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**Project Number 25142.000.001**

**Preliminary Environmental Site Investigation**

Judsons and Petries Road, Woodend,

Submitted to:

Urban Estates Limited

Level 2, Building One

181 High Street

Christchurch 8144

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**ENGEO Document Control:**

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**SQEP Certifying Statement**

I certify that the site has been assessed in accordance with current New Zealand Regulations and guidance documents and that this report has been prepared in general accordance with the Ministry for the Environment's Contaminated Land Management Guidelines No. 1: Reporting on Contaminated Sites in New Zealand, 2021.

I am considered by ENGEO Limited to be a suitably qualified and experienced practitioner (SQEP) able to certify reports pursuant to the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011, based on the company's definition of a SQEP as given below.

Dave Robotham  
23 February 2024

*ENGEO Limited requires that a SQEP has the following Qualifications / Experience:*

- *Tertiary science or engineering qualification relevant to environmental assessment.*
- *A minimum of 10 years of relevant experience.*
- *Registration with a professional body that assess and certifies environmental professionals in the competency criteria of training, experience, professional conduct and ethical behaviour.*

## 1 Introduction

ENGEO Ltd was requested by Urban Estates Limited to undertake a preliminary environmental site investigation at several sites along Judsons and Petries Road, Woodend, (herein referred to as 'the site', shown in Figure 1). This work has been carried out in accordance with our signed agreement dated 30 January 2024.

The sites included in this PSI assessment include:

- 43 Petries Road
- 1 Judsons Road
- 21 Judsons Road
- 32 Judsons Road
- 36 Judsons Road
- 40 Judsons Road
- 52 Judsons Road
- 62 Judsons Road
- 320 Woodend Beach Road
- 328 Woodend Beach Road
- 29 Copper Beach Road

The purpose of the assessment was to assess the property's suitability for consent for a change of land use and subdivision under the Resource Management (*National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health*) Regulations 2011 (NES) to satisfy the requirements of Waimakariri District Council (WDC).

This PSI was completed in accordance with the Ministry for the Environment MfE 2020, Contaminated Land Management Guidelines (CLMG) No.5: Guidelines for Site Investigation and Site Analysis of Soil and reported in general accordance with the MfE 2020 CLMG No.1: Reporting on Contaminated Sites in New Zealand and the report reviewed and approved by a suitably qualified and experienced contaminated land practitioner in accordance with national environmental regulations for soil contamination.

### 1.1 Objectives of the Assessment

The objective of the preliminary site investigation (PSI) was to gather information relating to the current and historical potentially contaminating activities at the site. The works comprised review of historical site information and review / assessment of information gathered during the site walkover undertaken on 7 February 2024.

## 2 Site Information

A total of eleven sites have been included in this assessment and are currently being used for mixed use of residential, commercial / industrial, agricultural use and as a scrap metal storage area.

ENGEO understands that the site is to be re-zoned for future potential residential subdivision.

Site information is summarised in Table 1 with photographs of the sites taken during the site walkover provided in Appendix 1.

Table 1: Site Information

Location	43 Petries Road	1 Judsons Road	21 Judsons Road	32 Judsons Road	36 Judsons Road	40 Judsons Road	52 Judsons Road	62 Judsons Road	320 Woodend Beach Road	328 Woodend Beach Road	29 Copper Beach Road
Legal Description	Lot 1 DP 563024	PT LOT 1 DP 2567 BLK XII RANGIORA SD	Lot 3 DP 563024	PT RURAL SEC 689 BLK XII RANGIORA SD	PT RURAL SECS 689 BLK XII RANGIORA SD	PT RURAL SEC 689 BLK XII RANGIORA SD	Lot 2 DP 563024	PT RURAL SEC 689 BLK XII RANGIORA SD	LOT 2 DP 75359 RURAL SEC 1262 BLK XII RANGIORA SD	PT LOT 1 DP 2567 BLK XII RANGIORA SD	Lot 101 DP 590032
Property Owner	Woodwater Limited	Marie Bax / Cheryl Judson/David Schumacher	Kelly Birbeck / Tarryn Shear	Shelley Ann Read	Ola Hendriks	M V Investments Limited	Shelley Ann Read	Craig Campbell	Walter Vaughan	Marie Bax / Cheryl Judson / David Schumacher	Perforated Sheet Specialists Ltd
Current Land Use	Agricultural grazing with large barn	Agricultural grazing	Residential lifestyle and agricultural grazing	Semi-vacant land with small shed	Commercial industrial / residential	Residential lifestyle	Vehicle storage and agricultural grazing	Car scrap yard	Residential lifestyle and agricultural grazing	Residential	Agricultural grazing
Proposed Land Use	Proposed residential land use										
Site Area (ha)	4.1 ha	4.0 ha	3.84	0.2 ha	0.4 ha	0.82 ha	4.09 ha	4.01 ha	16.09 ha	0.24 ha	1.95 ha
Building Construction	Large barn: Concrete foundation, metal cladding and metal roofing.	No buildings present	Dwelling: Concrete ring foundation modern compressed board cladding, metal roofing. Various sheds: No foundation or flooring, metal and timber cladding, metal roof.	Shed: Timber piles, metal cladding and metal roof.	No access granted to site.	Main dwelling: Concrete ring foundation, concrete render cladding and timber cladding, metal roof. Second dwelling: Timber piles, metal cladding, metal roof. Various outbuildings: concrete foundations, metal and timber cladding, metal roof.	Various sheds: Concrete and no foundation/flooring, metal and timber claddings, metal roof.	No buildings present.	Dwelling: Concrete ring foundation, concrete and cement board cladding, metal roof. Garages: Concrete foundation, metal and timber cladding, metal roof. Various barns: no flooring or foundation, metal and timber cladding, metal roof. Milking shed: Concrete foundation, concrete cinder block cladding metal roof.	Dwelling: Concrete ring foundation, cement and brick cladding, metal roof. Garages: Concrete foundations, concrete cinder block and metal cladding, metal roof.	No buildings present.
Territorial Authority	Waimakariri District Council										
Current Zoning	Rural zoning										

The site setting is summarised in Table 2.

**Table 2: Site Setting**

Item	Description
<b>Topography</b>	<p>The sites are mostly flat with some hummocky areas across the paddocks. Some presumed dunes are present in the eastern paddock at 320 Woodend Beach Road.</p> <p>The site at 29 Copper Beach Road is mounded approximately 2 m higher than the roadside.</p> <p>A gully is observed in the south-eastern corner of 62 Judsons Road.</p> <p>A surface water pond (was dry at the time of the site walkover) was observed in the lower lying area at 320 Woodend Beach Road.</p>
<b>Local Setting</b>	<p>The sites to the north across Petries Road are residential (10 % produce consumption). The sites to the east along Copper Beach Road are residential lifestyle blocks. The sites to the south down to Woodend Beach Road and to the west across Woodend Beach Road are rural residential with agricultural grazing. The sites to the northwest of Judsons Road are a part of residential subdivision (10% produce consumption)</p>
<b>Nearest Surface Water &amp; Use</b>	<p>An unnamed drain is present along the eastern boundary line of 62 Judsons Road and 320 Woodend Beach Road (western boundary of 29 Copper Beach Road). The drain is presumably used for stormwater runoff.</p>

## 2.1 Geology and Hydrogeology

The documented geology and hydrogeology of the sites and surrounding area is summarised in Table 3 below.

**Table 3: Geological and Hydrogeological Information**

Item	Description
<b>Geology</b>	<p>The site has been regionally mapped by GNS Science as being underlain by unweathered, variably sorted gravel, sand silt and clay of modern river floodplains or low level degradation terraces. Regional mapping completed by Forsyth et al (2008) indicates that the site is underlain by grey river alluvium beneath plains or low level terraces.</p>
<b>Hydrogeology</b>	<p>The site overlies a coastal confined aquifer system.</p> <p>Groundwater was encountered in the test pits completed by ENGEO Geotechnical engineers on the western side of the site between 1.6 m and 2.8 m depth.</p> <p>Nearby ECAN wells (M35/0546) suggest that ground water seasonally fluctuates between 2.3 m and 3.7 m.</p>



<p><b>Groundwater Abstractions</b></p>	<p>There are two active wells on-site:</p> <p>M35/6260: 320 Woodend Beach Road – W M Vaughan for dairy use and domestic supply.</p> <p>M35/0450: 320 Woodend Beach Road – W M Vaughan for irrigation and domestic supply.</p> <p>There are six active wells within 250 m of the site:</p> <p>M35/11675: 296 Woodend Beach Road – B E Simonsen for domestic and stock water.</p> <p>M35/8385: 250 Woodend Beach Road – Woodend Beach Road Development Limited for domestic and stock water.</p> <p>BW24/0609: 17 Copper Beach Road – B Cooke for domestic and stock water.</p> <p>M35/17990, M35/17991 &amp; M35/17992: 79 Petries Road – Waimakariri District Council for water level observation.</p>
<p><b>Discharge Consents</b></p>	<p>There are two discharge consents on-site:</p> <p>CRC132956: 52 Judsons Road, D Judson-Schumacher for the discharge of domestic sewage tank effluent to land. Terminated in 2018.</p> <p>CRC992307: Woodend Beach Road and Main North Road, W McGowan-Vaughan for discharge of animal effluent to land from 120 cows. Terminated in 1999.</p> <p>CRC150733: 36 Judsons Road, OH Hendriks for the discharge of contaminants to land. Active state.</p> <p>There are six discharge consents within 250 m of the site:</p> <p>CRC073225: 79 Petries Road, Waimakariri District Council for the discharge of stormwater/ contaminants into land and surface water. Terminated 2017.</p> <p>CRC962529.2: 38 Pankhurst Drive, Waimakariri District Council for the discharge of stormwater containing contaminants into water nearby water. Active state.</p> <p>CRC153843: 244, 231-273 Woodend Beach Road, Woodend Beach Road Developments Limited for discharge of stormwater to water. Active state.</p> <p>CRC172956: 331 Woodend Beach Road, N G Bax for the discharge of on-site wastewater to land. Active state.</p> <p>NCY860579: 14 Hamlett Drive, D H James for the discharge of stormwater. Terminated 1998.</p> <p>CRC990582: 1 Evergreen Drive, Woodend Beach Road Developments Limited for discharge of sewage tank effluent into land. Terminated in 2000.</p>

### 3 Site History

ENGEO reviewed aerial photographs, property file documentation and Christchurch City Councils response to a contamination enquiry. Relevant information obtained during this review is summarised below.

### 3.1 Listed Land Use Register

Canterbury Regional Council (CRC) maintains a Listed Land Use Register (LLUR) of past and current land uses within the Canterbury Region. The LLUR documents properties on which potentially hazardous activities have been undertaken. The potentially hazardous activities are defined on the MfE HAIL. Identifying a HAIL activity on the site triggers the requirement for a contaminated land assessment prior to development under the NES.

The CRC LLUR property statement was requested by ENGEO on 8 February 2024 for the sites and is presented in Appendix 2. The following sites were not listed to have HAIL activities recorded on the LLUR:

- 43 Petries Road
- 1 Judsons Road
- 32 Judsons Road
- 40 Judsons Road
- 52 Judsons Road
- 320 Woodend Beach Road
- 328 Woodend Beach Road

The property 62 Judsons Road is listed on the LLUR for G4: Scrap yards. The sites at 29 Copper Beach Road and 21 Judsons Road are listed on the LLUR for I: Any other hazardous land use. The final property listed on the LLUR is 36 Judsons Street for E1: Asbestos products manufacture or disposal. Please refer to Table 4 below for the LLUR Statement Summary for this site.

Table 4: Summary of the CRC LLUR Register

62 Judsons Road			
Period From	Period To	HAIL Activity(s)	LLUR Category
Unknown	Present	Scrap yards	G4
<b>Additional Information from LLUR Statement</b>	<p>This record was created as a part of the Waimakariri District Council 2016 HAIL identification project.</p> <p>Area defined from unknown to present aerial photographs. Scrap yards was noted in aerial photographs reviewed.</p>		
36 Judsons Road			
Period From	Period To	HAIL Activity(s)	LLUR Category
Unknown	Present	Asbestos products manufacture or disposal	E1
<b>Additional Information from LLUR Statement</b>	<p>Large fragments of potential asbestos containing cement were identified in a driveway at 36 Judsons Road, Woodend. An Asbestos Assessment and bulk sampling report was completed by Oceania Environmental Consultants in March 2019. Chrysotile asbestos was identified in two of the three bulk samples analysed.</p>		
29 Copper Beach Road			
Period From	Period To	HAIL Activity(s)	LLUR Category
Unknown	Unknown	Any other land	I
<b>Additional Information from LLUR Statement</b>	<p>An investigation in 2019 to explore the potential for residential subdivision found zinc and lead exceeding rural-residential soil contaminant standards near farm buildings / yards.</p> <p>Contaminated – Rural – residential land use.</p>		
21 Judsons Road			
Period From	Period To	HAIL Activity(s)	LLUR Category
1940's	Present	Any other land	I
<b>Additional Information from LLUR Statement</b>	<p>Investigation reports have been received for the site, but yet to be reviewed.</p>		

## 3.2 Previous Environmental Investigations

### 3.2.1 36 Judsons Road

Oceania Environmental Consultants – Asbestos Assessment and Bulk Sampling Report – 36 Judson Road, Woodend. 14 March 2019.

Oceania Environmental Consultants produced a report outlining that potential asbestos containing cement board was identified along the driveway of the site. Two pieces of cement board were identified as being asbestos containing. Soil samples were stated to have been collected, however the report does not include any summary of the soil sample results or laboratory certificate pertaining to soil samples. No recommendations around remediation were included in the report.

Sephira Environmental – Limited Detailed Site Investigation – 36 Judsons Road, Woodend – 25 July 2019.

Sephira Environmental were engaged to undertake a DSI on portions of the site at 36 Judsons Road which may have been subject to uncontrolled filling containing contaminated demolition debris. A total of four locations were sampled along the driveway area on the site with seven soil samples submitted for laboratory analysis. One sample, TH-2, reported positive for concentrations of asbestos above the BRANZ guidelines. All other samples were reported as negative for asbestos fines and fibres.

The report concludes that a portion of the site had been filled with up to 300 mm of mixed demolition debris. The presence of asbestos was stated to not be ubiquitous across the site and a gravel layer provides some exposure reducing cover to the asbestos board debris. It was recommended that further DSI sampling is undertaken to determine the risk to human health and that a remedial action plan be drafted to address any risks.

Sephira Environmental – Limited Detailed Site Investigation – 36 Judsons Road, Woodend – 22 October 2019.

Sephira Environmental were engaged to undertake further DSI sampling of the site at 36 Judsons Road. WDC requested that a DSI be undertaken of the rear of the property to assess potential surface soil contamination that may have resulted from the previous stockpiling of asbestos-containing demolition debris. Eight near surface samples were collected from the rear (north of the site) with analysis for lead and asbestos. Lead was reported in sample S-1 above NES residential land use (10% produce consumption) criteria. Sephira returned to site to complete delineation sampling around S-1 with two additional samples, S-1A and S-1D, reporting lead above the NES residential land use criteria. Asbestos was not detected in the initial eight soil samples analysed.

The report concludes that the lead impacted material should be remediated from the site with likely off-site disposal. The report does conclude that the removal of the lead material can be undertaken as a permitted activity under the NES and that a validation report or summary of works report be completed by a SQEP following the removal.

### 3.2.2 29 Copper Ridge Road

The site at 29 Copper Ridge Road was original one larger land parcel with the address of 85 Copper Ridge Road. After subdivision of the larger site around 2017-2019 the site was subdivided and named 83 Petries Road. The site is now named 29 Copper Beach Road. Please note that this section references all three site address names as indicated on the review reports.

### [Davie-Lovell Smith – Soil Contamination Risk Stage 1 Preliminary Site Investigation Report and Stage 2 Detailed Site Investigation Report – 83 Petries Road – July 2014.](#)

Davie-Lovell Smith were engaged to complete a combined preliminary and detailed site investigation to determine if there is a risk to human health for future development of the site to a residential subdivision. The PSI portion of the report concludes that the site was historically used for agricultural grazing and dairy farming up until 1993. During 1993, a portion of the site was used as a vehicle scrapyards.

Due to the use of the site as a scrapyards, DSI sampling was completed across the scrapyards area (85 Petries Road) and around an old building area (29 Copper Beach Road). The results of the car scrapyards have not been summarised in this report as they are for a neighbouring site outside of the zone change for this report. The older building area was described as various old buildings (unknown construction or building materials), shipping containers, tyres and general rubbish. A total of 10 soil samples were collected for either heavy metals and / or polycyclic aromatic hydrocarbons and / or total petroleum hydrocarbons. Five of the samples around the old building reported lead above the NES residential land use guideline value and zinc was reported in one sample above the NES residential land use guideline value.

The report concluded that additional delineation sampling should be completed around the hotspot around the old building area.

### [Momentum Environmental Ltd – Soil Contamination Risk Site Validation Report – 83 Petries Road – April 2023](#)

Momentum Environmental were engaged to complete a site validation report prior to the potential re-zoning and / or subdivision of the site at 83 Petries Road (now 29 Copper Beach Road). Due to the time difference between the DSI report (2014) and the remedial action plan being written, Momentum Environmental undertook a site visit to determine if any additional areas of concern were present on the site. Multiple soil mounds were identified across the site which the owner stated were topsoil scraping from the development of the adjacent road and wider site. During the remedial works, it was noted that the previously identified soil mounds were not present and re-leveling across the site had been completed.

Remediation of contaminated soils (lead and zinc contamination) on the site were completed in January 2023 which included the removal of 306.88 tonnes of contaminated soils with disposal to Burwood Landfill. Validation sampling concluded that the soils remaining on the site were considered to be at or below the expected background levels for the site.

## **3.3 21 and 52 Judsons Road**

### [ENGEО Ltd – Combined Preliminary and Detailed Site Investigation – 21 Judsons Road, Woodend](#)

ENGEО was engaged in July 2020 to complete a PSI and DSI of the site at 21 Judsons Road and 52 Judsons Road to assess the suitability of the site for residential subdivision. The PSI portion of the report identified that the site had been used for mixed residential land agricultural use since the 1940s. During the site walkover, a large stockpile of waste material was identified in the southern paddock which consisted of wood, furniture and compressed board. The on-site buildings at 52 Judsons Road contained several old vehicles, farm machinery and general storage of farm items such as paint cans. Oil staining was present in some of the underlying soils below the stored vehicles. Some PACM cement board was also identified in the eastern shed on-site.

A total of 21 soil samples were collected from various targeted areas of concern on the site for contaminants of concern associated with the HAIL activities. Lead was identified above the NES residential land use in eight samples from across the site. Cadmium was also reported above the NES residential land use in one sample. Several samples reported various heavy metal analytes above the site-specific regional background levels for the site. No samples were collected of the PACM material or underlying soils in the eastern shed.

The report concluded that the northern paddock areas of the site would likely be suitable for residential subdivision, however the areas around the buildings at 52 Judsons Road and the waste pile material in the eastern paddock at 21 Judsons Road had exceedances against the applicable human health guidelines. Therefore, these areas were not considered suitable for residential subdivision. Recommendations were made to analyse the PACM material in the eastern shed and if positive, subsequent soil samples collected for asbestos analysis.

### 3.4 Aerial Photographs

Aerial photographs dating from 1940 – 2022 have been reviewed (refer to Appendix 3). The aerials were sourced from Canterbury Regional Council's Canterbury Maps. Relevant visible features on the site and surrounding area are summarised in Table 5 below.

**Table 5: Aerial Photograph Summary**

Date	Description
1940 – 1944	The site is bound by Petries Road in the north and Woodend Beach Road to the southwest. The northern portion of the site (43 Petres, 52 Judsons and 62 Judsons Road) appears to be mostly paddocked areas. Some buildings are present at 62 Judsons Road in the southern portion of the site. Some potential stockpiles are present to the north of these buildings at 52 Judsons Road. A dwelling and outbuilding are present near the southern boundary line at 40 Judsons Road with the remainder of this site being grassed paddock area. Some buildings are present along the western boundary line at 36 Judsons Road, use of the buildings is unknown. One small building is present in the south-western corner of 32 Judsons Road. An area of dense trees or vegetation is present in the south-eastern corner of 62 Judsons Road and covering the majority of the southern portion of 29 Copper Beach Road. A building is present in the northern section of 29 Copper Beach Road. The sites at 1 Judsons Road and 21 Judsons Road are undeveloped and appear to be grassed paddocks. Some potential stockpiles are present at 21 Judsons Road in the eastern-most paddock. It is unclear what the stockpiles contain. The dwelling is present at 328 Woodend Beach Road. The dwelling and several outbuildings are present in the southern portion of the site at 320 Woodend Beach Road. The remainder of the site at 320 Woodend Beach Road is grassed paddocked areas. There is potentially some land disturbance in the eastern corner of 320 Woodend Beach Road, however the aerial photograph image appears to have been stitched and it is unclear what this area is.
1960 – 1964	The stockpiles identified in the former aerial photograph at 52 Judsons Road and 21 Judsons Road are no longer present. No land disturbance is identified in the eastern section of 320 Woodend Beach Road; however, a potential lower lying area is noted in this area. Some more buildings have been constructed at 320 Woodend Beach Road in the vicinity of the dwelling and other outbuildings previously identified. The remainder of the site appears mainly unchanged.
1965 – 1969	The majority of the site appears mainly unchanged. Large paddock areas appear to be used for grazing or pastoral crop growing.

Date	Description
1970 – 1974	Some of the vegetation in the southern section of 29 Copper Beach Road appears to have been cleared with the building still present in the northern section of the site. The remainder of the site appears mainly unchanged.
1975 – 1979	The majority of the site appears mainly unchanged.
1980 – 1984	Another building is present at 29 Copper Beach Road in the northern portion of the site. Presumed vehicle storage is present around the buildings at 52 Judsons Road. The remainder of the site appears mainly unchanged.
1985 – 1989	This aerial photograph is pixelated, therefore difficult to determine visible features. The on-site building appear to still be present. Other features are unable to be identified.
1990 – 1994	Two buildings are still present in the northern section at 29 Copper Beach Road with the remainder of this site being grassed. The paddock areas at 43 Petries, 52 Judsons and 62 Judsons Road are still present. There are no obvious changes to the sites at 32, 36 or 40 Judsons Road. A barn structure has been constructed in the eastern corner of 21 Judsons Road. An area of potential land disturbance is present along the northern boundary line at 1 Judsons Road. The remainder of the site appears mainly unchanged.
1995 – 1999	An area of land disturbance is still present along the northern boundary line at 1 Judsons Road. The remainder of the site appears mainly unchanged.
2000 – 2004	A ponded area is present along the southeastern boundary line at 320 Woodend Beach Road. The pond area is similar size and shape to that observed on-site in current day. The remainder of the site appears mainly unchanged.
2010 – 2014	Various containers and stockpiled material is present around the buildings at 29 Copper Beach Road. The site to the northwest of 29 Copper Beach Road also has several vehicles stored on it. A barn structure has been constructed along the southern portion of the site at 62 Judsons Road. Several stored cars are present around the buildings at 52 Judsons Road with the remainder of the site being used for grazing. The site at 43 Petries Road appear to still be used for grazing. The dwelling and paddock area at 40 Judsons Road appears to have been sectioned off from 52 Judsons Road. A large building has been constructed in the southern portion at 36 Judsons Road. The site at 1 Judsons, 21 Judsons, 32 Judsons Road and 320 Woodend Beach Road and 328 Woodend Beach Road appears mainly unchanged.
2015 – 2019	The two buildings and various stockpiled material have been removed from 29 Copper Beach Road. A large building has been constructed in the eastern paddock at 43 Petries Road with some potential shipping containers present to the south of the building. The site at 62 Judsons Road is being used for car stockpiling with the majority of the site being covered in rows of vehicles. Some unknown material is also visible in a clearing in the vegetated area in the south of the site. The sites at 32, 40 and 52 Judsons Road appear mainly unchanged. A residential dwelling is present in the western section of the site at 21 Judsons Road. A large stockpile or burn pile is present to the west of the barn structure at 21 Judsons Road. The sites at 320 and 328 Woodend Beach Road appear mainly unchanged.

Date	Description
2020 – Present	The site at 29 Copper Beach Road appear to be undergoing earthworks with several areas of the site present without grass cover. The car storage at 62 Judsons Road is still present, however the number of vehicles is significantly less than previously identified and a row of containers or truck trailer units are present along the western boundary. Another large L shaped building is present at 36 Judsons Road in the northern section of the site along with a small potential dwelling located towards the centre of the site. Another dwelling has been constructed at 40 Judsons Road, located just north of the original dwelling location. Various small sheds and stockpiled material are present to the south of the dwelling at 21 Judsons Road. A potential burn pile area is observed at 1 Judsons Road the in western section of the site. No changes were observed at 320 or 328 Woodend Beach Road.

### 3.5 Waimakariri District Council Property File

The property files for the sites that are held by Waimakariri District Council were reviewed as part of this investigation. No property files were on-file for 1 Judsons Road, 29 Copper Beach Road 32 Judsons Road or 62 Judsons Road. These files will be summarised and included in the finalised copy of this report.

The relevant property file information is listed below for each property:

#### 43 Petries Road

- Building Consent for large barn 4/6/2015

#### 21 Judsons Road

- Building permit for a large shed 28/7/1986
- Building Consent for relocated dwelling 5/3/2015

#### 36 Judsons Road

- Building consent for dwelling with attached garage 15/04/2009
- Building consent for garage 10/2019
- Building consent for new dwelling 18/11/2020
- Building consent for addition to garage 4/04/2022

#### 40 Judsons Road

- Building permit
- Building consent for sleepout 24/5/2005
- Building consent for dwelling with attached carport 13/5/2014

#### 52 Judsons Road

Nothing on file pertaining to environmental contamination or Building Consents.



### 320 Woodend Beach Road

- Building Application for a hay shed 30/9/1974
- Building Application for a garage 29/5/1982

## 4 Current Site Conditions

A site walkover was completed by an ENGEO representative on 7 February 2024. A summary of the walkover is provided in Table 6 below with photographs of the site taken during the site walkover provided in Appendix 1.

**Table 6: Site Walkover Summary**

Location	43 Petries Road	1 Judsons Road	21 Judsons Road	32 Judsons Road	36 Judsons Road	29 Copper Beach Road
<b>Visible signs of contamination</b>	No visible signs of contamination noted. Site was being used for sheep grazing with large barn in eastern paddock, please refer to photographs 1-4.	No visible signs of contamination were noted. Paddock had been recently used for sheep grazing, please refer to photographs 5-6.	Large stockpile of waste material present to west of large barn along Judsons Road. Stockpile included general domestic waste, furniture including chairs and couches, wrecked cars, timber, empty drums, a large boiler, empty paint cans, bricks and greenwaste, please refer to photographs 7 – 8.  Some stockpiled timber and plastic materials were identified around the dwelling, please refer to photographs 9-10.	No visible signs of contamination noted. Site appears to have several recently felled trees with stockpiled wood present. Please refer to photographs 13-14 and Figure 2.	ENGEO was not granted access into the site at 36 Judsons Road, therefore unable to determine the site and use of buildings or to determine if lead and/or asbestos had been remediated. Please refer to Figure 2 for known contamination areas.	No visible signs of contamination were noted. The site was mounded with presumed topsoil as identified in the Momentum Environmental Report dated 2023. Please refer to photographs 15-16 and Figure 4.
<b>Surface water appearance</b>	No surface water was present.					
<b>Visible signs of plant stress</b>	No visible signs of plant stress were noted.					
<b>Potential for on or off site migration of contaminants</b>	Migration of contaminants on or off-site are considered low.					
<b>Ground cover</b>	Hardstand driveway leading to barn. Paddock areas grassed.	Entire site is grass cover.	Hardstand driveway leading to house. Remainder of site grassed.	Entire site is grass cover.	Presumed hardstand driveway area.	Entire site is grass cover.

Location	40 Judsons Road	52 Judsons Road	62 Judsons Road	320 Woodend Beach Road	328 Woodend Beach Road
<b>Visible signs of contamination</b>	<p>No visible signs of contamination were noted.</p> <p>Two dwellings were present with small outbuildings / garages. Remainder of the site was grassed with horses present in north paddock. Please refer to photographs 17-19 and Figure 2.</p>	<p>Several car bodies and parts were present throughout the on-site buildings and surroundings areas. PACM identified in shed in ENGEO DSI (ENGEO 2020) was still present. No new signs of contamination were noted. Please refer to photographs 20- 23 and Figure 2 and 3.</p>	<p>Paddock area was being loaded out by scrap metal company during walkover, however several vehicles, stockpiled materials, drums, paint cans, building materials were present. Please refer to photographs 25, 26 and 27. Within the vegetated area in the south-eastern corner of the site, a large pile of waste material was identified. Waste material included timber, empty drums, empty paint cans, kids toys, carpet and greenwaste. Please refer to photograph 24 and Figure 3 and 4.</p>	<p>Several of the outbuildings had stored empty containers and drums present. Some dark presumed oil staining in one of the barn buildings. A large greenwaste burn off area is located just on the boundary line to the southeast of the dwelling. Remainder of the site was grassed paddocks areas. Please refer to photographs 28-32 and Figure 5</p>	<p>The site had no visible contamination noted. One burn drum was present near the garages on the site, however the base of the drum was intact and no ashy material observed below the drum or surrounding area. Please refer to photographs 33-34 and Figure 5</p>
<b>Surface water appearance</b>	No surface water was present.				
<b>Visible signs of plant stress</b>	No visible signs of plant stress were noted.				
<b>Potential for on or off site migration of contaminants</b>	Migration of contaminants on or off-site are considered low.				
<b>Ground cover</b>	Hardstand around driveway areas, remainder of site grassed	No hardstand areas observed. Paddock areas grassed and areas between garages / sheds all grassed.	Grass cover.	Hardstand driveway area and between milking shed / barn. Remainder of site grassed.	Hardstand driveway and between garages and dwelling. Garden area is grassed.

## 5 Potential HAIL Activities

Activities included on the Hazardous Activities and Industries List (HAIL) trigger the requirement for a contaminated land investigation prior to redevelopment. While no activities have been identified on the LLUR for the site, the following observations were noted dependant on location across the sites during the site walk over:

- A10: Persistent [pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds;
- G4: Scrap yards including automotive dismantling, wrecking or scrap metal yards.
- G5: Waste disposal to land.
- E1: Asbestos products manufactured or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition.
- I: Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment (lead based paint).

Further information regarding the areas of potential concern have been summarised in Table 7 below. Where a site is not mentioned in Table 7, no activities included on the HAIL were identified for these areas (1 Judsons Road and 43 Petries Road).

**Table 7: Potential Contamination at the Site**

Potential source of contamination	Contaminants of potential concern	Possible extent of contamination	HAIL activity as defined by the NES (soil)
<b>21 Judsons Road</b>			
Waste pile in eastern paddock	Waste dependant Heavy metals Polycyclic aromatic hydrocarbons (PAHs) Asbestos Other contaminants of concern	Area around waste pile only	G5
Asbestos building products or lead based paints on barn	Asbestos Lead	Large barn 'halo' only	E1 and I
<b>32 Judsons Road</b>			
Old farm building Lead based paints and / or asbestos building materials	Lead Asbestos	Building 'halo' only	E1 and I
<b>36 Judsons Road</b>			
Asbestos cement board debris and asbestos fibres in fill in driveway	Asbestos	Driveway area, extent unknown	E1
Lead in driveway area	Lead	Section along eastern boundary line of the site	I
<b>40 Judsons Road</b>			
Asbestos building products or lead based paints on dwelling	Asbestos Lead	Dwelling 'halo' only	E1 and I

52 Judsons Road			
Lead based paints and / or asbestos building materials on various farm buildings	Lead Asbestos	Building 'halo's only	E1 and I
Potential asbestos debris in eastern barn	Asbestos	Soils within barn area	E1
Area of stored wrecked cars	Heavy metals TPH	Soils to south of the site between and in garages	G4
62 Judsons Road			
Area of stored wrecked cars	Heavy metals TPHs	Entire site	G4
Various stockpiled materials including oil drums, building products, timber	Heavy metals Asbestos TPHs PAHs	Several stockpiles areas on-site, stockpiles likely to have been moved over time	G5
320 Woodend Beach Road			
Stored empty drums and containers in farm sheds	Heavy metals OCPs PAHs	Within farm sheds	G5
Lead based paints and / or asbestos building materials on dwelling and various farm buildings	Lead Asbestos	Building 'halo's only	E1 and I
Green waste burn off area	Heavy metals PAHs	Burn off area only	G5

<b>328 Woodend Beach Road</b>			
Lead based paints and / or asbestos building materials on dwelling	Lead Asbestos	Building 'halo's only	E1 and I
<b>29 Copper Beach Road</b>			
Undocumented topsoil across the site	Heavy metals PAHs	Entire site	G5 and I

## 6 Conceptual Site Model

A conceptual site model has been developed to assess the potential exposure pathways present at the site. A contamination conceptual site model consists of four primary components. For a contaminant to present a risk to human health or an environmental receptor, all four components are required to be present and connected. The four components of a conceptual site model are:

- Source of contamination;
- Pathway(s) in which contamination could potentially mobilise along (e.g. vapour or groundwater migration);
- Sensitive receptor(s) which may be exposed to the contaminants; and
- An exposure route, where the sensitive receptor and contaminants come into contact (e.g. ingestion, inhalation, dermal contact).

The potential source, pathway and receptor linkages at this subject site are provided in Table 8.

**Table 8: Conceptual Site Model**

Potential source of contamination	Contaminants of potential concern	Exposure Route and Pathways	Receptors	Acceptable Risk?
<b>21 Judsons Road</b>				
Waste pile in eastern paddock	Waste dependant Heavy metals Polycyclic aromatic hydrocarbons (PAHs) Asbestos Other contaminants of concern	Dermal contact with impacted soil, inhalation of dust / fibres / vapours and incidental ingestion during earthworks and long term use of the site. Groundwater migration.	On-site workers Future subsurface maintenance workers Future site residential users Surrounding environment	<b>Unknown,</b> sampling completed previously did not identify heavy metals above residential land use criteria, however further sampling is recommended.
Asbestos building products or lead based paints on barn	Asbestos Lead			<b>Unknown,</b> sampling required to determine if there is a risk to human health or environment
<b>32 Judsons Road</b>				
Old farm building Lead based paints and / or asbestos building materials	Lead Asbestos	Dermal contact with impacted soil, inhalation of dust / fibres and incidental ingestion during earthworks and long term use of the site. Groundwater migration.	On-site workers Future subsurface maintenance workers Future site residential users Surrounding environment	<b>Unknown,</b> sampling required to determine if there is a risk to human health or environment
<b>36 Judsons Road</b>				
Asbestos cement board debris and asbestos fibres in fill in driveway	Asbestos	Dermal contact with impacted soil, inhalation of dust / fibres and incidental ingestion during earthworks and long term use of the site. Groundwater migration.	On-site workers Future subsurface maintenance workers Future site residential users Surrounding environment	<b>No,</b> sampling undertaken previously identified asbestos fragments, asbestos fibres and lead above human health guidelines
Lead in driveway area	Lead			



<b>40 Judsons Road</b>				
Asbestos building products or lead based paints on dwelling	Asbestos  Lead	Dermal contact with impacted soil, inhalation of dust / fibres and incidental ingestion during earthworks and long term use of the site.  Groundwater migration.	On-site workers  Future subsurface maintenance workers  Future site residential users  Surrounding environment	<b>Unknown,</b> sampling required to determine if there is a risk to human health or environment
<b>52 Judsons Road</b>				
Lead based paints and / or asbestos building materials on various farm buildings	Lead  Asbestos	Dermal contact with impacted soil, inhalation of dust / fibres and incidental ingestion during earthworks and long term use of the site.  Groundwater migration.		<b>Unknown,</b> sampling required to determine if there is a risk to human health or environment
Potential asbestos debris in eastern barn	Asbestos	Dermal contact with impacted soil, inhalation of dust / fibres and incidental ingestion during earthworks and long term use of the site.	On-site workers  Future subsurface maintenance workers  Future site residential users  Surrounding environment	<b>Unknown,</b> sampling required to determine if there is a risk to human health or environment
Area of stored wrecked cars	Heavy metals  TPH	Dermal contact with impacted soil, inhalation of dust / fibres / vapours and incidental ingestion during earthworks and long term use of the site.  Groundwater migration.	On-site workers	<b>No,</b> sampling completed previously identified heavy metals above residential land use criteria.

<b>62 Judsons Road</b>				
Area of stored wrecked cars	Heavy metals TPHs	Dermal contact with impacted soil, inhalation of dust / fibres and incidental ingestion during earthworks and long term use of the site.  Groundwater migration.	On-site workers  Future subsurface maintenance workers	<b>Unknown,</b> sampling required to determine if there is a risk to human health or environment
Various stockpiled materials including oil drums, building products, timber	Heavy metals Asbestos TPHs PAHs		Future site residential users  Surrounding environment	
<b>320 Woodend Beach Road</b>				
Stored empty drums and containers in farm sheds	Heavy metals OCPs PAHs	Dermal contact with impacted soil, inhalation of dust / fibres and incidental ingestion during earthworks and long term use of the site.  Groundwater migration.	On-site workers  Future subsurface maintenance workers	<b>Unknown,</b> sampling required to determine if there is a risk to human health or environment
Lead based paints and / or asbestos building materials on dwelling and various farm buildings	Lead Asbestos		Future site residential users  Surrounding environment	
Burn off area	Heavy metals PAHs			
<b>328 Woodend Beach Road</b>				
Lead based paints and / or asbestos building materials on dwelling	Lead Asbestos	Dermal contact with impacted soil, inhalation of dust / fibres and incidental ingestion during earthworks and long term use of the site.  Groundwater migration.	On-site workers  Future subsurface maintenance workers  Future site residential users  Surrounding environment	<b>Unknown,</b> sampling required to determine if there is a risk to human health or environment

29 Copper Beach Road				
Undocumented topsoil across the site	Heavy metals PAHs OCPs	Dermal contact with impacted soil, inhalation of dust / fibres and incidental ingestion during earthworks and long term use of the site.  Groundwater migration.	On-site workers  Future subsurface maintenance workers  Future site residential users  Surrounding environment	<b>Unknown,</b> sampling required to determine if there is a risk to human health or environment

## 7 Conclusions

ENGEO Ltd were engaged by Urban Estates Limited to undertake a preliminary site investigation (PSI) for several properties along Judsons Road, Woodend Beach Road, Petries Road and Copper Beach Road in Woodend. The investigation was conducted to assess previous land-uses at the site to assess the potential contaminants of concern and provide advice regarding the suitability of the land for residential land use zone change. The assessment consisted of a review of available information including historical aerial photograph review, Canterbury Regional Councils Listed Land Use Register, Waimakariri District Council Property Files and certificates of titles. A site walkover was also undertaken.

The information reviewed identified that most of the sites have been used since the 1940s for agricultural grazing with some site with residential buildings or farm buildings present.

Several previous environmental reports were completed for some of the sites included in this assessment. These are summarised in Section 3.2. Four of the sites, 62 Judsons Road, 36 Judson’s Road, 52 Judsons Road and 29 Copper Beach Road are listed on the CRC LLUR statement for several HIAL activities. During the site walkover, it was noted that several of the on-site buildings are of the age (pre 2000 and/or 1980) that indicate that asbestos building products and / or lead based paints may have been used on the buildings. A waste pit area was also identified in the southeastern section of 62 Judsons Road. The site at 29 Copper Beach Road was mounded with anecdotal evidence included in the Momentum Environmental SVR report (Momentum Environmental, 2023) stating that topsoil scraping from the development of the adjacent road and wider site was placed on the site at 29 Copper Beach Road.

It is considered that the following HAIL Activities may have occurred on selected areas of the site :

- A10: Persistent [pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds;
- G4: Scrap yards including automotive dismantling, wrecking or scrap metal yards.
- G5: Waste disposal to land.
- E1: Asbestos products manufactured or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition.

- I: Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment (lead based paint).

Due to the noted activities, ENGEO recommends that a Detailed Site Investigation (DSI) with targeted soil sampling is undertaken prior to the subdivision or any soil disturbance being undertaken on the site with HAIL activities noted and summarised in Table 9 below. Depending on the results of the DSI, a remedial action plan may also be required to manage identified impacted soils and ensure that appropriate controls are implemented and adhered to. Areas outside of those indicated are considered likely suitable for residential use, subdivision and soil disturbance (if proposed at a later date).

A number of areas of the site may have been impacted from their past uses, however disturbance and redevelopment issues would be identified prior to re-development via the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 or through the Environment Canterbury Regional Plan Rules. Therefore, it is considered that the potential impacts present in the soil are unlikely to impact on a plan change for the area.

It should be noted that various on-site buildings on the site were constructed prior to 2000. The Health and Safety at Work (Asbestos) Regulations 2016 state if a building constructed or installed prior to January 2000 requires demolition or refurbishment, an asbestos survey must be undertaken by a competent person. If asbestos is in a damaged or deteriorated condition, or becomes damaged during demolition, friable asbestos fibres can potentially contaminate the surrounding soils. ENGEO recommends that an asbestos survey is completed prior to the demolition of the buildings present on-site for which building surveys are not available.

## 8 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, Urban Estates Limited, 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 Engineering NZ/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.

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## 9 References

- MfE, 1997. Ministry for the Environment. (1997). Guidelines for assessing and managing contaminated gasworks sites in New Zealand.
- MfE, 2011b. Ministry for the Environment. (2011). Hazardous Activities and Industries List (HAIL).
- MfE, 2012. Ministry for the Environment. (2012). Users' Guide National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health.
- MfE, 2021a. Ministry for the Environment. (2021). Contaminated Land Management Guidelines No.1: Reporting on Contaminated Sites in New Zealand.
- NESCS, 2011. The Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations (2011).

## FIGURES



**APPENDIX 1:**  
Site Photographs





**APPENDIX 2:**  
CRC LLUR Statement



**APPENDIX 3:**  
Historic Aerial Photographs

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