

CORONERS COURT OF THE AUSTRALIAN CAPITAL TERRITORY

Case Title: Inquiry into a fire at the premises of Energy Services Invironmental, 60 Dacre Street, Mitchell, ACT, on 15 September 2011

Citation: [2018] ACTCD 16

Hearing Date(s): No hearing required

Findings Date: 1 November 2018

Before: Chief Coroner Walker

Decision: See [29]

Legislation Cited: Coroners Act 1997 (ACT)
Environment Protection Act 1997 (ACT)

File Number(s): CF 128 of 2012
CF 319 of 2012

Jurisdiction

1. Following reports of a fire at the premises of Energy Services Invironmental (“ESI”) on 16 September 2011, I commenced an inquiry pursuant to section 18 of the *Coroners Act 1997 (ACT)* (“the Act”). At that time, section 18 read as follows:

18 Coroner’s jurisdiction in relation to fires

- (1) A coroner must hold an inquiry into the cause and origin of a fire that has destroyed or damaged property, if—
 - (a) requested to do so by the Attorney-General; or
 - (b) the coroner is of the opinion that an inquiry into the cause and origin of the fire should be held.
- (2) Where—
 - (a) the owner or occupier of destroyed or damaged property requests a coroner to hold an inquiry into the cause and origin of a fire; and
 - (b) the coroner is of the opinion that an inquiry into the cause and origin of the fire should not be held;

the coroner must give to each owner or occupier who requested that an inquiry be held written notice of the opinion and the grounds for the opinion.

(Section 18 has been amended subsequently and is now in a different form.)

2. I received two reports in respect of the ESI fire:
 - (a) CF 319/12 was a report in respect of the commencement of the fire on 15 September 2011; and

- (b) CF 128/12 was a report that residual sodium in the burnt-out shell of the premises was reacting with moisture and causing small explosions.
3. In respect of each report I formed the opinion that an inquiry into the cause and origin of the fire should be held. Given the overlapping facts I dealt with the matters jointly.
 4. I requested a joint investigation be conducted by the ACT Environmental Protection Authority (“EPA”) and WorkSafe ACT, with the assistance of ACT Police and the ACT Emergency Services Agency as required. I received a number of reports and statements for the purposes of the inquiry. The key factual events were clearly recorded in the materials put before me and I was satisfied that appropriate investigation was undertaken. Accordingly, I am of the view that I have sufficient evidence to make the findings I am required to make without the need for a public hearing in this matter.

Scope of Inquiry

5. The findings I must make in respect of a fire are proscribed by subsection 52(2) of the Act. In September 2011, section 52 was in the following form:

52 Coroner’s findings

- (1) ...
 - (2) A coroner holding an inquiry must find, if possible—
 - (a) the cause and origin of the fire or disaster; and
 - (b) the circumstances in which the fire or disaster happened.
 - (3) At the conclusion of an inquest or inquiry, the coroner must record the coroner’s findings in writing.
 - (4) A coroner may comment on any matter connected with the death, fire or disaster including public health or safety or the administration of justice.
6. I note that subsection 52(4) has been amended to specifically require a coroner to find whether a matter of public safety arises in an inquest or inquiry. However, under the legislation operative at the time of this fire, my power to comment is unfettered.

Circumstances of the Fire

7. On 15 September 2011, the premises at 60 Dacre Street, Mitchell were occupied by ESI. The business operated a facility which reprocessed contaminated electrical oil. The facility had previously operated at another location in Mitchell but had relocated to the Dacre Street site, a purpose-built facility, in February 2010.
8. At the time of the fire, 499,798 litres of oil were stored on site. 428,166 litres of that oil was contaminated to some degree with polychlorinated biphenyls (PCBs). PCBs are persistent organic pollutants and accumulate in the environment. They are known to be toxic to humans and can cause cancer and birth defects.
9. ESI’s process for refining contaminated oil involved the use of sodium metal. In its metallic state, sodium is highly reactive and reacts explosively with water to create flammable hydrogen gas and corrosive sodium hydroxide. This process also creates highly alkaline waste water, of which there were 456,211 litres on site at the time of the fire.

10. There is wildly conflicting evidence as to the amount of sodium which was on site at the time of the fire:
 - (a) ACT Police believed there were 40kg;
 - (b) The ACT EPA believed there was approximately 120kg;
 - (c) WorkSafe ACT were advised by ESI that there were 22 drums of sodium plastic-wrapped in oil, each drum containing 125kg of sodium, a total of 2.75 tons; and
 - (d) Reon Scott, the ESI staff member with responsibility for inventory, advised Police there were 22 drums of sodium plastic-wrapped in oil, each drum containing 150kg of sodium, a total of 3.3 tons.
11. Determining the total amount of sodium on site at the time of the explosion and fire is not essential to my task of making findings as to the cause and origin of the fire. I am however inclined to accept that it was in the vicinity of 3 tons.
12. The facility operated under the conditions of Environmental Authorisation number 0400 granted pursuant to subsection 49(1) of the *Environment Protection Act 1997* (ACT). That authorisation was granted by the ACT EPA on 4 April 2003 for an unlimited period but was subject to annual review.
13. The last review of ESI by the ACT EPA prior to the fire was 5 April 2011. That review did not identify any significant non-compliance issues.
14. At about 11:05pm on 15 September 2011, a witness leaving the area observed thick black smoke rolling out of the top of the roller doors of the ESI building. He called 000. A second witness made a similar report.
15. A back to base security alarm also activated at 11:16pm. It transpired that this was part of a broader system within the building. The first alarm which activated was near the double doors at the front of the premises, from which smoke had been seen escaping by the witnesses. That back to base alarm had been set at 4:51pm that evening.
16. The ACT Fire Brigade attended at 11:25pm, closely followed by ACT Police. The ACT EPA were notified just after midnight and an Environmental Protection Officer attended the scene shortly thereafter.
17. Due to the potentially toxic gas emissions, an initial 300 metre cordon was established. At 12:44am on 16 September 2011 that cordon was extended by road closures on Wells Station Drive, Hoskins Street, Sandford Street and Gungahlin Drive. A combined ACT Fire, ACT Police and ACT Ambulance Service command post was established at the scene.
18. At 1:10am, the cordon was extended to include the whole of the suburb of Mitchell by road closures at the corners of Flemington Road and Wells Station Drive and Flemington Road and Sandford Street. The suburb of Mitchell was evacuated. Consideration was given to further evacuation downwind of the fire but was ultimately determined to be unnecessary.
19. Fighting the fire was made more complex by the presence of sodium on the site, precluding the use of water to fight the fire directly and requiring the use of special firefighting foams. The sodium caused unanticipated small explosions during the firefighting process as it came into contact with water.
20. ACT EPA conducted atmospheric monitoring downwind of the fire along with water sampling of run-off downstream, which will be discussed in detail later.

21. Public safety warnings were issued. I refer to this issue further from paragraph 51.
22. By about 5:30pm on 16 September 2011, the fire was extinguished. The majority of the oil stored onsite at ESI was destroyed by the fire.
23. A complete exclusion of Mitchell continued throughout 16 September 2011. A modified exclusion continued on 17 September allowing access to only those with a genuine need to enter the area. By 6:45pm on 18 September 2011, police were advised that environmental testing across all sites was negative. Consequently, the exclusion zone was reduced to an area surrounded by Dacre, Tooth and Pelle Streets.
24. Monitoring continued by ACT Fire Brigade until 20 September 2011, when the site was handed over officially to the ACT Environment Protection Agency.
25. I attended the scene on 29 November 2011. Representatives from the ACT EPA, WorkSafe ACT, the ACT Fire Brigade and ACT Police were present at the scene.

Cause and Origin of Fire

26. I have received the following evidence as to cause and origin of the fire:
 - (a) The ACT Fire Brigade investigation was unable to determine the origin of the fire due to its intensity and the level of destruction.
 - (b) WorkSafe ACT were unable to determine a source of ignition for the fire due to the high level of destruction of the building and contents due to the duration and intensity of the fire, and for the same reasons were unable to determine an exact point of origin.
 - (c) The Environmental Protection Authority was unable to identify the cause of the fire.
 - (d) AFP Forensic members attended the scene on 19 November 2011 and conducted an examination from above using the ACT Fire Brigade cherry picker. They advised me that the chance of locating anything of evidentiary value was unlikely, and the chances of determining the precise cause and origin of the fire was unlikely.
27. WorkSafe ACT has advised me that the common causes of fires in commercial buildings include arson, human error, electrical fault and malfunction of a boiler or pressure vessel. Some of these causes are able to be eliminated in the case of the ESI explosion and fire: there is no evidence of arson, and at the time of the fire ESI did not have any boiler or pressure vessels on site. After the fire the manager of ESI's Mitchell site, Rodney Larson, was unable to identify any sources of human error or mechanical malfunction which could have caused the fire. However evidence potentially bearing on that question was destroyed by the fire.
28. Four professional agencies investigated the cause and origin of the fire without conclusion. I consider that there is no further evidence available to me which will bear on this point and that holding a holding would be futile.

Key Findings

29. The key findings I make in this matter are:
 - (a) prior to the explosion and fire on 15 September 2011, the ESI facility was appropriately managed and the operational risks were identified and managed;

- (b) the response of ACT public authorities to the explosion and fire was appropriate;
- (c) despite significant investigation by multiple agencies, no cause or origin of the fire is able to be established, due to the ferocity of the explosion and subsequent fire;
- (d) the cause and origin of this fire is unascertained.

Matters of Public Safety - Environmental Considerations

- 30. The ACT EPA provided me with a report of its investigation into this matter dated 22 February 2013.

Water Pollution

- 31. ESI's premises were contained by a perimeter bund – a retaining wall to capture on-site any chemical spill or run-off to prevent it from entering other premises – with an approximate volume of 231,000 litres. There were also two internal bunds with a capacity exceeding 110% of the largest vessel. I observe that prior to the explosion and fire on 15 September 2011 there appears to have been no concern on the part of the ACT EPA in relation to the capacity of ESI's bunding.
- 32. At about 3:30am on 16 September 2011 an Environmental Protection Officer from the ACT EPA inspected the stormwater system downstream of the fire and observed no sign of pollution within the system. A check at 5:30am was to similar effect. However, at 6:10am the ACT Fire Brigade notified the Environmental Protection Officer that liquid was discharging from the ESI premises. At about 7:15am a bund was constructed on Dacre Street to capture the liquid discharging overland from the site. However, this bund did not capture liquid discharging through the building's underground stormwater system.
- 33. The underground stormwater system from the ESI building was connected through a series of underground drains to an open stormwater channel located adjacent to Flemington Road in Mitchell. This channel discharged into the Flemington Road Pond and overflowed into Sullivans Creek and ultimately to Lake Burley Griffin (which was closed by the National Capital Authority as a precaution).
- 34. The ACT EPA took a precautionary approach and arranged for two earthen bunds to be constructed across the open stormwater channel and a third bund across the overflow from the Flemington Road Pond. These bunds were successful in containing the run-off from the fire, as demonstrated by testing on 16 September 2011 downstream from the Pond in Sullivans Creek and Lake Burley Griffin showing no evidence of pollution from the fire.
- 35. The contaminated waste water from the ESI site was ultimately transported to an interstate treatment facility which was authorised to accept and treat the waste. 390,000 litres of liquid waste were removed from the bunds on Dacre Street and Flemington Road Pond, with a total cost to the ACT EPA of in excess of \$947,000.
- 36. The EPA was unable to identify who had responsibility for pollution of the stormwater system and environment. The evidence available to me does not enable me to conclude whether the discharge of liquid waste from the ESI site was due to a structural failure of the premises' bunding or whether the additional volume of firefighting foam in combination with the liquids stored on site exceeded the capacity of the bund. Both are clearly possible.

37. Nevertheless, I am satisfied that the actions of the ACT EPA were appropriate and timely and in particular, the construction of the additional bunds on 16 November 2011 prevented a potential mass environmental disaster in the ACT.

Air Pollution

38. Due to gaseous discharge, atmospheric monitoring was undertaken. The readings did not indicate a risk of immediate danger to firefighters or nearby residents.
39. Soil testing was conducted in Mitchell, the surrounding suburbs, and Wamboin in New South Wales following the direction of the smoke plume. All results were found to be well below the health investigation levels set for each of the contaminants of concern.
40. Ash produced as a result of the fire was caustic however was tested and found not to contain contaminants which were dangerous for human health. Under EPA supervision, the ACT Fire Brigade cleaned the immediate vicinity of the fire.
41. The EPA served an Environment Protection Order under section 125(1) of the *Environment Protection Act 1997* (ACT) on Mr Larsen and Energy Services Nominees (ESN) on 27 September 2011. (I infer that ESN was considered the appropriate legal entity to receive notices and orders of this type.) The Order required ESN to stop receiving and storing further waste, disconnect the premises from the stormwater system and take all steps necessary to stop pollution leaving the premises as well as some remedial work for the site. ESN went into liquidation on 2 July 2013 and a liquidator was appointed: this had the effect of making the Order redundant. Prior to going into liquidation ESN had not fully complied with the Order: it had not assessed or remediated the site, although it had complied with the other conditions of the Order with respect to stopping further contamination and disconnection from the stormwater system. Ultimately the site was sold by the liquidator to a new purchaser on condition from the EPA that:
 - (a) the site must be assessed and remediated in accordance with the Contaminated Sites Environment Protection Policy and be independently audited by a Contaminated Sites Auditor, and
 - (b) prior to the commencement of development works the Auditor's site audit statement and site audit report into the sites suitability for its proposed and permitted uses must be reviewed and endorsed by the EPA.
42. Recent advice from the EPA confirms that the former ESN site (Block 15 Section 22 Mitchell) is on the Contaminated Sites Register; and the site is regularly inspected and there has been no redevelopment since initial demolition was completed.
43. Ultimately the EPA found that ESI did not breach the conditions of its environmental authorisation and no breach of the *Environment Protection Act 1997* was identified.

Matters of Public Safety - Work, Health and Safety Considerations

44. WorkSafe ACT provided me with a report of its investigation into this matter dated 23 May 2012.

Prior to the Fire

45. The evidence before me suggests that on 19 February 2009 the ACT Fire Brigade advised WorkSafe ACT of its concern that the new ESI facility may not comply with AS 1940-2004 (*storage and handling of flammable and combustible liquids*).

Enquiries were made with the ACT Fire Brigade to clarify these concerns. Ultimately WorkSafe ACT elected to take no action as they could not clarify which section of the Australian Standard had not been complied with or why the ACT Fire Brigade held these concerns.

46. WorkSafe ACT has also advised me that it has records of eight previous incidents relating to ESI, including previous fires and injuries to workers. Of some concern is a fire on 12 February 2005 caused by a “recycling unit” left running. However, there are no incidents recorded against ESI in the period between moving into the new purpose-built facility at 60 Dacre Street in February 2010 and the explosion and fire on 15 September 2011 and the 2005 incident was some considerable time before 2011. In all the circumstances, I do not draw any adverse implications from the previous WorkSafe matters.
47. I have no evidence to suggest that there were any issues with management of the ESI facility, or that operational risks were not properly identified and managed, prior to the explosion and fire on 15 September 2011.

The Explosion and Fire

48. I have already noted the vast discrepancies in the understanding of key agencies as to the total amount of sodium metal stored on the ESI premises and my acceptance that the amount was likely in the vicinity of 3 tons. Although the amount of sodium on-site is unlikely to have impacted on the cause of the fire, undoubtedly it would have had an impact on its severity and duration and accordingly on the effort required of firefighters and others to control it. It is concerning that the key agencies were ill-informed whilst the fire was ongoing as to this important information however I am unable to conclude that there was any risk to public safety as a result.
49. Despite investigation and interview of relevant witnesses, no breaches of the *Work Safety Act 2008* were identified.
50. Prohibition notices were issued by WorkSafe ACT to ESI on 22 September 2011 and 31 October 2011. The notice of 22 September 2011 was revoked on 2 November 2011 upon the WorkSafe Inspector being satisfied that there were no longer grounds for the notice to operate. The notice of 31 October 2011 was substituted with another prohibition notice on 14 March 2012, and that notice remained in force until 13 September 2012. On that date, a reinspection was undertaken of the demolition site, and the WorkSafe Inspector observed that the structure walls had been demolished and the hazardous chemicals (including the Sodium) had been removed. On that basis that prohibition notice was also revoked.

The Warning System

51. Media reports in the days after the ESI explosion and fire criticised the Emergency Alert system used to advise nearby residents with some residents complaining they did not receive the warning and others saying they had received a warning despite being interstate or overseas.
52. On 23 November 2011 the Australian Parliament’s Senate Environment and Communications References Committee delivered its report into “*The capacity of communication networks and emergency warning systems to deal with emergencies and natural disasters*”. The report examined the Emergency Alert system’s operation on 16 September 2011 in respect of the ESI explosion and fire. The Committee concluded that some of the issues complained of arose from the

lack of a location-based mobile telephone emergency warning capability but were also due to a failure by the ACT ESA to use the Emergency Alert system in accordance with the 'Recommended Use Guidelines'. See http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/Completed_inquiries/2010-13/emergencycommunications/report/c03.

53. Given both the ACT Government and the Senate Committee reviews of the issue, I see no benefit in further inquiry.

Commendations

54. Darren Coffey was the first person to observe the ESI premises on fire. He attempted to enter the premises in order to ascertain if anyone needed assistance but retreated after the explosion and when overcome by smoke. Mr Coffey put the safety and lives of others ahead of his own safety in seeking to assist anyone potentially trapped in the building. I commend him for his courage.
55. I also thank all agencies involved in conducting this investigation on my behalf for their diligence and expertise in this matter.

Report and Recommendations

56. Section 57 relevantly read in September 2011:

57 Report after inquest or inquiry

- (1) A coroner may report to the Attorney-General on an inquest or an inquiry into a fire held by the coroner.
 - (2) ...
 - (3) A coroner may make recommendations to the Attorney-General on any matter connected with an inquest or inquiry, including matters relating to public health or safety or the administration of justice.
57. Given the significant impact this fire had on the population of the ACT, the expense incurred in fighting it and the public interest in this matter, I report my findings to the Attorney-General albeit without recommendation.

I certify that the preceding 57 numbered paragraphs are a true copy of the Reasons for the Findings of her Honour Chief Coroner Walker

Associate: R. Boughton

Date: 1 November 2018