PATTLE DELAMORE PARTNERS LTD
Level 2, 134 Oxford Terrace, Christchurch Central,
Christchurch 8011
PO Box 389, Christchurch 8140, New Zealand

Tel +64 3 **345 7100** Fax +64 3 **345 7101**
Web **www.pdp.co.nz**
Auckland Tauranga Wellington **Christchurch**

solutions for your environment

memorandum

TO	Jane Anderson	FROM	Sebastian Küng
	Selwyn District Council	DATE	7 April 2020
RE	Review of Consent Application - Z Energy, 2 & 10 Brookside Road, Rolleston		

1.0 Introduction

Pattle Delamore Partners Ltd (PDP) has been engaged by Selwyn District Council (SDC) to provide technical advice on consent applications involving hazardous substances.

Z Energy has applied for land use consent to construct and operate a service station and carwash, including the installation of three underground storage tanks. The proposal includes three underground storage tanks, and the applicant has requested the flexibility of two potential options. The underground storage tanks will consist of **either** three 50,000 L double skinned fibreglass tanks (Option 1), **or** three 60,000 L double skinned fibreglass tanks (Option 2) to store:

- Option 1:
  - 50,000 litres of grade 91 petroleum;
  - 50,000 litres of diesel;
  - 30,000 litres of grade 95 petroleum; and
  - 20,000 litres of grade 91 petroleum.
- Option 2:
  - 60,000 litre of grade 91 petroleum;
  - 60,000 litres of diesel;
  - 40,000 litres of grade 95 petroleum; and
  - 20,000 litres of grade 91 petroleum

The purpose of the tanks is to store automotive fuel to supply a service station located at 2-10 Brookside Road, Rolleston. As such, the applicant has applied to store petrol and diesel (hazardous substances), as well as LPG associated with two LPG bottle swap units (storing up to 30 individual 9 kg gas bottles in each unit, 540 kg in total).

The site is zoned in the Living 1 Zone (ECan, 2020) on the SDC District Maps.

The purpose of this memo, with respect to the storage and use of hazardous substances, is to:

- Assess whether the application is complete and contains adequate information;

- Audit the application in terms of its potential for adverse effects arising from the storage and use of petrol and diesel;
- Audit the appropriateness of any proposed mitigation measures;
- Determine whether there are any affected parties with respect to hazardous substances; and
- Make recommendations for consent conditions if required.

2.0 Completeness of Application

The applicant has assessed the proposed storage and use of 91 petrol, 95 petrol, diesel and LPG under Rule 8.1.1.1 of the Township Volume of the Selwyn District Plan. We have reviewed the application against the Selwyn District Plan Rules and agree that this is the appropriate rule to consider.

The applicant has assessed the storage of diesel as non-complying under Rule 8.1.1.1, and the storage of LPG and petrol as discretionary under Rule 8.1.1.1. We agree with the classification of non-complying for the storage of diesel, however, disagree with the classification for the storage of LPG and petrol. We have assessed the storage of petrol and LPG as non-complying, as described below.

Permitted activity Rule 8.1.1.1 of the Township Volume limits the underground storage within the Living 1 Zone of petrol to zero litres (HSNO classification 3.1A), and the combined storage volume of petrol and diesel to 250 litres (HSNO classification 9.1 B). The proposal is to store (in underground tanks) and use 100,000 litres of petrol and 50,000 litres of diesel (Option 1) **or** 120,000 litres of petrol and 60,000 litres of diesel (Option 2). As such, the permitted activity rule cannot be met. Rule 8.1.4 classifies any activity that does not comply with Rule 8.1.1.1 as non-complying, except where the storage of hazardous substances complies with any quantity limits in Column B of Appendix 9, then the activity is classified as discretionary. Column B of Appendix 9 does not specify a limit for the underground storage of petrol, and therefore the storage of petrol activity is classified as non-complying under Rule 8.1.4.

With respect to the storage of diesel, there appears to be a formatting error in Table E9.2 of the Selwyn District Plan, with the limits specified for diesel in Column A reading “above-ground storage” and “under-ground storage” and “1,000 L” in Column B. If the 1,000 L limit should in fact be the Column A limit, then the activity would be classified as non-complying under Rule 8.1.4 (as no quantity would be listed in Column B). Alternatively, if the 1,000 L limit applies to Column B, then the activity would similarly be classified as non-complying under Rule 8.1.4 as the Column B limit would be exceeded. Table E9.2 furthermore limits the storage of HSNO class 9.1B substances to 250 L (Column A). Diesel and petrol are both HSNO class 9.1B substances, and therefore both substances exceed the Table E9.2 Column A limits. A column B limit is not specified in Table E9.2, and therefore the storage of diesel is classified as non-complying under Rule 8.1.4.

Permitted activity Rule 8.1.1.1 of the Township Volume limits the storage of LPG within the Living 1 Zone to 300 kg (Column A of Table E9.2). The application proposes two LPG bottle swap units, comprising of 30 x 9 kg LPG bottles for each unit (i.e. 270 kg per unit, or 540 kg total). The proposed quantity of LPG exceeds the column A limit of Table E9.2, and therefore does not meet Rule 8.1.1.1. No limit is specified in Column B of Table E9.2, and therefore the storage of LPG is classified as non-complying under Rule 8.1.4.

Strictly speaking, the application could be considered to not fully meet the relevant statutory requirements of Section 88 and Schedule 4 of the RMA for completeness, as an assessment of the risks to the environment from the storage and use of hazardous substances has not been provided. More specifically the application does not identify the potential risks of the activity for fire/explosion, on human health or on the environment, as a result of a leak or spill from the underground storage and use of automotive fuel (petrol and diesel).

The application does, however:

- Adequately describe the activity;
- Consider the activity against the District Plan rules as is required for a non-complying activity for the storage of diesel (and incorrectly as a discretionary activity for the storage of petrol and LPG); and
- Provide detailed information on how the storage of petroleum products will be managed, including how spills will be prevented. The application also notes that observation wells will be installed, which can be used for monitoring for potential hydrocarbons in groundwater.

Ordinarily, we would recommend requesting further information from the applicant in order to address the deficiencies in the information provided. However, based on our level of knowledge and the mitigation and management measures proposed, we are able to use the following hazardous substance information (Table 1) to identify the actual or potential effects of the storage and use of petrol and diesel, and the storage of LPG. We will therefore accept the information provided by the applicant.

Table 1: Petrol and Diesel HSNO Classification and SDC Classification

Substance	HSNO Class[1]	Hazards[2,3]	Hazard Description[2]	Living 1 Zone Quantity Limit	
				Column A[4]	Column B[5]
Liquified Petroleum Gas	2.2.1A	Fire/explosion (high hazard)	Flammable gas - high hazard	300 kg	-
Petrol	3.1 A (underground)	Fire/explosion (very high hazard)	Flammable liquid - very high hazard	0 litres	-
Diesel	3.1D (underground)	Fire/explosion (low hazard)	Flammable liquid - low hazard	1,000	-
Petrol & Diesel	6.1E (All)	Human health	Acutely toxic - May be harmful, aspiration hazard	-	-
Petrol & Diesel	6.3B	Human health	Mildly irritating to skin	-	-
Petrol & Diesel	6.7B	Human health	Suspected carcinogen	-	-
Petrol & Diesel	9.1B (All)	Environment (medium hazard)	Ecotoxic in the aquatic environment	250 litres/kg	-

Notes:

1. *https://www.epa.govt.nz/database-search/approved-hazardous-substances-with-controls/*
2. *https://www.epa.govt.nz/industry-areas/hazardous-substances/rules-for-hazardous-substances/hazardous-substances-classification-codes/*
3. *Table E9.2 Selwyn District Plan Township Volume Appendices*
4. *Table E9.2 Selwyn District Plan Township Volume Appendices, Column A*
5. *Table E9.2 Selwyn District Plan Rural Volume Appendices, Column B*

3.0 Notification

The application provides sufficient information to make a determination as to any adverse effects with respect to the proposed handling and storage of hazardous substances.

- Sensitive activities to the effects of hazardous substances include schools, hospitals and residential areas. We note that a veterinary clinic is located south-east and across the road from the site (3 & 5 Brookside Road), a residential dwelling is located to the south-west (10 Brookside Road), and the general surroundings to the south of the site (i.e. across Brookside Road) and east include residential properties. Sensitivity is therefore characterised as moderate.
- The applicant has proposed controls to mitigate any potential effects of storing chemicals on site (compliance with HSNO regulations; specification of double-skinned tanks that acts as an internal spill containment system; tank steel manufactured to an Environmental Protection Agency approved specification; nozzles fitted with breakaway couplings which automatically cut off fuel supply in emergencies; all discharge points that could potentially release hazardous substances will drain to an API, and the API will be able to contain a spill of 2,500 L; inspection and maintenance schedules; tanker delivery drivers and relevant staff to be trained on emergency response procedure; spills kits onsite; mesh cage for LPG unit to be compliant with HSNO Act). When the storage of these substances is carried out in accordance with these controls the residual risk of the proposal is low.
- Based on the information provided in the application and consideration of the Selwyn District Plan, we consider that any adverse effects resulting from the storage of these chemicals will be less than minor.

4.0 Potential Adverse Effects

4.1 General

Part B3.2 of the Selwyn District Council Plan identifies a comprehensive list of potential adverse effects arising from the storage and use of hazardous substances. It suggests that the following effects should be considered:

a) effects on human health;

b) effects on the health of farm stock and domestic animals;

c) damage to plant crops, windbreaks, plantations, landscape planting and other vegetation;

d) damage to natural flora and fauna;

e) contamination of the food chain, including chemical residues in farm stock and crops;

f) damage to the life-sustaining or aesthetic qualities of water and soil resources and ecosystems;

g) effects on ancestral lands, sites and other taonga of value to Tangata Whenua;

h) aesthetic and health effects arising from the development, improvement or occupation of land contaminated by hazardous substances;

i) devaluation of rural, residential, conservation and recreation amenity values of land that has been contaminated by hazardous substances;

j) potential and actual risks and public concerns associated with the location of facilities and activities involving hazardous substances, with respect to residences, schools, conservation areas, recreational areas, waterbodies and other sensitive land use areas and sensitive environments; and

k) reverse sensitivity effects on rural land use involving hazardous substances, from residential and other more sensitive activities establishing in rural areas.

The applicant is proposing to store and use petrol and diesel and store LPG within a Living 1 Zone within the Selwyn District. The primary risk associated with the storage and use of petrol and diesel is via a leak from the storage container, a spill during re-filling of the tank, or re-fuelling of plant and vehicles. The primary risk associated with the LPG storage is explosion risk. The Environmental Protection Authority (EPA) considers diesel a low fire/explosion hazard, a medium environmental hazard, and a risk to human health (EPA, n.d.). EPA considers petrol a very high flammable hazard, a medium environmental hazard, and a risk to human health (EPA, n.d.). The EPA considers LPG a highly flammable gas.

The potential adverse effects that are relevant to this application are therefore:

a) effects on human health;

f) damage to the life-sustaining or aesthetic qualities of water and soil resources and ecosystems; and

g) effects on ancestral lands, sites and other taonga of value to Tangata Whenua.

4.2 Effects on Human Health

LPG is a HSNO Class 2.2.1A substance, i.e. a highly flammable gas. As such the storage of LPG presents a potential explosion risk. The application states that it is not proposed to store LPG in bulk. Instead pre-filled bottles will be stored within wire cages. It is proposed to install two bottle swap units (30 x 9 kg bottles for each unit, i.e. total storage of approximately 540 kg). The application states that the units will comprise a mesh cage compliant with the HSNO Act.

Petrol and diesel, being at risk of leaking or spilling into the environment, poses a potential risk to human health. These substances may be harmful if inhaled, are mildly irritating to skin and are a suspected carcinogen. Human contact should be avoided.

The applicant proposes to install three double skinned fibreglass tanks, with two potential options:

Either

- Option 1:
  - One 50,000 litre tank of grade 91 petrol;
  - One 50,000 litre tank of diesel; and
  - One split tank comprising of 20,000 litres of grade 91 petrol and 30,000 litres of grade 95 petrol.

Or

- Option 2:
  - One 60,000 litre tank of grade 91 petrol;
  - One 60,000 litre tank of diesel; and
  - One split tank comprising of 20,000 litres of grade 91 petrol and 40,000 litres of grade 95 petrol.

The applicant has requested that the consent provides the flexibility of pursuing either Option 1 or Option 2 as outlined above.

In order to minimise the risk of direct leaks from the tanks, the tanks will be double skinned (primary and secondary walls) purpose-built fuel storage systems manufactured in accordance with all the relevant

provisions of the HSNO Act and the associated codes of practice. To minimise the effects of accidental spills by customers while refuelling, the fuel dispensing pumps will be situated on an impervious concrete pad which drains to an API separator, after which the water will discharge to ground. The applicant proposes to refill the underground tanks as required via fuel tankers. The fuel tanker fill points are located to the east of the forecourt, and this area will also drain to the API separator (as indicated in the Proposed API Catchment Area Plan in the SHA Architecture drawings). Spill kits will be retained on-site, and tanker delivery vehicles drivers and other relevant staff will be suitably trained in emergency response procedures.

We agree that these measures proposed by the applicant are appropriate for the scale, location and nature of the underground and aboveground tank installation.

There are no specific details provided on the proposed storage tanks. The applicant has indicated that the three tanks (Option 1: three 50,000 L tanks; **or** Option 2: three 60,000 L tanks) will be underground secondary contained tanks, designed to the appropriate standards for the underground storage and use of petrol and diesel. The tanks will be double-skinned, whereby the second skin on the tank acts as an internal spill containment system that provides for 110% capacity of the volume of hazardous substances stored. The applicant has proposed the installation of an API separator, monitoring wells, retaining spill kits onsite, and training tanker delivery drivers and relevant staff on emergency response procedures, which will minimise the associated effects.

The applicant states that the proposed system will comply with the relevant regulations in the Hazardous Substances and New Organisms Act (HSNO) and that all necessary certifications for the site will be gained. In order for the Selwyn District Council to be assured that that the storage facility is in full compliance with all relevant HSNO regulations it is recommended that a consent condition be imposed which requires that prior to operating the test certificates for the tanks and LPG storage must be gained and supplied to the council.

The facility inspection and monitoring systems should ensure that the petrol and diesel storage system is maintained in a safe and fit for purpose state, provided they are correctly implemented. Based on the details provided in the AEE we believe that the systems proposed are effective and will be correctly implemented. We also have taken into account that Z Energy own and operate a number of service stations which gives us confidence that the facility will be operated and maintained appropriately.

While no specific set of conditions have been provided by the applicant the measures discussed above have been proposed in the application and we consider it appropriate to incorporate these into consent conditions.

Finally, as it is the New Zealand Fire Service (NZFS) that would be called to respond to any incident at the site, we recommend that NZFS are contacted prior to beginning operation of the system and made aware of the proposed activity. In this way NZFS will be able to familiarise themselves with the location generally as well as the nature and volumes of hazardous substances that are stored onsite and the nearest water source.

4.3 Damage to the Life-Sustaining or Aesthetic Qualities of Water and Soil Resources and Ecosystems

Petrol and diesel are considered by the Environmental Protection Authority to be a medium environmental hazard as it is ecotoxic in the aquatic environment. Any leaks or spills that could reach surface water have the potential to adversely affect aquatic life.

According to the '1:50,000 Topomap River and Stream lines' layer on the ECan GIS database, there are no streams or drains in the immediate vicinity of the site. The layer shows a drain running between 2 Chain Road and SH1, approximately 380 m south-west of the site, and another drain approximately

240 m north-east of the site. The stormwater layer in the ECan GIS database, as well as imagery from Google Street View, shows stormwater sumps along nearby roads (e.g. in the vicinity of 4 Brookside Road), which presumably disposes stormwater to ground. There is a risk to the environment if any leak or spill was able to reach these drains, or if it reaches groundwater via the onsite stormwater disposal system or nearby roadside stormwater sumps.

The application states that the proposed stormwater management system meets the requirements of the *Environmental Guidelines for Water Discharges from Petroleum Industry Sites in New Zealand*, Ministry for the Environment, December 1998. Stormwater from the areas associated with the fuel storage tanks and dispensary will be directed to the API separator prior to discharging to ground via a soak pit. The applicant has indicated that the API separator is capable of containing a spill of 2,500 L. However, if petrol or diesel were to leak to groundwater, this could potentially have an effect on drinking water supplies. The ECan GIS database indicates that the nearest well is M36/0009, located approximately 100 east of the site and owned by BP Oil New Zealand Ltd, is active and is listed as being used as a domestic supply. As per the environmental site assessment prepared by AECOM (AECOM, 2018), the ECan well card for this bore has a note dated 15 March 2013 stating that "*BP states that this bore is not at this location. Original owner = Hotel*". The AECOM report notes that the site and surrounding area are serviced by a reticulated water supply, and while the nature of well M36/0009 is unclear, "*shallow groundwater use within the immediate vicinity is considered unlikely*." As per the ECan GIS database, there are no community supply wells in the vicinity of the site. The risk to nearby drinking water supplies is considered low.

The application specifies spill mitigation measures in the event of a spill. All tanker drivers and relevant service station personnel will be trained in the location of the interceptor, including the manual shut off valve, and will be required to take immediate actions to contain the spill, which includes shutting down of all pump islands and isolating the area of spill. A spill kit will be located along the convenience shop frontage. The application also includes a description of typical emergency response procedures (page 39 of the AEE).

Maintenance will be undertaken by authorised maintenance contractors who will inspect and maintain the forecourt, drainage system and the API separator. The service station staff will conduct more frequent visual inspections and keep the drainage separators clear of any surface debris and will contact the authorised contractors should any unscheduled maintenance be required.

We believe that these mitigation measures proposed to contain a leak or spill are suitable to prevent the transport of petrol and/or diesel to groundwater and/or surface water drains.

4.4 Effects on Ancestral Lands, Sites and Other Taonga of Value to Tangata Whenua

The applicant has made no assessment of the potential effects of the proposal on ancestral lands or sites.

We have checked the location of the proposal against ECan databases, Mahaanui Iwi Management Plan 2013 and Selwyn District Plan, and note that the proposal does not appear to be within an area of any particular Ngai Tahu or Taumutu Rūnanga interest.

5.0 Summary

The greatest risk of the activity is spill or leak, with potential for subsequent fire/explosion, environmental damage or effects on human health. The risk of spill or leak and the potential effects on human health and the environment can be avoided or significantly reduced by ensuring that the system is designed, constructed and maintained to appropriately mitigate these risks when dealing with petrol and diesel storage, and the storage of LPG. More specifically:

- A location test certificate is recommended to be provided to the Council prior to use assuring the council that the installation is in full compliance with the relevant HSNO regulations;

- The storage vessels proposed are appropriate and minimise the risk of a leak or spill;
- Any leaks are contained and captured by the stormwater system;
- Monitoring of storage vessels and distribution system is undertaken;
- The risks from refilling of the vessels are minimised;
- A spill kit is kept permanently at the site;
- Comprehensive systems are in place to ensure that the facility is maintained in a safe and fit for purpose condition; and
- Emergency procedures are in place to respond to an incident should one occur.

6.0 Appropriateness of Proposed Mitigation Measures

The Applicant, in their Assessment of Environmental Effects, has included a number of proposed measures to mitigate the potential for a spill or leak. We agree that the measures proposed by the Applicant in these assessments and plans, as listed above in Section 5.0, are appropriate to reduce the risk of effects on the environmental and to human health from the proposal.

7.0 Recommendation

Section 104(1) requires that the consent authority must, subject to Part 2, have regard to:

a) Any actual and potential effects on the environment of allowing the activity; and

b) Any relevant provisions of:

   vi. a plan or proposed plan; and

c) Any other matter the consent authority considers relevant and reasonably necessary to determine the application.

We have had regard to the effects of the hazardous substances and the relevant provisions of the plan and consider that there are no other matters relevant to the hazardous substances.

As discussed in Section 6.0, when carried out in accordance with the recommended mitigation measures, the potential adverse effects proposed handling and storage of hazardous substances is considered to be less than minor. Given that the effect is considered to be less than minor, it is furthermore considered that there are no affected parties with the respect to proposed storage and use of hazardous substances.

The Applicant has assessed the proposal against the Selwyn District Plan objectives and policies in Appendix M of the application. Most relevant to the proposal (for hazardous substance) are Objectives B3.2.1 and B3.2.2, and Policies B3.2.2 and B3.2.2. We consider the proposal is consistent with these objectives and policies and agree with the Applicant's assessment that the proposal is consistent with the objectives and policies of the Selwyn District Plan.

If granted, we recommend the conditions outlined below.

8.0 Recommended Conditions

In order for Selwyn District Council to be assured that the underground storage tanks have been correctly located, installed and are safe to use, it is recommended that the following consent conditions be imposed:

- The three underground storage tanks shall be located on Lot 1 DP 75460, Rolleston. The three underground storage tanks shall be in accordance with either Option 1 **or** Option 2:

  - Option 1: split tank (20,000 litres 91 grade petroleum, 30,000 litres 95 grade petroleum), 50,000 litres 91 grade petroleum tank and 50,000 litres diesel tank;
  - Option 2: split tank (20,000 litres 91 grade petroleum, 40,000 litres 95 grade petroleum), 60,000 litres 91 grade petroleum tank and 60,000 litres diesel tank.

- The maximum volume of diesel and petrol stored on the site at any one time shall be of 50,000 litres of diesel and 100,000 litres of petrol for Option 1, **or** 60,000 litres of diesel and 120,000 litres of petrol for Option 2.
- Evidence of compliance with the Hazardous Substances and New Organisms Act shall be provided to the Council prior to the operation of the system, including copies of the Location Test Certificate for the LPG bottle swap units and petroleum product storage system, and the Stationary Container Certificate for the petroleum product storage system;
- Spill kits shall be located permanently on site;
- Upon completion of construction works at the site, the consent holder shall prepare and provide to Council a Site Environmental and Operational Management Plan, and an Emergency Response Plan; and
- Records of site inspections and surveys be kept and made available to Council staff upon request.

Advice note: prior to beginning operation of the system, the consent holder may wish to contact the New Zealand Fire Service (NZFS) as the NZFS would respond to any potential incident at the site. This would allow NZFS to familiarise themselves with the location generally as well as the nature and volumes of hazardous substances that are stored onsite and the nearest water source.

9.0 References

AECOM. (2018). *2 Brookside Road, Ellesmere-Rolleston 7614*. *Limited Environmental Site Assessment.* Report prepared for Z Energy Limited.

ECan. (2020). *On-Line GIS Database.* Retrieved 27 February 2020, from https://mapviewer.canterburymaps.govt.nz/

EPA. (n.d.). *Approved hazardous substances with controls*. Retrieved 27 February 2020, from Environmental Protection Authority - Hazardous Substances: https://www.epa.govt.nz/database-search/approved-hazardous-substances-with-controls/

EPA. (n.d.). *Hazardous substances classification codes*. Retrieved 27 February 2020, from Environmental Protection Authority - Hazardous Substances: https://www.epa.govt.nz/industry-areas/hazardous-substances/rules-for-hazardous-substances/hazardous-substances-classification-codes/

Limitations

This memorandum has been prepared by Pattle Delamore Partners (PDP) on the specific instructions of Selwyn District Council for the limited purposes described in the memorandum. PDP accepts no liability if the memorandum is used for a different purpose or if it is used or relied on by any other person. Any such use or reliance will be solely at their own risk.

This memorandum has been prepared by PDP on the basis of information provided by Selwyn District Council and others (not directly contracted by PDP for the work), including Z Energy, 4Sight Consulting, AECOM and Environment Canterbury. PDP has not independently verified the provided information and has relied upon it being accurate and sufficient for use by PDP in preparing the memorandum. PDP

accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the provided information.

Prepared by

Sebastian Küng
Environmental Engineer

Reviewed and Approved by

Steve Pearce
Technical Director