Management Zones	270-292 Dukes Road North, Mosgiel
Known/ potential contaminants	Heavy metal concentrations were found to be elevated at the five verified HAIL sites (Areas A – E) and two unverified HAIL sites (Areas F & G) identified in Figure 1. Concentrations of arsenic in Areas A - C exceed the *Commercial/Industrial* guidelines and are a risk to workers. Concentrations of arsenic and/or zinc within all 7 areas exceed the environmental guidelines.
General Earthworks Requirements	Dust management and prevention of cross-contamination and silt/sediment discharges to storm water are key. **Within HAIL sites**: Consent is required from Dunedin City Council to disturb a HAIL site. Consent is required from Otago Regional Council to disturb a contaminated site.
Disposal	Soils within Areas A - G cannot be considered clean fill. Contaminated soil removed from the site must be taken to an appropriate landfill for disposal. Soils meet the Burnside Landfill acceptance criteria. Soil from Areas D - G may be kept for reuse onsite. Soils from Areas A - C may be placed within a designated disposal location, subject to consent. All other areas are clean fill.
Records	Maintain records of the following (to be available for council inspection on request): • Consents • All excavations and placement of fill • Any incidents or complaints • Any signs of unexpected contamination • The volume of soil removed for disposal • The disposal location (including on-site location)

Figure 1: The properties at 270-292 Dukes Road North outlined in turquoise showing Areas A – G containing heavy metal contamination (DCC GIS | 2023-2024. Copyright DCC/ORC, CC BY 4.0).

Contamination Risk Assessment

Elevated heavy metals were reported in Areas A – G. Areas to be marked prior to bulk earthworks.

Areas A – C: Concentrations of arsenic surrounding the sheep dip (locations D44, D45, A – G, I and L), within the burn pile (D26) and adjacent to the central sheds (D37) exceed the *Commercial/ Industrial outdoor worker (unpaved)* guidelines indicating that these soils may present a risk to human health during development works and under a commercial/industrial land use. ***Concentrations of arsenic reported at Area C are extremely high and pose a particularly high risk.*** Careful handling and dust management is required.

Areas D – G: Concentrations of arsenic and/or zinc at some locations exceed the environmental guidelines and site soils may present a risk to environmental health. Accidental discharges must be avoided, particularly to surface water / storm water and tracking onto the road.

Site Controls

Dust

Works must comply with the *Good Practice Guide for Assessing and Managing Dust* (Ministry for the Environment, 2016)

- Stop works if wind speeds exceed 10 m/s (36 km/h), or wind screens are in place or a suppressant/stabiliser is applied
- Limit vehicle speeds on excavated surfaces to 10 km/h
- Limit exposed surfaces as much as possible
- Maintain soil to be excavated in a damp (not wet) condition during excavation and cartage
- Use of water sprays to dampen soils must not cause erosion or run-off, or saturated soils
- Cover loads during transport

Stockpiles

- If contaminated soil is placed outside of the identified HAIL sites, it must be placed on low permeability material (e.g. Bidim®, polyethylene sheet or paved surface) to avoid cross-contamination
- Stockpiles must not be located where run-off can leave the site
- Stockpiles must be covered when not actively worked to prevent rainwater ingress, run-off and dust discharges

Groundwater, Storm Water, Silt and Sediment

- Install erosion and sediment controls as per *Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region* (Auckland Council, 2018) to prevent run-off
- Avoid earthworks during rain or when free water is present in excavated areas
- Any surface water entering excavations is allowed to soak into the ground
- Surface water in contact with exposed earthworks is contained and prevented from entering storm water drains or Silver Stream
- If discharge of accumulated water is required, the water shall be contained and treated as contaminated. A temporary trade waste consent is required to discharge to municipal sewer following settling. No discharge is to occur to the storm water network.
- Tracking of silt off-site must be prevented

Silt and Sediment (continued)

- Vehicles entering/exiting the site are to remain on clean aggregate roadways formed to provide all-weather access (stabilised entranceway)
- Wheels that contact with site soils shall be swept down or washed in a designated area with silt containment before leaving site

Unexpected Contamination

If unexpected buried material or waste is encountered, works shall stop and the Contaminated Land Consultant contacted.

Signs of potential contamination:

- Uncontrolled fill
- Unusual odours
- Discoloured soils, stained water seeps or an oil sheen
- Suspected petroleum hydrocarbon contamination
- Putrescible or hazardous waste, refuse, or combustion by-products
- Intact or broken drums or other containers
- Suspected asbestos containing materials or pipes

Health & Safety

Access to the earthworks site is restricted to authorised personnel who have undergone an induction and are aware of the potential hazards relating to contaminated soil at the site.

General safety procedures to be followed by all staff entering or working in the immediate area of the earthworks:

- Site workers shall avoid unnecessary contact with site soils (especially Areas A – C).
- Hands are to be washed in a dedicated area prior to eating, drinking or smoking.
- Appropriate personal protection equipment (PPE) and first aid points are in place
- All incidents shall be reported to the main contractor's health and safety advisor

PPE to be available and used as required:

- Overalls
- Disposable gloves or construction gloves
- P2 respiratory protection (in case of a breach of dust control)

Records

- Copies of consent to be held on site during works
- Location and extent of earthworks to be recorded
- Records of reuse of soils within the site, particularly from Areas A - G
- Volume of surplus soil removed off-site to be recorded
- Soil disposal location
- Incidents/unexpected contamination
- Complaints are to be recorded and response noted

Additional Consulting

The Contaminated Land Consultant shall be advised of any unexpected signs of contamination and undertake additional sampling as required

If discharge of water from site is required, water sampling will be undertaken to determine a suitable disposal location

Site Contact Details

Address	270-292 Dukes Road North, Mosgiel	
Site Owner	Name	
	Phone	
	Email	
Contractor	Company	
	Name	
	Phone	
	Email	
Site Manager	Name	
	Phone	
	Email	
Health & Safety Officer	Name	
	Phone	
	Email	
Environmental H&S Officer (if different from above)	Name	
	Phone	
	Email	
Contaminated Land Advisor	Name	Berni Chapman / Aleasha King
	Phone	[redacted] / [redacted]
	Email	[redacted] / [redacted]
Emergency/After Hours Contact	Name	
	Phone	