MANNER AND CAUSE OF DEATH

1. Katie Bender died at about 1.30pm on Sunday, 13th July 1997 when she was struck in the head by a fragment of steel expelled from one or other of the corner columns (C30 or C74) on the face of the East Wing of the Main Tower Block of Royal Canberra Hospital situated on Acton Peninsula.
2. Katie Bender was with her parents in a crowd estimated to be in excess of 100,000 spectators gathered on the foreshore of Lake Burley Griffin to watch the demolition by implosion of the Main Tower Block and Sylvia Curley House. Katie Bender was standing on the grass nature strip just down from Lennox Gardens near the roundabout leading from Flynn Drive to the northbound lanes of Commonwealth Avenue Bridge. The crowd in this area alone was estimated by Constable S. G. Howes of the Australian Federal Police Traffic Operations as between 30 – 40,000 people.
3. Katie Bender's death was instantaneous. Katie Bender's scalp and skullcap were severed from her head by the impact of the steel fragment which was in effect a high velocity missile. It was a massive penetrating wound to the head. Katie Bender weighed 47.5kg and was 160cm in height. It is not necessary to examine in any detail the

   autopsy performed by Doctor S. Jain which is set out in his report dated the 27th August 1997. Dr. Jain stated in his autopsy report that "death was caused by a head injury caused by missile injury".

4. The fragment which struck Katie Bender came from either the lower ground or ground floor portions of the column but more probably from the lower ground floor which was more highly charged with explosives than the ground floor.
5. The fragment travelled approximately 430 metres at subsonic speed and struck Katie Bender about 3.1 seconds after it was launched killing her instantly. The fragment broke into a shape that could be expected when an explosive charge is placed against steel backing plates and columns in the fashion used by the explosive subcontractor, Mr. Rod McCracken of Controlled Blasting Services. The impact velocity, calculated by Dr.. A. Krstic of the Defence Science and Technology Organisation, Department of Defence, Salisbury, South Australia was 128 – 130 metres per second. The associated kinetic energy was 8.172 kilojoules.
6. The lethal fragment was a section of deformed steel plate approximately triangular in shape, measuring 165mm x 130mm x 140mm with a weight of 999grams. It was classified as mild carbon steel. One edge exhibited shear characteristics and had a thickness of approximately 14.9mm. The remainder of the fragment had a relatively uniform thickness of 10.6mm. Two edges of the steel fragment exhibited fracture characteristics in the form of a chevron pattern. There was hair, blood and bone on the fragment with the bone matter adhering to edge B. This is clearly reflected in the photograph number 1 in Exhibit 10 being a book of photographs of various items of metal debris recovered from the blast.
7. Dr.. A. E. Wildegger Gaissmaier also of DSTO engaged in a computer modelling process of a similar but not identical explosive. The lethal fragment was part of the webbed portion of a steel column. The fragmentation pattern on the steel and the surrounding piece showed the same qualitative

characteristics that generally occur when steel is directly exposed to a sudden explosive impact. It seems the fragment fractured from another piece of steel and was originally part of the backing plate. This backing plate actually embedded itself in the ground within metres of the Simpson family of Chisholm ACT who were located about 15 metres from the edge of the Lake and about 400 metres from the hospital building. The plate was warm to touch. It is not necessary to review this evidence in detail but it is sufficient to state that the thickness of the fragment that killed Katie Bender matched the webb thickness of the corner columns, C30 and C74 on the front of the East Wing of the Main Tower Block. This conclusion that the steel fragment struck Katie Bender is also supported by the column orientation, the position of the two columns, the time lapse from the reddish orange fireball being visible and when Katie is struck down (see further the evidence of Mr. S. Alkemade on 23rd March 1998).

8. A great many columns in the Main Tower Block were not fully sandbagged including the two columns (C30 and C74) from whence in all probability the fatal fragment was expelled. The evidence in support of this conclusion is to be found in the photographs actually taken by the Work Cover inspectors about 2 hours before the implosion on Sunday, 13th July 1997. The photographs are persuasive evidence that there was simply no protection on the lakeside of the blast particularly in respect of C74 and where Katie Bender and hundreds of other spectators had gathered to view the event. An analysis of the protective measures or lack thereof is set out elsewhere in my Report.
9. Dr. Christopher James Lennard, a forensic scientist, examined no less than 12 metal objects and fragments emitted from the hospital blast. These items were located in various parts of the area bounded by Commonwealth Avenue, Flynn Drive, the Treasury Car Park and the area near the Canberra Yacht Club. His report dated 6th February 1998 was received into evidence.
10. The force with which the fragment of steel was expelled from the Hospital site, travelled the 430 metres striking Katie Bender, then, entangled in her scalp and hair, landed with an audible thud approximately 6 metres to the rear of Katie's standing position immediately adjacent to the rear wheel of a spectator's pushbike. The resultant impact is consistent with a massive force commensurate with a cricket bat being swung at 432 kilometres per hour. This force was also supported by Constable Howes observation of the "divot" that the fragment made on impact with the earth. There are two enlarged high-resolution photographs of the deceased at the time of the blast. The first photograph depicts the deceased standing looking towards the Hospital site 3.4 seconds after the first appearance of the orange fireball at the base of the Main Tower Block. The second photograph is of the deceased on the ground at about 3.6 seconds after the detonation having been struck down by the fragment.
11. The most likely trajectory for the fragment of steel as determined by Dr.. A. Krstic was trajectory L. This trajectory had the fragment of steel coming from the lower ground floor column either C30 or C74. Those columns were loaded with a greater amount of explosives than the ground floor columns. The trajectory had the fragment of steel just clearing the curved brick wall some 92 metres away. The curved brick wall was on the extremity of the hospital building almost at the end of the Peninsula. The wall was 8.3 metres in height. The damage evident to the top of the curved brick wall supports not only the

adoption of trajectory L as the most likely course taken by the fragment of steel but also that it originated from column C30. Dr. Krstic stated that it was likely the fatal fragment would have been prevented from leaving the Acton Peninsula if the bund wall had extended to a height of 2 – 3 metres all the way across the face of the building. Dr. Krstic, in his evidence on 24th March 1998 dealing with the base of the chimney stack, stated "that no amount of bund wall perhaps 5 metres or 4 metres would have caught those bits of debris, being so high".

12. The Australian Federal Police investigation team collected a considerable volume of evidence in the form of statements from many spectators, the donation of videos and photographic material. It was only necessary to adduce evidence from 5 civilian witnesses who were in close proximity to the deceased. The evidence was received from Messrs. B. Redden, P. Jermyn, M. Battye, G. Vasek and P. Muscat. Statements by many other bystanders were simply tendered in evidence.
13. The video material clearly shows that upon the reddish yellow fireball from the base of the building being discharged objects are observed being emitted not only from the centre of the fireball but other parts of the building. The objects are visible being projected across the lake in the direction of the spectators. The videos also clearly show the lake being peppered by the flying debris with a number of spectator craft resorting to evasive action.
14. The response by Mr. Malcolm Hayes of the ACT Fire Brigade, the Ambulance Service and the Police, especially Constable S. Howes at the scene was quick, efficient and sensitive. It should be remembered that a large crowd had gathered. Constable Howes had CPR continued until the crowd was cleared from the area although Katie Bender had obviously died at this stage. The actions of Constable Howes are deserving of special mention. The officer acted in a highly professional manner in extremely emotional circumstances. The crowd were confused, screaming and some were in a state of panic. Along with the fire officers Constable Howes solely worked in those initial minutes after Katie Benders death to secure the scene in the terms of the preservation of evidence, allaying the concerns of the public and assisting other people who were visibly distressed by the events. His statement to the Coroners Court is set out in this Report. Constable Howes acted in a controlled and responsible manner. The Court commends him for his significant community spirit in adverse circumstances.
15. There are an additional number of factors contributing to the cause of death, which are further analysed in this Report but it is useful to identify those factors in summary of my Report. Those factors are: -

    a. Detonating explosive charges imploding the Main Tower Block of the Canberra Hospital cutting a fragment of steel of a high velocity,
    b. Employing an incorrect methodology, viz: -

        i. The use of an excessive amount of explosives,
        ii. The use of the wrong type of explosives,
        iii. The use of a steel backing plate rather than a soft backing cover such as rubber,

iv. Incorrect cuts being made to the columns,
v. Failure to use cutting charges together with kick charges to correctly pre - weaken the steel columns,
vi. A failure to retain, on a continuing basis, for advice a structural engineer experienced in the implosion process of demolition,
vii. A failure to retain for consultation or advice again on a continuing basis an independent explosives expert having knowledge of the implosion method of demolition,
viii. Placing the explosives on the incorrect side of the steel columns so that the blast was directed at the spectators on the other side of the lake,
ix. Inadequate protective measures, and
x. Inadequate testing.

1. The contribution made by the Canberra community to the police investigation needs to be recognised. One only needs to view and listen to the video evidence to gain the sense of outrage and anger expressed by the spectators on that Sunday afternoon. Many hundreds of those spectators whose lives were at risk came forward and generously donated as evidence photographic and video material collected by them to assist the police work in this case.
2. The treatment of the scene, the collection of all the fragments of steel and particles of the deceased's body, the gathering and compilation of all the public, AFP photographs and video material was done with great promptness and efficiency. The subsequent police investigation has been extremely detailed and thorough and broad based in the seizure and collation of the many documents so as to gain a sufficient understanding of them so that interviews could be carried out and conducted in a manner which focussed on the issues. The efforts of the Australian Federal Police to locate and engage the services of a variety of expert witnesses across a range of disciplines proved invaluable, to the extent that none of those experts were in any real sense challenged as to their expertise or their conclusions. In particular the efforts of Detective Constable Mark Johnsen who oversaw the majority of the investigations including travelling overseas and conducting many of the more crucial interviews deserves recognition for his commitment to his duties and the Inquest generally.