

Final

**Best practice governance of waste asbestos
transport, storage and disposal – a discussion paper**
4 APRIL 2017

PREPARED FOR

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Submissions on this discussion paper are invited by 19 April.

Please use the comments form provided with the document.

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Report title	Best practice governance of waste asbestos transport, storage and disposal – a discussion paper
Client	Asbestos Safety and Eradication Agency
Status	Final
Author(s)	Joe Pickin
Reviewer(s)	Paul Randell
Project number	P788
Report date	4 April 2017
Contract date	15 December 2016
Information current to	1 February 2016
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Abbreviations & glossary

ACM	asbestos containing material
ASEA	Asbestos Safety and Eradication Agency
OHS	occupational health and safety

Acknowledgements

We are grateful to the waste and asbestos professionals, environmental regulators, safe work regulators and others who contributed their time in helping the authors understand the issues canvassed in this discussion paper. These stakeholders are listed in Appendix A.

1. Introduction

In December 2016, the Asbestos Safety and Eradication Agency (ASEA) commissioned Blue Environment and Randell Environmental Consulting (the consultants) to investigate best practice governance of asbestos waste transport, storage and disposal. The project follows an ASEA (2015) study titled [Asbestos waste in Australia](#), which identified a number of concerns in relation to asbestos waste policy and practices.

As a waste problem, asbestos is uniquely challenging. It is one of few hazardous wastes that is widely distributed across society, one of few wastes that is most appropriately buried in landfill, and it needs special procedures for handling and disposal. Asbestos is a poor fit with the general thrust of waste policy, which is towards fewer landfills, more recycling, and facilities that operate at higher (and costlier) standards of management. Each of the states and territories is striving to deal with waste asbestos management and may benefit from a national perspective. We note there is much more asbestos waste to come – modelling undertaken for ASEA suggests that as much as half the asbestos ever consumed in Australia may still be in use in the built environment today.

1.1.1 The purpose of this document

This discussion paper follows a program of consultation (see list in Appendix A) and supporting research and analysis (see the summaries in Appendices B to E). It aims to shed light on a range of difficult issues, promote discussion, and obtain feedback from stakeholders dealing with asbestos waste issues, including environmental and safe work regulators, health departments, asbestos professionals and the waste industry.

1.1.2 The structure of this document

Section 2 opens with a vision of what an ideal waste management system for waste asbestos might look like, and the prerequisites for this vision to be realised. It then discusses the current situation, noting that although much asbestos is managed in accordance with the ideal, asbestos waste management falls short in many areas. Section 3 considers in detail the pre-requisites for the ideal waste management system, examining ways to improve the situation. A final section considers whether and how national guidance would be useful in improving asbestos waste management.

Discussion prompts are provided throughout the document, but readers are invited to respond to any part of the document.

Various appendices provide technical information to support the discussion paper content.

The primary research questions

Our project brief posed four specific questions from ASEA's waste working group that fall within the broader scope of best practice governance of asbestos waste transport, storage and disposal. They were:

1. What are the threshold quantities applied to asbestos waste and how does this impact tracking and disposal?
2. What is the impact of waste levies and disposal fees for asbestos waste and can a socially optimal model be identified?
3. What are the different approaches to asbestos waste storage that can prevent unsafe stockpiling of asbestos waste?
4. What is the optimal distance to asbestos waste disposal facilities for metropolitan and regional areas?

These primary research questions are considered in Sections 2 and 3.

2 The ideal and the current situation

2.1 The ideal

In the ideal waste asbestos disposal system, all waste asbestos would be safely and directly transported to a landfill and then safely and indefinitely buried.

Prerequisites of the ideal system for waste asbestos disposal are:

- *infrastructure* – a convenient network of safe disposal facilities
- *pricing* – inexpensive, predictable and secure
- *governance* – coordinated governance responsibilities that balance risks and costs, tightly and consistently enforced regulations and comprehensive tracking
- *community understanding* – high levels of understanding within the Australian community about asbestos and appropriate local options for disposing of it.

Discussion prompt #1 Is the text in Section 2.1 a reasonable expression of the ideal waste asbestos disposal system and its pre-requisites?

2.2 The current situation

Much waste asbestos is managed in accordance with the ideal. However, in many cases and many areas it is not. Specifically:

1. not all waste asbestos is transported to landfill
2. not all waste asbestos is transported directly to landfill
3. not all waste asbestos is safely transported
4. not all asbestos received at landfills is safely buried
5. at some landfills buried asbestos could be disturbed
6. access to landfills accepting asbestos is not always convenient
7. disposal of asbestos in landfills is often expensive
8. regulations are not always tightly and consistently enforced
9. tracking of waste asbestos is not comprehensive
10. governance is not always well-coordinated
11. costs and risks may not always be ideally balanced in governance frameworks for waste asbestos
12. many people know little about waste asbestos and how to safely dispose of it.

2.2.1 Not all asbestos is transported to landfill

Asbestos is occasionally dumped illegally in bushland, industrial areas and city fringes. Often the quantities are small but in some cases they are large and clearly of commercial origin. Additionally, in rural and regional areas it is apparently unexceptional for asbestos waste to be illegally disposed of on private property through collusion between the owner and local builders. A report by the Queensland Ombudsman (2013) refers to a mine shaft in that state's south-east that was widely used for illegally disposing of asbestos.

2.2.2 Not all waste asbestos is transported directly to landfill

Sometimes there is no local landfill accepting asbestos and it must be taken instead to a waste transfer station for consolidation in readiness for a landfill delivery. Double handling increases exposure risks, especially if the transfer station does not have trained staff, safe procedures and a designed and designated asbestos area. Asbestos removalists sometimes store asbestos until the landfill is open, or accumulate small amounts until a trip to the landfill is justified. Our research identified no comprehensive guidance on how to store waste asbestos.

2.2.3 Not all waste asbestos is safely transported

Waste asbestos needs to be securely wrapped in plastic for transport and deposition. Transport by commercial operators is safer because professionals have the appropriate equipment and training in waste asbestos management (the same applies to asbestos removal – it would be safest if all removal jobs were carried out by professionals). However, do-it-yourself transport by homeowners or tradespersons is not uncommon.

One respondent noted that commercial vehicles carrying waste asbestos in NSW no longer require dangerous goods identification so if there is an accident there is a risk that attendees at the accident site may not recognise the exposure risk.

2.2.4 Not all asbestos received at landfills is safely buried

Safe burial requires special procedures to prevent risk of exposure to landfill staff or customers including burial of the securely wrapped material in a designated area and immediate covering. Not all waste asbestos delivered to landfills is buried in accordance with safe procedures.

Landfills sometimes receive asbestos contaminated loads that are not identified. This may be accidental or deliberate: a skip hirer may not have recognised some asbestos or may have recognised it but sought to avoid costs or inconvenience, or knew of no alternatives. This waste would most likely be deposited at the normal tip face, potentially exposing staff and customers.

Wrapping of waste asbestos is sometimes inadequate, especially when it is delivered by homeowners. Many landfills will accept these loads to avoid the risk of illegal dumping, fixing the wrapping themselves or processing the material without rewrapping.

When asbestos is deposited in the designated area, wrapping can open and allow asbestos dust to escape.

Some rural landfills have public access but no staff. The authors were informed about sites where deposited waste asbestos is driven over by people delivering loads of other wastes, which can release asbestos dust.

In some regions there is high variability in landfill operating standards. A council may upgrade its procedures due to occupational health and safety (OHS) concerns, and increase its prices to cover the additional costs. If the neighbouring council do not do likewise, asbestos waste streams will tend to divert to the cheaper, lower standard option. We were advised that the City of Wagga Wagga recently started requiring asbestos deliveries in sealed containers, and some removalists responded by taking waste asbestos elsewhere.

2.2.5 At some landfills buried asbestos could be disturbed

Buried waste is normally compacted, covered with soil and, later, capped. Occasionally buried waste needs to be disturbed, for example to drill gas collection wells, fix incorrect closure contours or extract metals prior to closure. Unless the site has a dedicated and recorded asbestos disposal area that can be avoided, these works could expose staff or neighbours to risk. Many sites do not keep permanent records of their asbestos deposits.

2.2.6 Access to landfills accepting asbestos is not always convenient

The number of landfills in Australia has declined significantly over the past few decades. This is mainly due to stricter operating requirements for liners, compaction, gas management, fencing and similar, which push up prices and make smaller sites less viable. Often closed sites are replaced by transfer stations from which residual waste is transported to landfill in bulk vehicles. Transfer stations are generally not set up to receive waste asbestos, so this reduces the availability of disposal options.

As well as closure of small landfills, some operating landfills have decided not to accept asbestos, or accept it from local residents only, or accept it but at very high prices. These decisions may be due to OHS concerns, difficulties and costs in providing trained staff, impending landfill closure, preservation of landfill space, problems obtaining insurance, or to maximise profits. Operating landfills that have stopped accepting all or some asbestos reportedly include sites servicing Ballarat, Shepparton, Brisbane, Glenorchy, Hobart, Darwin and at least two sites servicing Sydney.

Some landfills are licensed to accept asbestos from commercial sources only, most likely because of access difficulties within the landfill for small domestic vehicles and the higher risks of poor packaging and exposure associated with domestic waste asbestos disposal. Other landfills are licensed for non-commercial sources only. This is probably due to councils seeking to ensure that small amounts of asbestos from do-it-yourself home renovations have a local disposal option, but without wanting to encourage larger commercial quantities to the site.

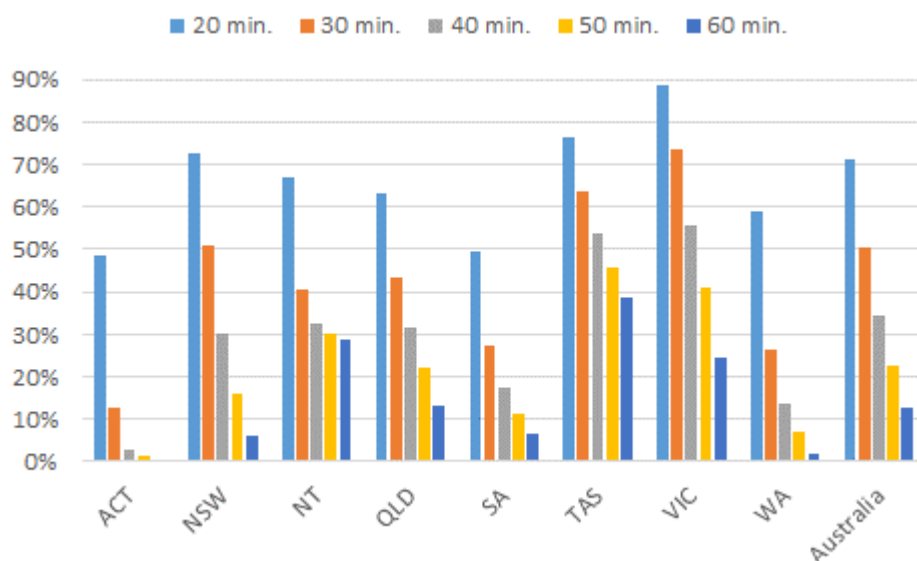
When access to facilities to accept waste asbestos disposal is inconvenient it increases the likelihood of inappropriate disposal, such as hiding asbestos amongst other waste or illegal dumping.

Blue Environment commissioned analysis of the accessibility of waste facilities accepting asbestos using a Geographical Information System. Figure 1 shows the estimated proportion of the population in each state and territory that can access a waste facility currently accepting asbestos within a defined driving time (off-peak conditions). Based on this data, about half of Australians must drive more than 30 minutes to access an asbestos disposal facility; a third must drive more than 40 minutes; and 13% must drive for more than an hour. Average driving times are longest in the NT, Tasmania and Victoria.

Separate maps of each state and territory are given in Appendix F showing driving times surrounding each waste facility accepting asbestos¹.

¹ The list of facilities accepting asbestos were taken from a [GeoScience Australia](#) database supplemented through review of the websites of states and territories that list where asbestos can be taken. If you find any errors on the maps, please let us know.

Figure 1 The proportion of the population in each state and territory that has access to a waste facility accepting asbestos within the defined driving times



2.2.7 Disposal of asbestos in landfills is often expensive and can be unpredictable and insecure

The procedures for landfilling asbestos typically involve digging a hole in the general waste, depositing the asbestos and immediately covering it with soil. Some sites store asbestos in a skip bin near the entrance to the site for transport and burial at the end of the day; others are required to deposit each load immediately on arrival. The special handling arrangements cost more to implement than depositing general waste, and this is often reflected in prices.

Expensive disposal promotes dumping and attracts criminals to the asbestos removal and transport industry, who may charge the disposal costs to the generator but dump the asbestos.

Prices for asbestos disposal can also be inflated by:

- sites charging very high prices to discourage its receipt unless it is highly profitable
- minimum charges, which, in a case reported to us, meant a householder presenting a few pieces of asbestos in an ice-cream container was charged \$157
- landfill levies charged by state governments on the deposition of asbestos (see Table 1).

For commercial asbestos removal projects, the impact of high landfill costs depends on the fraction of overall project costs attributable to disposal. Some insight into this is given in Table 2 based on our consultations.

High costs for asbestos disposal are felt even more keenly by do-it-yourself homeowners, for whom removal and transport are not a direct financial outlay.

Commercial operators reported difficulties in budgeting for disposal costs due to their high variability.

When landfills accept cash payments for commercial asbestos it reduces the security of the transaction. A minority of drivers may be tempted to dump the waste asbestos and pocket the cash.

Table 1 Landfill levy rates payable on the disposal of asbestos, 2016-17

		Levy rate	Application and comments
ACT		n/a	The ACT owns and can set prices for the only landfill, so needs no levy. Small quantities of asbestos from non-commercial sources can be deposited for free. Commercial loads: < 0.25t \$41/load, >0.25t \$164.10/t.
NSW	Metro	\$135.70	
	Regional levy area	\$78.20	
	Other	\$0	
NT		no levy	
Qld		no levy	
SA	Metro	\$31	Between 1 September 2016 and 30 June 2017, the adjacent reduced levy applies for the disposal of packaged asbestos waste. It is not clear what the levy rate will be after that.
	Non-metro	\$15.50	
Tas		\$2-5	Levy collection is voluntary.
Vic	Metro	\$30	EPA Vic is the only jurisdiction where the levy on all asbestos wastes (including soils contaminated with asbestos) is lower than the industrial waste levy.
	Regional		
WA	Metro	\$0	Applies to all packaged waste asbestos containing materials
		\$50	Applies to asbestos contaminated rubble and soils
	Regional	\$0	

Table 2 Insights into the proportion of the costs of commercial asbestos projects attributable to transport and disposal

Relevant area	Type(s) of projects	Proportion(s)
Regional NSW	Removal of asbestos containing materials	Transport & disposal: 20% (typically disposal costs more than transport)
	Removal of soils contaminated with asbestos	Transport & disposal: 60-80% (typically disposal costs more than transport)
Regional Vic	Removal of asbestos containing materials (small projects)	Transport & disposal: 50% (incl. vehicle, licence fees and related insurance)
Metro NSW	Collection, consolidation, transport & disposal of asbestos containing materials	Disposal: 19%

Some landfills offer relatively cheap rates for asbestos disposal to minimise dumping. Council owned sites are more likely to do this, because councils often need to pay for cleaning up dumped waste. Low prices can attract asbestos from other areas. The authors were advised that large quantities of asbestos have flowed from Melbourne, where landfills are mostly privately owned, to council owned landfills in regional Victoria.

2.2.8 Regulations are not always tightly and consistently enforced

Standards for asbestos management at landfills are reportedly variable in regional areas. This implies that OHS and environmental protection procedures are not always well-enforced. We were also advised that transporters do not always hold the appropriate licences for carrying waste asbestos.

2.2.9 Tracking of waste asbestos is not comprehensive

The larger states run tracking systems for the management of hazardous wastes. Typically, a notification signed by the waste generator and transporter is sent to the EPA when a vehicle containing hazardous waste is about to be transported from a site, and a similar notification is sent when it arrives at a facility licensed to accept it. These systems were established to control dumping of hazardous wastes.

Waste asbestos is tracked by NSW, Qld, SA and Vic. The ACT, NT and Tas do not run tracking systems. WA runs a tracking system but it does not include asbestos. WA is considering including asbestos in its tracking system but has an overarching requirement that the tracking system is self-funded, and is concerned that tracking under this condition will increase prices for asbestos waste disposal.

Lack of tracking increases the chances of inappropriate disposal.

2.2.10 Governance is not always well-coordinated

In addition to the tracking systems described above, many asbestos removal projects are known to local councils through planning approval systems and known to government safe work agencies through their asbestos notification programs. These three systems are reportedly not systematically linked. Integration of government records of asbestos removal would make it easier to trace illegally dumped loads. When the risk of being caught increases, the likelihood of criminal activity declines.

There are overlaps in the roles of environmental and safe work regulators in managing waste asbestos systems. The overlap is apparently marked in relation to asbestos-contaminated sites. Industry operators complain of variable guidance in how to manage soils containing small amounts of asbestos. In some cases it appears that industry operators 'shop' for the least risk-averse interpretations to minimise costs.

2.2.11 Costs and risks may not always be ideally balanced in governance frameworks for waste asbestos

Like exposure to radioactivity or tobacco smoke, the risks from exposure to asbestos are linked to the intensity and time-span of exposure, but there is no exposure threshold below which the risks are zero (enhealth 2013). Indeed, everyone has been exposed to asbestos fibres to some degree due to background concentrations in the air (Dufresne *et al.* 1996, Seaton 2002, Qld Gov't 2016).

To the extent it is true that:

- cautious approaches to protection from asbestos exposure impose a cost
- additional costs increase the risk of inappropriate management
- inappropriate management increases the risk of exposure,

then cautious approaches to protection may cause more exposure rather than less.

Two examples where informed parties believe approaches to protection may be over-cautious are:

- A regulator investigating an asbestos removalist reviewed about 2,000 days of compulsory air monitoring, and found no exceedances. The regulator wondered why this cost (reportedly \$2,000 per day) was imposed on asbestos owners if the risk of an exceedance was so low.
- Operators in multiple states with experience in managing contaminated soil have questioned regulatory sensitivity to asbestos contamination. Based on volume 2 of the *National Environment Protection (Assessment of Site Contamination) Measure 1999*, any level of asbestos

contamination apparently means the soil is to be treated as waste asbestos, involving expensive wrapping and disposal procedures.

The authors are not qualified to assess whether the risks of asbestos exposure are appropriately reflected in the governance frameworks for waste asbestos, given their impact on costs. It could be argued risk management procedures are inviolable, and that secondary effects such as those described must be dealt with through other means. It is apparent, though, that:

- costly protective measures increase prices, and high prices promote inappropriate management
- there is some debate about whether governance frameworks for waste asbestos are appropriately balancing exposure risks and costs.

Discussion prompt #2 Is it reasonable to consider cost impacts in setting standards for managing asbestos exposure risks? If so, have we got the balance right in asbestos governance frameworks?

2.2.12 Many people know little about asbestos

Many people do not know about asbestos, especially recent immigrants and those who do not speak English. Others know about asbestos but are unaware that their properties contain it. Many are aware they have an asbestos issue but do not know how to get rid of it safely and cheaply. In each case, this can result in asbestos going into normal garbage or skips. In 2015, a Sydney recycler closed an operation to manufacture 100,000 tonnes of sand per year from recycled glass after asbestos was detected in feedstock. We understand EPA NSW suspects the asbestos was, at least in part, from domestic recycling bins.

Where people have heard about asbestos but have not understood the risk issues well, it is possible they become oversensitive to the risks. Some experts believe this is occurring in WA, where media speculation about the risk of asbestos contamination in recycled demolition waste has resulted in large unsold stockpiles.

3 Improving the management of waste asbestos

In this section, we focus how the management of waste asbestos might be improved. We focus the discussion on the prerequisites of an ideal system as set out in Section 2.1, that is: infrastructure, pricing, governance and community understanding.

3.1 Infrastructure

A convenient network of safe disposal facilities is needed. This section discusses ways of improving the current situation.

3.1.1 Accessibility

A convenient network of safe disposal facilities is needed. Potentially, a national agreed target could be set in which, in each state and territory, there is a target for some defined proportion of the population to be within some defined driving time of a facility that accepts waste asbestos for disposal. For example, a standard could state that:

‘In all states and territories, 90% of the population should be within 40 minutes off-peak driving time from a facility permitted to accept waste asbestos.’

For reference, the current status in each state and territory is illustrated in Figure 1 and mapped in Appendix F.

Discussion prompt #3 Would it be useful to agree on a national target for accessibility to facilities accepting waste asbestos? If so, how should it be expressed?

3.1.2 Additional facilities

The network could be expanded using existing facilities. Opportunities for additional facilities are listed below in order of ease of implementation:

1. landfills accepting asbestos from restricted sources (e.g. non-commercial only or local residents only) could start accepting it from all sources
2. landfills permitted to accept asbestos but not currently accepting it could do so
3. landfills not permitted to accept asbestos could be permitted to do so
4. transfer stations that are, or could be readily made, suitable to receive asbestos could do so.

Investment in site infrastructure would be needed in some cases.

Asbestos at transfer stations

The appropriateness of transfer stations receiving asbestos is a difficult issue. Ideally, waste asbestos would all go directly to landfill – a transfer station involves double-handling and, if not carefully managed there could be increased risks of cross-contamination of recyclables or exposure to asbestos fibres.

However, many landfills do not allow small vehicles to the tip face, so some double-handling is inevitable. Also, some areas have no landfill so a transfer station may be the only alternative to a very long drive.

Elements of a safe configuration for managing asbestos at suitable transfer stations could be:

- a separate fenced and padlocked area within some defined minimum and maximum distance of the main operational area
- container with a lid
- hardstand
- water supply
- signage
- wrapping equipment.

New facilities could also be developed to accept asbestos:

1. new landfills could be developed, potentially for asbestos only
2. temporary or mobile storage facilities could be established to consolidate asbestos for subsequent delivery to landfill.

Expansions to the network would ideally focus on areas where the gaps are greatest and where there are estimated to be large quantities of asbestos based on the age profile of buildings.

Discussion prompt #4 How could the network of disposal facilities accepting waste asbestos be most readily expanded?

3.1.3 Encouraging waste facilities licensed to accept asbestos to do so

As discussed in Section 2.2, some waste facilities that are licensed to accept asbestos decline to do so for reasons such as a perceived inability to handle it safely, lack of trained staff, impending closure, insurance problems or access difficulties for small vehicles. This gives us some insight into what governments could do to expand the asbestos waste network:

- *Assistance with insurance* – government intervention may be needed to help managers of waste asbestos overcome their difficulties in relation to insurance availability and cost.
- *Support in managing OHS responsibilities* – standards and training are needed for how asbestos should be managed at waste facilities, so that adherence protects operators from liability claims. This could cover best practice in different operations and circumstances, including at transfer stations and remote rural sites.
- *Support for enhanced on-site infrastructure* – investment may be needed in new plant, equipment, fencing, storage, signage, GPS software, cameras and similar. Government support may be appropriate in some circumstances (see Section 3.2).

Discussion prompt #5 How can governments encourage waste facilities to accept asbestos?

Discussion prompt #6 Under what circumstances is it appropriate for transfer stations to accept asbestos?

3.1.4 Requiring waste facilities to accept asbestos

Another potential mechanism to expand the network of facilities accepting waste asbestos is through compulsion. Rather than permitting facilities to take asbestos, as happens across the country now, governments could require them to do so. This would require recognition of waste facilities as essential community services and significant administrative change. It would also likely need legislation.

Consultation carried out in the preparation of this discussion paper found widespread support for this principle among regulators, local governments, the waste sector and the asbestos removal industry.

Mandatory acceptance of waste asbestos would require price controls – otherwise a site may use pricing to avoid accepting asbestos. This issue is discussed in the following section.

Discussion prompt #7 Could waste facilities be required to accept asbestos? If so, how could prices be controlled (see the discussion in Section 3.3.2)?

3.2 Pricing

A prerequisite of an ideal waste disposal system is pricing that is inexpensive, predictable and secure. Governments could help improve pricing in several ways, as discussed below.

3.2.1 Licence and permit fees

Licence and permit fees for asbestos removers and transporters should be kept low, otherwise less safe do-it-yourself operations are encouraged. Fees should ideally be related to quantities managed rather than set at standard rates that disadvantage small operations.

3.2.2 Control of landfill disposal prices

As discussed in Section 3.1, price control would be a necessary accompaniment to requiring landfills to accept asbestos. It could eliminate profiteering and high price variations, which some asbestos professionals say cause difficulties in project planning and costing. Broad-scale regulation of disposal prices has not been undertaken previously in the waste sector – it would be a major challenge and require legislative change. However, there may be more subtle ways to control prices, for example through incentives.

Price controls for asbestos disposal could involve:

- free disposal of asbestos containing materials (ACM)
- establishing a standard national or state pre-levy price (this might vary with quantity or landfill size)
- setting the price for asbestos at a landfill with reference to the price it charges for general commercial waste streams (e.g. general price x 1.25).

3.2.3 Landfill levy relief

Landfill levies increase waste disposal prices, including for asbestos. It is difficult for governments to make special levy arrangements for waste asbestos materials because lower prices for asbestos could prompt customers to claim their waste contained asbestos or even to contaminate their waste to reduce the disposal price. However, two states provide a special levy on asbestos, and both models are worth examining as potential national precedents:

- WA imposes a levy on asbestos contaminated wastes (soils and demolition rubble) but exempts 'pure' ACM such as building materials. To qualify for the zero levy, waste must be suitably wrapped on presentation. Fraud seems unlikely because to qualify, the customer would need to go to the significant trouble of wrapping the non-asbestos material in plastic.
- Victoria imposes a \$30 levy on asbestos (both wrapped product and contaminated waste). This is lower than the levy on other commercial wastes. It is unlikely to provide much incentive for waste generators to misclassify waste as ACM because the differential would usually be outweighed by the higher rates charged by landfills for the onerous procedures they must follow in managing waste asbestos.

The ACT government provide relief by providing free disposal of small domestic loads (less than 0.25 tonnes). However, ACT is unique in that the ACT government owns and operates the landfills in the territory and can set the gate fees.

Discussion prompt #8 To what extent would widespread adoption of the WA model (no levy on waste ACM) or the Victorian model (lower levy on asbestos wastes) help ensure asbestos wastes are safely and directly transported to landfill?

3.2.4 Negotiations with the landfill industry

In Section 2.2 we discussed problems caused by minimum charges that sometimes apply to very small quantities of waste asbestos, and by cash transactions that incentivise dumping. These problems may be at least partially resolvable through discussions with the landfill industry. A best practice model for pricing of waste asbestos and other problem wastes could potentially be negotiated with and promoted through the Australian Landfill Owners Association.

3.2.5 Subsidised collection and disposal for householders

Some councils in Sydney, supported by the NSW State Government, provide a service where householders can get small amounts of legacy asbestos removed from their properties for free. The costs of this collective program are much lower than the combined cost of individuals presenting at a landfill with small amounts of asbestos, and the material is managed safely by a licensed contractor. There were mixed views among consultees about the value of this type of program. Several pointed out that if the program extended beyond legacy asbestos, there is a danger that it incentivises unsafe do-it-yourself activity.

Discussion prompt #9 Under what circumstances is it appropriate to subsidise the collection and disposal of asbestos from households?

3.2.6 Subsidies for asbestos removal

To ensure almost all waste asbestos goes safely and directly to landfill, commercial management of asbestos removal, transport and disposal would need to be encouraged at the expense of do-it-yourself management. This would require a program of price support or subsidies extending beyond waste management and into the asbestos removal industry. Such a program could be state based, but experience shows that variable financial incentives across the states and territories creates problems, and that a national approach works best. Funding options include an additional levy on waste disposal (with appropriate rebates, a levy on the sale of building products or general revenue.

3.3 Governance systems

The ideal system for asbestos waste disposal relies on coordinated governance responsibilities that balance risks and costs, tightly enforced regulations and comprehensive tracking. This section considers some ways in which the current governance situation could be improved.

What rules apply where?

Appendices to this document summarise state and territory rules for asbestos management:

Appendix B – waste asbestos classification

Appendix C – waste asbestos transport

Appendix D – waste asbestos temporary storage (transfer)

Appendix E – waste asbestos disposal.

3.3.1 Coordination

To the extent practicable, data held by councils, safe work and environmental protection agencies should be compatible and accessible to each other. This would help in tracking illegal dumping or unauthorised burial, reducing the incentive for these activities. Clear delineation of agency responsibilities is needed, particularly in contaminated site management.

3.3.2 Tracking systems

Ideally all states and territories would run tracking systems for asbestos wastes. Tracking systems using paper should be phased out in favour of electronic systems. These generate higher quality information because they can be populated with pre-defined values – for example, noting whether a destination site is licensed to accept waste asbestos. Electronic systems need contingencies for projects or facilities outside the mobile network.

3.3.3 Thresholds and definitions

Our consultation revealed uncertainty as to what ‘counts’ as waste asbestos – in particular, the threshold amount of contamination of soils and rubble above which a waste is classified as contaminated with asbestos.

The *National Environment Protection (Assessment of Site Contamination) Measure 1999* Volume 2: Schedule B1 and Volume 3 Schedule B2 addresses site characterisation thresholds and remediation procedures in detail, but its implementation and adoption does not appear to be uniform (see the threshold information by state and territory in Appendix B).

In discussions with regulators from the different jurisdictions, threshold limits for soil contamination or demolition rubble were generally considered unimportant even those with an apparent threshold embedded in regulation. NSW seems particularly assiduous in applying and enforcing a low limit. This is apparent in the data on tonnes of waste asbestos delivered to landfills – in six of the seven years’ of data presented in [Asbestos waste in Australia](#) (ASEA 2015), the NSW total exceeded all the other states and territories combined.

Some asbestos industry operators argue that the requirements for classifying soil as asbestos contaminated are too onerous, variable and impose unnecessary costs. One of the regulators countered that they need to keep operators rigorous, and if the requirements were relaxed ‘asbestos would start to appear in recycling plants’.

Discussion prompt #10 Has every state and territory given full effect to the *National Environment Protection (Assessment of Site Contamination) Measure 1999*, including Vol 2: Sch B1 and Vol 3 Sch B2 on asbestos materials in soil? Does the Measure have any specific problems or weaknesses? Could the asbestos contaminated soil be defined simply by referring to the wastes generated from an asbestos contaminated site remediated in accordance with the Measure?

3.3.4 Waste codes

In the systems used for tracking movements of hazardous wastes in NSW, Qld, SA and Vic, waste ACM and mixed wastes contaminated with such materials (soils and demolition wastes) can be given the code ‘N220’. This same code is used for tracking interstate transport under the *National Environment*

Protection (Movement of Controlled Waste between States and Territories) Measure 1998. In Section 3.2 we canvassed the prospect of distinguishing between ACM and mixed wastes contaminated with asbestos. This would be easier if the codes for these wastes were different.

Another advantage of separating the codes is that higher quality data on the quantities of each waste type would be available. It should then be possible to tell from waste data whether quantities of ‘pure’ ACM were increasing or decreasing – at present, these quantities are masked behind large quantities of soil. Also, at present, soil contaminated with asbestos is sometimes recorded under code N220 (asbestos) and sometimes as N120 (contaminated soil).

Discussion prompt #11 Would you support the following reconfiguration of waste codes and practices under the *National Environment Protection (Movement of Controlled Waste between States and Territories) Measure 1998*?

- Waste ACM: N220
- soil contaminated with asbestos: N120 (with contaminants recorded so the presence of asbestos is not overlooked)
- other waste contaminated with asbestos: N221 (a new code).

3.4 Community understanding

The ideal system for asbestos waste disposal requires high levels of understanding within the Australian community about asbestos and appropriate local options for disposing of it. Ongoing education programs are needed, particularly in:

- non-English speaking communities
- recent immigrant communities
- areas with much of the housing stocks in the risk decades.

4 National best practice?

Management of waste asbestos is a major challenge for all the states and territories. Several aspects have been raised in which national guidance or assistance may be beneficial, including:

- a standard for accessibility to facilities accepting waste asbestos
- a standard for how asbestos should be managed at waste facilities
- thresholds and definitions for asbestos contaminated wastes (soils and demolition residues)
- approaches to pricing and landfill levies
- waste codes.

A national guide to best practice in managing waste asbestos could be developed covering these and other matters.

An alternative raised by one environmental regulator is to develop a specific National Environment Protection Measure.

International management of asbestos

On an international basis, Australia historically ranked as one of the higher per capita producers and consumers of asbestos. While Australia has banned imports and ceased production of ACM, countries with less stringent oversight still produce and export asbestos containing materials (in 2013 Russia, Kazakhstan, Brazil and China each exported over 50,000 tonnes with exports from these totalling almost one million tonnes) (The Mesothelioma Center 2016). International management of asbestos waste from countries with similar socio-economic characteristics can provide interesting waste management examples for Australia.

Transport

In the United States, individual states are responsible for setting legislative measures around the management of waste asbestos. However, transporters of asbestos waste are required to complete a hazardous waste manifest form which creates a cradle-to-grave record of waste transport. Regulations which dictate the requirements of the manifest are determined by the US EPA under the Hazardous Waste Manifest System (US EPA 2016).

Storage/disposal

In the United Kingdom, local authority waste transfer stations can be licenced to accept loads of bonded asbestos from domestic sources. Commercial loads or loads of non-bonded asbestos can be disposed of directly to landfill or taken to licenced hazardous waste transfer stations (Environment Agency 2010).

Discussion prompt #12 Would national guidance on best practice management of asbestos waste be useful, and if so what form should this take?

5 Summary of the discussion prompts

	Refer to text in Section
1. Is the text in Section 2.1 a reasonable expression of the ideal waste asbestos disposal system and its pre-requisites?	2.1
2. Is it reasonable to consider cost impacts in setting standards for managing asbestos exposure risks? If so, have we got the balance right in asbestos governance frameworks?	2.2.11
3. Would it be useful to agree on a national target for accessibility to facilities accepting waste asbestos? If so, how should it be expressed?	3.1.1
4. How could the network of disposal facilities accepting waste asbestos be most readily expanded?	3.1.2
5. How can governments encourage waste facilities to accept asbestos?	3.1.3
6. Under what circumstances is it appropriate for transfer stations to accept asbestos?	3.1.3
7. Could waste facilities be required to accept asbestos? If so, how could prices be controlled?	3.1.4 & 3.3.2
8. To what extent would widespread adoption of the WA model (no levy on waste ACM) or the Victorian model (lower levy on asbestos wastes) help ensure asbestos wastes are safely and directly transported to landfill?	3.2.3
9. Under what circumstances is it appropriate to subsidise the collection and disposal of asbestos from households?	3.2.5
10. Has every state and territory given full effect to the <i>National Environment Protection (Assessment of Site Contamination) Measure 1999</i> , including Vol 2: Sch B1 and Vol 3 Sch B2 on asbestos materials in soil? Does the Measure have any specific problems or weaknesses? Could the asbestos contaminated soil be defined simply by referring to the wastes generated from an asbestos contaminated site remediated in accordance with the Measure?	3.3.3
11. Would you support the following reconfiguration of waste codes and practices under the National Environment Protection (Movement of Controlled Waste between States and Territories) Measure 1998? <ul style="list-style-type: none"> • Waste ACM: N220 • soil contaminated with asbestos: N120 (with contaminants recorded so the presence of asbestos is not overlooked) • other waste contaminated with asbestos: N221 (a new code). 	3.3.4
12. Would national guidance on best practice management of asbestos waste be useful, and if so what form should this take?	4

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Appendix A: Stakeholders consulted

Stakeholders consulted

The stakeholders listed below were consulted during the development of this discussion paper. The authors greatly appreciate the time spent and contributions made from all project stakeholders.

- | | |
|--|--|
| 1. Andrew Doig | Australian Sustainable Business Group, Sydney |
| 2. Andrew Manning | ResourceCo, SA |
| 3. Anthony Plumb | Coffey, Sydney |
| 4. Barry Ryan | Western Sydney Regional Illegal Dumping Squad |
| 5. Brooke Littman | Cumberland City Council, Sydney |
| 6. Cathy Cooney, Tanya Kiley | EPA SA |
| 7. Chandana Vidanaarachchi | Latrobe City Council, Vic |
| 8. Chris Stewart | Qld Dept. of Environment and Heritage |
| 9. Cydoni Edwards | South West Waste and Resource Recovery Group, Vic |
| 10. Enzo De Fazio | Edge Group, Melbourne |
| 11. Hayley Rolfe | WA Department of Environment Regulation |
| 12. Ifte Hussain | Greater Shepparton City Council, Vic |
| 13. Jaimie Clarke | Tas EPA |
| 14. Juliet Duffy | Regional EnviroScience, NSW |
| 15. Karen Fazzani | Loddon Mallee Waste and Resource Recovery Group, Vic |
| 16. Kevin Murphy | SafeWork NSW |
| 17. Mark Barraclough | Alex Fraser Group, Vic/Qld |
| 18. Matthew McCarthy | Townsville City Council, Qld |
| 19. Matthew Peake | Gippsland Waste and Resource Recovery Group, Vic |
| 20. Norman Ferguson & Sarah O'Connor | Mildura Rural City Council, Vic |
| 21. Paul Goldsbrough, Ben Christianson & Brad Bick | Qld Office of Industrial Relations |
| 22. Paul Somerville | Rural City of Wangaratta, Vic |
| 23. Paul Starr | Australian Dept. of the Environment and Energy |
| 24. Peter Vassel | NT EPA |
| 25. Rebecca Brown | Western Australian Local Government Association |
| 26. Richard Baker | Energex, Brisbane |
| 27. Rob Hogan, Megan Whelan | NSW EPA |
| 28. Sally North | WorkSafe WA |
| 29. Shane Middleton | City of Greater Geelong, Vic |
| 30. Simon Thompson | South Australian Local Government Association |
| 31. Stephen Fitzpatrick | Eastern Metropolitan Regional Council, Perth |

Appendix B: Classifying waste asbestos

This appendix includes a summary of each jurisdiction's thresholds to classify waste as asbestos and also includes a summary of how asbestos-contaminated soil is classified (as either asbestos contaminated materials, contaminated soils, or both). It also discusses the Australian Standard 4964: *Method for the qualitative identification of asbestos in bulk samples*.

Summary of jurisdictional classification systems for waste asbestos

Jurisdiction	Asbestos waste threshold	Asbestos contaminated soil classification
Australian Capital Territory	The ACT's Assessment & Classification of Liquid & Non-liquid Wastes (accessed Jan 2017) defines asbestos waste as “any waste that contains asbestos as defined in these standards” suggesting that a minimum threshold is not applied.	The definition of asbestos waste used in the ACT suggests that asbestos contaminated soil is classified as asbestos waste (tracked under N220).
New South Wales	The NSW Waste Classification Guidelines Part 1: Classifying waste (accessed Jan 2017) defines asbestos waste as “any waste that contains asbestos” suggesting that a minimum threshold is not applied. This is supported by an article in the NSW edition of Sustainable Business Weekly (accessed January 2017) from 2012 which notes that “any waste which contains any amount of asbestos is considered asbestos waste”.	The definition of asbestos waste used in NSW suggests that asbestos contaminated soil is classified as asbestos waste (N220). In a comment to the report Contaminated Soil Waste in Australia (accessed Jan 2017), the NSW EPA noted that “sometimes asbestos contaminated soil is disposed under the material classification of ‘Asbestos’ waste”. Asbestos waste in Australia states (pg.1) “In NSW, waste with even the smallest proportion of asbestos contamination must all be classified as asbestos waste, so asbestos waste may include significant proportions of other demolition materials”.
Northern Territory	Waste regulations in the NT do not provide minimum concentration thresholds that categorise waste containing asbestos. The NT EPA Asbestos Disposal in the Northern Territory (accessed Jan 2017) defines asbestos waste as “all removed ACM and disposable items used during the asbestos removal work...” without reference to a minimum threshold. This suggests that any concentration of asbestos results in waste being classified as asbestos waste.	Information on the NT Government website (accessed Jan 2017) regarding asbestos contamination in soil notes that “the asbestos assessment, remediation and management of your site must be conducted in line with both of the following: <ol style="list-style-type: none"> the <i>National Environment Protection (Assessment of Site Contamination) Measure 1999</i> the 2009 <i>Western Australian Department of Health Guidelines for the assessment, remediation and management of asbestos-contaminated sites in Western Australia</i>”. The WA DoH document (see text below in WA summary) classifies asbestos in soil at concentrations over 0.001% (w/w) as asbestos contaminated soil. Given the NT Government advice to use this document it suggests that asbestos contaminated soil will be regarded as such, and tracked under N120, when it meets the same criteria as for WA.
Queensland	Queensland’s Work Health and Safety Regulation 2011 (accessed Jan 2017) does not provide minimum concentration thresholds that categorise waste containing asbestos as asbestos waste. The regulations define asbestos waste as “asbestos or	Queensland’s Guideline for contaminated land professionals (accessed Jan 2017) states that “There is currently no guidance available at the national level for the assessment, remediation and management of sites contaminated by asbestos. The administering authority regards the WA Asbestos Guidelines (DoH and DEC 2009) as

	<p>ACM removed and disposable items used during asbestos removal work including plastic sheeting and disposable tools".</p> <p>Queensland's Environment Protection Regulations 2008 (accessed Jan 2017) list asbestos as a regulated (hazardous) waste. Queensland's Waste tracking guideline (accessed Jan 2017) provides minimum concentration thresholds for regulated wastes but this does not include asbestos. This suggests that any concentration of asbestos results in waste being classified as asbestos waste.</p>	<p>current best practice and these must be used when preparing contaminated land submissions regarding asbestos contaminated land". The WA DoH document (see text below in WA summary) classifies asbestos in soil at concentrations over 0.001% (w/w) as asbestos contaminated soil. This suggests that asbestos contaminated soil would be regarded as such when it meets this criterion in Queensland.</p>
South Australia	<p>South Australia does not have minimum concentration thresholds in determining asbestos waste. The Wastes containing asbestos – removal, transport and disposal (accessed Jan 2017) guidelines note that "If asbestos-containing materials are discovered within or actively mixed with other wastes, the entire load is deemed as an asbestos waste and must be managed appropriately". This suggests that any concentration of asbestos results in waste being classified as asbestos waste.</p>	<p>The <i>Wastes containing asbestos – removal, transport and disposal</i> guidelines note that "where a stockpile of waste soil is contaminated with asbestos-containing material the entire stockpile is deemed to be asbestos waste and must be managed as per this guideline, conditions of EPA Licence or remediated to remove the asbestos containing material". This is further supported by SA EPA guideline Standard for the production and use of waste derived fill (accessed Jan 2017) which states "...if asbestos is found to be in a waste soil or recycled product it is asbestos-containing material (ACM) and does not meet the waste fill criteria as defined in this standard". These excerpts show that asbestos contaminated soil is to be treated as asbestos waste in SA and tracked under N220.</p>
Tasmania	<p>No information available regarding asbestos waste thresholds, however, waste asbestos is a controlled waste in Tasmania.</p>	<p>Little information is available on the Tasmania Government/EPA website with regards to the classification of asbestos contaminated soils. Information Bulletin No.105: Classification and Management of Contaminated Soil for Disposal (accessed Jan 2017) notes that "Soil and other material reasonably suspected to be a controlled waste must be sampled and analysed to determine whether it is a controlled waste... This generally includes, but is not limited to soil that is from a site that is used, or has been used, for an activity listed in Table 3 and is likely to be contaminated." Under table 3 of this document, "Asbestos production, handling or disposal" is listed as a "Potentially Contaminating Activity".</p> <p>It remains unclear if Tas classify soils contaminated with asbestos as asbestos waste or asbestos contaminated soils.</p>
Victoria	<p>Waste regulations do not provide minimum concentration thresholds that categorise wastes containing asbestos as waste asbestos. The asbestos.gov.vic.au glossary of terms defines asbestos waste as "asbestos removed and disposable items used during asbestos removal work or asbestos-related activities, including</p>	<p>The EPA Victoria document Asbestos Transport and Disposal (accessed Jan 2017) notes that where asbestos is the sole contaminant in soil it is treated as asbestos waste. Soils with asbestos and other contaminant(s) must be categorised using the</p>

	<p>plastic sheeting and disposable personal protective clothing and disposable protective equipment including tools". The Occupational Health and Safety Regulations 2007 (accessed Jan 2017) note that regulations around asbestos handling "do not apply to construction and demolition material – (b) of which less than 0.001% is asbestos containing material measured using a method determined by the Authority". This is likely to dictate the threshold of waste asbestos as EPA Victoria noted in the Regulatory impact statement – proposed environment protection (scheduled premises) regulations 2017 (accessed Jan 2017) "WorkSafe is the lead agency for occupational health and safety requirements for the identification, management and removal of asbestos in the workplace. Once it is removed, EPA is responsible for regulating the commercial transport of industrial asbestos (which includes removal of domestic asbestos by a commercial contractor)".</p>	<p>EPA Victoria "Soil hazard categorisation and management guidelines into either category A, B, or C. Soil must then be packaged for disposal as per this guideline".</p> <p>EPA comment during consultation when preparing <i>Asbestos waste in Australia report 2015</i>: "EPA advises industry that if asbestos is the only contaminant in soils that the entire load be classified as asbestos waste".</p>
Western Australia	<p>The WA Environmental Protection (Controlled Waste) Regulations 2004 define material containing asbsetos as "material which contains 0.001% or more of asbestos fibres weight/weight". This is likely to dictate thresholds in asbestos waste.</p>	<p>In Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (accessed Jan 2017), asbestos contaminated soil is classified as such if it meets one of four general criteria. Page seven of the guideline states:</p> <p><i>"Contamination Criteria</i></p> <p><i>The Department of Health (DOH) takes a risk-based and, where necessary, conservative approach to the uncertainties associated with protecting the public from asbestos-contaminated sites. As a result, the Guidelines employ the following four general contamination criteria:</i></p> <ul style="list-style-type: none"> <i>• The investigation criterion or clean-up goal used by DOH is 0.001% asbestos in soil on a weight for weight basis (w/w) for free fibre-related materials including fibrous asbestos and free fibre itself;</i> <i>• Depending on site use, DOH applies at least 10-fold higher criteria to asbestos-containing materials (ACM) in sound condition, such as commonly found asbestos cement fragments, since these pose much lower risks to human health;</i> <i>• For remediation purposes, the top 10 cm of soil should also be made free of visible asbestos or ACM; The asbestos air-quality limit for protecting the public around contaminated sites is 0.01 fibres per millilitre (f/ml)(using the membrane filter method) as endorsed by the enHealth Council in</i>

		<p><i>Management of asbestos in the non-occupational environment 2005 document (enHealth 2005)."</i></p> <p>The WA Department of Environment Regulations document Exemptions from the landfill levy for asbestos containing material (accessed Jan 2017) notes the definition of material containing asbestos as: "any manufactured material or thing that, as part of its design, contains asbestos". This is commonly referred to as asbestos containing materials or ACM.</p> <p>The document also defines waste that is not included within the definition of asbestos containing material, which includes: "asbestos contaminated soils; and other waste mixed with asbestos fibres; or mixed loads, where the asbestos containing material can reasonably be separated from other waste".</p> <p>WA defines asbestos containing material to enable waste asbestos materials to be excluded from landfill levy regulations and reduce disposal costs. Asbestos contaminated soils are not included in this definition and are therefore levied under the landfill levy regulations.</p> <p>This classification model keeps the cost of landfilling asbestos containing products to a minimum, whilst not creating a financial incentive to mix asbestos into contaminated soils to dispose of the waste at a cheaper rate.</p>								
National summary	<p>A consistent and definitive threshold which defines asbestos waste is not reported from jurisdictions in Australia. Controlled waste regulations in Western Australia state that material which contains greater than 0.001% (weight for weight) of asbestos fibres is considered to be a material containing asbestos. In Victoria the same threshold value is used in WorkSafe OHS regulations to provide a definition around asbestos containing construction and demolition materials. In Victoria, WorkSafe is the lead agency for OHS requirements for the identification, management and removal of asbestos in the workplace and as a result the threshold is likely to apply to waste asbestos. All other jurisdictions do not provide a quantitative threshold and their definitions of asbestos waste suggesting that if any concentration of asbestos is found then it is considered to be asbestos waste.</p>	<p>A consistent approach to classifying soil contaminated with asbestos as either asbestos or asbestos contaminated soil is not apparent across jurisdictions in Australia. A summary of the apparent approaches in each jurisdiction is provided in the below table:</p> <table><tr><th>Assumed classification for waste tracking and disposal</th><th>Jurisdiction</th></tr><tr><td>Asbestos (N220)</td><td>ACT, SA, Vic, NSW</td></tr><tr><td>Contaminated soil, listing asbestos as contaminant (N120, N121)</td><td>WA, NT, Qld</td></tr><tr><td>Unknown</td><td>Tas</td></tr></table>	Assumed classification for waste tracking and disposal	Jurisdiction	Asbestos (N220)	ACT, SA, Vic, NSW	Contaminated soil, listing asbestos as contaminant (N120, N121)	WA, NT, Qld	Unknown	Tas
Assumed classification for waste tracking and disposal	Jurisdiction									
Asbestos (N220)	ACT, SA, Vic, NSW									
Contaminated soil, listing asbestos as contaminant (N120, N121)	WA, NT, Qld									
Unknown	Tas									

5.1.1 Australian Standard 4964-2004: Method for the qualitative identification of asbestos in bulk samples

The *Australian Standard 4964-2004: Method for the qualitative identification of asbestos in bulk samples* includes guidance regarding informative sampling for collecting suspected asbestos contaminated wastes.

In the document [*Working with NATA accredited asbestos facilities*](#) it is noted that:

“AS 4964 allows for the reporting of the presence of asbestos at a limit of reporting in the range 0.01-0.1%, depending on whether the asbestos fibres are uniformly spread through the sample or not.” (page 8)

This suggests that the investigation criterion or clean-up goal set out in the *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* of 0.001% could not be tested using the current Australian Standards method.

It is understood that established methods for collecting samples of suspected contaminated materials are not widely enforced, with AS 4964 providing general guidelines for the sampling of building materials, soils and ores. This standard makes reference to two further standards (AS 4482.1 (*Guide to the investigation and sampling of sites with potentially contaminated soil - Non-volatile and semi-volatile compounds*) and AS 4433.1 (*Guide to the sampling of particulate materials - Sampling procedures*)) which may provide further guidance for collecting a representative sample from large piles of contaminated soil.

Appendix C: Waste asbestos transport requirements

This section includes a summary of the waste tracking systems in each jurisdiction, the occupational health and safety regulations and the requirements of the Australian Dangerous Goods Code.

Asbestos waste tracking systems

The table below provides analysis of each jurisdictions asbestos waste tracking system, including (where relevant):

- an overview of the tracking system
- the weight threshold for requiring the tracking of asbestos waste
- whether the tracking system is online or if it is a paper-based system (relevant because paper-based systems generally produce lower quality data)
- whether the waste generating source is identified (i.e. is the waste from a domestic source or from an industry source and if from industry from which industry sector by ANZSIC code)
- whether the 'fate' of the asbestos waste is recorded (this refers to the tracking system's ability to record if the asbestos is either disposed or if it remains in transfer).

This table includes updated content from the *Asbestos waste in Australia* report 2015.

5.1.2 Summary of jurisdiction's intra-state asbestos waste transport tracking systems

Jurisdiction	Overview of intra-state tracking system for asbestos waste	Tracking threshold	Online or paper	Generator ANZSIC code	Fate	Comments
Australian Capital Territory	Asbestos waste is not tracked when transported within the ACT.					
New South Wales	<p>In 2015 NSW implemented a comprehensive hazardous waste tracking system for waste asbestos movements within the jurisdiction. Waste asbestos must be tracked when transported into, within or out of NSW. The waste consignor, transporter and receiving facility all have obligations to ensure that the waste is properly tracked.</p> <p>Waste asbestos removal companies are required to register and report through the mobile device application WasteLocate, which provides live tracking of the movement and locations of the collected waste. This system allows the tracking of waste asbestos consignments from the consignor, transporter and receiver.</p> <p><u>Exemptions from WasteLocate:</u></p>	<p>"100kg or 10m² for transporters of asbestos"².</p> <p>"Requirements to use <i>WasteLocate</i> apply to household and commercial settings or anyone else who triggers</p>	Online (only, smartphone tablet application)	✓ ⁴	✓	Collect a full set of tracking information.

² <http://www.epa.nsw.gov.au/wasteregulation/transport-asbestos-tyres.htm>, accessed Jan 2017

⁴ A grey tick means the data available in this field has historically been incomplete or problematic for some other reason.

Jurisdiction	Overview of intra-state tracking system for asbestos waste	Tracking threshold	Online or paper	Generator ANZSIC code	Fate	Comments
	<p>The EPA has issued an exemption relating to the requirements to use WasteLocate for asbestos contaminated soil: Notice of Exemption from Clause 79: Reporting on transportation of asbestos waste solely within New South Wales (PDF 25KB). This exemption is temporary likely till around August 2017. C&D mixed wastes with waste asbestos contamination are also currently not required to be tracked under WasteLocate.</p>	the 100kg/10m ² threshold.” ³ .				
NT	Asbestos waste is not tracked when transported within the NT.					
Queensland	<p>The Qld Department of Environment and Heritage Protection (EHP) website (accessed Jan 17) states asbestos waste transporters must:</p> <ol style="list-style-type: none"> 1. hold an environmental authority to transport regulated waste in a vehicle 2. accurately record and submit waste tracking information. 	<p>>250kg for both domestic self-haul and commercial removal.</p> <p>0 kg for commercial asbestos specialists.</p>	<p>Paper or electronically</p> <p>Note: to provide electronically need approval (s81W) of the tracking system to be used. No data provided electronically to date.⁵</p>	✓	✓	Qld does not track asbestos contaminated soils or other contaminated soils under their hazardous (regulated) waste system.

³ NSW EPA comment during consultation when preparing *Asbestos waste in Australia report 2015*

⁵ Qld DEHP comments during consultation when preparing *Asbestos waste in Australia report 2015*

Jurisdiction	Overview of intra-state tracking system for asbestos waste	Tracking threshold	Online or paper	Generator ANZSIC code	Fate	Comments
South Australia	<p>SA EPA Wastes Containing Asbestos – Removal, Transport and Disposal “Persons who transport asbestos waste for fee or reward require an environmental authorisation (licence) as a ‘Transporter of Listed Waste’, issued by the EPA as required under Section 36 of the Environment Protection Act.</p> <p>If asbestos-containing materials are discovered within or actively mixed with other wastes, the entire load is deemed as an asbestos waste and must be managed appropriately. For example, where a stockpile of waste soil is contaminated with asbestos-containing material the entire stockpile is deemed to be asbestos waste and must be managed as per this guideline, conditions of EPA Licence or remediated to remove the asbestos- containing material” p.1.</p>	<p>0kg for commercial removal.</p> <p>Unlimited domestic self-haul without tracking.</p>	Online or paper. Paper certificates cost \$2.50 per certificate.	✓	✗ ⁶	SA does not track the fate of asbestos waste (only the name of receiving facility) (see footnote).
Tasmania	Asbestos waste is not tracked when transported within Tasmania.					
Victoria	<p>EPA Vic guideline Asbestos transport and disposal states: “The transportation of domestic sourced asbestos, unless it is removed by a licensed asbestos removalist, does not fall within EPA’s statutory responsibilities. A householder may transport their own asbestos to a licensed landfill for disposal without transport certificates or a permitted vehicle... When a commercial contractor (i.e., a licensed asbestos removalist) undertakes the removal of the asbestos from a domestic source, transport certificates and a permitted vehicle are required” (p.1).</p> <p>EPA Vic comments during consultation when preparing Asbestos waste in Australia report 2015: “EPA advises industry that if asbestos is the only contaminant in soils that the entire load be classified as asbestos waste.”</p>	<p>0kg for commercial removal.</p> <p>Unlimited domestic self-haul without tracking.</p>	Online or paper	✓	✓	Collects a full set of tracking data.
Western Australia	<p>Asbestos is not tracked when transported within WA.</p> <p>WA operates a controlled waste tracking system, but asbestos is excluded from the requirements relating to transport by a licensed controlled waste carrier and tracking via a controlled waste tracking form.</p> <p>Asbestos contaminated wastes such as soils are also not required to be tracked in WA.</p>					

⁶ SA EPA comment for *Asbestos waste in Australia* report 2015: ‘the facility receiving the asbestos has licence conditions that determine the fate of the asbestos. For landfill the condition of licence will require disposal in a mono-cell or mixed waste cell. For a transfer station the temporary storage of asbestos waste will occur within a dedicated area and in a controlled manner. Waste levy data provided by the facility details the amount, when and where asbestos waste was disposed. Hence through these mechanisms the SA EPA is aware of the fate of the asbestos waste within its regulatory environment noting the fate is not required in the paper-based waste tracking system but it is required within the online waste tracking system’.

5.1.3 Asbestos waste tracking systems – discussion

All Australian jurisdictions track **interstate** movement of asbestos waste as required under the National *Environment Protection (Movement of Controlled Waste between States and Territories) Measure*. However, interstate disposal of asbestos is not common.

There are major differences in **intrastate** tracking system requirements for waste asbestos in Australian jurisdictions. These differences are surprising, given that all jurisdictions are dealing with essentially the same problem.

For asbestos containing materials (ACM) (roofing, cladding, building materials, etc.):

- NSW, Vic, Qld and SA track ACM through waste generator, transporter and receiver to ensure it is disposed of in a facility that will appropriately manage the risks posed by asbestos waste to human health.
- NSW historically did not track asbestos, however, now tracks ACM quantities exceeding 100 kg or 10 m².
- Qld requires tracking of all (including domestic self-haul) ACM waste transport for any weight above 250 kg. In effect, this caps the amount of asbestos waste that can be transported by householders. Qld also allows commercial transport of asbestos waste of less than 250 kg without tracking, as long as this is incidental to providing services such as domestic plumbing.
- SA and Vic both require the tracking of asbestos waste by commercial asbestos waste companies for any amount of asbestos, but do not require tracking of domestic self-haul regardless of the tonnage. SA does not record the fate of the waste asbestos – only the name of the receiving facility.
- The ACT, NT, Tas, and WA do not track asbestos transport for either commercial asbestos companies or domestic self-haul asbestos transport.

For asbestos contaminated wastes (asbestos contaminated soils, C&D wastes):

- Vic, SA, track asbestos contaminated wastes.
- ACT, NSW, NT, Tas, WA do not track asbestos contaminated wastes.
- Qld does not track asbestos contaminated soils under their hazardous waste tracking system, but does have another permitting system for contaminated soils movements.

In all states that track waste asbestos, the tracking code for is N220. In some jurisdictions it is possible that asbestos waste mixed with soil may be classified as ‘contaminated soil’ (N120 or N121) rather than asbestos.

OHS regulations for transport, storage and disposal of waste asbestos

The tables below provide the occupational health and safety regulations and the requirements of the Australian Dangerous Goods Code.

5.1.4 Summary of occupational health and safety transport requirements in each jurisdiction

Jurisdiction	Detail
Australia	The SafeWork Australia document <i>How to manage and control asbestos in the workplace: Code of Practice</i> document notes that "Asbestos waste must be transported and disposed of in accordance with the relevant state or territory Environment Protection Authority (EPA) requirements" ⁷ .
Australian Capital Territory	The Australian Capital Territory <i>Work Health and Safety Regulation 2011</i> notes that the regulations do not apply if the work involving asbestos is "the transport and disposal of asbestos or asbestos waste in accordance with the <i>Environment Protection Act 1997</i> and the <i>Dangerous Goods (Road Transport) Act 2009</i> " ⁸ . This suggests that the transport and disposal of asbestos is controlled by environmental regulations administered by the ACT Government.
New South Wales	The New South Wales <i>Work Health and Safety Regulation 2011</i> does not provide guidelines with regards to the transport, storage or disposal of asbestos. The regulations point to the <i>Protection of the Environment Operations Act 1997</i> for guidance in relation the transport and disposal of asbestos waste.
Northern Territory	The Northern Territory <i>Work Health and Safety (National Uniform Legislation) Regulations</i> note that the regulations do not apply if the work involving asbestos is "the transport and disposal of asbestos and asbestos waste in accordance with the <i>Waste Management and Pollution Control Act</i> " ⁹ . This suggests that the transport and disposal of asbestos is controlled by environmental regulations administered by the Northern Territory Environment Protection Authority.
Queensland	The Queensland Government website notes that the <i>Work Health and Safety Act 2011</i> and the <i>Work Health and Safety Regulation 2011</i> regulate the management, control and removal of asbestos in the workplace. The <i>Environmental Protection Act 1994</i> and <i>Environmental Protection Regulation 2008</i> regulate the transport and licencing of disposal facilities and is administered by the Department of Environment and Heritage Protection ¹⁰ .
South Australia	The South Australian <i>Work Health and Safety Regulations 2012 (SA)</i> are made under the <i>Work Health and Safety Act 2012 (SA)</i> to specify the requirments relating to the mangement and control of asbestos in the workplace. These do not provide regulations in relation to the transport, storage or disposal of asbestos. The asbestos.sa.gov.au website notes that "The Environment Protection Authority is the agency responsible for administration of the <i>Environment Protection Act 1993</i> . In relation to asbestos the EPA is responsible for transport, disposal and waste..." ¹¹ .
Tasmania	The Tasmanian <i>Work Health and Safety Regulations 2012</i> note that the regulations do not apply if the work involving asbestos is "the transport and disposal of asbestos and asbestos waste in

⁷ [http://www.safeworkaustralia.gov.au/sites/SWA/about/Publications/Documents/625/How to Manage and Control Asbestos in the WorkplaceV3.pdf](http://www.safeworkaustralia.gov.au/sites/SWA/about/Publications/Documents/625/How_to_Manage_and_Control_Asbestos_in_the_WorkplaceV3.pdf), accessed January 2017

⁸ <http://www.legislation.act.gov.au/sl/2011-36/current/pdf/2011-36.pdf>, accessed January 2017

⁹ http://www5.austlii.edu.au/au/legis/nt/consol_reg/whasulr606/s419.html, accessed January 2017

¹⁰ <http://www.deir.qld.gov.au/asbestos/general/legislation-and-codes-of-practice.htm>, accessed January 2017

¹¹ <http://www.asbestos.sa.gov.au/law.html>, accessed January 2017

	accordance with the <i>Environmental Management and Pollution Control Act 1994</i> ¹² . This suggests that the transport and disposal of asbestos is controlled by environmental regulations.
Victoria	<p>The Victorian <i>Occupational Health and Safety Regulations 2007</i> are made under the <i>Occupational Health and Safety Act 2004</i> to specify the responsibilities and duties relating to asbestos in workplaces in Victoria. Under the Act and Regulations, WorkSafe Victoria has published two compliance codes which provide guidance to those who have obligations under the Act. These are:</p> <ul style="list-style-type: none"> • Managing Asbestos in Workplaces Compliance Code¹³ • Removing Asbestos in Workplaces Compliance Code¹⁴ <p>Both guidance documents provide advice regarding asbestos transport and storage however reference EPA Victoria as the lead agency responsible for regulation. In a regulatory impact statement released by EPA Victoria in October 2016, it was noted that “WorkSafe is the lead agency for occupational health and safety requirements for the identification, management and removal of asbestos in the workplace. Once it is removed, EPA is responsible for regulating the commercial transport of industrial asbestos (which includes removal of domestic asbestos by a commercial contractor)”¹⁵.</p>
Western Australia	The West Australian Department of Environment Regulation summarises the roles different agencies play in regulating asbestos management. It notes that the Department of Environment Regulation, under <i>Environmental Protection (Controlled Waste) Regulations 2004</i> , regulates the transportation and disposal of asbestos materials while the Department of Commerce is responsible for the <i>Occupational Safety and Health Regulations 1996</i> ¹⁶ .
National summary	Amongst all jurisdictions, OHS/WHs regulations do not include regulations around the disposal, transport or storage of asbestos. In all cases, regulation of transport, storage and disposal is covered by each jurisdiction’s relevant environmental Act or Regulation.

¹² http://www.austlii.edu.au/au/legis/tas/num_reg/whasr20122012n122389/s419.html, accessed January 2017

¹³ https://www.worksafe.vic.gov.au/_data/assets/pdf_file/0017/9233/Managing_Asbestos_CC.pdf, accessed January 2017

¹⁴ https://www.worksafe.vic.gov.au/_data/assets/pdf_file/0018/9234/cc_asbestos_remove.pdf, accessed January 2017

¹⁵ <http://www.epa.vic.gov.au/~media/Publications/1639.pdf>, accessed January 2017

¹⁶ <http://www.public.health.wa.gov.au/cproot/3999/2/Asbestos%20regulators%20and%20information%20sources.pdf>, accessed January 2017

Dangerous goods code requirements

The National Transport Commission (NTC) developed and maintains the Australian Dangerous Goods Code (also known as DGC) which sets out the requirements for transporting dangerous goods by road and rail (NTC 2017a) in Australia. In the August 2014 (Version 7.3) update of the document, asbestos in a **fibrous state** (i.e. friable asbestos) was added as a miscellaneous dangers substance. The 2017 version (Version 7.5, due for release in March 2017) of the DSG notes that “The Code is aligned to the United Nations recommendations on the Transport of Dangerous Goods Model Regulations (19th edition) and also includes specific provisions that better reflect current Australian practices and conditions” (NTC 2017b). According to the NTC website, the code is given legal force in jurisdictions by their dangerous goods transport Acts and Regulations. The table below provides a summary of the jurisdictional Acts and Regulations that enforce the DGC.

5.1.5 Summary of jurisdiction’s intra-state asbestos waste transport tracking systems

Jurisdiction	Acts and Regulations
Australian Capital Territory	Act: Dangerous Goods (Road Transport) Act 2009 Regulation: Dangerous Goods (Road Transport) Regulation 2010
New South Wales	Act: Dangerous Goods (Road and Rail Transport) Act 2008 Regulation: Dangerous Goods (Road and Rail Transport) Regulation 2014
Northern Territory	Act: Transport of Dangerous Goods by Road and Rail (National Uniform Legislation) Act Regulation: Transport of Dangerous Goods by Road and Rail (National Uniform Legislation) Regulations
Queensland	Act: (road) Transport Operations (Road Use Management) Act 1995, (rail) Transport Infrastructure Act 1994 Chapter 14—Transporting dangerous goods by rail Regulation: (road) Transport Operations (Road Use Management-Dangerous Goods) Regulation 2008, (rail) Transport Infrastructure (Dangerous Goods by Rail) Regulation 2008
South Australia	Act: Dangerous Substances Act 1979 Regulation: Dangerous Substances (Dangerous Goods Transport) Regulations 2008
Tasmania	Act: Dangerous Goods (Road and Rail Transport) Regulations 2010 Regulation: Dangerous Goods (Road and Rail Transport) Regulations 2010
Victoria	Act: Dangerous Goods Act 1985 Regulation: Dangerous Goods (Transport by Road or Rail) Regulations 2008
Western Australia	Act: Dangerous Goods Safety Act 2004 Regulation: Dangerous Goods Safety Regulations Amendment (No. 2) 2015 (Dangerous Goods Safety Regulations 2007)

Source: NTC 2017c

The requirements for asbestos transportation under the DGC is specified in the table below.

Material		Asbestos, Amphibole	Asbestos, Chrysotile
Specification		UNU no. 2212	UNU no. 2590
Class/division		9 (substances and articles (miscellaneous dangerous substances and articles) are substances and articles which, during transport present a danger not covered by other classes)	
Subsidiary risk		na	
Packing group		II (Substances presenting medium danger)	III (Substances presenting low danger)
Special provisions		168, 274	168
Limited quantities		1 kg	5 kg
Packagings & IBCs	Packaging Instruction	P002, IBC08	
	Special packing	PP37, B2, B4	PP37, B2, B3
Portable tanks and bulk containers	Instructions	T3	T1
	Special provisions	TP33	

Special provisions 168: “Asbestos which is immersed or fixed in a natural or artificial binder (such as cement, plastics, asphalt, resins or mineral ore) in such a way that no escape of hazardous quantities of respirable asbestos fibres can occur during transport is not subject to this Code. Manufactured articles containing asbestos and not meeting this provision are nevertheless not subject to this Code when packed so that no escape of hazardous quantities of respirable asbestos fibres can occur during transport”. Other special provisions and specifications are found in NTC 2017b.

It follows that ACM such as cement sheeting double wrapped is not a DG under the code and therefore does not require DG code compliance for transport.

Appendix D: Waste asbestos temporary storage (transfer) requirements

This includes a summary of licensing requirements, physical storage requirements, timing and volume limitations, levy payments, and financial assurances.

Licensing and management requirements for transfer stations

Temporary storage (transfer stations) can provide an important linkage to landfill disposal for asbestos waste particularly in areas lacking a local landfill licensed to receive asbestos. This section analyses the licensing and management requirements for operating a transfer station to receive asbestos waste before it is transported off-site to a landfill. We exclude transfer stations that are co-located on an operating landfill site – typically these are licensed as part of the landfill operation.

The table below provides, for each jurisdiction, an overview of the role of transfer stations in managing asbestos waste and a description of any EPA licensing and management requirements. Note, this table includes content that was first included in *Asbestos waste in Australia report 2015* including comments made during consultation in developing the 2015 report.

5.1.6 Licensing and management requirements for accepting asbestos at transfer stations (t/s)

Jurisdiction	Overview & jurisdictions general comments	EPA licence/ approval req?	Requirements to receive waste asbestos (where applicable)	Comments
Australian Capital Territory	ACT EPA comment: 'We don't encourage double handling of asbestos via transfer stations (t/s) & prefer asbestos goes straight to landfill for disposal. Domestic quantities (<250kg) ... can be received for free to prevent illegal dumping, or disposal in household bins.'	Yes	ACT EPA comment: 'T/s take only double bagged asbestos & require placing in bins (no throwing). If packing is torn they have bags on site for minor tears (only). Unpackaged asbestos is not allowed to enter the t/s. If only small can place in a bag on site, but if larger, then refuse to take until properly wrapped'.	ACT has free receipt of asbestos waste from domestic transport of <250kg.
New South Wales	NSW EPA comment: 'Most t/s not licensed to take waste asbestos. Refer to Clause 80 of <i>POEO Act 2014</i> that requires asbestos waste to go to a landfill (not t/s). EPA allows only a few t/s to aggregate asbestos (e.g. Shoalhaven Council)'.	Yes	"Bonded asbestos material must be securely packaged at all times... Friable asbestos material must be kept in a sealed container" ¹⁷ . NSW EPA comment: 'Any t/s permitted must have management plan for asbestos. Must refuse to receive asbestos that is not appropriately contained'.	NSW legislation appears to prohibit t/s from accepting asbestos, but EPA allows a few t/s to do so.
Northern Territory	NT EPA comment: 'No transfer station currently receives asbestos. The NT EPA's preference is that asbestos go directly to landfill'. "The NT EPA's preferred position ... is that asbestos should be disposed of promptly to a landfill licensed to receive it. Given the remoteness of communities & transport distances in NT other options such as temporary storage & on-site containment cells may also be considered. These	Yes	"All new temporary storage facilities or expansions to existing storage facilities associated with the collection, storage, treatment & disposal of asbestos on a commercial or fee for service basis require an Environmental Protection Approval under the Waste Management & Pollution Control Act prior to construction... In addition ..., all temporary storage facilities designed to accept asbestos require an Environmental Protection Licence" (NT EPA 2015).	NT EPA asbestos disposal guidelines states the preference is for asbestos to go directly to landfill but do not prevent transfer stations from applying to handle asbestos.

¹⁷ <http://www.epa.nsw.gov.au/managewaste/house-asbestos.htm>, accessed April 2015

Jurisdiction	Overview & jurisdictions general comments	EPA licence/ approval req?	Requirements to receive waste asbestos (where applicable)	Comments
	systems must be regarded as secondary” (NT EPA 2015).			
Queensland	EHP comment: ‘No t/s in Brisbane accepts asbestos’. Qld government maintains ‘asbestos disposal information’ listing of options by local government area ¹⁸ . Varying levels of information are provided (from comprehensive to council contact details only). No t/s is listed, suggesting receipt is uncommon.	Yes	No specific EHP requirements were identified. T/s receipt of asbestos is apparently decided and controlled at local government level.	T/s in Brisbane do not take asbestos, but some others do. To understand asbestos receipt in regional t/s consultation with councils would be needed.
South Australia	SA EPA comment: ‘the EPA promotes the development of regional waste management plans to ensure the waste management requirements for areas are considered and addressed. Some t/s accept asbestos and some don’t. The site operator chooses to gain approval to receive asbestos waste’.	Yes	‘Double wrap asbestos in >200 micron thick plastic using duct tape to form sealed packages of a manageable size, or place in plastic-lined bins supplied by a licensed waste transporter. Plastic liners should be taped down over the contents of the bin’ (EPA SA 2014, p.3). SA EPA comment: ‘Typically t/s will refuse asbestos not properly contained or may wrap on site for a fee. Customers delivering asbestos are usually commercial operators & the t/s operators get to know those who are not compliant’.	The EPA promotes the development of regional waste management plans to ensure the waste management including asbestos management and disposal requirements for areas are considered and addressed
Tasmania	Tas EPA comment: ‘Around 15% of t/s take asbestos. Up to operator as to whether it is accepted. EPA prefers that they take it to prevent illegal dumping by making it easy to dispose. Most councils publish whether they accept waste asbestos. EPA does not currently have a publicly available list of asbestos waste disposal sites but are hoping to have the list available into the future’.	Unknown	Tas EPA comment: ‘Must be double wrapped prior to acceptance. Issue exists when unwrapped asbestos arrives – has already exposed public on the journey. Three options: 1. Refusal. 2. Charge to wrap the asbestos. 3. Provide equipment to customer to do wrapping. All options have issues.’	Tas EPA supports t/s taking asbestos.
Victoria	In 2015, EPA Vic commented: ‘Most t/s don’t receive asbestos because receipt requires works approval & licensing.’ The only t/s taking asbestos in Victoria are co-located on landfill premises (which require EPA works approval & licensing).	Yes, but exemptions apply	EPA Victoria (2009) provides detailed guidance on the requirements for asbestos waste delivery, including: “Double-wrap the entire article with polythene sheets, approximately 200 µm (0.2 mm) thick, & seal with adhesive tape” (p.2). The <i>Regulatory impact statement – proposed environment protection (scheduled premises) regulations 2017</i> includes the following:	

¹⁸ <http://www.deir.qld.gov.au/asbestos/law/transport-disposal.htm#requirements>, accessed April 2015

Jurisdiction	Overview & jurisdictions general comments	EPA licence/ approval req?	Requirements to receive waste asbestos (where applicable)	Comments
	<p>Vic EPA recently published Regulatory impact statement – proposed environment protection (scheduled premises) regulations 2017.</p> <p>The revised regulations propose to allow the temporary storage of waste asbestos in limited volumes and for a limited time at some transfer stations without licensing and works approval). See further information under requirements to receive waste asbestos (adjacent).</p> <p>A Victorian working group (AVRWGM <i>et al.</i> 2011) published a guideline on <i>Managing domestic non-friable asbestos at resource recovery centres</i>. This is the only detailed guide for t/s to receive asbestos waste from households identified in this review. This guideline is no longer public. EPA Vic comment: ‘The content related mainly to safe handling of asbestos at transfer stations. Before release of the document is revisited there needs to be agreement that this is a preferred option to manage asbestos disposal. To ensure the guidelines were adopted correctly transfer stations would need to be equipped with proper facilities and handling procedures/training. This increases costs. There may also be limited uptake as the risks around asbestos are often too big a barrier, especially at a local council level’.</p>		<p>“...the proposed new clause under Regulation 12 will provide an exemption from works approval and licensing requirements in relation to:</p> <p>(d) temporary storage of less than 10 cubic metres of doublewrapped, non-friable asbestos for a period of no more than 60 days on land–</p> <p>(i) <i>permitted under a planning scheme made under the Planning and Environment Act 1987 for use as a transfer station and which is allowed to accept asbestos; or</i></p> <p>(ii) <i>used as a depot by, or for the purposes of, a public utility and which is 100 metres or more from sensitive land uses, including residential premises, health services, child care centres and education centres;</i></p> <p><i>This approach recognises that the temporary storage of asbestos at transfer stations and public utility depots must, as workplaces, comply with occupational health and safety laws. Requiring a works approval or licence for the temporary storage of asbestos at such locations is not an effective or proportionate mechanism for reducing any residual risks of this activity” (page 53).</i></p>	
Western Australia	<p>WA Department of Environment Regulation comment: ‘Many transfer stations choose not to accept ACM. Transfer stations that do choose to accept ACM are required to submit an asbestos management plan to DER for consideration.’</p>	Yes	<p>WA DER comment: ‘T/s that receive ACM must follow <i>Guidelines for managing asbestos at construction & demolition waste recycling facilities</i>.’ Appendix A (p.25) of the guidelines states that the <i>WA Environmental Protection (Controlled Waste) Regulations 2004 (Regulations)</i> require asbestos to be:</p> <p>“1. Separated from other material for disposal where that is reasonably practicable</p> <p>2. Wrapped & contained in a manner that prevents asbestos fibres entering the atmosphere during transportation on a road</p>	

Jurisdiction	Overview & jurisdictions general comments	EPA licence/ approval req?	Requirements to receive waste asbestos (where applicable)	Comments
			3. Labelled or marked with the words “CAUTION ASBESTOS” in letters no less than 50 millimetres high on the individual packages & the transport container.”	

5.1.7 Waste asbestos temporary storage requirements – discussion

Unlike most wastes, it is commonly accepted that the best place for asbestos waste is landfill, where it can be safely removed from the environment for the long term. Across Australia, state and local governments are working towards a gradual rationalisation in the number of landfills in order to minimise the environmental and human health risks that landfills can create. As small regional landfills are filled they are often replaced with transfer stations that consolidate waste and enable higher rates of resource recovery, reduce long term liabilities and risks, and transport bulk waste loads to a regional landfill. When transfer stations do not accept asbestos, landfill closures reduce asbestos disposal options, creating a potentially serious problem. Several jurisdictions actively discourage asbestos waste receipt at transfer stations.

In all jurisdictions, apart from NSW, it appears to be left up to transfer station operators (generally local governments) to decide whether to seek an EPA licence to accept asbestos waste.

Without guidance from jurisdictional governments, transfer station managers – including local governments – may decline to accept asbestos. Its acceptance requires higher levels of training, more rigorous occupational health and safety procedures and, most likely, costlier insurance. Readily available lists of facilities that take asbestos waste (available for all jurisdictions apart from NT, Tas and regional WA) include few transfer stations.

In all jurisdictions, transfer stations require EPA approval to accept commercial loads of asbestos. It is often unclear if licensing is required for a t/s to receive only domestic self-haul asbestos waste. Vic is currently proposing regulatory changes that would allow transfer stations to receive limited amounts of asbestos from any source (10 cubic metres of double wrapped, non-friable asbestos) for a limited period (no more than 60 days).

The ACT is the only jurisdiction that allows free (no levy or gate fees) disposal of domestic asbestos waste in amounts of less than 250kg.

Where guidance for the management of asbestos at transfer stations was available, it was generally consistent and based upon the *National occupational health and safety commission code of practice for the safe removal of asbestos, 2nd edition* (Commonwealth of Australia 2005).

Appendix E: Waste asbestos disposal requirements

This section includes a summary of licencing and landfilling requirements and landfill levies.

Licensing and management requirements for accepting asbestos at landfills

This section assesses the licensing and management requirements for operating a landfill to receive asbestos waste. In all jurisdictions, asbestos can be received only at landfills operating under an EPA licence¹⁹. A public list of waste facilities that accept asbestos is available in the ACT, NSW, Qld, SA, Vic and WA (covering Perth only). No such list is available for the NT or Tas. The Asbestos Safety and Eradication Agency also maintains a list of waste facilities allowed to receive asbestos.

The table below describes, for each jurisdiction:

- management requirements
- the landfill levy rates in 2015/16 for asbestos waste

Note, this table includes some content that was first included in *Asbestos waste in Australia report 2015*.

¹⁹ In some jurisdictions, Victoria for example, very small rural landfills are exempt from EPA licensing.

5.1.8 Licensing and management requirements for accepting asbestos at landfills

Jurisdiction	Requirements to receive waste asbestos at a landfill	Recording of the location of asbestos?	Landfill levy (2016/17) (\$/tonne)	Comments
Australian Capital Territory	<p>ACT Government 2016 states that: 'Domestic quantities of asbestos are accepted at the Mugga Lane and Mitchell Resource Management Centres free of charge. Asbestos material must be double wrapped, sealed in heavy duty plastic and identified to facility operators. The law requires you to engage a licensed asbestos removalist to remove asbestos from your house. Asbestos loads greater than 250 kg or in a package larger than 80 cm x 80 cm will be treated as commercial loads (refer commercial waste charges section)'.</p> <p>ACT EPA comment: 'Bonded asbestos-containing material (ACM) requires 1m capping material; 3m for friable. General practice is to put bonded over friable & then apply 1m capping. Double bagged, or in a container (see Commonwealth of Australia 2005). All commercial operators must book in & do tipping at the face, ensuring truck windows are up & operators use asbestos monitoring devices. Use mono cells for asbestos'.</p>	Use mono cell, so yes.	<p>Domestic: <0.25t free.</p> <p>Commercial: < 0.25t \$41/load, >0.25t \$164.10/t²⁰</p>	ACT is the only jurisdiction providing free disposal for domestic delivery (because the ACT government owns the landfills & controls the gate fees)
New South Wales	<p>NSW EPA (2015) includes requirements for landfills receiving asbestos. Applications for a licence to construct & operate landfills or develop new cells must include, at a minimum: ... a filling plan ... showing proposed layout of cells, the type & amount of waste to be deposited in each cell, projected rate of filling, & location of any special burials (e.g. asbestos waste or clinical waste) (p.5).</p> <p>Specific requirements for landfilling asbestos waste & clinical waste are contained in the Protection of the Environment Operations (Waste) Regulation 2014. This requires asbestos waste to be covered with virgin excavated natural material or other material as approved in the licence. The depths of the required covering are:</p> <ul style="list-style-type: none"> - immediate covering with 150 mm of cover - 500 mm of cover at the end of each day - final cover of at least 1 m (in the case of bonded asbestos waste or asbestos-contaminated soils) or 3 m (in the case of friable asbestos material). 	No	<p>Metropolitan Levy Area: \$135.70 per tonne</p> <p>Regional Levy Area: \$78.20 per tonne²².</p>	NSW landfill management requirements are set out in regulations, providing stronger enforcement capabilities & ensuring greater consistency across different sites.

²⁰ http://www.tccs.act.gov.au/about-us/fees_and_charges, accessed January 2017

²² <http://www.epa.nsw.gov.au/wasteregulation/waste-levy.htm>, accessed April 2015

Jurisdiction	Requirements to receive waste asbestos at a landfill	Recording of the location of asbestos?	Landfill levy (2016/17) (\$/tonne)	Comments
	<p>Ideally, asbestos should be buried in a separate, dedicated mono-cell. Where ... asbestos waste is deposited in a cell with other wastes, the deposition area should be as small as possible & located away from areas used by customers bringing in other waste streams (p.53).</p> <p>The following extracts are from NSW landfill licences for the asbestos management.</p> <p>Urban landfill, 4627 Westconnex delivery authority (note this site is now closed)</p> <p>O5.18 All asbestos waste must be disposed of at the Premises in accordance with the document titled 'Filling Plan'...</p> <p>O5.19 All asbestos waste must be covered immediately to a depth of at least 0.15 metre & at the end of each day's operation, to a depth of at least 0.5 metre as per the requirements of clause 42 of the <i>POEO (Waste Regulation) 2005</i>.</p> <p>Regional landfill, 5898 Broken Hill City Council</p> <p>Waste allowed: Waste including asbestos waste in bonded matrix & asbestos fibre & dust waste resulting from the removal of thermal or acoustic insulating materials or from processes involving asbestos material, & dust from ventilation collection systems. Disposal in accordance with Cl. 42 of the <i>POEO (Waste Reg.) 2005</i>.</p> <p>L2.6 The quantity of asbestos waste defined in condition L2.1 of this licence ... must not exceed 70 tonnes per reporting period²¹.</p>			
Northern Territory	<p>NT EPA asbestos disposal requirements (detailed in NT EPA 2015) provide that:</p> <p>"All new landfills or expansions to existing landfills require an Environmental Protection Approval under the Waste Management & Pollution Control Act prior to construction... In addition, all new & existing landfills, regardless of serviceable population size, that accept asbestos require an Environmental Protection Licence under the Act prior to the acceptance of asbestos..."</p> <p>Disposal Requirements</p> <p>1. Each load of asbestos waste must be covered with a suitable inert material immediately after it has been deposited.</p>	No, but looking to implement	\$0	NT provide (via a guideline) comprehensive & significant management requirements for landfills receiving asbestos. It is unclear if these requirements are enforceable as they are not required by the landfill licence. They are not included or only partially included in the licences for Shoal Bay & Katherine landfills.

²¹ <http://www.epa.nsw.gov.au/prpoeoapp/>, accessed April 2015

Jurisdiction	Requirements to receive waste asbestos at a landfill	Recording of the location of asbestos?	Landfill levy (2016/17) (\$/tonne)	Comments
	<p>2. The licensee must keep records of the volume & GPS coordinates of all asbestos disposed of by burial.</p> <p>3. Asbestos waste shall be deposited in a position which is:</p> <ul style="list-style-type: none"> a. in the case of asbestos fibre & dust wastes, at least 3m b. in the case of stabilised asbestos wastes in a bonded matrix, at least 1m <p>beneath the planned final land surface in such a manner that they do not come into direct contact with compaction or earthmoving equipment.</p> <p>4. Asbestos waste ... must be covered finally by:</p> <ul style="list-style-type: none"> a. in the case of asbestos fibre & dust wastes, orange marker mesh identifying that asbestos is buried below & not less than 3m of compacted material. b. in the case of stabilised asbestos wastes in a bonded matrix, orange marker mesh ... & not less than 1m of compacted material. <p>All asbestos landfills to place the following information of the land title:</p> <ul style="list-style-type: none"> - cadastral boundaries of asbestos landfill; - quantities of asbestos buried at the site; - caution against the disturbance of the area. <p>All landfills require a closure & post closure plan detailing the revegetation program & ongoing management & maintenance requirements for the site" (p.3).</p>			
Queensland	<p>Qld EHP comment: 'Recent changes have shifted to self-regulation & leave it up to landfill operator how to accept & record the location of asbestos at landfills. Qld WorkCover is working with waste industry to make sure people are not exposed.'</p> <p>Review of the Qld landfilling guidelines found no specific guidance for asbestos landfilling. Qld landfill licences (known as <i>environmental</i> authorities) are not freely available but can be purchased from EHP, at https://www.ehp.qld.gov.au/services/index.php?item_id=33258.</p> <p>EHP comments suggest that the licences do not prescribe asbestos management methods.</p>	No	\$0	Qld is the only jurisdiction with 'self-regulation' model for asbestos landfill management requirements.

Jurisdiction	Requirements to receive waste asbestos at a landfill	Recording of the location of asbestos?	Landfill levy (2016/17) (\$/tonne)	Comments
South Australia	<p>The SA EPA website published the current information regarding levy settings in SA as follows.</p> <p>'The Government announced on 4 July that a levy increase will occur on 1 September 2016.</p> <p>The solid waste depot levy for waste produced in metropolitan Adelaide is to be:</p> <ul style="list-style-type: none"> 1 September–30 June 2017: \$76 per tonne. <p>The solid waste depot levy for waste produced in non-metropolitan Adelaide is to be:</p> <ul style="list-style-type: none"> 1 September–30 June 2017: \$38 per tonne. <p>The liquid waste levy for 2016–17 is \$35.10 per kilolitre.</p> <p>Reduced levy for asbestos</p> <p>Between 1 September 2016–30 June 2017, a reduced levy will apply for the disposal of packaged asbestos waste*:</p> <ul style="list-style-type: none"> Metropolitan Adelaide: \$31 per tonne Non-metropolitan Adelaide: \$15.50 per tonne <p>Under these requirements, asbestos waste needs to be presented appropriately packaged, secured and labelled to support its safe disposal at an appropriate facility.</p> <p>* Meaning the disposal of asbestos waste that is packaged and disposed in accordance with:</p> <ul style="list-style-type: none"> Chapter 8 of the Work, Health and Safety Regulations 2012, or the requirements for lawful unlicensed removalists as set out from time to time in the legislation and excluding asbestos-contaminated soil. <p>'Asbestos waste' is any asbestos or ACM removed and disposable items used during asbestos removal work including plastic sheeting and disposal tools where asbestos containing material (ACM) means any material or thing that, as part of its design, contains asbestos.'</p> <p>SA EPA comment: 'Authorisation via licence must specify that asbestos is allowed. Landfills will either have mono cell or have specific controls to dispose as part of the mixed waste cell (that is usually in a defined area to ensure no problems later when sinking bores for landfill gas recovery, etc.).'</p>	Yes	<p>Levy metropolitan Adelaide: \$31/t</p> <p>Levy non-metropolitan Adelaide: \$15.50/t</p>	
Tasmania	<p>Tas EPA comment: 'Asbestos to be double wrapped or suitably covered (for contaminated soil) & buried on arrival. Most landfills have an asbestos pit that they open for a particular day. Not a requirement – just what is recommended.'</p>	No	\$2 - \$5	

Jurisdiction	Requirements to receive waste asbestos at a landfill	Recording of the location of asbestos?	Landfill levy (2016/17) (\$/tonne)	Comments
Victoria	<p>EPA Victoria's guidelines for landfilling of asbestos include:</p> <p>"... waste asbestos to be handled & covered in such a manner that no dust is generated. To achieve this & the long-term security of the disposal operation the following measures or equivalent practices should be adopted:</p> <ul style="list-style-type: none"> • Before compacting, cover with a layer of soil at least 300 mm thick or with a layer of waste at least 1 m thick. • ... must not be deposited within 2 m of the final tipping surface of the landfill. • When not receiving waste, any containers used for temporary storage at a site must be covered. <p>It is preferable that a dedicated area of a landfill be used for asbestos disposal & that this area is clearly designated on site maps. ... While landfilling of waste asbestos is generally appropriate, situations may arise where pre-treatment before landfilling should be considered. Acid treatment of white asbestos changes the nature of the asbestos fibres & appears to be the cheapest form of treatment available. Other treatment methods include thermal processes, chemical coagulation & immobilisation" (EPA Vic 2009 p 2).</p>	Yes, but not consistently applied across all licences.	\$30 (note the levy for non-hazardous commercial waste is now \$62 in metro areas). ²³	EPA Vic is the only jurisdiction where the levy on all asbestos wastes (including soils contaminated with asbestos) is lower than the industrial waste levy. Potentially creating an incentive to put asbestos waste into other wastes to reduce the levy rate per tonne.
Western Australia	WA Department of Environment Regulation sets detailed asbestos management requirements for landfill licensed to receive asbestos. The licences are available online. Extract below from an example licence (the City of Armadale):	Yes	<p>\$0 for asbestos products such as roofing or insulation.²⁴</p> <p>\$50 for asbestos contaminated soils/rubble that cannot be readily cleaned sent to inert landfill from Jan</p>	<p>For levy purposes, WA DER (2014) defines 'asbestos contaminated soils' as "not considered to be asbestos-containing materials."</p> <p>WA's \$0 levy on asbestos products such as asbestos sheeting or insulation & \$50 (equivalent) levy on asbestos contaminated soils or rubble, should help to mitigate the risk of mixing asbestos into other loads to achieve a lower levy rate.</p>

²³ <http://www.epa.vic.gov.au/your-environment/waste/landfills/landfill-and-prescribed-waste-levies#PIWRates>, accessed January 2017

²⁴ [WA DER 2014](#)

Jurisdiction	Requirements to receive waste asbestos at a landfill	Recording of the location of asbestos?	Landfill levy (2016/17) (\$/tonne)	Comments
	<p>The licensee shall ensure the following procedures are in place for managing asbestos wastes:</p> <ul style="list-style-type: none"> (i) as soon as practicable and before compaction, cover the asbestos or asbestos-containing material with a layer of soil or inert waste at least 300 millimetres thick or with solid waste at least 1 metre thick; (ii) record as grid references on a premises plan all locations used for the disposal of asbestos or asbestos-containing material and keep this plan as a permanent record; (iii) keep a permanent register of each load of asbestos or asbestos-containing material deposited at the premises, including the date, the name of person that deposited the asbestos or asbestos-containing material and the vehicle registration number; (iv) witness the covering of the asbestos or asbestos-containing material and sign the register referred to above by the close of the day; (v) not deposit any asbestos or asbestos-containing material within two metres of the final tipping surface of the landfill; (vi) operate the landfill such that any existing asbestos or asbestos-containing material deposited at the premises remains undisturbed; and (vii) make all records available for viewing by an Inspector upon request. 		2015, increasing to \$70 by 2018. ²⁵	

²⁵ WA DER 2014, <http://www.der.wa.gov.au/about-us/media-statements/112-landfill-levy-rates-to-rise-from-january-2015>, accessed April 2015.

5.1.9 2015 Summary and discussion

Readily available lists of facilities that will take asbestos waste are maintained by government in all jurisdictions apart from NT, Tas and regional WA.

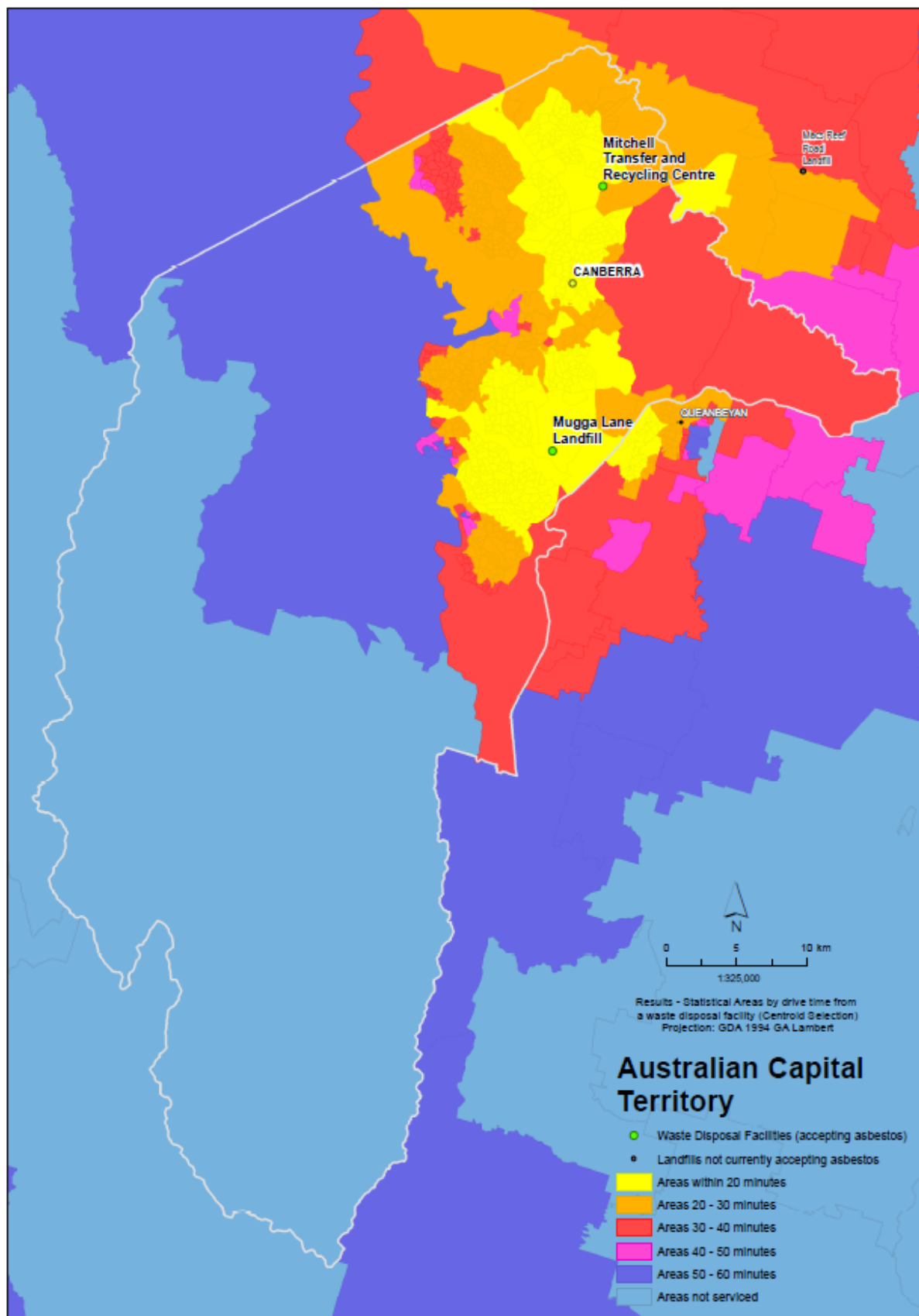
In all jurisdictions, an EPA licence is required to landfill asbestos waste and a similar set of management requirements are outlined. There is some variation in the requirements for mono-landfilling and the records that are required regarding the asbestos waste location. Perhaps more significant is the variation in how the landfilling management requirements are specified. For example, NSW includes the requirements in regulations which are then simple to reference in a licence and can be used in enforcement action. The NT EPA has an impressive set of management requirements for asbestos at landfills (see [NT EPA 2015](#)), however, 'guidance notes' are difficult to enforce unless included within the landfill licence.

Landfill levies applied to asbestos waste across Australia differ widely. Some jurisdictions exclude asbestos products such as asbestos-containing roofing or sheeting; others make no exceptions. The ACT provides for free disposal for limited quantities. WA's levy exemption on asbestos-containing products such as sheeting or insulation and \$50 (equivalent) levy on asbestos-contaminated soils or rubble, should help to mitigate the risk of mixing asbestos into other loads to achieve a lower levy rate.

In Victoria, the levy on all asbestos wastes (\$30/tonne) (including soils and rubble contaminated with asbestos) is lower than the industrial waste levy (\$62/tonne). This has the potential to create an incentive to put asbestos waste into inert demolition wastes to reduce the levy rate per tonne. Should future levy data suggest significant quantities of asbestos waste are being mixed with other industrial rubble to reduce landfill disposal costs, Victoria could adopt WA's approach as discussed above.

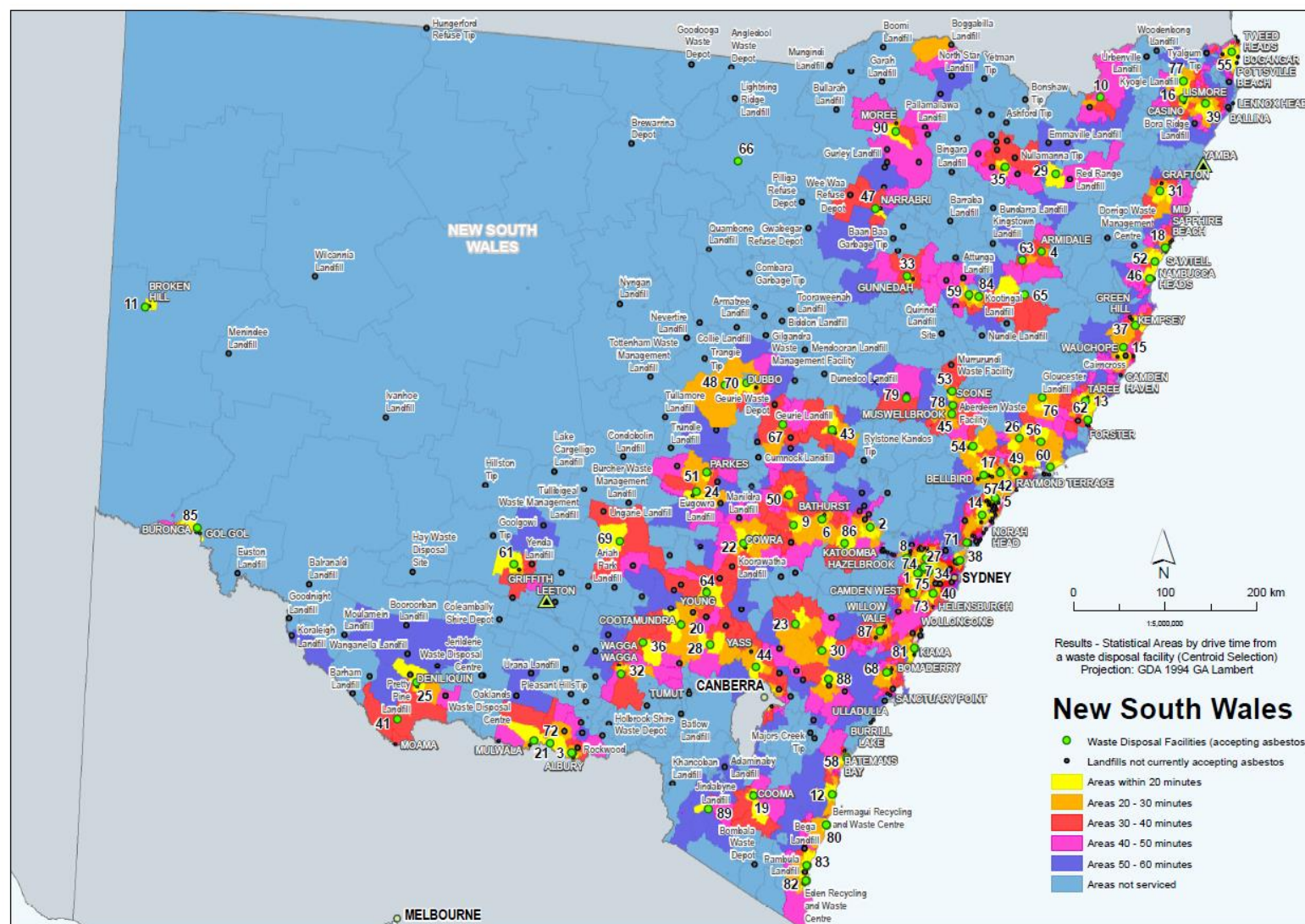
Appendix F: Maps showing the accessibility of disposal sites accepting asbestos

The accessibility of asbestos waste disposal facilities in the ACT



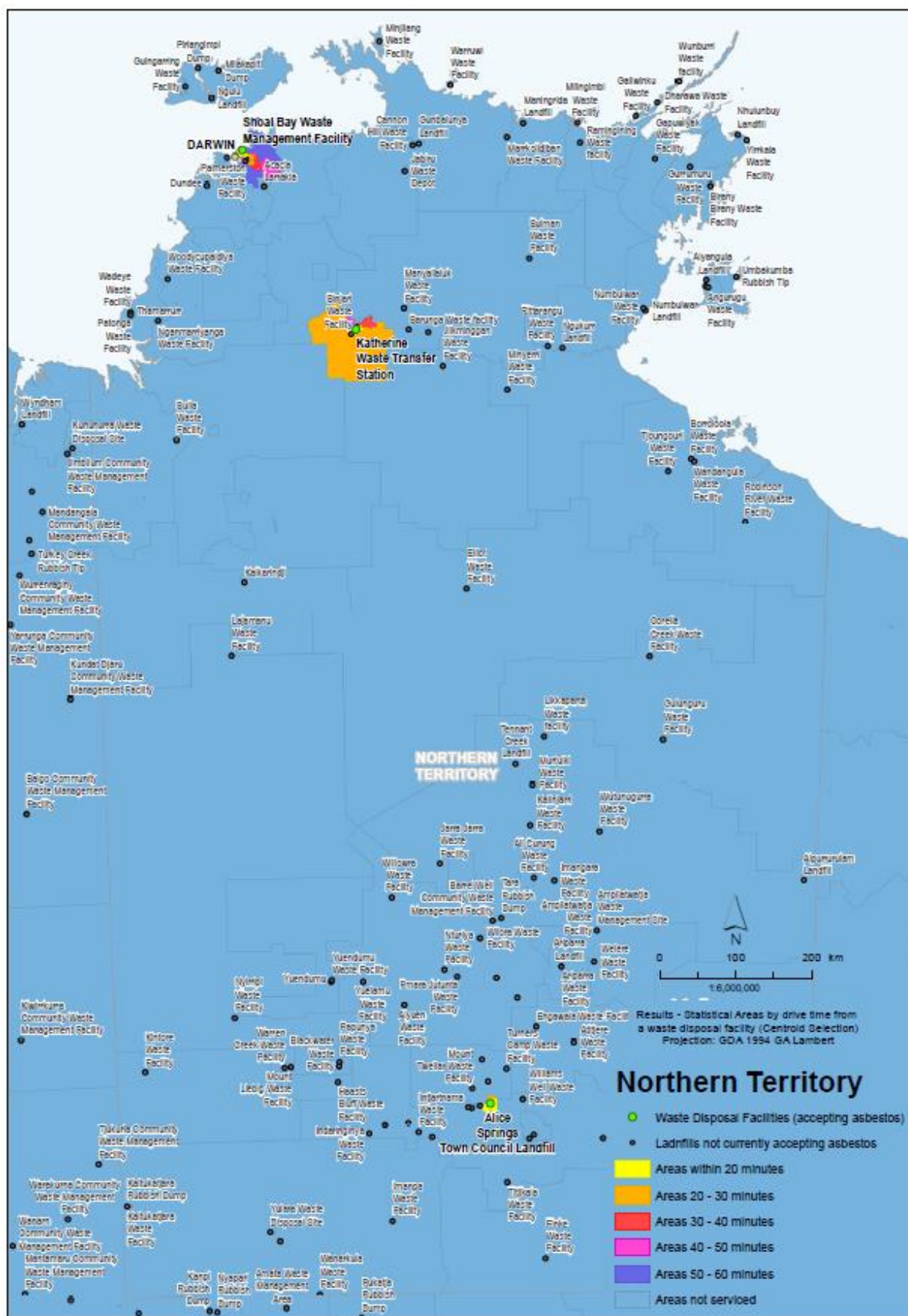
Produced by Tonkin Consulting. Derived using the GeoScience Australia waste database, the [ACT database of sites accepting asbestos](#), and ABS statistical areas level 2 population data. Please advise of any errors.

The accessibility of asbestos waste disposal facilities in NSW



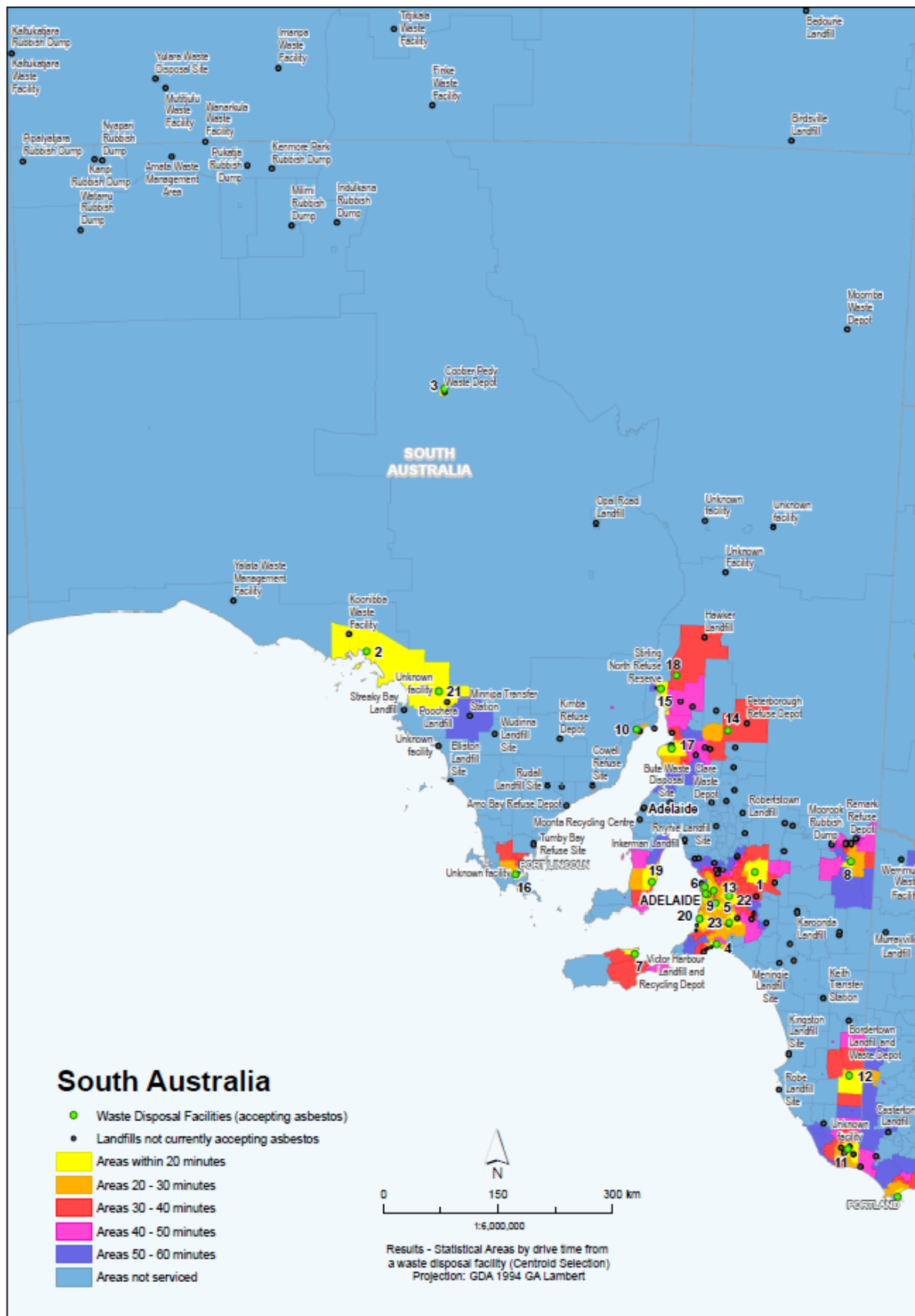
Produced by Tonkin Consulting. Derived using the GeoScience Australia waste database, the [EPA NSW database of sites accepting asbestos](#), and ABS statistical areas level 2 population data. Please advise of any errors.

The accessibility of asbestos waste disposal facilities in the NT



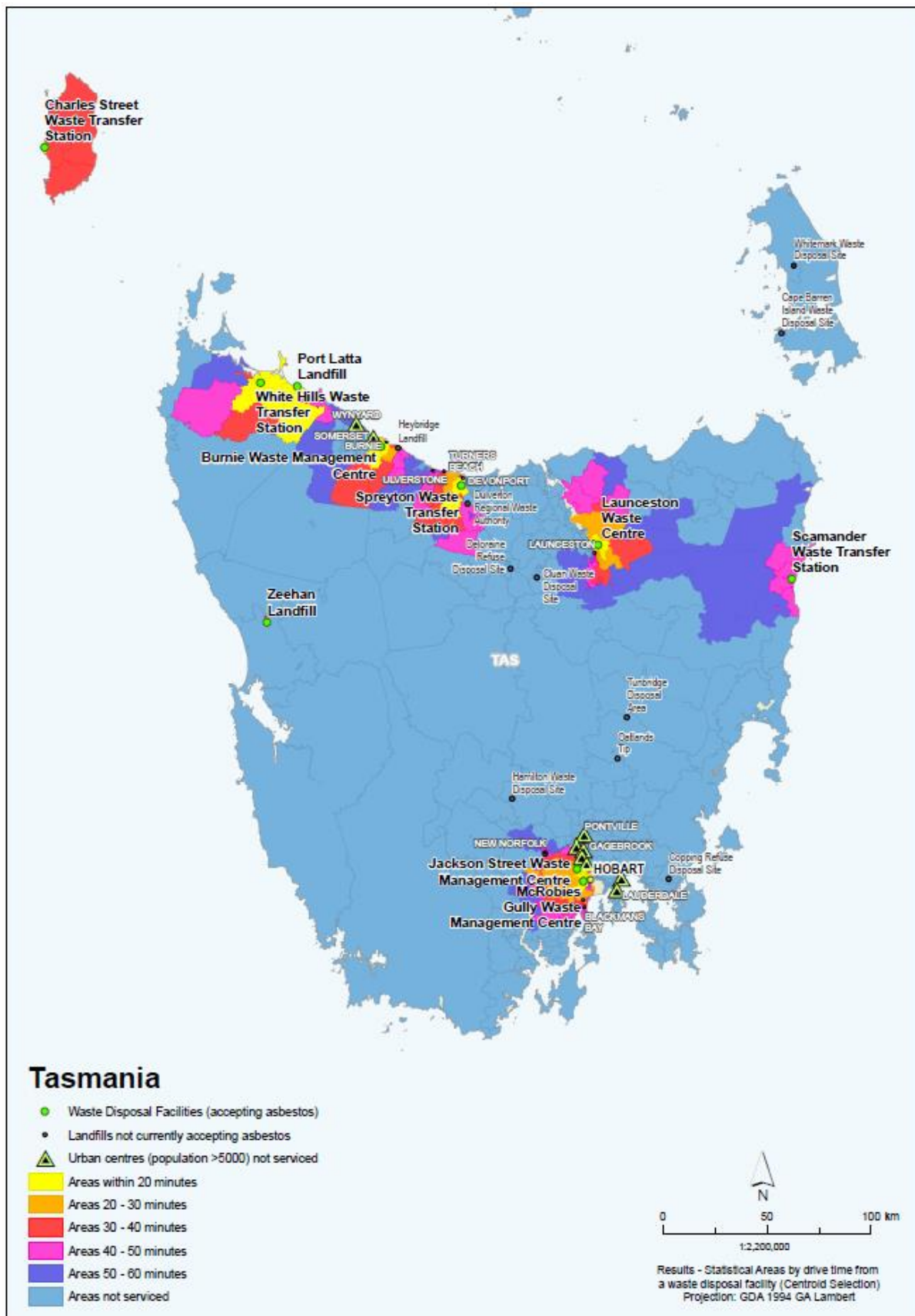
Produced by Tonkin Consulting. Derived using the GeoScience Australia waste database and ABS statistical areas level 2 population data. Please advise of any errors.

The accessibility of asbestos waste disposal facilities in SA



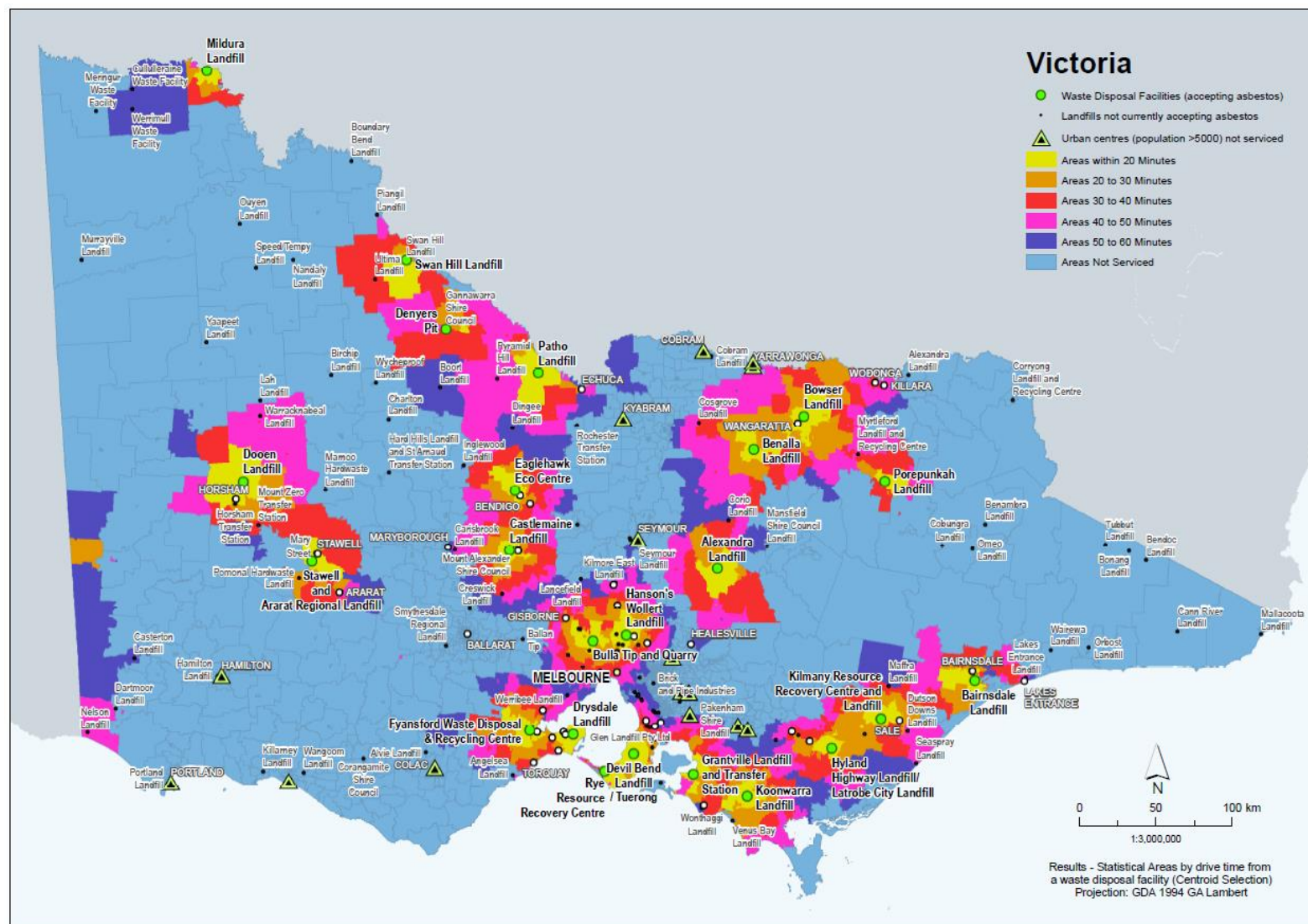
Produced by Tonkin Consulting. Derived using the GeoScience Australia waste database, the [SA EPA database of sites accepting asbestos](#), and ABS statistical areas level 2 population data. Please advise of any errors.

The accessibility of asbestos waste disposal facilities in Tasmania



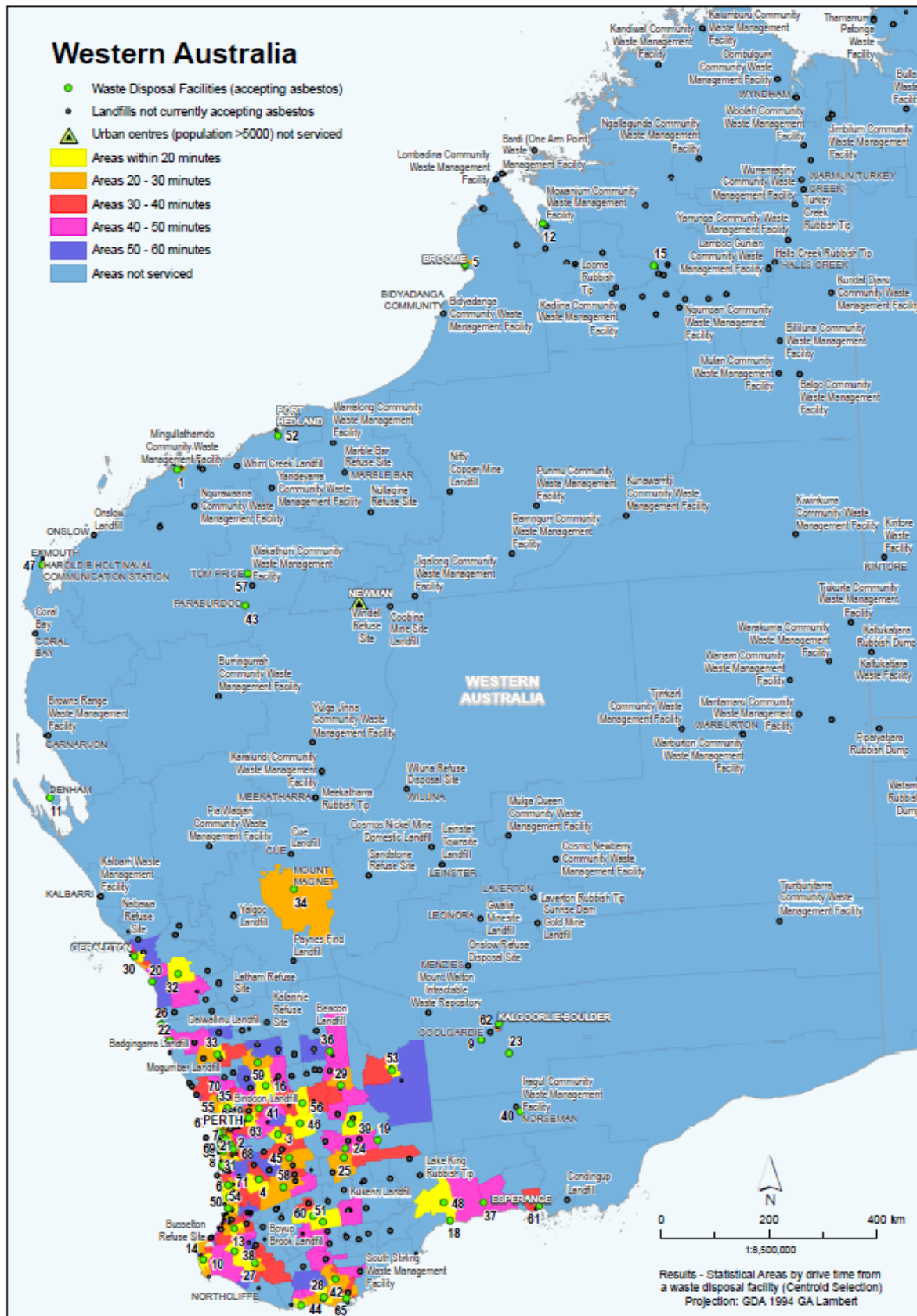
Produced by Tonkin Consulting. Derived using the GeoScience Australia waste database and ABS statistical areas level 2 population data. Please advise of any errors.

The accessibility of asbestos waste disposal facilities in Victoria



Produced by Tonkin Consulting. Derived using the GeoScience Australia waste database, the [Vic EPA database of sites accepting asbestos](#), and ABS statistical areas level 2 population data. Please advise of any errors.

The accessibility of asbestos waste disposal facilities in WA



Produced by Tonkin Consulting. Derived using the GeoScience Australia waste database, the [Vic EPA database of sites accepting asbestos](#), and ABS statistical areas level 2 population data. Please advise of any errors.