

Demonstrating the Need to Integrate City Planning and Emergency Preparedness: Two Case Studies*

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City planners need to consider aspects of emergency management, risk assessment and hazard vulnerability in their planning and development deliberations. Planners need to recognise that urban hazards, especially from technological sources, are more prevalent than may at first be apparent. An emergency management focus is particularly necessary when urban renewal and redevelopment is being considered. Of special importance is the need for planners to understand that projects like this can exacerbate the plight of existing "at-risk" groups, and may even create a more hazardous social environment. Planners also need to be made aware that their professional actions have a direct impact on both the task-set and performance capabilities of disaster managers and emergency services operatives. In this paper two case studies are presented to demonstrate how these issues translate into practice. The first explores the consequences of a "classic" medium-scale technological emergency in Australia. The second study, from Canada, illustrates the ubiquity of small-scale industrial hazards in the modern city, and epitomises the extent to which city-dwellers are vulnerable.

The Hazardousness of the Urban Environment

This paper highlights what we regard as a growing urban problem: the increasing hazardousness of urban living and activities brought on by particular land-use planning practices and development control systems associated with hazards from medium and small-scale industrial activity. We believe that part of the solution lies with a closer integration between two specialist groups that have largely remained professionally separated. The two groups are city planners and emergency management planners.

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Our purpose in this paper is to highlight the urban planner's obligation to hazard mitigation and emergency management, and to remind the planning profession that it plays an important integrating role in the advancement of community safety. Building on the base developed in a companion paper (Britton and Lindsay 1995), this paper demonstrates how the practices of urban planning can have an unintended detrimental effect on the safety of the community.

These aims are communicated through two case-studies. The first provides a recent example of an industrial emergency which occurred in Sydney (NSW, Australia), during 1990. Here, we illustrate how existing land-use practices and development control systems can place existing urban groups in danger. This case raises questions about the safety, ethicality, and viability of juxtaposing divergent and conflicting land-use practices, and asks questions about the appropriateness of some urban development schemes if they can endanger thousands of people. Our second example focuses on a redevelopment plan prepared by a team of planning students in their second year of the University of Manitoba's Master of City Planning program. This example is intended to show how current planning education projects may neglect disaster management issues, thus perpetuating the questions raised in the first case. Specifically, the students have interpreted their planning responsibilities in the context of an urban renewal project for a neighbourhood of Winnipeg (Manitoba, Canada) which, if implemented, could increase the already elevated at-risk status of residents and endanger future urban groups. Their recommendations, in effect, can best be described as a "disaster-in-waiting."

Two Case Studies

Case Study #1: The St Peters, Sydney (NSW, Australia) Liquid Petroleum Gas (Propane) Explosion

The first case-study focuses on an inner Sydney district located in the municipality of Marrickville. It comprises the suburbs of St Peters, Sydenham, and Tempe, which constitute Postal Code Area 2044. This area came under intensive study following a major technological emergency in 1990 (Britton and Correy 1990; Britton 1991; NSW Chemical Inquiry 1991). Earlier reviews about the development of the district and its history are provided in the Marrickville Heritage Society's journal, *Heritage* (especially articles by Le Maistre 1988, Meader 1988, and Thompson 1984). A precis of these latter articles provides interesting contextual material for the

recent event. It is clearly evident that the area has undergone considerable change during the past few decades.

A little over a century ago the St Peters area was admired as an appropriate abode for the gentry, with "the garden walls of private residences, luxuriating English elms, oaks, willows and other well known trees of old England ... the church, with its ivy-covered walls and burial ground, studded with tombstones of the old type, makes us fancy ourselves again in the land of our birth" (Le Maistre 1988). The first land grants were made in the district in 1790. Subdivision of properties commenced with the building of St Peters church in 1838 south of Cooks River Road and Government Road. Today, the former route is part of Princes Highway, one of the busiest roads in Sydney, while Government Road has been renamed Unwin's Bridge Road. St Peters church is significant for two reasons. It was the first church built by free labour in the Sydney region; and the name of the municipality was taken from this church when the area became incorporated in 1871 (the municipality ceased to exist in 1948 when it was amalgamated with the municipality of Marrickville).

The area retained a high status until the beginning of the current century when the development of a brickpit commenced. Most of Marrickville municipality is based on Wianamatta shale which formed the mainstay of Sydney's early brick industry. The drainage of swampland in the southern part of the municipality, which effectively split the present suburbs of St Peters and Marrickville into separate sectors, was a direct contributor to St Peters developing an industrial character, permitting Marrickville to develop a residential profile. Hence, the character of St Peters began to change with the development of industry, reducing the district's attractiveness for many; and out-migration of high socioeconomic status families commenced from the 1880s. Further sub-division replaced large blocks of land with smaller allotments to accommodate the influx of brickmakers and other labourer groups. The area nevertheless became a prosperous working class district. Much of the brickwork necessary for the construction of cuttings, tunnels and embankments associated with Sydney's extensive railway system originated here.

The depression of the 1890s, however, brought a collapse of land and building booms which significantly affected the brickmaking industry. Demand for bricks fell at the same time the industry was being mechanised, causing widespread unemployment for the municipality's approximately 5,000 residents. After the depression the area no longer presented a prosperous working class face. From the 1920s, Australia began to industrialise quickly and many houses in the St Peters area were replaced by industrial

premises. This pattern continued with the development of small factories and relatively large industrial complexes starting to dominate the local landscape. Today, PCA 2044 is predominantly an industrial zone with residences being closely and almost completely surrounded by a diversity of industrial operations.

The 1986 population census furnishes a good vignette of the areas social demographic character. In terms of age structure, PCA 2044 has a predominantly maturing age profile, characterised by old people, adolescent children and middle-aged adults. Almost half the population (46.9%) is overseas-born, with a further 0.8% comprising Aboriginal and Torres Strait Islanders. About half the overseas-born are represented by Yugoslavs (9%), Greeks (6.3%) and Vietnamese (4.8%). By comparison with other districts in Sydney, both English-speaking and non-English speaking recent arrivals are over-represented here. Long-term non-English speaking migrants are also over-represented. By contrast, Australians born of Australian parents are under-represented. Semi-skilled manual (18.6%) and unskilled manual groups (29.3%) predominate, comprising 48% of the total local workforce, while skilled manual (trade) comprises 23% of the areas occupational group (blue-collar workers constituted 21% of Sydney's labour force in 1986). PCA 2044 also has a high percentage of young blue collar workers (20–34 years). White-collar occupations are under-represented when compared with the Sydney metropolitan area. PCA 2044 accentuates the general characteristics of an employment-depressed area: while 9% of Sydney's labour force were looking for jobs during 1986, 14.7% were doing so in the St Peters area. Youth unemployment in the area was high (46.5%) in 1986. With the average yearly income in Australia during 1986 approximating \$22,000, 58% of PCA 2044 income earners were bringing home less than \$12,000 p.a. And while 57% of Sydney-siders had no post-school qualifications (10% had trade qualifications; 14% had "other" qualifications, and 10% had tertiary educational qualifications), 71.3% of the St Peters residents had no formal trade or educational qualifications. Of the remaining, 7.4% have trade certificates, 9.3% have "other" qualifications (such as secretarial and other certificate courses), and 4% gained tertiary educational qualifications (degree, diploma or higher qualifications). Schools in the area came under the Commonwealth Schools Commission's Disadvantaged Schools Program (DSP). Finally, the number of households in the municipality of Marrickville with no car is nearly twice the Sydney average; and households with two or more cars are markedly below the Sydney average.

Much of the earlier manufacturing activities in the St Peters area have since been replaced by transport and storage commerce. In particular, there

are large numbers of toxic, petro-chemical and other hazardous goods storage facilities. The dominance of this industrial type and its associated transportation requirements, has produced a marked degradation in the quality of air and water; and noise pollution is extreme. Included within the St Peters industrial area is a large liquid petroleum gas (LPG — propane) storage depot. The depot occupies a two hectare site containing a fixed bulk storage complex, small cylinder storage and a filling depot. From the road, the depot is obscured by large vertical "ready-mix" concrete holding vessels and mounds of sand and gravel, which are owned by the parent company. The entire complex abuts a narrow canal on its eastern boundary which separates the LPG storage depot from the Kingsford Smith Airport, Australia's premier international air gateway and Sydney's major domestic airport. The last few seconds of a plane's final approach prior to touch-down takes it almost over the tank farm, which is clearly visible to port-side passengers. The flight corridor passes directly over St Peters, contributing significantly to the area's noise pollution. To the west, the site borders the NSW Electricity Commission warehouse complex. A railway goods line shares the southern boundary with a spur line providing direct access to the tank farm area.

Within one kilometre radius of the tank farm are substantial portions of the residential suburbs in PCA 2044; the QANTAS industrial area (including the international air carrier's freight and cargo storage depots, aircraft parking, jet testing and catering facilities); about one-quarter the length of the airport's principle runway; sections of two major arterial roads (the Princess Highway and Airport Drive); the NSW Railway yards; the Sydney Haulage Terminal and many other industrial complexes including several other petro-chemical and hazardous goods storage facilities. A two kilometre radius of the site encompasses all the residences of PCA 2044; parts of residential Marrickville and Marrickville South (PCA 2204) and residential sections of Mascot (PCA 2020); four primary schools and a high school. It encloses the domestic and international air terminals, the heliport terminal, and most of the major runway and its auxiliary; the airfuel storage depot and the airport fire station. It embraces a large bus depot at Tempe and three railway stations. Just outside the two kilometre circle is Australia Post's State Mail Centre, another railway station, and three other schools.

The bulk storage depot itself comprises 450 tonnes of LPG (propane) stored in five separate cylindrical tanks oriented in an east-west direction. Four of the tanks, each measuring 15 metres long and 2.5 metres in diameter, contain 100 tonnes of LPG, and a fifth smaller tank, (12 m x 1.5 m) contains 50 tonnes of LPG. The cylinders are elevated to three metres above ground

level, supported on reinforced concrete footings at each end. Tanker filling points are located at the western end of each tank. Twelve ground-level tanks, ranging from one tonne to eight tonnes, ring the bulk storage cylinders. In the south-eastern corner of the complex is a small cylinder storage and filling depot. On the evening of Sunday 1 April 1990 the main LPG tanks were full and two 40,000 litre road tanker trucks were in position at the tanker filling points. As was the normal practice, eleven other LPG tankers were parked at various points on the access roadway encircling the storage tanks. The small cylinder storage shed contained hundreds of cylinders with capacities ranging from 20–100 kg.

At 8:55 pm on a calm 1 April, the fire brigade received an emergency call from an unidentified person and arrived at 9:12 pm to find an intense fire 30 metres high emanating from the pressure relief valve of one of the 100 tonne storage tanks. The flame, acting like a blowtorch, was also impinging on the three other 100 tonne cylinders from beneath. A road tanker had also caught fire. Soon after, a pressure relief valve on another 100 tonne tank opened. A little while later this flame intensified and increased in height, and at 9:20 pm the pitch of the escaping gas changed. An evacuation of all fire crews was ordered from the site and instructions were given to evacuate all civilians within a radius of two kilometres. Then, at 9:39 pm, nineteen minutes after the first evacuation order, a BLEVE (boiling liquid expanding vapour explosion) from the 40,000 litre road tanker occurred. The fire ball extended hundreds of metres into the sky, appearing like a mushroom cloud. The truck's tank shell was split and hurled 20 metres, crushing the cabin of two parked tanker trucks and partly demolishing a cement-block wall. Several minutes later, a 100 tonne storage tank BLEVE'd, hurling the cylinder like a rocket 150 metres eastward. In the trajectory it took, the cylinder demolished an electrical sub-station (plunging the district in darkness) and a panel beating shop, damaging other storage tanks before coming to rest in the canal. The heat from the BLEVE ignited the small filling depot causing hundreds of small cylinders to explode. The blast and fire ball destroyed two other on-site buildings and damaged several NSW Electricity Commission warehouses.

The explosions placed in immediate threat 2800 airport staff. Up to 1000 passengers and over \$1 billion worth of planes were placed in immediate jeopardy. Operations were disrupted, costing the airline industry almost \$1 million when 40 flights had to be re-directed from Sydney Airport; air traffic throughout eastern Australia and the Tasman Sea was disrupted when the Qantas Flight Operations Centre had to be evacuated.

More significantly, the LPG hazard placed the homes of 22,000 residents in danger. With the fires, and the likelihood of explosion, police had to evacuate all residents within two kilometres of the depot. However, the evacuation and its management caused as much fear and anxiety as the hazard agent itself (Britton 1991). The direct and indirect social costs to the residents included some economic loss (wages and minor property damage); some physical injuries; and psychological and health-related costs. In aggregate, none of these effects were major. However, they should not be dismissed lightly because they represent major upheavals to the individuals concerned, mainly because this group does not have the type of discretionary, "slack," resources needed to absorb, or buffer, unexpected events such as this (Britton 1991, Britton and Lindsay 1995). As a consequence, significant social disruption and dislocation amongst this group was evident for many weeks after the event. In other words, these residents are a *classic* "at-risk" group in terms of their social location relative to the resources they have at their disposal to help them reduce their hazard vulnerability status; and their physical location vis-a-vis a known technological hazard.

Another point of interest about this emergency occasion is that subsequent investigations by the NSW Chemical Inquiry Committee revealed that owners of the LPG depot had not complied with on-site safety standards. In particular, the site lacked adequate fire detection and fire control systems, and did not have the requisite emergency plans. In fact, the Committee's report stated that the safety standards and equipment at the depot had not been updated for 25 years. Two years later, the NSW Industrial Court fined the company \$35,000 because "[the company] failed to ensure the health, safety and welfare of persons on the site" (*The Australian* newspaper, 3 April 1992).

Case Study #2: The Winnipeg Main Street (Point Douglas) Revitalization Project

The second case study concerns the Point Douglas area, in inner-city Winnipeg. The provincial capital of Manitoba, Winnipeg is regarded as the city which most strongly reflects Canada's multi-cultural character. The large metropolitan agricultural centre on the prairies is a blend of ultra-modern skyscrapers and restored heritage buildings. During the past two decades in particular, Winnipeg has experienced a slow-growth economy, a situation which is expected to continue while the region's economy remains oriented to traditional large-scale primary commodity and other externally based production. This predisposition has been exacerbated by the withdrawal of some large-scale national manufacturing industries.

Like St Peters in Sydney (Australia), Point Douglas played a prominent role in the development of the city of Winnipeg. In turn, Winnipeg's progress as a regional centre for trade and commerce has strongly influenced the present-day physical and social structure of the Point Douglas area. In 1812, Lord Selkirk established the first permanent European settlement in Winnipeg. These homesteaders developed a north-south route connecting settlements of the Red River Valley. Known as the Red River Trail, this route evolved into Main Street, Winnipeg, which was to become one of the principal thoroughfares in the Point Douglas area. One of the early pioneers, Miles MacDonnell, "selected as the best location for a new colony Point Douglas, a mile below the northwest fur trading post of Fort Gibraltar at the confluence of the Red and Assiniboine Rivers" (Artibise 1977, p. 11). By 1874, Main Street was considered the most important street in Winnipeg city. At that time, all the commercial development was found on Main Street, with the city's industrial development occurring adjacent to the south, in "the Forks" area of the Red and Assiniboine River confluence. The early residential districts also grouped round Main Street, although the area immediately along this route soon became the preferred location for boarding houses and hotels. Together with a decision to re-route the Canadian Pacific Railway (CPR) line from Selkirk through Point Douglas, the most desirable residential locations gradually shifted south-westward, away from Point Douglas (Artibise 1977).

The decision to re-locate the CPR line in 1881 had an immediate effect on the commercial attraction of the Point Douglas area. A local real estate boom occurred in which the price of prime land on Main Street fetched \$2,000 a square foot, a situation unmatched until the 1970s (University of Manitoba 1989, p. 9). Moreover, the railway's push westward became a major inducement for inland migration. Winnipeg attracted a large number of new settlers. Between 1900 and 1913, the city's population almost quadrupled (from 40,000 to 150,000), at the time making Winnipeg Canada's third largest city. As a result, "the city was launched into a period of growth and prosperity relatively unequalled in other Canadian urban development at the time" (*ibid.*, p. 10). In the rush to develop the city, however, the local council "did everything to encourage railway development and nothing at all to control it" (Artibise 1977, p. 36). By 1885 warehouses and industrial complexes began to replace the residential areas of pre-rail Winnipeg; and rail spurs to serve increasing numbers of manufacturers and wholesalers began to criss-cross the area. Rail bridges, under-passes and sub-ways began to appear. Even with these, the railway made other forms of travel in and out of the Point Douglas area increasingly difficult, and

before long the railway became a barrier. The Point Douglas area became known as "the wrong side of the tracks"; "CPR Town"; and "the foreign quarter," the latter a comment on the large number of immigrant families in the district.

After the boom years of 1881-1913, Winnipeg commenced a period of continual decline. Point Douglas was an early victim of the recession, neglected at first by local authorities who believed the visibly deteriorating living conditions were due to "the uncivilised behaviour" of the residents (University of Manitoba 1989, p. 12); and subsequently by manufacturers and distributors who began to leave the city for other locations. These later impacts were influenced by the opening of the Panama Canal and the outbreak of World War 1, both of which occurred in 1914. These actions reduced Winnipeg's monopoly as a bulk distribution centre and stemmed the tide of westward immigration. At the local level other decisions came into play over a period, such as land-use planning decisions which enticed the retail sector away from Main Street. As a result, the hub of the city's central business district started to move westward. These impacts were compounded in 1961 when the Disraeli Freeway was constructed. This development separated Point Douglas from the city on its eastern flank. Today, Point Douglas is bounded to the north, south, and east by the Red River; and to the west by the CPR Winnipeg Rail Shunting Yards and the Disraeli Freeway; with the CPR track bisecting it. Other main traffic arteries such as Higgins and Sutherland Avenues, carrying very heavy traffic volumes, also transect the area, crossing the river on two bridges.

Zoning bylaws reflect these changing land-use patterns. South Point Douglas, the area south of the CPR track, is zoned as predominantly industrial (M1 and M2), with a small sector of commercial and institutional usage. At one time, this area was gazetted as M3 (heavy industry) but the decline in heavy industry over the years has altered this requirement. As a reminder of its past, there are still large and small vacant industrial sites adjacent to the railway. North Point Douglas, north of the CPR track, is also predominantly industrial (zoned M1), although it is more heterogeneous than its southern namesake. Mixed light industry, commercial and residential usage typifies this area. A significant feature of North Point Douglas is the increase in the construction of new homes since the 1980s.

Analogous to the St Peters, Sydney (Australia) example, the Winnipeg study has also been the subject of a review, this time by a group of second year Masters students from the Department of City Planning, University of Manitoba. It is fair to assume that this report, "Main Street Revitalization" (University of Manitoba 1989), not only reflects the current state of urban

planning theory and practical conventions, but also provides signals to where the profession is heading, as the next generation of city planners prepare to enter the workforce. In this report, the students advocate a series of proposals about what could be done with the Point Douglas area in an attempt to re-energise it. However, these proposals may have the opposite effect to that intended. This point is explained by examining these proposals in the framework of the sociological concepts of manifest and latent functions.

Latent Functions of Urban Redevelopment

In the late 1950s a leading American sociologist, Robert K. Merton, distinguished between two sets of social action which he termed "manifest" and "latent" functions (1957). Manifest functions described the consequences of social actions that contributed to the adjustment or adaptation of a social system. These consequences were intentional, recognised, and in the main accepted by the relevant participants. Latent functions, on the other hand, referred to consequences of social action that were unintended, unrecognised, and generally unanticipated. They could be either functional and thus be beneficial; or they could be dysfunctional and thereby be disadvantageous to the social system or the social actors.

The goal statement of the student project provides its manifest function. In essence, the intention of the report is to "provide concepts and specific recommendations as to how North Main Street and the area in its vicinity can be revitalised" (1989, p. i). The report comprises a series of specific recommendations framed within a detailed discussion of the area's history, and the prospects and choices that the city of Winnipeg faces, as the students see them. The manifest function of "Main Street Revitalization" is operationalized in Part 3 of the Report, in which a series of twenty-three recommendations and associated implementation strategies are offered (1989, pp. 180-209). They cover four categories: image and security (five recommendations and implementations); economic and commercial (four); housing (nine); and social (five). Several of these recommendations are of interest to the current discussion. They have been extracted from the original and appear in Table 1 below.

The general thrust of the proposals is to re-vitalise the Point Douglas area by establishing more low-cost housing, and creating incentives for the development of a land-use plan designed to create a variety of functions in the area. In particular, the proposal is designed to bring new work-places closer to new homes and integrate the two, thereby reducing the usual need of an individual to leave the local area in order to go to work. The proposals also attempt to shift the present physical barriers created by existing

Table 1. Student Recommendations for Main Street Revitalization, Point Douglas (Winnipeg)

Image and Security

Recommendation #3 The expansion of existing area museums and the creation of new ones.

Economic and Commercial

Recommendation #2 Facilitate the creation of small business incubators.

Recommendation #4 Establish a Business Improvement Zone (BIZ) for Point Douglas.

Housing

Recommendation #1 Newly established Department of Housing and Community Programs to set within its mandate the improvement of housing in the North Main Street neighbourhoods and the establishment of housing in South Point Douglas.

Recommendation #2 Develop a land use plan that would incorporate a variety of land uses and allow for housing in South Point Douglas.

Recommendation #4 Assist homeownership for core area residents.

Recommendation #6 Develop an urban homesteading program for South Point Douglas

Recommendation #7 Incorporate self-help initiatives into the housing process.

Recommendation #8 Increase opportunities and incentives for home renovations.

Recommendation #9 Reinstate the rental Residential Rehabilitation Assistance Program for Winnipeg's core area (i.e., improve low-cost rental stock).

Social

Recommendation #5 Utilise one of the floors in the Canadian Pacific Railway Station as a Native Cultural Centre.

transportation networks into benefits by creating a cohesive, integrated neighbourhood capable of providing for itself, materially and psychologically. At the same time, the proposals are designed to enhance the quality of life-style of what is at present an urban ghetto. In these respects, the report fulfills many planning and societal requirements; and it no doubt illustrates that the students have accepted — and are capable of applying — many of the factors they have been trained to consider in the planning profession.

However, what does the report achieve for the safety of the current residents and those which the redevelopment proposals hope to attract? We argue that should they be implemented, the report's proposals are likely to produce a series of latent consequences that will increase the "at-risk" status of an already socially vulnerable residential group. Moreover, should this occur, the hazard vulnerability of people, who are also likely to be socially disadvantaged, will increase relative to where they were prior to them moving. We also argue that these possibilities are foreseeable. Why? Because the one thing the report does not mention is that, under this proposal the technological hazard status of Point Douglas will be increased.

To support this assertion, we will look at two disaster pre-conditions:

- who currently lives in the Point Douglas area and who is likely to live there in the near future;
- what type of workplace activities already exist and will continue, or are likely to be attracted to the site.

We will then employ Merton's concept of latent function to underscore the significance of the unintended consequences that are inherent in the report's proposals.

Citing the most recent (1986) census data at the time, the project report informs the reader that Point Douglas has a larger proportion of dependants (under-15 years and over-64 years) than the city of Winnipeg as a whole. Moreover, this area has a high proportion of Ukranian, Polish and Filipino ethnic groups, whereas the city as a whole is composed of mainly English, French and German derivative peoples. The district also has an over-representation of new immigrants. When compared with Winnipeg as a whole, Point Douglas is over-represented by widows and divorcees; and it has more single-parent families (34% of total), than Winnipeg (13.9%). Moreover, average family size is larger which, when combined with the fact that 70% of families in Point Douglas earn less than \$25,000 per annum (a contrast with Winnipeg in general in which 70% of the workforce earns over \$25,000 p.a.), suggests that a large proportion of Point Douglas residents could be categorised as "urban poor." Supporting this assertion, 31.2% of the income in the area is derived by government transfer payments, compared with

10.2% for Winnipeg as a whole. Finally, the unemployment rate for Point Douglas is over twice that of the city average, at 18.08% compared with 7.8% for Winnipeg.

These demographic data provide compelling evidence that the predominant social group within the study area is of low socio-economic status in which individuals have few, if any, spare social resources. In other words, they have little "resource slack" in the form of discretionary income or other material resources (Britton 1991, Britton and Lindsay 1995). More specifically, their socio-economic status implies that they would have very little capacity to absorb unexpected costs, direct or indirect, of the type which would be created by a technological hazard impact. Given the predominance of this group in Point Douglas, it is unlikely that higher socio-economic groups would be attracted to this area in the immediate future. Hence, if the Point Douglas area was to witness an increase in resident population numbers, it is likely to do so by attracting a similar social group, at least in the short-term. If this is the case, then it is also likely that the types of work premises that would be attracted to the region would also be limited; more than likely reflecting what is currently there.

What type of industrial activity is evident in Point Douglas at the moment; and is it hazardous? A "windshield survey" of the area by the authors in mid-1992 located the following: automotive repair shops' automotive paint shops; bus depot; chemical manufacturer; drycleaning establishments; foam manufacturer; gas centre storage premise; grain storage facilities; industrial incinerator; leather manufacturer; lumberyard; machinery repair workshop; paint and hardware wholesaler; petrol bowlers; plumber; power distribution terminal; printing and publishing premise; recycling centre; scrapmetal/salvage merchant; shipwright; signwriter; soap manufacturer; storage warehouse; tyre distributor; veterinary laboratory; wholesale paint supplier and; window (PVC) manufacturer. One feature that integrates all of these activities is that they are hazardous (Anderson 1987). Moreover, toxic waste dumping should not be discounted in much of the area, given its previous zoning for heavy industry. The type of hazards associated with these activities relate to poisonous fumes, explosive material, flammable material, ground/air/water pollution, and so on. In addition, the close proximity of these to each other has the potential to produce a chemical synergism that could endanger the entire Point Douglas area.

This locality is also criss-crossed with rail lines and major road arteries that haul all manner of hazardous materials and create likelihoods for mass emergency events. On March 19, 1993, for example, a Canadian Pacific

Railway hopper car derailed and rolled down the embankment on to Higgins Avenue where it spilt its benign cargo of processed flour. While this incident only resulted in the disruption of traffic, it nevertheless demonstrates the real potential for a hazardous incident in this area.

Also located in the Point Douglas area are the following: six housing apartment blocks (190 residents); two senior centres (153 residents); two nursing homes (240 residents); two elementary schools (over 300 students); one high school (140 students); four churches and one convent; a daycare centre and a pre-school centre; a community centre; an indoor soccer arena; the Manitoba Theatre Centre; the Winnipeg Concert Hall; and the Manitoba Museum of Man and Nature. Given the current social groups which occupy this area, and from an emergency planning and management perspective, there is ample justification to advise against further residential infilling of the land vacated by heavy industry, or for any further developments which encourage large aggregations (permanent or temporary) of people. These activities are incompatible with hazardous industrial activities. There is already considerable intermixing of at-risk sites and hazardous industries in Point Douglas which raise emergency management issues such as hazard exposure, community response capabilities, and evacuation. Hence, the permanent residents are a classic at-risk group in terms of their social location in relation to the resources they have at their disposal to help them reduce their hazard vulnerability status; and their physical location vis-a-vis known technological hazards. Are these proposals appropriate given the latent function they may produce in terms of endangering present and future residents?

Some Concluding Comments

The purpose of this paper has been to demonstrate the issues raised in the first paper of this two part discussion (Britton and Lindsay 1995). The case studies are employed to help increase city planners' awareness of both the physical and social characteristics that influence the hazardousness of a neighbourhood, especially in the context of urban redevelopment. This context, developed in the earlier paper, focuses on the need for city planners to understand the relationship their profession has to the maintenance of community safety, the amelioration of those conditions that lead to vulnerability, and the value of establishing a professional connection with emergency management personnel.

The result of the current lack of interaction between urban planning and emergency management is that some urban planning initiatives, particularly some urban redevelopment schemes, inadvertently place people at consid-

erable risk. Furthermore, the case studies help illustrate how urban redevelopment can increase both the hazardousness of a neighbourhood while, simultaneously, encouraging the settlement of a more vulnerable population. It must be recognized within urban planning that, while these effects may be unintended, they should be anticipated. The fact that small-quantity hazardous materials activities can endanger individuals who are in close proximity must be given the same consideration in the planning process as the larger, more commonly-known hazardous industrial activities.

In this context, the University of Manitoba report provokes more questions than answers; and from an emergency management perspective, there is cause for concern. While we cannot be sure based on this one example, it is reasonable to conclude that the student's proposals reflect the current position of at least some sections of the urban planning profession. The efforts of the students cannot simply be dismissed as overly optimistic or innovative, nor does their inexperience or other project constraints account for their findings. Residential re-development of inner city areas is a goal of many urban planning offices and the results of professional efforts are often similar to those of the University of Manitoba report. Two other commonly known efforts in Canada have been Vancouver's False Creek "Expo" site (Weninger 1990) and Toronto's Ataratiri project (Weninger 1990; Allester 1992), the latter of which proves to have many parallels to the Point Douglas case study.

The site for the Ataratiri project in central Toronto has recently been described as having "obvious environmental constraints" (Allester 1992, p. 28). The factors which may hinder residential development include "several major transportation corridors — an elevated expressway, major regional roads and two active rail routes" (Allester 1992, p. 28) and the fact that the 32 hectare site "sits partially in a flood plain and contains contaminated soils" (Monet and Kinley 1991, p. 44). Some of the past and present industries in the area include "a roofing/paving company, rail yards, scrap yards, tannery, machine shop, foundry, battery company and service station" (Weninger 1990, p. 30). Given the similarities in land-use, the flood prone topography, the near central location, and the urban history, the Ataratiri project site clearly resembles the Point Douglas neighbourhood.

The Ataratiri re-development plan "aims to create a desirable community with more than 7,000 affordable dwellings, plus 1,500 commercial and industrial jobs" (Monet and Kinley 1991, p. 44). The project places an emphasis on providing housing for low-income residents (Weninger 1990) in a mixed-use setting at an average block density of "a daunting 430 units per hectare" (Allester 1992, p. 29). Buffer zones on the site's edges are

intended to "protect development from major sources of noise, vibration, air pollution and transportation risk" (Allester 1992, p. 29) while re-grading is employed to combat the flood risk.

The Ataratiri project is an example of urban intensification that is seen as an alternative to suburban sprawl in many Canadian cities. While the project is currently suffering from a lack of provincial government support (Allester 1992, p. 30) this does not indicate that the plan is considered misconceived, but rather that the costs and financial risks are too high in the current market. Quite contrary to this lack of support is the recognition the project has received. In 1991 the Canadian Institute of Planners presented the Jean Alauter Award for Planning Excellence to the City of Toronto and The Kirkland Partners for the Ataratiri site plans (Monet and Kinley 1991). Monet and Kinley cite the project's "impressive array of environmental, economic and social background studies" (p. 44) and public consultation as being responsible for Ataratiri becoming "a model of integration ... worthy of national recognition for the redevelopment of older industrial areas which exist in all our cities" (p. 44). While city planners might regard the scheme as having merit, it is very doubtful that emergency planners would exhibit similar enthusiasm.

Inner city re-development schemes which employ a mixed-use approach, such as the University of Manitoba report, reflect the current state of urban planning theory and practical conventions. This being the case, what does the report tell us about the planning professions understanding of the need to plan for comprehensive community safety? Furthermore, while it is clear that factors such as equity have been taken into account in the preparation of the redevelopment schema, what do the proposals in the report suggest about the planning profession's overall understanding and commitment to social justice in the context of at-risk groups, especially those at the lower end of the socio-economic stratum? And while the proposals reflect current economic and political orientations, what can we glean about the planning profession's overall ethical position in terms of delegated responsibility for emergency management (Jackson and Janssen 1990)? Finally, what clues does the report furnish about how the planning profession interprets "responsible planning"? We believe that there is significance in the fact that of the fourteen criteria the report uses as guidelines for its "sustainable revitalization and redevelopment program" (1989, pp. 177-179), not one mentions the need to plan for community safety. To be sure, the report mentions the "troubles" (their term) of the Point Douglas area. However, these are identified specifically as substance abuse, adult and child prostitution, and homelessness (1989, p. 168).

In our first paper we argued that the planning profession has yet to turn its attention to the types of questions we have submitted. We also recognized, however, that the planning profession was not the lone culprit. So why should these urban planning case studies be presented as examples of the problem? The answer, as discussed earlier, is because planners have an irrefutable and essential role in the social and physical development of the built environment. Moreover, they are integrally involved in establishing land-use development control systems. Hence, whether they are aware of it or not — and whether they like it or not — planners have a real, immediate, and tangible responsibility to plan for community safety. They have a delegated responsibility to plan for the future of our cities.

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