STATE CORONER'S COURT

OF NEW SOUTH WALES

Inquest:	Inquest into the death of Ryan Teasdale
Hearing dates:	1 May 2019
Date of findings:	1 May 2019
Place of findings:	State Coroners Court, Lidcombe
Findings of:	Acting State Coroner, Magistrate Teresa O'Sullivan
Catchwords:	CORONIAL LAW – Cause and manner of death – drowning – stormwater inlet
File number:	2017/83407
Representation:	Mr C McGorey, Counsel Assisting, instructed by Ms C Skinner (Crown Solicitor's Office) Mr R Oldfield, Executive Lawyer (McCulloch & Buggy Lawyers) for Wollongong City Council
Non publication order:	Not applicable

Findings:	**The identity of the deceased** The person who died was Ryan Teasdale. **Date of death** Ryan died on 16 March 2017. **Place of death** Ryan died in Unanderra, NSW. **Cause of death** The medical cause of Ryan's death was drowning. **Manner of death** Ryan drowned after he was forced by the flow of water into an open stormwater inlet.
Recommendations:	1. Public Works Advisory (NSW), in conjunction with Local Government NSW, develop guidelines for the safe design of stormwater inlets in New South Wales. Without being exhaustive, the guidelines are to provide: a. technical design assistance with the construction of safe stormwater inlets, particularly those situated in residential or areas readily accessible to the public; and b. criterion for the conduct of risk assessment of the risks posed by existing stormwater inlets, identification of sites posing unacceptable risks to public safety particularly with respect to drowning and/or the allocation of resources to improve sites considered to require design improvements as a matter of priority. 2. Public Works Advisory (NSW), possibly in conjunction with Local Government NSW, disseminate copies of these findings to all Local Councils in New South Wales for the attention of elected Council members and relevant council officers having responsibility for stormwater and flood management within the relevant Local Government Area.

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The Coroners Act in s81 (1) requires that when an inquest is held, the coroner must record in writing his or her findings as to various aspects of the death.

These are the findings of an inquest into the death of Ryan Teasdale.

Introduction

1. This inquest concerns the death of Ryan Teasdale ("**Ryan**") who died 16 March 2017.

2. Ryan was born on 4 November 2005 and was 11 years old at the time of his death.

3. As at 16 March 2017 Ryan lived with his parents, Melissa and Neil Teasdale, and older brother (Jason) and older sister (Brooke), at Leigh Crescent, Unanderra and was attending Lindsay Park Public School.

The nature of an inquest

4. The role of a Coroner, as set out in s. 81 of the *Coroner's Act 2009* ("the Act"), is to make findings as to:

    a. The identity of the deceased;

    b. The date and place of the person's death;

    c. The physical or medical cause of death; and

    d. The manner of death, in other words, the circumstances surrounding the death.

5. There is no controversy as to Ryan's identity, or about the date, place or medical cause of his death. Accordingly, the focus of the inquest has been the manner of Ryan's death.

6. A secondary purpose of an inquest is to determine whether it is necessary or desirable to make any recommendations in relation to any matter connected with the death, including in relation to matters of public health and safety.[1]

The Facts

7. I have received into evidence a brief which comprises two volumes of material. The following is a summary of that evidence. I have been much assisted by the

[1] Section 82 of the Act.

submissions of Counsel Assisting, which were circulated to the interested parties in advance of the hearing and largely agreed to.

8. Although the hearing of this inquest has been relatively brief, I would like to make clear that this in no way reflects the immense value of Ryan's life. It is very clear from the material before me that Ryan was an adored member of his family. In a moving statement, Ryan's family described him to the Court as caring, generous, kind, happy and one of a kind. They spoke about his cheeky personality and how much he made them laugh and smile, as well as his enthusiastic collecting of rocks, crystals and gems, especially in his favourite colour purple. The loss of a child is always tragic, and to lose such a treasured person in these circumstances is heartbreaking. I hope these findings go some way in recognising and acknowledging Ryan's very important life, and ultimately help to reduce the risk of a death occurring in similarly tragic circumstances in the future.

Riley Park as at March 2017

9. As at 16 March 2017 Ryan lived a few minutes' walk from Riley Park.

10. Riley Park is located in in Unanderra, South Wollongong. It is positioned within a suburb. The park is flanked on each side by roads and houses.

11. The highest point of the park is at the northern most corner, near the corner of Central Road and Ridley Parade. The ground slopes down from the park's northern boundary (along Central Road) towards its south east boundary (along Carr Parade).

12. Three stormwater drains discharge stormwater into Riley Park from the northern boundary (along Central Road). Two other pipes on the Ridley Parade boundary also pipe water into Riley Park.

13. The stormwater runoff flows across the park along "overland" flow paths. The overland paths converge to direct the stormwater runoff into a stormwater drain positioned near the south eastern corner.

14. A stormwater inlet is positioned on the Ridley Parade side of the park approximately 30 to 40 metres from the corner of Ridley Parade and Carr Parade (south eastern corner of the park).

15. As at 16 March 2017 the stormwater inlet constituted a headwall and open concrete pipe. The inlet pipe opening was approximately 600 mm in diameter.

The inlet opening was below road level. The opening was not covered with mesh or grate nor was it marked with any fencing or signs alerting the public to dangers at that site. As shown in photographs taken on 17 March 2017, the inlet opening presented as unremarkable and innocuous.

16. The inlet's concrete pipe connected to a series of pits and pipes running underneath roads and residential properties. That concrete pipe system runs underground in an easterly direction and drains out into the America and Allans Creeks alongside the Western Suburbs Swimming Pool. That location is about 861 metres from the stormwater inlet at Riley Park.

17. During a heavy rain event, when the capacity of the inlet is reached due to the flows at that site, stormwater runoff would pool near the inlet pipe's entrance. Stormwater would also run across the roads and properties to the east and south-east of Riley Park.

18. On 16 March 2017 the inlet pipe opening at Riley Park at times became submerged owing to the flow rates. That opening was not submerged at all times. The extent of the pooling at the site likely varied owing to the intensity of the rain event.

19. The frequency at which the opening became submerged and/or water ran across the roads is not known.

Water related activities at Riley Park

20. As at 16 March 2017, there was a practice of children and adults sliding down the hillside at Riley Park during heavy rain events. Heavy rain would cause two distinct water channels to run from the top of the hill. Those channels would merge into one channel midway down the slope.

21. Children and adults would use body boards as makeshift toboggans to slide down the hill. Examples of this can be seen in the images taken on 16 March 2017 showing adults and children sliding down the hill on body boards at Riley Park.

Rainfall between 15 and 16 March 2017

22. On 15 and 16 March 2017 the Illawarra region received in excess of 100 mm of rain. There was significant rainfall within a short period on the afternoon of 16 March 2017.

Ryan and Jason Teasdale attend Riley Park on 16 March 2017

23. On the afternoon of 16 March 2017 Ryan and his brother, Jason (13 years old) ("**Jason**"), returned home after school. Soon after they walked together to Riley Park with their body boards to slide down the park's slope. Ms Teasdale was at work at the time and Mr Teasdale was shopping for dinner.

24. This was the first time Ryan and Jason had attended Riley Park for this purpose. Ryan and Jason had seen a video, posted in the Illawarra Mercury website about two weeks prior, showing people riding their body boards "down a hill in a park in Unanderra after heavy rain" which their sister recognised to be Riley Park.

25. According to evidence prepared by Wollongong City Council ("**the Council**"), body boarding in Riley Park had been "promoted" in posts or articles on the Illawarra Mercury news site in the lead up to 16 March 2017, with a particular Facebook page having been "liked" by hundreds of people. That Facebook page was later deleted on 17 March 2017 and removed from the online news service site.

Arrival at the park

26. Ryan and Jason arrived at Riley Park sometime after 3 pm.

27. Clint Magro drove past Riley Park just before 3 pm on his way to collect his children from Cedars Christina College. He saw four males sliding down the grass slope on body boards. He told his children about the body boarding when he picked them up. He then drove them to Riley Park at which time it was raining very heavily at the time. When he arrived he saw that water was covering the stormwater inlet area and covering half the roadway (at Ridley Parade).

28. Footage recorded at 3:10 pm by Mr Magro shows Ryan sliding down the hill. Jason and Brendan Bonacina can also be seen in the footage. This is the last known recording of Ryan that afternoon. The final seconds of the footage shows floodwater pooling at the bottom of the hill (the drain is not visible on this footage).

29. A number of people at Riley Park recorded footage of people sliding down the hill on this afternoon. The footage subsequently provided to police did not cover the period 3:10 to 3:50 pm. Ryan is not depicted in any of the later footage made after 3:50 pm.

30. Mr Magro returned home with his children to collect body boards and swimmers and then returned to Riley Park prior to 3:30 pm. Mr Magro took a photograph at

about 3:30 pm from his car. Mr Magro estimated that there were about 20 people in the park playing on body boards at the time. It was raining but the rain eased at about 3:50 pm, at which time he recorded more footage.

31. Another adult at the park, Jay Tregonning, estimated there were about 15 to 20 people in Riley Park at about 4:30 pm. Mr Margo estimated that by 5 pm the number of people at the park had increased to about approximately 60 to 80 people aged between 6 and 18 years of age.

Ryan discovered to be missing

32. At about 4:12 pm, Jason realised his brother was missing.

33. Jason last recalled seeing Ryan as he (Jason) was walking back up the hill and Ryan was going down the hill on his board. A witness at the park recalled seeing Ryan playing by himself (running and jumping on his board) towards the bottom of the hill.

34. At this point Jason thought Ryan had walked home. Jason left the park and returned home about 4:30 pm and spoke to his father. Mr Teasdale saw that Jason was soaking wet with grass all over him and assumed he had been at Riley Park.

35. Mr Teasdale looked for Ryan in the house when Jason said he thought Ryan had already come home. Mr Teasdale then called Ryan's mobile about three times with no answer. He then alerted Ms Teasdale that Ryan had not returned home and drove to Riley Park but did not see him there. At that time he saw about 20 persons at the park sliding down the park with adults and children sliding down the hill in the stream of water.

36. Ms Teasdale left work at 5:30 pm and drove around the streets of Unanderra looking for Ryan. She attended Riley Park, which by then was empty of people, and, seeing the drain opening, became alarmed and called the police. That call was made at about 6:20 pm. Ms Teasdale, her father and Mr Teasdale later met at Riley Park just prior to the police's arrival.

Police attendance at Riley Park

37. Senior Constable ("**SC**") Mitchel Grace and SC Andrew Atkins arrived at the park at about 6:48 pm and met with Ryan's parents. The parents reported their concern that Ryan may have entered the stormwater inlet.

38. SC Grace and SC Atkins inspected the inlet opening. They saw water flowing into the opening from the run off down the hill. The water level at that time was low, being about 5 to 10 cm deep, and the entrance was clear of debris. SC Grace looked down the pipe as far as he could but did not see anything.

39. The observations of various witnesses at the park on 16 March 2017 demonstrate how variable the conditions at the inlet opening were on that afternoon/evening. In particular:

    a. at about 3 pm Austin Bonacina and Mr Magro observed the water level to be over the stormwater drain and covering the road.

    b. at about 6:48 pm SC Grace observed the water level in the drain to be low, at about 5 to 10 cm deep, and was able to stand at the inlet opening and look up into the pipe.

    c. at about 7:12 pm, following heavy rain, Sergeant McKerrow saw water flowing into the inlet opening from the hill runoff and the water level in the drain to be high and flowing fast.

    d. at about 7:30 pm Ms Teasdale saw the water level in the park rise, in the space of a few minutes, and completely submerge the inlet's opening.

Search for Ryan

40. SES personnel arrived after SC Grace's and Atkins' attendance.

41. Searchers attempted "drain hopping" to see if they could ascertain the directions the pipe(s) were travelling underground in the hope of locating Ryan. The rain became heavier at this point in time.

42. At about 7:30 pm the police were provided with maps of the drains in and around Riley Park by the Council to assist the search.

43. The search that night ceased at about 11 pm, after continuing heavy rainfall, and was set to resume at 7 am the following morning.

Resumption of the search on 17 March 2017

44. On the morning of 17 March 2017 SC Chris King (Police Rescue Unit) acted as the Search Coordinator and tasked four SES teams, Council personnel and other professionals to systematically search each street drain from Riley Park through to Allen's Creek in Unanderra.

Discovery of the body board

45. At about 7:50 am Ryan's body board was found by Brittany Corkish in the rear yard of the Community Centre at 35C Carr Parade, Unanderra. The board's surface had minor scratches and was missing its wrist strap.

46. Riley Park is visible from the front of 35 Carr Parade. The stormwater inlet is about 90 metres from that location. There had been flooding on that street between number 35 and 37 on the afternoon of 16 March 2017 with floodwater travelling to the rear of 35C Carr Parade.

Western Suburbs Pools

47. At about 11:10 am volunteer State Emergency Service flood rescue operators Brayden McPaul and Michael Brown located Ryan (deceased) in the creek outside the northern fence of the Western Suburbs Pools, Unanderra, approximately 861 metres east of the Riley Park stormwater drain opening.

Pathologist

48. Dr Bernard l'Ons ("**the Pathologist**") carried out an autopsy on Ryan on 20 March 2017.

49. The Pathologist noted that Ryan:

    (1) was found with a plume of foam around his mouth (indicative of drowning) and with a strap around his wrist.

    (2) had multiple superficial abrasions and contusions of the head, neck, chest, right and left arms, and right and left legs. He also had an abrasion on the left upper back however his injuries were more extensive on his front than on his back.

    (3) also had marked petechiae on his face, as well as the eyelids of both eyes, scleral haemorrhages and bruising of the inner upper gum. Bruising was also observed in the lower left rib area.

50. In the Pathologist's opinion, Ryan died as a consequence of drowning. The abrasions and bruising were consistent with bumping and scraping.

What happened?

51. The officer-in-charge of the investigation of Ryan's death, Detective Senior Constable ("**DSC**") Zammit, concluded:

    (1) although no person witnessed Ryan enter the Riley Park stormwater inlet, that is the only reasonable hypothesis open on the evidence.

    (2) at the time Ryan arrived at Riley Park, the stormwater inlet opening was likely covered or submerged by water. The drain opening may not have been visible to Ryan.

    (3) Ryan came within close proximity of the stormwater inlet and was pulled into it by the suction effect, created by the flow of water into the inlet, and then drowned. This likely occurred sometime between 3:10 and 3:50 pm.

    (4) Ryan was ultimately swept about 860 metres through the stormwater drainage system and exited the pipes located outside the Western Suburbs Pool, Unanderra.

    (5) Ryan's board did not fit in the Riley Park drain entrance. The board likely broke off at the pipe opening and travelled in the floodwaters over Ridley Parade and Carr Parade and into the rear yard of 35C Carr Parade (approximately 90 metres).

52. I am satisfied based on review of the evidence that I can make findings consistent with the abovementioned conclusions.

53. I am also satisfied that, as submitted by Counsel Assisting, a person with no familiarity of the inlet opening might not be aware of its existence if it was submerged by water. Even assuming Ryan knew of the existence of the inlet openings at the time he came into close proximity with the same, he likely wasn't aware of the significant risks posed by the water flow at that point.

54. Whether Ryan came to be in close proximity to the opening because he deliberately entered the water pooled at the site, accidentally fell in or owing to some other unidentified reason cannot be ascertained.

Emergency Services' response

55. I am satisfied that NSW Police and the Search and Emergency Services made all reasonable efforts to find Ryan and commend those agencies for their efforts.

History of the stormwater inlet at Riley Park

56. Responsibility for the Riley Park area was vested to the Council by the Housing Commission in 1960. The Council was responsible for Riley Park and the stormwater inlet as at 16 March 2017. It continues to have responsibility for the same.

57. The roads and stormwater systems in and around Riley Park were designed and built in the 1950s as part of a Housing Commission subdivision.

58. At the time of construction there were no safety design standards that would have been implemented in the design of the park or stormwater system.

Current construction standards

59. The Council provided evidence to the inquest that the stormwater drain as existed at Riley Park on 16 March 2017 is not consistent with what the Council would construct or permit to be constructed at this time.

60. The Council would not permit a park designed in present day that:

    (1) allows stormwater to flow across the park;

    (2) has slopes as steep as those currently existing at Riley Park; or

    (3) has an open stormwater inlet as existed at Riley Park on 16 March 2017.

61. If built today, consideration would be given to the assessed depth and velocities of potential flood waters within the public open space of the park to determine if there is a risk to life, what that risk is and possible design treatments to mitigate risk (if applicable).

62. Consideration would also be given to relevant guidelines in the "Australian Rainfall and Runoff 1987 (ARR87)", a national guideline document published by Engineers Australia. Section 14.10.4 includes the following passage:

> "The issue of safety is one of the aspects of urban drainage systems which is of direct concern to the general public. The average number of fatalities associated with urban drainage systems in Australia (estimated as three or four per year by O'Loughlin and Corderoy, 1983) is far below the number of deaths on roads, but the response by the press and the public is much greater. Responsible authorities need to take special care concerning safety.

> The major hazard in drainage is that of drowning, and children are particularly at risk due to their small size and lack of experience. Because incidents are rare at any single location, it is difficult to define exact safety standards.
>
> To guard against persons being swept into closed pipe systems, *inlets to street drainage networks should be sized so that a child cannot be admitted. Any kerb openings with a height of slot greater than 150 mm, and direct pipe inlets with diameters greater than 300 mm, should be screened by a suitable grate with bars spaced at 150 mm or less*. Grates should not be placed over outlets to pipe systems. Although these prevent children from climbing into pipes, they could prove fatal to a person who is somehow caught in the system." (emphasis added)

63. In the view of the Council, the installation of a grate over the inlet opening would pose other risks in terms of safety and flooding from blockages. I agree with Counsel Assisting's submission that, accepting the validity of that assessment, there is no doubt regarding the risks posed by an open pipe inlet with a diameter of about 600 mm.

64. Assuming Riley Park was constructed today, the Council expects that stormwater flows across the park would be piped or consolidated into an open trunk drainage system. Those flows would not cross the park at multiple locations. The surface flows across the park would thereby be eliminated or better managed with minor surface drainage at the site being collected in structures known as "grated surface inlet pits" (as now exist at the site).

65. At the time of Ryan's death, the Riley Park stormwater inlet had not been identified as one posing significant risk to the public, nor was it being considered for safety improvements.

66. The Council was responsible for a large number of stormwater "assets", including drainage assets (including 22,000 pits, 1312 culverts and 2532 headwalls) and natural assets (including engineered structures mimicking natural processes).

67. The Council identified stormwater drainage systems that required upgrade and improvement through condition assessments, the Floodplain Risk Management Program, public requests and other drainage investigations to mitigate isolated flooding. Identified projects were then categorised into various areas and

prioritised based on set criterion. The Council also had an infrastructure works program for the improvement of safety and effectiveness of the stormwater network.

68. The Council historically has prioritised resources towards areas of known risks, where hazards have been identified following significant injuries or accidents, where customer complaints have been received and where research regarding community expectation has identified priorities. Its approach has tended to be "reactive" more so than "proactive" in this respect, owing to the number of assets and resources available.

69. As at the time of Ryan's death, the Council had not received public complaints about the safety of the Riley Park stormwater inlet site, nor was it aware of prior instances of persons being put at risk at that site. There are no records of a formal inspection being carried out at Riley Park prior to 16 March 2017.

Changes since Ryan's death

70. The Council commenced a review of the Riley Park stormwater inlet immediately following Ryan's death.

71. On or about 30 March 2017 the Council installed a grate across the inlet opening as a temporary measure whilst it finalised its assessment. This replaced another temporary grate that persons unknown had installed after Ryan's death.

72. In the week immediately following Ryan's death the Council carried out investigations into safety for new stormwater inlet structures. At this time, the Council considered the available NSW and National guidelines provided only *generic* risk assessment guidelines. They did not provide specific guidance on designs to prevent access to inlet structures while managing blockage and flood impacts.

73. The Council became aware through its investigations of the *Queensland Urban Drainage Manual (Provisional 2013)* ("**the QLD guidelines**").

74. The QLD guidelines is a joint venture involving the Queensland Department of Natural Resources and Water, the Queensland Division of the Institute of Public Works Engineering Australia and the Brisbane City Council. These guidelines provide a component on safety aspects of stormwater inlet design and guidelines for risk assessment.

75. A final design of the inlet site was completed on 21 July 2017 and construction of the new inlet completed by 14 September 2017. The construction resulted in the removal of the headwall and the installation of a “letterbox” drainage pit or “grated surface inlet pit” at the site.

76. The current design has no pipe opening and prevents anyone (child or otherwise) entering the stormwater system at this point. A photo of the new site was included in the material before this Court and annexed to the submissions of Counsel Assisting as circulated to the parties.

Other sites within the Council’s responsibility

77. The Council provided evidence that it assigned engineers to investigate whether other, similar, risks existed with stormwater inlets on Council owned land. An initial program was developed during March and April 2017.

78. Three additional sites on Council land were identified and underwent risk assessment, with use of the QLD guidelines, being stormwater sites at:

    (1) Charles Harper Park (Helensburgh) – resulting in the installation of a grate over the stormwater inlet.

    (2) Nyrang Parke (Keiraville) – an outlet of a detention basin (as opposed to an inlet site as existed at Riley Park) which had signage installed to raise awareness of risks.

    (3) The Foothills Estate Basin 3 (Tarrawanna) – an outlet of a detention basin (as opposed to an inlet site) which had signage installed to raise awareness of risks.

79. The Council also implemented a longer term risk management program to assess the safety of approximately 2,000 inlet structures for which it has responsibility.

Concluding remarks

80. I would like to take this opportunity to again acknowledge the enormity of Ryan’s death, which continues to have a huge impact on his parents, siblings and extended family and friends, as well as his wider community. I would like to thank Ryan’s parents and extended family for being present during the inquest and offer my deepest condolences for their most tragic loss.

81. I thank my Counsel Assisting, Mr Chris McGorey and his instructing solicitor, by Ms Clare Skinner from the Crown Solicitor's Office, for their excellent assistance.

82. I thank the Officer in Charge of the investigation, Detective Senior Constable Paul Zammit.

Findings pursuant to section 81(1) of the Act

83. As a result of considering all of the documentary evidence that formed part of the inquest, I make the following findings:

The identity of the deceased

The person who died was Ryan Teasdale.

Date of death

Ryan died on 16 March 2017.

Place of death

Ryan died in Unanderra, NSW.

Cause of death

The medical cause of Ryan's death was drowning.

Manner of death

Ryan drowned after he was forced by the flow of water into an open stormwater inlet.

Recommendations

84. Pursuant to s. 82 of the Act, Coroners may make recommendations connected with a death.

85. I accept Counsel Assisting's submission that Ryan's death highlights the significant risks that can arise from children coming into close proximity with an open stormwater inlet during heavy flows, whether deliberately without realising the risks involved or through inadvertence, as existed at Riley Park on 16 March 2017.

86. The risk posed by that inlet as at 16 March 2017 during heavy rain events is clear. This risk was compounded by the location of the inlet. This was not an inlet opening located in a remote or difficult to access location. It was positioned in a

park, within a residential area, to which the public had unrestricted access and use. In the absence of signage or some other warnings at the site, children and their parents would not be reasonably on notice as to the dangers posed by such a site during heavy flows particularly when that opening is submerged.

87. Ryan, as were many other adults and children, was at the park engaging in an otherwise benign activity of sliding down the slope. That was an activity that had garnered recent attention on news websites and by virtue of people seeing that activity taking place as they passed by. The other children at the park on the afternoon of 16 March 2017, as well as those who attended on prior occasions during heavy rain periods, were also at risk because of the inlet opening.

88. To its credit, the Council has implemented changes to the Riley Park stormwater inlet site to prevent any repetition of the events on 16 March 2017. It has also assessed other possible risk sites and implemented a longer-term plan to assess the safety of numerous other inlet structures.

89. I agree with Counsel Assisting would be beneficial to the community to ensure that the tragic circumstances of Ryan's death are brought to the attention of other Local Government Councils within New South Wales. This is to prompt such entities to give appropriate attention to the safety of existing stormwater inlet structures within their area of responsibility. To the extent that their risk assessment process may be facilitated by the QLD guidelines, the existence of those guidelines should also be brought to their attention through these findings. The hope is that other councils prioritise this as an important safety issue and ensure it receives urgent attention.

90. In the course of preparing this inquest for hearing, the Council suggested that I consider making a recommendation that the NSW and/or national guidelines be developed for the design of stormwater inlets with respect to safety. The Council stated that the risks of vehicles being washed away in flood waters and resulting in drowning deaths is well known and there are technical guidelines for vehicular safety, sometimes based on physical research, that have been developed to better understand and manage this risk. The Council suggested that similar research and guidelines should be developed to better deal with safety, stormwater inlets and blockage risks.

91. The above comments and relevant evidence in support were sent to Public Advisory Works and the Office of Environment and Heritage ("**OEH**") on 6 June

2018, and to Local Government NSW on 4 September 2018. Each of the agencies were invited to respond and comment on a potential recommendation that research be undertaken, and guidelines developed, for the purpose of addressing stormwater inlets, blockage risk and public safety. Local Government NSW was also asked to indicate whether it was in a position to circulate a copy of my findings in this matter to other councils within NSW.

92. On 2 July 2018, Public Works Advisory responded stating that it was unaware of any NSW based guidelines or standards for the design of stormwater inlets specifically related to the safety of, and risks, to people, and considered it appropriate that the safety of people be a design and construction criteria for stormwater culvert inlets. Accordingly, it indicated that it supported the Council's suggestions and had no objection to a recommendation that research be undertaken, and guidelines developed, for the purpose of addressing stormwater inlets, blockage risk and public safety. Similarly, on 5 February 2019, the OEH responded indicating that it would support a recommendation in these terms.

93. To date, a response has not been received from Local Government NSW.

94. Accordingly, I make the following recommendations to Public Works Advisory (NSW) and Local Government NSW:

    (1) Public Works Advisory (NSW), in conjunction with Local Government NSW, develop guidelines for the safe design of stormwater inlets in New South Wales. Without being exhaustive, the guidelines are to provide:

        (a) technical design assistance with the construction of safe stormwater inlets, particularly those situated in residential or areas readily accessible to the public; and

        (b) criterion for the conduct of risk assessment of the risks posed by existing stormwater inlets, identification of sites posing unacceptable risks to public safety particularly with respect to drowning and/or the allocation of resources to improve sites considered to require design improvements as a matter of priority.

    (2) Public Works Advisory (NSW), possibly in conjunction with Local Government NSW, disseminate copies of these findings to all Local Councils in New South Wales for the attention of elected council members

and relevant council officers having responsibility for stormwater and flood management within the relevant Local Government Area.

I close this inquest.

Teresa O'Sullivan

A/State Coroner

1 May 2019

Coroners Court of NSW, Lidcombe