

Supporting information for 3rd party referral of proposed landfill at 'Allawuna', York by SITA

The following information has been compiled to reflect the generic environmental principles, factors and objectives of the Environmental Protection Authority (EPA) to assist the EPA in its decision regarding level of assessment.

It is considered that the following environmental factors require consideration:

Biophysical

- Flora
- Fauna
- Water (surface or ground)
- Conservation reserves

Pollution Management

- Air Quality
- Water Quality (surface, marine or ground)
- Soil Quality
- Odour and Noise
- Greenhouse gases

Social Surrounds

- Heritage
- Visual Amenity
- Recreation

1 Flora

The site is at the foot of the Mt Observation Wandoo National Park, where there are significant stands of *Eucalyptus wandoo* and *Eucalyptus accedens* considered in excellent condition. The understorey vegetation comprises very high quality, intact shrub flora that is likely to contain a number of priority taxa including rare orchids based on similar vegetation associated with nearby Wambyn Nature Reserve. Importantly, sand complexes associated with this eastern wandoo vegetation are hotspots for rare flora including remnant stands of the Declared Rare Flora, the scarlet lechenaultia, *Lechenaultia laricina* that has a major population on nearby Berry Brow Road adjacent to the Mt Observation Wandoo National Park.

Adjacent to the proposed SITA development is a major privately owned wandoo remnant comprising over approximately 100ha of high quality wandoo upland over laterite interspersed with sand plain and sandy drainage channels and granite exposures. This privately owned area, though surveyed in summer 2012/13, was in excellent condition and there was evidence of good stands of orchids (remnant flower heads). Therefore given the proximity to Wambyn Nature Reserve, the proposed landfill site needs surveying for rare or priority flora.

Both Wambyn Nature Reserve and the private reserve adjacent to the proposal site are high quality biodiverse assets of regional significance where any impact on ground water (through excavation that will interrupt local water flow) may have a significant negative impact on the dominant wandoo species. It is well established through research undertaken at The University of Western Australia (Professor Hans Lambers) that wandoo is highly susceptible to changes in hydrology and thus any

decline in wandoo and other groundwater dependant shrubs will have direct and potentially irreversible impacts on these important remnant woodlands.

Importantly, large amounts of putrescent materials will undoubtedly interrupt local fauna particularly pollinating insect communities that are important for maintaining the pollination of many local species including all orchid species including those at Wambyn Nature Reserve.

This reserve has one of the richest assemblages of orchids in the eastern wandoo with over 50 species recorded for the reserve including a number of priority species. It is considered by botanists from the Royal Botanic Gardens in Kew, UK to be a major orchid habitat globally following several visits over the past decade to the reserve by Professor Mark Chase and Dr Michael Fay from Kew.

Note: The above information was provided by Professor Kingsley Dixon, Visiting Professor, The University of Western Australia, School of Plant Biology.

In addition, landcare groups such as the Talbot Brook Land Management Association and other groups, with the help of many people and local farmers in the area, have been undertaking revegetation of the catchment and surrounding areas, some with funding from Government agencies. Hundreds of thousands of trees have been planted into the creek lines and waterways to revegetate the upper reaches of the catchment areas, including 6 Mile Creek, which runs into major rivers, and 13 Mile Brook with areas further upstream being revegetated as well. The proposed landfill will destroy years of hard work by local farmers and volunteers.

The proposed landfill facility will result in an unacceptable impact on the environment through direct loss of vegetation on site including likely species of protected flora and through indirect impacts resulting from the landfill including changes in hydrology, increases in weeds, pests and feral animals, and contamination of air, land and water resources. These issues are discussed in more detail in the following sections.

2 Fauna

Establishment of the site will require the clearing of native vegetation that is considered to provide habitat for protected fauna, namely Carnaby's Cockatoo. A bird list for the area surrounding the landfill site is extensive and includes other rare species: Red-tailed Cockatoo, Baudin's Black-Cockatoo, Western Yellow Robin, Black Shouldered Kite and Wedge-tailed Eagle.

The wedge tailed eagle (*Aquila audax*) is found in the Wandoo National Park which borders the property selected by SITA and has been observed on Allawuna farm. It has a generalised diet and preys on animals according to their relative abundance and also eats carrion. This means that rats from the landfill and rotting meat in the waste could potentially be eaten and this would affect the local population and introduce disease and poisons into the wild animals that inhabit the park. As a native species, the wedge-tailed eagle is protected under the provisions of the Wildlife Conservation Act 1950).

The Helena River which is fed by the Mundaring and Helena catchment also has a few remaining native fish which are endemic to this system and any contamination will significantly threaten their habitat and species viability.

A large flock of the rare Carnaby's Cockatoo uses this farm and adjacent areas. The cockatoos require a close association between breeding and feeding sites. They have been observed on many of the farms in the areas, feeding on marri seeds and crops. Residents, who have gone to the fences of Allawuna farm boundaries from October onwards, have observed a flock of between 40 and 50 birds in the trees and on the grounds of the farm (see photos below).

The proponent of the proposed landfill asserts that a field survey of the farm did not reveal any rare or significant plants or fauna. They stated, "A few scattered Gums, Wandoo and marri on the site were carefully inspected for evidence of Black Cockatoo (Carnaby's Cockatoo) roosting or breeding and found to be clear." This statement is untrue.

The subject property, "Allawuna", has so far been denied the right to clear land – primarily because of the property's location being at the foot of Mount Observation in close proximity to important drinking water catchments and also because of the presence of the Carnaby's Black-Cockatoo and the relevant legislation which covers this Australian Threatened Species.

It is also noteworthy that a landowner, who shares a boundary with Allawuna farm, was denied subdivision of his property because of the flora and fauna concerns especially the disturbance to the habitat of the Carnaby's Cockatoo.

This proposal also will have major ramifications for bio-security in the area as feral animals will be attracted to the site to scavenge amongst the rubbish, which includes waste from hospitals and restaurants as indicated by SITA. Feral pigs and cats, wild dogs, mosquitoes, seagulls and introduced species of birds pose a significant threat to native fauna and will be a major nuisance to this area, creating greater problems for the fragile environment and the community including damage to fences, destruction of stock, contamination of water sources (both for human and stock consumption) and impacting on crops.

There is a very real threat that this may result in the transmission of Salmonellosis, a bacterial disease which affects both humans and a wide range of animals, including cattle, sheep, horses, chickens, fish and birds across the region. Cattle can be chronically infected after drinking contaminated water or digesting contaminated food on which a carrier bird has landed. One affected cow can serve as a carrier within the herd without exhibiting clinical signs. Salmonellosis is currently having a serious economic impact on the cattle industry worldwide. The possibility of the Carnaby's Black-Cockatoos falling victim to Salmonella whilst scavenging at the "Allawuna" tip is also a very real threat to this already threatened species.

These photos show the large amount of trees on the site that will need to be cleared for the landfill. This is where the Carnaby's Black Cockatoo regularly feeds. The forest in the background is where the wedge tailed eagle nests.



Figure 1: existing vegetation on Alluwana Farm (Source: Bev Hill, 2012)



Figure 2: Carnaby's Cockatoos feeding and roosting on Allawuna farm (Source: Ian and Jenni McColl)

3 Water (surface and ground)

The likely impact of the proposal on surface and groundwaters including changes in hydrology, habitat; stream flows and human use values, is considered to be significant, resulting in a loss of environmental values, including ecosystem maintenance.

The proposed landfill site contains a waterway - the Thirteen Mile Brook (figure 3). This waterway drains into the Helena Catchment and ultimately the Swan-Avon River.

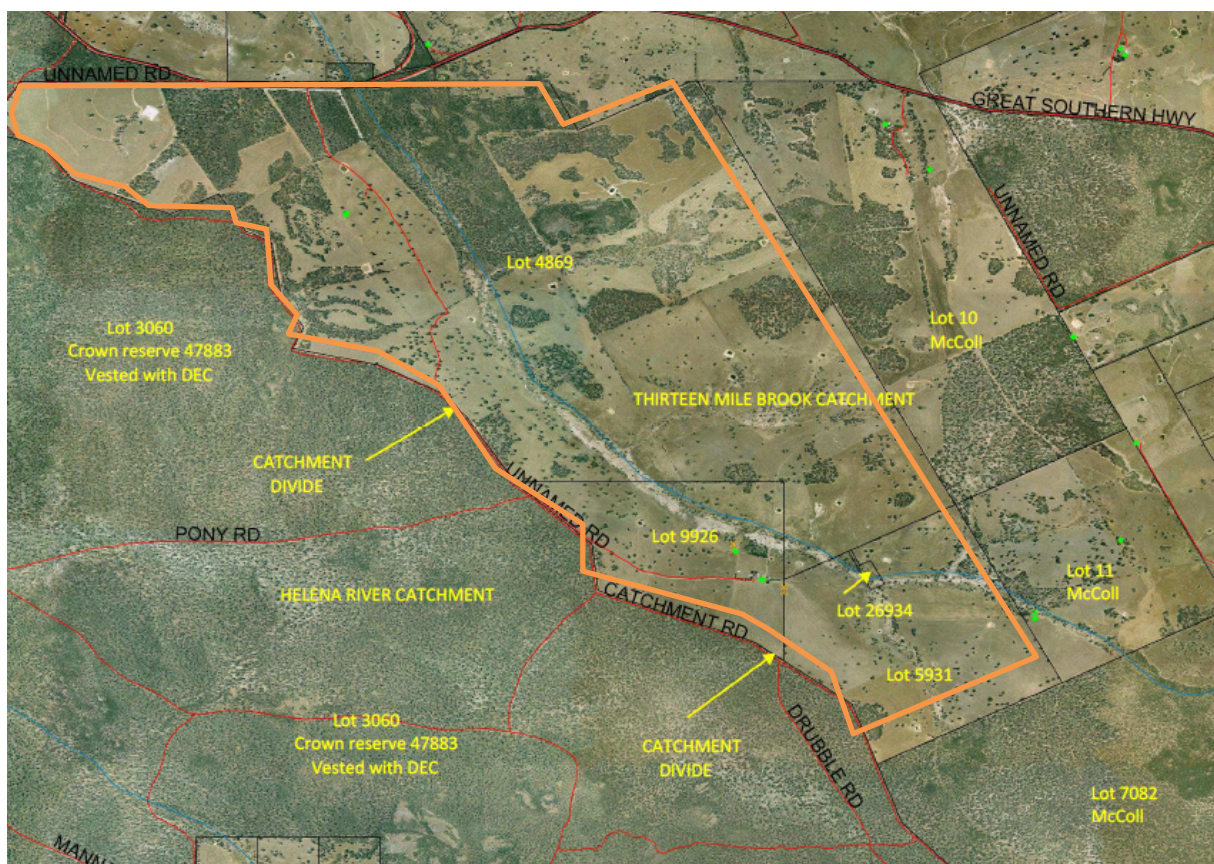


Figure 3: Location of 13 Mile Brook on the proposed tip site

On the upper reaches of the Thirteen Mile Brook, very extensive rehabilitation planting has been established to rejuvenate this watercourse and the surrounding environment. A linear river greenway system has been created by the Talbot Land Management Group. Government documents (such as The Avon Arc Sub-Regional Strategy 2001) identify Thirteen Mile Brook as a tertiary level greenbelt linkage which needs local strategies to remediate its condition. The proposed landfill facility will result in the degradation of this waterway and recognised greenbelt.

The site is located in one of the highest rainfall areas of the Central Wheatbelt, in the Avon Valley Catchment. 496mm of rain per annum has been recorded over the last 37 years by a nearby farmer. Increasing incidence of intense storm events which lead to flash flooding will require significant changes in surface hydrology to adequately manage stormwater flows. The required engineering earthworks and detention storage areas are likely to result in changes in stream hydrology including reduced flows, impacting on the ecological water requirements of the 13 Mile Brook and downstream catchments.

Figure 4 shows flash flooding in St Ronans Brook, a feeder creek to the 13 Mile Brook, after a storm event earlier this year. This type of storm event is not uncommon in the region.



Figure 4: Flash flooding in St Ronans Brook, a feeder creek to the 13 Mile Brook on 6 January 2013
(Source: Ian and Jenni McColl)

In addition, some concerns have been raised regarding the proposed construction of the leachate dam on the banks of the 13 Mile Brook. Any breach in this dam will result in unacceptable impacts to the brook and the downstream waterways. Furthermore, as evidenced across the region, the building of containments and dams creates pressure downslope. This often results in increased waterlogging and the transmission of contaminants to rise to the surface causing saline and waterlogged ground.

The proposed landfill location is also adjacent to the Helena catchment, into which the 13 Mile Brook flows. The Helena catchment is a public drinking water source area (figure 5), providing drinking water for the Water Corporation's integrated water supply scheme for the Perth and Peel metropolitan region as well as the goldfields agricultural region.

The area is underlain by fresh groundwater, which flows into the Mundaring Weir catchment which is also a public drinking water catchment. Groundwater runs north from this site into a large water shed area for the Helena and Mundaring Catchments just North of the Southern Hwy, from West of Inkpen Road and East of Berrybrow Road to North to Bakers Hill and Colongyne Road.

The area around "Allawuna" is known to have Palaeolithic channels, These are underground streams that come to the surface in various places in the form of springs and soaks. While it is known where the soaks and springs are, the precise locations of these channels are not known, as they have not been investigated. What is known is that the system drains into the Helena River, which in turn drains into the Mundaring weir.

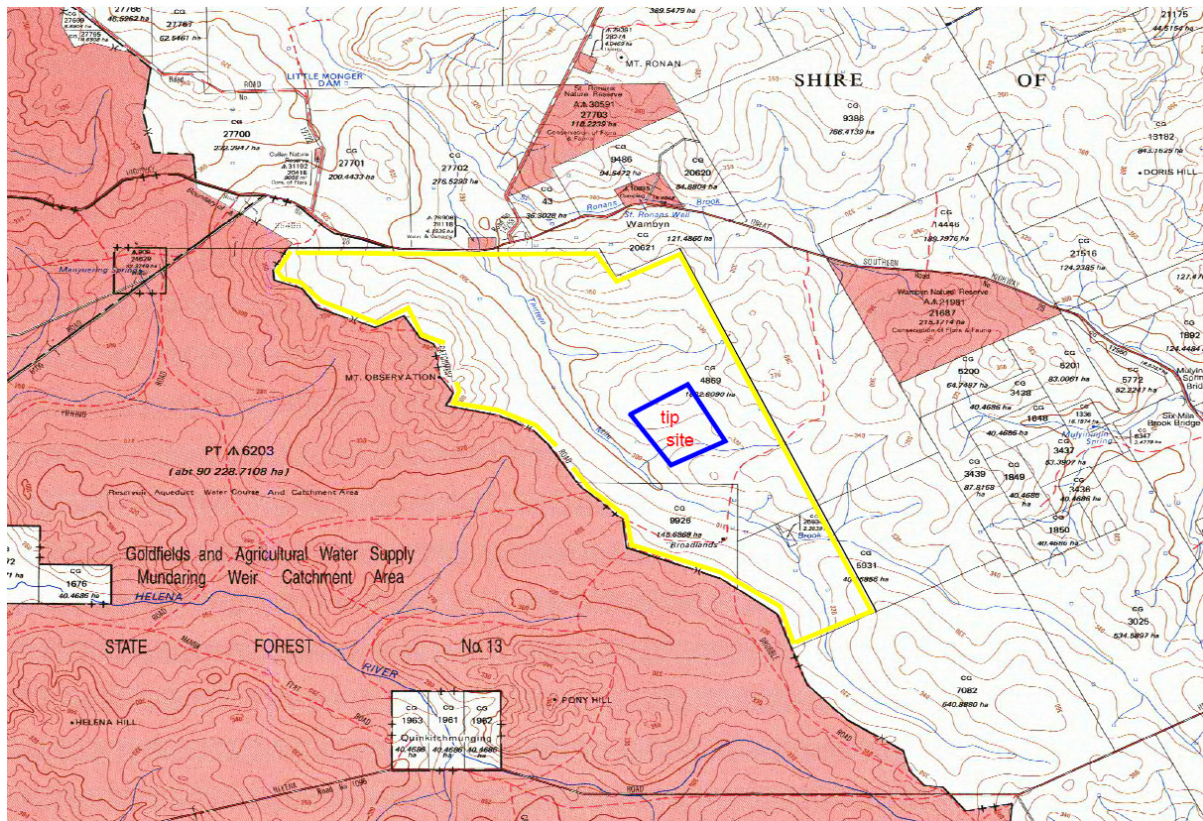


Figure 5: Location of tip site in proximity to a public drinking water source area

The proponent has stated that Thirteen Mile Brook is a seasonal stream, mostly dry and flowing northward. They imply that the changes to the Brook will be of little consequence. Their approach is simplistic as it does not address the paleochannels and dolomite dykes that characterise this environment with the possibility that groundwater may be flowing into the Helena/Mundaring Catchment as well as the Swan- Avon Catchment.

The proposed landfill facility is likely to cause the following hydrological impacts, resulting in a significant impact on the environment.

- Engineering works to manage stormwater flows on site will result in changes to flows and volumes downstream including likely impacts on ecological water requirements,
- the tributaries on adjacent farms will not be flushed and salinity will result,
- salinity in the upper reaches (the Talbot area) of the catchment will be increased,
- the massive revegetation projects in the catchment (over 400,000 trees & plants) in a cooperative venture with the Talbot Brook Land Management Assoc Inc, Department of Water, Swan River Trust, Lottery West will be endangered,
- heavy vehicles will be forced to cross 13 Mile Brook, with possible changes in flow paths and volumes from the construction of bridges and the danger of gas emissions and spillages,
- natural drainage and seepage lines will be changed by construction on the site,
- climate change experts predict extreme weather events in the future. Summer storms produce massive flows in these seasonal watercourses. Local flooding and overflows from the site are a distinct possibility. There have been several such incidents in recent years.
- the toxic dust from the site will be transferred via 13 Mile Brook into the Avon-Swan Catchment.

4 Conservation Areas

The western boundary of the proposed land fill site is the Mt Observation and Wandoo National Parks. A Wandoo belt forms the majority of the National Park which also contains rare species of flora, including orchids, Powder bark-*Eucalyptus Accedens*, and *Capillosa*. There are caves in the area (Dingo Rock Cave) and other large rock formations which are unique to the area and have indigenous significance.

Mt Observation is in close proximity to the proposed landfill site. It contains a Convict Heritage site – a hut, on Manyering Springs that was built by convict labour when the Southern Hwy was built. It has a large fresh water soak that was used to source water for stock and human consumption.

It is considered that the proposal for a landfill facility adjacent to the Wandoo National Park is likely to result in significant impacts on the National Park. These impacts include changes in hydrology likely to cause a deterioration in the health of the Wandoo forest; indirect impacts due to weeds, feral animals, dust, and windblown rubbish; and loss of amenity for visitors to the national park as a result of odour and noise.

In addition, there are a number of properties in the locality that have undertaken substantial revegetation works and contain remnant vegetation for conservation purposes. Wambyn Olive Farm, which lies 2kms due east from the proposed landfill site alongside Wambyn Nature Reserve is a "Land for Wildlife" property (DEC no.966). It is considered that the proposed landfill site on Allawuna Farm has the potential to significantly impact on the values of the conservation areas in the locality.

5 Air quality

Landfill sites are generally associated with impacts on air quality that will adversely affect environmental values and the health, welfare and amenity of people and nearby land uses. These impacts include dust, noise, odour and possibly particulates from fire. Impacts of noise and odour are discussed in section 8 below.

It should be noted that Wambyn Olive Farm is certified as organic by NASAA (cert. no. 6153). The main product is olive oil and olives but the farm also produces organic eggs, organic grains plus some organic fruit and vegetables. The owners of Wambyn Olive Farm are greatly concerned that the proposed landfill facility will result in air pollution (dust), contamination by wild birds and animals feeding at the site, groundwater pollution(irrigation), loss of income as a result of de-certification. It should also be noted that the farm has been assessed as a "sensitive site" by the Department of Agriculture and Food because of the above issues.

A number of fires have been reported at landfill sites in recent times. A fire at the proposed landfill site at Allawuna would create major air pollution issues in the locality, affecting surrounding residents and potentially the townsite. It should be noted that all landholders to the east of the landfill and west of York rely on the collection of water from roofs or dams for potable supply. A fire at the proposed landfill site is likely to compromise the quality of this important water resource and possibly jeopardise people's health.

6 Water quality (surface and groundwater)

The proposed landfill site contains Thirteen Mile Brook. This waterway drains into the Helena and Swan-Avon rivers, eventually running into the Mundaring Weir, which is used for human consumption. The western boundary of the property is the eastern boundary of the Mundaring Catchment area and the site is located above a significant groundwater resource that is of drinking-water quality. The potential to contaminate the ground and surface water poses an unacceptable risk to the environment.

The Helena River Catchment is located in the woodland adjacent to Allawuna farm. In 2010 and 2011 a survey of freshwater fish in the catchment was undertaken by the Eastern Metropolitan Regional Council, Swan River Trust and University of WA. In this study identified five native species of fish. Although, none of the species are considered rare, they are locally threatened due to habitat loss and damage. The biggest threat is contamination of waterways from eutrophication from waste products.

There is substantial documented evidence regarding the poor performance of landfill facilities with regards to leaking of contaminated leachate. Although current DEC guidelines propose a number of solutions to control leachate leakage, once these sites start to leak there is no way to rectify the situation. Leachate leaking into the groundwater could not be recovered and could lead to possible pollution of the Palaeolithic channels and the groundwater. The fact that landfill sites are no longer permitted on the Swan Coastal Plain demonstrates the considerable risk posed to surface and groundwaters, as well as soils, from contamination from landfills.

Additionally, as noted in section 3, the proposal site is subject to heavy rainfall and flash flooding. This would have the potential to be inadequately managed, resulting in an overflow of leachate from the landfill site into Thirteen Mile Creek and Helena River.

Furthermore, farms to the west of York have no scheme water, relying on rainwater tanks for human consumption as well as stock watering and irrigation of organic olive trees, vegetables and fruit trees. The potential exists for this important water source to become contaminated by dust from the tip site, as well as particulates from fire. Stock water will also be affected by dust contamination. This contamination, which could enter the domestic and international food supply chain, is also considered to be unacceptable.

7 Soil quality

Landfill technology is such that it is no longer permitted on the coastal plains. The history of landfill speaks for itself, they all leak. If they can leak no longer on the coastal plain, why are they now proposing to leak in the Darling Ranges? This potential for contamination of soil (and surface and groundwater) is considered to pose an unacceptable risk to the environment.

Any safety precautions at the site are subject to human error. When problems arise in such naturally pristine locations, their repercussions are generally not rectifiable. SITA's own web site provides examples of human error and contravention of its own rules, resulting in spillages and accidents. We acknowledge SITA's transparency, however, it highlights the fact that the selection of the most suitable site should always be the highest priority on the proponent's agenda.

In addition, SITA maintains that the site will contain waste in a series of cells made from compacted clay and lined with plastic. The ground around York moves and shifts constantly and cracks in structures are a part of everyday life. According to the University of Western Australia, York is situated in the South West Seismic Zone of Western Australia. In the period November 1994 to January 1995, there were 27 earthquakes in the York area, with the largest having a magnitude of 2.6 on the Richter scale. In the triangular area between York, Wyalkatchem and Kellerberin in the period from November 1994 to June 1998, there were in excess of 400 earthquakes, with the largest being 4.6 (2010 Seismicity of University of Western Australia).

On the 16th November 2012 Australian seismologists developed and released a new National Earthquake Hazard Map of Australia, which identified the areas of Moe in Victoria, York and Kirwan in Western Australia as well as Tenant Creek in the Northern Territory as the country's most susceptible location to the natural occurrence of earthquakes. This is of significant concern, as any earthquake has the potential to affect the performance of the liner.

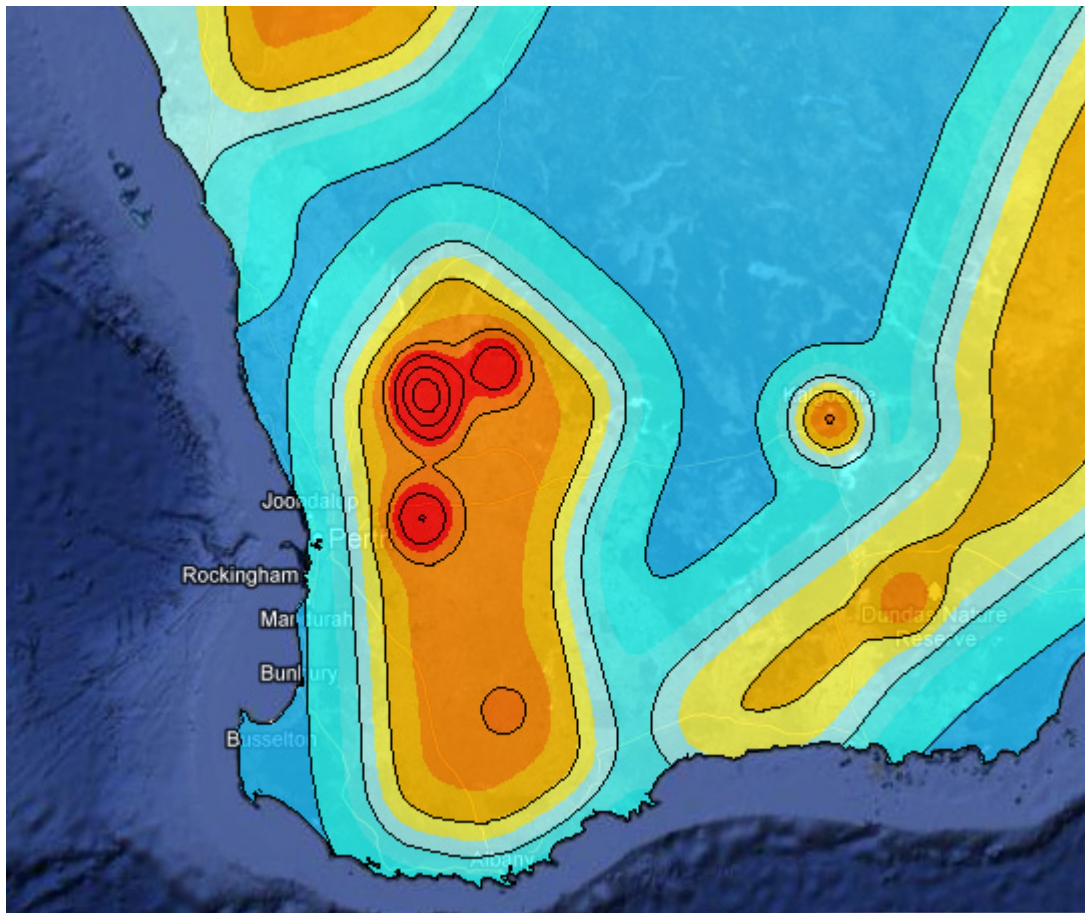


Figure 6: National Earthquake Hazard Map of Australia

(source: <http://www.ga.gov.au/darwin-view/hazards.xhtml>)

8 Odour and noise

Although EPA Guidance Statement No 3: Industrial Buffer Distances states that the buffer required for a class 2 putrescible landfill site is 500m for sensitive uses (subdivisions) and 150m for single residences, there is a significant level of concern within the York community regarding the impacts on air quality that are likely to result from the proposal.

The proposed site is bordered by a number of farms where the occupants have lived and worked in the region for many years. These residents are likely to be affected by dust, odour and noise, such that their amenity will be significantly impacted. (Dust has been discussed above in section 5).

The proposal will result in the emission of obnoxious odours from this site. On a westerly breeze, the effects of this odour will be felt in York as well as nearby landholders.

All machinery with reverse beepers, including bulldozers, excavators, loaders, compactors and trucks used for this whole operation will have a major noise effect for the surrounding area. Ground noise is also a concern. Blasting through Granite rock – which is a major feature in this landscape will also result in emissions of noise that are likely to have a significant impact on environmental and social values.

9 Greenhouse gases

The road leading to Allawuna is the Great Southern Highway. The rubbish is proposed to be trucked from Welshpool up Greenmount Hill, through the small hills townsites of Mundaring and Sawyers Valley, onto the Great Southern Highway, a small narrow single lane windy road.

SITA has announced there will be a 70t road train leaving their transfer station in Welshpool and travelling to York via the Great Eastern Highway and the Great Southern Highway every 20 minutes, 5 ½ days a week for 40 years. These roads are already congested and with these extra 6 trucks per hour plus the trucks carrying sand to cover the rubbish at the end of each day and more trucks to export the Kaolin clay from site, every person travelling on these roads will be at a greater (almost unacceptable) level of risk from vehicular accidents. The Great Southern Highway is already a very dangerous road, it is single lane, winding and undulating and not suitable for road trains travelling at 110kph. The road surfaces will be damaged by the increase in heavy haulage vehicles leading to an increase in an already very high road traffic accident count.

The emission of carbon monoxide from this substantial number of trucks, as well as other greenhouse gases such as volatile organic compounds and the burning of methane gas requires accurate estimation and careful consideration, including the proposition of management and mitigation actions to ensure the project is carbon neutral.

10 Heritage

The Ballardong People of York have not been consulted regarding this proposal and ground has already been broken on the site. The Ballardong People of York are concerned about the natural watercourses, springs and waterholes and also some important flora that will be impacted, and are receiving advice on these matters.

An archaeological and ethnographic survey is required to be undertaken on site prior to any disturbance to identify the presence of significant Aboriginal heritage. The findings of this study, together with any management recommendations and proposed responses should be made public.

11 Visual amenity

As outlined in section 9, the proposal will result in municipal solid waste (green wheelie bin), commercial and industrial waste, construction and demolition waste and asbestos to be trucked from Perth to York by road train (av. 40t each), 330 truck movements a week (60 per day), 7000t a week (1200t/day) every week of the year for the next 40 years. The road train route is an already dangerous, undulating and twisting section of the Great Southern Highway.

It is considered that the substantial number of truck movements along this scenic route will significantly impact on the visual amenity of the area.

12 Recreation

York is only just over an hour's drive from Perth's CBD, therefore a very popular getaway destination for residents from Perth and surrounds. A very large number of vehicle enthusiasts including motorbike riders and vintage car owners of all ages are welcomed visitors to York and love to traverse the open, scenic roads into York.

Great Southern Highway, the intended route for SITA's vehicles (including work vehicles of every description, trucks and road trains) is the main road into York from Perth and its surrounds. The location of the York road has not changed much since early settlers made their way from Guildford to York. Most twists and turns are still in the road, especially from the Lakes to York. This road is an extremely hilly, single lane highway with only a few short double lane areas provided for passing and accordingly it is considered unsuitable for double trailer road trains travelling at 110km per hour.

The proposed usage of this road by SITA, which includes 6-day traffic of a road train every 7-8 minutes both laden and empty, will result in the reduced recreational use of the route by visitors to York. This could have catastrophic impacts on the economy of the town, which thrives on its reputation as a day-trip and weekend destination.

Furthermore, although not strictly related to the factor of "recreation", the people of York are extremely worried about the impact of this traffic on road safety. It is considered that tourists, everyday commuters to work who live in the Wheatbelt and drive to Perth daily, and all of the school buses, and volunteer emergency services such as ambulances, FESA, and police will have major difficulties with this already dangerous stretch of road. There are a lot of black spots on this very dangerous section of highway and the proposed type and level of traffic is likely to significantly increase the risk of traffic accidents and even fatalities.

13 CONCLUSION

The proposed landfill facility at Allawuna farm in York has the potential to result in a significant impact on the environment, specifically to flora, fauna, surface water, groundwater, conservation areas, air and soil quality (including from odour and noise), heritage, visual amenity and recreation, as well as resulting in the substantial emission of greenhouse gases. The proposal is also of significant interest to the majority of the York community.

Accordingly it is considered that the level of assessment be set by the Environmental Protection Authority at Public Environmental Review, so that the potential impacts of the proposal can be sufficiently investigated in a transparent manner that facilitates community input.

Thank you for your consideration.

Bev and Denis Hill