Submission Cover Sheet

MHF033

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Full name

Ian F Thomas

Name of organisation:

I F Thomas & Associates, Consulting Chemical, Environmental and Risk Engineers

Postal address

123 Nelson Place, Williamstown, 3016

Address Affected

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1 Attachment

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Ian Thomas

I F THOMAS & ASSOCIATES
Consulting Chemical, Safety & Environmental Engineers
123 Nelson Place
Williamstown 3016
Tel 9397-1413
Mobile 0401 957 700
Email ifta@ifta.com.au
Web www.ifta.com.au
The varying nature of planning decisions for developments near to major hazard facilities in Victoria, Australia

Ian F. Thomas*

I F Thomas & Associates,
123 Nelson Place,
Williamstown, VIC 3016, Australia
Email: ifta@ifta.com.au

Abstract: This paper tells us why it is important to make wise planning decisions for areas surrounding Major Hazard Facilities (MHFs) by addressing the consequences of some selected events. It describes the virtually unregulated, complex and costly Victorian planning process which occurs in absence of defined separation distances. It cites some examples of decisions known to the author and presents a summary of explosion events which have occurred in the period 1910 to 2013. The paper concludes by suggesting what should be done to rectify the situation. MHF Safety Cases need to be fully accessible to the planning authorities and the courts, preferably also to the general public as was the intent when they were first mooted. This is now an obligation of EU member states following adoption of Directive 2012/18/EU known as Seveso III. Only by so doing, can individuals and authorities know enough about an MHF to decide how close is safe for a proposed activity type. Individuals will then be able to make rational decisions about where to live. It is recommended that appropriate buffer zones based on community safety should be incorporated in Australian planning legislation.

Keywords: MHF; HSE; planning; UVCE; unconfined vapour cloud explosion; explosion; tank boilover.


Biographical notes: Ian F. Thomas is a Chemical and Environmental Engineer researching part-time into the Development of Safer Alternative Fuels at RMIT University. He is a Fellow of IChemE, IEAust, RACI and SIA, and has worked in the chemical industry for 25 years. For 11 years he was responsible for safety, occupational hygiene and environmental performance at BF Goodrich Chemical Ltd, Altona. Here, he was involved in mitigating the effects of an accidental release of 700t of vinyl chloride monomer. Since 1990, he has consulted in process safety and loss prevention and written some 100 articles and papers for peer-reviewed conferences and symposia.
1 Introduction

For many years the Health and Safety Executive UK (HSE) (see http://www.hse.gov.uk/), has influenced planning for areas in close proximity to so-called Top-Tier COMAH sites via Planning Advice for Developments near Hazardous Installations (PADHI). Major changes were made to PADHI following the 2005 Buncefield oil depot accident. The current 2014 version known as PADHI+, has made yet further improvements. These changes provide an updated on-line assessment service and increased consultation distances.

PADHI+ (and the EU Seveso Directives from which it derives) stands as a model for other administrations to follow. It can be applied on-line and without cost to planning authorities, would-be developers and planning consultants and provides HSE advice directly. Marginal cases can be addressed by an approach to HSE but the bulk of proposals will not need this. Numerous site maps where consultation distances (CDs) have been defined are also available to planning authorities, and consultants acting for developers. Over the years, HSE has provided much advice to consultants outside of the UK such as the author, but funds no longer allow this. Information can be obtained by contacting sites directly where the operator has no objection. PADHI is legislation, not advice. If a proposal is within the consultation distance prescribed a proponent must by law, make an application. Planning authorities such as municipal councils seeking planning advice near to MHFs may choose not to heed it – at their own risk. This happened with the upgrade of facilities at the Oval Cricket Ground which is in proximity to a gasometer. HSE advised against the proposal in 2008 but was overruled in 2012 by the Secretary of State for Communities and Local Government. Usually HSE advice is heeded.

In Victoria and New South Wales, planning advice near to MHFs is advisory only. In 2011, Planning and Infrastructure New South Wales updated its Hazardous Industry Planning Advisory Papers (HIPAPs) of which there are now twelve. Of particular relevance here is Hazardous Industry Advisory Paper No 4 (HIPAP 4) entitled Risk Criteria for Land Use Planning. Major Hazard Facilities in Victoria are analogous to UK Top-Tier COMAH sites. They are defined within the Occupational Health and Safety Regulations 2007 Part 5.2 – Major Hazard Facilities. A guidance note has been published by WorkSafe Victoria entitled Land use planning near a major hazard facility. WorkSafe is a sub-part of the Victorian WorkCover Authority of the Government of Victoria. These and the UK HSE legislation, were addressed in some detail in papers presented at the conference Risk 2012 (Thomas, 2012; Suraweera et al., 2012). Individual states of Australia operate under the National Standard for the Control of Major Hazard Facilities, NOHSC:2016(1996). This refers to the need to ensure safety of the surrounding community but only requires actions which minimise the likelihood of accident. Australian states are also obliged but not compelled to adopt the Safe Work Australia Major Hazard Facilities guides which address how the MHFs should act to ensure safety.

The Australian Capital Territory (ACT), Northern Territory, Queensland, South Australia (SA) and Western Australia (WA) also control MHFs but not the surroundings. Queensland in considering the surrounding community, refers to the New South Wales HIPAPs addressed above. The Brisbane City Plan requires MHFs to conduct QRA and in so doing, to ‘include societal risk as required’.

All of these authorities including the federal entities are responsible for ensuring safety in industry. The need to also consider impacts of hazardous industries upon their
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surroundings is an additional burden which these authorities are not responsible for. Rather, they provide advice which planners may consider. The fundamental fault here, is the absence of planning legislation to address this important matter. In September 2015, a ‘Planning Panels Victoria’ Major Hazards Advisory Committee was set up.\textsuperscript{14} It has until May 2016 to finalise its report to the Minister for Planning. While this is clearly an appropriate initiative it is somewhat belated for cases where questionable decisions have already been made.

A landmark case was heard by the Victorian Civil and Administrative Tribunal (VCAT) in 2008/2009 involving a proposal to build 66 dwelling units by Sandbar Properties Pty Ltd near to the Mobil Yarraville Terminal.\textsuperscript{15–16} In it, much deliberation took place with limited guidance from WorkSafe. A draft of the current guideline was tabled by a WorkSafe observer at the very end of the proceedings. The development was ruled against. As a result of this case, the WorkSafe guideline was published in 2010 addressing the surroundings of a single major hazard facility, the Coode Island terminal.\textsuperscript{17} A subsequent version of the guideline including advice surrounding the Mobil Yarraville Terminal and one other site was tabled at a Planning Panels Victoria hearing in September 2010\textsuperscript{18} but not published. It remains unpublished. The third site which the guideline addressed was the Mobil Gellibrand Tank Farm (GTF). A proposed development near to the GTF has been addressed by several planning committees and has been the subject of a long-running hearing by VCAT which commenced in early 2013 and concluded in July 2014. The unpublished guideline has been made available at these hearings. Other matters which will be addressed are a VCAT hearing between Ethos Productions Pty Ltd and the Port of Melbourne Corporation in 2010 and between refrigerant gases manufacturer Technochem Australia Pty Ltd and the Shire of Melton in 2011.

An analysis of major explosions which have occurred since 1910 is presented. Explosions are one cause of harm others being major fires and the escape of large clouds of toxic substances. Explosions are investigated because the author has most knowledge of these in particular, of unconfined vapour cloud explosions (UVCEs) such as those which occurred at Flixborough and Buncefield. He is also satisfied that they are potentially the most devastating with respect to effects with distance and also the most common adverse event type. Equally there are numerous kinds of harm to persons and also of damage to property. Deaths are used as the universal way of expressing control measures but this does not mean that other harms should be ignored.

2 The current planning process

There are three ways in which potentially adverse impacts between sensitive land uses such as housing and MHBs or otherwise offensive industries are addressed. The first is by planning provisions administered by local municipalities by way of Clause 52.10 \textit{Uses with adverse amenity potential}.\textsuperscript{19} The second is by guidelines such as those developed by the Victoria and New South Wales OHS agencies referred to in Section 1. The third is by environmental policies whose purpose is to minimise nuisance such as adverse odour or noise. Municipal planning guidance is based largely on these environmental policies which aim to reduce these high-level low-consequence events.\textsuperscript{20} The WorkSafe and HIPAP guidance is aimed at addressing the other end of the risk spectrum, high-consequence low-likelihood events such as major fires and explosions. Many, including authorities and governments are overly influenced by the rarity of these major events and
often ignore them when faced with increasing demands for developments and the income that goes with them. This is why proper guidance is required and it is the author’s view that this should be legislated for example, as it is in the UK.

3 Explosions which have occurred since 1910

An analysis of 616 explosions which occurred over the period 1910 to 2013 and caused 11,466 deaths follows. A 15-page table of the events themselves is available upon request. The events are sourced mostly from the USA but also from other countries. Much data is missing for political reasons of non-disclosure for example, there is only one accident listed for North Korea. The list includes isolated examples of events caused by explosives and addresses some barge initiated explosions while in port. Otherwise, deliberate events, acts of war, and accidents on ships at sea and aircraft are excluded from the analysis. Natural events are also excluded.

Sources of the list are *Unconfined vapour cloud explosions* by Dr Keith Gugan (1978), Marsh and MacLennan Insurance Broker’s *100 largest losses* publications (Marsh, 2001; Marsh, 2009), the US National Fire Protection Association (NFPA) and *GenDisasters*, a US/Canada genealogical database covering the period 1805 to 2011. Additional sources are Wikipedia, Survival Ring, Lees (1990, 2005), ILO (Bertazzi, 2015), HSE UK, and the UN Secretariat. Two recent events are included which occurred in 2014 (i) Yanhou Tunnel China, 1st March and (ii) East Harlem, New York, USA, 12th March.

Figure 1 presents explosion events by date and Figure 2 the number of deaths caused per explosion by country. 374 of the 616 events addressed specify the substance involved. Of these, 250 are flammable gases and 124 are flammable liquids. Figures 3–5 show the number of explosions, the number of deaths and the number of deaths per explosion by substance involved.

Figures 6–8 show the number of explosions, the number of deaths and the number of deaths per explosion by premises type for all 616 events. Location types are defined in Table 1.

The principal finding of the foregoing analysis is to show that devastating, death dealing events keep on happening and therefore effectively, we do not learn sufficiently from them. The more volatile the substance involved, the worse is the event. The more occupied are both the causing premises and nearby surroundings, the greater are the number of lives lost. The most vulnerable premises are those which are occupied continuously 24hrs/day and those which contain many people. It is therefore important to separate premises which contain large flammable and volatile inventories from such sensitive land uses as housing, schools, hospitals, nursing homes, busy shopping complexes, theatres and sporting stadia.

The most dangerous facilities in terms of deaths caused per event are (i) pipelines, (ii) roads which are used to convey dangerous goods and (iii) large-scale premises. They are not factories as most would expect. This is because factories are more sparsely populated than so-called sensitive land uses, particularly at night. At time of writing, WorkSafe Victoria has not addressed pipeline safety despite the fact that they are often located very close to residences (Georgiou, 2015). The Major Hazards Advisory Committee referred to in section 1 hereof has been asked to address pipelines.
The varying nature of planning decisions for developments near to MHFs

Figure 1  No. of explosion-caused deaths by date (see online version for colours)

Figure 2  No. of deaths per explosion by country (see online version for colours)
Figure 3  No. of explosions by substance involved

Figure 4  No. of deaths by substance involved (see online version for colours)
The varying nature of planning decisions for developments near to MHFs

Figure 5  No. of deaths per explosion by substance involved (see online version for colours)

Figure 6  No. of explosions by premises type
Figure 7  No. of deaths by premises type (see online version for colours)

Figure 8  No. of deaths per explosion by premises type (see online version for colours)
The varying nature of planning decisions for developments near to MHFs

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Location types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory</td>
<td>Oil refineries, petrochemical, chemical, fertiliser and other manufacturing premises</td>
</tr>
<tr>
<td>Business</td>
<td>Retail premises other than large department stores including local businesses such as plumbers</td>
</tr>
<tr>
<td>Storage</td>
<td>Flammable liquid and flammable gas storage facilities where storage is in tanks</td>
</tr>
<tr>
<td>Pipeline</td>
<td>Above-ground and underground liquid and gas pipelines in streets, railway reserves, in towns and in open country including pipeline company events</td>
</tr>
<tr>
<td>Large-scale premises</td>
<td>Hotel, motel, apartment complex, theatre, church, parliament and department stores</td>
</tr>
<tr>
<td>Flour mill</td>
<td>Large factory where the risk is of dust explosion e.g. grain elevators and sugar mills</td>
</tr>
<tr>
<td>Oil rig/well/field</td>
<td>Oil rig, oil platform, oil well and oil field</td>
</tr>
<tr>
<td>Rail</td>
<td>Trains conveying dangerous goods such as fuels including station events</td>
</tr>
<tr>
<td>Road</td>
<td>Road or highway where the event involves flammable goods</td>
</tr>
<tr>
<td>House</td>
<td>House, apartment, caravan, camper</td>
</tr>
<tr>
<td>Restaurant/bar/tavern</td>
<td>Smaller premises than large-scale premises where people congregate</td>
</tr>
<tr>
<td>Service station</td>
<td>Fuel retailing premises</td>
</tr>
</tbody>
</table>

To avoid the deaths they cause, towns gas (natural gas) should not be reticulated into multiple-dwelling complexes such as high-rise apartment blocks. Reticulation of flammable gases and liquids both above-ground and below-ground should be completely reconsidered if we wish to avoid the deaths they cause.

4 Establishing separation distance

Separation distances surrounding MHFs are intended in the first instance, to ensure appropriate location of new hazardous industries with respect to existing sensitive land uses. New land uses proposed near existing MHFs require separation guidelines to be applied similarly. This is described by the courts as ‘reverse onus’ guideline application. In Victoria since 2000 when the WorkSafe MHF regulations came into being, there have been no proposals for new MHFs. New, less hazardous facilities are proposed from time to time and are located in new industrial estates distant from existing sensitive land uses.

In Victoria, planning proposals are exclusively to locate sensitive uses ever closer to the 38 existing MHFs. This article therefore is about the need for formalised reverse onus separation in the interest of community safety and continuing viability of the MHFs.

Internationally, separation distance is defined by the process of Quantified Risk Assessment (QRA) which permits calculation of the level of risk with distance and also calculates the frequency of occurrence of rare large-scale events capable of causing multiple deaths and injuries. The findings of a QRA are then assessed against acceptable risk criteria set by governments. For Victoria this is defined within WorkSafe Guidance Note GN16 as updated in April 2011. There are two ways of measuring acceptable
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risk, individual risk of death at a location at a defined distance from the source, and group or societal risk where likelihood of an event causing multiple deaths is defined. Individual risk reduces with distance from the source of a potential event and world criteria typically define acceptability as being $1 \times 10^{-7}$/person/year or as $1 \times 10^{-6}$/person/year that is, 1 chance in 10 million or 1 in 1 million. QRA produces contours of individual risk surrounding an MHF. Group risk is defined by a graph of frequency of occurrence (F) of an unlikely event vs. the number of deaths (N) caused. The graph contains three zones, acceptable risk, unacceptable risk and risk acceptable if improvements are made.

5 Background to HSE legislation

The following is lifted directly from the UK HSE website.33 The part of the website at this reference is no longer available however, two key areas of the site contain similar descriptions of the development of HSE methodology namely, About land use planning34 and Background to HSE’s involvement in land use planning.35

“The safety implications of land use development in the vicinity of major accident hazard sites were first recognised in the late 1960s. In 1972 planning authorities were advised to consult HM Factory Inspectorate (now part of HSE), before granting planning permission for certain classes of development (known as major hazards) and for other development in the vicinity of existing major hazard sites.

In 1974 an explosion at a chemical works in Flixborough, Humberside killed 28 people on site and caused extensive damage to properties some distance away. Following this, a committee of experts, the Advisory Committee on Major Hazards (ACMH) was established to review all aspects of safety at and around major hazard sites. The ACMH produced three reports in which they proposed a strategy which included the mitigation of the consequences of any major accidents that could occur.

Control of development in the vicinity of major hazard sites was identified as a key element in mitigation. The ACMH established principles which still govern HSE’s policy in this area; they recognised that complete ‘sterilisation’ of land around such sites was not practicable but that ‘The overall objective should always be to reduce the number of people at risk’ and ‘it is wise to avoid a substantial growth in population near an existing installation’.

Arrangements were introduced for local planning authorities to consult HSE for advice about risks from major hazard sites and the potential effect on populations nearby when considering applications for planning permission around such sites.

After a series of other major incidents elsewhere in Europe, the European Commission Directive on the Major Accident Hazards of Certain Industrial Activities (known as the Seveso Directive) was adopted in June 1982. The Seveso Directive, which was amended in 1997 and 2003, requires EC Member States to ‘ensure that the objectives of preventing major accidents and limiting the consequences of such accidents are taken into account in their land-use policies and/or other relevant policies’. The measures which should be taken to achieve these objectives include controls on new developments in the vicinity of existing hazardous installations and on the siting of new hazardous installations.
6 The worksafe approach

In October 1988, the predecessor of WorkSafe Victoria known as the Risk Assessment Group, Dangerous Goods Branch, Department of Labour introduced ‘Risk Acceptance Criteria’ which defined an acceptable individual risk of $10^{-7}$/person/year and a group or societal risk graph defining acceptable and unacceptable group risk. This followed its engagement of DnV Technica to perform a Quantified Risk Assessment of the Altona Petrochemical Complex in 1987 (Seaman, 1987). This guidance remained on an interim only basis until 2006 when the Hazardous Materials Division of WorkSafe published Guidance Note MHD GN-16 entitled *The requirements for demonstration under the Occupational Health and Safety (Major Hazard Facilities) Regulations.*

The current version entitled *Requirements for demonstration: Advice to operators of major hazard facilities on demonstrating an ability to operate the facility safely*, was introduced in April 2011 under Part 5.2 of the Occupational Health and Safety Regulations 2007. The present WorkSafe approach which commenced post-Buncefield, has been to produce the planning advice previously described and at the same time, to rely heavily on HSE UK practice. The difficulty however is two-fold.

1. WorkSafe defines its $10^{-7}$ individual risk distance as 185m which is the pre-Buncefield Consultation Distance (CD). The immediate post-Buncefield CD was increased from 185m to 400m following extensive Quantified Risk Assessment conducted after the event at the direction of HSE. The Buncefield facility is described as an oil depot but in fact is a large-scale petrol storage site (LSPSS).

2. WorkSafe defines an outer planning advisory area (OPAA) of 500m for Coode Island and 300m for Mobil Yarraville Terminal and Mobil Gellibrand Tank Farm the latter two being unpublished. The OPAA does not relate to any separation distance used in the UK. It is described as an area where escaping occupants may be harmed in the act of escape and where generally, it is inadvisable to permit housing.

The variability in response by WorkSafe and its predecessors together with its current claim not to be an agency for making planning decisions has meant that lengthy and costly legal processes are unavoidable. The free on-line consultation activity available in the UK is clearly a wiser option.

7 The 2008/2009 Yarraville case

Sandbar Properties Pty Ltd had made considerable progress in negotiations with the Maribyrnong City Council (MCC) before the author became involved and had reached agreement on many details of its 66 dwelling proposal including fencing, garden areas,
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street noise reduction and easements. The author was consulted when MCC required a risk assessment to be conducted. Initially this negotiation was amicable and MCC planners were keen to find a way for the development to proceed. Council had obtained Worksafe written advice and at a meeting with Council, the developer, its town planner, its architect and the author, a reference to an unpublished separation distance of 185m was mentioned but without explanation. As is now known, this is the WorkSafe advisory 10⁻⁷ contour distance. The distance to the 10⁻⁷ risk contour was described by the Tribunal following evidence put from Mobil’s Safety Case, as being only a short distance beyond the boundary of the Yarraville Terminal that is, considerably less than 185m away. Despite the Sandbar site being outside of both of these contours, the development was refused on municipal planning grounds. The Tribunal concluded that the air quality distance of 300m specified in Environment Protection Authority (EPA) Air Quality Guidelines AQ 2/86 for fixed roof tanks and also referred to in planning clause 52.10, applied. If this was an appropriate way to consider the proposal, the Clause 52.10 floating-roof tank distance of 100m should also have been considered but the authorities even following a Freedom of Information Act (FOI) request, would not release details of tanks on the site. The upshot was that the decision was made on grounds of environmental amenity (nuisance) and not on grounds of safety or risk. The decision was also made without anyone present knowing whether the lesser 100m nuisance separation distance should have been applied. Further, even the barristers for each side were not permitted to view the Mobil Safety Case. This resulted in Council’s barrister during her cross-examinations declaring that she could not properly cross-examine because she had not seen the safety case.

The decision was unfortunate given that the Council and Sandbar had expended considerable resources on non-risk related details of the proposal before risk was considered. This is also questionable because as understood, the Council knew the developer and the location, having previously approved a former application by Sandbar. This was for dwellings to be constructed on an adjacent site for which a risk assessment was done and where Council approved the development only in return for being gifted an adjacent school building by the developer.

The author is also concerned that the school building which was adjacent to the contested proposal site, was subsequently developed by MCC in conjunction with the State Government as a community centre and child minding facility. Such a facility is potentially an order of magnitude more sensitive than housing in the UK requiring a greater separation from an MHF. The distance from the terminal to the community centre is 265m that is, less than the 300m determined by VCAT to be required for housing. For an HSE UK sensitivity level 4 (SL4) premises such as a 24hr creche, the PADHI separation distance required is 400m. For a daytime-only creche HSE UK SL3 would apply and the required CD would have been 300m. Either way the creche and indeed the community centre should not have been permitted if the VCAT logic for the Sandbar site is accepted. In addition, neither Council nor VCAT were moved by the fact that there are some 90 houses closer to the MHF than the proposal site some of which are 25m distant across the road from the terminal and in turn, some of which are newly constructed. The actions surrounding the community centre proposal suggest that where a municipality is seeking planning approval for its own premises an independent planning agency should be appointed.
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8 The 2010 Yarraville case

Ethos Productions Pty Ltd trading as Kindred Studios owns and operates a site in Yarraville for musical and photographic education and production in a series of sound-proofed studios. An expansion in the business was sought bringing it into use as part of Victoria University. This was approved by Maribyrnong City Council and opposed by the Port of Melbourne Corporation (PoMC) which operates container storage on land between the Maribyrnong River and across the street from the Ethos site. Results of several risk assessments prepared prior for the Coode Island terminalling facility by Terminals Pty Ltd and details of goods stored at this and other sites at Coode Island were tabled. The Ethos site was in-part, within the 500m outer planning advisory area (OPAA) prescribed by WorkSafe in its planning guidance document.

Notwithstanding this, WorkSafe advised Maribyrnong City Council in writing that it had no objection to the proposed use. The case was heard by VCAT which was advised by counsel for the PoMC for example, that persons evacuating from the Ethos premises might suffer from adverse effects following inhalation of fumes from Coode Island in an event, to an extent which might impair their ability to evacuate safely. PoMC was also concerned that this former industrial site was proposed to be used for expanded non-industrial and non-port purposes, that the use is not supported by planning policy and that the use is incompatible with the strategic direction for the area and will inhibit the ongoing operation of the port. Other matters such as noise emanation from the premises and increased traffic and parking were also raised. The proposal was approved and the expanded educational facility is now operational.

9 The 2011 Melton case

Technochem Australia Pty Ltd purchased an industrial property in Melton South encouraged to do so by the Shire of Melton given the large amount of separation from sensitive uses available for this fundamentally dangerous refrigerant gas manufacturing and recycling business. The buffer at this time was in fact compliant with both EPA AQ 2/86 and Clause 52.10 of the local planning scheme for such an industry, namely 1000m. The business was approved on the basis of presence of a quantity of dangerous goods sufficient to cause it to be classified as an MHF. References to this matter are cited and may be provided upon request, with permission (Thomas, 2011a; Thomas, 2011b).

Much of the business involved blending, handling and storage of flammable gases. Future bulk storage of anhydrous ammonia and of ethyl mercaptan odorant was also planned. All of these factors warrant the need for the 1000m buffer.

For some two years, the company invested heavily in the site and developed a state-of-the-art facility only to be advised that the land up to its fence line and half of the property itself was to be rezoned residential. This was consequent upon something which the Shire of Melton almost certainly knew was pending, namely the construction of the new satellite town of Toolern under the auspices of the Victorian Growth Areas Authority. Not only was housing planned as indicated but the town centre including a major shopping and entertainment complex was planned near to the site.
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Figure 9  Sandbar site and WorkSafe IPAA & OPAA (see online version for colours)

Figure 10  Kindred site and WorkSafe IPAA & OPAA (see online version for colours)
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No-one at the shire provided any warning of this. In fact, all of the businesses in the same location as Technochem first learned of the zoning change after the event and were not afforded the usual opportunity to comment. They did comment and at this late stage, this involved considerable resources.

A risk assessment was performed which showed the need for a considerable separation distance. WorkSafe appeared not to have any objection to the zoning change. EPA advised buffer distance requirements for the site given the propensity to annoy the would-be new residential neighbours with odours or noise. The matter was settled when the proposed housing boundary was moved to comply with the EPA requirement. Exactly what separation distance resulted is not known as the author was not involved at the time this decision was made. It was mooted to be either 350m or 440m according to EPA (Frame, 2011). The matter of the safety of the would-be residents was not considered. This case suggests that independent means should be brought into being to cause a municipality considering a proposal, to reveal to the applicant all matters which might affect a proposal.

**Figure 11** Technochem site (red) & 1000m buffer (see online version for colours)

10 The 2012-14 Williamstown case

In 2009, a proposal to build a high and medium rise development on a former industrial site was submitted to Hobsons Bay City Council (HBCC) by a consortium of developers then known as Nelson Place Village Pty Ltd and later as NP Developments Pty Ltd.
(NPD). Attempts were made by the state government to have the matter ‘called-in’ and a decision made by the planning minister rather than by HBCC. This would have meant that there were no grounds for appeal once the decision was made. The Council succeeded in retaining planning responsibility for the proposal and ruled against it.

NPD subsequently brought the matter to VCAT in 2013. In the meantime hearings took place for example by the Ports and Environ Planning Committee and the Port Phillip Woollen Mills Advisory Committee, both considering matters pertinent to the NPD/HBCC case. The author submitted evidence to the Ports and Environ Planning Panel on behalf of the developer in 2010, to VCAT on behalf of Save Williamstown Inc in 2013 and on behalf of Ms Charmian Gaud of Save Williamstown Inc in 2014. Other objectors and interested parties were Mobil, BAE Systems and several other individual Williamstown residents. The proposal to be presented in a number of separate stages when completed, would house some 2000 residents on a 2.8ha site which at its eastern end is 270m from the bund wall of the nearest tank at the Mobil Gellibrand Tank Farm (GTF). The facility at GTF is an MHF and includes the Port of Melbourne Corporation (PoMC) Gellibrand Pier where dangerous goods including crude oil are loaded and unloaded by Mobil and either stored at GTF or pumped directly to the Mobil Altona Refinery.

Figure 12 NPD site and WorkSafe IPAA & OPAA (see online version for colours)

WorkSafe in its unpublished guidance note has named two advisory areas for the GTF, the inner planning advisory area (IPAA) of 185m and the outer planning advisory area (OPAA) of 300m. Why WorkSafe regards the need for a 500m OPAA surrounding the Coode Island terminals and 300m surrounding the GTF is unclear. In handling and
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storing crude oil of Class 3 Packing Group I as well as petrol and less volatile substances, the GTF exhibits a similar level of risk to the storage of Class 3 Packing Group I propylene oxide at Coode Island. It is also unclear why WorkSafe in applying its $10^{-7}$ risk contour to the GTF cites this as 185m which is the pre-Buncefield distance rather than 400m which is the post-Buncefield distance established following performance of extensive quantified risk assessment carried out for HSE UK. The Tribunal finding with respect to the [185m] $10^{-7}$ risk contour states “The WorkSafe Inner [185m] and Outer [300m] Advisory Areas are informed by the findings from extensive research undertaken following the ‘Buncefield Incident’ in the UK”. Why and how WorkSafe has arrived at its OPAA for this and other sites is unclear given that it is an arbitrary distance not based on a QRA and without precedent anywhere else in the world. Why WorkSafe appears to rely on the EPA amenity buffer of 300m is also unclear given that the latter is designed to prevent nuisance and has little to do with safety. Further, the 300m WorkSafe separation distance appears to be drawn correctly in proximity to the development site to the west but measures only some 220m to the north. This contour is shown in Figure 12 contained in an as yet unpublished WorkSafe guideline document.

**Figure 13** UK 400m LSPSS CD superimposed on the NPD site (see online version for colours)

WorkSafe appears unaware that PADHI+ 2011 no longer specifies a consultation distance for premises like the GTF and only does so for large scale petrol storage sites like the Mobil Yarraville Terminal addressed in Section 7. For all other sites, the consultation distance is derived on a case-by-case basis following the conducting of a quantified risk assessment. This generally leads to greater consultation distances than 400m. In the UK, a specific case analogous to the GTF and Gellibrand Pier where both a
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A crude oil storage site and crude oil loading/unloading dock are present, would yield consultation distances of the order of 800m or 1000m. In defining its guidelines, WorkSafe has not recognised this and has acted as if the GTF is simply a large scale petrol storage facility (LSPSS).

Although petrol is an order of magnitude less dangerous than crude oil, crude oil contains up to 20% of very volatile liquids collectively known as naphtha and also usually contains water. The water layer settles to the bottom of the storage vessel and can lead to tank boil-over in the event of a fire. There have been 480 tank fire incidents in the period 1951-2003 (9/yr) (Shaluf and Abdullah, 2011). Boil-over is extremely dangerous analogous in-part, to a boiling liquid expanding vapour explosion or BLEVE which can occur if a fire impinges on the outside of a pressurised storage vessel. Both require considerably greater separation from populated areas than less hazardous events.

VCAT found in favour of the developer notwithstanding the fact that WorkSafe advised that no houses should be built on Kanowna Street as this is within the 300m Outer Planning Advisory Area (OPAA) distance. VCAT did so based upon prior evidence given by WorkSafe to the Port Phillip Woollen Mills Advisory Committee where (a) WorkSafe indicated that it had no objection to housing, (b) that housing was in order provided that it was built to withstand 6kPa blast overpressure and (c) that an evacuation plan for residents was developed. NPD (now AV Jennings Ltd to which the site has been sold) therefore has the right to build Stages 1 and 2 of the development adjacent to Anne Street in the west and Kanowna Street in the east. Ahead of any proposal for the main body of the land, a change of government has occurred and a height limit imposed on that part of the site. Save Williamstown Inc has also opposed the destruction of the former Oriental Hotel on the corner of Nelson Place and Anne Street and the Nugget Factory building on the corner of Kanowna and Cecil Streets. Both were unsuccessful and these premises are now demolished. This residents group is now lobbying the developer’s bank to decline to lend on the basis of its adherence to the Equator Principles of social and environmental risk management to which it adheres.

It is perhaps unfortunate that the planning panels and the tribunal place so much faith in WorkSafe given evidence presented by several experts to the contrary. The solution for this and any other major site is for an independent and peer reviewable QRA to be performed before any decision is made.

11 Conclusions

- None of the above cases have been addressed without considerable expenditure of resources by proponents, opponents and authorities alike.
- There appears to be less than the best possible advice coming from WorkSafe Victoria.
- The collective and individual thinking of authority members such as those at the Victorian Civil and Administrative Tribunal (VCAT) at WorkSafe and at Maribyrnong City Council cannot be entirely known. What is known however is that if uniform planning regulation like that in the UK was to be brought into being, the cost of proposals would be reduced and the interests of safety properly served.
The varying nature of planning decisions for developments near to MHFs

- In the 2008/9 Yarraville case addressed in Section 7 hereof, there appears to be a difference in the way the proposed housing development and the adjacent Community Centre & Creche proposal were treated by Maribyrnong City Council. In the 2010 Yarraville case addressed in Section 8 hereof, the presence of clear planning buffers and online checking as is the case in the UK, may have avoided considerable legal cost in pursuing the matter.

- In the 2011 Melton case addressed in Section 9 hereof, the responsible authority approved a hazardous industry proposal requiring a 1000m buffer perhaps without sufficient consideration of a proposal by the Growth Areas Authority to build a new town adjacent to it.

- In the 2013/14 Williamstown case addressed in Section 10 hereof, inconsistency in WorkSafe advice at a Planning Panels Victoria hearing and at the Tribunal influenced the decision made by the Tribunal.

- In the 2013/14 Williamstown case, both WorkSafe and the Victorian Civil and Administrative Tribunal appear to have paid insufficient attention to the findings made by the UK Health and Safety Executive following the 2005 Buncefield accident pertaining to required buffer distances surrounding large scale petrol storage sites.

- WorkSafe appears inconsistent in applying different outer planning advisory area distances to two analogous MHFs, the Coode Island bulk liquids terminalling facility and the Mobil Gellibrand Tank Farm, suggesting that a 500m buffer at the GTF may be more appropriate.

- The requirement in the UK for MHFs which have port facilities as well as storage to conduct site-specific quantified risk assessment (QRA) as was recommended to the Tribunal in the Williamstown case, was not heeded.

12 Recommendations

- That Victoria adopts the UK HSE system of nil-cost, on-line assessment of its advice and performance of QRA to establish separation distances for MHF sites which are not petrol storage sites.

- That the intent of Seveso III (see http://www.hse.gov.uk/) be adopted in full in Australia in particular, its requirements to (a) strengthen citizens’ rights on access to information by making relevant information publicly available – Article 14, (b) to deploy land-use planning for the siting of establishments – Article 14 and (c) to consult the concerned public in decision making for specific individual projects – Article 15.

- That Victoria varies its planning legislation to incorporate appropriate community buffers surrounding Major Hazard Facilities (MHFs) and that the Major Hazards Advisory Committee now in place in Victoria causes such change.
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- That there is a need for the growing tendency to permit otherwise inappropriate developments within the WorkSafe outer planning advisory area (OPAA) for example by requiring housing to be constructed to withstand fire and explosion impacts, to be uniformly applied or outlawed.

- That if WorkSafe is to apply planning advice, it be required to do so uniformly.

- That Victoria be required to either adopt the UK proclaimed post-Buncefield separation distance criteria or perform detailed QRA sufficient to permit derivation of its own criteria.

- That Victoria considers adopting the UK requirement for top-tier COMAH premises which are not large-scale petrol storage sites, to conduct site specific quantified risk assessment.

- That clarity needs to be applied to the WorkSafe claim that by definition, occupants of housing are unable to prepare and act in accordance with an emergency plan given the precedent of the 2013/14 Williamstown case where the developer is required to prepare and apply such a plan to the 2000 impending new residents.

- The 2008/9 Yarraville case warrants equality of treatment to apply to adjacent proposals notwithstanding the difference in the nature of the applicant. It is suggested that where a municipality is seeking planning approval for its own premises an independent planning agency should be appointed.

- The 2011 Melton case suggests that independent means should be brought into being to cause a municipality considering a proposal, to reveal to the applicant all matters which might affect it.

References


Frame, J. (2011) Amendment C84, Part 2, Melton Planning Scheme; Statutory Facilitation, EPA Victoria, Letter EPA to Growth Areas Authority ref 27070; 4 pages.


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Notes


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36 Risk Assessment Group, Dangerous Goods Branch, Department of Labour - Risk Acceptance Criteria, 14 pages; C1573/63/1, dated October 1988.


38 Risk assessment of the Altona Petrochemical Complex and environs; Summary Report; Technica Consulting Scientists and Engineers; C849/149/55, 15 pages; Department of Labour, Victoria; March 1987.


40 More information about - Major hazard facilities - Land use planning near a major hazard facility, issued October 2010. WorkSafe Victoria; pdf provided at planning tribunals only; 6 pages.


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