Coroners Act, 1996
[Section 26(1)]

Western *Australia*

RECORD OF INVESTIGATION INTO DEATH

Ref No: 45/14

I, Rosalinda Vincenza Clorinda Fogliani, State Coroner, having investigated the deaths of -

Debra Alexandra Till *with an Inquest held at Perth Coroners Court on 1-12 December 2014 and 16 December 2014 find that the identity of the deceased person was* ***Debra Alexandra Till*** *and that death occurred on 9 March 2007 at Fortescue Metals Group Rail Camp 1, approximately 90 kilometres south of Port Hedland, as a result of head Injury with probable crush asphyxia; and*

Craig Allan Raabe*, with an Inquest held at Perth Coroners Court on 1-12 December 2014 and 16 December 2014 find that the identity of the deceased person was* ***Craig Allan Raabe*** *and that death occurred on 10 March 2007 at Sir Charles Gairdner Hospital Nedlands as a result of head injury,*

in the following circumstances -

Counsel Appearing :

Mr Philip Urquhart assisting the State Coroner

Mr Richard Price (instructed by Corrs Chambers) on behalf of Fortescue Metal Group Limited and The Pilbara Infrastructure Pty Ltd

Mr David Price on behalf of the Shire of East Pilbara, Mr Chad Harvey and Mr Bill Crerar

Mr Thomas Offer (instructed by Riaan Piek, Spark Helmore Lawyers) on behalf of Mr Robert Guthrie

Mr Paul Yovich (instructed by Squire Patton Boggs AU) on behalf of Spotless Services Australia Limited.

Mr Alan Hershowitz (instructed by Hall and Wilcox) on behalf of Mr Peter Lawry

Mr Andrew Harris QC (instructed by Michael Deane) on behalf of Spundbrood Pty Ltd, Smith Prell Pty Ltd and Mr Anthony Ward Smith (known collectively as NT Link), Mr Trent Lees and Mr Paul Lambley

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INTRODUCTION

Debra Alexandra Till (Ms Till) and Craig Allan Raabe (Mr Raabe) died in March 2007 from injuries they received when Tropical Cyclone George hit their temporary accommodation camp, at a remote location south of Port Hedland. Both deceased were sheltering from the cyclonic winds in their pre-fabricated accommodation buildings, known as dongas.

The camp had approximately 70 dongas. Each donga generally accommodated four persons as they had four separate rooms each with its own bathroom facilities. There were no internal doors connecting the rooms. The deceased were sheltering in separate dongas.

When the cyclone hit in the early hours of 9 March 2007 their dongas lifted, pulled away from their footings and were destroyed. Ms Till's donga detached, slid away from its foundations and collided with the donga next to it. She died from injuries that she sustained as a result of that impact, at the site of the collision on 9 March 2007. Mr Raabe's donga detached from its foundations and rolled over. He died from injuries that he sustained as a result of the impact a day later, after he had been airlifted to Sir Charles Gairdner Hospital in Perth.

Most of the other dongas at the temporary accommodation camp withstood the cyclonic winds.

The manner in which the dongas were designed, built and anchored to the ground did not meet the applicable structural design standards. They were built by reference to standards applicable to a non-cyclonic area. This was an error. The temporary accommodation camp was located in a cyclonic area and the dongas should have been built in accordance with the structural design standards applicable to a cyclonic area.

Tropical Cyclone George was a very intense and physically large cyclone. It was considered to be the most destructive cyclone to affect the Port Hedland area since Tropical Cyclone Joan in 1975, over three decades earlier.

Structural design standards exist to take account of the rare, severe and/or unpredictable occurrences such as the one manifested at this temporary accommodation camp in March 2007.

Compliance with the applicable standards would have minimised the risk of damage and destruction to the dongas. In this case, structural design standards existed that would have guided the construction of more substantial dongas, by reference to the "wind region" in which they were located.

The applicable Australian Standards had taken account of the likely effect of cyclonic conditions in the Pilbara. At the material time, those standards imposed building

design criteria by reference to delineated wind regions, determined by reference to the distance from the coast. The closer to the coast, the more frequent and severe the cyclonic winds are likely to be. Moving inland, the wind forces are likely to decrease and there is a concomitant decrease in what is structurally required to accommodate them.

The dongas were located approximately 90 kilometres from the coast, which meant they were in what was known as Wind Region C, a cyclonic wind region. However, due to a series of errors, the dongas were constructed by reference to standards for Wind Region A, a non-cyclonic wind region. It is hardly surprising that they were unable to withstand the cyclonic winds to which they were subjected on 9 March 2007. They were not designed, nor constructed to withstand such forces.

THE INQUEST

The deaths of Ms Till and Mr Raabe were reportable deaths within the meaning of section 3 of the *Coroners Act* 1996 (the Coroners Act) because they resulted directly from injury. They were reported to the coroner as required by section 17 of the Coroners Act.

After the deaths and prior to the inquest, a number of prosecutions were carried out pursuant to the *Occupational Safety and Health Act* 1984 (the OSH Act).

Those prosecutions related to allegations against a number of specified respondents for failing, so far as was practicable, to provide and maintain a working environment, adequate safety procedures and residential premises for workers that did not expose them to hazards. Some of those prosecutions related to contraventions causing a death and others related to contraventions causing injuries at the temporary accommodation camp.

On 23 March 2012 the last of those prosecutions was concluded. The outcome of all of the previous litigation was that all charges under the OSH Act were dismissed and judgements of acquittal were either entered or reinstated.[1]

By reason of section 19(1) of the Coroners Act I have jurisdiction to investigate the deaths of Ms Till and Mr Raabe. Pursuant of section 40 of the Coroners Act, the deaths of Ms Till and Mr Raabe were directed to be investigated at one inquest.

Section 25(1) of the Coroners Act sets out the primary role of the coroner investigating a death, which is to find, if possible, the identity of the deceased, how the death occurred, the cause of death and the particulars needed to register the death under the *Births, Deaths and Marriages Registration Act* 1998.

[1] *Kirwin v The Pilbara Infrastructure Pty Ltd* [2012] WASC 99
Laing O'Rourke (BMC) Pty Ltd v Kirwin [2011] WASCA 117

In *Re the State Coroner; Ex Parte the Minister for Health*, the Honourable Justice Buss found that subsection 25(1)(b) of the Coroners Act, concerning the coroner's finding on how the death occurred, confers upon the coroner "*....the jurisdiction and obligation to find, if possible, the manner in which the deceased happened to die. This does not refer only to the means or mechanism by which the death was suffered or inflicted. It extends to the circumstances attending the death.*"[2]

Pursuant to section 25(2) of the Coroners Act, I may comment on any matter connected with the death including public health or safety or the administration of justice. This includes the power to make recommendations, often referred to as the coroner's death prevention role. It is not necessary that I be of the view that the recommendation if implemented would have prevented the death being investigated at the inquest.

Pursuant to section 25(5) of the Coroners Act, I must not frame a finding or comment in such a way as to appear to determine any question of civil liability or to suggest that any person is guilty of an offence.

The standard of proof is on the balance of probabilities. Consistent with the principles enunciated in *Briginshaw v Briginshaw*, a more cautious approach is to be adopted in circumstances where an adverse finding is under consideration. I am required to take into account the

[2] [2009] WASCA 165 at [42]

seriousness of an allegation made, the inherent unlikelihood of an occurrence of a given description and the gravity of the consequences flowing from a particular finding when deciding whether a matter has been proved on the balance of probabilities.[3]

I held an inquest between 1 and 12 December 2014 and on 16 December 2014 at Perth.

After the inquest counsel assisting submitted to me that it is open for me to make a number of adverse findings.

On 6 February 2015, pursuant to section 44(2) of the Coroners Act, through counsel assisting I gave interested persons the opportunity to present submissions against the making of specified findings adverse to their interests, before making any such findings.

Between 27 February and 6 March 2015 counsel for the interested persons made their written submissions against the making of specified findings adverse to their clients' interests. I have taken these submissions into account.

Where I have accepted counsel assisting's submission in connection with an adverse finding that is open to me, my adverse finding is made in this record of investigation.

[3] (1938) 60 CLR 336 at pp 361 - 3

THE ISSUES EXPLORED AT THE INQUEST

The key issues explored at the inquest concerned the process by which the builder was granted the building licence for the construction of the temporary accommodation camp, the design process for the tie-downs of dongas, the standard of workmanship of the tie-downs, and the origin of the error with regard to the correct wind region, how the error was made and why the error was not identified.

Some, but not all, of these issues had been explored in the earlier litigation.[4] Because of the extent of that litigation, it was not desirable to investigate and take further evidence on all of the issues connected with the destruction of the temporary accommodation camp that had previously been the subject of judicial analysis.

Prior to the inquest, through counsel assisting notification of the proposed procedures for the inquest was given to the interested persons which included the 19 provisional factual findings proposed to be made having regard to the previous litigation.

[4] From the Perth Magistrates Court trial before the learned Magistrate Randazzo: Charges Nos. 50531-50547 and 50575 of 2008 – *Department of Consumer and Employment Protection v The Pilbara Infrastructure Pty Ltd and Fortescue Metals Group Ltd* and from the Supreme Court of Western Australia (in criminal) before the Honourable Justice Hall: *Kirwin v The Pilbara Infrastructure Pty Ltd and Fortescue Metals Group* [2012] WASC 99; and from the Perth Magistrates Court trial before the learned Magistrate Malone: Charges Nos. 50576-77 of 2008 – *Christopher Kirwin v Laing O'Rourke (BMC) Pty Ltd* and from the Supreme Court of Western Australia (in criminal) before the Honourable Justice Murray: *Kirwin v Laing O'Rourke (BMC) Pty Ltd* [2010] WASC 194 and from the Supreme Court of Western Australia, the Court of Appeal, *LaingO'Rourke (BMC) Pty Ltd v Kirwin* [2011] WASCA 117

The interested persons were provided with an opportunity to make submissions on the proposed procedures.

At a directions hearing on 3 October 2014, Fortescue Metals Group and its subsidiary The Pilbara Infrastructure (together referred to as FMG/TPI) through its counsel made oral submissions, supplemented by written submissions of that same date. FMG/TPI raised no objection to the proposed procedure but made submissions concerning the content of the provisional factual findings and submitted additional proposed factual findings.

Also at the directions hearing on 3 October 2014, the following parties raised no objection to the proposed procedure, through their counsel: the Department of Commerce, Spotless Services Australia Ltd (Spotless), the initial project manager, and Mr Robert Guthrie (consultant builder initially engaged by Spotless and later by Mr Smith).

NT Link,[5] the builder, through its counsel, by written submissions dated 18 November 2014 objected to the proposed procedure concerning the provisional factual findings. The objections were primarily based upon the fact that neither NT Link nor its principal Anthony Ward Smith (Mr Smith) were parties to the litigation from which the provisional factual findings were to be drawn. The other objections either flowed from that fact or were

[5] References to NT Link include Spunbrood Pty Ltd, Smith Prell Pty Ltd and Anthony Ward Smith.

based upon a revisiting of the issues from that earlier litigation. Mr Smith had been a witness in some of that earlier litigation.

Of the 19 provisional factual findings all of those relevant to this finding have now been established to the requisite standard on the evidence before me at the inquest. All factual findings are made within this record of investigation into the deaths and supercede the provisional ones.

The fact that neither NT Link nor Mr Smith were parties to the earlier litigation does not preclude me from making findings regarding the likely outcome had the dongas been constructed to the proper standards and/or the reasons for the dongas failing to withstand the wind forces.

I do not make a finding on whether or not the taking of refuge in a shelter built to cyclonic specifications (including a donga) is generally regarded as a proper way to avoid injury in cyclonic conditions.[6]

[6] Accordingly provisional factual finding 19 falls away.

Provisional factual finding 11 is modified to read as follows:

> "If the actual distance of Rail Camp 1 was less than 100 kilometres from the smoothed coastline this would have placed it within Wind Region C. Had it been greater than 100 kilometres it would have been in Wind Region A according to AS/NZS 1170.2.1989 and AS 4055 1992 which were among the applicable Australian Standards referenced in the Building Code of Australia at the material time."

THE REASON FOR CONSTRUCTING RAIL CAMP 1

The temporary accommodation camp was known as Rail Camp 1. It was constructed in 2006 and located approximately 90 kilometres inland from Port Hedland. Its purpose was to accommodate workers who were going to build a private railway line so that iron ore could be transported from Cloudbreak Mine in the Pilbara to the port facilities in Port Hedland. It was one of four such camps that were located along the proposed route. This inquest was concerned with the events at Rail Camp 1.

Cloudbreak Mine was an iron ore mine located about 250 kilometres south east of Port Hedland. It was situated on mining tenements held by FMG/TPI.

The private railway line was to be built within a delineated railway corridor extending from Cloudbreak Mine to Port Hedland. Rail Camp 1 was along that corridor.

There was some urgency in ensuring the private railway line was constructed in accordance with anticipated time frames. Clearly, it was not possible to undertake substantive work on the relevant portion of the railway line until Rail Camp 1 was constructed to accommodate the people who would be working on that line. Consequently there was some urgency in ensuring that

Rail Camp 1 was constructed in accordance with anticipated time frames.

Rail Camp 1 was substantially completed a few months before Tropical Cyclone George hit it. It comprised approximately 70 dongas, a dry mess, a wet mess, recreational areas and buildings, a muster area, fuel facilities and workshop buildings. There was also an office building approximately 150 metres from the dongas.

When it was believed that Rail Camp 1 was ready for occupancy, the workers were allocated their accommodation in the various dongas. They worked on the railway line close by and/or they did other work in support of that.

The area of the Pilbara where Rail Camp 1 was located had been divided into wind regions because of the likelihood of buildings needing to accommodate cyclonic winds depending on where they were located.

THE AUSTRALIAN STANDARDS AND THE WIND REGIONS

Australian Standards are published documents that set out specifications and procedures designed to ensure products, services and systems are safe, reliable and consistently perform the way they were intended to.

An Australian Standard has been in existence since the 1950s for the determination of minimum wind loads for the structural design of buildings. These wind loads are calculated according to the location of the buildings. From time to time, the Australian Standards are updated and/or varied.

The wind design requirements are incorporated into the Building Code of Australia when it references the applicable Australian Standard. The Building Code of Australia is a uniform set of technical provisions for the design and construction of buildings and other structures throughout Australia. It is produced and maintained by the Australian Building Codes Board.

In 2006 an application for a building licence was required prior to commencing building work. At the material time, the applicable building standards were contained in the *Local Government (Miscellaneous Provisions) Act* 1960, the *Building Regulations* 1989, the Building Code of Australia 2005 and its referenced Australian Standards. A building surveyor or a builder could have properly opted to utilise a number of referenced Australian Standards, namely AS 1170.2.1989, AS 4055 1992 and/or AS 1170.2.2002.[7]

Australian Standard AS 1170.2 provides simplified wind design procedures for housing. It is part of a suite of structural design standards. Material used in

[7] T 934 – T 936; Exhibit 4.1.1, 4.4.2 and 4.4.42

construction must be consistent with the applicable structural design standards.[8]

AS 1170.2.1989 divided the area of the Pilbara surrounding Port Hedland into three wind regions designated A, C and D. Wind Region D was within 50 kilometres from the smoothed coastline. Wind Region C was the area between 50 kilometres and 100 kilometres from the smoothed coastline and Wind Region A was the area greater than 100 kilometres from the smoothed coastline.

For all relevant purposes, AS 4055 1992 was to the same effect as the 1989 standard.

However, the subsequently issued AS 1170.2.2002 divided the area of the Pilbara surrounding Port Hedland into four wind regions designated A, B, C and D. Wind Regions C and D carried the same delineations. A new Wind Region B was delineated as the area between 100 kilometres and 150 kilometres from the smoothed coastline. Consequently, Wind Region A's delineation was altered and it became the area greater than 150 kilometres from the smoothed coastline.

Buildings within Wind Region D, being adjacent to the coast, would need to accommodate the greatest wind loads, being within a severe cyclonic wind region. Buildings within Wind Region A would need to have to

[8] Exhibit 4.4.42

accommodate the least of the predictable wind loads, being within a non-cyclonic wind region.

The loading standards are developed by a group of experts utilising current knowledge, statistical data and mathematical formulae, and are approved by a committee that comments on whether a proposed standard, or amendment to a standard, is workable in real life.[9]

At the inquest, independent expert building surveyor Ms de Santis explained that where a building surveyor became aware of a subsequently issued Australian Standard, a structural engineer may be consulted for advice on which standard ought to be applied. There was some discretion as to which of the applicable standards was to be utilised by a surveyor or a builder.[10]

By reference to both the 1989 Australian Standard and the subsequently issued 2002 Australian Standard, Rail Camp 1 fell within cyclonic Wind Region C, so to that extent, the difference between the standards is immaterial.

However, for areas greater than 100 kilometres from the smoothed coastline, the 1989 Australian Standard specified non-cyclonic Wind Region A, whilst the 2002 Australian Standard specified non-cyclonic (intermediate) Wind Region B, with areas beyond 150 kilometres falling within non-cyclonic (normal) Wind Region A.

[9] Exhibit 4.3.16
[10] T 934 – T 936

Relevantly, if a building were approximately 100 kilometres from the smoothed coastline, a person using the 1989 Australian Standard would need to need to determine whether it fell within cyclonic Wind Region C (up to 100 kilometres) or non-cyclonic Wind Region A (greater than 100 kilometres). The same person using the 2002 Australian Standard would need to determine whether it fell within cyclonic Wind Region C or non-cyclonic (intermediate) Wind Region B.

The wind regions were identified by reference to distance from the smoothed coastline. This is an idealised coastline with small irregularities removed. Wind Region measurements are taken from the nearest smoothed coastline.

Rail Camp 1 was located approximately 90 kilometres from the smoothed coastline. It therefore clearly fell within Wind Region C, a cyclonic area (being the area between 50 and 100 kilometres from the smoothed coast line).

Under AS 1170.2.1989 Wind Regions A and C were contiguous. A person using this 1989 Australian Standard would find that Rail Camp 1 was located in Wind Region C, and close to Wind Region A.[11]

However, under AS 1170.2.2002, being the 2002 Australian Standard, a person would find that Rail Camp

[11] About 10 kilometres distance from Wind Region A

1 was located in Wind Region C but not at all close to Wind Region A.[12]

By error, Rail Camp 1 was constructed within cyclonic Wind Region C but having regard to the building standards for Wind Region A, a non-cyclonic area. Had it been constructed having regard to Wind Region C standards, there would have been extra load requirements incorporated into the design criteria.

One of the issues at the inquest concerned how it was that dongas situated in the Wind Region C area were incorrectly built by reference to Wind Region A standards.

Tragically, this error that was not identified until after the devastation caused by Tropical Cyclone George.

THE EARLY NEGOTIATIONS FOR THE CONSTRUCTION OF RAIL CAMP 1

FMG/TPI needed to secure the services of a builder in order to construct Rail Camp 1 on its mining tenement. FMG/TPI had no expertise in building.

FMG's negotiations were initially undertaken through a project manager acting on its behalf, and by the employment of a tender process. The intention had been that the successful tenderer would construct Rail Camp 1

[12] About 60 kilometres distance from Wind Region A

(and the other camps) with the project manager overseeing that phase and delivering the project within the anticipated time frames. When the tender process failed to generate a suitable outcome, the project manager withdrew from the construction phase and FMG/TPI entered into direct negotiations with a builder for the construction of two of the temporary accommodation camps known as Rail Camp 1 and Rail Camp 2.

Mr Raiko Valentin, a witness at the inquest, was a qualified chartered accountant who, on behalf of FMG/ TPI, negotiated the contracts for the installation of the four temporary accommodation camps in the railway corridor between Port Hedland and Cloudbreak Mine. He was assisted by Mr Giovanni Macchiusi, also a witness at the inquest. Mr Macchiusi was a project manager with experience in construction projects.

The initial error regarding the designation for Rail Camp 1's wind region appeared at an early stage, when the project manager drafted the tender documentation in order for FMG to secure the services of a builder.

The Request for Tender

On 17 March 2006 FMG entered into the final iteration of a Memorandum of Understanding (the MOU) with

Spotless Services Australia Limited (Spotless).[13] Under the MOU Spotless was to provide the design, finance, manufacture, transportation, installation and commissioning of the four proposed camps. Spotless was to also operate and manage the camps.

Essentially, under the MOU Spotless was to project manage the delivery of the temporary accommodation camps.

The four temporary accommodation camps were to be located at suitable sites to be identified by FMG/TPI. The sites were to be at Port Hedland, Cloudbreak Mine site, and a further two camps along the rail corridor between those points (one of which became Rail Camp 1).

At the inquest Mr Valentin explained that the intention was for there to be approximately 100 kilometre equidistant locations for Rail Camps 1 and 2, so that contractors would not have to travel more than 50 kilometres to any point on the rail construction site.[14]

Spotless engaged Mr Robert Guthrie, a registered builder who operated his own business.[15] Mr Guthrie was a witness at the inquest. He had experience in the design and installation of buildings including camp accommodation in cyclonic locations. He described his

[13] Exhibit 4.1.15, the first version of the MOU was dated 18 November 2005 and had been varied by exchange of correspondence after this date.
[14] T328
[15] Guthrie Constructors & Consulting.

role as being the project manager for the FMG infrastructure project.[16]

Mr Guthrie was tasked by Spotless to prepare the Request for Tender (RFT) in order to identify a suitable builder. The RFT was issued in January or February 2006[17] and closed approximately one month later.

Mr Guthrie drafted Part D of the RFT, which was entitled "*Contract specification for the supply and installation of construction camp facilities*".

Clause 2.0 at Part D of the RFT provided for the scope of works to include the following:

> *"the design, fabrication, manufacture, supply, installation and provision of services for each camp…."*

Clause 2.3 at Part D of the RFT provided that:

> *"The detailed design shall conform with the law, the Specification, By-Laws and Requirements and relevant Australian Standards including the Building Code Of Australia;*

Clause 2.8 at Part D of the RFT provided that:

> *"The Works shall be performed in accordance with the Design Specification, the Standard Specifications referenced hereto and the drawings listed in the Appendices and all agreed amendments and revisions hereto."*

Clause 3.2.1 at Part D provided:

> *"The buildings shall comply with all Australian Standards and Codes and satisfy the requirements of*

[16] T1039 to 1041
[17] T 1040 - T1046 and Exhibit 4.1.18; it was issued between 30 January and 16 February 2006

all Statutory Authorities including….Building Code of Australia (compliance to BCA class 1B building)….AS 1170 Structural Actions….Shire of East Pilbara"

At the material time Mr Guthrie knew that the Building Code of Australia provided for various wind regions, depending upon the distance from the coast. His knowledge of wind regions was consistent with AS 1170.2.1989.[18] I am satisfied that Mr Guthrie was aware that, if a wind region was cyclonic, there were implications for a building's structural design requirements.

Clause 4.3.5 at Part D, drafted by Mr Guthrie, specified the *"Design Wind Loads"* as follows:

> *"All buildings shall be designed, constructed and installed for wind loads in accordance with the Building Code of Australia and the relevant Australian Standards. The Port accommodation facility location is within* ***Region D – TC2*** *and all other locations are Region* ***A – TC2****, design wind speeds shall be in accordance with Australian Standards.*
>
> *Adequately designed tie-downs shall be provided to all buildings at the accommodation facility.*
>
> *The contractor shall advise the building designed wind loadings for any used buildings proposed to be supplied."*

References in Clause 4.3.5 of Part D of the RFT to "*region A – TC2*" and "*region D – TC2*", were to Wind Regions A and D under the applicable Australian Standards.

[18] T1042 - 1043

Mr Guthrie believed that was AS 1170.2.1989.[19] The effect of this clause was to indicate that the Port Hedland camp was in Wind Region D (which was correct) and that all the other camps were in Wind Region A (which was incorrect as far as Rail Camp 1 was concerned, but correct with respect to Rail Camp 2 and the Cloudbreak Mine camp).

The RFT had been prepared for the purpose of generating tenders for the project. It was never intended to be the specification for the project. Rail Camp 1's location had not yet been finalised at the time the RFT was drafted and was described as being "*Approx 100km ex Port Hedland*".[20] In light of that, I am satisfied that it was an error to positively ascribe Wind Region A to Rail Camp 1's location in clause 4.3.5 of Part D of the RFT.

That error is compounded when account is taken of the fact that the RFT bore an issue date of 1 December 2005 on its cover page, but it was not actually issued until January or February 2006. By the latter dates, Mr Guthrie was in possession of information of a more definite nature that would have enabled him to positively ascribe Wind Region C to Rail Camp 1's location. This is reflected in a number of documents that had been sent to Mr Guthrie.

[19] AS 1170.2.1989 was among the applicable Australian Standards; TC2 means Terrain Category 2 and is not relevant to the issues in the inquest.
[20] Exhibit 4.1.18, RFT Part D clause 1.2.1

First, an email from a Spotless employee that, on its face, had been copied to Mr Guthrie on 8 December 2005 referring to the proposed location for Rail Camp 1.[21]

Secondly, an email from Mr Valentin that, on its face, had been copied to Mr Guthrie on 23 December 2005[22] (and described in more detail below). This email gave particularly clear information about Rail Camp 1's location, and included the provision of coordinates. At the inquest Mr Guthrie denied having read the email but conceded that had he done so, "*it would have rung alarm bells.*"[23]

Thirdly, an email from Mr Valentin that, on its face, had been copied to Mr Guthrie (and others) on 9 January 2006 attaching details of the final camp sites with GPS coordinates.[24]

Fourthly, when Mr Guthrie, on behalf of Spotless, made application to the Shire of East Pilbara for development approval on 17 January 2006 (described in more detail below) the coordinates for Rail Camp 1 were provided with the application.[25] The coordinates (handwritten onto the application form) were the same as those referred to in Mr Valentin's email dated 23 December 2005. At the inquest Mr Guthrie's evidence was that he did not think

[21] Exhibit 1.1.12; the coordinates were given as 678,577mE and 7,664,483mN.
[22] Exhibit 1.1.12
[23] T 1057
[24] Exhibit 4.1.11;
[25] Exhibit 4.1.15

the handwriting on the application form was his own.[26] Mr Valentin's evidence was that it was not his own.[27] I take into account that it was Mr Guthrie's application and I am satisfied that the handwriting was his or that it was written at his instruction or with his knowledge.

Accordingly, whilst as at 1 December 2005, when the RFT was drafted, the proposed location was described in approximate terms, by the time the RFT was issued some two months later, Mr Guthrie was in possession of information from which he could have determined that Rail Camp 1 was in Wind Region C (and thereby would have understood that his reference to Wind Region A in that RFT was in error).[28]

This would have necessitated corrections being made to the RFT before it was issued to address the error regarding the wind region, and the consequential error regarding the footings for the dongas at Rail Camp 1. Had the error been identified, it would have become obvious at an early stage that the footings for the dongas at Rail Camp 1 needed to be anchored for cyclonic hold down, and that the RFT, as issued, did not reflect this.[29]

However, I take into account that the RFT contained a disclaimer on page 2 consistent with it being a document

[26] T1058 - 1059
[27] T330
[28] T1059; one of Mr Guthrie's options was to allocate the task to land surveying company, Gerloff, which he knew had been engaged by Spotless.
[29] T1060 – 1061 and Exhibit 4.1.18, subclause 4.6.2. This subclause only required footings anchored for cyclonic hold down at Port Hedland.

that gave tenderers "*background information on the Project*". It disclaimed any warranties or representations on the part of Spotless and/or FMG as to the completeness or accuracy of any information contained in it. Each tenderer was required to confirm in writing that it had not relied on the information provided. There were further provisions in the RFT consistent with that disclaimer.[30]

A clear effect of the disclaimer in the RFT was to alert the tenderers to their own responsibility for determining the correct wind region for Rail Camp 1. Tenderers were not to assume that the reference to Wind Region A in clause 4.3.5 was correct. Nor were they to assume that the information concerning the footings was correct.

Due to the disclaimer, counsel assisting submits to me that no adverse finding ought be made against Mr Guthrie in respect of his incorrect reference to Wind Region A in the RFT.

I am satisfied that by January or February 2006 Mr Guthrie possessed the information from which he could have ascertained his error. However the purpose of the RFT was to source a tenderer that was in turn responsible for submitting an accurate tender. The tenderer was to undertake its own inquiries without relying on information within that RFT.

[30] Exhibit 4.1.18, clauses 5 and 6; at clause 25.0 the tenderer was required to make certain warranties about the accuracy of the tender.

In the circumstances, I accept counsel assisting's submission and have no adverse comment against Mr Guthrie in respect of the error in the RFT at the time it was issued as part of the tender process. After that tender process was completed (by approximately March 2006), Mr Guthrie had no further role in connection with the RFT.

The significance of the RFT is that, despite the disclaimer, the wind region error that it contained was replicated in the subsequent arrangements for Rail Camp 1's construction.

The origin of the error was in the RFT.

While the tender process was under way, steps were taken to secure development approval for Rail Camp 1 from the local authority.

THE GRANT BY THE SHIRE OF EAST PILBARA OF DEVELOPMENT APPROVAL FOR RAIL CAMP 1

Rail Camp 1 was going to be located within the Shire of East Pilbara's boundaries and this necessitated development approval.

Spotless, under the cover of letter signed by Mr Guthrie dated 17 January 2006, made application to the Shire of East Pilbara for approval to commence development for Rail

Camp 1, on behalf of FMG.[31] Spotless submitted the application form and Mr Valentin signed it on 30 January 2006 on behalf of FMG. The application described the proposed development as a *"transient workforce accommodation village"* with the approximate cost being $10,000,000. Also included in this application were the coordinates of the proposed development's location, described as 678577mE and 7664483mN.

The application was submitted to Mr Chad Harvey, principal building surveyor for the Shire of East Pilbara at the material time, and he reviewed it. Mr Harvey was a witness at the inquest. The ordinary council meeting minutes of the Shire of East Pilbara dated 3 February 2006 disclose that the Council resolved to give planning/development approval for Rail Camp 1, subject to the condition that all building works were to comply with legislative requirements, and the minutes also disclose that it was Mr Harvey who had recommended it for Council approval.[32]

Mr Harvey's recommendation to the Shire of East Pilbara discloses that he must have had particular information about the approximate location of Rail Camp 1 by that stage because he refers to it in his recommendation as being *"Approx 15km north east of Wodgina"*.[33]

I am satisfied that Mr Harvey sourced this information about the location from an email that had previously been

[31] Exhibit 4.1.15
[32] Exhibit 4.1.15
[33] Exhibit 4.1.15, draft report and council minutes.

sent to him (and copied to Mr Guthrie) by Mr Valentin on 23 December 2005 (described in more detail below).[34]

By that email, Mr Valentin also foreshadowed to Mr Harvey that a formal application for development approval would be made in January 2006, and this is in fact what happened.

Spotless was informed of the Shire of East Pilbara's planning/development approval for Rail Camp 1 by letter dated 17 February 2006.[35] At this stage, there was no reference to wind regions. The purpose of the application process for development approval was for the Shire of East Pilbara to review the proposed usage of the land in order to confirm that the usage complied with the requirements of the applicable town planning scheme at the material time.[36]

At the inquest Mr Valentin was cross-examined in connection with the statement, in his email dated 23 December 2005, that FMG was "*anxious*" to ensure that planning approvals for the three proposed temporary accommodation camps be considered at the Shire of East Pilbara's Council meeting that was scheduled for 3 February 2006. The camps he referred to in that email were Rail Camp 1, Rail Camp 2 and the Cloudbreak camp. Specifically with respect to the Coudbreak camp, which was close to the Ashburton Shire boundary, Mr Valentin also

[34] Exhibit 1.1.12
[35] Exhibit 4.1.15
[36] Exhibit 4.1.23; Town Planning Scheme number 4 issued in November 2005.

said that FMG was "*anxious to keep within the East Pilbara Shire, as per our Rail Camps*".[37] I am satisfied that there is nothing untoward reflected by Mr Valentin's use of the word "*anxious*" in that email and I accept his evidence that it related, logically, to the convenience of only having to deal with one local government authority.[38]

NT LINK ENTERS INTO NEGOTIATIONS FOR THE CONSTRUCTION OF RAIL CAMP 1

After the Shire of East Pilbara's grant of the development approval (notified to Spotless by letter dated 17 February 2006) there was a breakdown in the negotiations for procurement and installation of Rail Camp 1, for reasons that do not impact upon my findings.

First, the tender process initiated by the RFT failed to generate a suitable tenderer.

Each of the four entities that received the RFT tendered for the project. The closing date was late February or early March 2006. None of the tenders were acceptable to FMG because the prices submitted were substantially higher than anticipated. Spotless was not able to settle an agreed lower price with any of the tenderers.

[37] Exhibit 1.1.12
[38] T 358 – T 361

After that, a business known as NT Link was drawn to FMG's attention as a possible builder for the project. NT Link traded primarily from Alice Springs in the Northern Territory. Mr Anthony Smith operated NT Link's building business through a private company. Mr Smith was a witness at the inquest. References to conduct on the part of NT Link in this finding include Mr Smith as the business owner and/or operator.

Mr Smith had substantial experience in the construction and installation of transportable buildings, including in cyclone prone areas, through his operation of NT Link's building business.

Some negotiations took place between April and July of 2006 involving, at various points, Mr Valentin on behalf of FMG, representatives of Spotless and Mr Smith.

Over the course of the negotiations three proposals were submitted by NT Link for the supply and installation of Rail Camp 1 and Rail Camp 2. Given the anticipated timeframes, NT Link did not make any proposal in respect of the supply and/or installation of the temporary accommodation camps to be built at Port Hedland and Cloudbreak Mine.

NT Link made an initial proposal by letter dated 21 April 2006[39] (the first NT Link proposal), a revised proposal by

[39] Exhibit 4.1.26

letter dated 18 May 2006[40] (the second NT Link proposal) and the final one by letter dated 2 June 2006[41] (the third NT Link proposal).

To assist him in drafting his proposals, Mr Smith was provided with a copy of the RFT, as background information by Spotless. It was not provided to Mr Smith as part of a tender process because that had been completed.[42] NT Link neither received nor responded to the RFT during the tender period.

However, for the purposes of his negotiations for the installation of Rail Camp 1, Mr Smith was now in possession of a document, the RFT, that cited the incorrect wind region for Rail Camp 1, that disclaimed the accuracy of its information and also, was of no further legal effect given the close of the tender process.

In the first NT Link proposal, addressed to Spotless, Mr Smith stated that NT Link's pricing assumed that all installations would be "*carried out by qualified tradespersons and subcontractors to all Australian Standards*". Under the heading "*Tie downs*" the attached scope of works stated:

> *"We have allowed for engineered tie downs, Region A-TC2 for all units – complexes over 3 buildings will only have tie downs to the exterior of the units."*

[40] Exhibit 4.1.28
[41] Exhibit 4.1.34
[42] T91 - 92

NT Link's description for Wind Region A used the same wording that appeared in the RFT, namely "*Region A - TC2*".

Accordingly, in the first NT Link proposal, NT Link was allowing for tie-downs to a Wind Region A standard, and allowing for them to be "*engineered*". A Darwin based firm of engineers was nominated amongst the list of subcontractors in respect of "*Tie-downs, Footings, Veranda, Design engineering*".[43] The first NT Link proposal was addressed to Spotless and made available to FMG.

The first NT Link proposal did not result in an agreement. Consequently, the second NT Link proposal was made. Mr Smith again stated that all installations would comply with all Australia Standards. The second NT Link proposal stated that camp design had been carried out by Spotless and that NT Link assumed "*that their design meets all regulations*". The clause concerning the engineered tie-downs was in the same terms as in the first NT Link proposal. Wind Region A was specified as applicable, using the same wording that appeared in the RFT.[44] The proposal for engineering certification was in the following terms:

> "*Our submission will include drawings of as builds, inspections of footings, tie downs and veranda's, engineered certification for the construction of the units, OH&S, Environmental plans along with full site records, photographs and documentation for works on site".*

[43] Exhibit 4.1.26, page 10; the engineers referred to were Townes Chappel Mudgway.
[44] Region A - TC2

The second NT Link proposal was also addressed to Spotless and made available to FMG. It did not result in an agreement either.

At a certain point during this period the negotiations between the three entities[45] for the construction of Rail Camp 1 and Rail Camp 2 broke down. As a result Mr Valentin on behalf of FMG/TPI entered into direct negotiations with NT Link for the procurement and installation of Rail Camp 1 and Rail Camp 2, and Spotless withdrew its commitment to procure and install the temporary accommodation.[46] It was at this point that Spotless' responsibility for the design process for the dongas at Rail Camp 1 ceased.

As a consequence of Spotless' withdrawal from that part of the project, the third NT Link proposal was submitted directly to FMG, for the attention of Mr Valentin. It was contained in attachments to the covering letter. In the second attachment entitled "*Design and Scope of Works*" the provision concerning the engineered tie-downs was in the same terms as in the first and second NT Link proposal. Wind Region A was again specified as applicable, using the same wording that appeared in the RFT.[47] In terms of the number or tie-downs for each building it was stated that "*[a]ll buildings will be tied down using 4 x concreted bored*

[45] FMG/TPI, Spotless and NT Link
[46] T95, T284 – 285, T1102
[47] Region A – TC2

piers with steel rod or chain welded to the chassis. (Large complex units will only be tied down at their perimeter)."

At the inquest Mr Smith conceded that he had represented that NT Link would be providing "*some engineering services*".[48]

I am satisfied that NT link, through its three proposals, had made it clear that it would consult engineers in connection with the tie-downs and/or footings for the dongas at Rail Camp 1.

On the basis of what was known at that time, it was an error on Mr Smith's part to positively attribute Wind Region A to Rail Camp 1 in the three NT Link proposals.

Given the close of the tender process, the cessation of Spotless' role, the fact that the RFT was provided to Mr Smith as background material and the fact that it contained an express disclaimer about the accuracy of its data and information, I am satisfied that no comfort can be drawn from the reference to Wind Region A in the RFT for those who subsequently became responsible for constructing Rail Camp 1.

[48] T247

THE INSTALLATION CONTRACT FOR RAIL CAMP 1

The negotiations between FMG/TPI and NT Link culminated in the signing of the Installation Contract for Rail Camp 1 on 31 July 2006 by Mr Valentin on behalf of TPI and Mr Smith as managing director of Spunbrood, trading as NT Link.[49]

Before the signing of the Installation Contract, NT Link had already made application for and been granted the building licence for Rail Camp 1 and Rail Camp 2 by the Shire of East Pilbara (discussed in further detail below).[50]

The purpose of the Installation Contract was for the parties to enter into an agreement for NT Link to carry out the procurement, transport, installation and removal of Rail Camp 1, "*a 280 man village*" including ancillary buildings and associated infrastructure. NT Link remained the owner of the buildings, including the dongas.[51]

The contract price to be paid by TPI to NT Link for the construction of Rail Camp 1 was $7,770,000. Progress payments were provided for. A site details plan attached to the Installation Contract bore the site coordinates for Rail Camp 1. Those coordinates placed Rail Camp 1 in cyclonic Wind Region C.

[49] Exhibit 2.2.4, Contract for Installation of Rail Village 1
[50] Exhibit 4.1.15, application made on 13 July 2006 and granted on 20 July 2006
[51] T249

Under clause 1.1 of the general conditions of the Installation Contract, NT Link agreed to carry out and complete the works with due diligence and in a good and workmanlike manner consistent with the nature and character of the works.

In the Installation Contract, under the heading *"Special Conditions of Contract"* condition 10 read:

> *"The Contractor will be responsible for procuring local Shire Building License Approvals on or before 7 August 2006."*

Clause 1.1 and special condition 10 reflected the responsibility of the builder, NT Link, to submit building licence application papers that accorded with legal requirements, and to build structures that accorded with the nature and character of the works.[52]

Attachment A of the Installation Contract was headed *"Design and Scope of Works"*. Under the sub-heading "*Installation of Buildings*", consistent with the earlier NT Link proposals was a provision to the effect that each donga would be tied down by using four concreted bored piers with steel rod or chain welded to the chassis. Further that NT Link had allowed for engineered tie-downs, Region A - TC2 for all units.

[52] Exhibit 2.2.4, clause 1.1

Again Wind Region A was specified as applicable, using the same wording as in the RFT. Again, that was incorrect. NT Link should have allowed for Wind Region C.

At the inquest, Mr Smith accepted that the RFT stated that Rail Camp 1 was "*approximately 100 kilometres*" from Port Hedland (and not from the smoothed coastline).[53] The RFT did not provide the final location for Rail Camp 1, nor did it form part of the Installation Contract.

NT Link installed the dongas by reference to the incorrect wind region

Counsel for NT Link submits to me that NT Link "*allowed*" for Region A – TC2 tie-downs because that is what FMG/TPI specified.

Mr Smith's evidence was that he asked for assurances that Rail Camp 1 was located in Wind Region A and Mr Valentin assured him that it was 100 kilometres inland (or approximately 100 kilometres inland) and assured him that it had intentionally been put in the Wind Region A area.[54] This is inconsistent with Mr Valentin's evidence, which was to the effect that he did not reassure Mr Smith that Rail Camp 1 was in Wind Region A.

Mr Valentin's evidence was that he "*always said*" to Mr Smith "*that it was approximately 100 kms from Port*

[53] T110

[54] T111; Mr Smith was unable to recall the detail of whether Mr Valentin said Rail Camp 1 was 100km inland or approximately 100km inland.

Hedland. Further, that he did not know that the wind regions changed at 100 kilometres from a smoothed coastline until after Tropical Cyclone George.[55]

Mr Smith's evidence was also to the effect that he measured the distance between the location of Rail Camp 1 (as it was then known) and the smoothed coastline (as he assumed that point to be) and "*got to around 100 kilometres inland*" and that satisfied him that he was within the right region. Mr Smith had formed the view that the positioning was "*close enough to 100 kilometres*" to satisfy himself that the information he had been given about Wind Region A was correct.[56]

Mr Smith also accepted that in 2006 he took a map and arrived at a result of between 97 and 105 kilometres. He accepted that he did not specify any particular measurement to Mr Valentin, he had no discussion with Mr Guthrie about measurement for Rail Camp 1 and he told Mr Harvey from the Shire of East Pilbara that the distance was approximately 100 kilometres. Mr Smith did not take any further measurements once the final location for Rail Camp 1 was identified.[57]

I am satisfied that the fact that he arrived at a distance of approximately 100 kilometres ought to have put Mr Smith on notice that careful consideration of the location of Rail Camp 1 was warranted. If the distance was less than 100

[55] T 334; T342; T 435
[56] T113 - 115
[57] T119; T 226 – T 233

kilometres it came within Wind Region C and there would be a substantial impact upon the design criteria, which was his area of responsibility.

Regrettably, while Mr Smith himself knew that the location was "*on the edge*"[58] of what he believed to be Wind Region A and that it was "*too close to call*"[59] it did not at the material time generate a proper inquiry on his part as to precisely how far Rail Camp 1 was from the smoothed coast line.

Mr Smith had not been told that any other entity had undertaken that precise measurement either, but he assumed FMG had done that.[60]

Mr Smith ought to have instructed a surveyor or a similarly competent person to make that measurement. He could have called for copies of surveyor's measurements if he believed that had already been done by another entity. Mr Smith had Rail Camp 1's coordinates from at least early July 2006, and they appeared in the Installation Contract that he signed.[61] In his evidence Mr Smith accepted that with the benefit of hindsight, he ought to have obtained a surveyor to undertake a more precise measurement.[62]

At the inquest, Mr Smith initially denied that NT Link had a contractual obligation to ensure the dongas were installed pursuant to the correct wind region specification, but he did

[58] T129
[59] T134
[60] T128 and T218
[61] T242
[62] T 128

concede that as the installer of the dongas, he had that duty.[63] Later in his evidence Mr Smith conceded that NT Link was contractually obliged to ensure that it was the correct wind region.[64]

The question before me is not one of contractual interpretation. My inquiry concerns how the dongas came to be built in the wrong wind region. In his evidence Mr Smith to his credit, conceded that as the installer, NT Link did have the duty to ascertain the correct wind region.

Mr Smith through his counsel submits to me that NT Link's duty as installer was discharged by Mr Smith seeking reassurance about the distance from Mr Valentin of FMG.

As the builder, in possession of the coordinates, having been granted the Building Licence, having regard to the structural design standards in the Building Code of Australia and having made his own measurement showing that Rail Camp 1 was on the edge, Mr Smith had no basis for treating any comment or reassurance that he believed had been made or given to him by Mr Valentin as being determinative of that question.

I take into account Mr Valentin's provision of accurate information to the Shire of East Pilbara by his email dated 23 December 2005,[65] which by stipulation of coordinates, distance from Port Hedland and distance from Wodgina,

[63] T108 - T109
[64] T138
[65] Exhibit 1.1.12

placed Rail Camp 1 clearly within an area designated as Wind Region C. I accept Mr Valentin's evidence that he did not assure Mr Smith that Rail Camp 1 was going to be located 100 kilometres or beyond from the coastline.[66]

At the inquest Mr Smith's evidence was to the effect that he also placed less importance on finding out exactly whether Rail Camp 1 fell within Region A or C because he believed that in the event of a cyclone, Rail Camp 1 would be evacuated. Mr Smith agreed that, on the basis of this belief, he therefore took a risk that it may well have been within Wind Region C.[67]

Mr Smith's evidence was that it was Mr Valentin who told him that Rail Camp 1 would be evacuated in the event of a cyclone. Mr Valentin denied that.[68]

The question of whether or not Rail Camp 1 would be evacuated in the event of a cyclone can have no bearing on NT Link's obligations to install the dongas to the correct standard. The reason why the Australian Standards impose design criteria for buildings in cyclonic regions is in obvious recognition of the fact that an occupant might need to shelter in it during a cyclone. To suggest that a lower standard of care be applied to ascertaining the applicable wind region because other people, in the event of a future cyclonic event, would evacuate the camp reflects a

[66] T 332, 342, 435
[67] T137 and T237
[68] T438

disturbing disregard for the safety of the intended occupants.

Mr Smith did not make a proper inquiry to determine the correct wind region for Rail Camp 1 and as a consequence he made an error. On the evidence before me it was his role to ascertain the correct wind region. I am satisfied that Mr Smith did not ensure that the dongas installed by NT Link at Rail Camp 1 complied with the Wind Region category applicable to the location of the camp.

NT Link did not consult engineers in respect of the tie-downs for the dongas

In all three of its proposals, and in the Installation Contract NT Link stated that the tie-downs for the buildings would be designed or approved by an engineer.[69] However, NT Link did not obtain engineering advice and/or approval in relation to the tie-downs for the dongas installed at Rail Camp 1. The tie-down design process was undertaken in a less than acceptable fashion.

On 13 July 2006 by email Mr Smith sent his own hand-drawn design for the tie-downs for the dongas to Mr Guthrie.[70] His instructions to Mr Guthrie were as follows: "*Here is the drawing of the buildings and verandas for FMG. Could you please tidy up?*"

[69] Exhibits 2.2.4, 4.1.26, 4.1.28, 4.1.34
[70] Exhibit 4.4.28

Mr Smith's hand drawn sketch diagram of the tie-down design appeared on the attachment to the email. Mr Smith knew that Mr Guthrie was a builder, but not an engineer.[71]

Mr Guthrie was working for Spotless at the time, but when he worked on Mr Smith's drawing he did not do so on behalf of Spotless. Mr Guthrie understood that the drawing was to be utilised for the dongas at Rail Camp 1 and Rail Camp 2 and he believed that Wind Region A was applicable because the camps were "*over 100k*".[72]

The next day Mr Guthrie sent back a drawing to Mr Smith for the purpose of that drawing being utilised for the installation of the dongas at Rail Camp 1 and Rail Camp 2 (the Guthrie Tie-down Drawing).[73] The Guthrie Tie-Down Drawing reflected that it was prepared by Guthrie Constructors and Consulting on 14 July 2006.

At the inquest Mr Smith conceded that, pursuant to the Installation Contract, NT Link was required to source and utilise either engineer designed tie-downs or engineer approved tie-downs. Further, he acknowledged that the reason for this was so that they met requirements and he agreed that there is a safety aspect to it. Mr Smith's evidence was that he did not comply with this obligation due to time pressures that he was under. He rang two engineering firms and both said they were too busy to look

[71] T 291
[72] T 1067 – T 1069
[73] T 181, T 1067 and Exhibit 4.2.13.1

at the project. Mr Smith did not go back and tell anyone that he could not find an engineer.[74]

Mr Smith conceded that his time pressures did not constitute an adequate explanation for failing to source and utilise a tie-down drawing that was approved by an engineer.[75]

Mr Smith also conceded that he did not believe an appropriately qualified engineer would have approved the Guthrie Tie-down Drawing for Wind Region A in any event due to the diameter of the auger hole being specified as 150 millimetres (though he believed that NT Link actually used a 250 or 300 millimetre auger for the installation).[76]

In respect of the installation of each donga at Rail Camp 1, Mr Smith provided for four tie-downs at each lifting point (normally located three to five metres in, depending on the length of the building). This was consistent with what was specified on the Guthrie Tie-Down drawing as "*4 locations per building*".[77]

Mr Smith's evidence was that one of the engineers that he had previously contacted from Townes Chappell Mudgway Pty Ltd (TCM), who was unable to take on the work, had suggested to him that he utilise the "*generic region A engineering drawing*" that he had in his possession (the

[74] T 188
[75] T 186
[76] T 184 to T 187
[77] T 185 and Exhibit 4.2.13.1

TCM Drawing).[78] However, on the basis of a dry footing plan on the TCM Drawing, the number of tie-downs required for each donga would have been eight or ten and certainly more than the four that were ultimately utilised by NT Link in the installation.

A Preliminary Report[79] prepared in August 2007 by Peter C. Bruechle Pty Ltd, Consulting Engineer discloses the following, in connection with the postulation that the TCM Drawing showed four tie-downs per side of each building (a total of eight) whereas NT Link placed only two per side of each donga (a total of four):

> "*Even if there had been four vertical tie-downs as called for by TCM it is certain that failures would still have occurred for two reasons. The first is that the wind speeds experienced far exceeded Region A winds and the design would certainly not have catered for such high winds even with 4 tie downs. The second is that the tie down details documented by TCM and used by [NT Link] catered only for overturning, not for horizontal translation".*

Other evidence before me is to the effect that the TCM Drawing showed ten (and not eight) tie-downs for each building. In her evidence at the inquest, independent expert building surveyor Ms De Santis calculated the number of tie-downs if done by reference to the dry footing plan on the TCM Drawing and she concluded that it would have required ten tie-downs for such a building.[80]

A further review by Mr Townes, director of TCM, also concluded that the dry footing plan on the TCM Drawing

[78] T 187 – T 188, Exhibit 4.4.27
[79] Exhibit 4.3.7
[80] T 963 – T 967 and Exhibit 4.4.39

specified five tie-downs in two rows, a total of ten tie-downs for the building.[81]

It is to be borne in mind that the TCM Drawing was a generic drawing for Wind Region A, and not in any event suitable for Wind Region C (that needs to accommodate greater wind loads). Whether the TCM Drawing showed eight or ten tie-downs, it certainly mandated more than the four tie-downs per donga utilised by NT Link.

At the inquest, Mr Smith's explanation for utilising four tie-downs per donga was that he had done it that way traditionally for most of his career and further, that the diameter and depth that NT Link ended up using was greater than on the drawings he had.[82]

The tie-downs that were utilised to affix the dongas to the ground at Rail Camp 1 were designed by reference to the non-cyclonic Wind Region A. I am satisfied that the Guthrie Tie-Down Drawing was utilised by Mr Smith for the installation of the dongas at Rail Camp 1 to the extent that only four tie-downs were utilised for each donga. Mr Smith knew that Mr Guthrie was not an engineer. The Guthrie Tie-down Drawing was not approved by an engineer.[83]

It is not relevant to explore the degree to which the tie-downs on the dongas at Rail Camp 1 may or may not have complied with non-cyclonic Wind Region A. The relevant

[81] Exhibit 4.4.41
[82] T 196
[83] T 181, T 291

consideration is that the tie-downs ought to have been designed or approved by an engineer, for use in cyclonic Wind Region C.

I am satisfied that the tie-down design used by NT Link in the installation of Rail Camp 1's dongas was inadequate for cyclonic Wind Region C requirements. They were not designed or approved by an engineer. Predictably, they failed.

Mr Smith through his counsel acknowledges that the tie-downs lacked specific certification by an engineer.

Mr Smith through his counsel also submits that a generic certification for a Wind Region A installation would have been acceptable, but that a Wind Region A certification is irrelevant to my findings. This submission is premised upon the argument the NT Link's responsibilities only extended to installing dongas designed for Wind Region A. I do not accept that submission. In any event, the TCM Drawing, if regarded as "generic" required eight or ten tie-downs, so it was clearly not substantially relied upon in the design process for the dongas at Rail Camp 1.

I am satisfied that Mr Smith did not have the tie-downs for the dongas certified by an engineer as required by the contract for the installation of Rail Camp 1.

Mr Guthrie prepared the Guthrie Tie-Down Drawing by reference to the incorrect wind region

Mr Guthrie, a registered builder and qualified carpenter, operating his business, Guthrie Constructors and Consulting, described himself at the inquest as a consultant builder. He had been engaged by Spotless as project manager for the FMG infrastructure project. However, by the time Mr Guthrie did the Guthrie Tie-Down Drawing on 14 July 2006,[84] Spotless had withdrawn its commitment to provide the design for the dongas at Rail Camp 1.[85]

The Guthrie Tie-Down Drawing was done by Mr Guthrie in a personal capacity, through his private consulting business. Mr Guthrie knew that Mr Smith proposed to utilise it for the design process for the tie-downs to the dongas at Rail Camp 1 and Rail Camp 2.[86]

Mr Guthrie had previously worked on projects located in cyclonic regions and at the material time he was aware of the Wind Regions A, C and D in accordance with AS 1170.2.1989, one of the applicable Australian Standards.[87]

At the inquest, Mr Guthrie's evidence was that it did not cross his mind as to why Mr Smith was not getting an engineer to do the drawing for the tie-downs, and in describing his role he said that Mr Smith *"was just using me*

[84] Exhibit 4.2.13.1
[85] The third NT Link proposal dated 2 June 2006 was addressed to FMG, not Spotless.
[86] T 1067
[87] T 1040 - T 1043

as a draftsman to do that small drawing for him and I didn't mind doing it and that drawing would need to be certified." By that he meant certified by a structural engineer because he understood every structural diagram had to be certified.[88]

At the material time, Mr Guthrie believed that the dongas at Rail Camp 1 were going to be located in Wind Region A, but he did not even know whether the Guthrie Tie-Down Drawing was compliant with Wind Region A requirements, and he had not previously done a tie-down specification in that manner.[89]

Mr Guthrie's evidence was to the effect that, had he known the tie-downs were to accord with Wind Region C requirements, he would certainly not have produced the specifications as per the Guthrie Tie-Down Drawing and he agreed that he would have done ones that were far stronger. His evidence was that a tie-down design for Wind Region C "*would have meant an engineer's design*".[90]

When Mr Guthrie prepared and sent the Guthrie Tie-Down Drawing to Mr Smith, he was not new to the project. He had previously prepared the RFT that contained a statement to the effect that Rail Camp 1 was approximately 100 kilometres from Port Hedland, he already knew that a location between 50 to 100 kilometres from the smoothed coastline would have placed the dongas within cyclonic

[88] T 1069 – T 1071
[89] T 1068 – T 1071
[90] T 1070

Wind Region C, he was sent (but stated he did not read) a copy of an email from Mr Valentin dated 23 December 2005 which stated that Rail Camp 1 would be *"located about 15 kms north east of Wodgina and just to east of Grt Northern Highway, approx 90 km from PHE"*, [91] he conceded that had he read this email, it would have rung alarm bells[92] and he possessed the coordinates for Rail Camp 1.[93]

However at the material time, Mr Guthrie still believed Rail Camp 1 was within Wind Region A and he agreed that he did not double check.[94] I am satisfied that prior to the provision of the Guthrie Tie-Down drawing, Mr Guthrie had sufficient knowledge and information before him from which he could, and should, have ascertained that Rail Camp 1 was located within Wind Region C. On that basis, the tie-down drawing would have needed to address the design criteria for Wind Region C and required an engineer's design or approval.

At the inquest Mr Guthrie's evidence was that he told Mr Smith that the Guthrie Tie-Down Drawing needed to be certified by an engineer and he believed that Mr Smith was going to use TCM for that purpose.[95]

That alone does not excuse Mr Guthrie from needing, through his own efforts, to have proper regard to the correct wind region, due to the impact of a cyclonic wind region

[91] Exhibit 1.1.12
[92] T 1057
[93] Exhibit 4.1.11
[94] T 1068
[95] T 1069 – T 1072 and T 1088 – T 1089

upon the design criteria. It was clear that the tie-downs were a critical component in the construction of the dongas and Mr Guthrie prepared the Guthrie Tie-Down Drawing on the understanding that it would be utilised in the process of applying for a building licence and/or constructing the dongas.

Mr Guthrie through his counsel submits to me that Mr Guthrie's conduct in tidying up Mr Smith's sketch did not fall short of what would be expected in the circumstances, that the significance of his task has been overstated and that the Guthrie Tie-Down Drawing was neither lodged with the Shire of East Pilbara nor utilised in any meaningful way after it was provided to NT Link.

I am satisfied that, despite some parts of that design subsequently being altered, the Guthrie Tie-Down Drawing was in fact utilised in part of the design process for the installation, particularly having regard to the number of tie-downs ultimately used for each donga. Further, Mr Guthrie willingly assumed the responsibility, he provided a drawing that on its face appeared to be intended for use in the installation of the dongas at Rail Camp 1 and he conceded that had he read Mr Valentin's email concerning the location of Rail Camp 1, it would have rung alarm bells.

I am satisfied that Mr Guthrie did not have proper regard to the fact that Rail Camp 1 was located in Wind Region C when completing and then providing to NT Link a drawing of

the tie down specifications for the dongas to be installed at Rail Camp 1.

NT LINK'S APPLICATION TO THE SHIRE OF EAST PILBARA FOR THE BUILDING LICENCE

Pursuant to the Installation Contract dated 31 July 2006, as outlined in Attachment A headed Scope of Works, NT Link was required to submit a "builder's application" to the relevant Shire Council before commencing the installation of Rail Camp 1.[96]

In fact, NT Link had progressed this before the signing of the Installation Contract by making application for a building licence as owner builder pursuant to the *Building Regulations* 1989 for Rail Camp 1 and Rail Camp 2 on 13 July 2006.[97] The application described the details of work as "*2 x Rail Camps – Temporary FMG – Rental Buildings*". The estimated value of the construction work was expressed to be $7,700,000 for each temporary accommodation camp, being a total of $15,400,000.

A building licence application fee invoice in the sum of $30,829.50 was made out to NT Link on 26 July 2006 and records disclose it was paid to the Shire of East Pilbara on 28 July 2006.

[96] Exhibit 2.2.4
[97] Exhibit 4.1.15

Accompanying NT Link's building licence application was a letter of introduction on FMG letterhead dated 6 July 2006, which provided as follows, in respect of "*2 x 280 Person Rail Villages*" to accommodate the rail construction workforce over a period of approximately 14 months:

> "*Due to the critical timetable to achieve construction of our Rail Infrastructure and the short time frame provided to NT Link to deliver these Rail Villages, we would appreciate if you could provide Mr Smith and his construction managers and staff, with every assistance.*
>
> *As you are aware, it is not possible for construction work on our rail to commence until suitable accommodation is available, due to the extreme remoteness of location of our proposed rail line in the Pilbara*".

As part of its building licence application, NT Link submitted the plans and designs for Rail Camp 1 and Rail Camp 2. Relevantly, Rail Camp 1's plans and designs were similar to the plans and designs at Attachment D to the Installation Contract. The dongas were described as "*14.4 x 3.3m 4 PERSON STAFF QUARTERS*" and the location was described as "*FORTESCUE RAIL CAMP*" with no further detail as to its position on the face of that document.

The building design criteria on the face of the plan for the dongas specified that the wind loading was to be in accordance with AS 1170.2.2002. The 2002 Australian Standard was among the applicable standards. Reference to this standard would result in Wind Region A being

specified to commence at a distance of 150 kilometres from the smoothed coastline, well beyond Rail Camp 1's location.

The building design criteria on the plan for the dongas also specified that the applicable wind region was "*REGION A, TERRAIN CATEGORY 2*", meaning Wind Region A. This was similar to the wording utilised in the RFT, all of NT Link's three proposals and in the Installation Contract. The original error regarding the applicable wind region that first appeared in the RFT has appeared in this subsequent documentation.

NT Link did not supply the Shire of East Pilbara with the correct drawings

There were errors in a number of the drawings or plans that were submitted by NT Link with its application to the Shire of East Pilbara for a building licence to install Rail Camp 1.[98] At the inquest, Mr Smith agreed that a number of discrepancies were identified in those plans and his evidence was that this had not happened to him previously because he had never submitted that number of plans to any shire prior to this. Mr Smith accepted that the checks that were put in place before he submitted the plans for approval were not very adequate.[99]

[98] Exhibit 4.1.15
[99] T 170

NT Link through its counsel submits to me that the errors identified in the specific drawings are irrelevant because none of those deficiencies were addressed to the plans for the dongas. I accept this submission to the extent that it applies to the errors in the plans and drawings for the buildings other than the dongas, save that the number of discrepancies over all reflects upon the level of oversight and attention to detail by Mr Smith.

Also, there were some errors or omissions directly relevant to Rail Camp 1's dongas.[100] The building design criteria on the face of the plan for the dongas incorrectly referred to Wind Region A as being applicable (insofar as it applied to Rail Camp 1) and Rail Camp 1's general arrangement plan did not bear the coordinates nor a precise location as to where it was to be installed.

This is in contrast to Rail Camp 2's plan which did bear the coordinates. The omission of the coordinates on the plans for Rail Camp 1 in NT Link's building licence application was regrettable.

Mr Smith was in possession of the coordinates for Rail Camp 1 from June 2006 and they also appeared on the enlarged version of the site details plan for Rail Camp 1 in Attachment D to the Installation Contract that he signed on 31 July 2006 (approximately two weeks after he submitted the building licence application). However, Mr Smith did not provide those coordinates nor a precise location for Rail

[100] Exhibit 4.1.15

Camp 1, to the Shire of East Pilbara with the drawings and plans for Rail Camp 1 as part of NT Link's building licence application. Further, the drawings and plans for the dongas were not based upon the design criteria for the cyclonic Wind Region C.

The obligation to provide the Shire of East Pilbara with correct drawings for the grant of the building licence rested with the applicant, NT Link. At the inquest, Mr Smith conceded that obligation.[101]

I am satisfied that Mr Smith did not supply the correct drawings of the dongas to be installed at Rail Camp 1 to the Shire of East Pilbara when applying for a building licence.

NT Link did not supply the Shire of East Pilbara with specifications for tie-downs

Under the *Building Regulations* 1989 that were in force at the material time, every builder making application for a building licence was required to deposit with the building surveyor of the local government two complete sets of drawings (to a scale not less than 1:1000) showing, amongst other things, the depth of the foundations. [102]

[101] T 153

[102] Regulation 11(1)(v) of the *Building Regulations 1989* (in force in 2006).

Accordingly, NT Link was required to provide the specifications for the tie-downs for the dongas for Rail Camp 1 to the Shire of East Pilbara as part of the application for the building licence. However, they were not provided.

Mr Smith submitted NT Link's building licence application on the same date that he sent Mr Guthrie his hand-drawn tie-down diagram to "*tidy up*", namely 13 July 2006. The tie-downs could not have been too far away from Mr Smith's mind at the time he submitted NT Link's building licence application. He received the Guthrie Tie-Down Drawing the next day, but there was no information as to tie-downs in the documentation that he provided to the Shire of East Pilbara.[103]

At the inquest Mr Smith described this omission as an oversight and an error, but he did not accept that it was a critical error. This was in the context of his intended use of "*generic*" tie-downs for a Wind Region A location, and he agreed he normally submitted these to the local government authority as a matter of course. Mr Smith thought, mistakenly as it transpires, that NT Link had supplied some form of tie-down information to the Shire of East Pilbara. He conceded that without the tie-down plans, the Shire of East Pilbara would not know whether the tie-downs were even adequate for Wind Region A. His explanation was that someone in his office had not submitted the tie-down plans

[103] Exhibits 4.1.15, 4.2.13 and 4.4.28

and he did not check it. He conceded that his checking was inadequate.[104]

NT Link through its counsel acknowledges this failure to supply tie-down specifications and submits that the fact that the installation was specified as non-cyclonic is a relevant consideration and further, that the Shire of East Pilbara also believed the installation was non-cyclonic.

Mr Smith can draw no comfort from the fact that the installation was specified to be non-cyclonic in this context. The non-cyclonic specification was his error in the first place.

It is clear that Mr Smith was required to deposit information concerning the tie-downs with the Shire of East Pilbara. I am satisfied that when applying for the building licence to install Rail Camp 1 Mr Smith did not supply the Shire of East Pilbara with specifications of the tie-downs for the dongas that were to be installed.

THE SHIRE OF EAST PILBARA'S GRANT OF THE BUILDING LICENCE TO NT LINK

Mr Chad Harvey, principal building surveyor at the Shire of East Pilbara at the material time, had obtained his qualifications in New South Wales by 1995. He subsequently moved to Western Australia and in October

[104] T 175 – T 179

2004, he was employed by the Shire of East Pilbara. By that time he had worked for a number of different local governments in New South Wales and Western Australia and he agreed that he had assessed many hundreds of applications for building licences, which included the examination of plans and designs for compliance with the Building Code of Australia.[105]

Shortly after being employed by the Shire of East Pilbara, Mr Harvey became aware of the existence of cyclonic wind regions in the Pilbara. At the time Mr Harvey assessed NT Link's building licence application, he utilised the Australian Standard for the wind regions that he found referenced in the Building Code of Australia.

At the inquest Mr Harvey accepted that if a building was going to be built in the Shire of East Pilbara, approximately 90 kilometres from Port Hedland, it would clearly fall within Wind Region C.[106] He agreed that the approval of a building licence with plans attached to it is more than just a rubber stamping exercise, that it requires a close examination of the plans to ensure all relevant material has been supplied, and a close examination of the building specifications, even if the buildings are merely temporary. Further Mr Harvey accepted that plans and drawings need to be examined

[105] T 639 – T 647 and Exhibit 1.1.27
[106] T 660

closely to ensure that they comply with the Building Code of Australia and applicable Australian Standards.[107]

Whilst Mr Harvey's answers on those points were unsurprising, indeed they were as may be expected, Mr Harvey's evidence about the manner in which he assessed NT Link's building licence application left me with considerable concern about the attention that he paid to the details before he approved it. NT Link's application was dated 13 July 2006 and Mr Harvey approved the Building Licence for the "*mining village*" at Rail Camp 1 on 20 July 2006 (Licence No. 959).[108]

Mr Harvey approved NT Link's building licence application for the incorrect wind region

Of material relevance is the fact that at the time of the licence application, Mr Harvey had information before him from which he, as a building surveyor could, and should have, ascertained that Rail Camp 1 was in cyclonic Wind Region C. Information touching on Rail Camp 1's location was being sent to Mr Harvey some seven months before he approved NT Link's Building Licence.

On 8 December 2005 Mr Harvey had been sent an email from Mr Young (of Spotless) asking him whether the proposed camp site locations for Rail Camp 1 and

[107] T 672 – T 673
[108] Exhibit 4.1.15

Cloudbreak were within the Shire of East Pilbara's boundary and the coordinates for both rail camps were provided. Rail Camp 1's proposed coordinates were expressed to be 678,577mE and 7,664,483mN.[109]

On 23 December 2005 Mr Harvey had been sent an email from Mr Valentin (of FMG) informing him of the current planned size and location of a number of camps. In respect of Rail Camp 1, the email informed Mr Harvey that *"Rail Camp 1 will be located about 15kms North East of Wodgina and just to east of Grt Northern Highway, approx 90 km from PHE. Co ords for this camp are 678,577mE and 7,664,483mN"*[110]

On 9 January 2006 Mr Harvey had been sent an email from Mr Valentin attaching the final proposed sites for a number of the rail camps.[111] On the attached diagram, Rail Camp 1's final proposed site coordinates were shown for all four points on the camp, as follows:

1. 678,619.55mE and 7,665,389.43mN;
2. 679,042mE and 7,664,967mN;
3. 678,617.07mE and 7,664,542.08mN; and
4. 678,194.63mE and 7,664,964.51mN.

On or about 30 January 2006 Mr Harvey had received the application for approval to commence development for Rail Camp 1, showing the coordinates once again as 678,577mE

[109] Exhibit 1.1.12
[110] Exhibit 1.1.12
[111] Exhibit 1.1.12.1

and 7,664,483mN.[112] Mr Harvey's undated draft report to the Shire of East Pilbara Council for consideration at the Ordinary Council Meeting on 3 February 2006 stated that the location of the rail camp was *"Approx 15 km north east of Wodgina."*[113] I am satisfied that Mr Harvey sourced that description from Mr Valentin's email to him dated 23 December 2005. It is self-evident that Mr Harvey read that email.

The variation in the final coordinates as represented in the 9 January 2006 communication is immaterial as Rail Camp 1 always fell within Wind Region C.

However, Mr Harvey approved NT Link's building licence application for Rail Camp 1 for a Wind Region A location.

At the inquest Mr Harvey gave evidence about the method he used at the material time to determine the location for Rail Camp 1. Mr Harvey gave the coordinates for what he believed to be Rail Camp 1 to the Shire of East Pilbara's technical services director, who in turn inputted the coordinates into his computer and then he showed Mr Harvey where Rail Camp 1 would be located, on a map on his computer screen.

Mr Harvey observed the details on the computer screen and then walked over to the large map on the wall of that office and determined what he believed to be Rail Camp 1's location. Mr Harvey did not recall what reference points he

[112] Exhibit 4.1.15
[113] Exhibit 1.1.12.

used to make his determination but recalls that, visually, he positioned Rail Camp 1 below a line between Marble Bar and Millstream. For him, this meant that Rail Camp 1 was within Wind Region A and his evidence was that he did not recall it to be lineball otherwise he would have asked for clarification.[114]

It is clear that at the material time Mr Harvey was utilising a referenced Australian Standard that delineated three wind regions, namely A, C and D.[115] This standard provided for "*REGION C Tropical Cyclones*" at a distance of 50 to 100 kilometres from the smoothed coastline and "*REGION A Normal*" after 100 kilometres. Regions A and C were contiguous.

I am satisfied that Mr Harvey utilised an Australian Standard that was among those that were applicable at the material time. I take into account Mr Harvey's evidence, the evidence from independent expert building surveyor Ms De Santis and the information from the Australian Building Codes Board.[116]

Another applicable Australian Standard, AS 1170.2.2002 provided for four wind regions, namely A, B, C and D. This was the standard referred to on the face of the plans for the dongas. Had Mr Harvey utilised this standard, Marble Bar and Millstream were shown in Wind Region B and this

[114] T 678 - T 682; Mr Harvey did not draw a line between the two locations, instead, he visualised it.
[115] Exhibit 4.1.1 (AS 1170.2.1989) and Exhibit 2.1.13 (AS 4055 – 1992)
[116] T 653 – T 658; T 932 – 939; Exhibit 4.4.18 and Exhibit 4.4.42

might have alerted him to the fact that NT Link's reference to Wind Region A was incorrect and required further clarification. Further, on this standard Wind Region A commenced after 150 kilometres from the smoothed coastline, meaning that Rail Camp 1 could not, on any rudimentary calculation, fall even close to the cusp of Wind Region A.

When Mr Harvey determined the location for Rail Camp 1, he did not recall utilising the information he had previously been sent to the effect that it was approximately 90 kilometres from Port Hedland or that it was 15 kilometres north east of Wodgina, preferring to rely upon the coordinates. At the inquest Mr Harvey agreed that Wodgina was clearly closer to the nearest coastline than Marble Bar.[117] Had Mr Harvey used Wodgina as a landmark, he could not have positioned Rail Camp 1 below the line between Marble Bar and Millstream. Mr Harvey's explanation for the error was as follows:

> *"Obviously when I translated from the computer screen to the wall map I put it in the wrong spot. I've assessed it as region A when it should have been under another wind region".*[118]

Mr Harvey's supervisor at the Shire of East Pilbara at the material time, Bill Crerar, gave evidence at the inquest. Mr Crerar was a building surveyor, but he had not ever assessed a building application in a cyclonic area. He

[117] T 683
[118] T 680

believed Rail Camp 1 was the first such application. Mr Crerar had an understanding of designated wind regions by reference to the Building Code of Australia, referencing the Australian Standard AS 1170.2.1989. Prior to Mr Harvey's employment, Mr Crerar had undertaken the function of building surveyor with the Shire of East Pilbara.[119]

Mr Crerar confirmed that the methodology used by Mr Harvey of converting the coordinates to latitude and longitude on a map was the only one available to them at the Shire of East Pilbara at the material time.[120]

Given that it was not a complex exercise for a building surveyor to determine the correct wind region, counsel assisting submits to me that one plausible explanation for the wind region error is that Mr Harvey confused the coordinates for Rail Camp 1 with those for Rail Camp 2.

Mr Harvey had allocated permit number 959 for Rail Camp 1's licence and permit number 960 for Rail Camp 2's licence.[121]

The plan and diagrams within NT Link's building licence application for Rail Camp 1 and Rail Camp 2 were stamped, signed and dated by Mr Harvey on 27 July 2006 in his capacity as principal building surveyor for the Shire of East Pilbara and they showed the allocated permit numbers. By this process, each plan or diagram was "*approved subject to*

[119] T 892 - T 900
[120] T 900
[121] T672

compliance with the building planning and health statutes of the Shire of East Pilbara".

Regrettably, the general arrangement plan for Rail Camp 1 did not show coordinates and Mr Harvey's approval stamp mistakenly refers to permit number 960 (which was instead the permit number he had allocated for Rail Camp 2).

On the other hand, the plan for Rail Camp 2 did show coordinates and Mr Harvey's approval stamp mistakenly refers to permit number 959 (which was instead the permit number he had allocated for Rail Camp 1).

Given that Rail Camp 2 was squarely within Wind Region A, being approximately 180 kilometres from the nearest coast line, at the inquest Mr Harvey accepted that it was possible that he mistakenly gave the technical services director the coordinates for Rail Camp 2 and he agreed that he cannot exclude that as a possible explanation as to why he had Rail Camp 1 in Wind Region A.

That might explain why Mr Harvey believed that Rail Camp 1 was to be positioned well below an imaginary line between Marble Bar and Millstream. Namely that unbeknown to him, he was mistakenly looking at Rail Camp 2's proposed location, believing it to be that of Rail Camp 1. Another explanation may be that Mr Harvey gave the technical services director the correct coordinates but they were inputted incorrectly into his computer program. Even under

this scenario, it was nonetheless Mr Harvey's role to ensure the accuracy of the process.

Unfortunately, Mr Harvey was unable to recall whether he gave the technical services director a copy of an email, an application, or whether he gave him handwritten coordinates on some paper.[122] Regrettably there was no written record made or kept of this process.

Most of the plans and drawings attached to NT Link's building licence application, and in particular the ones that related to the dongas bore the building design criteria for Wind Region A. The plan entitled "*14.4 x 3.3m 4 PERSON STAFF QUARTERS*", being for the dongas, bore a description that clearly indicated it was designed for Wind Region A conditions, and that the 2002 Australian Standard had been applied, as follows:

> *"BUILDING DESIGN CRITERIA*
>
> *Wind Load – In Accordance with AS1170.2:2002*
>
> *REGION A, TERRAIN CATEGORY 2"*

Mr Harvey's approval stamp with his signature appears next to this description.

At the inquest, Mr Harvey's evidence was that he would ask for clarification of the exact location from a building licence applicant if the location of a building was on the cusp or the

[122] T 686

border of two particular wind regions.[123] However, due to the extent of the error that Mr Harvey made concerning the ascertainment of Rail Camp 1's location, I do not consider it likely that reference to the Australian Standard AS 1170.2.2002 (instead of AS 1170.2.1989) would have altered the outcome.

The Building Licence for Rail Camp 1[124] was granted to NT Link by the Shire of East Pilbara, allocated the permit number 959 and signed by Mr Harvey as principal building surveyor on 20 July 2006. Below Mr Harvey's signature appeared the following words: "*On completion of Building, notify Building Surveyor*". Attached to the Building Licence were the conditions of approval. The first condition read as follows:

> *"The approved plans attached to this form are issued on the understanding that the construction will be carried out in accordance with the Building Code of Australia 2004 and also that this permit is issued subject to compliance with the conditions listed or where elsewhere found to be applicable".*

Mr Harvey did not seek or make any changes to the plans and diagrams forming part of NT Link's building licence application. He did not raise any questions with NT Link or FMG/TPI regarding the fact that the dongas were designed by reference to the wind load that was specified for Wind Region A. He did not query the fact that the general

[123] T 650
[124] Exhibit 4.1.15

arrangement plan for Rail Camp 1 bore neither the camp's coordinates nor a precise location.

Mr Harvey through his counsel submits to me that his process, in essence his methodology, in identifying the wind region by reference to the map was adequate, but that he made an error in its execution that led to the mistaken conclusion that Rail Camp 1 was in Wind Region A. Further, it is submitted to me that even though Mr Harvey had been informed that Rail Camp 1 was 15 kilometres north east of Wodgina, and even though it is accepted that had he looked at a map that had Wodgina on it, he would have determined that Rail Camp 1 was in Wind Region C, his use of the coordinates and map was neither improper nor inadequate.

The methodology made available to Mr Harvey and used by him was not adequate, given that it did not incorporate a method for ascertaining the smoothed coastline. Whilst I accept Mr Crerar's evidence to the effect that this was the only methodology available to Mr Harvey at the material time, Mr Harvey would nonetheless have been aware that there was a lack of instruction concerning the ascertainment of the smoothed coastline, from which the measurement for the wind region was to commence. However, given the extent of Mr Harvey's error, I do not consider it likely that information about the smoothed coastline would have altered the outcome.

Further, and importantly, Mr Harvey did not properly apply that methodology. He did not apply sufficient attention to the task at hand and this resulted in a significant error being made by him when he attempted to ascertain Rail Camp 1's location. It was an avoidable error and it should not have occurred.

Mr Harvey had a range of information before him and as principal building surveyor, he ought to have been able to correctly identify that Rail Camp 1 was in Wind Region C. Independent expert building surveyor Ms De Santis' confirms that this was Mr Harvey's responsibility.[125]

Through his counsel Mr Harvey concedes that the information provided to him was sufficient to enable him to determine that the location of Rail Camp 1 was in Wind Region C.

At the inquest, Mr Harvey said that he had also relied on the certification stamp of Robin Salter & Associates[126] that appeared on the face of the plans or diagrams for the dongas, because he assumed they knew Rail Camp 1's location and they had been certified structurally for Wind Region A. He did not check his assumption with them.[127]

Frank Maroni certified the plans for the dongas and he signed Robyn Salter & Associates' stamp. Mr Maroni gave evidence at the inquest. I am satisfied that the effect of

[125] Exhibit 4.4.18
[126] Chartered consulting engineers
[127] T 689 – T 690

Mr Maroni's certification is that the design for those particular dongas was suitable for Wind Region A. It does not follow, nor can it reasonably be extrapolated, that Mr Maroni is certifying that Rail Camp 1 is actually located in Wind Region A. This is even more apparent when account is taken of the fact that the location on the plan for the dongas is stated as "*FORTESCUE RAIL CAMP*", without any information as to whether that means Rail Camp 1 or Rail Camp 2.

Through his counsel, Mr Harvey concedes that it is clear he did not solely rely on his interpretation of Robin Salter & Associates certification in concluding that Rail Camp 1 was in Wind Region A. I am satisfied that no comfort can be drawn by Mr Harvey from Robin Salter & Associates' certification stamp.

Despite having been provided with information from which he could, and should, have ascertained that the location of Rail Camp 1 was in Wind Region C, I am satisfied that Mr Harvey approved building plans which authorised the construction of the dongas at Rail Camp 1 to Wind Region A specifications only.

On the evidence before me, Mr Crerar did not have a role in supervising Mr Harvey's conduct when he was assisted by the technical services director in order to determine the location for Rail Camp 1. Nor did Mr Crerar have a role in checking the outcome of Mr Harvey's inquiries.

Mr Harvey approved NT Link's building licence application without sighting the tie downs

At the inquest Mr Harvey accepted that there were no drawings or designs that accompanied NT Link's building licence application that contained information regarding tie-downs for any of the buildings, including the dongas. Mr Harvey agreed that the *Building Regulations* 1989 (now repealed) required information about the tie-downs to be provided to the surveyor. His evidence was that the reference to the "*depth of the foundations*" in Regulation 11(1)(v) of the *Building Regulations* 1989 (now repealed) means the depth of a footing and he agreed that a tie-down is a footing. He accepted that a building surveyor would need to know how a structure is going to be affixed to the ground.[128] That is axiomatic.

Independent expert building surveyor Ms De Santis' evidence was to the effect that the requirement upon every builder making application for a building licence to deposit the relevant drawings for the depth of the foundations under Regulation 11(1)(v) was a minimum requirement and that Mr Harvey should have requested detail of the tie-downs of the buildings. Further that the plans before

[128] T 674 – T 675 and T 687 – T 688

Mr Harvey did not detail footings, anchorage, or assessment of the foundation material of the site.[129]

At the inquest Mr Harvey conceded that he did not ask for the design specifications for the tie-downs and he gave evidence about this. Mr Harvey assumed at the material time, that the proposed location of the buildings had been previously assessed to fall within Wind Region A, and he assumed that those buildings would have a "*standard tie-down*"[130] for Wind Region A. He did not check this assumption regarding the standard tie-down with the builder.[131] Mr Harvey should not have made this assumption. His explanation for why he did not seek information about the tie-downs was unsatisfactory.

In his evidence, Mr Harvey again relied on Robyn Salter & Associates' engineering certification stamp signed by Mr Maroni to justify his assumption that an engineer had certified the specifications for the tie-downs of the dongas. There is no indication on the face of the plan for the dongas, or within NT Link's building licence application, that the certification stamp extends to the tie-downs. Mr Harvey did not explore his assumption regarding the certification stamp with the engineer or the builder.[132] Mr Harvey should not have made this assumption either.

[129] Exhibit 4.4.18
[130] T 804; Mr Harvey explained this as normally being the footing of a chain wrapped around the beam or chassis.
[131] T 687 – T 688
[132] T 690

I am satisfied that it was incumbent upon Mr Harvey to be satisfied that the tie-down specifications for Rail Camp 1's dongas were adequate. In order to do that he needed to have sighted the tie-down specifications and they should have been certified or approved by an engineer, for the relevant building and for the correct wind region.

I am satisfied that Mr Harvey approved the installation of the dongas at Rail Camp 1 without either sighting or approving the specifications for their tie downs. Mr Harvey through his counsel concedes this.

There were a number of other discrepancies with the plans and drawings accompanying NT Link's building application, in addition to the incorrect wind region, imprecise location, lack of coordinates for Rail Camp 1 and lack of tie-down specification information. They reflect on Mr Harvey's general level of oversight and attention to detail. At the inquest Mr Harvey conceded that his checking of the drawings was not adequate.[133]

I am satisfied that Mr Harvey did not observe and then clarify a number of discrepancies in the drawings for the dongas for Rail Camp 1. Mr Harvey through his counsel concedes this.

[133] T 696

The Shire of East Pilbara did not have written procedures or training regarding wind regions

Having regard to the nature and extent of Mr Harvey's error when he attempted to ascertain Rail Camp 1's location, the inquest explored the instruction or training provided to him by the Shire of East Pilbara. Thus included the information and tools available to Mr Harvey in order for him to proceed to make a determination on Rail Camp 1's location, for the purposes of assessing NT Link's building application.

Mr Crerar did not provide Mr Harvey with any training or information regarding wind regions in the Shire of East Pilbara, nor was he provided with such advice or training when he commenced working at the Shire of East Pilbara in 2002.[134]

Mr David Everett has been the manager of development services and building at the Shire of East Pilbara since 2012. Mr Everett is a qualified building surveyor and he gave evidence at the inquest. Despite his efforts, as at the time he gave evidence, he had not been able to see a map or find anything, including by way of instructions or information that assists him as to what a smoothed coastline is.[135] This is in circumstances where, prior to the advent of Tropical Cyclone George, the measurement to ascertain the correct wind region under the Australian Standards was required to be taken from the smoothed

[134] T 894
[135] T 765

coastline. Currently, Mr Everett has a practice of checking the proposed location of a building through Google Earth that has since become available.[136]

At the material time, the Shire of East Pilbara had no specific process, procedure or guidelines for its building surveyors to assist them in determining the location upon a map, ascertaining the nearest smoothed coastline to that location and then calculating the distance between those two points.

The Shire of East Pilbara through its counsel submits to me that it was not necessary for written procedures or training to be developed for a building surveyor to calculate the point of the smoothed coastline because the role of the building surveyor is to identify the applicable wind region by reference to the maps referenced in the Building Code of Australia.

The Shire of East Pilbara submits that, in Mr Harvey, it engaged an experienced and qualified professional building surveyor and it was reasonable to rely on his expertise. The Shire of East Pilbara points to human error on Mr Harvey's part.

Mr Harvey approved NT Link's building licence application. However, it was the Shire of East Pilbara that granted the Building Licence to NT Link, albeit through the authority it

[136] T 761

had delegated to Mr Harvey.[137] The result of that delegation was that NT Link's building licence application was not required to be submitted for Council approval, and in fact it was not submitted.

There was undoubtedly human error on Mr Harvey's part. However, his role and that of the Shire of East Pilbara are not mutually exclusive. The delegation of such an important function brought with it the responsibility of ensuring that the delegate was equipped to properly carry out that function. The process of looking at a location on a computer screen then walking over to find it on the wall map was not desirable.

I am satisfied that the Shire of East Pilbara did not have any written procedures or training in place to assist its building surveyors when determining the smoothed coastline and wind region areas.

The role of the Shire of East Pilbara regarding classifications of buildings

Under Regulation 20(1) of the *Building Regulations* 1989 (now repealed) the Shire of East Pilbara was required to issue a certificate of classification on completion of certain buildings and prior to the occupation of such buildings.

[137] Exhibit 1.1.12

This certification process was required for buildings that were classified class 2 to 10 as defined in the Building Code of Australia.[138]

Mr Crerar himself would have classified the dongas as class 1B buildings but he explained that there were always ongoing discussions concerning classification of camp buildings in general as to whether they were class 1B buildings (thereby not requiring a certificate of classification) or class 3 buildings (that did require a certificate of classification).[139]

One of the conditions of the Building Licence[140] approved by Mr Harvey and granted by the Shire of East Pilbara to NT Link read as follows:

> *"CERTIFICATE OF CLASSIFICATION: {Building Regulations 1989 20(4)}. A Person shall not occupy any portion of a building until a Certificate of Classification has been issued in accordance with these regulations".*

However, NT Link's Building Licence contained no information as to what classification the dongas (or indeed any of the buildings) carried. There was no information as to which of Rail Camp 1's buildings had been identified as falling within classes 2 to 10.

At the inquest Mr Crerar proffered the explanation that the classification was omitted because provision for it did not

[138] Exhibit 4.4.20
[139] T 922
[140] Exhibit 4.1.15

appear on the Shire of East Pilbara's template document at the material time. He explained that under the current *Building Act* 2011 regime, all building permits have a classification on them and the template that they now use is the uniform one that is adopted by all local governments in Western Australia.[141]

Independent expert building surveyor Ms De Santis' explained that the format of NT Link's Building Licence was modified from the standard form and one consequence was that it did not nominate the classification of the development. Whilst this process ought to have been undertaken in compliance with the legislation, it would not have resulted in the Shire of East Pilbara being required to inspect any of the buildings prior to its issue.[142] However, had it been complied with, it might have drawn somebody's attention to the plans and drawings attached to NT Link's Building Licence and it might have caused somebody at the Shire of East Pilbara to notice that there was no information regarding tie-downs for the dongas.

The Shire of East Pilbara through its counsel concedes that NT Link's Building Licence for Rail Camp 1 did not contain information as to what classification was allocated and that the Building Licence ought to have provided those details. However, the Shire of East Pilbara submits that there is insufficient evidence before me to conclude that this process

[141] T 923 – T 924
[142] *Building Regulations* 1989, reg. 13(1)(d), Schedule 1, Form 4; Exhibit 4.4.18

would have led the Shire to identify the inadequacy of the tie-downs on the dongas at Rail Camp 1.

NT Link through its counsel acknowledges that it failed to notify the Shire of East Pilbara that the buildings classified within the classes 2 to 9 which were installed at Rail Camp 1 had been completed so that the Shire could issue a certificate of classification, but submits to me that this matter is irrelevant to my findings.

I am satisfied that the Shire of East Pilbara did not ensure that NT Link's Building Licence provided information as to what classifications the buildings had been given. Further, that NT Link did not notify the Shire of East Pilbara that the buildings classified within the classes of 2 to 9 which were installed at Rail Camp 1 had been completed so that the Shire could issue a certificate of classification pursuant to Regulation 20(1) of the *Building Regulations 1989*. On the evidence before me, these steps should have been taken. However, whether this would have resulted in a more rigorous review of the building licence application papers is speculation.

THE CONSTRUCTION OF RAIL CAMP 1

After the grant by the Shire of East Pilbara of the Building Licence to NT Link in July of 2006, NT Link commenced construction work on Rail Camp 1. NT Link carried out the

installation of the dongas and its invoice dated 24 January 2007 discloses that it considered its work on Rail Camp 1 to have been completed by December 2006.[143]

Some arrangements had been made for the management of some of the construction at Rail Camp 1. In May of 2006 FMG had entered into a contract with Worley Parsons Pty Ltd for the latter to carry out construction management in connection with its project. FMG later assigned its rights and obligations to its subsidiary, TPI.

The actual construction of the four temporary accommodation camps, including the dongas at Rail Camp 1, fell outside the scope of the services to be provided by Worley Parsons.

Mr Macchiusi, project manager engaged by FMG/TPI through his private company, was required to ensure that the temporary accommodation camps were built to industry standards for amenity and service level for the occupants.[144] He was a member of a team of personnel responsible for management and delivery of the project, known as Team 45 (they comprised over 100 persons and they were not a legal entity). Their role was to keep a watching brief over the project. Part of that role was to ensure that NT Link constructed Rail Camp 1 in accordance with the Installation Contract. There were milestones to mark Rail Camp 1's progression towards completion. Payments were made on

[143] Exhibit 4.2.34
[144] T 581

the achievement of certain milestones. Mr Macchiusi recalled the first milestone being to have all the buildings on site, the second milestone to have the first accommodation pod opened and subsequent milestones related to opening other accommodation pods.[145]

Through Worley Parsons Mr Macchiusi recruited Mr Peter Lawry, an experienced civil engineer. Worley Parsons had contracted Mr Lawry's services from Railtech Pty Ltd Mr Lawry's private company.[146] Mr Lawry was a witness at the inquest. Mr Lawry was a member of Team 45 and he reported to Mr Macchiusi. Mr Lawry's responsibilities included ensuring the temporary accommodation camps were built in accordance with their contract, on schedule and within budget. His role was described as "*Package Manager – Camps*".[147] Mr Lawry was required to satisfy himself that NT Link was constructing Rail Camp 1 in accordance with the Installation Contract.

Mr Macchiusi's evidence was to the effect that Mr Lawry's role (together with his two assistants) included the responsibility for establishing a level of inspection and surveillance over the work to satisfy himself that the work was being conducted in accordance with the contracts, both in a commercial and technical sense and a schedule sense.[148]

[145] T 533
[146] T 500 – T 502; Exhibit 4.4.33
[147] Exhibit 4.4.33
[148] T 608

Mr Lawry's evidence was to the effect that his duties were to assist the various contractors to ensure they got their contracts completed on time. Mr Lawry said it was not part of his responsibility to check to make sure the buildings were built in accordance with their specifications because the buildings were brought on site as a whole entity. However, when he was asked about the inspection of buildings to make sure that they were installed correctly, he explained that the inspection of the buildings was part of the work that enabled him to sign off on the various milestone sheets.[149]

At the inquest Mr Lawry accepted that he was responsible for checking whether the buildings were being constructed in a workmanlike manner and he recalled that he did see occasions where there was shoddy workmanship and he informed the contractor that he was not happy. He accepted that he was suitably qualified to notice whether the footings were being adequately installed and he inspected some of the footings at Rail Camp 1. He was not often at Rail Camp 1 and he described random visits of once or twice a week where he would walk around and look at the progress of the works in regards to the footings, whether concrete had been poured, and he said he would look at the welds on the tie-downs. However, he said "*I'm not a qualified judger of welding*".[150]

[149] T476 – T 477
[150] T 480 – T 482

It is to be borne in mind that NT Link was responsible for the construction work on the dongas at Rail Camp 1. Within this context, an aspect of the construction came before me for consideration. It concerned the quality of the work on the tie-downs for the dongas, including the welding.

The standard of welding of a number of the tie-downs was inadequate

Shortly after Tropical Cyclone George hit Rail Camp 1, consulting engineer Mr Martin Simms prepared a report on the damage at Rail Camp 1.[151] Mr Simms carried out observations on dongas that were mounted on loose block footings with tie-down rods welded to transverse floor beams at four points. The tie-down connections had pulled free from some dongas during the storm allowing them to be blown upwind. He examined some of the welded connections between the rods and the transverse floor beams and his report highlighted a number of failings including:

1. Welds with minimal weld throat thickness and low strength;
2. Tie-down rods welded too close to the toe of the flange; and

[151] Exhibit 4.3.24: Report on Cyclone Damage at Fortescue Metals Rail Camp 1 dated 15 March 2007.

3. Tie-down rods with large outstand lengths before the vertical section.

Mr Simms had cause to analyse the tie-downs to unit C97-100, the donga occupied by Ms Till at the time of her death. He considered it likely that unit C97-100 was pushed off its footing by unit C101-104 (which itself probably slid off its footing blocks after pulling away the welds between some of the tie-down rods) and then unit C97-100 appears to have hit unit C93-96. Mr Simms concluded as follows:

> *"Most of the severe damage appears to have been caused by units breaking free from their tie down footings and being blown into other units whereupon they have disintegrated more as a consequence of impact forces than wind forces, although once the shell of the units has been broken open, the wind forces would have completed the destruction and scattered wall and roof components throughout the site.*
>
> *The design of the in-ground foundations appears to be at best marginal because some have actually pulled out of the ground. However, the most frequent failure mode appears to be the failure of the welds between the tie down rods and the base frame of the units.*
>
> *The standard of welding between the tie down rods and base frames varied between just acceptable to totally unacceptable and the welding between the tie down rods and the base frames of units C97-100 and C101-104 was, in my opinion, completely unacceptable."*

At the inquest Mr Smith agreed that the welding of the tie rods to a number of the dongas at Rail Camp 1 was substandard.[152]

[152] T 203

I am satisfied that the welding of a number of the tie-downs for the dongas at Rail Camp 1, including Ms Till's donga and Mr Raabe's donga, was substandard.

NT Link did not engage a qualified welder for the tie-downs

It is established that NT Link was responsible for the installation of the dongas at Rail Camp 1 and that NT Link did not utilise an engineer approved or engineer certified tie-down design for those dongas.

NT Link did not fully implement the Guthrie Tie-Down Drawing or the TCM Drawing. Instead, NT Link made reference to such drawings and then in the course of the installation, modified some of the specifications on the basis of past practices and/or the equipment they had available at Rail Camp 1. Whilst some of those modifications resulted in a deeper tie-down hole of a wider diameter, with a wider rod, there were still less tie-downs per donga than specified in the TCM Drawing (which was after all for a Wind Region A area). The number of tie-downs for each donga (being four) corresponded with the Guthrie Tie-Down Drawing.

At the material time, NT Link did not have an employee or contractor available on site at Rail Camp 1 who was a certified or ticketed welder (that is a person who has done a welding course and obtained a certification). Nor did NT

Link make arrangements to engage a certified welder to do the welding tasks for any of the buildings installed at Rail Camp 1. In fact NT Link had not allocated a component in its budget for hiring subcontractors to do the welding at Rail Camp 1.[153]

Mr Smith's evidence was that if NT Link had been required to install buildings of a Wind Region C standard, he would generally not engage or sub-contract a certified or ticketed welder and he explained that he had *"used staff that we've had that are proficient in welding, although they haven't got a ticket."*[154]

There was a lack of rigour in such an approach. The potential consequences were serious. The capacity of the tie-downs to the dongas installed at Rail Camp 1 to withstand high winds depended in part on the quality of the welding.

Mr Paul Lambley was employed by NT Link as the foreman/supervisor of the installation of the buildings at Rail Camp 1 between early October and the end of November 2006 and he was a witness at the inquest. He is a qualified carpenter and had been involved in construction since 1991, including the installation of transportable buildings. However, at the material time he had no prior experience in installing transportable accommodation in cyclonic areas.

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[153] T 205
[154] T 204

As supervisor of the installation of the dongas, one of Mr Lambley's responsibilities included arranging for the welding of their tie-downs. His evidence was that though there were other subcontractors at Rail Camp 1 to do specialised jobs such as electricity, plumbing and sewerage treatment, there was no ticketed welder.[155]

Mr Lambley initially attempted to do the welding for one of the dongas but he was unable to continue because the MIG welder, that he had prior experience with, was underpowered.[156] He made arrangements for the delivery of a more powerful ARC welder (also referred to as a stick welder).

Mr Lambley knew that he was not able to operate an ARC welder and he called for volunteers to do the welding work on the tie-downs at Rail Camp 1. He described the process as follows:

> *"I asked a couple of lads can they weld, and Trent put his hand up – Trent Lees put his hand up and said he's more than competent on a stick welder. We grabbed a couple of helmets. We fired it up. I watched him weld the first one. There was a nice penetration, everything was melting and it looked fine. We then did the next – the rest of the building, chipped the slag off and it looked quite good."*[157]

Mr Lambley knew that Mr Lees was not a ticketed welder and that his role at Rail Camp 1 was to work on the roofing. Mr Lees was the only person who volunteered to do the

[155] T 512 – T 513, T 526
[156] T 527
[157] T 529

welding and if he had not volunteered, Mr Lambley would have had to try and find somebody else and either employ them or engage them as a subcontractor to do the welding.[158]

After observing the quality of Mr Lees' welding of the tie-downs for one of the dongas, Mr Lambley tasked the balance of the welding responsibilities for the tie-downs for the dongas at Rail Camp 1 to Mr Lees. By the time Mr Lambley left Rail Camp 1, he recalled that 98% of the welds of the tie-downs had probably been done.

When Mr Lambley inspected the majority of the tie-down welds completed by Mr Lees at the material time he was satisfied with the workmanship. However, at the inquest Mr Lambley conceded he is not a boilermaker and his inspection involved sighting the welding (once the slag was chipped off) and checking that there were no holes. Mr Lambley accepted that there were some types of deficiencies that he would not have been able to identify by sighting the welds.[159]

Mr Lees gave evidence at the inquest and he conceded that he had done the majority of the welding between the tie-down rods and the dongas at Rail Camp 1, that he had no certified welding qualifications, that he had learnt to operate an ARC welder by instruction from his father (a mechanical engineer), that he had learnt to operate a MIG and a TIG

[158] T 530
[159] T 531 – T 532, T 544 – T 545

welder by instruction from a qualified boilermaker and that generally, he had learnt to weld by working on a range of previous jobs. Mr Lees had no previous experience in installing tie down rods. Prior to attending Rail Camp 1 he did not know that he would be doing any welding, but he believed he was competent to do the welding at Rail Camp 1.[160]

The arrangements for the task of welding the tie-downs for the dongas were undertaken in an ad hoc and improvised manner. Mr Smith was at Rail Camp 1 for some periods of time while the welding was being done. He knew Mr Lees was not a ticketed (or qualified) welder, he knew there was not a ticketed welder on site, and he believed that Mr Lees had done most of the welding at Rail Camp 1. At the inquest Mr Smith responded to a number of questions as follows:

> *"Who do you say was responsible for checking the quality of the welding?---Well, I would say that I was responsible ultimately."*[161]

To a later question Mr Smith responded as follows:

> *"You accept that NT Link had contractual obligations to make sure that the quality of the welding was checked?---Yes. I do."*[162]

NT Link through its counsel submits that Mr Lees gave evidence to show that he had the necessary welding experience by reference to his previous instructors and

[160] T 387 – T 391 and T 402 – T 406
[161] T 208
[162] T 208

further that Mr Lees operated a commercial business making car trailers and Ute tray backs which in his view required more complicated welding.[163]

However, the issue is not the complexity. The main consideration is the quality of the affixation by welding, having regard to the wind loads that needed to be borne. It is unfortunate that NT Link relied on Mr Lees, a non-ticketed welder, volunteering to undertake this important function. It was no doubt well intentioned, but ultimately unwise of Mr Lees to volunteer. However, I take into account the fact that Mr Lees' supervisor, Mr Lambley, told him he was satisfied with his welding and Mr Smith bore responsibility for the installation.

I am satisfied that Mr Lees did not adequately weld a number of the tie downs that he worked on to the chassis of dongas installed at Rail Camp 1 and that his supervisor Mr Lambley did not ascertain, nor was he qualified to ascertain that that welding on those tie-downs was substandard. Mr Lees welded most if not all of the tie-downs at Rail Camp 1, and if any were not done by him, they were certainly not done by a certified welder.

NT Link through its counsel submits that any criticism of the welds could only have been made after "destructive testing" of the tie-down rods and that it would not have been apparent to the naked eye that any problem existed with these welds.

[163] T 404

NT Link through its counsel also repeats its submission to the effect that the welding is irrelevant to my findings because NT Link was contracted to install dongas in the non-cyclonic Wind Region A and the welding was not intended to accommodate cyclonic Wind Region C winds.

As I have already found, NT Link should have installed dongas suitable for Wind Region C. For this reason, it was not relevant at the inquest to explore the question of whether the dongas would have been able to withstand a Region A wind loading event.

Mr Smith wrongly concluded Rail Camp 1 was in a non-cyclonic wind region and he used the services of a non-ticketed welder to affix the tie-downs to the dongas. Predictably, they failed in respect of some of the dongas, including those being used by Ms Till and Mr Raabe.

I am satisfied that NT Link did not arrange the employment or engagement of an appropriately qualified or experienced welder to undertake the welding of the tie-downs for the dongas at Rail Camp 1.

Also, NT Link did not ensure that the welding of the tie-downs of all of the dongas at Rail Camp 1 was done to an acceptable standard.

On the evidence before me, these were Mr Smith's responsibilities.

Mr Lawry's role in signing the milestone certificates

Mr Lawry was responsible for signing off on milestone certificates which were completed at various stages during the process for the installation of Rail Camp 1's dongas, to enable payments to be made to NT Link when it was considered that each stage was completed.[164]

At the material time Mr Lawry was a civil engineer with approximately 35 years' experience. He held formal engineering qualifications and had worked on a number of mining projects. In 2006 Mr Lawry had some awareness of wind region classifications and he had not previously carried out tie-down designs, which he described as a structural design (to distinguish it from the design work of a civil engineer).

At the inquest Mr Lawry's evidence was that he was not qualified to comment on whether or not, in a particular instance, the manner in which a bar had been welded to the flange was totally inadequate, because he is not a structural engineer. If in previous jobs he had overseen construction of temporary accommodation camps in cyclonic areas, he had not addressed the wind region classification. Rather, his practice was to undertake his work by reference to the documents he was given.[165]

[164] T 477
[165] T 477 – T 480; Exhibit 4.2.19

In respect of the tie-downs for Rail Camp 1, it is unclear whether NT Link (or another) provided Mr Lawry with the Guthrie Tie-down Drawing or the TCM Drawing.[166] What is clear however is that Mr Lawry was not engaged to inspect the tie-downs for the dongas at Rail Camp 1 for compliance with cyclonic Wind Region C. Neither drawing would have assisted Mr Lawry in carrying out such an inspection as neither drawing complied with Wind Region C's design criteria.

As it transpires, Mr Lawry may have looked at some of the dongas' tie-downs, but he did not carry out an inspection of all of the dongas' tie-downs before he signed the milestone certificates. Once the installation was complete Mr Lawry could have visually inspected the tie-downs to a degree, by getting down on his hands and knees and looking under the dongas with a torch, but he did not consider that to be his role.[167]

At the inquest Mr Lawry accepted that by signing the milestone certificates it meant that he agreed that NT Link's contract requirements had been substantially fulfilled and NT Link could therefore get paid. He formed the view that the dongas were constructed in accordance with NT Link's obligations under the Installation Contract.[168] However, those obligations, as known to Mr Lawry, were for the construction of dongas in a non-cyclonic wind region.

[166] T 486, T 726; Exhibit 4.2.13.1 and Exhibit 4.4.27
[167] T 723
[168] T 720, T 731

Accordingly, knowledge of NT Link's contract requirements would not have assisted Mr Lawry in ascertaining whether the dongas (including their tie-downs) complied with Wind Region C's design criteria.

I accept Mr Lawry's submission, through his counsel, that he had no involvement with the tie-down design, or with the ascertainment of the correct wind region.

Mr Lawry, through his counsel, also submits that the fact that he signed off on the milestone certificates merely facilitated that payments could be made to NT Link for completion of each stage. It is further submitted to me that it was not Mr Lawry's role to consider whether or not the completion had been achieved in accordance with the plans and specifications, but rather that it had reached a certain point in time.

Regrettably, Mr Lawry was not ever provided with information or material from which he could have made a proper assessment of the dongas, including their tie-downs, for compliance with the correct building design criteria. By the time Mr Lawry has become involved, the error regarding the wind region had been made and those who instructed him, provided him with documentation and/or sought his advice, were proceeding on the assumption that Rail Camp 1 was being constructed in a non-cyclonic wind region.

Had Mr Lawry been provided with correct information concerning the cyclonic Wind Region C classification he may

have been in a position to alert others to deficiencies in the construction and installation of the dongas at Rail Camp 1. He was sufficiently qualified to have made that assessment.

On the evidence before me Mr Lawry did not have a specific role in checking the tie-downs for Rail Camp 1's dongas (including the quality of the welding) from an engineering perspective, for structural compliance.

EVENTS LEADING TO THE DEATHS

Tropical Cyclone George

By 9 March 2007 approximately 200 workers were occupying the dongas at Rail Camp 1. The FMG Rail Camp 1 Daily Occupancy Report discloses that Ms Till was accommodated in room C098 of her donga, having arrived on 23 January 2007 and with a proposed departure date of 23 January 2008, and that Mr Raabe was accommodated in room B005 of his donga, having arrived on 22 February 2007 and with a proposed departure date of 5 April 2008.[169]

Tropical Cyclone George formed on 3 March 2007 when a tropical atmospheric low-pressure system tracked across the top end of the Northern Territory and moved offshore

[169] Exhibit 4.4.10

into the Joseph Bonaparte Gulf. The Bureau of Meteorology began tracking it on that date.

The system weakened as it moved westward across the northern Kimberley but then re-intensified into a tropical cyclone shortly after moving offshore into the Indian Ocean on 5 March 2007. It then moved away from the Kimberley coast tracking steadily westward before turning abruptly south, making an almost 90 degree turn to the left on 7 March 2007 at approximately 9.00pm.

Tropical cyclones are measured by categories. A cyclone category is a term used by the Bureau of Meteorology for the classification of cyclone intensity expressed on a scale of 1 to 5 based on the severity of the cyclone and its associated wind speed. Category 5 is the most severe.

When Tropical Cyclone George turned abruptly southward it rapidly intensified into a severe tropical cyclone (category 3). It then began moving directly towards Port Hedland.

The area of the coast where Tropical Cyclone George ultimately made landfall was first put under a tropical cyclone warning by the Bureau of Meteorology at 10.05pm on 7 March 2007, approximately 24 hours prior to landfall. The broadcast was for potential destructive winds for Port Hedland.

At 6.00am on 8 March 2007 the Bureau of Meteorology issued a "yellow alert" for communities between Wallal and Mardie, including Port Hedland, Roeburne, Wickham,

Karratha and Dampier. A yellow alert means that there is a high risk of destructive winds in the area and time to take action. As a consequence, Rail Camp 1 was placed on yellow alert as it was within 100 kilometres of Port Hedland. Workers at Rail Camp 1 were instructed to secure all loose items around the camp.

In the late afternoon on 8 March 2007 Rail Camp 1's workers attended a meeting and they were instructed by the management to take sufficient food and water to their dongas and to take shelter there until the danger had passed. They were informed that a siren would sound if and when a "red alert" was issued. A red alert is a warning issued by the Bureau of Meteorology that destructive winds are likely to occur very soon after the alert is issued. A red alert was sounded at Rail Camp 1 in the early evening of 8 March 2007.

Tropical Cyclone George reached Port Hedland at about 9.00pm on 8 March 2007 and when it approached and crossed the coast 50 kilometres north east of Port Hedland at about 10.00pm it had intensified to least a category 4 cyclone. The rating of category 4 indicates maximum wind gusts near the centre of the cyclone that are expected to cause significant roofing loss, structural damage and other expected events such as dangerous airborne debris. Considerable damage and strong wind gusts of up to 154 kilometres per hour were recorded at Port Hedland,

with houses losing roofs. Gusts of 275 kilometres per hour were recorded offshore at Bedout Island.[170]

The cyclone continued to move inland and hit Rail Camp 1 at about 1.00am on 9 March 2007. It was still generating severe cyclonic winds and heavy rain.

The Bureau of Meteorology information indicated that the cyclone was a category 3 at approximately 25 kilometres north of Rail Camp 1. When the cyclone passed over the area where Rail Camp 1 was located the peak wind loads were estimated to be 175 to 180 kilometres per hour consistent with a category 3 cyclone.[171] The Bureau of Meteorology rates a cyclone category 3 as expecting maximum wind gusts near the centre of the cyclone so as to cause roof and structural damage and other events like power failures and caravans being overturned.

Rail Camp 1's workers look for the injured during the eye of the cyclone

When Tropical Cyclone George hit Rail Camp 1 damage to the camp began to manifest almost immediately. The dongas located on the southern edge of Rail Camp 1 bore the brunt of the cyclonic winds.

[170] Exhibit 1.1.10
[171] Exhibit 4.3.10

It became apparent that some of the dongas were being dislodged. However, given the surrounding environment, it was not possible for the workers sheltering in their dongas to go outside and look for or assist injured co-workers while the cyclonic winds were battering the camp. That would have invited further disaster and tragedy.

At approximately 2.30am, one and a half hours after it first hit, the eye of Tropical Cyclone George passed over Rail Camp 1. The eye is the typically calm weather at the center of the tropical cyclone, and can be surrounded by an eye wall which brings with it the most severe weather.

This short pause in the cyclonic winds gave the workers at Rail Camp 1 the opportunity to go outside and look for injured persons, and to leave their dongas to go and seek refuge in the office block that had remained secure. It lasted about half an hour.

At approximately 3.00am on 9 March 2007, the other half of the cyclone passed over Rail Camp 1. By this stage, Rail Camp 1's workers were sheltering in the office block, which had been transformed into a makeshift medical centre under the guidance of Rail Camp 1's paramedic, who was indefatigable in his efforts to render assistance to the injured and dying over the course of this tragedy.

During the eye of the cyclone Ms Debra Alexandra Till and Mr Craig Allan Raabe were located by their co-workers and all attempts were made to assist them.

It was also during this period that the paramedic was himself freed with the assistance of others from underneath the floor of his donga, where he had lain in water for some time. His first actions were to immediately go to assist Ms Till, who had just been located.

DEBRA ALEXANDRA TILL

Ms Till was born on 5 November 1959 in Wyalkatchem in Western Australia and she was the eldest of five children. She was 47 years old at the date of her death.

Ms Till was a wife, mother and grandmother and prior to her death she was in good health. She was a much loved member of her family.

Shortly before her death Ms Till and her husband had planned to purchase a property on the outskirts of Perth, but with her death, those plans never eventuated.

Ms Till came to work at the temporary accommodation camp by reason of being employed in its catering operations by Spotless, project manager for the general operations of the camp. Ms Till had only recently commenced her engagement with Spotless and she had just started the second of her five week shifts at the camp.

Events leading to the death of Debra Alexandra Till

At 1.00am on 9 March 2007 Ms Till was sheltering in her donga, in room C098, one of four rooms in the donga designated C097-100. Tropical Cyclone George hit Rail Camp 1 at that hour and her donga did not withstand the forces of the cyclonic winds. Ms Till was alone in her room.

The two dongas that comprised of rooms C097-100 and rooms C101-104 detached from their tie-downs and slid away from their foundations. The donga that comprised of rooms C097-100 then impacted with considerable force into the donga that was next to it comprising of rooms C093-096. After the collision, C097-100 rotated and the wall between it and C093-96 was crushed.[172]

One of the plant operators who had gone outside during the eye of the cyclone found a co-worker standing on what appeared to be the top of Ms Till's donga, calling for help.

The plant operator managed to climb into Ms Till's damaged donga and she found Ms Till lying under the debris. Other persons helped move rubble so that Ms Till could be assisted. The plant operator quickly began cardiopulmonary resuscitation and called out for a medical assistance.[173] A number of persons, including Rail Camp 1's paramedic went to assist her. Tragically Ms Till did not display any signs of life and she was unable to be resuscitated. The paramedic

[172] Exhibit 4.3.24
[173] Exhibit 1.2.16

pronounced her deceased in the early hours of 9 March 2007.[174]

Cause and manner of death of Debra Alexandra Till

On 15 March 2007 forensic pathologist Dr J White made a post mortem examination of the deceased Ms Till at the State Mortuary. The examination showed bruising to the scalp with cerebral swelling and a number of scattered soft tissue injuries. There were pinpoint haemorrhages detected in the eyes and over the heart and lungs.

Further examinations were undertaken. Macroscopic neuropathological examination showed cerebral swelling. Microscopic neuropathological examination showed no significant abnormalities. The aetiology of the cerebral swelling may have been due to head injury and/or the presence of hypoxia or lack of oxygen. Toxicological analysis showed no evidence of alcohol or other drugs.

At the completion of all investigations, the forensic pathologist formed the opinion that the cause of Ms Till's death was consistent with head injury with probable crush asphyxia.

Ms Till sustained her injury when her donga broke free of its tie-downs and was destroyed by the winds generated by

[174] Exhibit 1.2.13 and 1.2.16

Tropical Cyclone George. The design and construction of her donga, specifically with respect to its tie-downs, was inadequate for cyclonic Wind Region C, in which it was located.

I find Ms Till's cause of death is head injury with probable crush asphyxia. Death occurred in the early hours of 9 March 2007.

I find Ms Till's death arose by way of misadventure.

CRAIG ALLAN RAABE

Mr Raabe was born on 2 May 1964 in Brisbane, Queensland and he was the eldest of two children. He was 42 years old at the date of his death.

Mr Raabe was the father to three children and prior to his death he was in good health. He was a much loved member of his family and when he died, his children were very young.

Mr Raabe had been involved in the earth moving industry since he left high school in year ten. Shortly before his death, Mr Raabe had planned to buy some acreage in the Gympie area to build a house for his children. He had great hopes for them and he wanted to provide for their future.

Mr Raabe came to work at the temporary accommodation camp by reason of being recently employed by De Grey's Plant Hire as an excavator. At the camp, Mr Raabe was well respected as being the best excavator operator and he was well liked by his peers.

Pursuant to section 24(1) of the Coroners Act, Mr Raabe's father asked the coroner to hold an inquest. He expressed a number of concerns related to construction compliance and safety aspects at the camp.

Events leading to the death of Craig Allan Raabe

At 1.00am on 9 March 2007 Mr Raabe was sheltering in his donga, in room B005. Tropical Cyclone George hit Rail Camp 1 at that hour and his donga did not withstand the forces of the cyclonic winds.

Shortly after Tropical Cyclone George first hit, two other workers had come to shelter in Mr Raabe's room because their donga had broken free of its tie-downs. Very shortly after that Mr Raabe's donga broke free of its tie-downs, rolled over and was completely destroyed. As the donga began to move from side to side, Mr Raabe was heard to say "I think we're going over boys", then the donga rolled and the occupants of room B005 were knocked unconscious.[175]

[175] Exhibit 1.2.18

Two of the rail workers who had gone outside during the eye of the cyclone found Mr Raabe lying outside his destroyed donga, alive but with a severe head wound. They made arrangements to place Mr Raabe on a stretcher and with the assistance of others, took him to the office block. Rail Camp 1's paramedic and a team of other co-workers gave Mr Raabe constant medical attention and comfort throughout the night and the next morning.[176]

Rail Camp 1's paramedic dressed Mr Raabe's head wound, administered oxygen and applied suction to keep his airways clear. He attended to other wounds on Mr Raabe's body. He was also attending to up to 20 other persons who were injured, but not as critically as Mr Raabe, who was the primary focus of his attention.[177]

By approximately 4.00am on 9 March 2007 Rail Camp 1's engineering geologist was able to make contact with the police by means of a satellite telephone, and he sought their assistance. Given the weather and the condition of the roads, police and rescue services were first able to reach Rail Camp 1 by helicopter by approximately 11.30am on 9 March 2007. They included doctors from Nickol Bay Hospital in Karratha.

Mr Raabe was critically injured but alive. The doctors who arrived by helicopter immediately attended to Mr Raabe on site to stabilise him and commence fluid resuscitation. Mr

[176] Exhibits 1.2.11, 1.2.13, 1.2.15, 1.2.16, 1.2.17, 1.2.19.
[177] Exhibits 1.2.13, 1.2.17 and 1.2.23

Raabe was evacuated from Rail Camp 1 on the first helicopter accompanied by one of the doctors.[178]

Mr Raabe was first flown to Port Hedland Regional Hospital where resuscitation efforts continued and his scalp wound was repaired. He was then transferred by Royal Flying Doctor Service to Sir Charles Gairdner Hospital in Perth, arriving there at approximately 11.30pm on 9 March 2007. Resuscitation efforts continued and further tests were performed. After assessment by the neurosurgery team he was considered to have an unrecoverable injury to the brain. Tragically, Mr Raabe was unable to be saved and he was pronounced dead on the following day, being 10 March 2007.[179]

Professor Bryant Stokes AM, clinical professor of neurosurgery, reviewed the medical information for Mr Raabe (including the post mortem report). He opined that, given the severity of Mr Raabe's injuries, even if those injuries had occurred in close proximity to a fully equipped neurosurgical unit it is very unlikely that a person with an injury of this nature would have survived. He does not consider that Mr Raabe had a survivable head injury.[180] Professor Stokes had occasion to review the records of the medical assistance rendered to Mr Raabe by Rail Camp 1's paramedic. I concur with Professor Stokes' opinion that

[178] Exhibits 1.1.14, 1.1.15 and 1.2.13
[179] Exhibits 1.1.6 and 1.1.10
[180] Exhibit 4.4.17

Rail Camp 1's paramedic is to be commended for what he did in trying to maintain Mr Raabe.

Cause and manner of death of Craig Allan Raabe

On 12 March 2007 forensic pathologist Dr J White made a post mortem examination of the deceased Mr Raabe at the State Mortuary. The examination showed evidence of a severe head injury with fracturing of the skull, a large right sided subdural haematoma and cerebral trauma and swelling. In addition there was focal bruising of the upper right ribs and scattered soft tissue injuries.

Further examinations were undertaken. Microscopic examination of sampled tissues showed evidence of pneumonia. Microbiological studies performed at the time of the post mortem showed pseudomonas aeruginosa within lung tissue. Toxicological analysis showed no evidence of alcohol or other drugs.

At the completion of all investigations, the forensic pathologist formed the opinion that the cause of Mr Raabe's death was head injury.

Mr Raabe sustained this injury when his donga broke free of its tie-downs and was destroyed by the winds generated by Tropical Cyclone George. The design and construction of his donga, specifically with respect to its tie-downs, was

inadequate for cyclonic Wind Region C, in which it was located.

I find Mr Raabe's cause of death is head injury. Death occurred on 10 March 2007.

I find Mr Raabe's death arose by way of misadventure.

CONCLUSION AS TO THE DEATHS

Debra Alexandra Till and Craig Allan Raabe died of their injuries, sustained when their dongas were destroyed by Tropical Cyclone George that hit Rail Camp 1 in the early hours of 9 March 2007.

Their dongas suffered from structural deficiencies. These arose by reason of a series of errors made by persons who had the knowledge and/or means to avoid them, had they applied proper standards of care and attention to the task at hand.

The wind region error had its origins in the request for tender (RFT) for the construction of Rail Camp 1, that indicated, incorrectly, that it was located in non-cyclonic Wind Region A, but also disclaimed responsibility for the accuracy of that information.

The tender process failed, the RFT was provided to the prospective builder, NT Link, as background information and NT Link made a series of proposals for the construction

of Rail Camp 1 to the tenement holders (FMG/TPI). Each proposal incorrectly referred to Rail Camp 1 as being within non-cyclonic Wind Region A.

FMG/TPI and NT Link (through Mr Smith) entered into an Installation Contract for the construction and installation of Rail Camp 1, again incorrectly referring to Wind Region A.

Based upon the coordinates he had been provided with, Mr Smith had made his own measurement of Rail Camp 1's location and he found it to be approximately 100 kilometres from the coast. Mr Smith knew that in that area of the Pilbara, locations less than 100 kilometres from the coast were within cyclonic Wind Region C and locations greater than 100 kilometres from the coast were within non-cyclonic Wind Region A.

There would be a substantial impact upon the design criteria for Rail Camp 1 if it was located in the cyclonic wind region. It would mean that more substantial dongas would have to be built and the manner in which they were to be anchored to the ground would have to accommodate cyclonic wind loads.

NT Link through Mr Smith made application to the Shire of East Pilbara for a building licence and there were a number of errors or omissions in that application. The plan for the Rail Camp 1's dongas did not give a precise location for the installation, it incorrectly referred to the building design criteria for Wind Region A and the plan for Rail Camp 1

itself gave neither coordinates nor a precise location. Regrettably, NT Link's building licence application did not include plans or diagrams for the dongas' tie-downs, nor any information about them.

Mr Smith had prepared a hand drawn diagram of the tie-downs. He asked Mr Guthrie, a builder, to tidy up the drawing. Mr Guthrie was in possession of information that would have enabled him to determine that Rail Camp 1 was in Wind Region C, but he did not read it. Mr Guthrie proceeded to provide Mr Smith with a tie-down diagram by reference to Wind Region A, for use in the installation of Rail Camp 1. Mr Smith did not provide this diagram to the Shire of East Pilbara.

Mr Smith had contacted two engineering firms to endeavour to source an engineer approved or certified tie-down design, as required. Those firms were unable to take on the work and due to time pressures, Mr Smith did not proceed to arrange for engineering certification or approval for the tie-downs. Nor did he tell anyone else he was unable to source an engineer for this purpose.

The Shire of East Pilbara's principal building surveyor, Mr Harvey, assessed NT Link's building licence application and, despite reference to coordinates and a map, he incorrectly determined that Rail Camp 1 was in Wind Region A. Mr Harvey also incorrectly assumed that another person or entity had assessed Rail Camp 1 as coming within Wind Region A. Despite having no information about the donga's

tie-downs, Mr Harvey incorrectly assumed that the builder would use Wind Region A generic tie-downs and that another person or entity had assessed them. Mr Harvey was the only person at the Shire of East Pilbara who assessed NT Link's building licence application. He put the wrong permit number on Rail Camp 1's plan and this might have contributed to his error when he endeavoured to determine its location.

The Shire of East Pilbara had provided no training nor did it have written procedures or instructions for the ascertainment of wind regions.

Mr Harvey as delegate of the Shire of East Pilbara approved NT Link's building licence application for the incorrect wind region and with no information about the tie-downs for the dongas. The Shire of East Pilbara granted the Building Licence for Rail Camp 1 to NT Link.

Despite Mr Smith having formed the view that Rail Camp 1 was on the edge of the two wind regions and that it was too close to call, he proceeded to install the dongas by reference to non-cyclonic Wind Region A. Mr Smith said he took this risk because he was told that Rail Camp 1 would, in the future, be evacuated in the event of a cyclone. This was not a relevant consideration and cannot operate to excuse a builder from construction compliance.

When the time came to construct Rail Camp 1, NT Link had not budgeted for a welder and no arrangements had been

made to engage a person for that task. Mr Lambley, the foreman called for volunteers and the roofer, Mr Lees, volunteered to do the welding. Mr Lees was allocated the task of welding of the dongas' tie-down rods to the transverse floor beams. Whilst Mr Lees had some previous welding experience, he was not a ticketed welder and Mr Smith knew that.

The welding of a number of the tie-downs for Rail Camp 1's dongas was substandard, including the dongas occupied by Ms Till and Mr Raabe. The design of the tie-downs for Rail Camp 1's dongas did not comply with Wind Region C requirements.

Had the proper Wind Region C structural standards for the dongas been complied with, the temporary accommodation camp would have better withstood the cyclonic winds, and the destruction of the dongas would have been avoided. The fatal injuries suffered by Ms Till and Mr Raabe as a consequence of their dongas being destroyed were preventable.

REFERENCE TO DISCIPLINARY BODIES

The Coroners Act provides a mechanism for a coroner to refer evidence to a disciplinary body under section 50.

Counsel assisting submits that it is open for me to refer the conduct of Mr Smith as the operator of NT Link to the

Northern Territory Building Practitioners Board to conduct its own inquiry into the work performed by NT Link into the installation of Rail Camp 1.

Mr Smith's evidence was that he currently holds a builder's licence in the Northern Territory. When Rail Camp 1 was constructed Mr Smith was not registered as a builder or a building service provider in Western Australia. Nor were NT Link or Spunbrood. Rail Camp 1's location was outside the jurisdiction of the former Builders' Registration Board of Western Australia and building work could be carried out and building licences obtained from local government authorities by persons who were not registered in Western Australia.

Rail Camp 1's dongas were required to be constructed by reference to Wind Region C design criteria. The error with regard to the applicable design criteria and the quality of the construction work on the dongas at Rail Camp 1 touches upon the conduct of the builder, NT Link, operated by Mr Smith, and is of such a nature as might lead the relevant disciplinary body to inquire into or take any other step in respect of the conduct apparently disclosed by the matter. Having regard to the broad range of circumstances pursuant to which a referral may be made under section 50 of the Coroners Act, I refer the conduct of Anthony Smith, NT Link and Spunbrood Pty Ltd to the Northern Territory Building Practitioners Board.

Counsel assisting also submits that it is open for me to refer the conduct of Mr Harvey to the Western Australian Building Services Board. Mr Harvey holds a building surveyor contractor licence and a building surveyor practitioner licence, both at level 1. As a result he is currently a registered building service provider under the *Building Services (Registration) Act* 2011 (the BSR Act).

However, the disciplinary provisions of the BSR Act do not operate to catch the conduct of building surveyors prior to 2 April 2012. The *Local Government (Qualification of Municipal Officers) Regulations* 1984 (now repealed) provided for the cancellation of a surveyor's certificate but did not provide for a disciplinary regime. I accept Mr Harvey's submission, through his counsel, that the Building Commission does not have jurisdiction to investigate whether or not disciplinary action ought to be taken against Mr Harvey.

COMMENTS ON SAFETY OF TEMPORARY ACCOMMODATION IN CYCLONIC AREAS

Under section 25(2) of the Coroners Act I may comment on any matter connected with the death including public health or safety or the administration of justice.

This inquest highlighted the danger to public safety when construction compliance fails and gives way to expediency. Over the entire time-line of the project there were numerous

occasions when the wind region error could, and should, have been identified. On each such occasion, through inattention, the error was not identified.

That there may have been time pressures are not an adequate excuse for that inattention, and the suggestion serves to exacerbate my concerns.

Rail Camp 1 was a substantial project and it beggars belief that persons responsible for the design, building and licence approval kept making, essentially, the same error regarding the wind region. The result was that dongas designed and constructed for a non-cyclonic wind region were built in a cyclonic wind region. Shortly after they were completed, a number were destroyed by Tropical Cyclone George.

The fact that the accommodation is temporary does not bear upon the degree of attention to detail that must be afforded by builders and those responsible for granting building licences. However temporary it may be, it is still going to be used to accommodate people.

Given the nature and extent of the errors in construction compliance for Rail Camp 1, including within the licence approval process, I do not consider that there are any recommendations I can make that would have prevented these tragic deaths.

However, the evidence exposed some potential problems in areas connected with the deaths, concerning processes for the issue of building permits for temporary accommodation

and processes for ascertaining wind regions. I make recommendations related to the prevention of future deaths in similar circumstances.

Recommendation concerning construction compliance

After Tropical Cyclone George hit Rail Camp 1, there were changes to the Shire of East Pilbara's procedures for the building licence grants. A number of the changes have been occasioned by the need to comply with the provisions of the *Building Act* 2011 (the Building Act) which introduced new laws relating to the issue of building permits. The Shire of East Pilbara informs me of the current procedures for granting approval for building projects in all areas, including cyclonic areas and outlines the following steps:

> *"A Certificate of Design Compliance ("CDC') is now required to be signed by a registered building surveyor certifying that the building complies with the Building Code of Australia and relevant standards. Generally this certification is carried out by private building surveyors;*
>
> *All drawings and supporting documents relied on by the certifier and listed on the CDC are forwarded to the Shire with an application for a Building Permit;*
>
> *The Shire the issues the Building Permit;*
>
> *On completion of the works, the building surveyor that issued the CDC inspects the buildings to ensure compliance and for class 2 to 9 buildings issues a Certificate of Construction Compliance ("CCC") certifying that each relevant building is constructed according to the requirements of the CDC and is suitable for occupancy. For class 1 and 10 buildings, only a Notice of Completion is required to be lodged with the Shire;*

The CCC is included with an Application for an Occupancy Permit issued by the Shire;

In the situation of an uncertified application being received requiring a CDC to be issued by the Shire, the location is checked to ascertain the wind region of the area where the proposed building is to be located. The location is checked with any available resources at the time, including maps, location maps supplied by the applicant and Google Earth. If the exact location is still not clear, GPS coordinates may be requested. Should the location be close to one of the defined wind regions other than wind region A, the Shire errs on the side of caution and requires the building to be designed to the specification for the higher wind region." [181]

Applications to the Shire of East Pilbara for building projects approval in cyclonic areas are now required to be submitted with a structural engineering certification. A Certificate of Design Compliance (CDC) from a private building surveyor accompanies practically all of them. Prior to the issue of the building permit, the Shire of East Pilbara's building surveyor audits the applications to ensure that the design criteria reflect the correct wind region.[182]

These changes, occasioned primarily as a result of the regime under the *Building Act* 2011, are clearly an improvement to the Shire of East Pilbara's procedures in 2006 that were applied in connection with the grant of NT Link's Building Licence for Rail Camp 1.

However, even under the current regime, if the building surveyor decides to classify a donga as a Class 1B building, rather than a Class 3 building, then there will be no

[181] Exhibit 1.1.12
[182] Exhibit 1.1.12

requirement for the issue a Certificate of Construction Compliance certifying that the donga is constructed according to the requirements of the Certificate of Design Compliance and, importantly, there will be no requirement for the issue of an occupancy permit. Generally, the classification of a donga is dependent on the purpose and use of the donga.[183]

There is no definition of "donga" in the legislation and there is variance as to how temporary accommodation camp buildings (including dongas) may be classified, depending on the individual circumstances.

I recommend that the Western Australian Government consider introducing mandatory inspections in Wind Regions D and C in order to achieve greater construction compliance with the applicable building standards set out in the Building Regulations 2012.

Recommendation concerning wind region information

The evidence from the building surveyors at the inquest reflected that there is still no readily accessible method by which a local government authority or building surveyor may ascertain the smoothed coastline, from which the

[183] *Building Act* 2011, sections 54(2), 56 and 66(5); *Building Regulations* 2012, reg 43(a).

measurement is to be taken to ascertain the correct wind region.

At the material time, neither Mr Smith nor Mr Harvey knew how to ascertain the smoothed coastline. At the inquest, Mr Everett, a qualified building surveyor, was still unable to locate information about how to ascertain it, and he has responsibility for development services and building at the Shire of East Pilbara. The lack of clarity regarding the smoothed coastline and the delineations was also addressed by independent expert building surveyor Ms De Santis.[184]

Current practice is for the ascertainment of wind regions by reference to the delineations on the maps of Australia that form part of the Australian Standards referenced in the Building Code of Australia, requiring the transfer of that information onto a larger map, or by reference to a Google map.

I recommend that the Australian Building Codes Board explore methods by which a large scale electronic map that is prepared in accordance with the smoothed coastline and the delineated wind regions be made accessible through the Web. This map is to be updated if and when the Australian Standards change the delineated wind regions.

[184] T 956

RVC FOGLIANI
STATE CORONER
18 AUGUST 2015