14D Hazardous Facilities

## Introduction

Facilities or activities involving hazardous substances may cause adverse effects on human health and the environment through accidental discharges or poor management practices. The risk associated with the use, storage, transportation and disposal of hazardous substances needs to be managed to avoid, remedy or mitigate any adverse effects on the local community and the receiving environment.

This management involves measures which address both the location and operation of hazardous facilities and activities. For example, the risk associated with a hazardous facility may be unacceptable to the community where the site is in close proximity to sensitive ecological areas or residential activity areas.

The safety and health of workers in hazardous facilities is subject to regulations under the Health and Safety in Employment Act 1992, which control conditions on the site. However, any off­site effects that may impact on the wider environment and the community are addressed by Plan measures. These measures include the use of screening tools, site performance criteria and risk assessment procedures.

# 14D 1 Issue, Objective and Policies

## 14D 1.1 Local Area Issue

**14D 1.1.1 Risk Associated With Hazardous Substances**

**Issue**

#### There is a risk of harm to people and damage to the receiving environment from hazardous substances. Risks are associated with the way in which hazardous substances are used, stored, transported and disposed of and are related to characteristics of the substances such as their explosiveness, flammability, corrosiveness, toxicity and ecotoxicity.

**Hazardous substances should be managed in a safe manner to avoid, remedy or mitigate any adverse effects on human health and the environment caused by an accidental or deliberate release of hazardous substances. Measures should also be taken to reduce the risk to the local community and environment, from the location of hazardous facilities.**

**Objective**

To protect the community and the receiving environment from the risk associated with the location and operation of hazardous facilities.

**Policy**

1. That the location of hazardous facilities be managed to avoid or mitigate an unacceptable level of risk to the community and the receiving environment.
2. That those hazardous facilities which have a low probability of a hazardous incident, but have a high potential impact, be managed by the provisions of the Special Business Activity Area in Seaview/Gracefield.
3. That effects likely to be generated by hazardous facilities are managed to avoid adverse effects from creating an unacceptable level of risk to the community and/or causing irreversible damage to the receiving environment.
4. That appropriate safety measures be adopted by activities using, handling and storing hazardous substances and hazardous wastes to avoid or mitigate any adverse effects on human health and the receiving environment.
5. That appropriate measures be taken during transportation of hazardous substances and wastes to ensure the safety of the general public and the environment.
6. That the disposal of hazardous wastes be undertaken in an environmentally safe manner and where codisposal is necessary, in compliance with the requirements of the Silverstream landfill to protect human health and the receiving environment.

***AMENDMENT 383 - Amend Policy 14D 1.1.1(g)***

1. That hazardous facilities within the Wellington Fault Overlay ~~Special Study Area~~ be managed to avoid adverse effects from creating an unacceptable level of risk to the community and/or causing irreversible damage to the receiving environment.

***AMENDMENT 384 - Amend Explanation and Reasons of section 14F 1.1.1 Risk associated with Hazardous Substances***

**Explanation and Reasons**

#### Adverse Effects:

All activities involving the use, storage, transportation and disposal of hazardous substances have the potential to cause adverse effects on the environment and human health. For example, hazardous substances could be toxic, corrosive, flammable, highly reactive, or infectious. The aim of the objective and policies is to protect human health and the receiving environment from the risk associated with these hazardous substances.

#### Hazardous Facilities:

The policies focus on the location and operation of hazardous facilities and activities which have the potential to cause harm to people or damage the receiving environment. The location of hazardous facilities requires careful management to safeguard environmentally sensitive areas, such as the aquifer, waterways, coastal waters and wetlands where the release of hazardous substances can cause contamination. The safety and health of the local community are also taken into account when determining the appropriate location for hazardous facilities.

The location and operation of hazardous facilities and activities will be controlled through the use of the Dow Hazard Index in Seaview/Gracefield, the Hazardous Facilities Screening Procedure for other activity areas, and waste management controls at the Silverstream landfill. These controls are complementary to the New Zealand Standards, Regulations and Legislation for processes involving dangerous, toxic and explosive substances.

#### Hazardous Facilities Screening Procedure:

* 1. The Screening Technique:

The Hazardous Facilities Screening Procedure (HFSP) provides a mechanism to ensure that hazardous facilities or activities are not only safely located, designed and built, but also that they continue to operate safely throughout their life. The HFSP is a screening tool which focuses on the potential effects caused by a hazardous substances release or accident. It involves the assessment of effects in the following three groups:

* + - effects caused by fire and/or explosion;
    - effects on human health; and
    - environmental effects.

Potential adverse effects of hazardous substances can be predicted by assessing the hazards presented by the substance and the anticipated consequences of their release to the environment.

Any proposed hazardous facility will be assessed using the HFSP to determine the consent status of the activity in the particular activity area. If the proposed hazardous facility requires a resource consent, a more detailed assessment of risks may become necessary. This risk assessment needs to take account of both the probability and potential effects of hazardous substances accidents, and the proposed measures to mitigate and manage risks. The granting of the resource consent will then be considered on the basis that the off­site risks presented by a hazardous facility are adequately contained and managed.

The HFSP is used as a screening technique for new activities. Existing facilities will not be subjected to the HFSP unless there is a significant alteration in terms of character, intensity or scale.

The procedure involves the identification of:

* + - Base Threshold (B), which is defined as the amount (mass in tonnes or volume in cubic metres for compressed gases) of a substance that has been assessed as generating no or minor off­ site effects when released, before taking into account site and substance specific considerations.
    - An Adjustment Factor (F), which is defined as the product of the individual factors for each Effects Group (FF for Fire/Explosion Effects Group, FH for Human Health Effects group and FE for Environmental Effects Group) that increase or decrease the likelihood and consequences of release.
    - An Adjusted Threshold (T), which is calculated for each Effects Group by multiplying the Base Threshold (B) with the relevant Adjustment Factor (F), as follows:

T = B x FF provides the Adjusted Threshold for a substance in the Fire/Explosion Effects Group.

T = B x FH provides the Adjusted Threshold for a substance in the Human Health Effects Group.

T = B x FE provides the Adjusted Threshold for a substance in the Environmental Effects Group.

* + - The final step involves the calculation of the Effects Ratio, which represents the proposed quantity of the substance to be stored or used, in relation to the Adjusted Threshold (T). Where multiple substances are used or stored, the Effects Ratios for each Effects Group are added to calculate the cumulative effects of the proposed facility or activity. It is the highest of these Effects Ratios which is used to determine the consent status of the facility. A full description of the HFSP is in Appendix Hazardous Facilities 1.
  1. The Consent Status Matrix:

The Consent Status Matrix identifies whether a hazardous facility is Permitted, Restricted Discretionary, or Discretionary in the relevant activity area. The Matrix lists Effects Ratio trigger levels against which the Effects Ratios calculated for the HFSP are compared to determine the consent status of a hazardous facility in a particular activity area.

The Consent Status Matrix provides a signal to hazardous facilities operators as to which activity areas are best suited for a proposed development, what controls will apply, and the likely outcome of a consent application. In addition, communities will be given some certainty over where hazardous facilities are likely to be located.

* 1. Exceptions:

The definition for hazardous facilities does not apply to:

* + - Storage or use of hazardous consumer products for private domestic purposes.
    - Retail outlets for the domestic scale usage of hazardous substances (i.e. supermarkets, hardware shops, pharmacies, home garden centres). This does not include wholesale outlets or outlets for the supply of trade.
    - Developments that are potentially hazardous but do not involve hazardous substances (i.e. high voltage transmission lines, radio masts, etc.).
    - Facilities using genetically modified or new organisms.
    - Trade waste sewer and waste treatment or disposal facilities (This exception does not apply to the storage of hazardous substances or wastes associated with these facilities, which will be subjected to the HFSP as normal).
    - Gas and oil pipelines.
    - Fuel in motor vehicles, boats and small engines.
    - The occasional loading and unloading of hazardous substances on a site where this forms only a minor part of the site operations.
    - Oil filled transformers containing less than 1000 litres of oil.
  1. Exemptions:

Hazardous facilities for which industry specific standards and/or codes of practice have been developed which specifically focus on enhancing safety and minimising the risk of releases, or loss of control, of hazardous substances, may be exempt from the HFSP. This is applicable on the basis that these standards or codes of practices are employed in the design and construction of the facility, and that the Conditions for Permitted Activities are adhered to. These activities are then considered to have satisfactorily avoided, remedied, or mitigated potential environmental risks. However, each activity will need to be evaluated in accordance with general activity area provisions.

On the above basis, the following activities are exempt from the HFSP:

* + - The retail sale of petrol (up to a storage of 100,000 litres in underground tanks) and diesel (up to 50,000 litres in underground storage tanks), provided that it can be demonstrated that the Code of Practice for 'Design, Installation and Operation of Underground Petroleum Systems';, published by the Department of Labour, OSH, is adhered to.
    - The retail sale of LPG (up to 6 tonnes, above ground and 20 tonnes underground, single vessel storage), provided that it can be demonstrated that the “Australian Standard (AS1596 ­ 1989) for LP Gas Storage and Handling ­ Siting of LP Gas Automotive Retail Outlets” or other relevant revisions and amendments are adhered to.
    - Any hazardous facility within Seaview/Gracefield. Hazardous facilities shall comply with the requirements of the Dow Hazard Index.
    - The use including the manufacture for use, storage and carriage of explosives (UN Class 1.1) in the Extraction Activity Area provided that the provisions of the Health and Safety in Employment Act 1992 and the Explosives Act 1957 (or any substituted legislation) and all relevant regulations and Codes of Practice are complied with.
  1. The Wellington Fault Special Study Area Overlay:

The Wellington Fault Special Study Area Overlay has been identified as an area prone to risk from an earthquake rupture event. Hazardous facilities in this area should be managed more conservatively, using a lower trigger level throughout the Wellington Fault Special Study Area Overlay.

* 1. The Wellington Fault Special Study Area:

The Wellington Fault ~~Special Study Area~~ Overlay has been identified as an area prone to risk from an earthquake rupture event. Hazardous facilities in this area should be managed more conservatively, using a lower trigger level throughout the Wellington ~~Special Fault Study Area~~ Overlay.

#### Seaview/Gracefield:

Those hazardous facilities which have a low probability of a hazardous incident, but have a high potential impact are accommodated in the Special Business Activity Area in Seaview/Gracefield; subject to their compliance with the conditions. These conditions seek to protect human health and the receiving environment from the risk of fire, explosion, toxic gas release and hazardous substance spillage. The level of risk is managed through a screening technique, using the Dow Fire and Explosion Hazard Index.

In addition to this, a trigger level has been set for the environmental effects group of the Hazardous Facilities Screening Procedure (HFSP) to account for the risk of environmental effects from hazardous facilities in the Special Business Activity Area. Hazardous Facilities exceeding this trigger level will become Discretionary Activities.

#### Use and Storage of Hazardous Substances:

The use and storage of hazardous substances will be managed to avoid or mitigate any adverse effects on the community and the receiving environment. This involves on site storage requirements and the statutory requirements of the Toxic Substances Act 1979 and Dangerous Goods Act 1974 and subsequent amendments, such as the proposed Hazardous Substances and New Organisms law reform. There are also New Zealand Standards, Codes of Practice and Regulations for the storage of hazardous substances.

There is a wide range of conditions for the design and construction of bunding and storage facilities, depending on the type of hazardous substances. For example, there are Dangerous Goods Regulations for the storage of explosives, gases and flammable materials; and Health Regulations for toxic and infectious substances. The Regional Council will also be involved where an activity is likely to generate discharges to the land, air or water.

#### Transportation of Hazardous Substances:

Transportation of hazardous substances creates a potential danger to human health and the receiving environment. The prevention and mitigation of any adverse effects from the transportation of hazardous substances is achieved through the administration of safe procedures according to the Dangerous Goods Act 1974, Council Bylaws and the Transport Act 1962. These procedures are administered by Land Transport Safety Authority.

The New Zealand Standards also specify that the route taken should avoid areas of high population density. Section 9.1.3.1. of NZS 5433:1988 states that it is the carriers responsibility to indicate to the driver the safest route that should be taken. The safe transportation of hazardous substances is monitored and enforced by the Ministry of Transport.

#### Hazardous Waste Management:

Hazardous wastes may be described as hazardous substances which are unwanted and economically unusable. The types of hazardous wastes common in Lower Hutt are mainly generated by industrial activity. They include solvent based paints, and electroplating, pharmaceutical, and some medical wastes. If these hazardous wastes are not disposed of safely, there is a risk of leakage or spillage into the soil, sewer and stormwater drains, aquifer, waterways and rivers. Accidents and negligence frequently cause the contamination of waterways. There have also been instances of dumping into drains.

The issue of hazardous waste management involves adopting the most appropriate means of disposal to prevent any environmental damage and providing for an integrated approach which coordinates the various functions of central government, regional and territorial authorities, and developers. There is also an obligation to recognise international requirements, such as the Agenda 21 recommendations for hazardous waste minimisation and improved management measures.

Other methods for the safe management of hazardous wastes include the Trade Waste Bylaws; promotion of Cleaner Production Methods; adopt take back schemes; incineration of medical and quarantine wastes at Shelly Bay; export of PCB’s, e.g. to France; provision of information, e.g. Pollution Solutions; and the promotion of waste minimisation at source, reuse and recycling.

#### Disposal of Hazardous Wastes at Silverstream Landfill:

The disposal of hazardous wastes by codisposal is accommodated by the Silverstream landfill. Guidelines for disposal are provided by a Hazwaste Manifest which aims to protect the health of the transporter, landfill operators, the community and the receiving environment from potentially hazardous wastes. The Hazwaste Manifest is an application and approval form for the disposal of hazardous wastes at Silverstream Landfill.

All hazardous wastes are assessed for disposal at the Silverstream Landfill. The volume and type of hazardous wastes accepted depend on a range of factors concerning rate of codisposal, volume and concentration of previous loads, and the concentration level of the leachate. There may be a time delay until the leachate concentrations are satisfactory; or the hazardous wastes may require pre­treatment first.

Therefore, not all hazardous wastes are accepted and advice may be given on pre­treatment requirements or alternative methods of disposal for non acceptable wastes. The registration system would also assist monitoring and tracking of wastes.

Codisposal of hazardous wastes involves a mixing of hazardous and other wastes. The hazardous wastes are then broken down by physical, chemical and biological degradation. Those hazardous wastes which do not break down through degradation processes cannot be accepted. For example, PCBs (Poly Chlorinated Biphenyls), long life herbicides, organochlorides and radioactive wastes. The waste generators themselves should handle such hazardous wastes. Their options include pre­treatment; incineration of the wastes; storage prior to destruction; exportation; or return them to the original chemical manufacturer.

#### Contaminated Sites:

Contaminated sites result from the incorrect storage, use and disposal of hazardous substances. These sites need to be correctly managed to avoid adverse effects on the environment and human health. The common pathways for the transfer of contaminants include leaching into groundwater; surface runoff into waterways; aerial dispersion such as wind blown dust; and uptake and accumulation by plants, animals and humans.

There are site requirements to avoid spillage of hazardous substances which could cause soil or water contamination. If Council records refer to the site, two categories appear in Land Information Memorandums (LIM’s) with regard to contaminated sites:

* Previous or existing landuse identified (eg. former service station site, gasworks site etc.). Also included are details regarding licences held such as dangerous goods or trade waste licences.
* The Regional Council holds a register of contaminated or potentially contaminated sites. Where a previous land use may have contaminated the site it is recommended that the applicant check with the Regional Council to find out if the property is on the ANZECC Site Use Database.

The assessment and remediation will be achieved through liaison with the site owner/occupier and compliance with the requirements of the “Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites”. The assessment and management of contaminated sites may involve the Regional Council where there is a risk of discharges to air or water, which would require a discharge permit.

#### Adverse Effects:

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On the above basis, the following activities are exempt from the HFSP:

* + - The retail sale of petrol (up to a storage of 100,000 litres in underground tanks) and diesel (up to 50,000 litres in underground storage tanks), provided that it can be demonstrated that the Code of Practice for 'Design, Installation and Operation of Underground Petroleum Systems';, published by the Department of Labour, OSH, is adhered to.
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The Wellington Fault Special Study Area has been identified as an area prone to risk from an earthquake rupture event. Hazardous facilities in this area should be managed more conservatively, using a lower trigger level throughout the Wellington Special Fault Study Area.

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Those hazardous facilities which have a low probability of a hazardous incident, but have a high potential impact are accommodated in the Special Business Activity Area in Seaview/Gracefield; subject to their compliance with the conditions. These conditions seek to protect human health and the receiving environment from the risk of fire, explosion, toxic gas release and hazardous substance spillage. The level of risk is managed through a screening technique, using the Dow Fire and Explosion Hazard Index.

In addition to this, a trigger level has been set for the environmental effects group of the Hazardous Facilities Screening Procedure (HFSP) to account for the risk of environmental effects from hazardous facilities in the Special Business Activity Area. Hazardous Facilities exceeding this trigger level will become Discretionary Activities.

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There is a wide range of conditions for the design and construction of bunding and storage facilities, depending on the type of hazardous substances. For example, there are Dangerous Goods Regulations for the storage of explosives, gases and flammable materials; and Health Regulations for toxic and infectious substances. The Regional Council will also be involved where an activity is likely to generate discharges to the land, air or water.

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The issue of hazardous waste management involves adopting the most appropriate means of disposal to prevent any environmental damage and providing for an integrated approach which coordinates the various functions of central government, regional and territorial authorities, and developers. There is also an obligation to recognise international requirements, such as the Agenda 21 recommendations for hazardous waste minimisation and improved management measures.

Other methods for the safe management of hazardous wastes include the Trade Waste Bylaws; promotion of Cleaner Production Methods; adopt take back schemes; incineration of medical and quarantine wastes at Shelly Bay; export of PCB’s, e.g. to France; provision of information, e.g. Pollution Solutions; and the promotion of waste minimisation at source, reuse and recycling.

#### Disposal of Hazardous Wastes at Silverstream Landfill:

The disposal of hazardous wastes by codisposal is accommodated by the Silverstream landfill. Guidelines for disposal are provided by a Hazwaste Manifest which aims to protect the health of the transporter, landfill operators, the community and the receiving environment from potentially hazardous wastes. The Hazwaste Manifest is an application and approval form for the disposal of hazardous wastes at Silverstream Landfill.

All hazardous wastes are assessed for disposal at the Silverstream Landfill. The volume and type of hazardous wastes accepted depend on a range of factors concerning rate of codisposal, volume and concentration of previous loads, and the concentration level of the leachate. There may be a time delay until the leachate concentrations are satisfactory; or the hazardous wastes may require pre­treatment first.

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#### Contaminated Sites:

Contaminated sites result from the incorrect storage, use and disposal of hazardous substances. These sites need to be correctly managed to avoid adverse effects on the environment and human health. The common pathways for the transfer of contaminants include leaching into groundwater; surface runoff into waterways; aerial dispersion such as wind blown dust; and uptake and accumulation by plants, animals and humans.

There are site requirements to avoid spillage of hazardous substances which could cause soil or water contamination. If Council records refer to the site, two categories appear in Land Information Memorandums (LIM’s) with regard to contaminated sites:

* Previous or existing landuse identified (eg. former service station site, gasworks site etc.). Also included are details regarding licences held such as dangerous goods or trade waste licences.
* The Regional Council holds a register of contaminated or potentially contaminated sites. Where a previous land use may have contaminated the site it is recommended that the applicant check with the Regional Council to find out if the property is on the ANZECC Site Use Database.

The assessment and remediation will be achieved through liaison with the site owner/occupier and compliance with the requirements of the “Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites”. The assessment and management of contaminated sites may involve the Regional Council where there is a risk of discharges to air or water, which would require a discharge permit.

# 14D 2 Rules

## 14D 2.1 Permitted Activities ­ Conditions

#### Permitted Activities Conditions (a) ­ (c) only do not apply to ­

* The retail sale of petrol (up to a storage of 100,000 litres in underground tanks) and diesel (up to 50,000 litres in underground storage tanks), provided that it can be demonstrated that the Code of Practice for “Design, Installation and Operation of Underground Petroleum Systems”, published by the Department of Labour, OSH, is adhered to.
* The retail sale of LPG (up to 6 tonnes aboveground and 20 tonnes underground, single vessel storage), provided that it can be demonstrated that the “Australian Standard (AS1596­1989) for LP Gas Storage and Handling ­ Siting of LP Gas Automotive Retail Outlets” or other relevant revisions and amendments is adhered to.
* Any hazardous facility within Seaview/Gracefield. Hazardous Facilities shall comply with the requirements of the DOW Hazard Index. Such facilities must however comply with the Consents Status Matrix (Table 1) and the Interface Provisions (Tables 2 and 3) with respect to the Environmental Effects Group of the Hazardous Facilities Screening Procedures.
* The use including the manufacture for use, storage and carriage of explosives (UN Class 1.1) in the Extraction Activity Area provided that the provisions of the Health and Safety in Employment Act 1992 and the Explosives Act 1957 (or any substituted legislation) and all relevant regulations and Codes of Practice are complied with.

#### Otherwise, all Permitted Activity Conditions apply to these activities.

1. **Consent Status Matrix:**

All hazardous facilities shall have an Effects Ratio below or equal to the Effects Ratio specified for the activity area in which it proposes to locate, as indicated in the Consent Status Matrix in Table 1.

AMENDMENT 385 - Amend Table 1 of Rule 14D 2.1(a)

**Table 1 ­ Consent Status Matrix**

|  |  |  |  |
| --- | --- | --- | --- |
| **Activity Area** | **Effects Ratio Trigger Level for Permitted**  **Activities** | **Effects Ratio Trigger Level for Restricted**  **Discretionary Activities** | **Effects Ratio Trigger Level for Discretionary**  **Activities** |
| Extraction | < 2 | 2 ­ 4 | > 4 |
| Special Business | < 1 | NA | > 1 |
| General Business  General Rural | < 0.5 | 0.5 ­ 1 | > 1 |
| Avalon Business General Recreation ~~Suburban Commercial~~ Suburban Mixed Use Central Commercial Petone Commercial 2 Rural Residential  Community Health | < 0.2 | 0.2 ­ 0.4 | > 0.4 |
| ~~Special Commercial 1 & 2~~  Suburban Mixed Use - Station Village and Boulcott Village (see Appendix Hazardous Facilities 2 Station Village and Boulcott Village)  Petone Commercial 1  Special Recreation 1 & 2 Passive Recreation | < 0.1 | 0.1 ­ 0.2 | > 0.2 |
| River Recreation | < 0.05 | 0.05 ­ 1 | > 1 |
| All Residential  All Community Iwi | < 0.02 | ­ | > 0.02 |

For the Special Business Activity Area these trigger levels apply only to the environmental effects group. The trigger level for utilities will be based on the respective activity area where the utilities are located.

#### Interface Provisions:

Where an activity area with a high trigger level is adjacent to an activity area with a lower trigger level, a more conservative trigger level will apply within a buffer strip on the inside of the more hazardous activity area. The width of the buffer strip is shown in Table 2.

***AMENDMENT 386 - Amend Table 2 of Rule 14D 2.1(b)***

#### Table 2 ­ Width of Buffer Strip for more Hazardous Activity Area

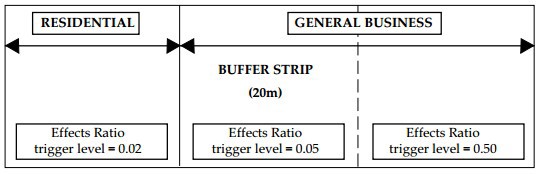
|  |  |
| --- | --- |
| **Activity Area** | **Width of buffer strip applied on the inside of the activity area if adjacent to a**  **more sensitive activity area** |
| Extraction | 30 metres |
| Special Business General Business  General Rural | 20 metres |

|  |  |
| --- | --- |
| Avalon Business ~~Suburban Commercial~~ Suburban Mixed Use Central Commercial Petone Commercial 2 Community Health General Recreation  Rural Residential | 10 metres |
| ~~Special Commercial 1 & 2~~  Suburban Mixed Use - Station Village and Boulcott Village (see Appendix Hazardous Facilities 2 – Station Village and Boulcott Village for location)  Petone Commercial 1  Special Recreation 1 & 2 Passive Recreation River Recreation | 5 metres |

The Effects Ratio trigger levels to be applied within the buffer strips of the more hazardous activity areas if adjacent to a more sensitive activity area are shown in Table 3. For example, where the General Business Activity Area is adjacent to a Residential Activity Area, the Effects Ratio trigger level within a buffer area of 20 metres will be 0.05, as identified in Tables 2 and 3. See Figure 1.

For the Special Business Activity Area these trigger levels apply only to the environmental effects group.

**Figure 1 ­ Example of Buffer Strip Concept**



***AMENDMENT 387 - Amend Table 3 of Rule 2.1(b)***

**Table 3 ­ Effects Ratio Trigger Level for more Hazardous Activity Areas**

|  |  |  |
| --- | --- | --- |
| **More Hazardous Activity Area, as identified in the Consent Status Matrix** | **Adjacent Sensitive Activity Area** | **Effects Ratio trigger level applied in the buffer strip of the more hazardous activity area** |
| Extraction  Special Business  General Business  General Rural  Avalon Business  General Recreation  Rural Residential  ~~Suburban Commercial~~  Suburban Mixed Use  Central Commercial  Petone Commercial 2  Community Health  ~~Special Commercial 1 & 2~~  Suburban Mixed Use - Station Village and Boulcott Village (see Appendix Hazardous Facilities 2)  Petone Commercial 1  Passive Recreation  Special Recreation 1 & 2  River Recreation | All Community Iwi  All Residential | 0.05 |
| River Recreation | 0.1 |
| Special Recreation 1 & 2  Passive Recreation  Petone Commercial 1  ~~Special Commercial 1 & 2~~  Suburban Mixed Use - Station Village and Boulcott Village (see Appendix Hazardous Facilities 2) | 0.2 |
| Community Health  Petone Commercial 2  Central Commercial  ~~Suburban Commercial~~  Suburban Mixed Use  Rural Residential  General Recreation  Avalon Business | 0.5 |
| General Rural  General Business | 1.0 |

***AMENDMENT 388 - Amend Rule 2.1(c)***

1. **Wellington Fault ~~Special Study Area~~ Overlay:**

Hazardous facilities in the Wellington Fault ~~Special Study Area~~ Overlay shall have an Effects Ratio below or equal to the Effects Ratio specified in Table 4. The buffer strips for the more hazardous activity area, where adjacent to a sensitive activity area, shall not apply to sites within the Wellington Fault ~~Special Study Area~~ Overlay.

For the Special Business Activity Area these trigger levels apply only to the environmental effects group.

**Table 4 ­ Effects Ratio Trigger Level to be Applied in the Wellington Fault ~~Special~~**  **~~Study Area~~ Overlay:**

|  |  |
| --- | --- |
| **Activity Area** | **Effects Ratio trigger level applied in the Wellington Fault ~~Special Study Area~~ Overlay** |
| Extraction  General Business  General Rural | 0.2 |
| General Recreation  Rural Residential  ~~Suburban Commercial~~  Suburban Mixed Use  Petone Commercial 2 | 0.1 |
| ~~Special Commercial 1 & 2~~  Suburban Mixed Use - Station Village and Boulcott Village (see Appendix Hazardous Facilities 2)  Petone Commercial 1  Passive Recreation  Special Recreation 1 & 2 | 0.05 |
| River Recreation | 0.02 |
| All Residential  All Community Iwi | 0.01 |

#### Site Design for Hazardous Facilities:

* 1. Any part of a hazardous facility installation immediately involved in the use, handling or storage of hazardous substances, shall be designed, constructed and managed in a manner that prevents:
     + Any adverse effects of the intended use from occurring outside the intended target area;
     + The entry or discharge of the hazardous substance into the stormwater drainage system; and
     + The entry or discharge of the hazardous substance into the sewerage system unless permitted by the sewerage utility operator.
  2. Any part of a hazardous facility site where hazardous substances are used, stored, manufactured, mixed, packaged, loaded, unloaded or otherwise handled shall be designed, constructed and managed in a manner that prevents:
     + The contamination of any land and/or water (including groundwater and potable water supplies) in the event of a spill or other unintentional release of hazardous substances;
     + The entry or discharge of the hazardous substance into the stormwater drainage system in the event of a spill or other unintentional release; and
     + The entry or discharge of the hazardous substance into the sewerage system in the event of a spill or other unintentional release.
  3. The hazardous facility site shall be designed, constructed and managed in a manner that any stormwater originating on or collected on the site that has become contaminated:
     + Does not contaminate any land and/or water (including groundwater and potable water supplies) by acting as a transport medium for hazardous substances unless permitted by a regional resource consent or a regional rule;
     + Does not enter or discharge into the stormwater drainage system; and
     + Does not enter or discharge into the sewerage system unless permitted by the sewerage utility operator.

#### Spill Containment System for Hazardous Facilities:

The parts of the hazardous facility site described in parts (d)(ii) and (d)(iii) above except for the intentional use of explosives for blasting in a quarry shall be serviced by a spill containment system that is:

* 1. Constructed from impervious materials resistant to the hazardous substances used, stored, manufactured, mixed, packaged, loaded, unloaded or otherwise handled on site;
  2. Able to contain the maximum volume of the largest tank used, or where drums or other containers are used, able to contain half of the maximum volume of substances stored; and
  3. Able to prevent any spill or other unintentional release of hazardous substances, and any stormwater and/or fire water that has become contaminated, from discharging into or onto land and/or water (including groundwater and potable water supplies) unless permitted by a regional resource consent or a regional rule.

#### Stormwater Drainage for Hazardous Facilities:

All stormwater grates on the site shall be clearly labelled “Stormwater Only”.

#### Washdown Areas for Hazardous Facilities:

Any part of the hazardous facility site where vehicles, equipment or containers that are or may have become contaminated with hazardous substances are washed shall be designed, constructed and managed to prevent the effluent from the washdown area from:

* 1. Entry or discharge into the stormwater drainage system;
  2. Entry or discharge into the sewerage system unless permitted by the sewerage utility operator; and
  3. Discharge into or onto land and/or water (including groundwater and potable water supplies) unless permitted by a regional resource consent or a regional rule.

#### Underground Storage Tanks:

Underground tanks for the storage of petroleum products shall be designed, constructed and managed to prevent leakage and spills.

Adherence to the Code of Practices for “Warning Signs for Premises Storing Hazardous Substances” of the New Zealand Chemical Installation and Operation of Underground Petroleum Systems” (Department of Labour ­ Occupational Safety and Health) is deemed to be one method of complying with this condition.

#### Signage:

Any hazardous facility shall be adequately signposted to indicate the nature of the substances stored, used or otherwise handled.

Adherence to the Code of Practice for “Warning Signs for Premises Storing Hazardous Substances” of the New Zealand Chemical Industry Council, or any other Code of Practice approved by the New Zealand Fire Service is deemed to be one method of complying with this condition.

#### Waste Management:

* 1. Any process waste or waste containing hazardous substances shall be managed to prevent:
     + The waste entering or discharging into the stormwater drainage system;
     + The waste entering or discharging into the sewerage system unless permitted by the sewerage utility operator; and
     + The waste discharging into or onto land and/or water (including groundwater and potable water supplies) unless permitted by a resource consent.
  2. The storage of any process waste or waste containing hazardous substances shall at all times comply with Conditions (d), (e), (f) and (g) for site design and management of hazardous facilities.
  3. The storage of any waste containing hazardous substances shall be in a manner that prevents:
     + The exposure to ignition sources;
     + The corrosion or other alteration of the conditions used for the storage of the waste; and
     + The unintentional release of the waste.
  4. Any hazardous facility generating waste containing hazardous substances shall dispose of these wastes to appropriately permitted facilities or be serviced by a reputable waste disposal contractor.

Where codisposal is to be used, disposal of hazardous wastes shall comply with the Hazwaste Manifest requirements of the Silverstream Landfill.

## 14D 2.2 Restricted Discretionary Activities

1. Any hazardous facility with an Effects Ratio within the Effects Ratio range specified as Restricted Discretionary for the activity area in which it proposes to locate, as indicated in the Consent Status Matrix in Table 1.
2. Any hazardous facility with an Effects Ratio above the Effects Ratio specified in the buffer strip, for the activity area in which it proposes to locate, as indicated in Table 3.

## 14D 2.2.1 Matters in which Council has Restricted its Discretion and Standards and Terms

1. Site design and maintenance.
2. Transportation of hazardous substances.
3. The level of risk to the community and the receiving environment.
4. Potential cumulative hazards presented in conjunction with neighbouring facilities.
5. Contingency measures for fire safety and fire water management, spill contingency and emergency planning.
6. Monitoring and maintenance schedules.

All Restricted Discretionary Activities shall show how the following matters will be addressed to avoid or reduce risk to the community and the receiving environment:

* 1. The proposed operation and site lay­out.
  2. Site drainage and off­site infrastructure (i.e. stormwater, sewer type and capacity).
  3. Transport of hazardous substances on and off the site.
  4. The surrounding natural, human, and physical environment.
  5. Separation distances from neighbouring activities, and the type of environment/number of people potentially at risk from the proposed facility.
  6. Potential hazards and exposure pathways arising from the proposed facility.
  7. Potential cumulative hazards presented in conjunction with neighbouring facilities.
  8. Proposed fire safety and fire water management.
  9. Proposed spill contingency and emergency planning.
  10. Proposed monitoring and maintenance schedules.

## 14D 2.2.2 Other Matters

All Restricted Discretionary Activities must comply with other relevant Permitted Activity Conditions.

## 14D 2.3 Discretionary Activities

***AMENDMENT 389 - Amend Rule 14D 2.3(b)***

1. Any hazardous facility with an Effects Ratio above the Effects Ratio specified as Restricted Discretionary for the activity area in which it proposes to locate, as indicated in the Consent Status Matrix in Table 1.

(b) Any hazardous facility with an Effects Ratio above the Effects Ratio specified in the Wellington Fault ~~Special Study Area~~ Overlay, for the activity area in which it proposes to locate, as indicated in Table 4.

## 14D 2.3.1 Assessment Matters for Discretionary Activities

1. The matters contained in sections 104 and 105, and in Part II of the Act shall apply.
2. The degree of compliance or non­compliance with any relevant Permitted Activity Conditions.
3. In addition to the above the following matters will be taken into account: Hazardous Facilities:

Where a hazardous facility has an Effects Ratio which exceeds the Effects Ratio for Restricted Discretionary Activities, an assessment of environmental effects shall be provided to address the following matters:

* + An evaluation of alternatives shall be included to determine whether there are any reasonable alternatives to the proposal, particularly where it is likely that the activity is likely to result in significant environmental effects.
  + Site design and off­site infrastructure (i.e. stormwater, sewer type and capacity).
  + A risk assessment will be required to address the following matters:

Separation distances to people sensitive areas (residential activity areas and facilities such as schools, rest homes, hospitals, or shopping centres).

Location in relation to the nearest aquifer and/or surface water body. Nature of soils and subsoils.

Location in relation to environmentally sensitive areas.

The systematic identification of hazards and potential exposure pathways, and assessment of associated risks.

Potential cumulative risks arising in conjunction with neighbouring activities or from cumulative effects in the receiving environment.

Transportation of hazardous substances.

* + Details on risk management shall be provided to address the following matters:

Implementation of an Environmental Management System. Guidelines on management systems are available from the NZCIC (New Zealand Chemical Industry Council) Responsible Care Programme; the BS (British System) 7750 system; the ISO (International Standard Organisation) 9000 and 14000 systems; the ISRS (International Safety Rating System) ; or any other recognised and accepted system which achieves the same objectives or intent.

Fire safety and fire water management.

Monitoring and maintenance schedules and plans.

Contingency plans for spills and other accidental releases of hazardous substances. Precautionary measures, emergency procedures and plans.

Site management systems for waste disposal and transportation of hazardous substances.

* + The assessment of environmental effects shall consider any risks associated with the transportation of hazardous goods on the local road network. Vehicles shall use the safest route possible and minimise the use of local and residential roads. Conditions may be imposed which specify transport routes.

# 14D 3 Anticipated Environmental Results

1. Protection of the life supporting capacity of air, water, soil and ecosystems from an unacceptable level of risk from the location and operation of hazardous facilities and activities. This includes the use, storage, transportation and disposal of hazardous substances and hazardous wastes.
2. Protection of human health from potential adverse effects associated with the use, storage, transportation and disposal of hazardous substances and hazardous wastes.

# 14D Appendices

## Appendix Hazardous Facilities 1

### Introduction

The Hazardous Facility Screening Procedure (HFSP) has been designed as a screening tool to assist Council in making decisions on whether a proposed hazardous facility is Permitted, or whether it is a Restricted Discretionary or Discretionary Activity requiring additional assessment of risks.

The HFSP will be applied to any proposed facility using or storing hazardous substances. Its purpose is to determine whether the facility will be permitted subject to compliance with specified conditions, or will require a resource consent.

Hazardous facilities range from home occupations using hazardous or environmentally damaging substances to large chemical factories. Common examples of hazardous substances are acids, solvents, paints, fuels, and pesticides. Environmentally damaging substances include seemingly harmless substances such as foodstuffs, which kill aquatic life when released into water ways in large quantities, for example, due to depletion of oxygen.

### Overview and Terminology

The HFSP is based on the assessment of hazardous substances in terms of three major Effects Groups: Fire/Explosion, Human Health, and the Environment. Each substance is assigned a Base Threshold (B) ­ expressed as a weight or volume ­ for each of the three defined Effects Groups. The Base Threshold is dependent only on the intrinsic hazardous properties of a substance.

Depending on the physical state of the substance(s), the type of storage and activity, site separation distances and the environmental sensitivity of the location, Adjustment Factors (F) are applied to the Base Thresholds. Base Thresholds and Adjustment Factors are then multiplied to generate an Adjusted Threshold (T) for each of the Effects Groups.

The next step is the calculation of the Effects Ratio (R), which represents the proposed quantity of a substance (Q) to be used/stored in relation to the Adjusted Threshold. The Effects Ratio forms the basis to determine the consent status of a particular facility, and to evaluate the cumulative effects presented by the multiple substances.

### Effects Groups and Hazard Levels

For the purposes of the HFSP, the effects of any particular substances are categorised into three Effects Groups:

* 1. Fire/Explosion Effects (FE): This Effects Group is concerned with damage to property, the built environment,

and people.

* 1. Human Health Effects (HE): This Effects Group is concerned with the wellbeing, health, and safety of people.
  2. Environmental Effects (EE): This Effects Group is concerned with damage to ecosystems and natural

resources.

Each Effects Group is divided into four hazard levels:

* + - extreme
    - high
    - medium
    - low

The division into low, medium, high and extreme hazard levels in each of the Effects Groups is predominantly based on the UN (United Nations) classification system for the transport of hazardous substances (UNRTDG, 8th Edition, 1993), and the classification for ecotoxic substances proposed by the Organisation for Economic Cooperation and Development (OECD), 1993.

For the purposes of the HFSP, the above classification systems have been further refined by assigning extreme hazard levels to certain hazardous substances, particularly toxic substances (Class 6.1), toxic gases (Class 2.3), and environmentally toxic substances (Ecotoxic Class). In addition, environmentally damaging substances have been placed into the Ecotoxic Class. Environmentally damaging substances have been defined as those substances which affect receiving waters through the addition of organic material, resulting in oxygen depletion.

Classification systems for hazardous substances such as the UNRTDG (1993) often only list a primary hazard, and sometimes a subsidiary hazard of a substance. However, in many cases hazardous substances may exhibit more than two types of hazards, and may fit into more than one Effects Group. For example, a substance may exhibit a medium fire hazard, an extreme human health effect, and a medium environmental effect. Hence, the HFSP allows for the fact that many substances present multiple hazards. This is similar to the approach taken in proposed Hazardous Substances and New Organisms legislation.

The hazardous substances classification system adopted for the HFSP is outlined in greater detail in Attachment A ­ Classification of Hazardous Substances.

### Effects Groups and Hazard Levels

The Base Threshold (B) is a pre­calibrated hazardous substances quantity (in tonnes or m3 for compressed gas) which differs for each Effects Group and hazard level. It takes into account the intrinsic hazard of a hazardous substance, and represents the quantity of a substance which has been assessed as generating no significant off site effects in a heavy industrial area, before substance and site specific conditions have been taken into account.

### Adjustment Factors

Pre­calibrated Adjustment Factors (F) are applied to the Base Thresholds to take account of substance and site specific conditions which will affect the potential severity of an effect.

Adjustment Factors differ for each of the effects group, and take into account the following considerations:

* + - the physical state of a substance;
    - storage temperatures;
    - the type of storage;
    - the type of activity or use;
    - separation distances to the site boundary; and
    - the environmental sensitivity of the location.

### Adjusted Threshold

The Adjusted Threshold (T) is the quantity of a hazardous substance (in tonnes or m3 for compressed gas), which, after application of Adjustment Factors, has been assessed as having no potentially significant off site environmental effects in a heavy industrial area. Adjusted Thresholds are determined separately for each Effects Group.

### Effects Ratio

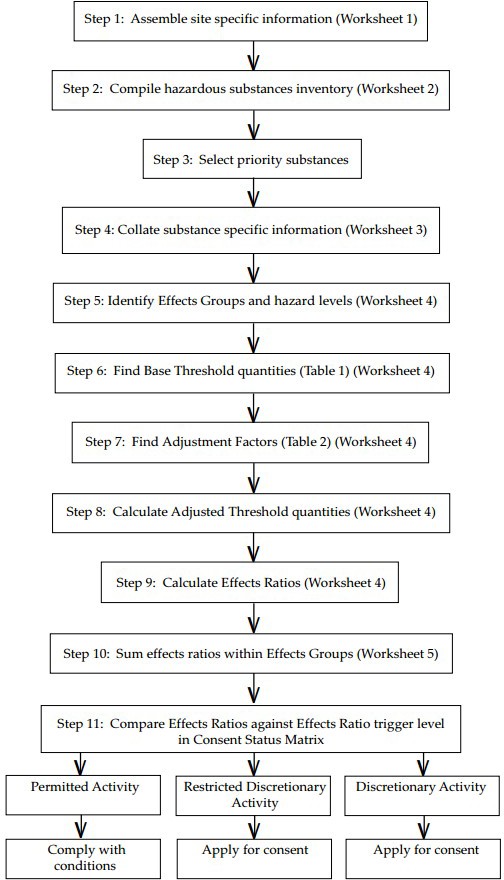
The Effects Ratio (R) is a dimensionless number. It is obtained by dividing the quantity of a substance (Q) that is proposed to be used or stored at a site, by the Adjusted Threshold. The Effects Ratio fulfills two important purposes:

* 1. By using a dimensionless ratio of the proposed quantity of a hazardous substance over the Adjusted Threshold, it is possible to aggregate the effects presented by multiple substances held on the same site. Hence, it becomes possible to assess cumulative potential environmental effects which may be created by several substances on the same site, and which have similar hazardous properties.
  2. The Effects Ratio forms the basis to determine the trigger levels in the Consent Status Matrix, which are used to determine the consent status of a particular facility. Whether or not a proposed facility requires a resource consent is determined by the highest Effects Ratio in any of the three Effects Groups.

### Using the HFSP ­ A Step by Step Guide

This section works through a step by step guide on how to use the HFSP, following the steps shown in Figure 1, and using a series of five worksheets, shown in Attachment B. These illustrate the HFSP’s individual steps and required long­hand calculations.

### Figure 1: A Step­by­Step Guide to the Hazardous Facility Screening Procedure

[](http://eplan.huttcity.govt.nz/Images/Lower%20Hutt/Chapter%2014/14D/PDFS/14D%2019.pdf)

**Step 1 ­ Assemble Site Specific Information**

Site specific information is an essential component of the HFSP. This is related in particular to site layout, and the presence of any sensitive land uses or environmental features. An example of a site information sheet is shown in Attachment B, Worksheet 1.

### Step 2 ­ Compile Hazardous Substances Inventory

To use the HFSP, it is necessary to create a full inventory of hazardous substances held on a site, including substances that are only stored or used temporarily. The inventory should contain:

1. The names of hazardous substances (chemical or proprietary, including names of suppliers).
2. Quantities in weight (tonnes) or volume (m3 for compressed gases).
3. UN classifications of all the hazardous substances on the site.
4. Whether the substance is used or stored.

A form to assist with this task is provided in Attachment B, Worksheet 2. It is noted that the HFSP uses the standard units of tonnes (for solids, liquids and liquefied gases) and m3 (for compressed gases). It is therefore sometimes necessary to convert substance quantities to these units. In the case of liquids, it is necessary to apply the specific

gravity (or density) to convert litres to kilograms, or m3 to tonnes. The specific gravity is the specific weight of a liquid in relation to that of water. Therefore, a liquid with a specific gravity of greater than 1.0 sinks, while a liquid with a specific gravity of less than 1.0 will float on water. For example, 1000 litres of petrol weigh approximately 800kg or

0.8 tonnes.

Conversions of quantities are also necessary where a substance is diluted, or mixed with another substance. In this instance, only the percentage of the pure substance in dilution or mixture is accounted for. For example, if it is proposed to store 10 tonnes of a substance that has a concentration of 30%, the proposed quantity on Worksheet 2 should be 3 tonnes.

An exception to this are corrosives (UN Class 8) and oxidising substances (UN Class 5), where the UN Class is sometimes directly applied to specific commercially available concentrations. In these instances, conversions are only applied to when these commercially supplied concentrations are further diluted for specific purposes.

Pesticides are also substances which are commonly available as diluted commercial products. The UNRTDG (1993) lists a range of pesticides and their dilutions, and their related Packaging Groups in Class 6.1 in terms of a human poison rating.

If a substance is in a mixed form, proposed quantities for the percentage of pure substance in the mixture should be listed. In cases where synergistic effects result in a mixture that is more hazardous than its components, the mixture may need to be subjected to appropriate testing procedures to obtain the necessary information, unless relevant information is readily available.

It is also important to note that small packages are generally treated the same as bulk quantities. While small packages or containers reduce the risk of a major spill, they may still react like bulk quantities in some emergencies. For this reason, a conservative approach has been taken, especially as the HFSP generally does not apply to retail outlets.

In some cases, it may be difficult to decide whether a substance is in use or storage. Generally, the HFSP considers a substance in use when the full amount of the substance is used at any one time, for example an acid bath. A substance that is taken from a container and used in small amounts while its bulk continues to be stored would be rated as being stored.

### Step 3 ­ Select Priority Substances

Often, numerous hazardous substances are held on a site, and it is time consuming to prepare a full classification of all of them. It is neither practical nor necessary to submit every substance to the HFSP; therefore the following “common sense” guidelines apply for sites where multiple hazardous substances are held, to assist in defining those which have “priority status”:

1. If there are ten or fewer substances on site, the HFSP is carried out on all substances unless it is evident that one single substance is likely to exceed the relevant trigger levels in the Consent Status Matrix (in which case the proposal will require a resource consent application);
2. If there are more than ten substances on site, the HFSP is carried out on those substances which:
   * are highly or extremely dangerous; and/or
   * are held in quantities exceeding 10% of the total stock of hazardous substances listed in the inventory (Attachment B, Worksheet 2).

### Step 4 ­ Collate Substance Specific Information

It is an essential component of the HFSP to assign a hazard level for each Effects Group to the hazardous substances held on site. To do so, it is necessary to collect a range of information about the substances including UN classifications.

The Hazardous Substance Worksheet in Attachment B, Worksheet 3 has been designed to help with the task of recording the information required to classify substances into Effects Groups and hazard levels.

This information can be extracted from the UN Recommendations on the Transport of Dangerous Goods (UNRTDG) 8th Edition, Material Safety Data Sheets, and national and international databases. A summary of such information sources is available upon request from the Council.

Where necessary information to carry out this step is not readily available from public information sources, a precautionary approach should be taken, and the substance should be assigned at least a medium hazard level for the Fire/Explosion and Human Health Effects Groups, and a high hazard level for the Environmental Effects Group.

These hazard levels are deemed appropriate because:

1. In general, assessment of hazardous substances focuses on health effects and explosives or flammable properties. If a substance rates highly in these categories, this information is usually readily available. Therefore, it is considered reasonable to assign a medium hazard level in the Fire/Explosion and Human Health Effects Groups for those substances where this information is not readily available;
2. In contrast, information on environmental effects is often lacking. The precautionary approach therefore dictates that a high hazard level should be chosen where no information is available.

### Step 5 ­ Identify Effects Groups and Hazard Levels

For the purposes of the HFSP, the effects of substances are categorised into three groups:

1. Fire/Explosion Effects (FE): This Effects Group is concerned with damage to property, the built environment,

and people.

1. Human Health Effects (HE): This Effects Group is concerned with the wellbeing, health, and safety of people.
2. Environmental Effects (EE): This Effects Group is concerned with damage to ecosystems and natural

resources.

Each Effects Group is divided into four hazard levels:

* extreme
* high
* medium
* low

Once the necessary background information has been collated, the user will proceed to assign Effects Groups and hazard levels to individual hazardous substances, as outlined in Section 3.0 ­ Effects Groups and Hazard Levels. Hazardous substances (including raw materials, products, and wastes) are classified into Effects Groups and hazard levels for each Effects Group with the help of Attachment A ­ Classification of Hazardous Substances.

Effects Groups and corresponding hazard levels are then recorded in the column marked “Step 4” on the Summary Sheet for Manual HFSP Calculations in Attachment B, Worksheet 4.

### Step 6 ­ Find Base Threshold Quantities

The Base Threshold (B) is a pre­calibrated quantity, as discussed in Section 4.0 ­ Base Threshold. A specific Base Threshold is assigned to each Effects Group and hazard level. These are listed in Table 1.

For example, in the Fire/Explosion Effects Group, (Sub­category Flammables), non significant off site effects in a heavy industrial area would be represented by Base Thresholds of:

1. 100 tonnes of a combustible liquid, which has a low hazard level in the Fire/Explosion Effects Group.
2. 30 tonnes of a Class 3, Packaging Group III substance, which are flammable liquids with a medium hazard level in the Fire/Explosion Effects Group.

The Base Thresholds for each substance used or stored on the site are found in Table 1 and recorded in the column marked “Step 6” on the Summary Sheet for Manual Calculations in Attachment B, Worksheet 4.

### Step 7 ­ Find Adjustment Factors

Adjustment Factors (FF, FH, and FE) are used to multiply the Base Threshold quantities in order to take account of the substance properties and specific circumstances on each site which will influence the severity of any potential effect. This multiplication yields the Adjusted Threshold, as discussed in Section 5.0 ­ Adjustment Factors.

For each Effects Group, different types of Adjustment Factors are relevant. For example, for the Fire/Explosion

Effects Group, the temperature is relevant, while for the Human Health Effects Group, proximity to a potable water resource is important.

Table 2 ­ Adjustment Factors, lists the pre­calibrated Adjustment Factors to be used for each Effects Group.

In some instances, more than one Adjustment Factor within each Effects Group will need to be applied to a substance. Where this is the case, the Adjustment Factors are multiplied to generate one combined Adjustment Factor (FF, FH or FE) for each Effects Group, and the Base Threshold is then multiplied by that one Factor.

The Adjustment Factors for each substance are recorded in the column marked “Step 7” on the Summary Sheet for Manual Calculations in Attachment B, Worksheet 4.

### Step 8 ­ Calculate Adjusted Threshold Quantities

The Adjusted Threshold (T) is calculated for each Effects Group by multiplying the Base Threshold (B) by the relevant Adjustment Factor (FF, FH, FE), as follows:

T = B x FF provides the Adjusted Threshold for a substance in the Fire/Explosion Effects Group. T = B x FH provides the Adjusted Threshold for a substance in the Human Health Effects Group. T = B x FE provides the Adjusted Threshold for a substance in the Environmental Effects Group.

The Adjusted Thresholds (T) for each substance should be recorded in the column marked “Step 8” on the

Summary Sheet for Manual Calculations in Attachment B, Worksheet 4.

### Step 9 ­ Calculate Effects Ratios

The Effects Ratio (R) is a dimensionless number. It is obtained by dividing the quantity of a substance (Q) that is proposed to be used or stored on a site by the Adjusted Threshold (T):

Effects Ratio (R) = Proposed quantity of substance (Q)

Adjusted Threshold (T)

The Effects Ratio (R) for each substance needs to be recorded in the column marked “Step 9” on the Summary Sheet for Manual Calculations in Attachment B, Worksheet 4.

### Step 10 ­ Sum the Effects Ratios to Find the Total Effects Ratio

When assessing several hazardous substances on a site, it is necessary to add the Effects Ratios within each Effects Group together. When carrying out a manual calculation, this is done with the use of Attachment B, Worksheet 5.

### Step 11 ­ Determine Consent Status Against Consent Status Matrix

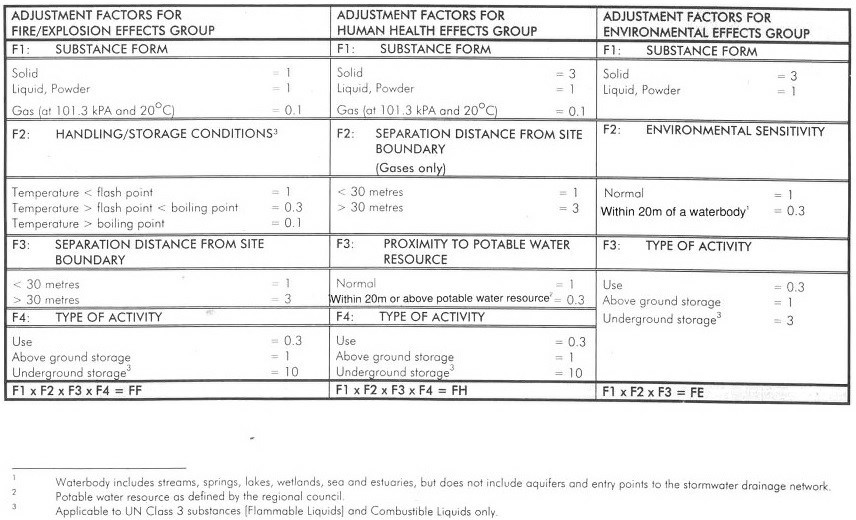
The sum of all Effects Ratios within each Effects Group determines the consent status of a particular site when compared against the Effects Ratio trigger levels in the Consent Status Matrix for that Effects Group. In most cases the same trigger value would cover all Effects Groups; in these situations, only the highest Effects Ratio in any of the three Effects Groups need to be considered to identify the consent status, for example, whether a hazardous facility or activity is Permitted, Restricted Discretionary, or Discretionary.

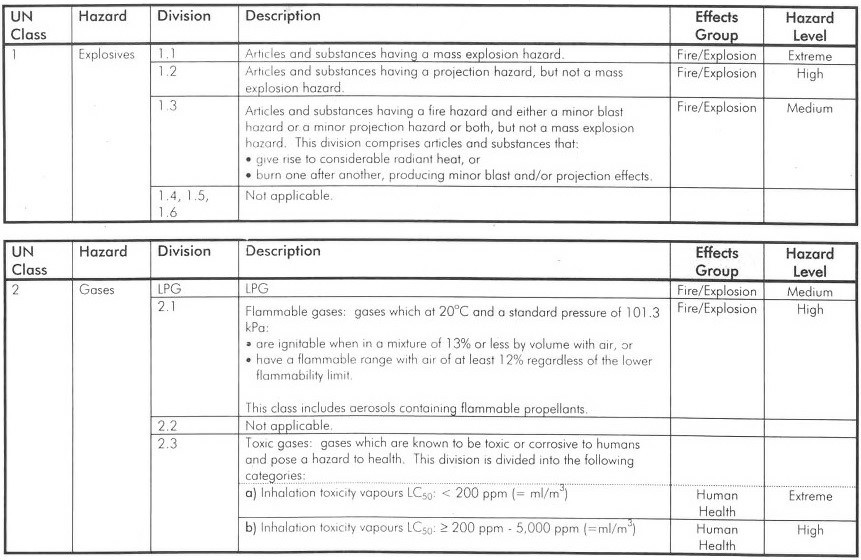
### Table 1: Base Thresholds for all Effects Groups and Hazard Levels

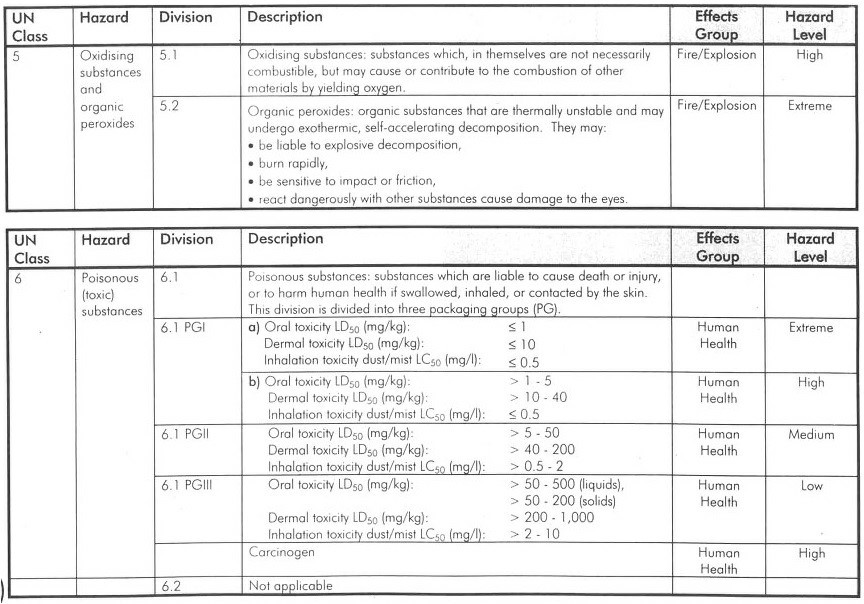
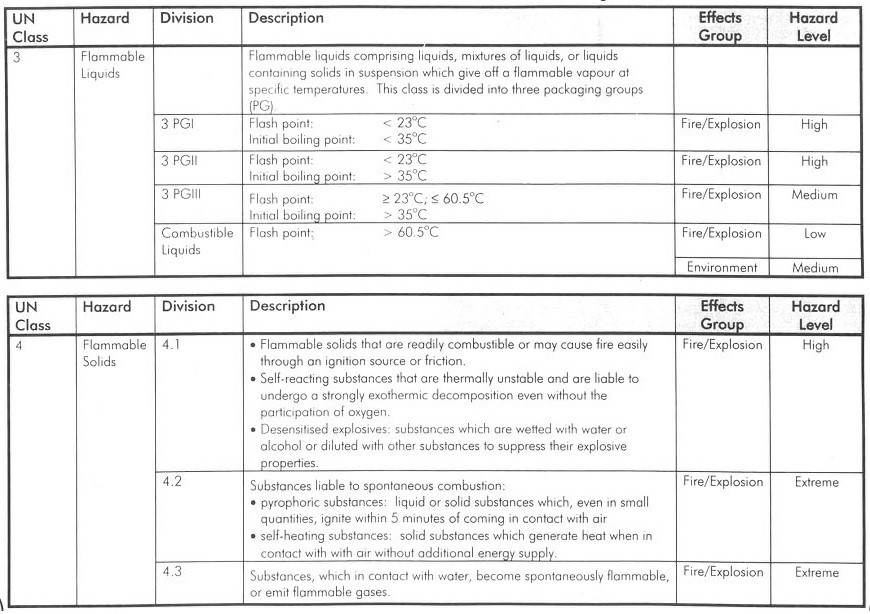
Note:

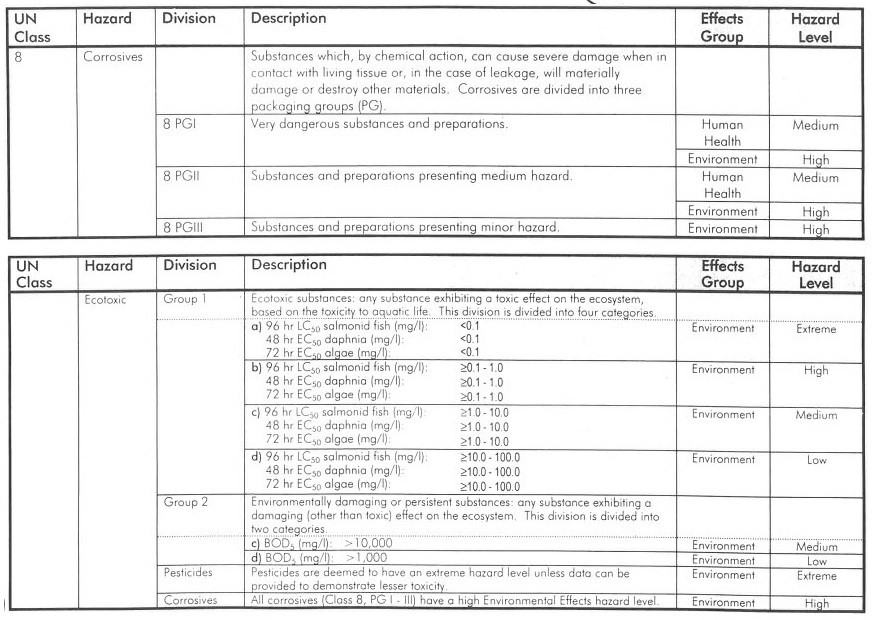
* Base Threshold in m³ at 101.3 kpa and 20°C for permanent or compressed gases.

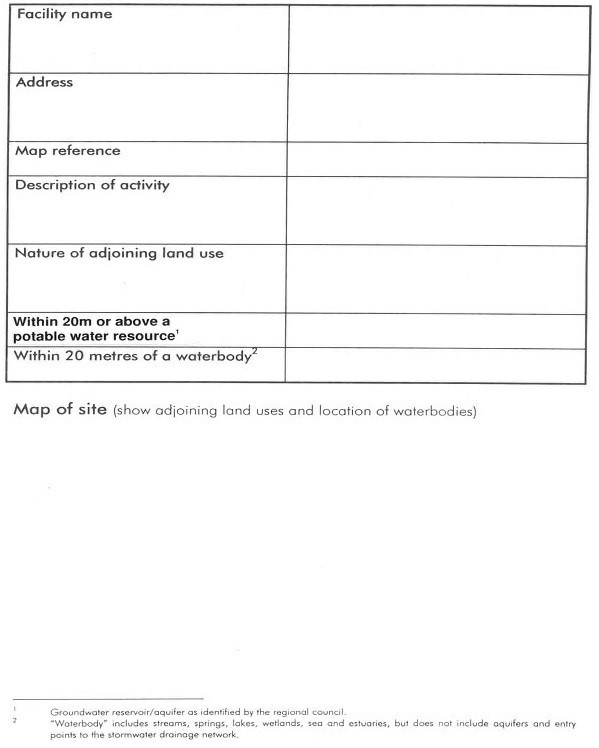
**Table 2: Adjustment Factors for each Effects Group**

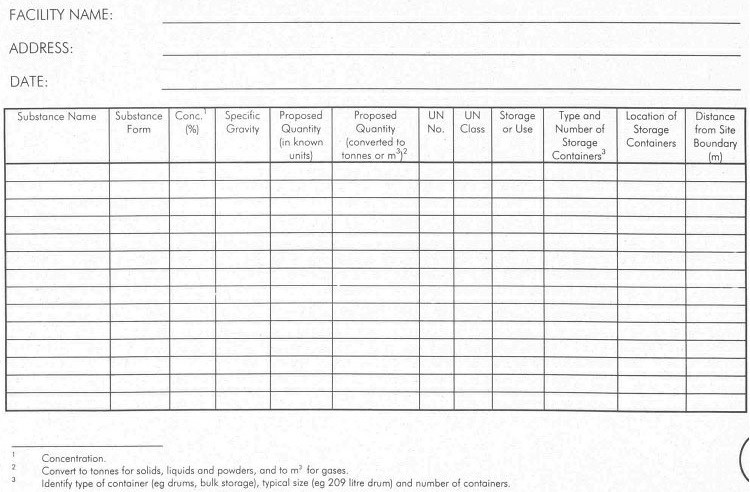
[](http://eplan.huttcity.govt.nz/Images/Lower%20Hutt/Chapter%2014/14D/PDFS/14D%2025.pdf)

[](http://eplan.huttcity.govt.nz/Images/Lower%20Hutt/Chapter%2014/14D/PDFS/14D%2026.pdf)**Attachment A: Classification of Hazardous Substances**

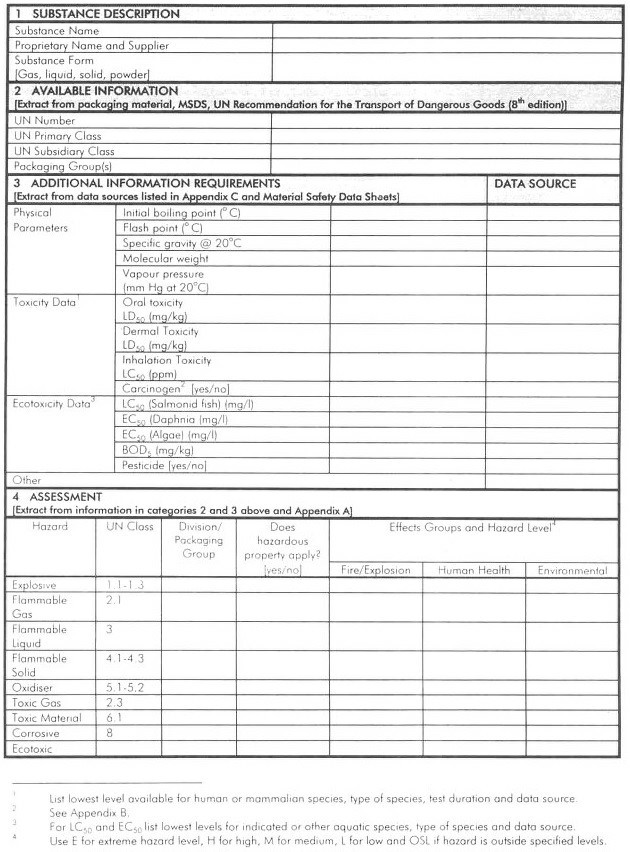
[](http://eplan.huttcity.govt.nz/Images/Lower%20Hutt/Chapter%2014/14D/PDFS/14D%2028.pdf)[](http://eplan.huttcity.govt.nz/Images/Lower%20Hutt/Chapter%2014/14D/PDFS/14D%2027.pdf)

[](http://eplan.huttcity.govt.nz/Images/Lower%20Hutt/Chapter%2014/14D/PDFS/14D%2029.pdf)

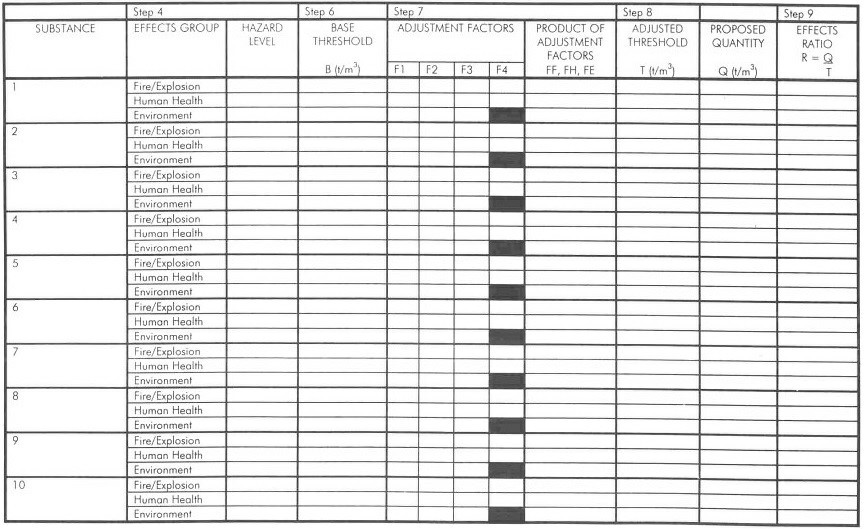
[](http://eplan.huttcity.govt.nz/Images/Lower%20Hutt/Chapter%2014/14D/PDFS/14D%2030.pdf)**Attachment B: Worksheet 1 ­ Site Information Sheet**

[](http://eplan.huttcity.govt.nz/Images/Lower%20Hutt/Chapter%2014/14D/PDFS/14D%2031.pdf)**Attachment B: Worksheet 2 ­ Hazardous Substances Inventory Sheet**

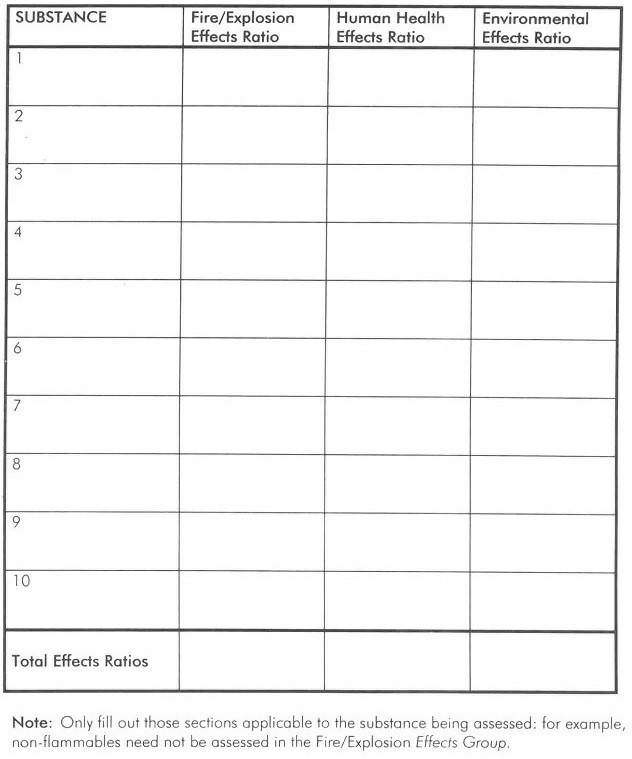
**Attachment B: Worksheet 3 ­ Hazardous Substance Worksheet**

[](http://eplan.huttcity.govt.nz/Images/Lower%20Hutt/Chapter%2014/14D/PDFS/14D%2032.pdf)

**Attachment B: Worksheet 4 ­ Summary Sheet for Manual HSFP Calculations**

[](http://eplan.huttcity.govt.nz/Images/Lower%20Hutt/Chapter%2014/14D/PDFS/14D%2033.pdf)

**Attachment B: Worksheet 5 ­ Total Effects Ratios Manual Calculation Sheet**

[](http://eplan.huttcity.govt.nz/Images/Lower%20Hutt/Chapter%2014/14D/PDFS/14D%2034.pdf)

AMENDMENT 390 - Add new Appendix Hazardous Facilities 2 – Station Village and Boulcott Village

**Appendix Hazardous Facilities 2 - Station Village and Boulcott Village**

