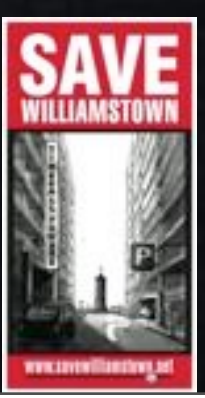
SAVE WILLIAMSTOWN

6. Safety



Consequences, not probability

- Societal Risk and Escalation must be considered
  - MHF
  - Storage tank
  - Shipping - fuel importation

Consequences, not probability

- Petroleum transport, transfer and storage is dangerous
  - People could die
  - Qualitative Assessment or Consequences
  - Versus QRA which is quantitative analysis ignors escalation

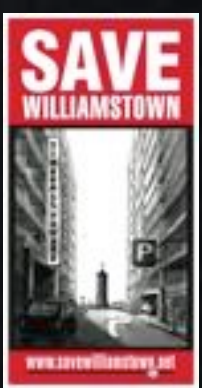
Reality check : Storage tanks

Consequences, not probability

- Study of 242 storage tank accidents over 40 years to 2005
  (excludes Buncefield)
  See Handout.
  - Most common cause of TANK accident was LIGHTNING! (80 out of 242)
  - Equipment failure (19)
  - Cracks / ruptures (17)
  - Static Electricity (12)

Reality check

- Crude oil explosion & fire Xingang harbour China July 2010
- Identical to Pt Gellibrand port / petroleum ship to shore facility



Reality check - Tankers

Crude oil explosion & fire Xingang Harbour China July 2010

Identical to Pt Gellibrand port / petroleum ship to shore facility

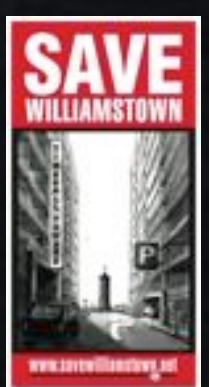
- Massive explosion during transfer from crude oil tanker to storage tank via pipeline
- 2000 firefighters battled for 15 hours
- Few media reports - occurred same day BP capped gulf of Mexico

Not a shonky operator

- PetroChina owned facility
  - listed on NY & HK Stock exchanges
  - Operates in 11 countries
  - No 7 in global top 50 petroleum companies
  - World best practice facility

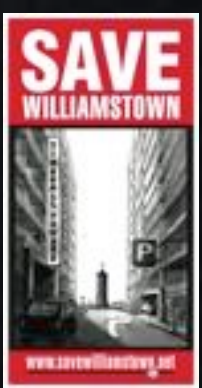
Worldwide Rethink
Credible Risk at Major Hazard Facilities

- Buncefield explosion 2005
  - Redefined Credible Risk from MHF
  - Residential, commercial & industrial buildings incinerated (fire), destroyed (explosion) or sustained major damage over 470m from site.
  - Lesser damage sustained further afield
  - More than 3000 claims



Reality check

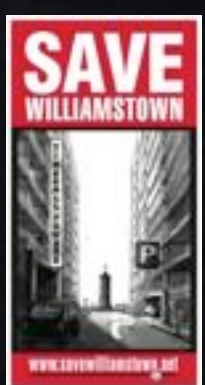
Buncefield UK Explosion 2005
2000 residents evacuated
property damage up to 3km away



Reality check

Buncefield UK Explosion 2005

- Deadly - "Pancake Shaped" Invisible Vapour Cloud - heavier than air
- Never anticipated by any hazard assessment (anywhere in the world)
- Huge fires involving oil fuel tanks
- Explosion causing damage to property and people over 3 km radius
- Evacuation of 2000 residents
- People suffered permanent hearing loss
- Homes evacuated for over a week
- Schools closed over 12 km radius

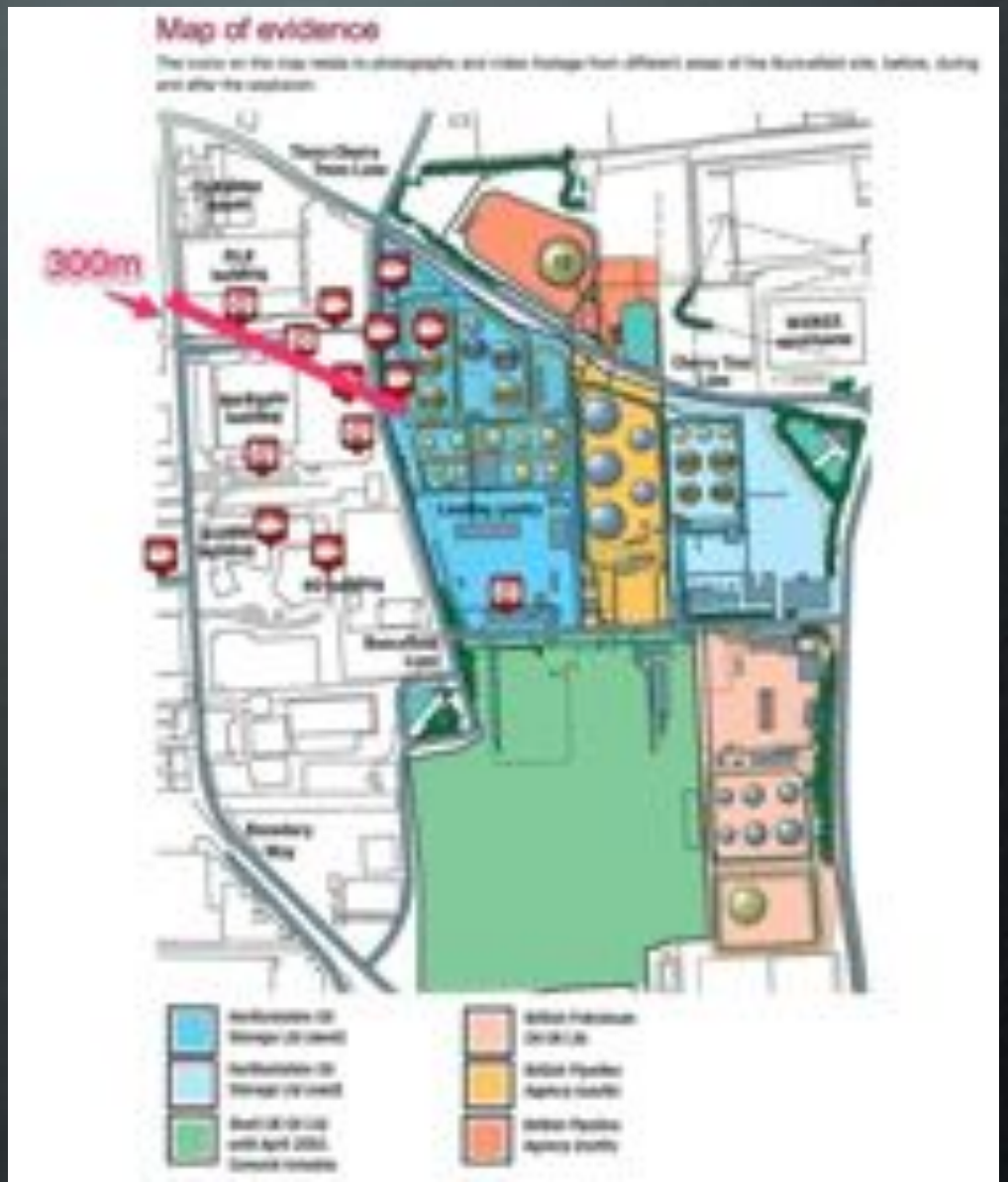


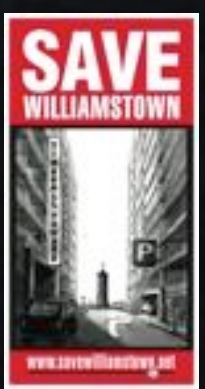
BUNCEFIELD
Feb 2011- RECENT REPORT

Buncefield Report February 2011:

Reports included legal cases resolved in July 2010 prior to WorkSafe mapping of buffer distances around Pt Gellibrand MHF

(See Handout)



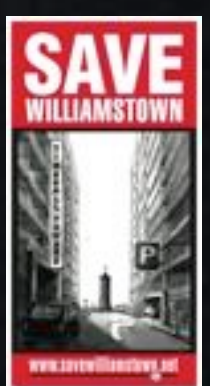


Reality check

Providence New York 2006
M/V Nordeuropa safely maneuvered from pier

- Fire during fuel transfer
- Discharge fuel into harbour
- Fuel lines burn & smoulder for weeks

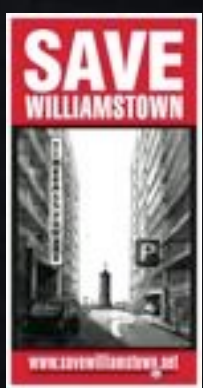
The significance is that if the ship had not departed the jetty as rapidly as it is did, catastrophic outcomes were expected to have resulted.



Reality check:
Crude Oil Spill – Mobil Point Gellibrand 2009

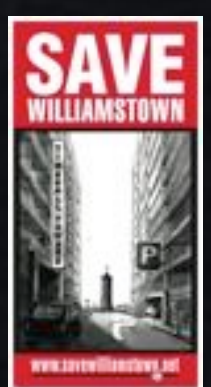
- Severe squall
- Terminal cargo arm breakage.
- Crude oil spill
- Luck
- Potential for vapour cloud / explosion
- Huge risks associated with discharge and loading
  - Ships
  - Pipelines
  - Storage tanks

See Handout



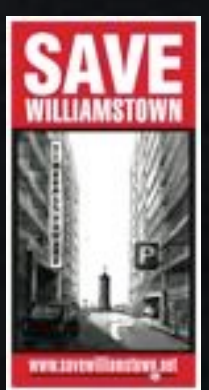
What could happen?

- Hydrocarbon Losses of Containment in fuel importation process between ship and shore pipelines
- Invisible vapour cloud spreads - heavier than air covering the ground, filling gutters, culverts and UNDERGROUND CARPARKS
- Simple ignition source - ie starting a car, match, cigarette, lightning, static electricity, flashover from nearby zone substation etc.
- Crude oil fires - extreme heat, thick, dense and acrid smoke
- Intense heat to 1000m



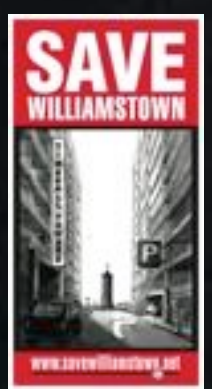
Port Buffer Zone for Mobil Major Hazard Facility

- Buffer Zones
  - Port of Melbourne - 300m
  - Exxon Mobil - 100m, 300m & 1km
  - Worksafe supports 185m & 300m
  - EPA, DIIRD, DoT support buffer zones
- Residential Evacuation - Explosions, Loss of Containment
- Safety Impact on Existing Residents if NPV's 456 dwellings (about 400 in 300m buffer) is approved
- National Security

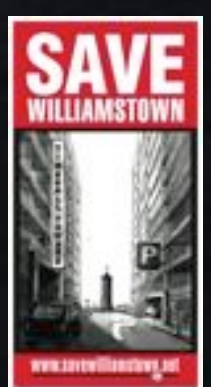


Port Buffer Zone for Mobil Major Hazard Facility

- WESTERN AUSTRALIA EPA Buffer Distances (see Handout)
- Fuel Importation (risk) 1000 m
- Boat Building and Repair (amenity) 200-500m
- Fuel Tanks - Floating Roof (risk & amenity) 200-1000m
- Fuel Tanks - Fixed Roof (risk & amenity) 300-500m



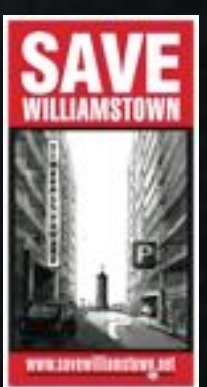
MHF Mobil will expand Port Deepening = Larger Vessels and Greater Productivity



Williamstown is a Peninsula Potential Evacuation Zone Dwellings up to1km from MHF

CURRENT RESIDENTS

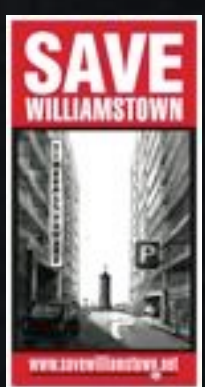
- In 1000m buffer zone
  North of Railway Line
  500 dwellings
  South of the Railway
  170 dwellings
- In 300m buffer zone
  NO Dwellings
- ABS Census 2006 estimates
  2.32 persons per household
  W'Town PLUS 1500 WORKERS
  AT BAE (total 3014 persons)
- Evacuation routes North of Railway - 3
- Entry routes for emergency vehicles - 2



If NPV includes 456 extra dwellings impact on 300m & 1km Buffer Zones

POTENTIAL FUTURE RESIDENTS

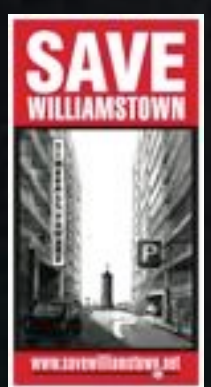
- In 1000m buffer zone
  North of Railway Line
  Current 500
  956 dwellings **(DOUBLE!)**
- In 300m buffer zone
  456 Dwellings
  (UP FROM ZERO)
- 2600 people in the potential evacuation zone PLUS 1500 WORKERS AT BAE
  Total 4100 persons
  25% increase
- Evacuation routes
  North of Railway - 3
- Entry routes for emergency vehicles - 2



National Security and terrorism threat

Federal Government has made
BAE Site and Point Gellibrand Pier
No-Go Zones for Security Purposes

See Handout
Port & Maritime Security - Potential for
Terrorist Nuclear Attack Using Oil Tankers
US Congress Report



Given the necessary Buffers
This is how much of the site should be built on

Need to determine Risk at Point Gellibrand

- **Safety must preceed planning controls**
- Port Environs Overlay
- Design and Development Overlays
- Impact on Port Industries
- Impact on existing community and safety response