemented during disturbance of non-native soils on-site.

The Health and Safety at Work (Asbestos) Regulations 2016 identifies that removal of asbestos material needs to be undertaken by an asbestos removal company with a nominated licensed Class A Supervisor or holding a Certificate of Competence (CoC) for restricted work with asbestos for the remediation of asbestos contaminated soils.

WorkSafe are to be notified five days prior to any earthworks being undertaken. The Contractor shall ensure that the removal work is undertaken in accordance with the Remedial Action Plan and with Health and Safety Regulations.

An asbestos assessor (ENGEO), independent from the earthmoving company, shall be engaged to issue a site validation report to assess whether the work was carried out in accordance with this RAP, and that the material is adequately managed.

Prior to remediation activities commencing, all employees and contractors involved in the remediation shall be inducted by the relevant party (earthworks contractor) on the potential hazards and the procedures that should be implemented to avoid or mitigate potential adverse effects to human health and the environment.

4.1 Description of Remedial Works

The extent of the proposed earthworks is presented in Appendix 1. Contamination in the subsurface has been initially identified through soil investigations by ENGEO; however, because of the heterogeneous nature of the fill material and asbestos identified during the intrusive investigation, asbestos is presumed to be potentially present throughout the fill material and non-native soils, and should be managed as such.

The area of proposed earthworks is presented in Figure 1. For disturbance of areas of non-native soils (i.e., fill material), the works and the responsibility shall be staged as follows:

- The contractor shall install security fences around the remediation area to prevent unauthorised access. Warning notices stating “ASBESTOS HAZARD AREA – KEEP OUT” will be present at all entrances to areas containing asbestos in soil.
- In general accordance with section 27.1 of the Approved Code of Practice for the management and removal of asbestos (WSNZ, 2016a), an enclosure is required to be installed around the contaminated area to isolate it. Therefore, the contractor shall install a dust netting (200 micron thick plastic) around the contaminated area.
- A suitable decontamination area shall be set up. Section 7.19 of the Approved Code of Practice for the management and removal of asbestos (WSNZ, 2016a) recommends that entry and exit to the contaminated area should be via a decontamination unit that contains separate “dirty” and “clean” decontamination sections.
- Once established the dust netting and decontamination unit shall be inspected by the CoC holder to ensure it meets the minimum requirements of WorkSafe NZ.
- Prior to undertaking earthworks, a site start up meeting shall be held with all parties involved in the remediation required to be present; the meeting will address the work methodology and the health and safety requirements.
- WorkSafe NZ shall be notified five days before earthworks commence; neighbouring properties shall be contacted through mail at least five days prior to earthworks commencing.
- All earthworks shall be undertaken in a manner that will reduce the potential for dust generation. This includes using an excavator, reducing drop heights from the excavator, and locating the excavator in areas which minimise tracking over the site (refer to Section 7.3).
- Earthworks shall be restricted to the hours between 7:30 am and 6:00 pm Monday to Friday and between 8:00 am and 5:00 pm on Saturdays.
- Non-native soils within area of the proposed stormwater swales (see Appendix 2) shall be excavated to 0.5 m below the proposed finished grades;
- Following re-contouring of the site soils, the site shall be surveyed.
- Fill material to remain on-site within the proposed parking area shall be covered with bidum cloth and asbestos warning tape, topped with 100 mm of compacted cleanfill and sealed with concrete.

- Soils within the proposed stormwater swale areas shall be capped with 0.5 m of cleanfill.
- Once the site is sealed and stormwater swales have been installed, the site shall be re-surveyed.
- All machinery shall be decontaminated before leaving the work area (refer to Section 12.2).
- All dust netting and decontamination unit material shall be removed from site and placed in a skip, double lined with 200-micron plastic sheet, and disposed of at an appropriate landfill facility.
- A site validation report (SVR) shall be completed in accordance with CLMG 1.

In order to manage potential environment effects of the remediation work, earthworks will be undertaken in accordance with the protocols outlined in this RAP. The primary potential risk associated with the chosen method of remediation is the mobilisation of asbestos fibres to air during earthwork activities, and subsequent inhalation by human receptors. Table 4 summaries the site remediation area and objectives.

Table 4: Summary of Remediation Area and Objectives

Contaminant	**Location**	Identified at test pit locations TP08 and TP12 (see Figure 2), but is potentially present throughout the subsurface where fill material is present.
Asbestos	**Friable / Non Friable**	Friable asbestos present
	Type	Chrysotile (white asbestos) Amosite (brown asbestos) Crocidolite (blue asbestos)
	Quantity	Unknown: Fill material and asbestos detected are heterogeneously located throughout site. Any observed fill material will be treated as impacted with asbestos.
Remedial Objectives		Following completion of re-contouring of site 100 mm of compacted cleanfill will be placed over the in-situ soils in the area of the proposed car park. A visual barrier (bidum cloth and asbestos warning tape) should be installed between the remaining in-situ asbestos-impacted soils and the overlying material. Finally, the site will be sealed with concrete or asphalt. Fill material within areas of the proposed stormwater swales shall be excavated to 0.5 metres below proposed finished grades. The swales shall then be backfilled with 0.5 m of cleanfill. The excavated material will be used as fill in areas of the proposed car park.

For disturbance of areas of native soils, the above-listed controls pertaining to asbestos are not considered necessary. However, general construction controls, such as dust minimisation, should be implemented for all earthworks.

5 Responsibilities

This RAP has been finalised in consultation with the client, the role and responsibilities of all parties are highlighted in Table 5.

Table 5: Assigned Responsibilities for Removal

	Details	Responsibility
Principal / Project Manager	The Car Distribution Group c/- Cardno	To distribute this Remedial Action Plan.
Certificate of Competence (CoC) holder for asbestos removal or Removal Supervisor	TBC	To ensure that the site works are undertaken in accordance with this document. This also includes ensuring that all site staff and subcontractors are aware of and comply with the procedures and health and safety requirements contained within this document.
Asbestos Assessor	ENGEO Ltd Tom Davies AA16090120 Environmental Consultant	To undertake compliance monitoring during the process, complete validation monitoring and sampling, and issue a clearance certificate (validation report).
Earthworks Contractor	TBC	To undertake the remedial works.

A copy of the RAP shall be kept on-site at all times. It is the project manager's responsibility to distribute the plan to their contractor, the person holding a Certificate of Competence for restricted work involving asbestos under the Health and Safety at Work (Asbestos) Regulations 2016 (approved asbestos remover), WorkSafe NZ, the Christchurch City Council and ECan. It is also the contractor's responsibility to ensure that all controls outlined in this document are put in place during the site works.

It is the contractor's responsibility for distribution of the RAP to any other sub-contractors or parties carrying out the soil disturbance works. Anticipated project commencement dates and a program of works is summarised in **Error! Reference source not found.**6 below.

Table 6: Programme of Commencement and Completion Dates

Details	Date
Start Up Meeting	TBC – dependent upon consent
Site Works	TBC
Validation Report	5 days after all remedial works complete, addresses whether works were carried out in accordance with this RAP.

6 Health and Safety

This RAP identifies potential hazards associated with the presence of ACM and asbestos fibre-impacted soils and recommends procedures to mitigate these risks. Risks associated with elevated concentrations of asbestos fibres relate to inhalation of fibres during earthwork activities.

A Health and Safety Plan (HaSP) will be prepared for the proposed activities.

6.1 Site Specific Safety Plan (SSSP)

Before starting remediation works the Contractor (and sub-contractors) will develop and issue a Site Specific Safety Plan (SSSP) to complement this Remedial Action Plan and to address other health and safety requirements that may be applicable to their site works. A copy of the SSSP will be emailed to all parties before undertaking the work.

All site personnel will be required to review this document. At the start of each day a brief "tool box" meeting shall be held to review the SSSP and the proposed work for the day, discuss potential perceived health and safety risks as well as environmental management procedures and to communicate these issues to the remediation team.

Appropriate emergency procedures must be established before the commencement of earthworks on site. The appointed Contractor is responsible for detailing these procedures, which will include the location of first aid kits, emergency telephones and medical emergency numbers.

6.2 Training

Full training will be provided by the selected contractor for all components of the SSSP, including this Remedial Action Plan (RAP).

6.3 Personal Protective Equipment

Workers may be exposed to asbestos via the inhalation of fibres. Use of appropriate PPE and behavioural practices will minimise the effects of any exposure to contamination. The following procedures shall be followed by workers who are likely to enter any remediation area:

- Each worker is required to wear a Type 5 disposable coverall in either in orange or white with a disposable high-visibility vest
- Chemical resistant disposable gloves shall be worn at all times and be regularly changed
- Rubber Safety gumboots must be worn, or work boots covered with disposable boot covers
- Hands are to be washed prior to eating, drinking or smoking
- Eating, drinking, smoking and the use of mobile phones within the remediation area is prohibited
- Respirators must be worn with P3 filters. These respirators are to be face-fit before work commences and are to be stored in sealed containers when not in use.

6.4 Air Monitoring

Air monitoring must be undertaken during the remediation works to assess the presence of asbestos fibres. Four air monitoring pumps are to be installed along the perimeter boundary (one up wind, one downwind and two crosswind of the remediation area) and be actively sampling during the earthworks. One additional air pump shall be installed in the cab of the excavator and be actively sampling during the earthworks. In accordance with the WADOH guidelines small portable air monitoring pumps will be used so that they can be easily moved if wind direction changes.

Air monitoring will be undertaken by a company independent from the removal contractor, and the following parameters will be followed:

- Sample pumps will collect representative samples – four hours at 2 litres / min for sample volume of 480 litres. If sampling over an eight hour period, the pumps will be set for 1 litre / min.
- The air monitoring cassettes shall be analysed by an IANZ accredited laboratory and shall use an analytical method developed by the National Occupational Health and Safety Commission Australia - NOHSC: 3003(2005) Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition.
- For compliance all results shall be below 0.01 fibres / ml, if a result exceeds this then additional controls will be required (dust suppression misting systems stall around perimeter or the use of a surface retardant).

7 Site Works Methodology

ACM and asbestos fibres in soil will be managed by capping of the entire site with hardstand.

7.1 Capping

In-situ management primarily involves the isolation of the contaminated area with barriers and covers so that it cannot be readily disturbed and therefore will not generate airborne fibres if asbestos is present. Typically, this will involve delineating the asbestos containing material on site and placing a layer of clean fill or hardstand between the area of impacted soils and future site users.

In accordance with the WA DOH guidelines the layer of clean fill should be at least 0.5 m for commercial sites. However, in areas of the site proposed to be sealed with hardstand, shallower depths of cleanfill are believed to be appropriate. Based on previous intrusive soil sampling at the site, soils in certain areas of the site have been found to be impacted with asbestos to at least 1.7 m bgl. Additionally, because of the heterogeneous distribution of fill material across the site, asbestos is potentially present throughout the fill material present in the subsurface. Plans for redevelopment of the site indicate that most of the site will be capped; the uncapped areas will be developed as stormwater swales.

Following completion of re-contouring of site a visual barrier (bidum cloth and asbestos warning tape) should be installed and then 100 mm of compacted cleanfill placed over the in-situ soils in the area of the proposed car park. Finally, the site will be sealed with concrete or asphalt.

Fill material within areas of the proposed stormwater swales shall be excavated to 0.5 metres below proposed finished grades. The swales shall then be backfilled with 0.5 m of cleanfill. The excavated material will be used as fill in areas of the proposed car park.

Once grading of on-site soils is complete, the site shall be surveyed. Following site sealing with hardstand and backfilling of the stormwater swales, the site shall be re-surveyed to validate that the site has been capped in accordance with this RAP.

7.2 Off-haul and Disposal

Although not expected to be required, if soils are not encapsulated, all soils containing AF and ACM will be disposed of to an off-site facility capable of accepting asbestos, such as Kate Valley Landfill.

7.3 Control Measures

The inhalation of dust during remediation work is considered to be a hazard to site workers and members of the public using adjacent areas.

The following activities may generate dust during the works:

- Driving within the remediation area
- Excavation of soils
- Placement of soils into backfill area

It is recommended that the following control methods are implemented to ensure that dust levels generated by earthwork activities are kept to a minimum:

- Fencing to be placed around the works area and fitted with dust nets. Dust nets (200 micron thick) are to be installed inside the remediation area and cut to allow air flow into the site but not offsite. Fencing and nets shall be checked daily to make sure they are intact, with any damaged nets repaired.
- Limit vehicle access to site.
- Avoid working or standing in areas down-wind of earthwork activities.
- Limit drop heights on excavator buckets when depositing soil.
- Cover or seal all stockpiled material which may generate dust in windy dry conditions.
- Keep windows / doors on excavators and trucks closed when in the remediation area.
- If soils are dry, apply water by sprinkler before starting works. The site shall be regularly damped down to reduce dust generation. This should prevent visible dust emissions beyond the remediation area.

When utilising water to control dust, the appointed Contractor shall ensure that:

- Water is sprayed on using standard pressure (**not high pressure**).
- The volume of water used for dust suppression does not cause surface ponding or run-off.
- The application does not cause surface run-off that would discharge into natural water bodies or stormwater drains.
- The application of water does not induce soil erosion.

Weather reports will be checked at the beginning and before the end of each day and if high wind speeds are expected the above mitigation measures will be implemented. When wind speed is sufficient to generate dust, operations shall cease.

The critical wind speed for entrainment of dust from the surface is 18 km/hr and above 36 km/hr entrainment increases rapidly (Davis, 2000). While it is noted that the generation of dust will be dependent on particle size and moisture, these wind speeds will be adopted as a trigger to visually monitor for dust generation. The site foreman will be responsible for ensuring that the dust mitigation measures are implemented when necessary. If conditions dictate that dust at the remediation area boundary cannot be controlled via the above methods, remediation works shall cease until conditions are favourable.

Compliance dust monitors shall be installed, one in the excavator cabin, and four on the perimeter fences (one upwind, one downwind and two cross wind of the remediation area). Samples shall be collected daily and submitted for analysis to provide confirmation that control measures are sufficient.

8 Decontamination

8.1 Personal Decontamination

A personal decontamination unit shall be set up at the exit of the remediation area.
The decontamination unit is typically an enclosed area which contains three rooms separated by spring loaded doors or overlapped plastic sheeting (Appendix 2). The decontamination unit can be built from heavy duty (minimum 200-micron thick) plastic sheeting, all floors, walls and sides shall be covered with plastic sheeting. The sheeting shall be tightly sealed at all joints and connections. Entrances to each area of the unit shall be made by overlapping plastic sheeting.

The unit shall contain three separately partitioned areas, as detailed below:

- Asbestos Removal Area: WorkSafe NZ recommend a vacuum Cleaner fitted with a HEPA (High Efficiency Particulate Air) filter shall be used to remove all dust particles from clothing, once dust is removed personnel shall proceed to the ‘dirty change area’. However, as it is likely that wet soil will be present on the clothing it may be more applicable to use a wash down facility to remove dust particles, once all dust is washed off personnel shall proceed to the ‘dirty change area’.
- Dirty Change Area: A waste bin doubled lined with 200-micron plastic shall be placed in the area, used tvyek suits and shoe coverings shall be removed and placed in the bin. Wipes shall be used to clean down the PS dust mask and the used wipes placed in the bin. Nitrile gloves shall then be removed and placed into the bin, personnel shall then proceed to the ‘clean change area’.
- Clean Change Area: The face mask can now be removed and placed within a storage box. Personnel clothes shall be stored in this area, once dressed personnel can exit the workplace.

Upon completion of the remediation works, the decontamination unit shall be appropriately disassembled, all plastic shall be folded inwards to prevent the mobilisation of asbestos particles. Plastic sheeting shall then be placed into a lined skip or container and disposed of at a suitable facility.

8.2 Equipment and Vehicle Decontamination

All equipment and vehicles shall be decontaminated before demobilising from site. The excavator shall be cleaned last and washing shall be directed into the encapsulation area. The excavator bucket will be then placed above the encapsulation area and washed, so that all water and run off is directed into the area that will be capped.

Personnel involved in cleaning of equipment shall wear full PPE, as described in Section 6.3. Areas of visible dirt shall be removed and hand cleaned using a scrubbing brush with clean water, particular attention shall be paid to wheels, wheel arches and the bucket of the excavator. The equipment shall be rinsed clean using hose and water (not pressure washed). Site vehicles shall have plastic washable or disposable covers placed over seats as material in the seat can hold asbestos fibres and are not easy to clean.

After the vehicles have been cleaned validation samples will be required. Tape samples (from the bucket and cab) will be collected and analysed for the presence of asbestos fibres; if results come back positive additional cleaning will be required. The air filters shall be removed from machinery and replaced with clean filters before demobilising from site.

8.3 Site Protocols and Procedures

To prevent the transfer of any contamination off site or to other areas within site, and to minimise exposure to site remediation workers, the following risk mitigation measures will be followed:

- Staff shall enter and exit the works area through a decontamination zone; all PPE will be put on and taken off in these areas as outlined in Section 8.1.
- Personnel operating excavators in the remediation area shall stay within their machinery while undertaking the works,
- All personnel working in excavators shall wear full PPE clothing (including a P3 dust mask), the front window of the excavator shall not be opened during the works
- All disposable coveralls shall be removed when leaving the work area, and placed into double lined bin bags, which shall be disposed of to landfill.
- All shoes shall be lace free and cleaned with sugar soap at the end of each day and left within the decontamination area, alternatively disposable shoe covers can be worn. Prior to demobilising from site, shoes shall be thoroughly cleaned using sugar soap and rinsed using clean water.
- Mobile heavy equipment shall be parked in a designated area within the work zone, at the end of each working day. Any traffic areas where contaminated soil is present should be validated following completion of the earthworks to ensure that any contaminated soil spilt during loading is removed.
- Prior to demobilising from site, all equipment shall be washed down as outlined in Section 8.2.
- To minimise exposure to airborne dust, the excavator and truck driver shall keep cab windows closed and not use air conditioning (unless internal recirculating) when in or near the remediation area.
- Eating, drinking, smoking, use of mobile phones and applying cosmetics / sunscreen shall only occur outside of the remediation area and after face and hands have been thoroughly cleaned.

- Water used for cleaning shall be disposed into the plastic lined drum or within the encapsulation area.

9 Waste Disposal

Disposable PPE shall be removed and placed into designated bags for disposal as asbestos waste as highlighted in Section 8.1.

It is anticipated that minimal material will require off-site disposal (just PPE) therefore two drums double lined with 200-micron thick polyethylene sheet will be available onsite for disposal purposes, at all times during the remediation work.

In the event that off-site disposal of soil is required the following procedures should be followed when transporting material off-site:

- Special waste bins / skips, approved for the transport of ACM and soils to Kate Valley will be placed on site in the event that asbestos-impacted soils need to be removed from the site. The bin will be double lined with 200 micron sealed plastic. Careful attention will be paid to avoid overfill so the total weight is kept to weight limit of the skip. Once the bin is full, the material will be sealed in the plastic liner and the bin cover pulled over.
- The bins shall be loaded within the site where runoff and possible spills during loading will be controlled and contained.
- Trucks shall have their loads securely covered during off-site transport of material.
- All weighbridge / disposal dockets shall be retained by the Contractor and a copy given to the Contaminated Land Specialist (ENGEO) so that evidence of the soil disposal can be provided to ECan and the Christchurch City Council.

10 Validation and Final Site Reporting

As the site is being capped, no soils will remain exposed to be validated. Instead, the remediation method (capping) will be validated by surveying the site elevations prior to and post capping to ensure that capping depths were implemented in accordance with this RAP.

Following the completion of the site's works, a site validation report (SVR) in accordance with MfE and WA DOH guidelines will be produced. This RAP, which details the location of the impacted soils and protocols for disturbing impacted soils, in conjunction with the Site Validation Report, will serve as a site management plan.

10.1 Potential Outcomes

Once the soil validation assessment has been completed by ENGEO, one of two scenarios will follow:

- Scenario 1 – The survey validation results show that the site has been appropriately capped. In this instance the remediation shall be considered complete and the SVR issued.
- Scenario 2 – The survey validation results show that the site has been insufficiently capped. In this instance additional material may need to be added to the cap and the site re-surveyed.

10.2 Imported Clean Fill

If any soil is imported to the site to bring soil back up to site level the soil shall meet the MfE definition of cleanfill (MfE, 2002) which states:

"Material that when buried will have no adverse effect on people or the environment. Cleanfill material includes virgin natural materials such as clay, soil, and rock, and other inert materials such as concrete or brick that are free of:

- *Combustible, putrescible, degradable or leachable components.*
- *Hazardous substances.*
- *Products or materials derived from hazardous waste treatment, hazardous waste stabilisation or hazardous waste disposal practices.*
- *Materials that may present a risk to human or animal health such as medical and veterinary waste, or radioactive substances.*
- *Liquid waste."*

Evidence that the imported fill meets this definition shall be provided in the SVR. All clean fill will be tested for contaminants of concern and assessed against NES guideline values for commercial land use scenario or evidence will be provided that the soil is virgin material from a suitable quarry.

10.3 Post Remediation

Upon completion of site re-contouring and stormwater swale installation, soils will be capped as detailed in Section 7. It should be noted that the capped area will remain as a managed contaminated site and will remain on the LIM for the specific property.

11 Contingency Measures

Should any unexpected contamination be identified such as buried drums / tanks containing unknown liquids or gases during the excavation, work should cease in the area immediately and ENGEO called so appropriate measures can be put in place to manage that risk. Contact details are:

ENGEO: 03 378 3780

12 References

DOH, W. (2009). *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia.*

ECAN. (2011). *Canterbury Natural Resources Regional Plan, Chapter 4: Water Quality.*

ENGEO. (2017). *Detailed Environmental Site Investigation, 711 Johns Road, Harewood, Christchurch. June 29.*

Health and Safety at Work (Asbestos) Regulations 2016. (2016, February 15). Wellington.

MfE. (2002). *A Guide to the Management of Cleanfills.* Wellington: Ministry for the Environment.

MfE. (2011a). *Contaminated Land Management Guidelines No. 1: Reporting on Contaminated Sites in New Zealand.* Wellington: Ministry for the Environment.

MfE. (2011b). *Contaminated Land Management Guidelines No. 2: Hierarchy and Application in New Zealand of Environmental Guideline Values (Revised 2011).* Wellington: Ministry for the Environment.

MfE. (2012). *Users' Guide: National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health.* Wellington: Ministry for the Environment.

WSNZ. (2016a). *Approved Code of Practice, Management and Removal of Asbestos.*

WSNZ. (2016b). *Workpace Exposure Standards and Biological Exposure Indices.*

13 Limitations

i. We have prepared this report in accordance with the brief as provided. This report has been prepared for the use of our client, McCracken & Associates Ltd, their professional advisers and the relevant Territorial Authorities in relation to the specified project brief described in this report. No liability is accepted for the use of any part of the report for any other purpose or by any other person or entity.

ii. The recommendations in this report are based on the ground conditions indicated from published sources, site assessments and subsurface investigations described in this report based on accepted normal methods of site investigations. Only a limited amount of information has been collected to meet the specific financial and technical requirements of the client's brief and this report does not purport to completely describe all the site characteristics and properties. The nature and continuity of the ground between test locations has been inferred using experience and judgement and it should be appreciated that actual conditions could vary from the assumed model.

iii. Subsurface conditions relevant to construction works should be assessed by contractors who can make their own interpretation of the factual data provided. They should perform any additional tests as necessary for their own purposes.

iv. This Limitation should be read in conjunction with the IPENZ / ACENZ Standard Terms of Engagement.

v. This report is not to be reproduced either wholly or in part without our prior written permission.

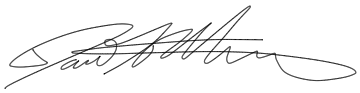
We trust that this information meets your current requirements. Please do not hesitate to contact the undersigned on (03) 328 9012 if you require any further information.

Report prepared by

Jenna Lohmann

Environmental Engineer

Report reviewed by



Dave Robotham, CEnvP CL Specialist

Principal Environmental Consultant

FIGURES

ENGEO
Expect Excellence

Date	July 2017	**Client**	**McCracken & Associates Ltd**		
Drawn by	JL	**Project**	**711 Johns Road, Belfast, Christchurch**		
Approved by	DR	**Description**	**Site Layout Plan**		
Scale	NTS	**Figure Number**	1	**Project Number**	13396

ENGEO
Expect Excellence

Date	June 2017	**Client**	**McCracken & Associates Ltd**		
Drawn by	CW	**Project**	**711 Johns Road, Belfast, Christchurch**		
Approved by	EM	**Description**	**Sample Location Map**		
Scale	NTS	**Figure Number**	2	**Project Number**	13396

APPENDIX 1:

Proposed Development Plans

The Car Distribution Group

Cardno Shaping the Future

landscape architecture
urban design
environmental management

0 20 40 100m

SCALE 1:2000 @ A3

VIEW LINES

DATE	DRAWING NO	ISSUE
27.03.2017	NZ0110217-C803	7

NORTH

JOHNS ROAD (SH1)

WAIMAKARIRI ROAD

Lot 1 DP 412022
Lot 2 DP 487647
Lot 5 DP 375764
Lot 6 DP 375764
Lot 7 DP 375764
Lot 8 DP 375764
Lot 12 DP 375764
Lot 13 DP 375764
Lot 100 DP 412877
Lot 101 DP 412877
Lot 102 DP 412877
Lot 103 DP 456142
Section 1 SO 14256
Section 2 SO 455212
Section 3 SO 455212
Section 4 SO 426349
Lot 2 DP 18312
Lot 9 DP 4264
Part Lot 8 DP

CATCHMENT 1
9980m²

CATCHMENT 2
16350m²

CATCHMENT 3
16040m²

CATCHMENT 4
15250m²

CATCHMENT 5
20640m²

FIRST FLUSH BASIN
INLET SWALE
OVERFLOW BASIN
FLOW
520m²
220m²
400m²
800m²
1000m²
500m²
490m²

NOTES

1. CONTOUR INTERVAL = 0.25m
2. LEVELS ARE IN TERMS OF THE CHRISTCHURCH DRAINAGE DATUM (CDD)

0 20 40 60 80 100m
SCALE 1:1000 @A1

1	4/02/2016	FOR CLIENT REVIEW	DVB	DVB	DVB

Dra□n CBR Da□ 28/04/2016
□ □□□□d DVB Da□ 28/04/2016
D□□□n□d DVB Da□ 28/04/2016
□□r□□d DVB Da□ 28/04/2016
□□□r□□□d DVB Da□ 28/04/2016

OROGEN Land - Civil - Spatial

The Car Distribution Group

THE CAR DISTRIBUTION GROUP

HAREWOOD CAR STORAGE YARD
HAREWOOD
CHRISTCHURCH

CATCHMENT PLAN

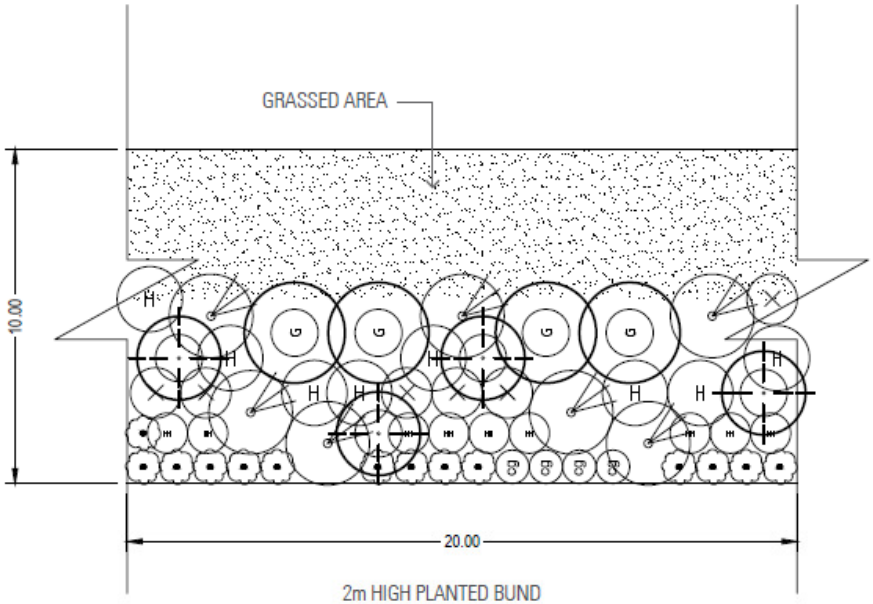
PRELIMINARY

DATUM MTPL2000 | Council Ref: | 1:1000 | □r□inal □□□ | □1

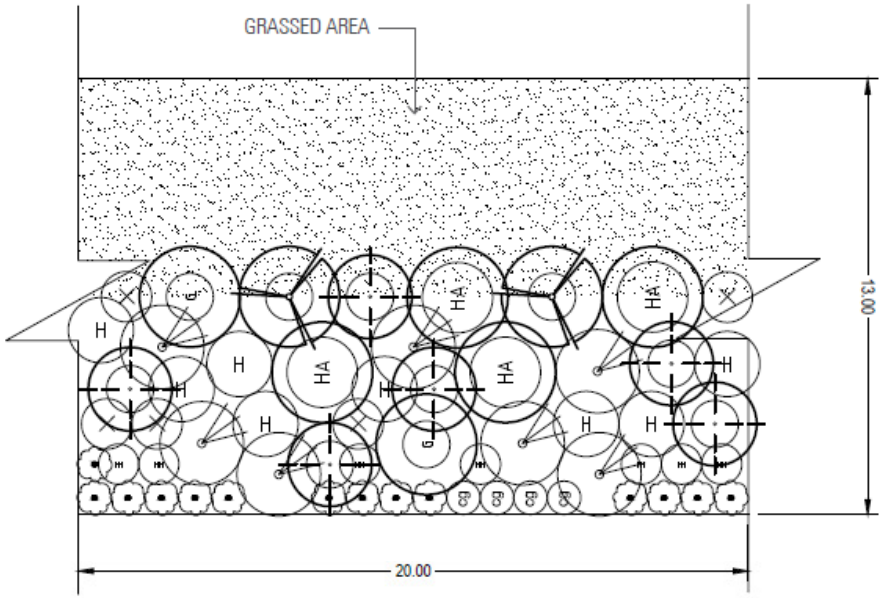
Dra□n□ □□ W16008-C304 | 1

(I) AMENDED LANDSCAPE PLAN

TYPICAL PLANTING LAYOUT



2m HIGH PLANTED BUND



3m HIGH PLANTED BUND

PLANTING ESTIMATES

Symbol	Species (Botanical Name)	Species (Common Name)	Size Required	Height (m)	Spread (m)	Quantity
H	*Anemanthele lessoniana*	Wind Grass	PB3	1.5	1.5	720
G	*Carex germinata*	Makura	PB3	1.5	1.0	350
X	*Coprosma propinqua*	Mikimiki	PB3	3.0	2.0	500
	Coprosma rotundifolia	Roundleaved Co	PB3	3.0	2.0	600
	Dianella nigra	Turutu/ Ink Berry	PB3	0.50	1.0	1200
	Griselinia littoralis	Kapuaka/NZ Broadlea f	PB3	4.0	2.5	300
	Griselinia littoralis	Kapuaka/NZ Broadlea f	1.5m High	4.0	2.5	40
	Hebe salicifolia	Koromiko	PB3	4.0	2.0	650
HA	*Hoheria angustifolia*	Narrowleaved Lacebark	1.5m High	6.0	3.0	70
	Pittosporum tenuifolium	Black Matipo	1.5m High	6.0	3.0	40
	Sophora microphylla	Kowhai	PB3	8.0	4.0	400
					Grand Total Plants	4870

NOTES

1. The planting layout as shown above is indicative only and may change at detailed design. These planting snippets are to be used as an example for planting layouts and the planting estimates are based on the above percentage mix of the various species of plants.
2. These planting snippets are to be repeated for the entire 2m and 3m high planted bund areas as indicated per the plan on sheet C803.
3. Non-grassed planting areas are to have a min of 350mm of topsoil, 50mm mulch and weedmat, and the grassed area is to be planted with a low maintenance grass species or groundcover which does not require maintenance.
4. Planting around light poles to use 1.5m grade plants, integrated into the PB3 planting, to give instant screening. Larger grades of specific species are as indicated and will be planted along the stretch of 3m bund (Waimakariri Road) to minimise the visual effects of the light poles.
5. Plants 1.5m high and over at time of install are to have tree pits to a minimum of 1m x 1m x 1m volume.
6. During the establishment period all plantings are to be watered to ensure thriving plants.
7. All plantings are to be managed and maintained in the future to ensure its longevity and sustainability.

The Car Distribution Group

Cardno Shaping the Future

landscape architecture
urban design
environmental management

0 1.5 3 7.5m
SCALE 1:150 @ A3

DATE	DRAWING NO	ISSUE
17.07.2017	NZ0110217-C8019	8

Kim McCracken & Associates

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✉ office@rgmc.co.nz

28 July 2017

The Senior Planner
Christchurch City Council
PO Box 73013
Christchurch 8154

Attention: Mr Andrew Long

Dear Andrew,

RE: <u>Resource Consent RMA/2017/765 – 711 Johns Road</u>

We refer to your request for further information (13 July 2017) and reply as follows.

- Landscape Plan
- N.E.S – Site Management Plan/Remediation
- Wastewater, Earthworks and Truck Wash

We have attached the responses and combined these in new Annexure M along with an updated contents page.

Kind regards,

Kim McCracken
Director