Private & Confidential

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Level 1
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18 November 2014

Dear Mr Dunphy

Preliminary findings: Independent investigation into the use of loose-fill asbestos-containing ceiling insulation in residential properties in NSW

We are pleased to provide our preliminary findings and observations in relation to this matter.

In this report, we present preliminary findings from our investigation. At this stage, our preliminary estimates are indicative only as the investigation is ongoing, data and media sources are still being verified, and we have further avenues of investigation to pursue.

We look forward to discussing these preliminary findings with you.

Yours sincerely

Andrew
Partner, Actuarial

Cassandra Michie
Partner, Forensic Services

Executive Summary

Background

PwC has carried out preliminary enquiries to determine the number of residential properties that may contain loose-fill (friable) asbestos insulation. Consistent with our scope, we have focused on the 26 Local Government Areas (LGAs) identified as potentially having residential properties that contain friable asbestos ceiling insulation. Whilst all forms of asbestos and asbestos containing materials are potentially harmful, there are particular concerns about friable asbestos given the ease at which particles become airborne.

Our preliminary investigations sought to identify individuals or entities that were known to install loose-fill asbestos ceiling insulation. Whilst we have identified some leads, the overwhelming evidence at this stage relates to an entity referred to as "Mr Fluffy" selling a material known as "Asbestosfluf". This has been the focus of our investigation and estimates of the number of affected residential properties across NSW.

"Mr Fluffy" was reportedly established by Dirk Jansen in 1968 in the ACT. The asbestos products believed to be used by Mr Fluffy contained crocidolite (blue asbestos) and amosite (brown asbestos) which are raw forms of asbestos that were crushed into a friable state and blown into ceiling cavities. Information sources have identified some other potential providers as using a loose-fill asbestos product (Bowsers Asphalt, Mr Byer and Mr Malcolm Angel), and we will continue to investigate the veracity of these reports including the potential coverage and operations of these other suppliers.

PwC has conducted preliminary enquiries including:

- Company searches for Mr Fluffy entities
- Searches of internet, media, and digitised newspaper
- Requesting and reviewing information provided by LGAs and other NSW government state agencies
- Discussions with relevant individuals including residents, Council members, and other individuals with information about Mr Fluffy.

As a result of these enquiries, we have calculated a preliminary estimate of the number of residential properties with loose-fill asbestos ceiling insulation across the 26 LGAs (20 of which were identified in the original scope and 6 of which were included later).

Our modelling approach

In conducting our investigations and analysis we had anticipated using three modelling approaches each of which were to focus on different input data. Our primary model uses distance or **proximity** to Mr Fluffy's operations to estimate how far reaching his operations were. Our two cross check models consider the **capacity** of his business to complete installations and the **financial** revenue to indicate extent of operations. There is considerable uncertainty in parameterising these models and hence for each model we have calculated three separate estimates; Low, Medium, High.[1]

Our progress to date with these models is as follows:

[1] We have not identified sufficient information at this stage to provide an estimate for the financial record model.

1. **Proximity model**: This model estimates the number of residential properties affected by analysing each Local Government Area (LGA) separately and calculating a potential exposure, based on the geographical distance between the ACT and the LGA. Our estimate was calculated using the number of properties that were constructed prior to 1981 that are still standing today. We have applied to these properties an exposure rate that reflects the proportion of this housing stock likely to contain friable asbestos insulation. We know that in the ACT this proportion is 1.52% of houses. Given the proximity of Queanbeyan and the volume of positive tests to date we have also applied this proportion of 1.52%. LGAs that are further from the ACT have a lower proportion applied with the lowest proportion being 0.05% for North Sydney and other Sydney-based LGAs. Our estimates of affected residential properties from our primary model ranged from 372 (Low) to 590 (Medium) to 1,100 (High), with the variation resulting from different proportions applied in the various LGAs.

2. **Capacity model**: This model estimates the number of residential properties affected by considering the capacity of Mr Fluffy to have installed loose-fill insulation over a number of years. This model makes assumptions, based on available evidence, of the number of insulations conducted per day, the number of days per week that insulation was installed, the product life cycle and the number of years of operation. We note that this model does not distinguish between commercial properties that Mr Fluffy may have installed insulation in, nor does it take into account other suppliers of loose-fill insulation that may have operated in NSW for which no or limited information is currently available. To date we have not identified significant evidence of substantial commercial operations. Our estimates of affected residential properties for this model ranged from 1,360 (Low) to 2,164 (Medium) to 5,367 (High) with this variation resulting from different assumptions. This model does not provide estimates of affected residential properties at a local Council level.

3. **Financial records model**: We have only uncovered a small amount of evidence that may be useful. As such, we have insufficient information about the revenue or income from Mr Fluffy's operations upon which to build a financial records model. If additional information becomes available as the investigation progresses, we may be in a position to provide an estimate using this model at a later date to cross check against the other models.

Summary of results

The table below shows high, medium and low estimates for our primary model being the Proximity Model and one of our cross check models being the Capacity Model.

Modelling Approaches	High	Mid	Low
Proximity Model	*Far reach* 1,100	*Occasional trip* 590	*Infrequent* 372
Capacity Model	*Long Life-Cycle* 5,376	*Mid Life-Cycle* 2,164	*Short Life-Cycle* 1,360

Our mid-point, or medium estimate, is 590 affected properties from our primary model on proximity to the ACT. Our cross check capacity model is currently substantially higher than this estimate with a medium estimate of 2,164 properties. Firstly this highlights the degree of uncertainty of estimating the number of affected properties, but secondly indicates that further investigations are required to narrow the gap and seek to reconcile the differences.

Uncertainty

The information available for the extent of exposure in the ACT (1,049 properties) is based on a visual inspection of the vast majority of potentially impacted houses. Such an exercise has not been performed in NSW. The approaches we have adopted in this report are based on uncorroborated evidence and as such our estimates contain a significant degree of uncertainty. We do believe that the results of our estimation will enable the NSW Government to consider policy decisions on the next steps of potential remediation.

For the Proximity and Capacity Models, we have made a number of assumptions based on data and information that has not been independently verified and in many cases was reported in the media. We reserve the right to update these estimates as the investigation progresses and as additional information becomes available.

Please refer to Section 4.3.1 for our full disclaimer.

1 Key interim findings from preliminary investigation

As part of our investigation, we have identified various entities that may have undertaken the installation of loose-fill asbestos. The overwhelming evidence to date relates to the operations of "Mr Fluffy" and as such this has formed the basis of our preliminary investigation. For further information regarding the methodology of the preliminary investigation, refer to Appendix A.

Please note that throughout this preliminary report we have referenced our findings back to source materials using the following bolded square bracketed notation, **[..]**.

1.1 Key entities involved

We conducted searches of ASIC filings to identify entities associated with Dirk Jansen or Mr Fluffy. Based on these searches and media references, we developed a timeline of the entities that are believed to be involved in the installation of Mr Fluffy insulation (refer to Figure 1 below).

In July 1966, Dirk Jansen ("Mr Jansen") and his wife Thea started D Jansen & Co **[A5]**. Adam Spence, a blogger who has researched and reported extensively on Mr Fluffy's operations, wrote an article dated 6 August 2014, reporting that Mr Jansen was a plasterer by trade and his company primarily worked in plastering and the general building trade **[A5]**. According to Mr Spence, in early 1968, Dirk Jansen launched Asbestosfluf Insulations as a subsidiary of D Jansen & Co, which began installing loose-fill asbestos insulation in homes in Canberra and parts of regional NSW. It has been reported that the asbestos Mr Jansen was using was being produced in South Africa by EGNEP, a subsidiary of the Cape Mining Company **[A5]**. ASIC filings identify a company named Dig X Investments Pty Limited that existed from 1977 to 1989, which was "formerly D Jansen & Co Pty Limited" **[B2].** We have not been able to verify to date whether this was still under Mr Jansen's ownership.

According to Mr Spence, Mr Jansen's son, "Joseph Jansen" and his business partner "John Hetz" established J & H Constructions in 1972. However, per our discussions with Mr David Laughlan, a former employee of Mr Jansen, Joseph's correct name was Jacobus Jansen. In 1973, Mr Joseph Jansen and Mr Hetz also expanded into the insulation industry, launching J & H Insulations **[A5]**. J & H Insulations is believed to have taken over Mr Jansen's subsidiary Asbestosfluf Insulations around 1973 and rebranded Asbestosfluf as Amoswool **[A5]**. ASIC filings show that J & H Constructions Pty Limited was registered from 21 December 1971 to 29 October 1985, and that J & H Insulations was registered on 1 January 1931. We have not yet been able to reconcile these two sources.

Figure 1. Timeline of Mr Fluffy entities

Date	Entity/Trading name	Description	
1.01.1931 - unknown	J & H Insulations	Status: Registered State: Date of deregistration:	Deregistered ACT unknown
1.01.1931 – 9.04.1974	Asbestosfluf Insulations	Status: Registered State:	Cancelled ACT
1.12.1966 – 17.05.1969	D Jansen & Co	Status: Registered State:	Cancelled ACT
12.09.1967 – 31.10.1969	Asbestospray Corporation of Australia Pty Ltd	Status: Registered State:	Deregistered ACT
23.01.1968 – 21.02.1989	Dig X Investments Pty Ltd (Formerly known as D Jansen & Co. Pty Ltd until 12.12.1977)	Status: Registered State:	Deregistered ACT
21.12.1971 – 29.10.1985	J & H Constructions Pty Limited (Formerly Joytama Pty Limited until 1.03.1973)	Status: Registered State:	Deregistered ACT
24.11.1976 – unknown	J. & H. Constructions	Status: Registered State: Removal date:	Removed ACT unknown
1979	Amosite and Crocidolite taken off ACT Market		
Unknown - 8.01.1982	Dig X Investments Pty Ltd	Status: Registered State: Date of registration:	Deregistered NSW unknown
1984	Amosite and Crocidolite banned		
2003	All asbestos banned		

1.1.1 Dirk Jansen's professional background

Dirk Jansen was a plasterer by trade and in July 1966 started D Jansen & Co **[A5]**. This business primarily undertook work in plastering and general trade on projects including the Woden Plaza and Woden Valley Hospital (now known as Canberra Hospital) **[A5]**. The D Jansen & Co advertisements note that his business address was 24 Olympus Way, Lyons in the ACT **[A26]**.

Mr Spence reported that, in 1967, D Jansen & Co expanded into asbestos becoming the ACT and districts licensee for Asbestospray Corporation of Australia Pty Ltd **[A5],** which we have corroborated via an advertisement in the Canberra Times dated August 1967 **[A7].** This same advertisement states that the Asbestospray Corporation of Australia Pty Ltd specialised in the "*application of Asbestospray finishes including fireproofing, acoustic, thermal and anti-condensation treatments*" and directed all enquiries to "*Asbestospray Fireproofing & Insulation (ACT), a division of D Jansen & Co*" **[A7]**.

It appears that Mr Jansen was engaged in a number of business ventures between 1966 and the mid 1970's with one article stating that he was involved in the sale of industrial conveyer belts, the leasing of construction machinery and was a wholesale supplier of cleaning products to retailers including David Jones **[A5]**. An advert from the Canberra Times in August 1967 for the sale of a Milk Bar business, in an area on the main highway from Melbourne to Brisbane, lists D Jansen of 24 Olympus Way Lyons as the contact person **[A9]**.

We undertook a directorship search via Dun & Bradstreet that sources information from the Australian Securities and Investments Commission for both Dirk Jansen and Joseph Jansen, his son. No matches were identified; however we note that ASIC electronic records do not extend back pre-1980s.

1.1.2 Mr Fluffy's operations

Mr Jansen, his company Asbestosfluf Insulations and his product have been referred to as "Fluffy Harry" or "Mr Fluffy" insulation **[C31, A11]**. Asbestosfluf Insulations operated in Canberra and parts of NSW, insulating homes with loose-fill asbestos. According to Mr Spence, Mr Jansen launched Asbestosfluf Insulations in early 1968, as a subsidiary of D Jansen & Co **[A5]**. However, ASIC filings show that Asbestosfluf Insulations was registered from 1 January 1931 to 4 September 1974 **[B8]**. At present, we have not been able to reconcile the apparent inconsistency in these dates.

Mr Jansen advised that the number of affected houses could be 5,000 or more **[C108]** and that:

- *"The bulk of the insulation was carried out in Canberra.*
- *Probably about 10 to 15% of the insulation was carried out in Queanbeyan.*
- *Few houses in Yass*
- *Nil in Cooma and Goulburn*
- *Five or six tonnes of the insulation was franchised to an operator in Finley (NSW* [Berrigan Shire]*) who did insulation work as a sideline to building work. This amount would insulate 60 houses at most."* As at 1987, the Berrigan Shire Council was *"not aware of any such insulation and was not able to suggest who the operator might have been."*

However, as per Section 3.2.2 we note this commentary from Mr Jansen's is inconsistent with the current evidence in Canberra.

1.1.3 Asbestosfluf to Amoswool

In 1972, Dirk Jansen's son Joseph (also referred to as Jacobus) Jansen and his business partner John Hetz established J & H Constructions **[A5]**. In 1973, Joseph Jansen and John Hetz decided to also expand into insulation launching J & H Insulations and it is reported that they took over Asbestosfluf

Insulations from Dirk Jansen. That same year, J & H Insulations rebranded Asbestosfluf as Amoswool, advertising it as "*completely harmless, containing no irritating fibres and would add market value to the house*" with no mention of asbestos **[A86]**.

1.2 Operations

1.2.1 Loose-fill insulation product

The product used by Mr Fluffy was mostly amosite (brown asbestos) produced in South Africa by EGNEP, a subsidiary of the Cape Mining Company which was founded in Britain **[A5]**. Mr Jansen is also believed to have used crocidolite (blue asbestos), with one article suggesting that this type of asbestos may have been offered as a premium product **[A5]**. The asbestos was imported from South Africa via New Zealand in 45kg hessian bags **[A5]**. The bags were coated in black tar to conceal any writing, so it was not possible to tell what the product was or where it had come from **[A5, C107, D1]**.

Please refer to Appendix C for a summary of the types of asbestos products that have been considered as relevant in this investigation, including when they were banned in NSW.

1.2.2 Installation process

The asbestos was removed from the hessian bags (refer to Section 1.2.1 above) and fragmented by placing it into a hopper with a fan attached **[A5, C107]**. The material was then pumped from the hopper with air through a hose into the roof cavity of a house.

Per our telephone discussion with Mr Laughlan, one of Mr Jansen's former employees who worked for a period of approximately six months towards the start of the asbestos insulation business, two men were required to undertake a job – one would be operating the hopper, while the other would be in the roof cavity distributing the asbestos. A job would take between one and a half to two hours to complete. Mr Jansen's employees worked a six day week and Mr Laughlan estimated that they would insulate between 4 and 6 houses a day. However, Mr Laughlan also caveated this statement by expressing that not every day was spent installing insulation as Mr Jansen operated several other business ventures, plastering in particular **[D1]**.

An article in the Canberra Times in 1988 stated that Mr Fluffy was operating for approximately 10 years and insulating houses at a rate of up to ten houses a week **[A10]**. These two sources would be consistent if the insulation pump was in use 2 – 3 days per week (resulting in 10 – 12 residential premises insulated per week).

Per an Asbestosfluf advertisement in 1968, the installation of Asbestosfluf insulation for an average 11m² home cost $82.50 **[A99]**. The final layer of asbestos in the roof cavity weighed approximately 120kg for a 3-bedroom house **[A10].**

1.2.3 Employees

Mr Spence reported that Mr Jansen initially employed a manager by the name of Mr M. Calder and his son Mr Dirk Junior Jansen to install the insulation, however we have not been able to confirm the full name of "M. Calder" and Mr Laughlan had no recollection of the names of any employees other than Mr Jansen's sons, Dirk Jnr and Jacobus **[A5, A101, D1]**. During the time that Mr Laughlan worked for Mr Jansen, the company only had one hopper and two employees installing insulation **[D1]**. It is possible that further hoppers and employees were involved in the process later on, however we have not identified evidence to substantiate this. Mr Laughlan also mentioned that Mr Jansen's son Jacobus was the foreman, however he was not involved in the insulation side of the business.

According to Mr Laughlan, employees were paid by the hour and generally worked 8 hours per day and 6 days per week **[D1]**. Mr Laughlan confirmed he was always paid on a weekly basis through a formal payroll process, never in cash **[D1]**.

1.2.4 Other potential suppliers of loose-fill asbestos

Through our research of media articles, documents provided by the agencies and Local Councils, and discussions with a number of individuals, we have identified a number of possible competitors that may have also used loose-fill asbestos (Table 1). These could account for the positive test results in Sydney, as well as some regional areas of NSW.

Table 1. Potential loose-fill asbestos suppliers

Company Name	Information Found
Bowsers Asphalt	An article in the Daily Telegraph dated 6 August 2014 states that *"the now obsolete Bowsers Asphalt Pty Limited was reportedly using loose-fill asbestos in Sydney from at least 1955"* **[A21]**. In addition, in July 1968 G. Major, a physicist from the Occupational Health Section, noted that "*Bowsers Asphalt Pty Ltd of Rozelle is considering commencing operation in Canberra, having used asbestos in a similar manner [to D Jansen & Co] for the past 13 years*" **[A101]**.
Mr Byer	In a document provided by the Ministry of Health, a Mr Byer was referenced as having an insulation firm that provided loose-fill asbestos in the 1960s and he advertised his services *"over a number of local government areas"* **[C109]**. This same article mentioned a Byer Motel. No further details are known, however, we believe it is the same Mr Byer as the Byer Motel.
Mr Mal Angel	In a discussion with Mr Fred Cuthbert, installer of InsulFluf, he recalled one competitor that undercut him on price on numerous occasions called 'Asbestosfluf'. He remembers that this product was sold by Mal Angel. He stated that Mr Angel was based in Finley (Berrigan Shire) at the time, but had since retired to Canberra and died of lung cancer. Mr Cuthbert recalled that he (Cuthbert) and Mr Angel used a hopper to tease up the bales of insulation and then blow the product into the ceiling cavity of a house **[D2]**. In 1987, Mr Jansen advised that he franchised 5-6 tonnes of the insulation to an operator in Finley (Berrigan Shire) who did insulation work as a sideline to building work. This amount would insulate 60 houses at most **[C108]**. We suspect this may be Mr Angel, however we have not been able to confirm this to date.

Our research also identified Bradford Insulation as a competitor advertising in the Canberra Times at the same time as Mr Fluffy, however we have not found any evidence to indicate they were using loose-fill asbestos.

At this stage, information on these competitors is very limited and indeed insufficient for use in estimating potential residential property exposure. Regardless, we have not restricted the scope of our investigation and will include any subsequent findings on these entities in our final report.

A number of instances of loose-fill asbestos have also been identified in industrial properties in Surry Hills, Sydney and Warilla, Shoalhaven. We are following a number of lines of enquiry to confirm whether Mr Fluffy or another provider was installing loose-fill asbestos in NSW regions.

1.2.5 Marketing/advertising

At this stage, we have identified approximately 22 advertisements for Asbestosfluf or D Jansen & Co in the Canberra Times between 1968 and 1971. These advertisements are dated April, May, June and October 1968 to 1971. This could also indicate that Mr Fluffy only undertook insulations for certain months of the year. Figure 2 is taken from the Canberra Times on Wednesday 12 June 1968.

Additional searches are required to identify all the advertisements for Asbestosfluf in the Canberra Times and any other advertising in NSW towns or regions.

Figure 2. Advertisement Canberra Times - Wednesday 12 June 1968

Searches of six regional New South Wales newspapers (Border Morning Mail, Albury, 18 newspapers; Bankstown and District Observer, Bankstown, 10 newspapers; Southern Star, Eurobodalla, 30 newspapers; The Queanbeyan Age, Queanbeyan, 28 newspapers; Central Western Daily, Orange, 28 newspapers; Daily Advertiser, Wagga Wagga, 17 newspapers) between 1965 and 1987 did not identify any advertisements for Asbestosfluf or D Jansen & Co. Please refer to Appendix B for further details on these searches.

1.3 Summary of LGA findings

As at 10 November 2014, the following LGAs have had positive tests for loose-fill asbestos in residential properties:

- Queanbeyan – 14 (2 remediated)
- Yass Valley – 1
- Palerang – 1
- Orange – 1 (demolished)
- Lithgow – 1 (remediated)
- Bankstown – 1 (demolished)
- Parramatta – 1 (remediated)
- Manly – 1 (remediated)

In addition, evidence has been identified that loose-fill asbestos insulation activity may have occurred in the following LGAs.

Table 2. Summary of LGA findings

LGA	Other Matters
Queanbeyan City Council	We identified a document from NSW Health stating that in 1987 Mr Jansen advised that "*probably about 10 to 15% of his insulation operations was carried out in Queanbeyan*" **[C108]**.
Ku-ring-gai Shire Council	We identified an inspection of a property located at performed on 29 August 1977. The inspection of the insulation indicated it was a *"mixture of chrysotile asbestos and mineral wool and was friable."* **[C070]**
Eurobodalla Shire Council	We identified an article from the ABC program Stateline in March 2005. In this article, a former resident of Batehaven, Piers Booth, stated that Mr Fluffy *"made its way to Batehaven in trailers of residents that installed loose-fill insulation themselves."* Another resident, Jack Parker, also supplied residents of Batehaven with sacks of loose-fill insulation to residents to install in their roofs **[C104]**.
Wagga Wagga City Council	We identified a statement from an individual who worked within the Wagga Wagga City Council to the Dust Disease Board. The individual remembered *"that [a] truck from Canberra would pull up at the house, lift a few tiles and pump it in."* **[C219]**
Greater Hume Shire Council	We identified documents from NSW Health stating that an individual, known as Mr Byer, operated an insulation firm in Holbrook during the 1960s. Mr Byer, who also owned the Byer Motel within Holbrook, provided loose-fill asbestos "over a number of local government areas" **[C109]**. In addition, we spoke with a former employee of Holbrook Council (now part of Greater Hume Shire Council) who recalled a Mr Byer operated out of the Byer Motel at the time installing loose-fill asbestos from a truck.

Yass Valley Council **Cooma-Monaro Shire Council** **Goulburn Mulwaree Council** **Berrigan Shire Council**	We identified a document from NSW Health stating that in 1987 Mr Jansen advised that there were • a "*few houses in Yass*", • "*nil [houses] in Cooma and Goulburn*", and • *Five or six tonnes of the insulation was franchised to an operator in Finley (NSW* [Berrigan Shire]*) who did insulation work as a sideline to building work. This amount would insulate 60 houses at most"* **[C108]**.

We have included a summary in Appendix A of each of the above councils, including:

- The extent of Asbestosfluf advertising in the area;
- The sample testing program being conducted within the council;
- Any possible leads identified during our investigation; and
- The LGA's program for discovery.

No positive tests or other relevant information has been obtained for the other LGAs during our investigation to date.

1.4 Our next steps

- Further media searches to determine the number and frequency of Mr Fluffy advertising including in regional newspapers, circulation areas for the Canberra Times and information regarding potential other suppliers of loose-fill asbestos.
- Contacting other potential suppliers of loose-fill asbestos.
- Enquiries with further contacts that have been identified including Mr Jansen's accountant, lawyer, family members and residents who recall Mr Fluffy operating in their local area.
- Enquiries with Workers Compensation regarding employee records and payment history if possible.
- Enquiries with the ATO regarding tax records if possible.
- Enquiries with the unions regarding Mr Jansen's memberships if possible.
- Work with local Councils to conduct further targeted enquiries where relevant.
- Liaise with the ACT Taskforce to obtain further information about Mr Fluffy's operations and revenue if possible.

2 Quantification

Our quantification is targeted at estimating the number of residential properties across NSW that are affected by loose-fill asbestos ceiling insulation.

While there is uncertainty surrounding the precise cessation of Mr Fluffy's operations, crocidolite and amosite asbestos materials used by Mr Fluffy were banned in Australia in 1984. As a result, any property built prior to this period is at risk of containing asbestos materials. Hence, our quantification is aimed at estimating the number of affected residential properties that were built prior to 1984, which still remain today.

It is important to note that this methodology is based on quantifying properties, not dwellings. As a result, an apartment block is considered one property rather than a number of dwellings.

Our quantification methodology incorporates two key modelling perspectives.

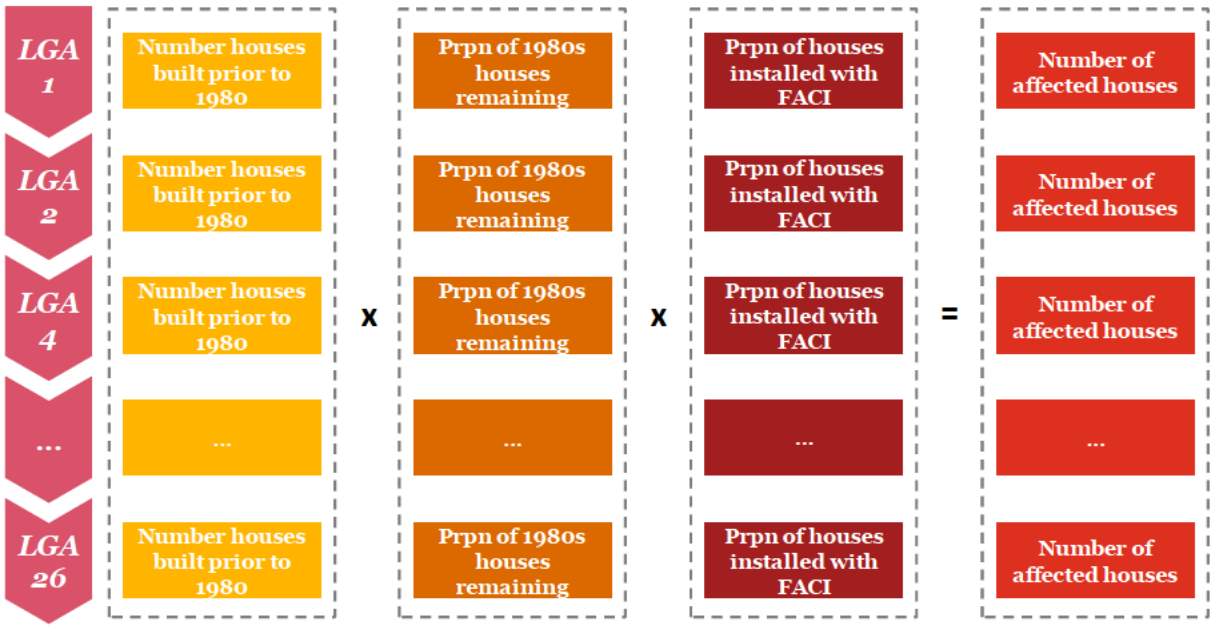
1. Firstly, we estimate the number of affected properties in the LGAs that are within scope using our **Proximity Model** (Figure 3) approach, which considers:

    a. the number of residential properties which existed during the period Mr Fluffy may have operated (pre-1984),

    b. the number of these properties which remain today (allowance for an attrition of residential properties), and

    c. the proportion of these properties, by LGA, that Mr Fluffy could have completed installations on.

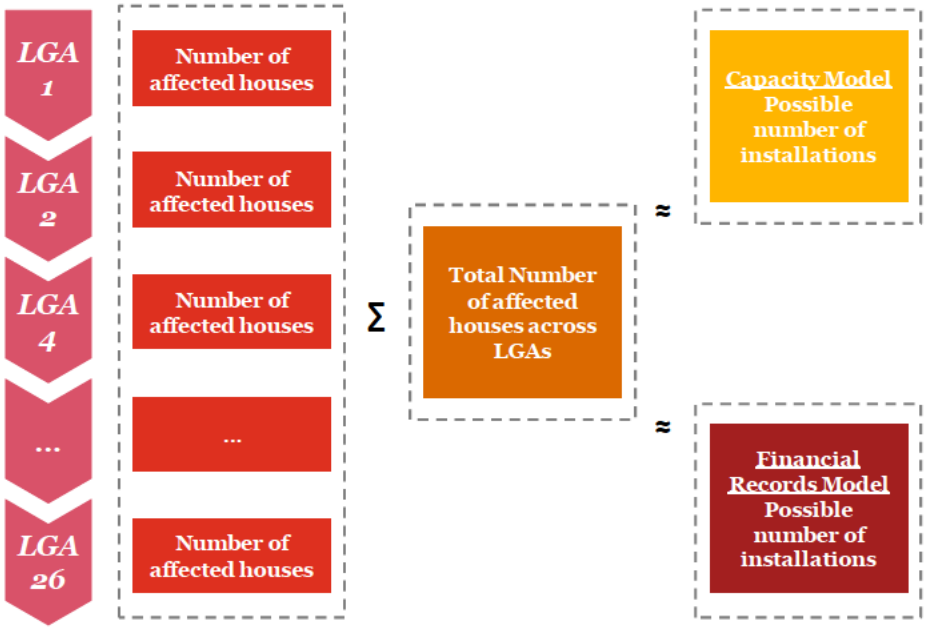
Figure 3. Proximity Model



FACI = Friable/loose-fill Asbestos containing Ceiling Insulation

2. Secondly, we compare the aggregated estimate across the LGAs from the first approach to two other models (the **Capacity Model** and the **Financial Records Model**) in order to triangulate the feasible volume of work that Mr Fluffy could have completed during his years of operation (Figure 4). These two models serve as a cross check as the number is not able to be broken down by LGA, it results in one number across NSW, not a number per LGA.

Figure 4. Verification Models – triangulation of total work completed



FACI = Friable/loose-fill Asbestos containing Ceiling Insulation

The first approach provides a granular break-down of our estimates for each LGA and is our primary basis for estimating the number of properties. It is explained in greater detail in Section 3. The second approach is used to cross-check our estimates in the first approach and is explained in greater detail in Section 4.

3 Proximity Model

The underlying theory of the Proximity Model relates to the likelihood of Mr Fluffy operating in each of the LGAs by having reference to that LGA's proximity to the ACT. We adopted the following methodology for this model:

- Estimate the number of properties built prior to 1984 (Section 3.1.1).
- Estimate the proportion of these properties which remain today (Section 3.1.2). This captures the attrition of residential properties over the 30 year period until 2014.
- Estimate the number of properties that may be affected (Section 3.2).

3.1 Number of residential properties built pre-1984

The number of NSW residential properties that existed during the period of Mr Fluffy's operations represents the stock of properties that could have had friable asbestos ceiling insulation installed.

3.1.1 Total residential properties built as at 1984

To calculate the total number of residential properties that existed at the time of Mr Fluffy's operations, we relied upon information from the 1981 Census of Population and Housing (sourced from the Australian Bureau of Statistics, ABS) **[E1]**, with 1981 acting as a proxy for 1984 (the Census represents our closest available information source to 1984). According to the 1981 Census, there were approximately 360,000 residential dwellings across the 26 LGAs. The Census does not provide a breakdown by property by LGA, instead it breaks the data down to dwellings. The observed proportion of properties to dwellings across NSW is 94% (according to our calculations based on the 1981 Census[2]). As such, in order to account for this we have adjusted downwards the number of dwellings by 6% to approximately 340,000 across NSW.

3.1.2 Total residential properties from 1984 still standing in 2014

We adjusted the total number of residential properties that existed in 1984 to account for attrition, because a number of residential properties would have been removed from the stock of residential properties between 1984 and 2014. This allows for factors affecting residential property turnover, including knockdown-rebuild activity, and destructive house fires.

We have developed a baseline assumption that 97% of the residential properties built prior to 1984 still remain in 2014. This assumption is based on the Canberra experience over the period of 1981 to 2011 and is derived from a comparison of the 1981 Census **[E2]** and Geoscience Australia's *"National Exposure Information System (NEXIS) Local Government Area aggregated information"* dataset **[E3]**. This dataset is based upon the 2011 Census and splits the residential properties as at 2011 between the 'number of buildings built pre-1980' and 'number of buildings built post-1981' (the variable is included in the dataset as 1980/81 corresponds to a significant change in building standards in Australia). Comparing the number of residential properties in 2011 that were built prior to 1980 (NEXIS) to the number built as at 1981 (1981 Census), we can determine the proportion of residential properties from the period that remain in 2011.

[2] Of the 1,816,010 dwellings recorded in the 1981 Census across NSW there were 1,698,089 excluding flats, caravans, improvised, combined dwellings and not stated. 1,698,089/1,816,010 = 94%

Canberra Calculation:

$$\frac{\textit{Number of residential buildings per 2011 census built pre} - 1980\ (\textit{NEXIS})}{\textit{Number of buildings at } 1981}$$

$$= \textit{proportion of houses from } 1980 \textit{ that remain in } 2011$$

$$\approx \textit{proportion of houses from } 1984 \textit{ that remain in } 2014$$

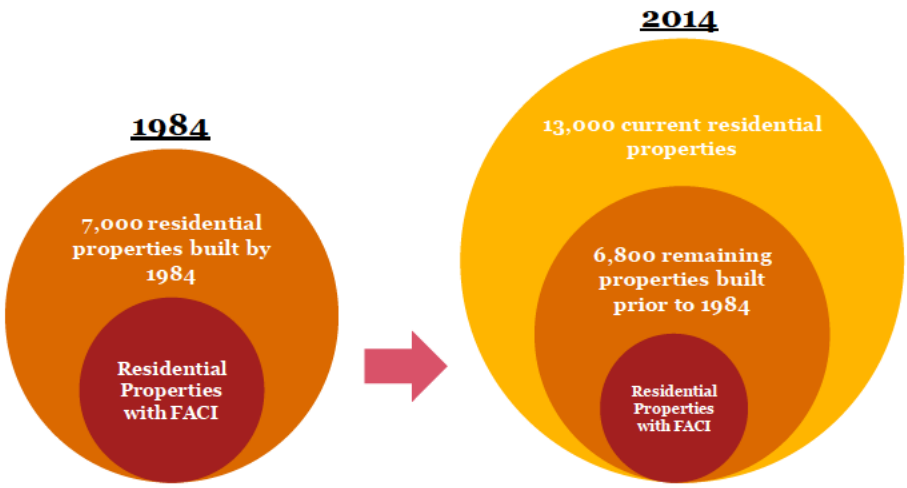
$$\frac{71{,}105}{69{,}220} = 97\%$$

Assuming this proportion is relatively stable for periods of equivalent length and similar time periods, we believe the turnover from 1981 to 2011 to be a suitable proxy for the turnover between 1984 and 2014.

Different LGAs have different rates of residential property turnover due to their unique histories. At this stage we are unsure of the accuracy of the NEXIS dataset (at the LGA specific level) and are attempting to verify its efficacy with Geoscience Australia and validate it by correspondence with LGAs. As a result, for this preliminary report we have used the Canberra experience and applied this 97% to all LGAs. The experience in Canberra appears reasonable given the close reconciliation of the 2011 housing stock in NEXIS to the 2011 Census (difference of 0.01%), and the low turnover implied (97%). We intend to refine this rate for each LGA on the basis of further inquiries with LGAs (contingent upon the validity of their information). Importantly, we assume that the same proportion applies to both non-Mr Fluffy residential properties and Mr Fluffy residential properties in each LGA (i.e. the turnover of the residential property stock did not discriminate – both are turned over at the same rate).

Figure 5: Worked example

In Queanbeyan, approximately 7,000 residential properties were built by 1981 (as a proxy for 1984). Of these, 97% are assumed to remain as at 2014. This implies that of the approximately 13,000 residential properties existing in 2011 (as a proxy for 2014), approximately 6,800 were standing in the era that Mr Fluffy operated.



FACI = Friable/loose-fill Asbestos containing Ceiling Insulation

Based on this information, we have assumed that of the approximately 340,000 residential properties in 1984 (based on 1981 information, across all 26 Local Councils), approximately 330,000 remain today.

3.1.3 Limitations

The key limitations of this part of our analysis are:

- The periods of analysis do not exactly align with those required under the RFQ (1981 has been used as a proxy for 1984 and 2011 has been used as a proxy for 2014) resulting in the use of proxies. The use of the 1981 Census and the NEXIS dataset (which provides a split for residential properties built prior to 1980) is an approximation of "*residential buildings…built prior to 1984*". Further investigation may be able to clarify the extent of asbestos insulation in residential properties beyond the period of interest, specifically post-1980 (the period used as a proxy for 1984).
- The boundaries of LGAs have shifted over the period from 1984 to 2014. Residential properties have been shifted between LGAs, some of which are not in scope. This will affect the estimated number of affected properties. We have attempted to allow for this by combining LGAs that existed in 1984 into their resultant LGA in 2014. In the situation where a LGA from 1984 is split amongst several LGAs in 2014, we have used share of area (km²) to allocate residential properties.
- The NEXIS dataset has not been validated by LGAs or Geoscience Australia. In an attempt to verify the NEXIS dataset, we compared NEXIS's number of residential buildings as at 2011 to the 2011 Census of Population and Housing **[E2]**. The reconciliation encountered issues for all LGAs except Canberra. The difference between the 2011 Census and the NEXIS dataset reduces the confidence that can be placed in the NEXIS dataset. As a result, for this preliminary report, we have used the observed proportion of residential properties built before 1980 in Canberra. However, we do expect LGAs to have different rates of turnover and attrition in the stock of residential properties. We have contacted Geoscience Australia in order to verify the data and are awaiting a response. We have also contacted three LGAs (Parramatta, Yass and Palerang) in order to validate the number of residential properties built before 1980 (Table 3).

Table 3. Validation of NEXIS using LGA estimates

LGA	NEXIS Estimate	LGA Estimate
Palerang	202	2,350 (estimate of 100 residential properties turned over in period) (response: 3/11/2014)
Parramatta	5,713	No response provided to date (contact: 31/10/2014)
Yass	464	No estimate provided (response: 31/10/2014 "Yass Valley Council does not have the requested information you seek, nor do we have the resources to obtain the information for you at this point of time, as this would involve a staff member going through years of registers and property files.")

Given the significant difference between Palerang Council's response and the NEXIS records (Table 3), we intend to verify the NEXIS figures with the remaining 23 councils that are in scope before relying on the LGA specific rate of residential property turnover implied by NEXIS.

We intend to refine the 97% assumption if we uncover evidence that suggests LGAs deviate materially from the experience of Canberra.

Further we note the following disclaimer attached to the NEXIS data source:

> *"The material in this output is provided for general information only and should not be relied upon for any particular purpose. It is made available on the understanding that the Australian Government is not thereby engaged in rendering professional advice.*
>
> *The Australian Government does not guarantee that the content, data or any other information output generated by this application, is complete or without flaws and therefore disclaims all liability for any error, loss or damage that may arise out of, or in connection with use or reliance upon it."*

3.2 Number of residential properties impacted

This section estimates the proportion of residential properties that were built prior to 1984, which may have been affected by loose-fill asbestos ceiling insulation. When this proportion is applied to the number of residential properties built pre-1984 (calculated in Section 3.1), the resulting number is our estimate of the affected residential properties in each LGA.

The estimate is highly uncertain and is the result of incorporating qualitative information gathered as a result of our investigation (Section 1). Given this investigation is ongoing, these estimates represent our preliminary findings. To illustrate the uncertainty, a range of potential proportions have been modelled.

Our estimates incorporate the following components:

- The ACT experience where the proportion of friable asbestos ceiling insulation is 1.52%, which we have used as a starting point to adjust the other LGA's having regard to the proximity to the ACT
- A tiering of LGAs based on their proximity to the ACT
- Evidence identified regarding the LGA's exposure to friable asbestos ceiling insulation
- The number of households that have requested sampling as a guide, to the extent to which householders are concerned that they may be exposed to friable asbestos ceiling insulation and that their household has the relevant features of a Mr Fluffy house.

3.2.1 Extent of installations – the ACT experience

There have been 1,049 positive tests in the ACT. These were identified through a program of inspection conducted in the 1990s that involved correspondence sent to approximately 65,000 residential premises in the ACT that were built in the period of Mr Fluffy's operations. This program was intended to identify all Mr Fluffy residential premises in the ACT in order to begin the remediation process. There are reports that a few properties were 'missed' during this visual inspection. To date 5 positive tests have emerged from these 'missed' properties **[A101]**. This may impact our calculation but it is likely to be immaterial.

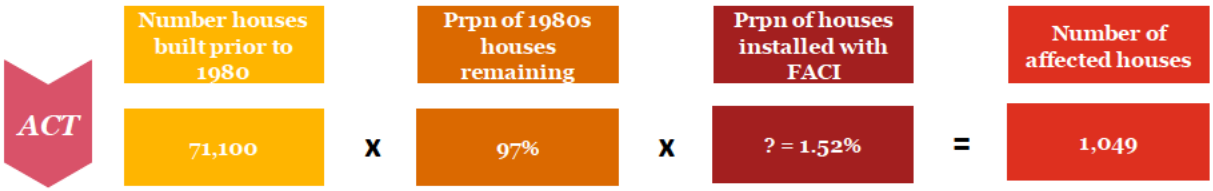
The housing stock in the ACT according to the 2011 Census included 69,000 residential properties which were built in 1980 or prior, and the 1981 Census recorded 71,100 residential properties; therefore 97.3% of the houses that were built in 1980 or prior are still standing today. As a result, we have assumed that the number of houses still standing in the ACT that received positive tests account for approximately 97.3% of the residential properties that originally contained friable asbestos ceiling

insulation. This suggests that Mr Fluffy completed 1,078 (=1,049/97.3%) installations in the ACT (assuming no further positive cases are recorded). [3]

The number of installations in the ACT (1,078) equates to 1.52% of the stock of residential property in 1981 (69,000 * 1.52% = 1,049). This 1.52% is consistent with the proportion quoted in the media and constitutes our starting point for estimating the number of affected properties in other LGAs.

A visual presentation of this calculation is included below (Figure 6).

Figure 6. Calculation of ACT experience



3.2.2 Extent of installations – other LGAs

If Mr Fluffy installed loose-fill asbestos-containing ceiling insulation to the same extent as Canberra (1.5%) in all of the LGAs in scope, then there could be 5,000 affected properties across NSW. As noted above, in 1987, Mr Jansen advised that there could be 5,000 or more affected properties **[C108]** across the ACT and surrounding region with 10-15% of this in Queanbeyan. However, we note that the source of this information qualifies Mr Jansen's comment as 'unreliable' **[C108]**. Further, Mr Jansen's estimate appears to be inconsistent with the current evidence of 1,049 houses in Canberra.

As a result, we have used the LGA's proximity to the ACT to estimate the extent to which Mr Fluffy operated in these LGAs. This model assumes that the number of installations reduces as distance from the ACT increases.

We have assumed that the proportion of residential premises that were built by 1984 that are affected by loose-fill asbestos-containing ceiling insulation is likely to be higher in Canberra than in other LGAs. As a result, we consider the experience in the ACT as the worst case scenario for NSW residential properties.

For this preliminary report we have divided the LGAs into several 'tiers of proximity', each with a lower proportion of affected residential properties as the distance from the ACT increases, as shown in Figure 7.

[3] Any additional positive cases in the ACT would lead to an increase in this percentage.

Figure 7. LGA tiers

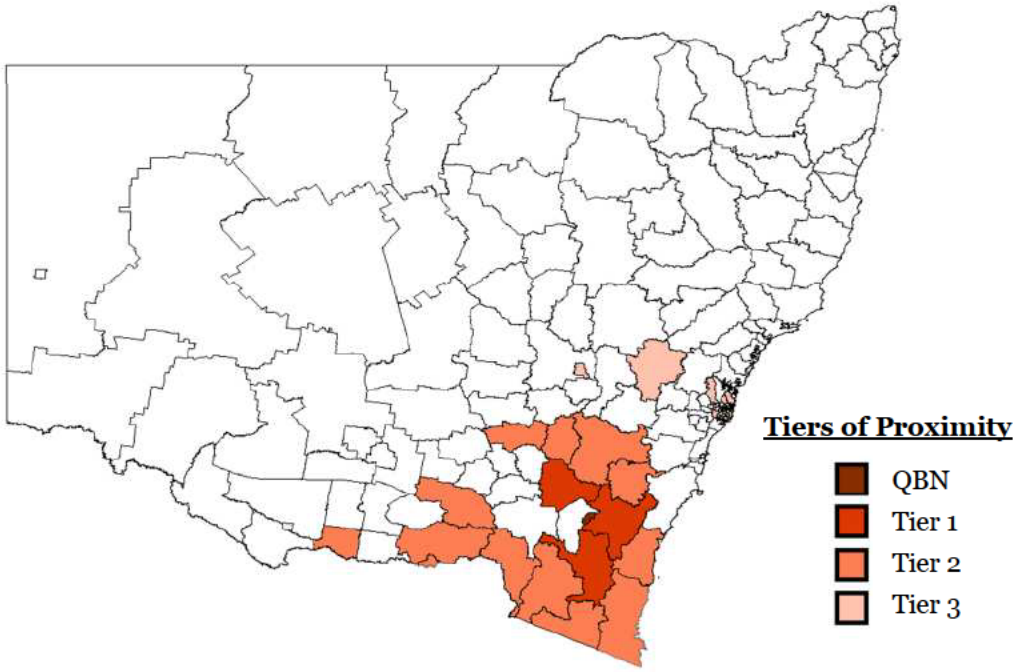


Table 4 outlines our estimated proportions (high, medium and low) for the affected residential property stock, by tier of proximity. Included in the table is our rationale for the inclusion of the LGAs in the tier.

Table 4. Tiers of Proximity

Tier of Proximity	Range of proportions	Included LGAs	Rationale
Queanbeyan	High: 1.52% Med: 1.52% Low: 1.52%	Queanbeyan	Neighbour to Canberra, with few barriers preventing cross-border operations. No justification for a different proportion of residences affected. • 16 positive test results • 150 registrations for sampling (week 12) In 1987, Mr Jansen advised that about 10-15% of the insulation was carried out in Queanbeyan **[C108]**.
Tier 1: Inner Circle	High: 1.52% Med: 1.26% Low: 1.00%	Yass Valley Palerang Cooma-Monaro	LGAs surrounding Canberra. The 3 main roads exiting Canberra pass though these Local Councils. • 1 positive test in Yass Valley, 1 in Palerang • 98 registrations for sampling (week 12) In 1987, Mr Jansen advised that there were a "*few houses in Yass*" and "*nil* [houses] *in Cooma*" **[C108]**.
Tier 2: Outer Circle	High: 0.75% Med: 0.30% Low: 0.10%	Albury Bega Valley Berrigan Bombala Boorowa Eurobodalla Goulburn Mulwaree Greater Hume Shire Snowy River Tumbarumba Upper Lachlan Shire Wagga Wagga Young	No positive test results, however, households are current undergoing testing in multiple LGAs and anecdotal evidence suggests Mr Fluffy operating in Eurobodalla, Wagga Wagga, Greater Hume, and others. • 0 positive tests • 212 registrations for sampling (week 12) In 1987, Mr Jansen advised that there were "*nil* [houses] *in…Goulburn*" **[C108]**.
Tier 3: Satellites	High: 0.15% Med: 0.08% Low: 0.05%	Ku-ring-gai Lithgow North Sydney Orange Bankstown Manly Parramatta The Hills Shire Warringah	Larger and further afield LGAs where market penetration was likely to be of lesser extent as it would be uneconomical to do substantial amount of work by a Canberra-based operation. Work is likely to be completed in clusters. • 4 positive tests • 210 registrations for sampling (week 12)

Table 5 outlines our estimates based on assumed proportions by tier of proximity.

Table 5. Proximity Model Results

Tier of Proximity	Local Council	Number of Residential Properties Built by 1984 (1981 Census)	2014 Housing Stock, built pre-1984	Number of Testing Registrations*	Number of Positive Tests**	Number of Negative Tests***	Estimates					
							High		Mid		Low	
		[a]	[b] = [a] * 97%				[c]	[d] = [b] * [c]	[e]	[f] = [b] * [e]	[g]	[h] = [b] * [g]
	Canberra	71,105	69,220	N/A	1,049	N/A	1.52%	1,049	1.52%	1,049	1.52%	1,049
QBN	Queanbeyan	6,980	6,795	150	16	0	1.52%	103	1.52%	103	1.52%	103
Tier 1: Inner Circle	Yass Valley	2,325	2,263	48	1	26	1.52%	34	1.26%	28	1.00%	23
	Palerang	2,383	2,320	14	1	13	1.52%	35	1.26%	29	1.00%	23
	Cooma-Monaro	3,185	3,100	36	0	5	1 52%	47	1.26%	39	1.00%	31
Tier 2: Outer Circle	Albury	11,764	11,452	2	0	2	0.75%	86	0.30%	34	0.10%	11
	Bega Valley	7,468	7,270	16	0	25	0.75%	55	0.30%	22	0.10%	7
	Berrigan	2,284	2,224	6	0	7	0.75%	17	0.30%	7	0.10%	2
	Bombala	1,104	1,075	7	0	11	0.75%	8	0.30%	3	0.10%	1
	Boorowa	959	934	6	0	3	0.75%	7	0.30%	3	0.10%	1
	Eurobodalla	8,237	8,019	13	0	10	0.75%	60	0.30%	24	0.10%	8
	Goulburn Mulwaree	7,745	7,540	18	0	32	0.75%	57	0.30%	23	0.10%	8
	Greater Hume Shire	5,856	5,701	2	0	2	0.75%	43	0.30%	17	0.10%	6
	Snowy River	1,877	1,827	13	0	2	0.75%	14	0.30%	5	0.10%	2
	Tumbarumba	1,285	1,251	0	0	2	0.75%	9	0.30%	4	0.10%	1
	Upper Lachlan Shire	2,978	2,899	7	0	10	0.75%	22	0.30%	9	0.10%	3
	Wagga Wagga	14,246	13,868	105	0	5	0.75%	104	0.30%	42	0.10%	14
	Young	3,425	3,334	17	0	12	0.75%	25	0.30%	10	0.10%	3
Tier 3: Satellites	Ku-ring-gai	30,636	29,823	72	0	20	0.15%	45	0.08%	22	0.05%	15
	Lithgow	6,563	6,389	3	1	0	0.15%	10	0.08%	5	0.05%	3
	North Sydney	24,968	24,306	22	0	5	0.15%	36	0.08%	18	0.05%	12
	Orange	9,410	9,160	12	0	0	0.15%	14	0.08%	7	0.05%	5
	Bankstown	45,476	44,270	23	1	0	0.15%	66	0.08%	33	0.05%	22
	Manly	15,357	14,949	3	1	0	0.15%	22	0.08%	11	0.05%	7
	Parramatta	41,772	40,665	2	0	0	0.15%	61	0.08%	30	0.05%	20
	The Hills Shire	24,721	24,066	51	1	3	0.15%	36	0.08%	18	0.05%	12
	Warringah	58,198	56,655	22	0	0	0.15%	85	0.08%	42	0.05%	28
	Total (excl. Canberra)	341,202	332,157	670	22	195		1,100		590		372

* Sampling registrations up to week 12

** Postive tests identified by PwC

*** Negative test results from Sampling program up to week 12, and Police checks

Our preliminary estimates in Table 5 suggest that the scale of the issue facing NSW may lie within the range of 372 to 1,100 residential properties.

Our estimates rely on our investigations to date including the number of sample testing registered and focus on Mr Fluffy's operations, and should evidence of other operators or additional positive tests come to light we may need to revise our estimates.

The risks associated with these estimates are included in Section 4.3.

4 Capacity Model

As noted above, the Capacity Model was used to triangulate the numbers identified through the Proximity Model. The Capacity Model is based on the years of operation of Mr Fluffy and we did not have sufficient information about Mr Fluffy's locations of operation to conduct this analysis by LGA, therefore this has been conducted for NSW as a whole.

The purpose of the Capacity Model is to form a view on the feasible volume of work that Mr Fluffy had the capacity to achieve over the period of his operations. The preliminary investigation uncovered several key findings, specifically:

- Mr Fluffy started operations in 1967 and while our investigations thus far have not yielded a solid cessation date, we understand that asbestos (amosite) was banned Australia-wide in 1984.

  This implies that Mr Fluffy could have operated for a maximum of 16 years. It was reported that the asbestos product used by Mr Fluffy was banned in the ACT in 1979, suggesting that Mr Fluffy could have operated solely in NSW for the remaining 4 years of his operations, or wound up operations in 1979. According to the ACT taskforce, Mr Fluffy operated until 1978/79 in Canberra and the surrounding region **[A101]**.

  Our estimate assumes a 12 year period of operations.

- Mr Fluffy may have been able to complete between 10 and 36 installations in a week.

  This is based on information gathered from a primary source, former employee Mr Laughlan (Section 1.2.2), who indicated that over his 6 month tenure with Mr Fluffy they were able to complete 4 to 6 installations per day, working a 6 day week. However, Mr Laughlan emphasised that not every day was spent installing loose-fill asbestos – Mr Jansen also operated other businesses, primarily plastering.

  The second source of information is gathered from secondary sources (including the Canberra Times), which suggest that Mr Fluffy could complete 10 installations in a week.

  Given that Mr Laughlan indicated that they would take approximately 2 hours per installation and were not fully utilised by the insulation business, our estimate utilised 12 installations per week.

- Additional assumptions include:
  - Annual leave period: 4 weeks
  - Annual downtime period: 2 weeks (period of no operations due to factors such as the weather)
  - Only one pump in operation (we have found no evidence to suggest that the scale of his operations exceeded a one pump business)

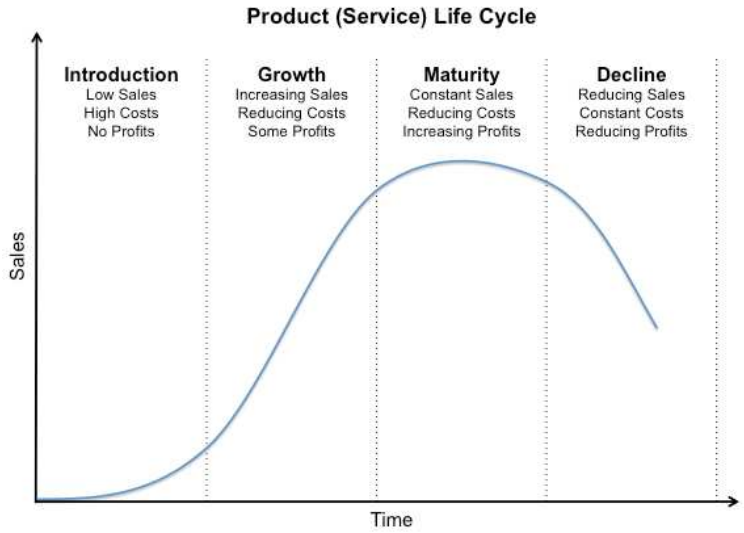
Based on the above evidence, the feasible volume of work Mr Fluffy could have completed quickly becomes unreasonable (e.g. a rate of 12 installations per week, 46 weeks per year, over a 12 year career results in approximately 5,400 affected properties across NSW today – we do not consider this to be reasonable).[4]

An important consideration in the reliability of Mr Laughlan's evidence is the product life cycle of loose-fill asbestos. Mr Laughlan worked for Mr Fluffy in the early part of the product's life cycle. As a cheap and effective form of ceiling insulation, it is likely that sales were at their highest in this period. In our experience, unchanged products have an economic lifecycle similar to Figure 8. Section 1.2.5 identifies Mr Fluffy advertising for a period of 3 years (1968 to 1971). This could indicate a possible peak period of up to

[4] The 5,400 (exact figure of 5,376) is calculated as 12 installations per week, multiplied by 46 weeks in the year multiplied by 12 years, multiplied by 97%, less the 1049 in Canberra, equal to 5,376.

3 years. We note, however, that we do not have specific information on the lifecycle of Mr Fluffy's loose-fill asbestos and the below diagram is an indication only.

Figure 8. The Product Life Cycle



As a result, we have refined our Proximity Model to allow for a product lifecycle. This lifecycle reflects the possible 3 year peak at a rate of 4-6 houses per day for 3-2 days per week, and adopts sales volumes at lower rates for periods beyond this. It is based on a 12 year career. Table 6 outlines three possible sale rates for years beyond the peak.

- The low range estimate assumes that the product lasted 6 years, at peak installation rate for 3 years and then at half capacity for the following 3 years;
- The mid range estimate assumes that the product lasted 12 years; allowing for a further 6 years of relatively low sales on top of the low range estimate; and
- The high range estimate also assumes a 12 year product life, however the rate of sales is constant at peak rate for the entire period.

Table 6. Capacity Model with product lifecycle refinements

Cycle Period	Years in Cycle Period	Low		Mid		High	
		Installations per week	Estimated Installations	Installations per week	Estimated Installations	Installations per week	Estimated Installations
1	3	12	1,656	12	1,656	12	1,656
2	3	6	828	6	828	12	1,656
3	6	0	0	3	828	12	3,312
Total estimated installations by 1984			2,484		3,312		6,624
Total estimated installations remaining (97%)			2,409		3,213		6,425
less current ACT experience			-1,049		-1,049		-1,049
Total current NSW estimate			**1,360**		**2,164**		**5,376**

Based on the above calculations, we estimate that Mr Fluffy had the capacity to complete approximately 3,200 total installations over the 12 year period, with 2,150 in NSW. However, if initial levels were sustained, this capacity could be in the order of 6,400 in total (5,400 in NSW). We note that these estimates do not explicitly distinguish between residential and commercial properties. To date we have not identified significant evidence of substantial commercial operations.

These estimates compare to the Proximity Model estimates of 372 to 1,100 affected residential properties. Assuming a working year of 46 weeks and a 12 year career, the Proximity Model estimates imply that Mr Fluffy completed 2.5 to 4 installations per week (after allowing for the positive cases identified in the ACT and the attrition of residential properties over the period). This implies that insulation was approximately 10% of Mr Fluffy's business (100% would yield 36 installations per week according to Mr Laughlan **[D1]**, therefore 10% would yield approximately 3.6 installations per week).

In 1987, Mr Jansen advised that there could be 5,000 or more affected properties **[C108]** across the ACT and surrounding region, however note that the source of this information qualifies Mr Jansen's comment as 'unreliable' **[C108]**. This estimate is consistent with Mr Fluffy working 2 days a week, completing 4-5 installations per day, working 46 weeks in a year, for 12 years. While this seems like a reasonable volume of work, it appears to be incongruent with the current evidence of 1,049 houses in Canberra, where he advised that he carried out the bulk of his work **[C108]**. We consider this as a key risk to our quantification.

4.1 Financial records model

The purpose of this model is to understand the feasible volume of work conducted by Mr Fluffy from financial records. At this stage, our investigations have not yielded sufficient information to determine approximate revenue for Mr Fluffy's insulation operations. As such, at this point in time we do not consider the model to be viable, however, if further information is discovered then it may yield informative results.

An important factor in the efficacy of this cross-check is the proportion of time that Mr Fluffy operated in NSW as opposed to the ACT. This is a critical piece of information in determining the scale of the issue facing NSW. At this stage, our investigation has not yielded any clarity on this split. In the 'Future model enhancements' section (Section 4.2) we outline possible sources of information that would help to estimate this split.

To date we have discovered that:

- An installation for an 11m² house was charged to customers at $82.50
- 120kg of asbestos was used in houses, spread 2 inches thick
- Hessian sacks weighing 45kg were used

In order to complete our understanding of Mr Fluffy's financial records and to explore this avenue of modelling, revenue or tax information is necessary. To make such an analysis feasible, we would also need to understand the proportion of time spent or revenue generated from the insulation operations as opposed to other operations (e.g. plastering).

4.2 Future model enhancements

As previously mentioned, the proportion of Mr Fluffy's operations in NSW is a critical factor in estimating how many residential properties may be affected. Possible lines of enquiry to obtain this information include:

- ATO – tax returns and financial statements

  These statements may indicate revenue levels and may show revenue by business activity. This may assist in the identification of revenue from insulation operations, which could be divided by the average price of insulation in order to calculate the number of properties with insulation installed.

- Workers compensation policies held by Mr Fluffy

  These policies could indicate the number of employees and their wages which could indicate the size of his operations by State. This could assist in the apportionment of business activities between the ACT and NSW. Further, the period of workers compensation cover could provide insight as to the duration of Mr Fluffy's operations.

- Union membership

  As a member of the construction industry in the 1960s to 1980s, Dirk Jansen was likely a Labour union member. The duration of his membership may indicate the period over which he worked. This information could improve our understanding of the period of Mr Fluffy's operations, helping to refine our Capacity Model.

- Banking details

  We are aware that Mr Fluffy offered finance with a 10% deposit (Figure 2). If this financing was arranged through a financial institution rather than being absorbed by the business, this may shed light on the volume of work completed.

4.3 Key risks associated with our estimates

Overall, we believe that there is a relatively low risk that the actual number of residential properties across NSW containing loose-fill asbestos is substantially greater than our estimates. This hypothesis is based on the several significant touch points over a residential property's economic life (particularly over the last 30 years) whereby its insulation options will be assessed or loose-fill asbestos could be identified. These touch points include:

- Property inspections

  A large number of properties in NSW will have been bought and sold, perhaps on several occasions, during the past 30 years. These properties would have been subjected to various inspections where loose-fill asbestos could have been identified and managed.

- Access to the ceiling cavity

  It is likely that each dwelling built before 1984 would have experienced an event involving the roof at some point during the past 30 years. For example roof repairs may have been required or home improvements such as the installation of air conditioning or new lighting. All of these events would have required access to the ceiling cavity where loose-fill asbestos could have been identified and managed.

- Home Insulation Program

  The Commonwealth government offered free/ fully rebated insulation to around 1.2 million homes in Australia over 2009/10. This program would have provoked households to consider their insulation options, determine whether or not they already had insulation in their homes, and whether they wanted to apply for this government program.

- Free sampling program

A free testing program is available in NSW which reduces the initial cost deterrent. That being said, we have evidence that some households are concerned about the broader economic consequences of having a house identified as containing loose-fill asbestos and are therefore reluctant to come forward for testing.

- Programs of discovery

  Many of the councils have arranged media campaigns to warn residents of the risks associated with loose-fill asbestos and to encourage them to apply for a test if they have any suspicions.

However, we note that given the scarcity of available information regarding Mr Fluffy's operations and the number of residential properties that existed during the period of Mr Fluffy's operations, any estimate of the remaining number of residential properties will be uncertain.

Below is a table of the key input assumptions accompanied by an explanation regarding their uncertainty.

Table 7. Assumptions and uncertainties

Input Assumption	Source	Uncertainties
Choice of LGAs	Office of Finance and Services	The estimated number of affected residential properties can be influenced by the number of LGAs which are included in the scope of the project as their conservative inclusion will result in an inflation in the stock of residential premises.
LGA boundaries		Over time the boundaries of the relevant LGAs have changed. Specifically there is uncertainty regarding Palerang, the Upper Lachlan Shire, Goulbourn Mulwaree, Greater Hume Shire, and Yass Valley.
Mismatch of periods of interest	*Caused by availability of data	The use of 1981 Census information rather than the actual housing stock at 1984, and the determination of the proportion which remain today by using the NEXIS dataset which relies upon the 2011 Census rather than 2014 figures.
Stock of residential premises in 1981	ABS	The ABS sourced statistics indicate the number of dwellings rather than the number of properties and does not provide sufficient granularity to split the data further. This has been allowed for by reducing the 1981 dwellings by 6% - using NSW-level information that 94% of dwellings were individual buildings.
Proportion of residential premises built prior to 1980 which remain today	Geoscience Australia (NEXIS)	The assumption of 97% applied to all LGAs is based on the un-adjusted experience of the ACT. There are significant factors that are unique to each LGA which will drive differences in the rate at which the housing stock 'turns over'.
Starting assumption of 1.5% of residential premises that existed in the ACT in 1981 are affected	News articles	The 1.5% assumption is based on reported to date positive tests (1,049) and makes no allowance for future positive tests. Given the extensive program of discovery conducted in Canberra, it is likely that this will be sufficiently close for our purposes. Further, by using it as a starting point, there is the implicit assumption that the experience of Canberra is relevant to the selected LGAs.

This list is not exhaustive, however it provides an indication of the high level of uncertainty which accompanies the estimates outlined in this report.

4.3.1 Disclaimer

This document has been prepared pursuant to the Prequalification Scheme contract between PwC and the NSW Office of Finance and Services dated 26 September 2014.

Our work does not constitute an audit in accordance with generally accepted auditing standards or assurance standards. Accordingly, we provide no assurance with respect to our work or the information upon which our work was based.

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This document is prepared based on information made available to us up to the date of this document and we reserve the right to amend our opinions, if necessary, based on factual information that comes to our attention after that date.

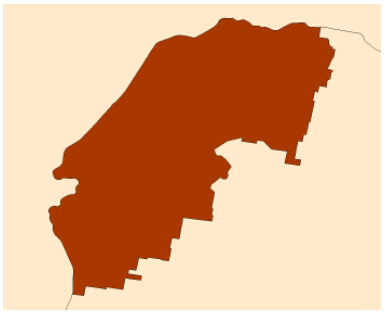
Our advice constitutes a "Professional Service" as defined in the Code of Professional Conduct (the Code) issued by the Institute of Actuaries of Australia. Our advice will comply with the Code in this respect. However, our advice is not "Prescribed Actuarial Advice" and therefore is not governed by the additional requirements for Prescribed Actuarial Advice that are set out in the Code.

Appendices

Appendix A Council Profiles

City of Queanbeyan

Area:	*172 km²*
Residential properties:	*13,000*
Population:	*40,000*
Estimated properties affected:	*High: 103*
	Low: 103



In 1987, Mr Jansen advised that about 10-15% of the insulations were carried out in Queanbeyan **[C108]**.

Extent of Asbestosfluf advertising

We searched The Queanbeyan Age to identify whether Mr Fluffy advertised within the Queanbeyan area. As per Appendix B, we searched newspapers between June 1970 and December 1980. No advertising from Mr Fluffy was identified in the newspapers searched during this period.

Testing information

In 1989, the NSW Government offered residents of Queanbeyan a voluntary asbestos identification service, which was carried out between 1986 and 1996 by Queanbeyan Council. 360 homes were inspected **[A087].**

A free-of-charge sampling service was announced by the NSW Government for a period of 12 months, 15 August 2014 to 15 August 2015, conducted by Licensed Asbestos Assessors for premises within Queanbeyan and other LGAs. As at 10 November 2014, there were 150 registrations.

We understand that a total of 16 properties within Queanbeyan have been identified as containing Mr Fluffy loose-fill asbestos **[C211].** We understand that one property has had the loose-fill asbestos removed, obtaining an appropriate clearance certificate **[C128],** whilst another property is owned by Housing NSW **[C236].**

The NSW Police performed testing of 609 properties around New South Wales, no properties within the City of Queanbeyan tested positive **[C210].**

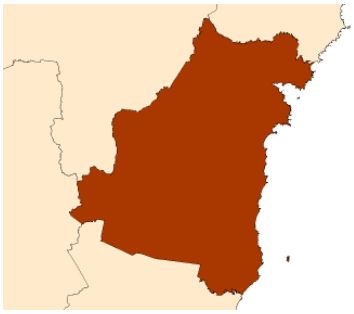
LGA's program for discovery

We were provided with the following information from the City of Queanbeyan relating to their program of discovery:

- An informative document provided to the Health and Building Department of the City of Queanbeyan dated 19 July 1990 providing details about Asbestosfluf insulation in residential premises **[C068]**.
- During 1995 to 1996, 5,000 letters were sent to owners of homes built before 1980 advising them of Council's identification service. In addition, a leaflet was distributed with rates notices **[C032]**.
- A letter provided to all properties who, from council records, have been identified as having, or previously having, loose-fill asbestos fibres in their ceiling cavity. The letter informed the property owners of this fact and advised them of the health risks of asbestos and provided recommendations as to how to limit their exposure **[C112]**.
- A homeowner's guide to Friable "Mr Fluffy" Asbestos Insulation is provided to residents of Queanbeyan enquiring about the issue **[C113]**.
- A general flyer was provided to residents of Queanbeyan with their rates notice **[C159]**.

Eurobodalla Shire Council

Area:	*3,428 km²*
Residential properties:	*20,000*
Population:	*36,000*
Estimated properties affected:	*High: 60*
	Low: 8



Extent of Asbestosfluf advertising

We searched the Southern Star to identify whether Mr Fluffy advertised within the Eurobodalla area. As per Appendix B, we searched newspapers between June 1970 and December 1980. No advertising from Mr Fluffy was identified in the newspapers searched during this period.

Testing information

A free-of-charge sampling service was announced by the NSW Government for a period of 12 months, 15 August 2014 to 15 August 2015, conducted by Licensed Asbestos Assessors for premises within the Eurobodalla Shire Council and other LGAs. As at 10 November 2014, 13 properties had registered for the sampling service **[C236].**

We have not been provided with the results of the samples undertaken on these properties as at 10 November 2014.

The NSW Police performed testing of 609 properties around New South Wales, of which 2 properties were located within the Eurobodalla Shire Council. We understand these 2 properties tested negative for loose-fill asbestos **[C210].**

Other potential leads

During our investigation, we identified an article from the ABC program Stateline in March 2005. In this article, a former resident of Batehaven, Piers Booth, stated that Mr Fluffy "*made its way to Batehaven in trailers of residents that installed loose-fill insulation themselves.*" Another resident, Jack Parker, also supplied residents of Batehaven with sacks of loose-fill insulation to residents to install in their roofs **[C104]**.

LGA's program for discovery

We were not provided with information from the Wagga Wagga City Council relating to their program of discovery.

A search of local newspapers within the Eurobodalla area, such as the Bay Post, identified the following articles relating to the current sampling service being conducted by WorkCover:

- A newspaper article dated 15 August 2014, entitled "NSW Government launches Mr Fluffy Investigation", providing details of the sampling service provided by the NSW Government. The article advises that residents requiring advice on managing asbestos insulation visit the WorkCover NSW website **[A052].**

Ku-ring-gai Shire Council

Area:	*85 km²*
Residential properties:	*32,500*
Population:	*109,000*
Estimated properties affected:	*High: 45*
	Low: 15

Extent of Asbestosfluf advertising

We did not perform a search of local newspapers in Ku-ring-gai Shire Council.

Testing information

A free-of-charge sampling service was announced by the NSW Government for a period of 12 months, 15 August 2014 to 15 August 2015, conducted by Licensed Asbestos Assessors for premises in Ku-ring-gai Shire Council and other LGAs. As at 10 November 2014, 72 properties have registered for the sampling service **[C236].**

We have not been provided with the results of the samples undertaken on these properties as at 10 November 2014.

The NSW Police performed testing of 609 properties around New South Wales, of which no properties were located in the Ku-ring-gai Shire Council **[C210].**

Other possible leads

Through our investigation, we identified an inspection of a property located at performed on 29 August 1977. The inspection of the insulation indicated it was a "mixture of chrysotile asbestos and mineral wool and was friable" **[C070].**

LGA's program for discovery

We were provided with the following information from the Ku-ring-gai Shire Council relating to their program of discovery:

- A webpage on the Ku-ring-gai Shire Council website published on 20 August 2014, entitled "Mr Fluffy – Loose-Fill Asbestos Warning". The webpage provides information to home-owners about the free inspections of properties being conducted by WorkCover. The webpage advices home owners to contact WorkCover or visit their website for additional information **[C095].**

Wagga Wagga City Council

Area:	*4,826 km²*
Residential properties:	*22,000*
Population:	*59,000*
Estimated properties affected:	*High: 104*
	Low: 14

Extent of Asbestosfluf advertising

We searched the Daily Advertiser to identify whether Mr Fluffy advertised within the Wagga Wagga area. As outlined in Appendix B, we searched newspapers between March 1969 and December 1987. No advertising from Mr Fluffy was identified in the newspapers searched during this period.

Testing information

A free-of-charge sampling service was announced by the NSW Government for a period of 12 months, 15 August 2014 to 15 August 2015, conducted by Licensed Asbestos Assessors for premises in Wagga Wagga City Council and other LGAs. As at 10 November 2014, 105 properties have registered for the sampling service **[C236].**

We have not been provided with the results of the samples undertaken on these properties as at 10 November 2014.

The NSW Police performed testing of 609 properties around New South Wales, of which 5 properties were located in the Wagga Wagga City Council. We understand these 2 properties tested negative for loose-fill asbestos **[C210].**

Other possible leads

During our investigation, we identified a statement from an individual who worked within the Wagga Wagga City Council to the Dust Disease Board. The individual remembered "*that [a] truck from Canberra would pull up at the house, lift a few tiles and pump it in*" **[C219].**

LGA's program for discovery

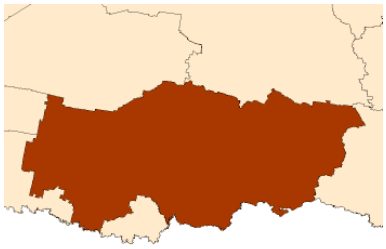
We were not provided with information from the Wagga Wagga City Council relating to their program of discovery.

A search of local newspapers within the Wagga Wagga area, such as the Daily Advertiser, identified the following articles relating to the current sampling service being conducted by WorkCover:

- Article dated 15 September 2014, entitled "Mr Fluffy Haunts", detailing the free asbestos testing program that his being conducted **[A073].**

Greater Hume Shire Council

Area:	*5,749 km²*
Residential properties:	*4,000*
Population:	*10,000*
Estimated properties affected:	*High: 43*
	Low: 6



Extent of Asbestosfluf advertising

We did not perform a search of local newspapers in Greater Hume Shire Council.

Testing information

A free-of-charge sampling service was announced by the NSW Government for a period of 12 months, 15 August 2014 to 15 August 2015, conducted by Licensed Asbestos Assessors for premises in Greater Hume Shire Council and other LGAs. As at 10 November 2014, 2 properties have registered for the sampling service **[C236].**

We have not been provided with the results of the samples undertaken on these properties as at 10 November 2014.

The NSW Police performed testing of 609 properties around New South Wales, of which 2 properties were located in the Greater Hume Shire Council. We understand these 2 properties tested negative for loose-fill asbestos **[C210].**

Other possible leads

Through our investigation, we identified documents stating that an individual, known as Mr Byer, operated an insulation firm in Holbrook during the 1960s. Mr Byer, who also owned the Byer Motel within Holbrook, provided loose-fill asbestos 'over a number of local government areas' **[C109].**

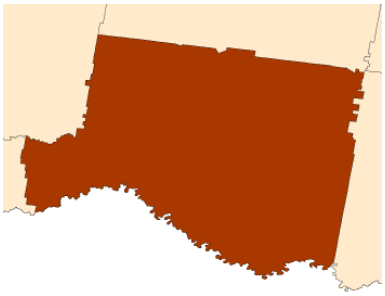
LGA's program for discovery

We were provided with the following information from the Greater Hume Shire Council relating to their program of discovery:

- An issue of the Holbrook Happenings dated 27 August 2014. The newsletter contains an article about loose-fill asbestos, advising readers to contact a licensed asbestos removalist to organise a sample of the material to be tested. The article also advises readers to contact the council for further information **[C191].** We note this article is also on the council's website **[A098].**

Berrigan Shire Council

Area:	*2,066 km²*
Residential properties:	*3,700*
Population:	*8,000*
Estimated properties affected:	*High: 17*
	Low: 2



Extent of Asbestosfluf advertising

We did not perform a search of local newspapers in Berrigan Shire Council.

Testing information

A free-of-charge sampling service was announced by the NSW Government for a period of 12 months, 15 August 2014 to 15 August 2015, conducted by Licensed Asbestos Assessors for premises within the Berrigan Shire Council and other LGAs. As at 10 November 2014, 5 properties had registered for the sampling service **[C236].**

We have not been provided with the results of the samples undertaken on these properties as at 10 November 2014.

The NSW Police performed testing of 609 properties around New South Wales, of which 7 properties were located within the Berrigan Shire Council. We understand these 7 properties tested negative for loose-fill asbestos **[C210].**

Other possible leads

During our investigation, we held discussions with Ms Michelle Koopman from the Berrigan Shire Council and Mr Cuthbert. Ms Koopman stated that a container load of asbestos insulation arrived in Finley in the 1960s **[D003]**.

In addition, Mr Cuthbert, who owned an insulation business in Finley during the 1960s and 1970s, recalled that one competitor, known as Asbestosfluf, would continually undercut him on price. He stated that he recalled a Mr Mal Angel, who was based in Finley installing an asbestos insulation product into residents in the Finley area **[D002]**.

LGA's program for discovery

We were provided with the following information from the Berrigan Shire Council relating to their program of discovery:

- A letter from the Mayor of the Berrigan Shire Council to residents advising them of the investigation being conducted by WorkCover NSW and encouraging them to contact the Council or WorkCover NSW if they have any additional information that may be able to assist in the investigation **[C081]**.

A search of local newspapers within the Berrigan area, such as the South Riverina News, identified the following articles relating to the current sampling service being conducted by WorkCover:

- Article dated 20 August 2014 entitled "Asbestos fears in Berrigan Shire, detailing the investigation being conducted by WorkCover NSW **[A105]**.

Appendix B Methodology

This section outlines the work we have performed during our investigation.

A.1 Obtaining and reviewing documents

Obtaining information

A Work Health and Safety Act Section 155(2) notice was issued to 26 Local Government Areas (LGAs), 9 government agencies in NSW, the ACT taskforce and the Home Insulation Program to give information to the WorkCover Authority of NSW. The notice requested "*any field records, including addresses, held in relation to the discovery, reporting or disposal of loose-fill asbestos material in residential properties.*"

The following councils and government agencies in NSW were issued with a notice to provide information:

Local government areas in scope		Government agencies
Albury City Council	Manly Council	Dust Diseases Board
Bankstown City Council	North Sydney Council	Environmental Protection Authority
Bega Valley Council	Orange City Council	Family and Community Services
Berrigan Shire Council	Palerang Council	Heads of Asbestos Coordination Authorities
Bombala Shire Council	Parramatta Council	NSW Fire Brigade
Boorowa Council	Shire of Young	NSW Ministry of Health
City of Lithgow Council	Snowy River Shire Council	NSW Police
Cooma-Monaro Council	The Hills Shire Council	State Emergency Service
Eurobodalla Shire Council	Tumbarumba Shire Council	Teacher Housing Authority of NSW
Goulburn Mulwaree Council	Upper Lachlan Shire Council	Department of Climate Change/ Home Insulation Program (HIP) - Federal
Greater Hume Shire Council	Wagga Wagga City Council	ACT Taskforce - ACT
Greater Queanbeyan City Council	Warringah Council	
Ku-Ring-Gai Council	Yass Valley Council	

In addition, WorkCover conducted searches of their WSMS system and the Construction register to identify whether additional information could be identified.

Information provided - LGAs

As at 6 November 2014, 22 of the 26 LGAs had responded to WorkCover's notice to provide information. We have not yet received responses from North Sydney Council, The Hills Shire Council, Bankstown City and Parramatta.

12 of the 22 LGAs that responded to WorkCover's notice had no information to provide. Most of these councils searched their electronic databases, but did not search paper records.

Information provided – Government agencies

As at 6 November 2014, 8 NSW government agencies had responded to WorkCover's notice to provide information and we have not yet received a response from the Department of Family and Community Services, Home Insulations Program and the ACT taskforce.

Each government agency responded with an overview of their process to obtain this information and their search terms. An example of search information from the Dust Diseases Board is included below.

a. Searches have been performed on DDB Client Industrial Histories using the following industry or occupation codes:

- Australian and New Zealand Standardised Industrial Classification Code (ANZSIC Version 2 1998):
  - **4259 Construction Services Not Elsewhere Classified** – primary activities listed included performing insulation materials installation
- Australian Standard Classification of Occupations (ASCO 2nd Ed 1220.0):
  - **7914-11 Building Insulation Installer** – tasks include – manipulates hoses to blow insulating material, such as mineral wool, loose-fill and cellulose fibre fill, or sprays foamed insulation
  - **4412-11 Fibrous Plasterer** – tasks include determines plasterboard layout, and installs insulation and vapour barriers
  - **4431-19 Mechanical Services and Air-conditioning Plumber** – tasks may include thermal or acoustic insulation materials to ducting, piping or air handling equipment

b. DDB Client Industrial Histories were searched for the following keywords – insulation, loose, residential, domestic, ceiling, house, home

c. Searches have been performed on Archive Reports Obtained from WorkCover (approx. 1960's-1990's)

Document review methodology

WorkCover sent PwC all documents received from the councils and government agencies listed above. Upon receipt of each document we performed the following procedures:

- Assigned each document with a unique file reference number
- Logged each document into a tracking spreadsheet and included a brief description, the source and the date the document was received
- Filed an electronic version of the document in a secure central folder
- Printed and filed a hard copy of each document
- Performed a review of each document and summarised any relevant information in the tracking spreadsheet. This information was then used to form the basis of our report.

A.2 Entity searches

A search of the Australian Securities and Investments Commission (ASIC) records were conducted for the following companies:

Australian registered company

- Asbestospray Corporation of Australia Pty Ltd
- Dig X Investments Pty Limited (Formerly D. Jansen & Co Pty Limited)
- Dig X Investments Pty Ltd
- J & H Constructions Pty Limited (Formerly Joytama Pty Limited)

Business/ Trading name

- J & H Insulations
- Asbestosfluf Insulations
- D Jansen & Co Pty Ltd
- J & H Constructions

A summary of the results are recorded in Figure 1 this report.

A.3 Media searches

Coverage of searches

Google: The Google search engine identifies any newspaper articles, websites, reports, advertisements and blogs in Australia at any date. These tended to be recent (i.e. post-1990s).

Trove: Trove contains digital copies of print media predominantly from newspapers published in Australia prior to 1955. The Canberra Times is included up until 1995.

Factiva: Factiva contains digital copies of print media predominantly from newspapers published from 1987 in Australia (and worldwide) and excludes classifieds.

NSW State Library: The NSW State Library contains microfilm copies of regional print media in NSW dating from the 1900s. These microfilm newspapers are required to be manually reviewed to assess their relevance.

Research procedures for online searches (Google, Trove and Factiva):

Based on the volume of hits returned for some of these search results, we performed the following procedures to identify relevant information:

1. Our searches were performed using keyword search terms (refer to table below). These keywords included terms that are related to asbestos, Mr Fluffy's operations, or ad hoc terms based on our findings during our investigation.

811531 insulation	Bowsers Asphalt	Holbrook asbestos
811531 insulation quote	Bradford Insulation	Holbrook insurance sale asbestos honey
Amoswool	Byer asbestos	Insulfluf
Asbestos fluff	Calder	Insulfluff
Asbestos spray fibre	Canberra Asbestosfluf	J & H Constructions
Asbestosfluf	D Jansen & Co	J & H Insulations
Asbestosfluf Insulations	Dirk Jansen	John Hetz
Asbestospray	EGNEP asbestos	Joseph Jansen
Asbestospray Corporation of Australia	Fluffy Harrys	loose-fill asbestos
Blue asbestos north shore hospital	Friable asbestos	Mr Fluffy

2. We scanned through the listing of "hits" (i.e. number of search results) to assess their relevance to our investigation. Articles from Australia, focusing on New South Wales articles, were targeted, as well as the years 1965 to 1989 where appropriate.
3. Where a "hit" appeared to be relevant, we scanned the content in the link to assess further for useful information.
4. Where a useful article or advert was identified (that had not previously been identified with other search terms), these were printed and reviewed in depth.

Research procedures – NSW State Library

1. We identified a sample of six councils for initial testing, based on instances of identified or suspected Mr Fluffy asbestos and therefore most likely to produce the highest number of hits.
2. We then searched the database of newspapers to identify the largest regional newspaper that was available for each council for the period being investigated (post-1965).
3. We targeted dates between 1965 and 1987 and then selected a sample of 10-30 dates for each of our 6 regional newspapers to test. In total we searched 130 papers, please refer to the table below for further information.
4. We scanned all advertisements and classifieds within the newspaper looking for any reference to Mr Fluffy asbestos or other loose-fill asbestos insulators.

Council	Specific Newspaper Searched	Dates Reviewed	Daily/ Weekly
Albury City Council	Border Morning Mail	Jan 1965: 1, 2, 3, 4 Jan 1966: 26, 27, 28, 29, 30, 31 Apr 1969: 8, 9, 10, 25 Apr 1977: 2, 4, 11, 12	Daily newspaper
Bankstown City Council	Bankstown and District Observer	Oct 1971: 6, 13, 20 Apr 1972: 12, 19, 26 May 1972: 3 Mar 1975: 12, 19, 26	Weekly newspaper (Wednesday)
Eurobodalla Shire Council	Southern Star	Jun 1970: 3, 10, 17, 24 Dec 1970: 2, 9, 22, 24 Jun 1972: 7, 21, 28 Nov 1972: 29 Dec 1972: 6, 13 Jun 1979: 6, 13, 20, 27 Dec 1979: 5, 12, 19, 26 Jun 1980: 4, 11, 18, 25 Dec 1980: 3, 10, 17, 24	Weekly newspaper (Wednesday)
Greater Queanbeyan City Council	The Queanbeyan Age	Jun 1970: 5, 12, 19, 26 Dec 1970: 1, 8, 15, 22 Jun 1972: 2, 6, 16, 20 Dec 1972: 1, 5, 8, 15, 17 Jun 1979: 1, 4, 8, 20, 22, 25 Dec 1979: 5, 7, 10, 12, 14	Weekly newspaper, then biweekly, then triweekly
Orange City Council	Central Western Daily	Jun 1970: 6, 8, 13, 15, 20, 22 Dec 1970: 5, 7, 12, 14 Jun 1972: 10, 12, 13, 17, 19 Dec 1972: 9, 11, 16, 18, 30 Jun 1979: 9, 11, 16, 18 Dec 1979: 8, 10, 15, 17	Daily newspaper (except Sunday)
Wagga Wagga City Council	Daily Advertiser (Wagga Wagga, NSW)	Mar 1969: 1, 2, 3, 4, 5, 6, 7 Apr 1969: 2 Mar 1974: 8, 9, 10, 11, 12 Apr 1974: 16 Mar 1987: 4, 5, 6	Daily newspaper

A.4 Telephone interviews

During our investigation we identified approximately 50 individuals that may be able to help with our inquiries. We attempted to obtain contact information for each individual by searching through the White Pages, Sentricx, Google and the historical electoral role, but were only able to find the relevant details for approximately half of these people. The table below is a record of the successful inquiries we made for this investigation:

Contact	Line of enquiry	Local government area in question
Former employee of Dirk Jansen	Background information on Dirk Jansen, his family and business ventures Mr Fluffy's business model - location, coverage, products and revenue Mr Fluffy's operations - installation process, suppliers, employees, competitors and marketing	Comments were made in regards to the ACT. Queanbeyan was also mentioned, but no other LGAs in NSW.
Installer of Insulfluf in the 1970s (asthma friendly insulation)	Mr Fluffy's business model and operations Other competitors in the loose-fill insulation business Loose-fill asbestos products and how this differed to other products on the market	Berrigan Shire
Installer of Rockwool insulation in the 1970s		Albury
Berrigan Shire Council employee	Mr Fluffy's business model, operations and competitors Positive tests and programs of discovery Other contacts that may be able to help	Berrigan Shire
Corowa Shire Council employee		Corowa Shire
Bega Valley Council employee		Bega Valley
Queanbeyan Council employee		Queanbeyan
Eurobodalla resident	Information about an individual selling sacks of loose-fill asbestos in Batehaven Mr Fluffy's business model, operations and competitors	Eurobodalla
Head of a Mr Fluffy homeowners	Information about Mr Fluffy's operations/locations in NSW	All
Former WorkCover employee	WorkCover Asbestos Spray register Mr Fluffy's business model, operations and competitors	City of Ryde
Former WorkCover employee	Involvement in potential cases in Sydney in the 1980s Mr Fluffy's business model, operations and competitors	Parramatta
Building surveyor	Mr Fluffy advertising in Wollongong Mr Fluffy's business model, operations and competitors	Wollongong
Envirowest consulting inspector	Extent of testing in Orange and further information on the positive test Mr Fluffy's business model, operations and competitors	Orange

Contact	Line of enquiry	Local government area in question
Pre-purchase building consultant	Pre-purchase inspections/licensing/protocols for sample testing Removal of Mr Fluffy product Mr Fluffy's business model, operations and competitors	Orange, Bathurst, Blayney, Cowra, Parkes, Forbes
Asbestos assessor	Inspections in their LGA – extent of testing and positive tests	Queanbeyan
Asbestos remover	Information about Mr Fluffy's business model, operations and competitors	Sydney
Asbestos assessor	Any intel from clients on Mr Fluffy or other properties in the area that may have loose-fill asbestos insulation	Goulburn, Upper Lachlan, Yass
Asbestos assessor	Removal of Mr Fluffy product	Wagga Wagga, Orange, Albury, Berrigan, Greater Hume, Lithgow
Asbestos assessor		Lithgow, North Sydney, Orange, Warringah, Manly
Asbestos assessor		Ku-ring-gai, Parramatta
Headmaster of a school that had a positive test for loose-fill asbestos	Background information on the loose-fill asbestos used in Warilla North Public School How long are invoices/accounting records retained? Any long standing members of staff that may have additional information on this matter	Shell Harbour
Inspector of an Industrial building that had a positive test for loose-fill asbestos	Establish current owners of 266 Cleveland Street in Surry hills and contact details How long have they owned the building for? When was the loose-fill asbestos material installed and by whom?	City of Sydney

A.5 Selection of data sets

Refer to Section 3 of the report for further information on the data sets we used during our investigation.

Appendix C Asbestos background

Asbestos was used in a variety of products in Australia, including as ceiling insulation due to its thermal insulation properties. The three most commonly used forms of asbestos that have been used in ceiling insulation as loose-fill asbestos include crocidolite (blue asbestos), amosite (brown asbestos) and chrysotile (white asbestos) **[A090]**. Both crocidolite and chrysotile were mined in Australia until mining ceased in 1983, as well as imported from abroad **[A090]**. Our investigation has focused on the following types of loose-fill asbestos:

Crocidolite

Crocidolite is blue-coloured asbestos and part of the amphibole classification, which means that they have brittle, needle-shaped fibres **[A090]**. Mr Adam Spence reported that Mr Fluffy offered crocidolite as a premium product to customers **[A005]**, however, it is the most harmful type of asbestos, since its fibres are extremely thin. Crocidolite was phased out from 1967 following the closure of the crocidolite mine at Wittenoom, WA **[A091]**, however it appears that Mr Fluffy used crocidolite imported from South Africa for loose-fill ceiling insulation **[A5]**. We believe that it was prohibited to manufacture, import or install products containing crocidolite in Australia from 31 December 1984 **[A092]**.

Amosite

Amosite is brown or grey-coloured asbestos and also an amphibole. It has both good tensile strength and heat resistance, and is also harmful **[A090]**. This appears to have been the most common form of asbestos used by Mr Fluffy as loose-fill asbestos **[A5]**, which was produced by EGNEP, a South African mining company, and imported into Australia. We believe that it was prohibited to manufacture, import or install products containing amosite in Australia from 31 December 1984 **[A092]**.

Chrysotile

Chrysotile is white-coloured asbestos. It is a serpentine, which is generally less harmful than the amphibole types of asbestos, since serpentines have flexible curved fibres and therefore require more exposure to cause health issues **[A090]**. The use of chrysotile in Australia (including in building products) was banned on 31 December 2003, with the introduction of the *Occupational Health and Safety Amendment (Chrysotile Asbestos) Regulation 2003* **[A093]**. Chrysotile was the most commonly used form of asbestos in Australia however we have not come across any instances of Mr Fluffy asbestos containing chrysotile.