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Project Number #19261.000.001

HSNO Report

Museum Street, Pipitea, Wellington

Submitted to:
Parliamentary Services
C/o TBIG
Spark Central, Level 5
Boulcott Tower
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1 Introduction

ENGEO Ltd was requested by Parliamentary Services C/o TBIG to undertake a HSNO report of Diesel storage tanks to be kept in the basement of a proposed new building on Museum Street, Pipitea, Wellington (herein referred to as 'the site'). This work has been carried out in accordance with our signed agreement P2021.001.963_01, dated 19 August 2021.

ENGEO understands this HSNO report is for resource consent purposes. As part of the design for a new building at parliament, diesel storage tanks will be kept in the basement of the Museum Street Building, to ensure the building can remain operational in a post-disaster event.

1.1 Objective of the HSNO Report

This report has been prepared to provide Parliamentary Services with the applicable requirements for diesel compliance under the Health & Safety at Work (Hazardous Substances) Regulations 2017 (MBIE, 2017) (HSWA HS Regs), based on the information provided and the concept design of Level B1 basement within the proposed Museum Street Building.

In order to satisfy the above objectives, ENGEO has taken into account the following controls:

- Labelling, signage and safety data sheets;
- Certified handlers and supervision and training of workers;
- Class 6 substances;
- Emergency Management;
- Controls applying to class 3 substances; and
- Stationary container systems (including compliance certification).

As described in Section 3, Diesel is a class 3 (flammable) substance, in addition to having class 6 (toxic) hazard classifications. Therefore the controls for both classes apply.

Other regulatory requirements including the Resource Management Act 1991, Building Codes, Local and District Plans or fire safety advice have not been taken into consideration into this report, as they would require separate in-depth attention. The report has not included any detailed design including that of secondary containment requirements, building or tank design.

2 Site Description and Setting

An accommodation strategy has been developed to improve the long-term performance and utility of the parliamentary precinct. Part of this accommodation strategy is the development of the proposed Museum Street Building, to be located to the west of Parliament house. This building is to be developed on crown-owned land, which is currently utilised as carparking, to the west side of Museum Street and to the north of Bowen Street (existing and proposed site plans presented in Appendix 1). This building, oriented north-south, is a proposed six storey building. The diesel tanks are to be situated in the basement (Level B1) of this building. The basement of this building is also illustrated in Appendix 1. The current design allows for four diesel tanks each with a capacity of approximately 7,216 litres, with a proposed total of approximately 28,800 litres stored on-site.

3 Hazardous Substances Classification

The hazardous substance, which forms part of this review, is diesel. The hazard classifications and approximate quantities for this substance are in Table 1.

Table 1: HSNO Classification

Hazardous Substance	HSNO Classification (GHS 7) (post 30 April 2021)	HSNO Classification (pre 30 April 2021)	Approximate Quantity
Diesel	Flammable Liquids category 4	3.1D	4 x 7,216 L Tanks
	Aspiration Toxicity 1	6.1E	
	<i>Skin Irritation category 3 has not been adopted</i>	6.3B	
	Carcinogenicity category 2	6.7B	
	Hazardous to the aquatic environment chronic category 2	9.1B	

The HSNO classifications pre and post 30 April 2021 (EPA, 2021) have both been provided due to a four year transitional period which is in place for approvals of some substances to comply with updated labelling, safety data sheets and packaging notices. The HSWA HS Regulations still also refer to the pre April 2021 HSNO classification system and as such the findings and recommendations in this report.

4 Findings and Recommendations

The following sections of the report identify the minimum controls defined under the HSWA HS Regulations, including means to comply and recommendations where applicable. In addition to implementing these controls identified, it is ultimately the responsibility of the Person Conducting a Business or Undertaking (PCBU) to manage the risks associated with the hazardous substances at the workplace and periodically review these control measures in place.

4.1 Documentation

Inventory

An inventory of any hazardous substances used, handled or stored at the workplace (including any hazardous waste), must be prepared and kept at the workplace. This must be accessible to any emergency service worker, including during an emergency and after the workplace is evacuated. This inventory needs to include a number of items, such as: the product name; maximum quantity likely to be kept; location of the hazardous substance on-site and refer to the Safety Data Sheet (SDS) for the substance. A template inventory suggested for use is in Appendix 2. An inventory does not need to be adjusted for every change in volume through use, however should be updated should there be a significant change to the maximum storage volume.

The inventory must also include any hazardous waste.

This is in accordance with Regulation 3.1 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Safety Data Sheets (SDS)

A SDS for the diesel must be obtained from the manufacturer / supplier when it is first supplied for use at the workplace and after any amendment has occurred to the SDS. This document should be readily accessible to a worker and to any emergency service worker or anyone else likely to be exposed to the hazardous substance. The SDS should be no more than five years old (the date and version number should be visible on the SDS). It is the suppliers duty to provide a compliant SDS for each substance supplied to the workplace.

This is in accordance with Regulation 2.11 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Labelling

All four stationary tanks on-site containing diesel should display a label including the following information:

- the product name or chemical name;
- a hazard pictogram and hazard statement in accordance with the classification of the substance; and
- the steps to be taken to prevent unintended ignition.

In the case of diesel, this would be:

- Diesel; the pictograms / diamonds for a Flammable Liquid and an ecotoxic;
- Flammable Liquid and ecotoxic; and
- Keep away from ignition sources / no naked flames / no smoking.

Typical labels are self-adhesive that can be affixed to the tanks.

This is in accordance with Regulation 2.4 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Signage

Signs are required for diesel as the hazard classifications and volumes stored / used are greater than the trigger volumes specified (hazard classification 3.1D is 10,000 litres, and 9.1B is 1,000 litres).

Signage is used to warn other people at the workplace and emergency services that hazardous substances are present and so emergency services can plan their response and select PPE appropriately. The signage must be clearly visible and legible at a distance of not less than 10 m, readily understandable and made out of durable material.

The presence of signs can vary depending on the storage location of the hazardous substances. As the diesel will be located in a particular room, or compartment within the building, the signage must be positioned at each entrance to the room. The signage must contain the following information:

- the word HAZCHEM;
- the hazardous properties;
- the general type of hazard relating to diesel (through the use of pictograms or hazard statements);
- the precautions necessary to prevent unintended ignition; and
- the immediate response action to be taken in an emergency.

An example of a typical sign for Diesel is represented in Figure 1.

This is in accordance with Regulations 2.5 and 2.6, and Schedule 3 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Figure 1: Example Signage for Diesel



4.2 Certified Handlers and Supervision and Training of Workers

Certified Handlers are only required for acutely toxic (6.1A and 6.1B) substances or those substances that require a controlled substance licence. Diesel does not fall into either of those categories, and therefore certified handlers are not required.

However, every worker who uses, handles, manufactures or stores a hazardous substance (before that worker is allowed to carry out or supervise work) must be provided with information, training and instruction in regards to the diesel. This should include, as a minimum:

- the health hazards associated with the diesel;
- any actions that should be taken in an emergency; and

- the workers obligations under the regulations.

Records of the training must be kept.

A worker at the workplace who uses, handles, manufactures or stores a hazardous substance must be provided with the necessary supervision to protect the worker from risks to his or her safety arising from the work involving diesel.

This is in accordance with Regulations 13.9, 4.5 and 4.6 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

4.3 Class 6 Substances

Personal Protective Equipment (PPE)

PPE should be used in order to minimise the risks to the health and safety of workers when carrying out work using a hazardous substance with a particular toxic or corrosive class (6.7B in the case of diesel). The PPE used should be as per the SDS. Examples of this could be: protective clothing (overalls); eye protection (chemical splash goggles); and hand protection (chemical resistant gloves).

This is in accordance with Regulation 13.8 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Equipment

Where a class 6 or 8 substance is used, as in the case of diesel, the equipment used to handle the substance must:

- Retain the substance without leakage at all of the temperatures and pressures at which the equipment is to be used; and
- Dispenses or applies the substance, without leakage, at a rate and in a manner that the equipment is designed for.

The equipment must be accompanied by documentation about the use and maintenance of it and be available to any worker handling the diesel and understandable by any worker required to access the equipment.

This is in accordance with Regulation 13.7 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Exposure Standards and Limits

A class 6 substance, in this case diesel, must not be used in a manner resulting in the concentration of that substance exceeding the tolerable exposure limit (TEL) set for a particular environmental medium. There was no available information for the TEL for diesel.

The PCBU with management of a workplace must ensure that a person at a workplace is not exposed to a concentration of a class 6 substance, diesel, that exceeds the prescribed exposure standard. There is no Workplace Exposure Standard (WES) set specifically for diesel. The WorkSafe WES Time Weighted Average (TWA) for diesel particulate matter as elemental carbon is 0.1 mg/m³ (WorkSafe, 2020). The Threshold Limit Value (TLV) TWA for fuels, diesel (total hydrocarbon, vapour and aerosol) from the American Conference of Governmental Industrial Hygienists is 100 mg/m³ (ACGIH, 2014).

The particulates from the diesel are unlikely to be an issue in the Museum Street Building basement as this is where the storage of the diesel will take place. The combustion of the diesel from the generators, where particulates may be created will take place on a different floor within the building or in the basement of a different building.

This is in accordance with Regulations 13.17 and 13.18 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

4.4 Emergency Management

Emergency Response Plans

An Emergency Response Plan (ERP) must be prepared for the workplace for diesel, as the hazard classifications and volumes present / likely to be present are greater than the trigger volumes specified (hazard classification 3.1D and 6.7B is 10,000 litres, and 9.1B is 1,000 litres). This ERP must describe and apply to all reasonably foreseeable emergencies that may arise from a breach or failure of the controls on diesel at the workplace. This may include fire, spill, first aid and earthquake.

The ERP, for each reasonably foreseeable emergency must describe the actions to be taken, identify each person with responsibility for those actions, specify actions to be taken to contact emergency services and provide information. The full content for an ERP is detailed in regulation 5.7 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

The ERP must be implemented in the event of any of the emergencies described in the plan, by the PCBU with management or control of a workplace. This plan must also be available to every person identified as being responsible for implementing the plan or a specific part of it and every emergency service provider identified within it.

Fire and Emergency New Zealand may review the ERP to assess whether the role proposed for them is achievable and consistent with their policies.

The PCBU must ensure that the ERP is tested at least every 12 months to demonstrate the plan is workable and effective. However, if a person, procedure or action specified in the plan is changed, the plan must be tested within three months of the change. This could be a desktop test. Records of these tests must be maintained. An example of a template test form in is Appendix 3.

This is in accordance with Regulations 5.6, 5.7, 5.8, 5.9, 5.10, 5.11, 5.12 and Schedule 5 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Fire Extinguishers

Two fire Extinguishers are required for the site for diesel, as the hazard classifications and volumes present / likely to be present are greater than the trigger volumes specified (hazard classification 3.1D is 500 litres).

Each fire extinguisher must be clearly visible, readily accessible in an emergency and have a classification and rating of at least 30B in accordance with AS/NZS 1850:2009.

This is in accordance with Regulations 5.2, 5.3, 5.4, 5.5 and Schedule 4 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

4.5 Controls applying to Class 3 Substances

Segregation / Incompatible Substances

Diesel is incompatible with all class 1, 2, 3.2, 4 and 5 substances, and as such must not be in contact with any substances of these classes and must be stored separately. Class 1 substances are explosives, class 2 flammable gases, class 3.2 liquid desensitised explosives, class 4 flammable solids and class 5 oxidisers. Substances that are incompatible or react dangerously need to be segregated, with separate secondary containment. The SDS for diesel will have more information in regards to this. From the information provided, no other hazardous substances will be present in the Museum Building basement.

This is in accordance with Regulation 10.5 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Reduce Likelihood of Unintended Ignition

Where a class 3.1 substance, diesel, is present, the PCBU must manage the substance so there is no ignition source present.

Diesel is not a volatile liquid, therefore there are no flammable vapours at normal temperatures that would render the surrounding atmosphere hazardous. Meaning the danger of ignition from a nearby flame or by a spark from electrical equipment is unlikely.

The flashpoint of diesel is around 60°C, the temperature at which it can form an ignitable mixture in air. In order to create a fire, an ignition source at flashpoint temperature would still be needed. However, once the ignition source is removed, the fire may not be sustained.

This is in accordance with Regulations 10.8 and 10.11 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Separation Distances

There is a requirement for an above ground stationary tank of 7,216 litres of a class 3.1D hazardous substance (diesel) to be separated from a protected place by 3.11 m. This distance can be reduced to not less than 50% (therefore 1.56 m) if the above ground supervault tanks are manufactured and design certified to the requirements of SwRI 95-03 for a 4 hour fire rated tank.

A protected place includes:

- i. A dwelling, residential building, place of worship, public building, school or college, hospital, child care facility, or theatre, or any building or open area in which persons are accustomed to assemble in large numbers, whether within or outside the property boundary of a place where a hazardous substance location is situated;*
- ii. Any factory, workshop, office, store, warehouse, shop or building where persons are regularly employed, whether within or outside the property boundary of a place where a hazardous substance location is situated; but*

does not include a small office or other small building associated with a place where storage, handling, use, manufacture or disposal of a class 2, 3, 4, 5, 6 or 8 substance is a major function.

From the information provided, the ground floor of the Museum Street Building could be classed as a protected place (where persons are regularly employed). The distance from the top of the tanks to the floor above should therefore be investigated.

If the stationary tank complies with the requirements detailed in regulation 17.63(3)(b), (c) or (d) the separation distance to a protected place does not apply. These requirements are in relation to the location of the internal combustion engine / generator.

As per regulation 17.63 (3), if the internal combustion engine / generator of a stationary container system is located in a building, the PCBU must ensure that a stationary tank that is part of that system is located:

- (a) outside that building
- (b) in that building;
- (c) in another building;
- (d) in any building.

The Parliamentary House generators will be situated in the basement of the current Parliament House building, and the Museum Street generators will be situated on the ground floor of the Museum Street Building. Therefore Regulation 17.63(d): stationary tanks in any buildings, is most likely to apply here.

A stationary tank may be located in any building if:

- The tank has a 4-hour fire rating that complies with the requirements of SwRI 95-03; and
- The design of the tank is listed on the record of certified designs and fabricators.

The supervault tanks proposed are designed, fabricated and tested in accordance with SwRI 95-03 and are 4-hour fire exposure resistant with a 240/240/240 rating. If the design of the tank can be listed on the record of certified designs and fabricators and the current proposal of tanks are chosen, then the separation distance to a protected place should not apply.

Each diesel tank must be separated from one another by a distance of at least 1 m. The tanks must not be located end to end on a horizontal plane, unless in determining the tanks location, the PCBU has taken into account the potential for a failure occurring at the end of a tank and the resulting risk.

This is in accordance with Regulations 11.9, 17.18, 17.19, 17.63, table 5 in Schedule 12 and table 1 in Schedule 25 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Secondary Containment

Secondary Containment is required for diesel as the hazard classifications and aggregate quantity are greater than the trigger quantity specified (hazard classification 3.1D is 10,000 litres).

In regards to the secondary containment system, as flammable liquids must be contained (diesel), controls excluding any energy source capable of igniting diesel and that prevent the diesel from being contaminated by incompatible substances should be established.

The capacity of the secondary containment system must be 110% of the stationary container (diesel tank). This secondary containment must be impervious to diesel and fire resistant.

This is in accordance with Regulations 10.30, 17.99, 17.100, 17.102 and Table 9 in Schedule 9 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

The stationary containers (tanks) proposed for the storage of diesel are supervault (SVR) tanks. These tanks have an outer steel tank which provides secondary containment, negating the requirement for additional bunding. From research, both primary and secondary containment of these tanks conforms to AS1692 and UL2085 requirements. These tanks are 4-hour fire exposure resistant with a 240/240/240 rating.

The four SVR tanks will be housed within a small bund wall. This bunding will be in place for the purpose of capturing any potential leaks from the fuel pumps, not for the tanks themselves. No measurements, or intended volume of this bund has been provided. A recommendation for the construction of the bund would be for an impervious bund liner to be laid prior to any concrete being poured. The concrete could be painted with a 2-pot epoxy resin paint for further protection.

4.6 Stationary Container Systems / Tanks

General Performance Requirements

All parts of the stationary container system are to be designed, constructed, installed, operated, maintained, inspected, tested and repaired so that the system contains the diesel without leakage when subjected to all operating temperatures, pressures, stresses, loadings and environmental conditions.

This is in accordance with Regulations 17.4 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Design, Construction and Installation

The above ground stationary tanks used to store diesel must be designed and constructed in accordance with any of the following:

- NZS/API 650:1998;
- BS EN 14015:2004;
- API 620:2013 (12th Edition);
- SwRI 95-03;
- SwRI 93-01;
- UL2085:1997 (2nd edition);
- AS1692:2006 (4th edition);
- UL142:2006 (9th edition); or
- BS799-5:2010.

The above ground stationary tanks used to store diesel must be installed on foundations that will prevent subsidence of the ground that endangers safety and must be designed, constructed and installed to the seismic and wind loading requirements specified in any of the following:

- NZS/API 650:1998;

- BS EN 14015:2004
- AS/NZS 1170.2:2011 (R2016);
- NZS 1170.5:2004; or
- The requirements in a safe work instrument.

This is in accordance with Regulations 17.6 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

The supervault tanks proposed are designed, fabricated and tested in accordance with SwRI 95-03 and UL2085 (which are both on the list above for design and construction).

No specific information in regards to the seismic and wind loading specifications for the supervault tanks was available from research undertaken, except that integral pedestal supports provide seismic anchoring.

Pressure Management

The above ground stationary tanks used to store diesel must be designed, constructed, installed and operated, to ensure that any pressure or vacuum resulting from: the filling or emptying of the tanks; or changes in atmospheric temperature, will not cause stress in the tank, or the tanks to collapse. The tanks should therefore be vented in accordance with: section 5.4 of AS1940:2004; API 2000:2014; or the requirements in a relevant safe work instrument.

The tanks must also have an emergency pressure management system that ensures the maximum design stress of the tank is not exceeded in any reasonably foreseeable event and the tank does not collapse in any reasonably foreseeable event.

This is in accordance with Regulations 17.7 and 17.8 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

No specific information in regards to the regulations for pressure management of the proposed supervault tanks was available from research undertaken, except that these tanks conform to international requirements and are pressure and vacuum testable on-site. There is also emergency venting for primary and secondary containments. The emergency vent is designed to control pressure in the tank in extreme fire conditions to eliminate explosion.

Liquid Level Indicators

Each stationary tank containing diesel must not be filled to a level exceeding its safe fill capacity. A calibrated liquid level indicator (for example a dipstick or gauge) must also be present on each tank indicating the actual liquid level, in relation to the safe fill level. This liquid level indicator must be designed, constructed and installed to resist heat and impact to which it may be subjected in any reasonably foreseeable situation.

This is in accordance with Regulations 17.11 and 17.12 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

There is no specific information in regards to liquid level indicators for the supervault tanks from the research undertaken.

Pipework

There are additional requirements for pipework that apply to any stationary containers. This in addition to the specific requirements for stationary container systems and generators (detailed below).

Pipework must be designed, constructed, installed, operated, inspected, tested and maintained to ensure that the pipework is suitable for all reasonably foreseeable working pressures, temperatures and structural stresses.

Pipework must comply with the following:

- Transfer lines must be designed, constructed, and installed, in accordance with:
 - ASME B31.4:2016 (ASME Code for Pressure Piping, B31. Pipeline Transportation Systems for Liquids and Slurries); or
 - AS2885.1:2012 (Pipelines – Gas and liquid petroleum – Design and construction).
- Transfer lines must be operated, inspected, tested and maintained in accordance with:
 - AS2885.3:2012 (Pipelines – Gas and liquid petroleum – Operation and maintenance).
- Process pipelines must be designed, constructed, and installed, in accordance with:
 - ASME B31.3:2016 (ASME Code for Pressure Piping, B31. Process Piping); or
 - ASME B31.4:2016 (ASME Code for Pressure Piping, B31) Pipeline Transportation Systems for Liquids and Slurries); or
 - AS2885.1:2012 (Pipelines – Gas and liquid petroleum – Design and construction).
- Process pipelines must be operated, inspected, tested and maintained in accordance with:
 - API 570:2016 (Piping inspection code: In-service inspection, rating, repair, and alteration of piping systems); or
 - AS2885.3:2012 (Pipelines – Gas and liquid petroleum – Operation and maintenance).

The installer of the pipework should be familiar with the compliance of these particular standards.

This is in accordance with Regulations 17.72 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Fittings

If the above ground stationary tanks used to store the diesel has pipework connected to the tank with one or more nozzles and the diesel could escape from one of those nozzles if the pipework fails, then the tank must be fitted with a valve.

This valve must:

- Be as close as practicable to each nozzle;
- Be positioned in order to cut off the flow of the diesel from the tank;
- Comply with section 6.3.3 of AS 1940:2004;

- In summary, this section requires that for any manually operating valve, the distinction between open and shut positions is obvious; any hand operated valve shall close by clockwise rotation and the direction of closing clearly marked and the use of detachable handles for valves should be avoided.
- Be made of cast steel; and
- Be fire safe (complying with BS EN ISO 10467:2004 or API 6FA:1999 or API 607:2016).

This is in accordance with Regulation 17.75 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Markings

In addition to labelling on the stationary containers for the diesel, each of these tanks must also be marked permanently and legibly with the following information:

- The specification to which the tank was designed;
- Date of manufacture of the tank;
- Materials used in construction of tank;
- Name and address of manufacturer of tank;
- Maximum and minimum design pressure of tank;
- Maximum and minimum design temperature of tank;
- Maximum permitted density (SG) of diesel contained in tank;
- Maximum safe fill level of tank;
- Identifier linking tank to records and compliance certificate relating to tank; and
- Design approval number (if any) for tank.

This is in accordance with Regulations 17.76 and 17.77 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Any pipework connected to the above ground stationary tanks for the diesel must be permanently and legibly marked with colour coded labels in accordance with AS1345:1995 and must indicate the direction of flow of the diesel through the pipework, by use of arrows.

This is in accordance with Regulations 17.78 and 17.79 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Records

A site plan must be available for inspection at the site. This plan must detail:

- The address of the site and the north point.
- The location of the stationary containers must also be noted in relation to:
 - every building;

- any separation distances required;
- any secondary containment systems;
- all fire-fighting equipment and facilities, including firewalls and vapour barriers; and
- every transfer point.

There must also be records available for inspection in relation to every stationary container system describing how the system complies with the requirements for markings of the tanks and pipework and for secondary containment.

All records must be updated when the stationary container system is modified, repaired or relocated.

This is in accordance with Regulations 17.80 and 17.81 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Specific Requirements Stationary Container Systems and Generators

There are additional requirements for stationary containers that contain a class 3.1 substance which is used to provide fuel to an internal combustion engine or a burner. In this case diesel will be used as the fuel for the Parliament House generators and will also serve the Museum Street building generators.

The stationary containers must be installed to ensure the following:

- That the diesel does not discharge or leak from any part of the tank within the building;
- Any transfer point used for filling the tanks with the diesel is located outside the building;
 - The point above may be negated and the tank may be directly filled using a connection that is both liquid tight and vapour tight and seals without spillage, when disconnected (dry break coupling), if the following is adhered to. The fill point is clearly identified; and there is a manual valve directly upstream of the coupling and the requirements of sections 5.3.2(a) to (f), 5.3.3 (a) to (c) and 5.3.4 of AS1940-2004 are complied with. The transfer point should be fitted with a non-return valve, installed in accordance with 6.3.1 of AS1940:2004.
- Any vent pipe, relief valve, or overfill pipe that is part of the tank terminates outside the building, except an emergency vent installed on a tank that complies with SwRI 95-03;
- Exhaust fumes created as a result of using the diesel are discharged into a safe place that is outside the building;
- The flow of the diesel to the internal combustion engine / generator associated with the tank is modulated to match the capacity of the engine or burner;
- The supply of the diesel to the generator associated with the tank, or any pump used to supply the diesel to that generator is cut off if the temperature of the air above the engine or burner reaches 90°C; and
- If the diesel spills or leaks into the systems secondary containment system, any pump that is part of the system is located so that it will not come into contact with the spilled diesel.

The stationary container system must also have a means of preventing the diesel from draining from the tank in the event that pipework fails, an example of this could be a non-return valve. This means of preventing the diesel from draining must be fitted as close as practicable to each tank.

The pipework in a stationary container system (other than the system supplying diesel to the generator), but up to the first connection point on the generator must be constructed, installed, and tested in accordance with requirements in a safe work instrument, or be:

- Constructed of fire-resistant materials (examples of this could be solid-drawn steel tubing; mild-steel or wrought iron tubing; or solid-drawn copper tubing);
- Constructed of corrosion-resistant materials that do not react with diesel, or interact with the pipework to significantly affect or weaken the pipework (examples of this could be solid-drawn steel tubing; mild-steel or wrought iron tubing; or solid-drawn copper tubing);
- Installed securely; and
- Tested to ensure that the pipework does not leak at a pressure that is the greater of 350 kPa or 1.5 times the maximum working pressure of that pipework.

The internal combustion engine / generator must be equipped with an emergency shut-down system that will isolate the supply of diesel from the engine / generator if a fire occurs on the engine.

The stationary tanks can be installed in a building, so long as all tanks are located on the lowest level of the building. The parliament house generators will be located within the existing parliament house basement (the same level as the Museum Street basement) and the Museum Street generators will be situated on the floor directly above the tanks (Ground floor). The PCBU must ensure regulation 17.63 (3) is complied with.

All equipment that forms part of the stationary container system must be repaired, inspected, tested and maintained to ensure all equipment continues to comply with the requirements to which it was designed, constructed and installed.

This is in accordance with Regulations 17.57, 17.59, 17.63, 17.73 and 17.87 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Compliance Certification

A compliance certificate is required for each of the stationary containers / tanks for the diesel as they are proposed to be of a capacity greater than 5,000 litres. These tanks must be certified prior to putting the diesel within them.

The compliance certifier, before issuing a certificate, will check compliance against the regulations, including the tanks suitability, design, construction and pressure management. Mainly all the items mentioned within this section 4.6.

This is in accordance with Regulations 17.90 – 17.98 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

5 Recommendations

It is recommended that:

- The controls identified in this report are implemented into the design;
- The regulations are consulted once the design specifications of the tanks and final volumes have been confirmed; and
- Certification from your compliance certifier is obtained prior to commissioning.

6 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, Parliamentary Services c/o TBIG, 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 (07) 777 0209 if you require any further information.

Report prepared by



Bridget Derham

HSNO Scientist

Report reviewed by



Dave Robotham, CEnvP SC

Principal Environmental Consultant

7 References

ACGIH: *Documentation of the Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs)* - Diesel fuel, as total hydrocarbons.

EPA, (2021). HSNO: GHS 7 Correlation Tables 2021. Environmental Protection Authority.

MBIE, (2015). Health and Safety at Work Act 2015. Ministry of Business, Innovation, and Employment.

MBIE, (2017). Health and Safety at Work (Hazardous Substances) Regulations 2017. Ministry of Business, Innovation, and Employment.

MfE, (1996). Hazardous Substances and New Organisms Act 1996. Ministry for the Environment.

Standards Australia, (2004). AS1940: 2004. The storage and handling of flammable and combustible liquids. Australian Standard.

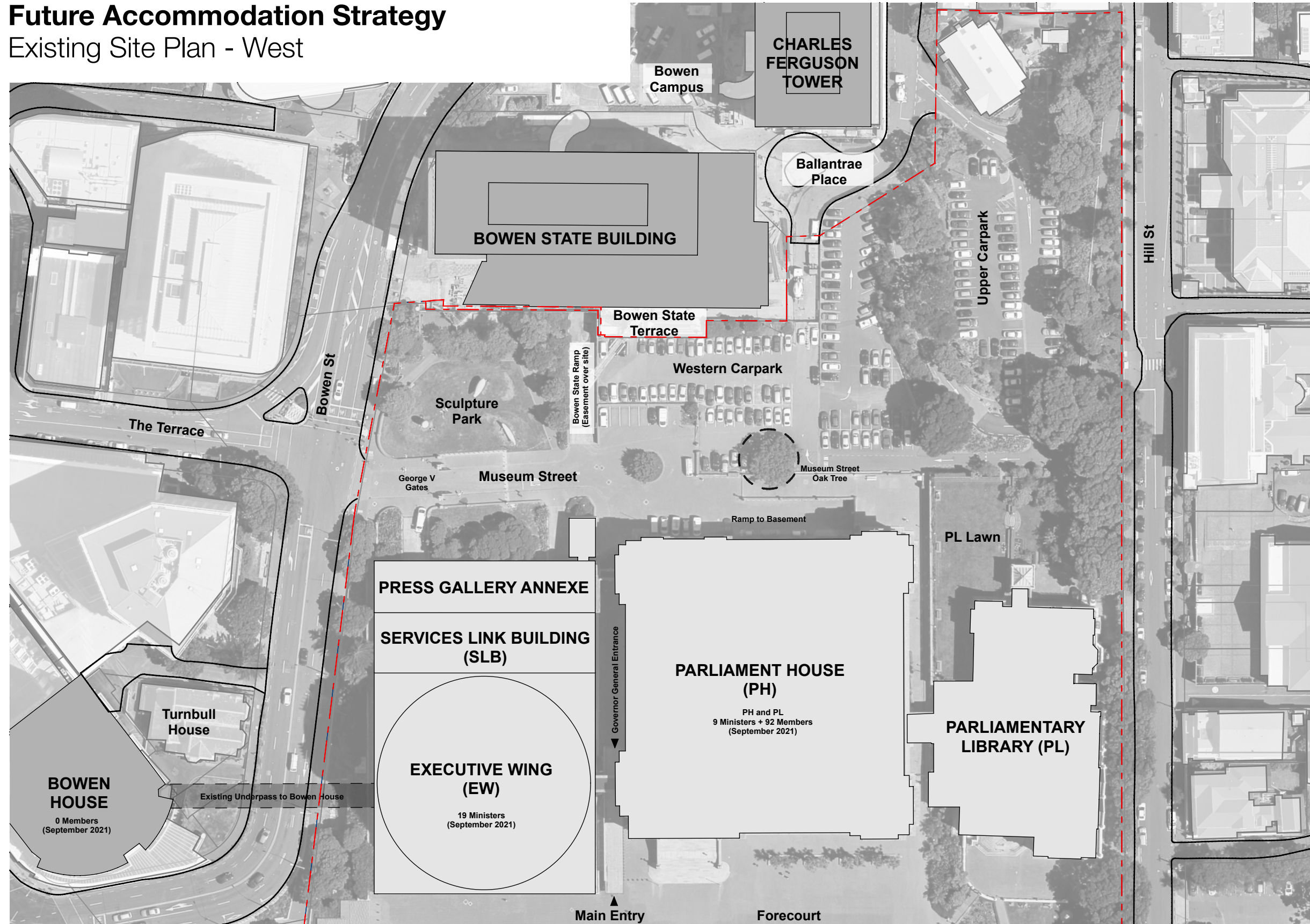
WorkSafe, (2020). Workplace exposure standards and biological exposure indices. WorkSafe New Zealand.



APPENDIX 1:
Site Plans

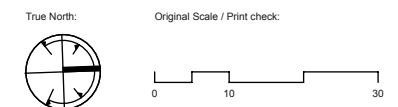
Future Accommodation Strategy

Existing Site Plan - West



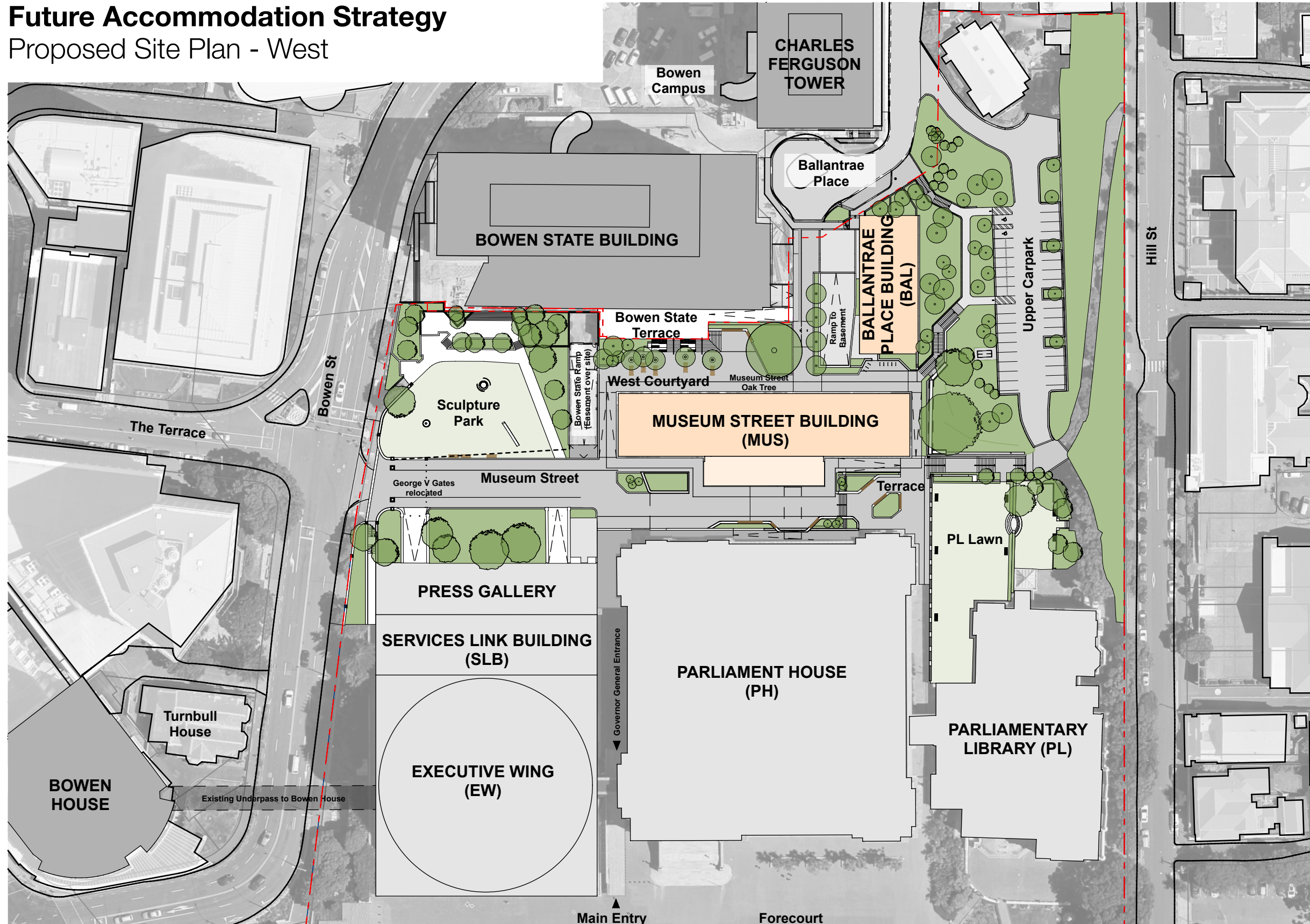
SITE PLAN KEY

- - - Site boundary




Future Accommodation Strategy

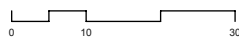
Proposed Site Plan - West

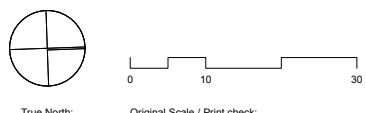
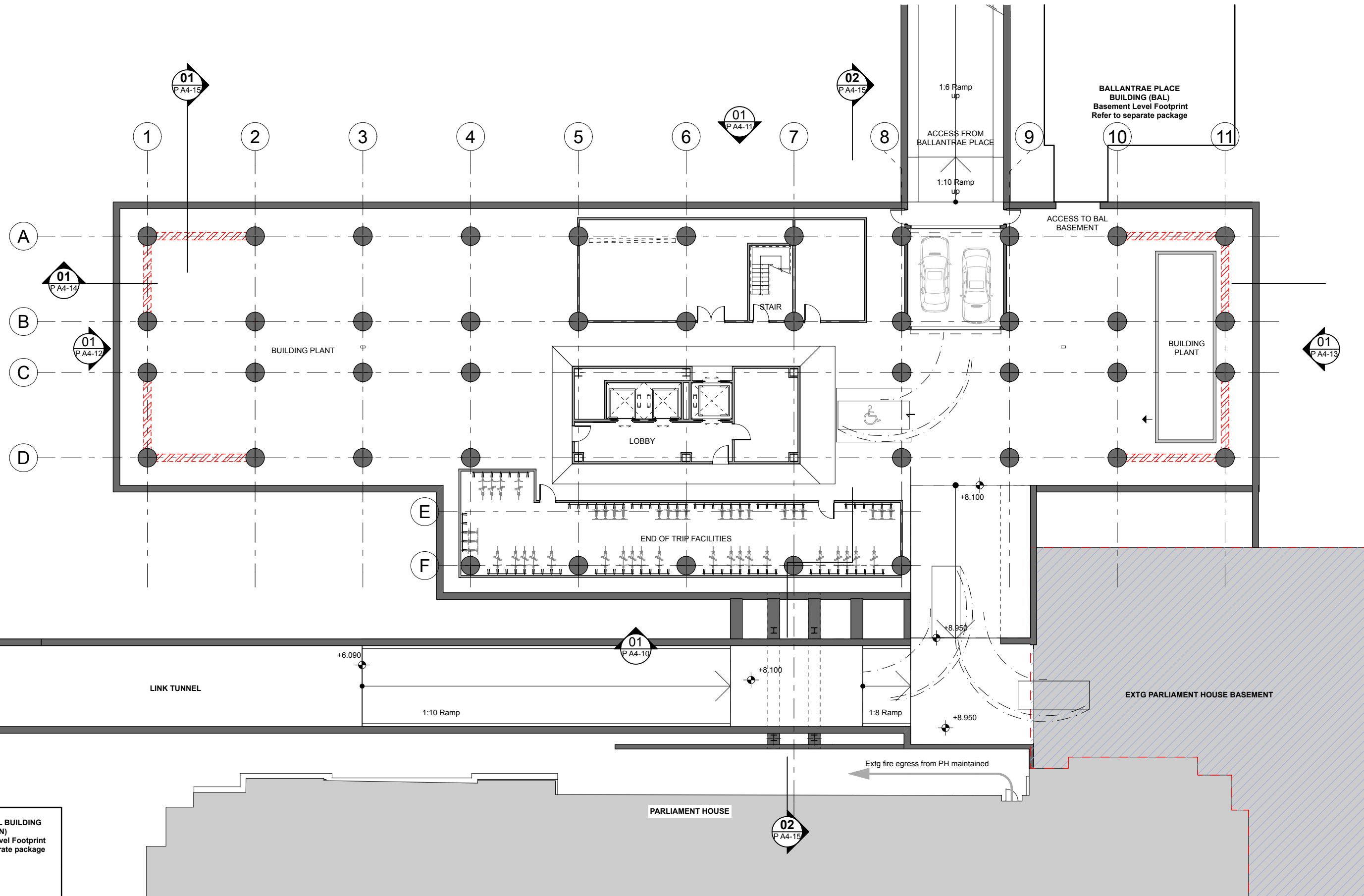


SITE PLAN KEY

- - - Site boundary

True North: 

Original Scale / Print check: 



Notes:
 DO NOT SCALE OFF DRAWINGS
 All dimensions to be checked on site.
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Rev	Description	Actual Issue Date
A	Application Drawings	17.09.2021

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Prepared For:
Her Majesty the Queen

PARLIAMENTARY SERVICE
 Te Ratonga Whare Pāremata

Project Title:
MUS - Museum Street Building
 at
 Parliamentary Precinct
 1 Molesworth Street, Wellington
 SEC 1 SO 38114

Resource Consent Application Drawings

Layout Name:
Level B1 Basement

Scale: 1:250 Original Paper Size: A3

Job No.: 2652 Layout I.D.: P A4-02 Revision: A

Version: SPA_24_0 / CAD Ref: 2652 FAS MUSv2 / Printed: 17/09/21, 12:52 PM

Print in Colour



APPENDIX 2:
Template Inventory

Hazardous Substances Inventory - Museum Street Building

Name of Substance	Hazard Classes	UN Number (if available)	HSNO Approval Number, Group Standard	Specific Location	Location	Maximum Quantity	Storage / Segregation Requirements	SDS Available & Version Details
Diesel	Flammable Liquids category 4; Aspiration Toxicity category 1; carcinogenicity category 2; aquatic chronic category 2; 3.1D, 6.1E, 6.3B, 6.7B, 9.1B	UN 3082	HSR001441	4 x SVR Tanks. Each with a capacity of 7,216 L	Tanks in Basement (B1) of Museum Street Building	28, 800 litres	Avoid possible sources of ignition	Yes. BP Diesel. Version 4. Date of issue: 14/02/2019



APPENDIX 3:

Template Emergency Response Plan - Testing

Museum Street Building (Basement) Emergency Response - Drill

This Emergency Response Drill should describe the type of emergency and what actions need to be taken during the course of the emergency (as outlined in the Emergency Management Plan for Museum Street Building, Basement B1). Each section in the drill is to be completed, and the person documenting this should initial and date the drill. Completed Drills are to be filed.

Date of Drill: _____ Time of Drill: _____

Names of those present at drill:

Name: _____	Signed: _____
Name: _____	Signed: _____
Name: _____	Signed: _____
Name: _____	Signed: _____
Name: _____	Signed: _____
Name: _____	Signed: _____

TYPE OF EMERGENCY

ACTIONS TO BE TAKEN DURING EMERGENCY

DRILL RESULTS (OUTCOME) / FURTHER ACTIONS

Museum Street Building (Basement) Emergency Response - Drill

GENERAL COMMENTS

Completed by: _____

Date: _____