Attachment 1

Form Letter v1

Form Letter v1

OPPOSITION TO MOOREBANK BUILDING WASTE PROCESSING PLANT

I **oppose** the proposed Moorebank Waste Processing Project (Project Number **05 0157**) at Lot 6 DP 1065574, Newbridge Road, Moorebank.

1. **I oppose the building waste processing plant** because the proposed development is far too close to existing and proposed residential homes. The proposed development is just 250 metres from the Georges Fair housing estate. Trucks using the proposed facility will travel even closer to residential homes. Trucks will likely short cut through Georges Fair, passing parks and local residents, using roads not designed for massive trucks.
2. **I oppose the building waste processing plant** because of the risks from asbestos and toxins. At the community consultation meeting held on 31/5/2011 at New Brighton Golf Club, the representatives of the developer refused to comment on whether asbestos would be processed at the facility and whether toxins would be released. There is a link between silica dust and lung cancer (*'Occupational Exposure to Silica and Lung Cancer', Cancer Epidemiology, Biomarkers and Prevention Journal, Volume 19, 2010*). There is no known cure for silicosis (*'A Brief Review of Silicosis in the US', Environ Health Insights, Volume 4, East Carolina University, 2010*). The developer plans to install sweepers "where trucks and people will travel" and that there are "unsealed areas" in the development. Their own documentation refers to "likely dust from the recycling facility" (*pg 3, developer's information distributed on 31/5/2011 at New Brighton Golf Club*). This is an unacceptable health risk for local residents.
3. **I oppose the building waste processing plant** because of the potential for flooding. The proposed development is in an area that floods. In the event of a flood, unsafe building materials and material stockpiles may cause an environmental disaster throughout Moorebank and the entire Georges River Basin.
4. **I oppose the building waste processing plant** because the NSW Government has indicated there will be *"*a return of local planning powers to local communities*"* (*'NSW govt scraps 3A planning provision', SMH, 4/4/2011*). The local community is opposed to this development. Councillors of the Liverpool City Council have voted unanimously against this development (*Minutes, Liverpool City Council meeting, 15/6/2011*).
5. **I oppose the building waste processing plant** because the proposed development is incompatible with the current and planned residential and recreational uses of the area. The proposed concrete processing facility is just 250 metres from the Georges Fair housing estate, with a high proportion of residents having young families. The area is zoned E2 Environmental Conservation. It should not be used for a concrete processing plant. In close proximity are schools, parklands, the Georges River itself, cycleways, a proposed waterside marina, a library and a golf club. The land is more suitable for recreational facilities or a reserve. Even the owners of the Benedict Recycling plant at Moorebank (which borders the proposed facility) have accepted that the area is no longer suitable for a building waste processing plant and have started to shut down *their* operations to create their own housing estate and marina.
6. **I oppose the building waste processing plant** because of increased traffic. The developer states the proposed facility will result in an extra 324 truck movements a day, which is *"*very low and will have no impact on the arterial road network" (*developer's information distributed on 31/5/2011 at New Brighton Golf Club*). Increased traffic will have a significant impact on arterial roads including Nuwarra Road, Newbridge Road and Governor Macquarie Drive. There is already significant traffic in the area which will be made worse by the 'Intermodal', which will cause an extra 1.5 million truck movements in the first year. Truck movements will primarily be in peak hours, further impacting on already high congestion. The residents of Moorebank and other areas should not experience any additional noise, pollution and congestion from this proposed facility, given the likelihood of the 'Intermodal'.
7. **I oppose the building waste processing plant** because of the negative impact on land values. Residents of the Moorebank precinct in particular have spent significant amounts of money on land and homes. The proposed development will have a severe impact on land values and residents will not be compensated.
8. **I oppose the building waste processing plant** because there was a lack of community consultation at a meeting held by representatives of the developers on 31/5/2011. The organisers did not notify a significant number of local residents and future residents about the meeting. The organisers refused to answer questions from local residents on health risks. The organisers did not allow time to note down and respond to residents' concerns.
9. **I oppose the building waste processing plant** because it is dangerous to residents for a concrete processing plant to be located in this area of metropolitan Sydney. There are pre-existing waste processing plants operated by Benedict Recycling and Smorgan Steel Recycling at Chipping Norton. Benedict Recycling is planning to build another plant at Heathcote. There is no need for so many waste processing plants in such close proximity to each other.

As a local community member, I **OPPOSE** the building waste processing plant. I call on councillors, the NSW Parliament, the Minister for Planning, the Planning Assessment Commission, the NSW Department of Planning and Infrastructure and the Premier of NSW to **REJECT** this proposal.

FULL NAME: **ADDRESS:** **DATE:**

EMAIL TO: plan_comment@planning.nsw.gov.au MAIL TO: NSW Department of Planning, GPO Box 39, NSW 2001 FAX TO: 9228 6455

Attachment 2

Form Letter v2

Form Letter v2

Hello All,

I am a resident of Georges Fair and I would like to strongly express my formal opposition to the building of a recycling plant/facility, on lot 6, DP 1065574, New Bridge Road, Moorebank. This location is alarmingly close to my place of residence (Georges Fair) and am very concerned about the health risks, pollution (both air and noise), increased commercial/industrial traffic and other related negative effects this facility may bring to our residential community and to our children in particular.

Additionally, the presence of such a facility so close to our place of residence goes directly against the reasons why we, as a community decided to make this beautiful place our home. I am also very concerned that the presence of such an industrialized facility will obstruct the potential capital gains/growth this home/investment may be capable delivering to our families.

I would like to reach out to you, our government representatives, to please reject this plan of erecting a recycling plant or any industrial facility near Georges Fair and conserve the residential environment around this beautiful development.

Attachment 3

Form Letter v3

Form Letter v3

Recycling Facility Lot 6, DP 1065574 Newbridge Road Moorebank.

My family & I have worked hard all our life's to finally be able to purchase land & build upon it our new home, the location we selected to live our dream is Georges Fair Residential Estate Moorebank. Our dream looks to be on a downward spiral because of the purposed development Building Waste Recycling Facility to be constructed within a stone's throw of the Georges Fair residential development. I can't stress enough the disbelief this purposed development has even seen the light of day due to the close proximity to a major residential development for so many logical reasons it is insane I even have to bring attention to this ridicules situation. Unfortunately in this day & age government departments don't seem to represent the best interest of the people that vote them into office or the reason they exist, to represent the public's best interest.

Here we have an existing residential development that is growing with more & more families spending their life savings hoping to build their future at Georges Fair yet we have the powers that be planning to build a facility that should be as far away from populated areas due to the nature of the beast. I just happen to work as a tradesman in the construction industry & firsthand knowledge sets alarm bells ringing in my ears that pieces of paper on some consultant report on the mater won't ever cover. Building waste for example in the volume purposed for this site 75000 tonnes per annum will be mostly from demolition & within that demolition waste there will be materials that are deemed hazardous like asbestos it simply happens. There is no way an iron clad guarantee can be given this won't happen unless every partial of waste is inspected before transportation to the site.

Even ruling out the very high chance of hazardous waste content you have the impact the transportation of waste materials to the recycling facility will have on the surrounding area & just one truck without sufficiently covered load will cause havoc & what will be the outcome if that happens a simple fine. The dust from the plant is my largest concern even if systems in place like water sprays, undercover processing facilities because machinery fails & to think a company that needs to turn a profit will shut down operation while some infrastructure is undergoing maintenance is naive.

I simply ask this question of the powers that be who think such a proposal is warranted to move forward, what authority is going to take responsibility for the public health problems from air born partials from this plant located so close to a residential area & the impact transportation of materials on the surrounding info structure. The residential development Georges Fair is existing & land has been zones accordingly & council oversees these developments, the purposed Recycling Facility falls under government departments that from an outsider looking in only seem to do what the general public don't want.

Common sense doesn't go hand in hand with government, but surely the departments overseeing the rubber stamp for this development will relies the folly in such a development in such close proximity to residential land full of families, the government spends millions on anti-smoking campaigns yet here is a campaign to lower the health of the general public. Fining a company for EPA breaches does nothing to compensate surrounding residences for the damage such a breach causes & the ONLY logical solution is for the government to represent the public health not developers or big business to maintain such developments are kept far away from residential areas.

Attachment 4

Form Letter v4

Form Letter v4 – Partial

When I purchased plot at Georges Fair from Investa, there was absolutely nothing on their (Georges Fair nor the Investa) website that described a proposed recycling plant capable of 324 (20 tonne) truck movements per day just meters from my street Maddecks Avenue. In fact there was nothing on Clarendon's website, the company that is building my home. In fact, there was nothing even on Liverpool City Council's website about a 500,000 tonne recycling facility to be built. What I was told by the land seller employed by Investa, at Georges Fair, was that the Benedict Sand Recycler was to be decommissioned and a Marina was to be built in its place nearby on the Georges River. The interested parties have known all along what would be happening and have duped all the residents.

My objection is described below:

1. Irrespective what the Recycler says: There is NO need for the project. It should be stopped by State Government and Local Government should rally on the support of their rate payers. There are many recycling facilities in Sydney's basin. It does not need another one with such environmental, health, aesthetic drawbacks. The project will employ only a handful of people when it is up and running yet operate 6 days per week in a family residential zoned community, devaluating property values, environmental damaging the Georges River and its flora and fauna, create great risk of injury to residents by the estimated 324 truck runs per day.
2. Visual Impact: It's a monster. Despite the trees. 30 meter high stack piles of bitumen, bricks, road base and other construction material with the real possibility of asbestos fibres. The sand piles currently can be seen from the Elizabeth Drive in Liverpool on the way down from Cowpasture Rd, along Elizabeth Drive heading into Liverpool. They look like icebergs. It's disgusting to know that our children are living here. The asbestos issue will land the Recycler in Court, and they'll get a small fine. But they won't care.
3. Air Quality: Real danger with the unknown particles throughout the air with open roof crushing occurring from 7am- 630pm 6 days per week. What will we be breathing and wearing. It needs to be stopped.
4. Noise: The dirt, the smell, the trucks and the noise is only going to magnify 1000 per cent than what it is now. With 324 truck runs daily. Huge crushers to crunch the construction material into recyclable waste.
5. Traffic and transport is already pretty bad in the Georges fair estate. Brickmakers Drive we thought was built for the residents, only to find out now it was built for the trucks to access the recycling site. Residents have Brickmakers Drive or Maddocks Rd to exit onto Newbridge or Nuwarra Road respectively. Most of the houses are not even constructed as yet. The problem will become exponential once the recycling facility begins. The Brickmakers drive and the trucks will be considered a place of work for the Recycler endangering the residents with accidents. Claims will be made against the recycler. It should not be permissible to be a place of work for the Recycler.

You must understand, I would not have purchased and built in the Georges Fair estate if I had known that the Moorebank Recycler was even a chance of operating. I was advised that the Benedict Sand Yard would be decommissioned and a Marina built in its place, elevating the property value, making it a beautiful place to raise a young family so close to the heart of Liverpool.

It is a disgrace that we have all been deceived.

Attachment 5

Form Letter v5

Form Letter v5

The proposed waste building materials recycling facility at Moorebank was a surprise to many people. It's horrifying if the development gets approval to be built in such close proximity to residential homes.

Moorebank Recyler Pty Ltd has submit an application (http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job& job_id=100) for a building material recycling facility in Moorebank, Liverpool council. Building material can contain asbestos, which is known to cause serious diseases including cancers, such as mesothelioma and lung cancer, and other non-malignant lung diseases such as asbestosis, pleural plaques and pleural thickening. Asbestos has been used in roofing, asbestos cement sheets and pipes, insulation, building materials and other products.

The method to screen dust, and health damaging waste from leaving the facility during the crushing of concrete is to watering it down by mist. The health risk for this strategy is simply too great to take.

Traffic and transport are already a problem with existing congestion and noise pollution at 2 major traffic intersections adjacent to the proposed site. An estimated daily addition of 324 trucks movements on average of 21.2 Tonnes will place even more burden to the road, motorist and residents.

There are far too many unknown implications not mentioned in this email, this application for development in on exhibition until 5th April 2013 with the NSW's Major Infrastructure & planning website mentioned above, there are simply far too little time and consideration for the people of NSW.

I am opposing this development proposal and wish you to join me.

Attachment 6

Form Letter v6

Form Letter v6

General:
The proposed material recycling facility will be located in close proximity of a residential area (Georges Fair Residential Estate). Distance between the north-west corner of the proposed site and the nearest residences in the Georges Fair area is 250 meter. It is even narrower at the intersection of the link road and the Brickmakers Drive. Therefore, despite all mitigation me@parliament.nsw.gov.auasures, it is inevitable that the proposed recycling plant, during construction and operation, will cause significant impact on the residents in the Georges Fair and neighbouring areas. It will also be located between two ecologically sensitive areas – the natural bushland and the Georges river. Any emission or discharge (accidental or regulated) from the proposed site will have significant impact on the ecosystem. Construction of the facility on an existing (non-operational) landfill has the potential for accidental release of pollutants currently confined (as reported) in the landfill.

Cumulative Impact:
Existing Benedict Sand and Gravel facility is already putting pressure on the nearby environment and residents (existing and future who are already purchased plots in the Georges Fair Estate) in terms on air pollution, excessive noise, strong odour, traffic congestion and visual impacts. The proposed facility will add extra loads to the environment and the community. Cumulative impact will have severe and irreversible impacts on the environment and community. The EIA did not include cumulative impact assessment.

Underestimation of Affected Area:
Page 1-2 of the EIA report indicates that a "small" section of the Georges Fair estate is located to the west of the site. This is incorrect. The length of this "small" section is approximately 600 meter or more than half the estate's length. Therefore, impacts arising from the proposed project will have significant impact on this "large" section of the residential estate.

Site Access: Site access through Brickmakers Drive (through 18m wide strip of land) would cause significant traffic congestion on Brickmakers Drive. Once the Georges Fair Estate is fully developed, this road will play a major role to take pressure off already over-stressed Nuwarra Road. Trucks coming in and out of the proposed site would cause heavy congestions not only on the Brickmakes Drive but also on the Newbridge Road. Travel time will be increased and it will impact aversely on local community and businesses. Note: Alternative access routes have not been considered in the EIA

Study Limitations: Noise and traffic studies have underestimated the number of vehicle movements along Brickmakers drive. This is a newly constructed road connecting the Heathcote road (via Nuwarra road) and the Newbridge road. People travelling between western suburbs (i.e. west of M5) and Bankstown areas are increasingly using this road and it is adding more vehicles to the road every day. This number will increase significantly when all residential area (Georges Fair) is fully developed. Additional truck movements (to and from the proposed facility) along this road will cause significant traffic congestion and it will increase travel time and decrease quality of life of the residents living in these areas. This is to note that the traffic survey was conducted (refer to Appendix 4 of the EIA) in October 2012 at Brickmakers Drive only a few weeks after it was constructed. At that time, as people were unaware of the existence of this road, number of vehicle using this road was

significantly low particularly during peak hours. Therefore, the collected data was not representative of the current situation. Brickmakers Drive should not be used during construction and operation of the proposed material recycling facility.

Erroneous Air Quality Assessment: Air Quality Assessment report was done between 2007 and 2010. Meteorological data collected in 2005 was used for air quality modelling. No recent data has been used. Also the air quality data used in the study was collected from a monitoring station (Rose Street, Liverpool) that does not represent the ambient air quality in and around the proposed site. Particularly the emission generated by the existing waste recycling plant (Benedict) has not been taken into consideration at all. It is likely that the cumulative emission from the Benedict site and the proposed plant will exceed the air quality criteria applicable to residential areas particularly the areas close to both sites (note: these areas in Georges Fair are yet to be developed).

Change to Local Hydrology: The proposed site will be on the floodplain of the Georges river and certainly it is going to affect the hydrological regime of the whole area. Natural run-off/drainage will be interrupted.

Proposed Layout: A 4m mound along the site boundary has been proposed. This seems grossly inadequate as most of the proposed structures e.g crushers, workshop etc are double of this height. This mound will not be able to screen neither noise nor emissions arising from the proposed facility.

Bushfire: Bushfire impact assessment did not assess whether the proposed facility would exacerbate bushfire (in case there is one) in the area between the proposed site and the Georges Fair residential area. It is not clear whether a fire would travel faster westward due to the presence of the recycling plant in the east than it would naturally do under "no-development" scenario. There is also potential that the construction or operation of the plant could trigger any bushfire event.

Inadequate Community Consultation: Community information session was organised on 31 May 2011 and the EIA has been issued almost 2 years after the consultation was done. A significant number of residents were moved in the area (particularly in the Georges Fair) since the consultation was organised. Therefore, concerns of the existing and future (owner of the building under construction) project-affected people were not considered in the EIA. General perception of the current resident towards the proposal for the development of recycling facility is negative.

Odour Control: The EIA report does not provide details of the odour control measures. Strong odour from the existing Benedict waste plant has recently being experienced by the residents. Repetition of such incident should not happen.

Attachment 7

Form Letter v7

Form Letter v7

I oppose the proposed Moorebank Waste Processing Project (Project Number 05 0157) at Lot 6 DP 1065574, Newbridge Road, Moorebank.

1. I oppose the building waste processing plant because the proposed development is far too close to existing and proposed residential homes. The proposed development is just 250 metres from the Georges Fair housing estate. Trucks using the proposed facility will travel even closer to residential homes. Trucks will likely short cut through Georges Fair, passing parks and local residents, using roads not designed for massive trucks.

2. I oppose the building waste processing plant because of the known risks from inevitable silica dust, asbestos and toxins. At the community consultation meeting held on 31/5/2011 at New Brighton Golf Club, the representatives of the developer refused to comment on whether asbestos would be processed at the facility and whether toxins would be released. It is well known that inhalable silica dust causes lung cancer and silicosis (`Occupational Exposure to Silica and Lung Cancer', Cancer Epidemiology, Biomarkers and Prevention Journal, Volume 19, 2010). There is no known cure for silicosis (`A Brief Review of Silicosis in the US', Environ Health Insights, Volume 4, East Carolina University, 2010). The building materials proposed to be crushed at the plant inherently contain very high silica content. The developer plans to install sweepers "where trucks and people will travel" and that there are "unsealed areas" in the development. Their own documentation refers to "likely dust from the recycling facility" (pg 3, developer's information distributed on 31/5/2011 at New Brighton Golf Club). This is an unacceptable health risk for local residents.

3. I oppose the building waste processing plant because of the lack of studies in a non-industrial setting of inevitable exposure to respirable silica dust of nearby residents, particularly infants, the elderly and those with pre-existing health conditions. A lot has been said in the literature about exposure limits, necessary safety gear, etc. of the grownup employees working for only around 40 hours a week in such plants but information is lacking about the unprotected residents, especially infants, growing children and elderly, exposed 24/7 to such carcinogenic environments. NSW government's own website (http://www.environment.nsw.gov.au/soe/soe2009/chapter4/chp_4.1.htm#fig4.11) has the following to say: "Those particularly susceptible to the health impacts of air pollution are the very young (because they are generally more active outdoors and their lungs are still developing), the elderly and those with pre-existing health conditions." Additionally, since infants breathe by mouth, thus bypassing the natural filtering mechanism of nose, they are at a much higher risk.

4. I oppose the building waste processing plant because of the known increased toxicity of freshly fractured silica that will be released from the plant than aged crystalline silica dust found elsewhere.

5. I oppose the building waste processing plant because of the potential for flooding. The proposed development is in an area that floods. In the event of a flood, unsafe building materials and material stockpiles may cause an environmental disaster throughout Moorebank and the entire Georges River Basin.

6. I oppose the building waste processing plant because the NSW Government has indicated there will be "a return of local planning powers to local communities" (`NSW govt scraps 3A planning provision', SMH, 4/4/2011). The local community is opposed to this development. Councillors of the Liverpool City Council have voted unanimously against this development (Minutes, Liverpool City Council meeting, 15/6/2011).

7. I oppose the building waste processing plant because the proposed development is incompatible with the current and planned residential and recreational uses of the area. The proposed concrete processing facility is just 250 metres from the Georges Fair housing estate, with a high proportion of residents having young families. The area is zoned E2 Environmental Conservation. It should not be used for a concrete processing plant. In close proximity are schools, parklands, the Georges River itself, cycleways, a proposed waterside marina, a library and a golf club. The land is more suitable for recreational facilities or a reserve. Even the owners of the Benedict Recycling plant at Moorebank (which borders the proposed facility) have accepted that the area is no longer suitable for a building waste processing plant and have started to shut down their operations to create their own housing estate and marina.

8. I oppose the building waste processing plant because of increased traffic. The developer states the proposed facility will result in an extra 324 truck movements a day, which is "very low and will have no impact on the arterial road network" (developer's information distributed on 31/5/2011 at New Brighton Golf Club). Increased traffic will have a significant impact on arterial roads including Nuwarra Road, Newbridge Road and Governor Macquarie Drive. There is already significant traffic in the area which will be made worse by the `Intermodal', which will cause an extra 1.5 million truck movements in the first year. Truck movements will primarily be in peak hours, further impacting on already high congestion. The residents of Moorebank and other areas should not experience any additional noise, pollution and congestion from this proposed facility, given the likelihood of the `Intermodal'.

9. I oppose the building waste processing plant because of the negative impact on land values. Residents of the Moorebank precinct in particular have spent significant amounts of money on land and homes. The proposed development will have a severe impact on land values and residents will not be compensated.

10. I oppose the building waste processing plant because there was a lack of community consultation at a meeting held by representatives of the developers on 31/5/2011. The organisers did not notify a significant number of local residents and future residents about the meeting. The organisers refused to answer questions from local residents on health risks. The organisers did not allow time to note down and respond to residents' concerns.

11. I oppose the building waste processing plant because it is dangerous to residents for a concrete processing plant to be located in this area of metropolitan Sydney. There are pre-existing waste processing plants operated by Benedict Recycling and Smorgan Steel Recycling at Chipping Norton. Benedict Recycling is planning to build another plant at Heathcote. There is no need for so many waste processing plants in such close proximity to each other.

12. I oppose the building waste processing plant because of the misleading information provided by Moorebank Recyclers in their application showing their panhandle as the access route for their trucks to New Bridge Road whereas RTA has already refused this access. The environmental assessment is meaningless without taking correct route into account to assess the impact on the nearby residents and environment. The to and fro movement of 324 trucks per day will create huge dust clouds if one goes by what their trucks were shown to do in a recent ACA report on Channel 9 titled "Housing dream shattered".

13. I oppose the building waste processing plant because of the misleading information provided by Moorebank Recyclers in their application claiming their "model to predict dust concentrations in the region and at nearest sensitive receptors" whereas the nearest sensitive locations are actually much closer than those used in their model, i.e., Georges Fair residences just across the Brickmakers Drive.

14. I oppose the building waste processing plant because the model used by Moorebank Recyclers for Air Quality Assessment is based on pollution data obtained during 2005 whereas government's own website (mentioned above in 3) says: "Emissions from the commercial and domestic sectors are growing, increasing their relative contribution to overall emissions." In view of this the modeling should be based on recent data and not some old convenient data.

15. I oppose the building waste processing plant because the model used by Moorebank Recyclers for Air Quality Assessment is based on meteorological data obtained from Bankstown Airport which is kilometers away but still "considered to be representative of conditions experienced at the project site" despite "Terrain around the site consists of gentle hills, bounding the Georges River (see Figure 2)". These types of gross assumptions are risky to be made when it comes to public health and safety especially when DECCW requirements clearly state that "Data must be representative of the area in which emissions are modeled".

16. I oppose the building waste processing plant because Moorebank Recyclers already admit in their Air Quality Assessment that "Assessment of cumulative 24-hour average PM10 air quality impacts is often complicated as there may be many occasions when background concentrations are already above the 24-hour average air quality criteria". The pollution levels have further increased since this data was obtained and will most likely keep increasing due to proposed Intermodal. Therefore, the pollution levels cannot be allowed to increase any further risking thousands of innocent lives.

17. I oppose the building waste processing plant because Moorebank Recyclers proposal is denying the opportunity to the future residents closest to the proposed site who are yet to complete their construction and start living there.

18. I oppose the building waste processing plant because we might be creating another James Hardy situation considering the similarities of health effects of asbestos and respirable silica dust. 30 years ago it was considered perfectly fine to work with asbestos without any protection. Even at that time plenty of medical break-through were occurring. Yet, nobody banned asbestos back then. It was only years later that the real danger of working with asbestos was known. Unfortunately, for some people it was too late. However, the dangers about exposure to silica are already well known and perhaps in future we may find that it is even more dangerous than we ever knew. Despite knowing this, if this development were to go head, it not only would be an environmental and health catastrophe but it would also be a moral catastrophe where future generations may not look at this event kindly. It is unclear why despite having recently looked at the James Hardy debacle we are trying to create another James Hardie? Why are the poor people who have nowhere to go be subjected to this silica dust 24/7?
19. I oppose the building waste processing plant because I am aware of significant scientific literature which clearly states that methods often used to control dust, such as watering or screening by trees, is most ineffective when it comes to the extremely fine particles of respirable silica dust, which is an integral part of air and will follow it everywhere.

As a community member, who would soon be living in Georges Fair, I OPPOSE the building waste processing plant. I call on councillors, the NSW Parliament, the Minister for Planning, the Planning Assessment Commission, the NSW Department of Planning and Infrastructure and the Premier of NSW to REJECT this proposal.

Attachment 8

Reduced copies of the Cardno Access Plans

DATE PLOTTED: 7/6/2010 BY: . JOSHUA BEZZINA (SYDNEY)
CAD FILE: N:\Projects\899\0000\WA89913054_ Moorebank Concrete Recyclers Group Expert Witness\01-Concrete Recyclers Group\011-Expert Witness\DaSK1001 (L) - WORKS.dwg

BOULDER RETAINING WALL (GRADE 1(H):1.5(V))

PROPOSED EASEMENT BOUNDARY

REFER TO SURVEYORS D.P. FOR FINAL EASEMENT BOUNDARY DETAILS.

GATE

DOWN RAMP

CATCH DRAIN

REINFORCED EARTH RETAINING WALL.

EXISTING ROAD

BRICKMAKERS DRIVE

BB (EXISTING)

BRIDGE 'CL'

CH0.0 CH10.0 CH20.0 CH30.0 CH40.0 CH50.0 CH60.0 CH70.0 CH80.0 CH90.0 CH100.0 CH110.0 CH120.0

CH 300.73

FINAL WALL POSITION

FUTURE BRIDGE

REINFORCED EARTH RETAINING WALL

REFER TO MCLAREN TRAFFIC ENGINEERING PLANS FOR INTERSECTION LINEMARKING AND TRAFFIC SIGNAL DETAILS

VERTICAL RETAINING WALL

BOULDER RETAINING WALL (GRADE 1(H):1.5(V))

PROPOSED EASEMENT BOUNDARY

REFER TO SURVEYORS D.P. FOR FINAL EASEMENT BOUNDARY DETAILS.

UP RAMP

SURFACE DRAINAGE UNDER ROADWAY AS REQUIRED.

EXISTING DRAINAGE CHANNEL

Electric Turret Light Pole

BB (EXISTING)

BDY

PT. 330

REFER INSET 'A' FOR CONTINUATION

0.000 10.000 20.000 30.000 40.000 50.000 60.000 70.000 80.000 90.000 100.000 110.000 120.000 130.000 140.000 143.260

LEGEND

- EXTENTS OF RAMPS PAVEMENT
- SUSPENDED BRIDGE DECK
- TANLANE EASEMENT

70.000 80.000 90.000 100.000 110.000 120.000 130.000 140.000 142.566 150.000 160.000 170.000

REINFORCED EARTH RETAINING WALL

INSET 'A'

SCALE 1:250

PANHANDLE ACCESS ROAD

Rev	Date	Description	Drawn	Appr.
L	15.08.13	RE-ISSUED FOR INFORMATION	J.B	D.K
K	05.08.13	RE-ISSUED FOR INFORMATION	J.C.	D.K
J	05.08.13	RE-ISSUED FOR INFORMATION	J.C	D.K
H	31.07.13	RE-ISSUED FOR INFORMATION	J.C	D.K
G	30.07.13	RE-ISSUED FOR INFORMATION	J.C	D.K
F	29.07.13	RE-ISSUED FOR INFORMATION	D.B	J.C
E	26.07.13	RE-ISSUED FOR INFORMATION	J.C.	D.K
D	16.07.13	RE-ISSUED FOR INFORMATION	D.B	D.K
C	28.06.13	RE-ISSUED FOR INFORMATION	D.B	D.K

0 5 10 15 20 25m

5 4 3 2 1

SCALE 1:250

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Drawn	D.B	Date	JUN'13
Checked	J.C	Date	JUN'13
Designed	J.C	Date	JUN'13
Verified	D.K	Date	JUN'13
Approved	D.K	Date	JUN'13

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm ON A1 ORIGINAL

Client: CONCRETE RECYCLERS GROUP

SITE PLAN

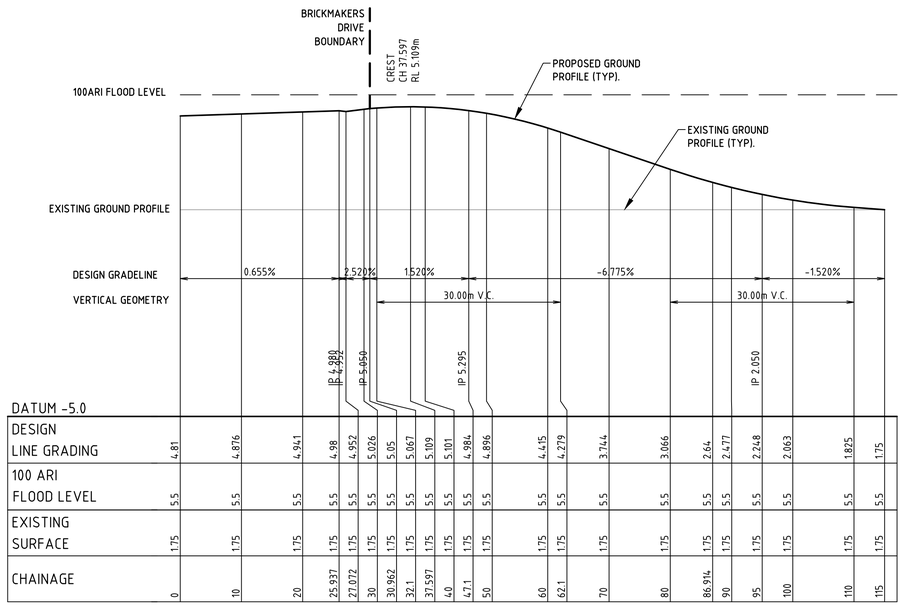
Status: FOR INFORMATION

Date	Datum	Scale	Size
JUN'13	AHD	1:250	A1

Drawing Number: SK1001

Revision: L

DATE PLOTTED: 7/4/2010 BY : JOSEPH CORCORAN (SYDNEY)



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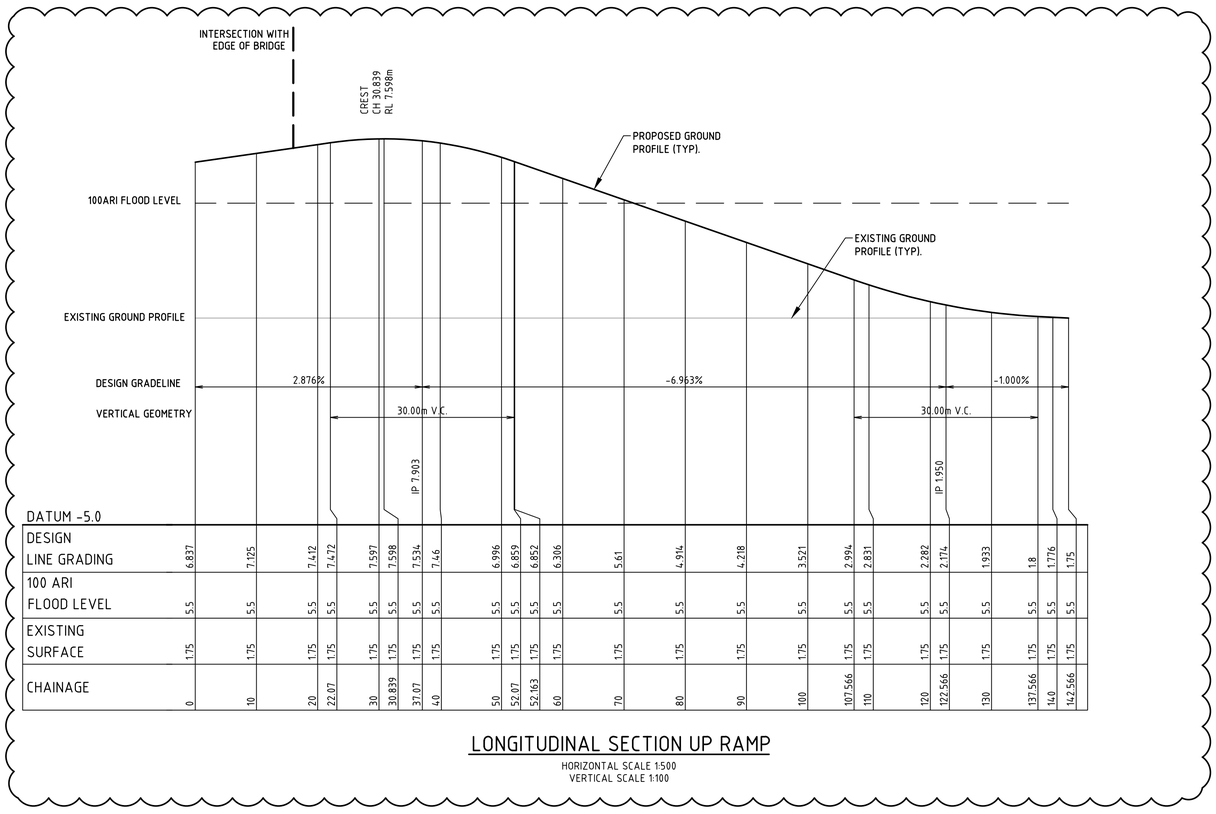
DESIGN LINE GRADING	4.81		4.876		4.941	4.98	4.952	5.026	5.05	5.067	5.109	5.101	4.984	4.896		4.415	4.279	3.744		3.066	2.64	2.477	2.248	2.063		1.825	1.75
100 ARI FLOOD LEVEL	5.5		5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5		5.5	5.5	5.5		5.5	5.5	5.5	5.5	5.5		5.5	5.5
EXISTING SURFACE	1.75		1.75		1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75		1.75	1.75	1.75		1.75	1.75	1.75	1.75	1.75		1.75	1.75
CHAINAGE	0	10	20	25.937	27.072	30	30.962	32.1	37.597	40	47.1	50	60	62.1	70	80	86.914	90	95	100	110	115					

LONGITUDINAL SECTION DOWN RAMP

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100



DATUM -5.0

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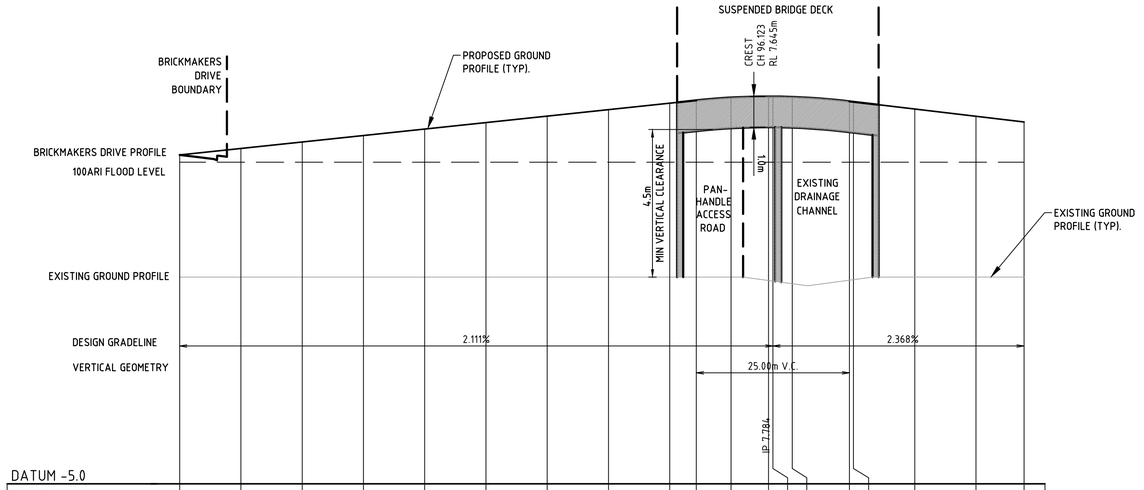
100 ARI FLOOD LEVEL	5.5		5.5		5.5	5.5	5.5	5.5	5.5	5.5		5.5	5.5	5.5	5.5		5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
EXISTING SURFACE	1.75		1.75		1.75	1.75	1.75	1.75	1.75	1.75		1.75	1.75	1.75	1.75		1.75		1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75
CHAINAGE	0	10	20	22.07	30	30.839	37.07	40	50	52.07	52.163	60	70	80	90	100	107.566	110	120	122.566	130	137.566	140	142.566					

LONGITUDINAL SECTION UP RAMP

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100



DATUM -5.0

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100 ARI FLOOD LEVEL	5.5		5.5		5.5		5.5		5.5		5.5		5.5		5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
BRICKMAKERS DRIVE	5.74																										
EXISTING SURFACE	1.75		1.75		1.75		1.75		1.75		1.75		1.75		1.75		1.75	1.75	1.75						1.75	1.75	1.75
CHAINAGE	0	10	20	30	40	50	60	70	80	84.34	90	96.123	96.84	100	109.34	110	120	130	138.459								

LONGITUDINAL SECTION BRIDGE ALIGNMENT

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100

Rev	Date	Description	Drawn	Appr.
E	01.08.13	ISSUED FOR INFORMATION	J.C.	D.K
D	31.07.13	ISSUED FOR INFORMATION	J.C.	D.K
C	30.07.13	ISSUED FOR INFORMATION	J.C.	J.C.
B	16.07.13	ISSUED FOR INFORMATION	J.C.	J.C.
A	28.06.13	ISSUED FOR INFORMATION	D.B	D.K

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SCALE 1:500

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2 1
SCALE 1:100

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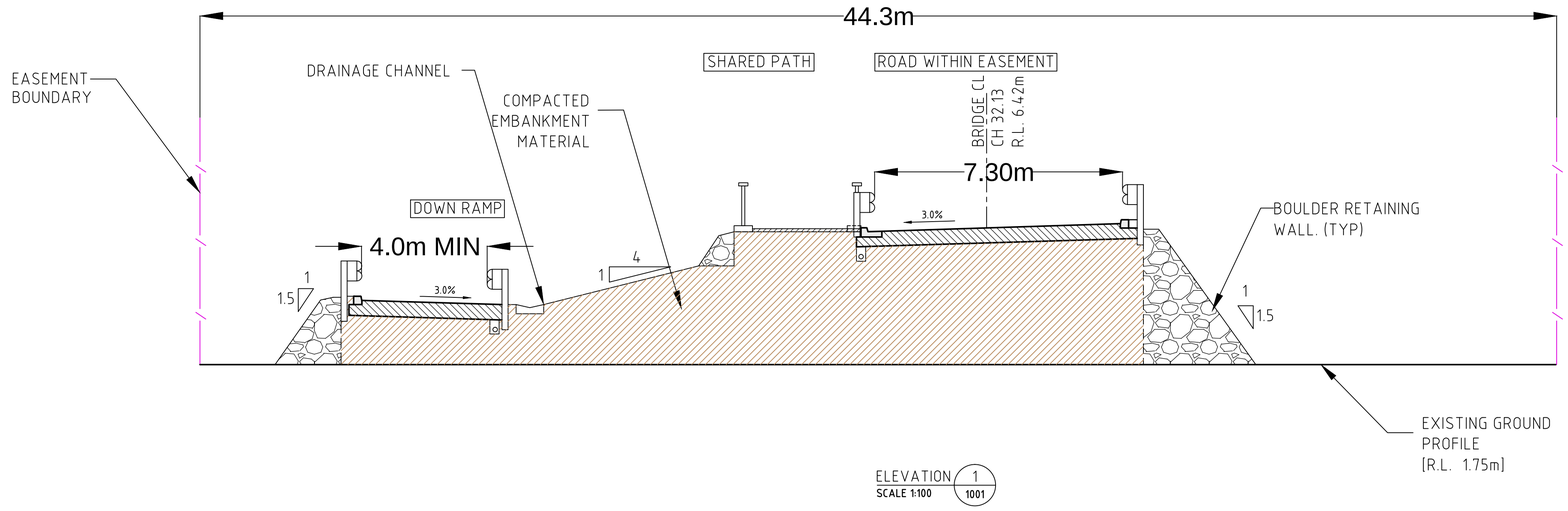
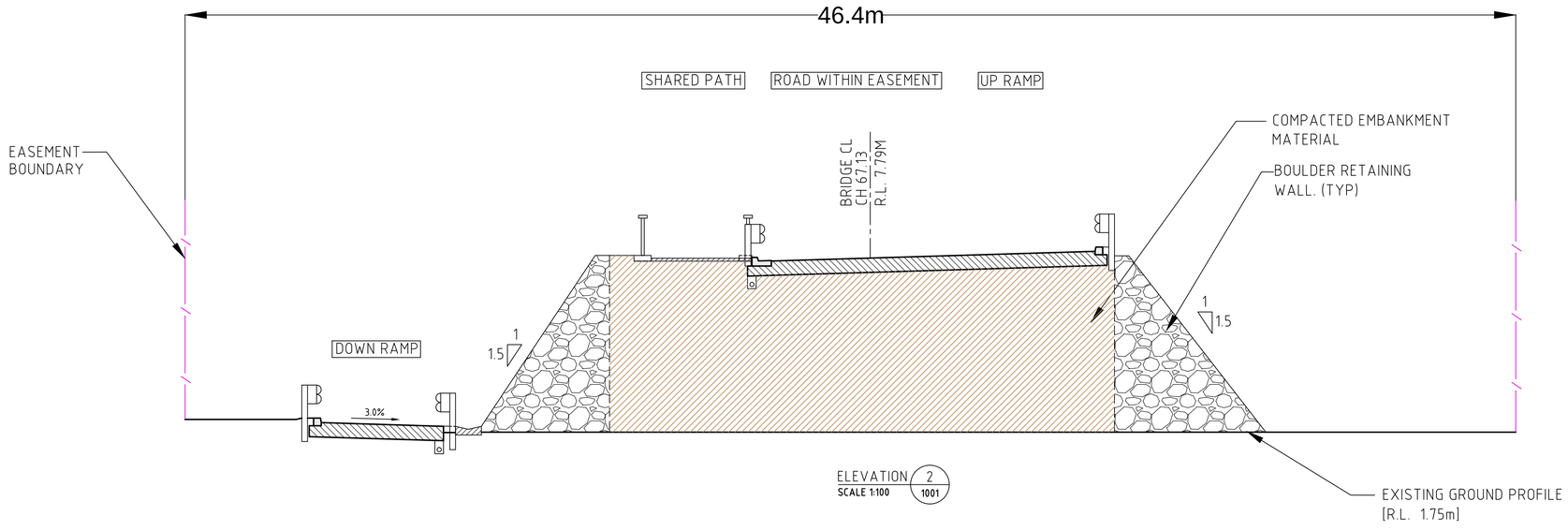
Drawn D.B	Date JUN'13	Client	CONCRETE RECYCLERS GROUP
Checked J.C	Date JUN'13		
Designed J.C	Date JUN'13		
Verified D.K	Date JUN'13	LONGITUDINAL SECTIONS	
Approved D.K	Date JUN'13	Status	FOR INFORMATION
		Date JUN'13 / Datum AHD / Scale AS SHOWN / Size A1	
		Drawing Number	SK1003
		Revision	E

CAD FILE: \\cardno.corp\Global\AU\NSW\Directory\Structure\Projects\899\0000\NA8999054_Moorebank Concrete Recyclers Group Expert Witness\01-CoSK1003 (E) L-SECTION.dwg

DATE PLOTTED: 7/6/2010 BY : JOSHUA BEZZINA (SYDNEY)



ELEVATION 1 / 1001
SCALE 1:100



ELEVATION 2 / 1001
SCALE 1:100

Rev	Date	Description	Drawn	Appr.
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D	05.08.13	ISSUED FOR INFORMATION	J.C.	D.K
C	31.07.13	ISSUED FOR INFORMATION	J.C.	J.C.
B	30.07.13	ISSUED FOR INFORMATION	J.C.	J.C.
A	16.07.13	ISSUED FOR INFORMATION	J.C.	J.C.

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SCALE 1:100

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Drawn	J.C	Date JULY'13
Checked	J.C	Date JULY'13
Designed	J.C	Date JULY'13
Verified	D.K	Date JULY'13
Approved	D.K	Date JULY'13

Client: CONCRETE RECYCLERS GROUP

CROSS-SECTIONS

Status: FOR INFORMATION

Date	Datum	Scale	Size
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Drawing Number: SK1004
Revision: E

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DATE PLOTTED: 7/4/2010 BY: JOSHUA BEZZINA (SYDNEY)

CAD FILE: N:\Projects\8991\0000\NA8991305x_Moorebank Concrete Recyclers Group Expert Witness\01-Concrete Recyclers Group\011-Expert Witness\DeSK2001(0) - STAGE 1.dwg

0.000
10.000
20.000
30.000
40.000
50.000
60.000
70.000
80.000
90.000
100.000
110.000
120.000
130.000
140.000
143.260

BOULDER RETAINING WALL
[GRADE 1(H):1.5(V)]

PROPOSED EASEMENT BOUNDARY

REFER TO SURVEYORS
D.P. FOR FINAL EASEMENT
BOUNDARY DETAILS.

DOWN RAMP

AREA FOR COSNTRUCTION OF BRIDGE ABUTMENT

EXISTING ROAD

BRICKMAKERS

INSTALL TEMPORARY KERB
AND CRASH BARRIER

'STAGE 1' CONSTRUCTION BATTER

BOULDER TOE WALL AS REQUIRED.

CH0.0
CH10.0
CH20.0
CH30.0
CH40.0
CH50.0
CH60.0
CH70.0
CH80.0
CH90.0
CH100.0
CH110.0
CH120.0

FINAL
WALL
POSITION

FUTURE BRIDGE CL

FUTURE BRIDGE

REINFORCED EARTH
RETAINING WALL

CH 297.83

REFER TO MCLAREN TRAFFIC
ENGINEERING PLANS FOR
INTERSECTION LINEMARKING
AND TRAFFIC SIGNAL DETAILS

BDY

BOULDER RETAINING WALL
[GRADE 1(H):1.5(V)]

PROPOSED EASEMENT BOUNDARY

REFER TO SURVEYORS
D.P. FOR FINAL EASEMENT
BOUNDARY DETAILS

UP RAMP

EXISTING DRAINAGE CHANNEL

REINFORCED EARTH RETAINING WALL

SURFACE DRAINAGE
UNDER REINFORCED
EARTH RETAINING WALL
AS REQUIRED

PT. 310

BB (EXISTING)

Electric

Turret

Light

Pole

DRIVE

REFER INSET 'A' FOR CONTINUATION

70.000
80.000
90.000
100.000
110.000
120.000
130.000
140.000
142.566
150.000
160.000
170.000

REINFORCED EARTH
RETAINING WALL

INSET 'A'
SCALE 1:250

PANHANDLE ACCESS ROAD

LEGEND

EXTENTS OF RAMPS
PAVEMENT

SUSPENDED BRIDGE DECK

TANLANE EASEMENT

Rev	Date	Description	Drawn	Appr.
D	15.08.13	ISSUED FOR INFORMATION	J.B	D.K
C	05.08.13	ISSUED FOR INFORMATION	J.C	D.K
B	05.08.13	ISSUED FOR INFORMATION	J.C	D.K
A	02.08.13	ISSUED FOR INFORMATION	J.C	D.K

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SCALE 1:250

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Drawn	J.C	Date AUG'13
Checked	J.C	Date AUG'13
Designed	J.C	Date AUG'13
Verified	D.K	Date AUG'13
Approved	D.K	Date AUG'13

Client: CONCRETE RECYCLERS GROUP

'STAGE 1' CONSTRUCTION PLAN

Status: FOR INFORMATION

Date	Datum	Scale	Size
AUG'13	AHD	1:250	A1

Drawing Number: SK2001

Revision: D

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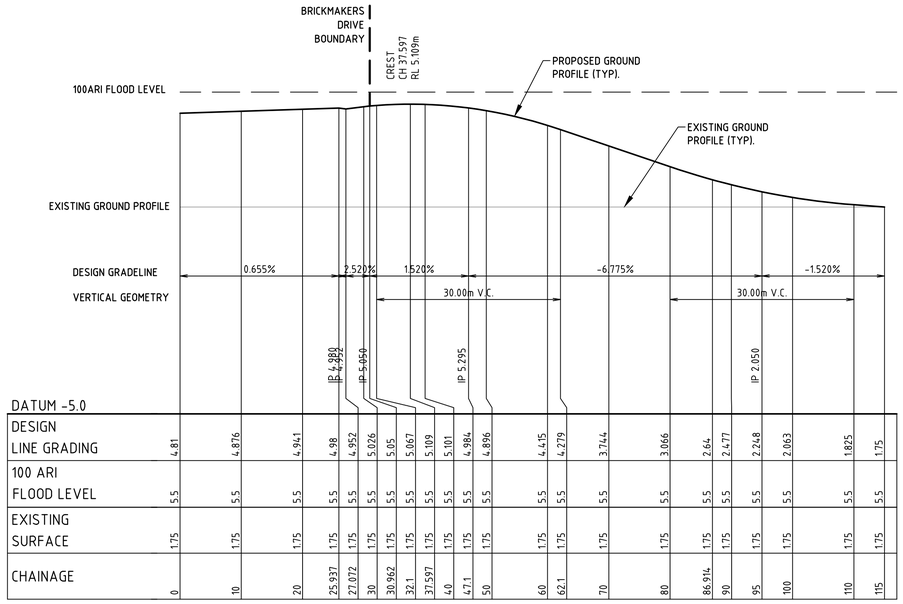
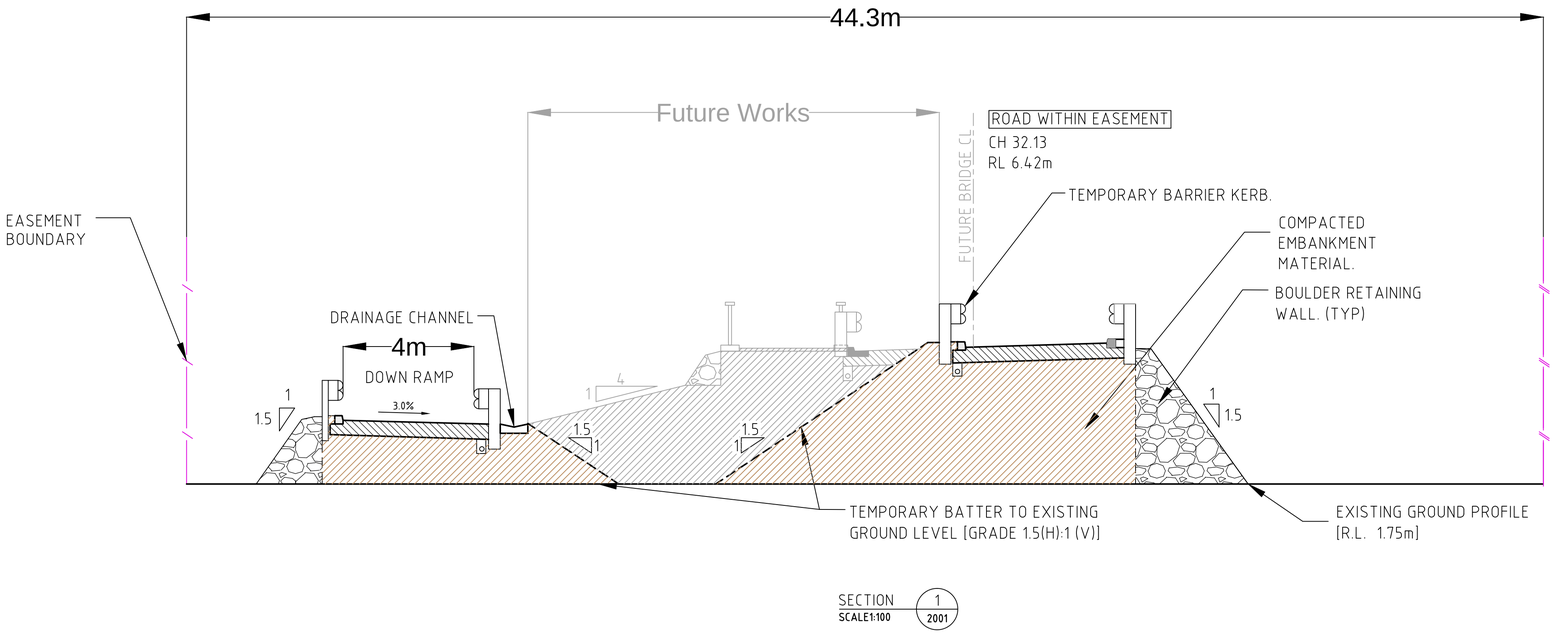

BRICKMAKERS DRIVE BOUNDARY
CREST CH 37.597 RL 5.109m
PROPOSED GROUND PROFILE (TYP).
100ARI FLOOD LEVEL
EXISTING GROUND PROFILE (TYP).
EXISTING GROUND PROFILE
DESIGN GRADELINE
VERTICAL GEOMETRY
0.655%
2.520%
1.520%
-6.775%
-1.520%
30.00m V.C.
30.00m V.C.
IP 4.380
IP 4.952
IP 5.050
IP 5.295
IP 2.050

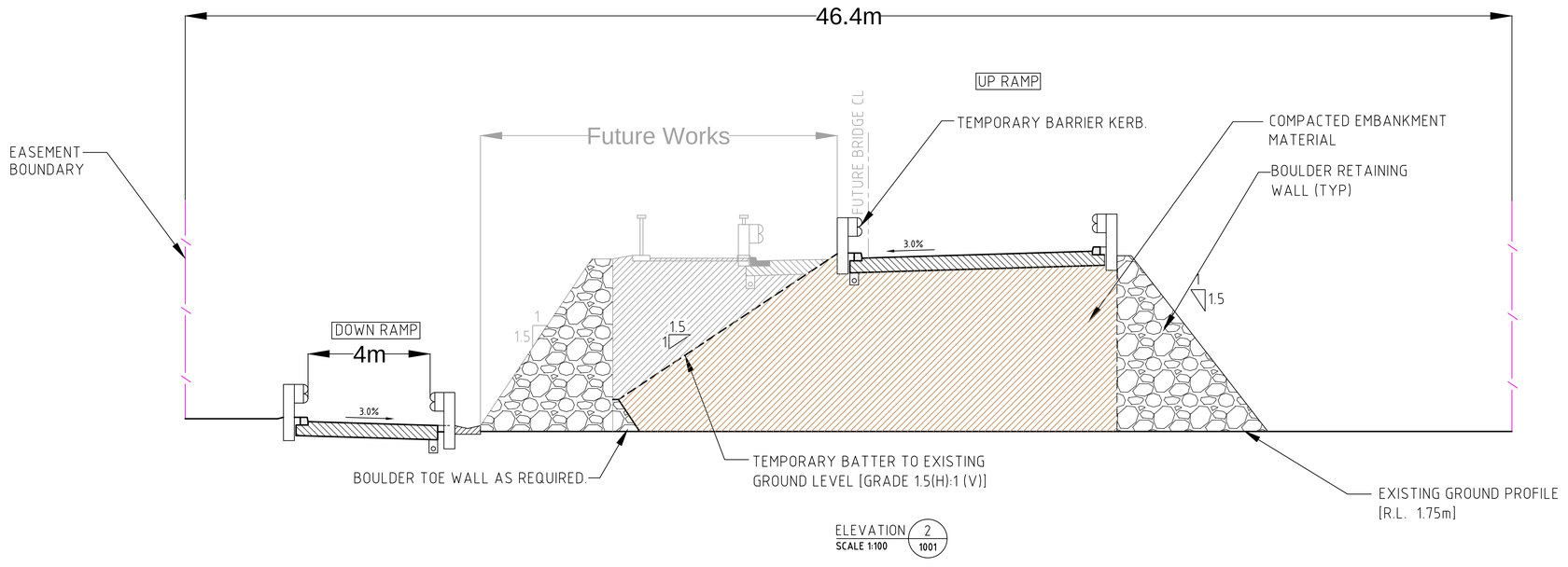
DATUM -5.0

| | | |

DATE PLOTTED: 7/4/2010 BY : JOSHUA BEZZINA (SYDNEY)



SECTION 1 / 2001
SCALE 1:100



ELEVATION 2 / 1001
SCALE 1:100

Rev	Date	Description	Drawn	Appr.
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B	05.08.13	ISSUED FOR INFORMATION	J.C.	D.K
A	05.08.13	ISSUED FOR INFORMATION	J.C.	D.K

0 2 4 6 8 10m
2 1
SCALE 1:100

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Drawn	J.C	Date AUG'13
Checked	J.C	Date AUG'13
Designed	J.C	Date AUG'13
Verified	D.K	Date AUG'13
Approved	D.K	Date AUG'13

Client CONCRETE RECYCLERS GROUP

'STAGE 1' CROSS-SECTIONS

Status: FOR INFORMATION

Date	Datum	Scale	Size
AUG'13	AHD	1:100	A1

Drawing Number: SK2004
Revision: C

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CAD FILE: N:\Projects\8991\0000\NA8991305x_Moorebank Concrete Recyclers Group Expert Witness\01-Concrete Recyclers Group\011-Expert Witness\DeSK2004 (C) - X-SECS.dwg

Attachment 9

Judgement of Justice Biscoe

Land and Environment Court
New South Wales

Medium Neutral Citation: **Moorebank Recyclers Pty Ltd v Liverpool City Council (No 2) [2013] NSWLEC 93**

Hearing Dates: 20-22, 27-31 May, 3-5, 7, 11 June 2013, (further written submissions) 12, 14 and 18 June 2013, and (further hearings) 19, 24, 25 June 2013

Decision Date: 27/06/2013

Jurisdiction: Class 3

Before: Biscoe J

Decision: Easements to be granted subject to owner's consent to lodgement of an application for approval or consent to construct and use ramps along the lines of attached draft orders. Matter to be re-listed tomorrow to make final orders.

Catchwords: REAL PROPERTY - easements - application under s 88K Conveyancing Act 1919 for easements of carriageway and for construction, maintenance and use subject to a term that owner of servient tenement give landowner's consent to lodging an application or approval under Part 3A or consent under Part 4 of Environmental Planning and Assessment Act 1979 (EPA Act) to construct and use ramps to connect applicant's land to a future road bridge or abutment so as to enable applicant to obtain vehicular access for development of its land - preconditions to imposition - whether easements reasonably necessary for effective use or development of applicant's land - applicant's land landlocked for future development and future development sterilised unless easements granted - whether term of easements should be imposed that owner of burdened land give land owner's consent to lodging of application for works on and use of burdened land under Part 3A or Part 4 or both of the EPA Act - relationship between s 88K and planning laws.

Legislation Cited:
Contaminated Land Management Act 1997
Conveyancing Act 1919 s 88K
Environmental Planning and Assessment Act 1979 ss 36, 57(5), Part 3A, Part 4, s 125
Land and Environment Court Act 1979 s 40
Local Government Act 1993 ss 30
Environmental Planning and Assessment Regulation 2000 cll 8F, 49(1)(b)
Liverpool Development Control Plan 2008
Liverpool Local Environmental Plan 1997
Liverpool Local Environmental Plan 2008 Schedule 1 cll 1, 11,
State Environmental Planning Policy (State and Regional Development) 2011 cl 8(1)(b), Schedule 1 cl 23(3)

Cases Cited:
117 York Street Pty Ltd v Proprietors of Strata Plan No 16123 (1998) 43 NSWLR 504
Annwrack Pty Ltd v Williams, NSWSC, 8 February 1989, unreported
Argyropoulos v Canterbury Municipal Council (1988) 66 LGRA 202
Chambers v Maclean Shire Council [2003] NSWCA 100, (2003) 57 NSWLR 152
Commissioner of Police v Eaton [2013] HCA 2, (2013) 87 ALJR 267
Evans v Cornish Nominees Pty Ltd [2009] NSWSC 1295, (2009) 14 BPR 27,257
Khattar v Wiese [2005] NSWSC 1014, (2005) 12 BPR 23,235
Moorebank Recyclers Pty Ltd v Liverpool City Council [2009] NSWLEC 100
Moorebank Recyclers Pty Ltd v Tanlane Pty Ltd [2012] NSWCA 445
Notaras v Waverley Council [2007] NSWCA 333, (2007) 161 LGERA 230
Rainbowforce Pty Ltd v Skyton Holdings Pty Ltd [2010] NSWLEC 2, (2010) 171 LGERA 286
Samy Saad v City of Canterbury [2012] NSWSC 389
Tanlane Pty Ltd v Moorebank Recyclers Pty Ltd [2008] NSWSC 1341
Tanlane Pty Ltd v Moorebank Recyclers Pty Ltd (No 2) [2011] NSWSC 1286
Tanlane Pty Ltd v Moorebank Recyclers Pty Ltd (No 3) [2012] NSWSC 90
Tanlane Pty Ltd v Moorebank Recyclers Pty Ltd (No 3) [2013] NSWSC 545

Texts Cited: AS 5100 Bridge Design Code Part 2 cl 6.2

Category: Principal judgment

Parties:
Moorebank Recyclers Pty Ltd (Applicant)
Liverpool City Council (First Respondent)
Tanlane Pty Ltd (Second Respondent)

Representation:
SOLICITORS:
Mark McDonald & Associates Lawyers Pty Ltd (Applicant)

Sparke Helmore (First Respondent)
Minter Ellison (Second Respondent)

COUNSEL:
T Robertson SC and J Lazarus (Applicant)
J Hutton (First Respondent)
T Hale SC and Z Steggall (Second Respondent)

File Number(s): 30141/13

JUDGMENT

CONTENTS	Paragraphs
INTRODUCTION.....	1-18
THE LANDS.....	19-21
BACKGROUND.....	22-59
MOOREBANK'S PART 3A APPLICATION.....	60-90
EXPERT EVIDENCE.....	91-101
SECTION 88K CONVEYANCING ACT 1919.....	102-115
CONSIDERATION.....	116-169
TIMING OF REGISTRATION OF EASEMENTS.....	170-175
ORDERS.....	176-179

INTRODUCTION

1 This is an application under s 88K of the Conveyancing Act 1919 by Moorebank Pty Ltd (**Moorebank**) for the grant of easements of carriageway and for construction, maintenance and repair benefiting its land located at Moorebank in the Liverpool local government area, subject to a term that the owner of the land to be burdened give written owner's consent to the making of any application for any consent or approval required to construct and use a road and bridge abutment with ramps as contemplated by the easements. This ancillary term is the principal matter in dispute.

2 The first respondent, Liverpool City Council, owns the land to be burdened by the proposed easements. The second respondent, Tanlane Pty Ltd (**Tanlane**), owns land used for industrial purposes adjoining the Moorebank land.

3 Tanlane has development consent from Council to construct a road bridge passing mostly about 6 metres above the Council land and the adjoining handle (known as **the panhandle**) of Moorebank's battleaxe land. When constructed, the road bridge will run between the Tanlane land and Brickmakers Drive, a public road owned by Council. Brickmakers Drive runs north-south and connects on the north to Newbridge Road, the major east-west trunk road in the locality. The road bridge will comprise two sections, in the west a solid embankment adjoining Brickmakers Drive and in the east a structure suspended on pylons to join the Tanlane land.

4 Consistently with Council's vision for the last decade and as required by Roads and Maritime Services (**RMS**), the only road access for future developments on the lands in the precinct east of Brickmakers Drive, including the Moorebank and Tanlane lands, is via the future road bridge in this location.

5 Moorebank has a pending major project application to develop its vacant and unused land for a materials recycling facility (**MRF**) under the transitional provisions of Part 3A (since repealed) of the Environmental Planning and Assessment Act 1979 (**EPA Act**). Under Part 3A the approval authority is the Planning Assessment Commission (**PAC**) as delegate of the Minister. Completion of assessment of the Part 3A application is dependent on Moorebank satisfying one of the Director-General's requirements (**DGRs**) under Part 3A that, as a "key issue", Moorebank must "demonstrate that suitable arrangements have been made to secure access to the site, including written evidence of the relevant landowner's consent for the proposed site access work". These proceedings are aimed at satisfying that

DGR thereby opening the way to PAC to determine Moorebank's Part 3A MFR application. The only means of access to the Moorebank land is by means of ramps connecting the panhandle to the road bridge, either to the embankment (**Ramps B**), which is Moorebank's preference, or to the suspended structure (**Ramps A**). Without such ramps the Moorebank land will be landlocked and all potential developments thereon sterilised.

6 Moorebank's Further Amended Summons claims the following relief:

> 1. An order that an easement be imposed under section 88K of the *Conveyancing Act* 1919 (NSW) burdening the first respondent's land, being Lots 308 309 and 310 in DP 1118048 and benefiting the applicant's land, being Lot 6 in DP 1065574 in the terms set out in Annexure A, or otherwise on such terms as the Court thinks fit. [Annexure A indicates that this easement is for the construction, maintenance and repair of a road and bridge abutment with ramps].
>
> 1A An order that a right of carriageway be imposed under section 88K of the *Conveyancing Act* 1919 (NSW) burdening the first respondent's land being Lots 309 and 310 in DP 1118048 and benefiting the applicant's land, being Lot 6 in DP 1065574 in the terms set out in the Annexure A, or otherwise on such terms as the Court thinks fit.
>
> 2. An order that the first respondent do all things and execute all documents which it is proper and necessary for it to do and execute in order to enable the registration of the easement and right of carriageway referred to in orders 1 and 1A in accordance with the *Real Property Act* 1900 (NSW).
>
> 3. An order that to the extent necessary as part of the granting of the easement and right of carriageway referred to in orders 1 and 1A, the first respondent on the written request of the applicant, shall forthwith give its written owner's consent for any application for any consent or approval required to construct and use the road and bridge abutment with ramps in the manner contemplated by the said easement and right of carriageway.
>
> ...
>
> 8. Such further or other orders as the Court deems fit.

7 Prayer 3 concerning owner's consent is the dominant issue in the case. It requires clarification in four respects:

(a) the reference to "consent or approval" means "consent" under Part 4 of the EPA Act where Council is the consent authority (**Part 4 owner's consent term**), or "approval" under Part 3A where the Planning Assessment Commission (PAC) is the approval authority as delegate of the Minister (**Part 3A owner's consent term**). Written owner's consent for lodgement of a development application under Part 4 is required by s 78A(1) and cl 49(1)(b) of the Environmental Planning and Assessment Regulation 2000, and owner's consent for lodgement of a project application under Part 3A is required by cl 8F(1). Council is not just the owner of the proposed servient tenement: it also happens to be the consent authority for Part 4 development applications in the area unless Part 4 is ousted by s 75R(1), which Moorebank contends it is in this case.

(b) Although prayer 3 is couched as an "order", any requirement that Council give "owner's consent" should be framed as a term of the easements: *117 York Street Pty Ltd v Proprietors of Strata Plan No 16123* (1998) 43 NSWLR 504 at 522 (Hodgson CJ in Eq); *Moorebank Recyclers Pty Ltd v Tanlane Pty Ltd* [2012] NSWCA 445 at [99].

(c) All that is sought in prayer 3 is owner's consent for the *making* of an application for a Part 4 consent or Part 3A approval. An order for an easement with that term does no more than overcome a legal obstacle to the *making* of an application. The order and the easement does not require Council to consent to the development itself. Such a term of an easement leaves the servient owner at liberty to object to the application before the approval authority and to exercise such rights as are given to it by the planning laws: *117 York Street* at 523.

(d) Moorebank's essential object, opposed by the respondents, is to obtain an unqualified Part 3A owner's consent term for the ramps because it has a pending Part 3A application for an MRF. Part 4 owner's consent term is very much its fallback position if for some reason a Part 3A approval is not forthcoming.

8 Council, supported by Tanlane, consents to the proposed easements provided that a Part 4 owner's consent term is imposed and no unqualified Part 3A owner's consent term. Ultimately, Council indicated that it would also consent to a qualified Part 3A owner's consent term to take effect only in the event a Part 4 development consent for construction and use of the ramps is not forthcoming within 12 weeks after a Part 4 development application is lodged. That is the period Council requires to process a development application for the ramps. Council concedes that if there is no development consent by that time, then it would be reasonably necessary for Moorebank to have a Part 3A owner's consent for the effective development of its land. Compensation for the proposed easements in the sum of $25,000 under s 88K(4) is agreed between Moorebank and Council.

9 The grant of an easement is also the grant of such ancillary rights as are reasonably necessary for its exercise or enjoyment. Such ancillary rights include, where appropriate, a right to written consent by the owner of the burdened land to the lodgement of any application for construction and use of works in the manner contemplated by the easement. Such an ancillary right is implied in a statutory grant of an easement. In a s 88K application, it is appropriate, to avoid any doubt or dispute, to grant it expressly as a term of the easement: *117 York Street Pty Ltd v*

Proprietors of Strata Plan No 16123 (1998) 43 NSWLR 504 at 521 per Hodgson CJ in Eq; followed *Rainbowforce Pty Ltd v Skyton Holdings Pty Ltd* [2010] NSWLEC 171, 171 LGERA 286 at [196] per Preston CJ of LEC. In the usual case the only statutory approval course open to an applicant for development of the land burdened by an easement is under Part 4 of the EPA Act. In the present case the Part 3A approval course is open to Moorebank related to its pending Part 3A MRF application. Indeed, as analysed later, a Part 4 consent for the ramps would be unlawful under s 75R(1) of the EPA Act so long as a Part 3A application extending to access over the Council land is on foot. It is implicit, in my view, in the grant of the easements Moorebank seeks that Council would provide its written owner's consent for the lodgement by Moorebank of a Part 3A application or a Part 4 application relating to construction of and use of ramps along the lines set out in prayer 3 of the summons. Hence, what Council, supported by Tanlane, is proposing is an express term of the easements that cuts down on what would otherwise be an implied term.

10 Thus, the choices confronting the Court include:

(a) as claimed by Moorebank in prayer 3 of the summons, an unqualified Part 3A owner's consent term and an unqualified Part 4 owner's consent term; or

(b) as contended for by Council, supported by Tanlane, an unqualified Part 4 owner's consent term coupled with a qualified Part 3A owner's consent term that would only operate if a Part 4 owner's consent was not forthcoming 12 weeks after a Part 4 development application is lodged.

11 The case is unprecedented in that the dominant issue does not concern the easements but the owner's consent term. It is a power struggle over whether Council or PAC should be the approval authority for the ramps. The tail is wagging the dog. However, it is said that there are legal and practical reasons for the competing positions, which I address later.

12 Underlying Council's position are two matters. First, by the imposition of a Part 4 owner's consent term, Council seeks to compel Moorebank to make a Part 4 application to Council for consent for construction and use of the ramps so that Council, as the local planning authority, can maintain design and construction control over the road bridge, ramps and traffic control works at the intersection of Lot 309 and Brickmakers Drive. The road bridge will provide the only access to Brickmakers Drive not only for the Moorebank land (via ramps) but to the Tanlane land and other land east of Brickmakers Drive. The road bridge is a key component of the precinct, which Council has for a number of years been seeking to develop in an integrated manner. Secondly, Moorebank seeks the easements in order to obtain vehicular access to and from Brickmakers Drive for a proposed MRF on the Moorebank land, but since 2011 Council has been opposed to an MRF on the Moorebank land and to Moorebank having access over the Council land for the purpose of an MRF on the ground that an MRF is not suitable for the residential and recreational character of the area.

13 However, Council accepts, and during the hearing made an open offer to Moorebank along the lines, that the Moorebank land should have the proposed easements subject to a Part 4 owner's consent term on the reasoning that the easements are required anyway to permit vehicular access for any other development permissible under the zoning of the Moorebank land, and that the ramps should be capable of carrying heavy trucks - even though that would include trucks required to service Moorebank's proposed MRF. In other words, Council consents to the easements provided they are not linked to a Part 3A MRF application by a Part 3A owner's consent term.

14 Moorebank's reasons for its position include the following. First, it submits that a Part 4 owner's consent term would be futile because a Part 4 consent for construction and use of the ramps would be unlawful under s 87R(1) of the EPA Act whilst its Part 3A MRF application is pending. Secondly, it submits that the Part 4 route for consent for construction and use of ramps would create the potential for serious conflict between two separate approval regimes. Thirdly, it submits that there is reason to believe Council would not apply an unbiased mind to a ramps application. Fourthly, it submits that to embark on a Part 4 consent route at this stage would cause such delay as to be a recipe for disaster for its Part 3A MRF application because the Department of Planning has stated its intention that all Part 3A projects will be determined by 30 June 2013 and, whilst some extension of that time should not be a difficulty, the time required for a new Part 4 process would likely be unacceptable to the Department leading to the dismissal of its Part 3A application.

15 Although the Supreme Court joined Tanlane to the present proceedings in order that Tanlane could protect its interests, Tanlane in evidence and submissions has entered quite fully into the entire fray. Nevertheless Tanlane says that its only concerns are that if easements are granted (a) Tanlane's interests are taken into account, (b) Tanlane is in no way consenting to an MRF on Moorebank's land, and (c) its forthcoming s 88K easement over Moorebank's panhandle is registered before registration of any easements granted to Moorebank. Tanlane says that three terms of the easements and one undertaking by Moorebank proposed by the respondents in draft short minutes reflect what Tanlane seeks in that regard. Those proposed terms are broadly to the effect that the owner of the Moorebank land not

hinder, interfere or prejudice rights under the Tanlane easement for construction or use of the road bridge the subject of the construction development consent. The proposed undertaking by Moorebank - which, however, Moorebank declines to give - is to the effect that Moorebank's rights in relation to any easements that I grant, particularly the right of registration of the easements, be postponed until after registration of the Tanlane easement.

16 In September 2012 Moorebank commenced these proceedings against Council in the Supreme Court. In February 2013 the Supreme Court (Pembroke J), on Tanlane's motion, joined Tanlane as a respondent and transferred the proceedings to the Land and Environment Court. In March 2013, on Moorebank's motion, this Court expedited the hearing with a view to determining the proceedings before 30 June 2013. The reason for this urgency is that the Department of Planning and Infrastructure (**the Department**) stated in an August 2012 circular titled "Accelerating completion of the assessment of transitional Part 3A projects" that: "It is the intention that all transitional Part 3A projects will be determined by 30 June 2013".

17 By what was thought at the time to be the conclusion of the hearing on 11 June 2013, less than three weeks were left to deliver judgment before the 30 June 2013 date specified by the Department. However, further submissions and documents for tender were received thereafter leading to further short hearings on 19, 24 and 25 June. Although this judgment is delivered before 30 June 2013, it is inevitable that determination by PAC of the Part 3A application will occur some time later. Moorebank proceeds on the justifiable assumption that the 30 June 2013 date is not an immutable deadline and will be extended for a reasonable time if it obtains the relief it seeks before that date.

18 I have had the advantage of a view of the parties' lands and the surrounding area. Orientation and an understanding of Ramps B are assisted by the following documents annexed to this judgment and marked as follows:

"1"	An extract from the zoning map in the Liverpool Local Environmental Plan 2008 (**LEP**), on which has been superimposed title details of the parties' lands.
"2"	An aerial photograph on which has been superimposed a plan of the proposed MRF and descriptions of (inter alia) Lot 309 and the panhandle.
"3"	A plan of Ramps B

THE LANDS

19 The Moorebank land to be benefited by the proposed easements is Lot 6 in DP 1065574. It is former landfill, vacant and unused. It has an area of about 20.5 hectares. It includes a dirt track panhandle about 10 metres wide and 840 metres long running north to Newbridge Road, a major arterial road. The panhandle is the only road access to the main body of the Moorebank land. The Moorebank land is bounded on the east by the Georges River, on the west by Council's land Lots 309 and 310 in DP 1118048, on the north (and east of the panhandle) by the Tanlane land, and on the south by a golf course. There is a drainage channel adjacent to and immediately east of the panhandle.

20 The Council land to be burdened by the proposed easement of carriageway comprises Lot 309 and Lot 310 in DP 1118048. Lot 309 is an 18 metre wide east-west strip between Moorebank's panhandle and Brickmakers Drive, over which Tanlane has development consent to construct the road bridge. That land is vacant and unused. Lot 310 lies north and south of Lot 309. Lot 310 is environmentally sensitive land and classified as community land under the *Local Government Act* 1993. The Council land to be burdened by the proposed easement for construction, maintenance and repair comprises Lots 309 and 310 as well as Lot 308, being Brickmakers Drive. Brickmakers Drive was dedicated to Council as a public road in August 2012 by Boral whose land on the western side of Brickmakers Drive is being developed as a large residential estate known as Georges Fair.

21 The Tanlane land is Lot 7 in DP 1065574. It has an area of about 22.31 hectares. It is bounded on the south by the main body of the Moorebank land, on the west by the Moorebank panhandle, on the north partly by Newbridge Road and partly by land owned by Flower Power, and on the east by the Georges River. The Tanlane land is about six metres higher than the panhandle, the drainage channel and the Council land Lots 309 and 310. The Tanlane land is used for an MRF and for sand extraction by the Benedict Group to which Tanlane is related. Benedict is a competitor of Moorebank in the MRF business and would be its major local competitor upon operation of an MRF on the Moorebank land unless the MRF on the Tanlane land ceases operation.

BACKGROUND

22 In 1995, in response to a rezoning request from Moorebank's planner Mr Kennan, a report for Council said that a

concrete recycling facility would seem to be a reasonable short-term use of the Moorebank land, and, so as to maximise future planning options, a sunset provision could be incorporated into the LEP and development consent requiring the recycling facility use to cease in, say, 20 years when planning for the whole area will be under review. Later that year Council wrote to Mr Kennan stating that it had resolved to prepare a draft LEP to allow a concrete recycling facility on the Moorebank land on the basis that it may be an appropriate short-term use of the site.

23 In 1996 Mr Kennan wrote to a Council committee that Moorebank seeks to rezone the land for a definite period of time to allow a concrete recycling facility and was willing to have Council place a sunset clause in the LEP.

24 In 1997 the Liverpool Local Environmental Plan 1997 (**LEP 1997**) was gazetted. It zoned the Moorebank land 1(a) Rural.

25 In 2000 the "Boral Moorebank Precinct" was formed including the lands owned by Moorebank, Tanlane, Boral, Flower Power and the Brighton Golf Club.

26 In 2001, after a site audit under the *Contaminated Land Management Act* 1997, the Moorebank land was certified as being suitable for commercial/industrial use including a concrete recycling facility, on conditions.

27 In 2002 Council adopted a non-statutory Moorebank Structure Plan. The Structure Plan identifies the indicative land use for the Moorebank land as "Waste and Recycling Uses/ Open Space". It provides for the Moorebank, Tanlane, Flower Power and Boral lands east of Brickmakers Drive to be accessed not by Newbridge Road but by a link road to be dedicated to Council by Boral as part of the redevelopment of the former Boral brick pit. That link road is now Lot 309.

28 Later in 2002 Moorebank and Tanlane entered into a deed under which Moorebank agreed to grant Tanlane an easement over the panhandle for construction and use of a road bridge.

29 In 2004 Mr Kennan on behalf of Moorebank made a rezoning submission to Council. He wrote that, assuming rezoning, Moorebank considered that the establishment of an MRF will occur well in advance of any redevelopment of the Boral site for residential purposes, and that Moorebank would agree to a sunset clause in the development consent requiring a further development consent after an appropriate number of years, which would provide for a limited period following completion of redevelopment of the Boral land during which the MRF could operate.

30 In 2004 the Roads and Traffic Authority (**RTA**) wrote to Council regarding an amendment to the LEP 1997 referring to the need to remove existing access points along Newbridge Road in the event of redevelopment of the Moorebank Precinct. The RTA noted that the intention of the proposed service road shown in the draft amendment was to provide vehicular access to the Moorebank, Tanlane and Flower Power lands once they are developed and existing access on Newbridge Road is removed.

31 In 2004 an amendment to LEP 1997 was gazetted with new zoning designations. An 18 metre wide corridor was rezoned 2(a) Residential: this is Lot 309. Land adjoining both sides of Lot 309 was rezoned 7(c) Environment Protection - Conservation: this is Lot 310.

32 Later in 2004 Benedict (to whom Tanlane is related) wrote to Council regarding the rezoning application for the Moorebank land stating that given the recent rezoning of the Boral land to residential and Benedict's stated goals of a residential and recreational rezoning for the Tanlane land, they questioned the appropriateness of an MRF on the Moorebank land in an environmentally sensitive area. Shortly afterwards, Boral objected to the rezoning of the Moorebank land as an inappropriate and incompatible use of the site and referred to Moorebank's proposed sunset clause on operations as a condition of a future development consent.

33 In December 2004 a Council report said the draft LEP is consistent with Council's Structure Plan and recommended that Council proceed with an amendment to permit, with development consent, an MRF on the Moorebank land.

34 In September 2005, Amendment No 76 to LEP 1997 was gazetted. It did two things. First, it rezoned the Moorebank land from 1(a) Rural to partly 1(a) Rural, partly 7(a) Environmental Protection - Waterway and partly 7(c) Environment Protection - Conservation. Secondly, it permitted, with the consent of Council, an MRF on part of the Moorebank land.

35 In December 2005 a developer deed was entered into between Council and Boral for development of the Boral land for residential purposes, under which Boral agreed to dedicate Lots 308, 309 and 310.

36 In December 2005 the Minister for Planning by his delegate declared the MRF development as a project to which Part 3A of the EPA Act applied. In 2006 Moorebank lodged a Part 3A application for approval of an MRF on its land. These and subsequent events relating to the Part 3A application are dealt with separately in the next section of this judgment.

37 In 2006 Moorebank and Tanlane explored design options for a road bridge and ramps.

38 On 1 May 2006 Moorebank gave owner's consent to the lodgement by Tanlane of a development application for construction of a road bridge over that part of the panhandle within the area of Tanlane's proposed easement for the road bridge.

39 In May 2006 Benedict, to which Tanlane is related, lodged a development application with Council for consent to construct a road bridge on Lot 309 and part of the panhandle.

40 In June 2006 Council granted development consent to Moorebank for bulk earthworks, to ensure that part of the Moorebank land on which the MRF was proposed to be built would not be affected by one in 100 year flood events.

41 In July 2006 Council adopted Development Control Plan No 50, which indicates that the preferred method of access for properties east of the panhandle is from the link road connecting to Brickmakers Drive.

42 In 2007 Council granted Tanlane development consent for the construction of a road bridge over Lot 309 between the Tanlane land and Brickmakers Drive. The consent did not extend to the use of the road bridge, which requires a further development consent. Conditions of the consent require the road bridge to be designed and constructed such that it is able to accommodate access ramps as designed in concept for Moorebank (Ramps A) and that the design be certified that it complies with AS 5100 - Bridge Design Code. This was to ensure that the road bridge would have the structural adequacy to carry the large trucks that would service the proposed MRF on Moorebank's land. In 2007 the consent was modified including widening the bridge to 12 metres.

43 In 2009 this Court dismissed Moorebank's judicial review challenge to the validity of the consent: *Moorebank Recyclers Pty Ltd v Liverpool City Council* [2009] NSWLEC 100 (Lloyd J). Moorebank had submitted that Council failed to consider whether the bridge would harm Moorebank's access and whether the bridge's design and structure were insufficient to allow access for the purposes of materials recycling on Moorebank's land. Lloyd J held that this was met by a condition of the development consent which required the bridge to be designed in accordance with the loads prescribed in AS 5100 since this would be sufficient to deal with the trucks and loads required for Moorebank's future MRF use: at [50].

44 Meanwhile, in January 2008, Council, Tanlane and Boral entered into a deed under which Tanlane was given exclusive rights of occupation of Lot 309 for the construction of the road bridge in accordance with Tanlane's 2007 construction development consent (after construction the road bridge is to be dedicated as a public road). Moorebank submits that this would contractually prevent Council agreeing to give Moorebank an easement over Lot 309 prior to construction of the bridge. This seems to me to have force.

45 In 2008 the Liverpool Local Environmental Plan 2008 (**LEP 2008**) was gazetted. It continued to zone the Moorebank Land E2 Environmental Conservation, in which zone there are permitted with consent identification signs, drainage, earthworks, environmental facilities, flood mitigation works, information and education facilities and roads. In addition, cl 11 of Schedule 1 provides that part of the Moorebank land can be used with consent for the purpose of an MRF. It states that cl 11 "is repealed on 1 September 2018". In my opinion, that is the sunset date for development consent to an MRF on the Moorebank land. However, cl 11 does not restrict a consent (by that date) from permitting construction and use of an MRF beyond that date. This is reinforced by contrasting cl 11 with cl 1 of Schedule 1 which provides, in relation to certain land in another zone that its "temporary" use for the purpose of industry is permitted with consent but that such consent may be granted "for a maximum period of 3 years": no such language appears in cl 11.

46 On the same day as LEP 2008 was gazetted, Council adopted the Liverpool Development Control Plan 2008 (**DCP 2008**). It provides for residential subdivision for a maximum of 216 dwellings on the Tanlane land. It also provides for flood free access via a road bridge in the vicinity of Lot 309 to Brickmakers Drive prior to any such subdivision. Tanlane intends to develop this residential subdivision, as well as a marina, upon cessation of the existing industrial uses in about late 2014. The timing of that development will have to take account of remediation of the Tanlane land after cessation of its current recycling use. Tanlane has lodged a development application with Council for the marina but not yet for the residential subdivision.

47 In June 2008 Council and Tanlane entered into a voluntary planning agreement (**VPA**), under which Tanlane agreed to construct a bridge from the Tanlane land to Brickmakers Drive and to dedicate and transfer the bridge to Council if and when Council granted consent for Tanlane's proposed subdivision of its land to create up to 225 residential lots.

48 The only vehicular access in the event of future development of the Moorebank, Tanlane or Flower Power lands is to and from Brickmakers Drive via Lot 309, which is about 300 metres south of Newbridge Road. That is because, first, that has been Council's strategy since its 2002 Structure Plan and, secondly, the position of RMS since 2003 has been that they will not allow vehicular access to and from Newbridge Road in the event of future development of the Moorebank, Tanlane and Flower Power lands and that such access should be over Lot 309. Thus, redevelopment of the Moorebank land and the Tanlane land will be sterilised because those lands will then be landlocked unless they can

access Brickmakers Drive over, or by connecting to, Lot 309.

49 In order to construct the road bridge, Tanlane requires an easement over Lot 309 and through the air space above Moorebank's panhandle. Council agreed to give Tanlane an easement over Lot 309. As mentioned earlier, under a 2002 deed Moorebank agreed to give Tanlane an easement over the panhandle. However, five years later Moorebank exercised its right under the deed to terminate the deed if construction of the bridge did not commence within five years.

50 In 2008 Tanlane brought proceedings in the Supreme Court claiming, first, that Moorebank wrongly terminated the 2002 deed and, alternatively, seeking an easement over the panhandle under s 88K of the Conveyancing Act. Moorebank opposed the grant of the easement because the bridge would obstruct its planned ground access route (the Marshall plan) over Lot 309 to Brickmakers Drive for its proposed MRF and it feared the bridge would be constructed in such a manner that it would be unsuitable for heavy vehicles servicing its proposed MRF. Young JA rejected the former claim but granted Tanlane an easement on terms under s 88K in the course of three judgments delivered between 2008 and 2012: *Tanlane Pty Ltd v Moorebank Recyclers Pty Ltd* [2008] NSWSC 1341; *Tanlane Pty Ltd v Moorebank Recyclers Pty Ltd* (No 2) [2011] NSWSC 1286 and *Tanlane Pty Ltd v Moorebank Recyclers Pty Ltd (No 3)* [2012] NSWSC 90. In order to protect Moorebank's proposed development of an MRF, his Honour granted the easement to Tanlane but made an order that Tanlane undertake to the Court to have the easement extinguished if, despite the best endeavours of both parties, after all appeals to and from the Land and Environment Court are exhausted, Moorebank cannot obtain access for 48 tonne trucks from its land across the proposed easement to Brickmakers Drive, and that, if the easement be extinguished, Moorebank undertake to the Court to return the compensation with interest.

51 On 21 December 2012 the Court of Appeal upheld the grant of the easement to Tanlane over the panhandle but varied the terms including adding terms that the road bridge and any ramps over Lot 310 to be attached to the road bridge would be constructed to a specified standard, which would permit the road bridge and the ramps to bear the load of large trucks servicing Moorebank's proposed MRF: *Moorebank Recyclers Pty Ltd v Tanlane Pty Ltd* [2012] NSWCA 445, (2012) 16 BPR 31,257 at [256] (**the *Tanlane Case***). The Court of Appeal ruled that the easement should not be imposed until the compensation payable pursuant to s 88K(4) has been assessed and that the compensation is to be not less than $26,500. I note that, following assessment, the easement does not take effect until it is registered: s 88K(7)(a). The Court of Appeal set aside the conditional order imposed by the primary judge referred to above because he thereby effectively failed to determine whether the easement was reasonably necessary in the circumstances which existed at the time of the hearing, and only determined that it would be reasonably necessary if certain events occurred in the future, namely Council's consent to the construction of the ramps: at [97]. It was also held that the conditional order was problematic because terms of an easement must be specified in the order imposing the easement and not in an order or undertaking independent of the easement: at [99] citing *117 York Street* at 522.

52 In the *Tanlane Case* the Supreme Court considered two alternative accesses proposed between the Tanlane land and Brickmakers Drive. The alternative for which Moorebank contended was called "the Marshall plan" (after its designer) and was over Lot 309. The Marshall plan did not require a road bridge but was for a surface road over Lot 309 from the panhandle to Brickmakers Drive. It could not co-exist with the road bridge over Lot 309 which Tanlane had development consent to construct and for which the Supreme Court granted Tanlane an easement over the panhandle. The alternative was for up and down ramps over Lot 310 to be bolted to either side of the bridge on Lot 309 (Ramps A). The Court of Appeal's decision killed the Marshall plan. The Court of Appeal was at pains to keep Ramps A alive for it imposed terms on the Tanlane easement that not only the bridge but the ramps be constructed to a specified standard, which would enable them to carry the loads of the large trucks that would service Moorebank's proposed MRF. There was no inquiry by the Court of Appeal into whether the proposed MRF was suitable for the area or any other aspect of its merits.

53 Soon after the Court of Appeal's decision, Moorebank commissioned Cardno to prepare engineering drawings for an alternative ramps proposal. The Cardno drawings provide for up and down ramps with both ramps connecting not to the road bridge itself but to the embankment to the bridge about 30 metres from Brickmakers Drive (Ramps B). It is Ramps B for which Moorebank now primarily contends. Ramps B involves a little more land take in Lots 310 and 308 than Ramps A.

54 Because Ramps B connects to the embankment rather than to the suspended structure of the bridge, it has advantages for Moorebank compared with Ramps A. First, it has the economic advantage that it is not dependent on Tanlane's construction of the road bridge, except for the embankment which would be constructed by Moorebank if it is not constructed first by Tanlane. Thus, Moorebank can control the timing of its ramps development without being the handmaiden to Tanlane's road bridge development. If Tanlane has not constructed the road bridge by the time

Moorebank is ready to construct the ramps, then under Ramps A Moorebank would have to construct two spans of the road bridge at an additional estimated cost of about $2 million, to which the ramps would be bolted. The construction and cost of those spans would otherwise be borne by Tanlane. Tanlane says that that is a purely hypothetical risk because it wishes to get on with constructing the road bridge but cannot do so until the Supreme Court assesses compensation for the Tanlane easement and that it has been frustrated for years in getting on with it by Moorebank's forensic opposition to the Tanlane easement. Nevertheless, future circumstances, including the economic climate, are sufficiently uncertain that I think the risk is real. Secondly, Tanlane is related to the Benedict Group which conducts an MRF on the Tanlane land as well as a sand extraction operation. Benedict is one of Moorebank's competitors and would be its major local competitor upon operation of an MRF on the Moorebank land unless the MRF on the Tanlane land ceases. If it were to be decided that the industrial activities on the Tanlane land would continue, Tanlane could decline to construct the road bridge. The bolts in Ramps A deliver to a competitor potential control over Moorebank's development. Ramps B has a potential economic advantage for Tanlane in that Moorebank would pay for the embankment, which would otherwise be payable by Tanlane if Moorebank were to construct the ramps before Tanlane constructed the road bridge pursuant to Tanlane's construction development consent.

55 In the *Tanlane Case* at [202] the Court of Appeal summarised Moorebank's position in relation to the Marshall plan as one involving Moorebank applying for a s88K easement subject to a Part 3A owner's consent term and then obtaining approval for that means of access from PAC under Part 3A, as follows (the references to the "2A land" and the "7(c) land" are to respectively, Lots 309 and 310) (emphasis added):

> 202 The position, in our opinion, can be summarised as follows:
>
> (i) At the present time, having regard to the position adopted by the Council as expressed in its letter of 14 July 2011, Moorebank cannot proceed further with the Part 3A Application because it cannot obtain Council's consent to access the 2A land to carry out the work necessary to implement the Marshall plan. This is because the Planning Authority has indicated it will not proceed further until it has that consent.
>
> (ii) Thus, for Moorebank to proceed further it will be necessary for it to obtain an easement under s 88K of the Act to construct a road on the 2A land and to use it for vehicle access, including vehicle access for trucks used in the recycling business. It is only if such an easement is granted that the Marshall plan can be taken any further. *Moorebank could seek as a condition of the easement that Council provide to the Planning Authority its consent to the carrying out of the necessary works: 117 York Street supra at 522*.
>
> (iii) Having regard to the terms of the resolution of 15 June 2011 and the Council letter of 14 July 2011, Council would oppose the grant of the easement.
>
> (iv) In any application for the grant of an easement significant questions of public interest would undoubtedly arise. Mr Kennan's view as to the suitability of the Moorebank site for a recycling facility may well be disputed in such proceedings. Further, the Court would have to take into account the fact that the grant of the easement would frustrate the Development Control Plan and at least significantly diminish the prospect of the development of the Tanlane land, in circumstances where it has at least obtained consent to a mode of access to and from Brickmakers Drive to enable such development to take place. Aligned to this, as no easement is sought over land owned by Tanlane, the Court in our opinion, would not have power to order any compensation for any loss Tanlane suffered by virtue of the imposition of the easement on its ability to develop the land. Even if this is not relevant to the public interest it will be a matter relevant to the discretion whether or not to grant an easement.
>
> (v) Further, although Mr Kennan may well be correct as to the desirability of separate access points for the Tanlane and Moorebank development (see par 4.2.3(a) of the joint expert report set out in par [193] above), on the material available the only alternative proposal, namely, Davy Robinson Drive is not a realistic proposal.
>
> (vi) Even if the easement over the 2A land was granted, Moorebank would still need to obtain development consent from the Planning Authority to the recycling facility on conditions acceptable to it.

56 The Court of Appeal from [202(vii)] summarised Moorebank's position in relation to the ramps proposal as one where it was extremely likely that Moorebank would have to obtain a section 88K easement subject to a Part 4 owner's consent term and then obtain a Part 4 ramps development consent from Council or, on a merits appeal against refusal, this Court (emphasis added):

> (vii) Contrary to Tanlane's submission, in our opinion the position of Council expressed in the resolution of 15 June 2011 and the 14 July 2011 letter extends to the Ramps proposal. The resolution referred to both Lots 309 and 310 and stated in terms that Moorebank's proposed use was incompatible with the current planned residential and recreational use of the area.
>
> (viii) For the Ramps proposal to be implemented, Moorebank would need to lodge a development application with Council *which would require Council's consent as owner* of the 7(C) and 2A land. Mr Mitchell acknowledged that Council may decline to give such consent. *In our opinion it is extremely likely that Council will decline to grant it*.
>
> (ix) If Council decided to reject the development application under cl 51(1)(b) of the Regulations under the EPA Act and refused to review that decision under s 82A of that Act, then Moorebank's only option would be to seek an easement under s 88K over the 7(C) and 2A land. The grant of an easement of this nature would not affect the access to Brickmakers Drive by occupiers of land to the east of the panhandle, but there may be public interest considerations in granting an easement over the environmentally sensitive 7(C) land. If such an easement was granted, a condition that the Council grant owner's consent to the development application could be imposed. Moorebank would then need to lodge a development application. If Council rejected the development application Moorebank could have a right of appeal to the Land and Environment Court under s 97 of the EPA Act.
>
> (x) If Council rejected the development application lodged without consent under s 80(1)(b) of the EPA Act or there was a deemed refusal for lapse of time under s 82(1) of that Act, Moorebank could appeal to the Land and Environment Court under s 97 of the EPA Act. That Court is entitled to exercise the powers and discretions of Council by virtue of s 39(2) of the *Land and Environment Court Act* 1979, including the power to give owner's consent: *Sydney City Council v Claude Neon Pty Limited* (1989) 15 NSWLR 724 at 732; *Sydney City Council v Ipoh Pty Limited*, supra at [9], [10] and [34]. The Land and Environment Court also has power, in a case where it determines to grant development consent under s 97, to provide for an easement necessary to give effect to the

development (*Land and Environment Court Act* s 40).

(xi) As we indicated earlier Mr Kennan's principal concerns about the Ramps proposal seemed to be that it encroached on the environmentally sensitive 7(C) land and the desirability of separate access points for the Moorebank land and the Tanlane land. Mr Kennan's ultimate evidence was he doubted Council would give consent to the lodging of a development application for the ramps. Mr Mitchell by contrast stated that the Ramps proposal was the preferable option to the Marshall plan but acknowledged that Council as landowner may resist it.

57 Two comments may be made. First, the Court of Appeal thought it "extremely likely" that Council would decline to give owner's consent to the lodgement of a Part 4 development application with Council for a ramps proposal: at [202 (viii)]. This forecast has turned out to be incorrect for that is what Council gave owner's consent to during the hearing before me in conjunction with consenting to the easements sought. Secondly, it is unclear why the Court of Appeal thought that Part 3A would be the approval route for the Marshall plan construction and use but Part 4 would be the approval route for ramps construction and use. In fact, Moorebank wishes to make a Part 3A application for construction and use of ramps.

58 In May 2013 the Supreme Court postponed a hearing date for the assessment of compensation in the *Tanlane Case* until after the s 88K matter before me is determined: *Tanlane Pty Ltd v Moorebank Recyclers Pty Ltd (No 3)* [2013] NSWSC 545 (Rein J). The reason for the postponement was that Moorebank indicated that it may wish to claim compensation of $19.1 million if it cannot progress its Part 3A MRF application because it cannot access Brickmakers Drive through its s 88K application in this Court: at [23], [29].

59 On 27 March 2013 Council resolved to investigate alternative zoning options for the Moorebank East precinct to better reflect the emerging recreation and residential precinct and environmental value of the area. On 29 May 2013 (during the hearing before me) Council resolved to initiate an amendment to LEP 2008 to rezone the Moorebank land from E2 to RE2 and remove item 11(permitting an MRF with consent) from Schedule 1, and to forward a planning proposal to the Department seeking gateway determination.

MOOREBANK'S PART 3A APPLICATION

60 Section 75B (within Part 3A) of the EPA Act provides:

75B Projects to which Part applies

(1) General

This Part applies to the carrying out of development that is declared under this section to be a project to which this Part applies:

(a) by a State environmental planning policy, or

(b) by order of the Minister published in the Gazette.

The carrying out of particular development, or development for a program or plan of works or activities, may be so declared.

(2) Kinds of projects

The following kind of development may be declared to be a project to which this Part applies:

(a) major infrastructure or other development that, in the opinion of the Minister, is of State or regional environmental planning significance,

(b) major infrastructure or other development that is an activity for which the proponent is also the determining authority (within the meaning of Part 5) and that, in the opinion of the proponent, would (but for this Part) require an environmental impact statement to be obtained under that Part.

(3) Related development

If part of any development is a project to which this Part applies, the other parts of the development are (subject to subsection (4)) taken to be a project to which this Part applies.

...

61 Pursuant to s 75B(1)(a), in December 2005, on Moorebank's application, the Minister for Planning by his delegate declared the MRF project as a project to which Part 3A applied. The declaration described the development as being on the Moorebank land. The effect was that the approval authority for such development became the Minister or the Minister's delegate (now PAC) not Council.

62 This opened the way to Moorebank in May 2006 making a Part 3A application for approval of an MRF on its land. That application likewise described the development as being on the Moorebank land. The proposed MRF has an annual capacity of 500,000 tonnes.

63 As mentioned earlier, in June 2006 Council granted development consent for bulk earthworks on part of Moorebank's land, required for the purpose of construction of the MRF. In May 2008 Council extended the lapsing period of that consent.

64 In August 2008 the Roads and Traffic Authority wrote to a Moorebank consultant advising that it would not permit Moorebank to have temporary access to Newbridge Road via the panhandle to service the proposed MRF.

65 In August 2006 the Director-General's delegate wrote to Moorebank attaching the Director-General's requirements (DGRs) under Part 3A. The letter included the following statement:

> The Department understands that site access issues are yet to be resolved. Consequently, you are required to ensure that suitable site access agreements are in place prior to the lodgement of the draft Environmental Assessment.

The attached DGRs included the following as one of the "Key Issues":

> **Site access** - demonstrate that suitable arrangements have been made to secure access to the site, including written evidence of the relevant landowner's consent to the proposed site access works.

66 This was reiterated in a letter in July 2008 from the Director-General's delegate to Moorebank and in the attached modified DGRs.

67 On 22 December 2008 Moorebank wrote to Council in the following terms:

> Moorebank Recyclers Pty Ltd, the owner of Lot 6, DP 1065574, Newbridge Road, Moorebank, is currently preparing an application for the establishment of a "*Materials Recycling Yard*" on that land.
>
> At its meeting of 25 February 2002, the Council adopted the Moorebank Structure Plan which sought to provide guidance with regard to the future development of the land owned by Boral, Moorebank Recyclers, Tanlane (Benedict Sands) and Flower Power.
>
> Part of the Moorebank Structure Plan was for all future development of the land to the east of the Boral land to be accessed not by way of Newbridge Road but via an accessway which was to be dedicated to Council by Boral as part of the redevelopment of the former Boral brick pit. The access corridor is now known as Lot 309, DP 1118048 which connects to Brickmakers Drive which is known as Lot 308, DP 1118048. We understand that both Lots 308 and 309, DP 1118048 have been dedicated to the Council.
>
> The proposed "*Materials Recycling Yard*" on the Moorebank Recyclers land is a "*project*" pursuant to State Environmental Planning Policy (Major Projects) 2005 and, as such, the Minister for Planning is the consent authority for the proposed development.
>
> We have received the Director-General's requirements for the Environmental Assessment to be undertaken as part of the preparation of the project application to the Minister. One requirement of the Director-General is that we obtain landowner's consent for access to the proposed development. As such, we required a letter from the Council giving landowner's consent for the lodgement of the Part 3A Project Application with the Minister for Planning over the abovementioned Council owned land.
>
> ...

68 On 27 January 2009 Council replied by letter to Moorebank as follows:

> **Re: Landowners Consent - Lots 308 & 309 DP 1118048 - Moorebank**
>
> We refer to your letter dated 22/12/2008 and confirm that Council grants consent for the lodgement of the Part 3A Project Application with the Minister for Planning in relation to the abovementioned Land for access purposes to the proposed materials recycling yard.

69 The Department in an email to Moorebank of 12 October 2011 said:

> In response to questions raised in our conversation on 5 October 2011, the DGRs require the Proponent to demonstrate that suitable site access has been obtained, including written evidence of the relevant landowner's consent for the proposed site access work.
>
> As such, an 'adequate' EA must include land owner's consent for the proposed site access work, not just consent for the lodgement of the Part 3A application.

70 In the *Tanlane Case* the Court of Appeal at [47] and [190] construed Council's 27 January 2009 letter in relation to Lots 308 and 309 as owner's consent "to the lodgement by Moorebank of an application under Part 3A of the EPA in respect of its proposed" MRF, but not "as an agreement to site access to carry out the works necessary to complete the proposal" (meaning, I understand, the Marshall plan). Although Council had given owner's consent to the lodgement of a Part 3A MRF application for access (by the Marshall plan) through Lots 308 and 309, it will not give such consent for access over Lot 310 required for ramps even though that has become the only possible means of access once the Marshall plan was knocked out by the decision in the *Tanlane Case*.

71 In October 2011 the Department sent an email stating that any undetermined Part 3A application in the system after 1 October 2011 would be revoked where an environmental assessment (**EA**) had not been lodged by 1 October 2013, unless the Director-General determined before then that substantial progress had been made in finalising the EA.

72 The second judgment of Young JA was delivered in November 2011.

73 Until 2011 Council was supportive of an MRF and the Part 3A application. Three examples suffice. First, in 2006 Council granted development consent to Moorebank for bulk earthworks required to construct the MRF. Secondly, Council rezoned the Moorebank land in 2005 and confirmed that zoning in the LEP 2008, to permit, with consent, an MRF on the Moorebank land. Thirdly, in 2009 Council gave its owner's consent to Moorebank lodging a Part 3A application for an MRF to obtain access over Lot 308 (Brickmakers Drive) and Lot 309. That owner's consent did not extend to consent to construction and use of the ramps over Lot 308 and 309: *Tanlane Case* at [190]. It was limited to Lots 308 and 309 and did not extend to Lot 310 because at that time Moorebank was pursuing the Marshall plan, which only required the use of those two lots. Under either ramps proposals, Moorebank needs Council's owner's consent to

lodging an application for construction and use of the ramps on all three lots, and presses for a Part 3A owner's consent.

74 Notwithstanding its 2009 owner's consent, in June 2011 Council changed its mind and resolved to recommend to the State government refusal of Moorebank's Part 3A development application "as the proposed use of this site is incompatible with the current and planned residential and recreational uses of the area", and to inform Moorebank that approval will not be granted for access over part Lot 310 and Lot 309 for the MRF. In July 2011 Council wrote to Moorebank noting (in relation to the Part 3A application) that a key DGR issue related to access, that Council had resolved not to support the Part 3A application, and that approval for access over part Lot 310 and Lot 309 "will not be granted for the proposed project". This resolution and letter extend to the ramps proposal: *Tanlane Case* at [202(vii)]. This is the genesis of the position that Council takes in these proceedings.

75 In March 2012 Mr Kennan for Moorebank wrote to the Director-General of the Department asking three questions:

> As discussed with Mr Chris Ritchie on 20 March 2012, our client, Moorebank Recyclers, seeks advice from the Department as to the approvals process for access to the subject land.
>
> Having regard to the detail provided below and in the attachments to this letter, the question which is posed by Moorebank Recyclers is:
>
> > *Is the Minister for Planning and Infrastructure the consent authority for:*
> >
> > *(a) the application for a Materials Recycling Facility on Lot 6, DP 1065574,*
> >
> > *(b) a road on Lot 309, DP 1118048, and*
> >
> > *(c) use of Lot 308, DP 118048.*
>
> ...

76 On 7 June 2012 the Department replied:

> ...
>
> Firstly, the Department confirms that the Minister for Planning and Infrastructure is the approval authority for the Project, which involves the construction and operation of a materials recycling facility on Lot 6 DP 1065574 Newbridge Road, Moorebank. However, the operation of the proposed Project would require suitable site access, including over land owned by Liverpool City Council (**Council**) on Part Lots 308 and 309 in DP 1118048.
>
> As a relevant landowner for part of the Project's access road, Council is required to provide landowners consent for the lodgement of the Project and approval to access the land to build and use the road.
>
> In relation to landowners consent, it would appear to the Department that Council has granted its landowners consent under Clause 8F of the *Environmental Planning and Assessment Regulation 2000*.
>
> However in addition to providing landowners consent, the Director-General's Requirements for the Project specifically requires the Proponent demonstrate that suitable site access arrangements have been made to secure access to the site. At this stage and based on Council's advice provided to the Department in its letter dated 14 July 2011 (see copy attached), the Department does not consider that the Proponent has complied with this component of the Director-General's Requirements.

77 On 11 December 2012 Moorebank submitted a draft EA to the Department under Part 3A. It provided for access to Moorebank's proposed MRF across Lot 309 by the Marshall plan. However, as stated earlier, under the decision on 21 December 2012 of the Court of Appeal in the *Tanlane Case* the Marshall plan was no longer possible.

78 Moorebank submitted the EA to the Department on 25 February 2013. Between late February and early April 2013 it was on public exhibition. The EA wrongly identified the proposed access to the MRF as the Marshall plan. During the hearing before me, Moorebank adduced affidavit evidence from its planner, Mr Kennan, explaining this misstatement in the EA. The explanation was that following the Court of Appeal's decision Mr Kennan told an officer of the Department that as a result of that decision the Marshall plan was no longer achievable if the road bridge were to be constructed and that Moorebank proposed to amend the EA to incorporate the Ramps B plans when completed. The officer told Mr Kennan that due to the time frame the Department had set for completion of Part 3A matters, it would not be possible to amend the EA to substitute ramps for the Marshall plan, but that an amendment to the EA could be made to make reference to an alternative access which is being investigated. This limited amendment was made to the EA before it was exhibited.

79 On 8 February 2013 Moorebank's solicitors wrote to Council contending that access arrangements for the proposed MRF formed part of the Part 3A application and that, accordingly, there was no need for Moorebank to lodge a development application with Council for those works. The letter also requested Council's owner's consent to the lodgement of an amended Part 3A application. On 20 February 2013 council replied requesting a copy of the proposed application. There was no reply.

80 On 19 April 2013 the Sydney Regional Development Advisory Committee wrote to the Department concerning Moorebank's Part 3A application making a number of recommendations and stating them as RMS requirements. Moorebank accepts before me, and I agree, that these recommendations and requirements are likely to be accepted by PAC as terms of any Part 3A approval of the MRF. Recommendations 8 and 9 are as follows:

> 8. Traffic control facility at Brickmaker Drive and Link Road intersection should be provided to Council's

satisfaction.

9. The proposed "No left turn" sign from the link Road into Brickmaker Drive should be referred to Council for approval. Considerations should be given to negative implications to the Marina Development.

81 By letter dated 12 April 2013 the Department requested Moorebank to provide the response to the issues raised in submissions, a (statutory) preferred project report if changes were proposed to the project to minimise its environmental impacts, and a revised statement of commitments.

82 In May 2013 the Environment Protection Authority made a submission to the Department, with which I agree, that "if residential development is not yet approved for this [Tanlane] site then it would be unreasonable for EPA to not support the proposed [MRF] facility because approval for residential development is not guaranteed or may not occur for some time in the future. In addition...noise mitigation measures...could be incorporated in any residential approval".

83 On 28 May 2013 (during the hearing before me), Moorebank's planner, Mr Kennan, submitted to the Department that access over Lots 308 and 309 was part of the Part 3A application. The Department's reply the next day was that (on the basis of the information provided), the Minister will consider the access arrangements to the site as part of the Part 3A application and if the Part 3A application is approved the proposed ramps access arrangements will form part of the terms of a Part 3A approval.

84 Mr Kennan in an affidavit of 29 May 2013 deposed that he had instructions that the Part 3A application will be amended by way of a preferred project report (pursuant to s 75H(6) of the EPA Act) by changing the proposed access route from the Marshall plan to Ramps B, as well as in other respects apparently intended to meet certain merits issues that were raised during the hearing. He said he envisaged that the preferred project report would be ready in approximately two weeks. In discussion with counsel at that time, I raised the question whether it would be necessary for the Minister's 2005 declaration to be amended by amending the development described therein so as to include access over Council's land and Ramps B.

85 That is what then happened on the last scheduled day of the hearing on 11 June 2013. In the last hour of that day during submissions in reply, Moorebank tendered and I admitted over objection the Minister's "Amendment of project declaration" of the same date. It extends the project to access over the Council land in accordance with the ramps proposals. It is in the following terms:

Amendment of project declaration

Section 75B (b) of the *Environmental Planning and Assessment Act 1979*

I, the Director-General of the Department of Planning and Infrastructure as delegate of the Minister for Planning and Infrastructure, in pursuance of section 75B (5) of the *Environmental Planning and Assessment Act 1979* (as continued in force by Schedule 6A to that Act), amend the Project declaration made on 19 December 2005 in relation to the proposal to construct and operate a demolition and construction waste recycling facility at Lot 6 DP 1065574 Newbridge Road, Moorebank, by replacing the development described in the Schedule to the "Record of Minister's opinion" dated 19 December 2005 with the development described in Schedule 1 to this instrument.

Dated 11th June 2013

Sam Haddad

Director-General

Department of Planning and Infrastructure

As delegate of the Minister for Planning and Infrastructure (Instrument of delegation published in Gazette No 95 of 28 September 2011 at page 5685)

SCHEDULE 1

A proposal to construct and operate a demolition and construction waste recycling facility at Lot 6 DP 1065574 Newbridge Road, Lots 308, 309 and 310 DP 1118048 Moorebank, generally as described in:

- A letter dated 12 October 2005 from Nexus Environmental Planning Pty Ltd on behalf of Moorebank Recyclers Pty Ltd to the Department of Planning; and
- An email dated 4 June 2013 (received at 12:33pm) from Nexus Environmental Planning Pty Ltd to the Department of Planning and Infrastructure

And including any development that is ancillary to the above

86 The email of 4 June 2013 referred to in Schedule 1, which was from Moorebank's planner Mr Kennan, enclosed the Ramps B plans and is in the following terms:

As I have discussed with you previously, as part of the response to submissions following exhibition of the Part 3A Environmental Assessment, and indeed the decision of the Court of Appeal to grant an easement for Tanlane over the Moorebank access handle, it is clearly the case that the access arrangement proposed in the Environmental Assessment cannot be achieved.

As such, Moorebank is proposing as part of the Preferred Project Report which is currently being prepared, to provide an alternative form of access in the form of ramps connecting to the abutment of the approved Tanlane road bridge as referred to in the Environmental Assessment. To assist, I attach a copy of the plans of the now proposed access.

Please be advised that Moorebank Recyclers now wishes to amend the Part 3A application such that the Project applies to Lots 308, 309 and 310, DP 1118048 in addition to Lot 6, DP 1065574. We seek confirmation from the

Department that the Part 3A can be amended as proposed.

87 These documents strengthen Moorebank's submission, considered below, that it would be futile to impose a Part 4 owner's consent term because s 75R(1) of the EPA Act make a Part 4 consent unlawful whilst it has a Part 3A application pending which includes the ramps. I accept it is likely that Moorebank will soon carry out its intention to amend its Part 3A application via a preferred project report. The tender of these documents led the respondents to object to their admissibility and to submit that if they shut the door to the Part 4 route for the ramps, the proper response was not to grant any easements.

88 Other communications between Mr Kennan and the Department on 4 and 5 June 2013 were later unearthed leading to a further short hearing. They included an email from the Department to Mr Kennan to the effect that although it considered access arrangements to be covered by s 75B(3), it was recommending to the Director-General to amend the original s 75B declaration to include the Council land and the proposed works in order to remove any doubt as to the scope of the works. Tanlane submitted inferences should be drawn that (a) the original Part 3A declaration and application did not include the design and construction of ramps over Lot 310; (b) the timing of Mr Kennan's emails of 4 June 2013 was for the purpose of forensic advantage after the conclusion of submissions in chief by Moorebank so as to advance its argument that Part 3A and s 75R would prevent the Part 4 route in order to create a further obstacle; (c) the project may be amended and reduced to not include design and construction of the access ramps; and (d) lack of evidence of a request by Moorebank to the Department to reduce the scope of the Part 3A to not include access ramps infers Moorebank's lack of good faith in disenabling Council's offer to be accepted. I draw the first and third inferences independently of these documents (the first by construing the original Part 3A declaration and application). I accept the second inference. I reject the fourth. Moorebank was not under a good faith obligation to channel a ramps construction and use application down the Part 4 route; it is open to it to make the proposed amended application; and it was open to the Minister to make the amended declaration. The lateness of all this has caused procedural inconvenience in the case and was to obtain a forensic advantage but does not provide a sound basis for declining to grant the easements or for saying that Moorebank has acted in bad faith.

89 Moorebank did little to advance its Part 3A MRF application between 2006 and 2012. That delay has resulted in this expedited hearing in order to meet the Department's intention to have all Part 3A applications determined by 30 June 2013. However, Moorebank's explanation, which I accept, for the delay is that it was awaiting the outcome of the Court of Appeal's decision in the *Tanlane Case* in the hope that the Marshall plan would be upheld. It says that it was the *Tanlane Case* that impacted upon its Part 3A application, not (as Tanlane submits) vice versa.

90 On 19 June 2013 I made a consent order that the parties' experts confer and endeavour to reach agreement on a preferred design for the ramps within seven days. This was later extended to eight days (ie until today). As at 24 June 2013 Moorebank reported that its preferred project report under s 75H(6)(b) incorporating amendments including Ramps B was ready for submission to the Director General subject to (a) waiting to see if the experts reached agreement on the design and (b) if they agreed, obtaining final comments thereon from Moorebank's experts. Moorebank anticipated submission of the preferred project report within two weeks after receipt of the experts' report as to the design and that, by reference to a PAC publication "Procedures for Decision Making", this would be followed by public exhibition of the preferred project for two weeks, determination of the application following consideration of the Director General's report under s 75I, possibly a PAC decision to hold a public meeting on 14 days notice, and its determination as soon as possible thereafter or at the public meeting.

EXPERT EVIDENCE

91 Expert evidence was adduced from structural engineers, hydrologists, ecologists, traffic experts, acoustic experts, air quality experts, planners and valuers. The valuers, and subsequently the parties, agreed that the compensation payable for the grant of the proposed easements is $25,000.

92 Last week a consent order was made that the structural engineers, hydrologists and traffic experts should meet and attempt to agree on a preferred design for the construction of a ramp and bridge abutment and traffic control works at the intersection of Brickmakers Drive and Lot 309 within 7 days. That was later extended to today. Although their report virtually coincides with publication of this judgment and therefore is too late for analysis in this judgment, there is no suggestion that this affects, or should delay, publication of this judgment. The subject matter of their report and much of the expert evidence adduced goes beyond anything that has to be determined in these proceedings. Much of it involves an intensity of merits analysis which is appropriate to a consent authority's consideration of a development application for construction and use of the ramps and the MRF. I am satisfied that it is reasonably open to a consent authority to grant approval for construction and use of the ramps and that there is a realistic chance of obtaining such approval, and that any impacts on the Council land or the area are capable of being managed through conditions attached to any development approval.

Engineers

93 The structural engineers are in general agreement including that both ramps proposals are unlikely to have any adverse flood impacts, Ramps A will be considerably more expensive given that two spans of the bridge have to be constructed by Moorebank (this assumes Tanlane has not already constructed them), both ramps proposals allow either Tanlane or Moorebank to complete their access first, and the size of the easements can be made to comply with the consent authority's requirements.

Hydrologists

94 The flooding experts agree that the construction of the proposed ramps will not have a significant impact on flood levels upstream of the proposed ramps. They recommend a more detailed flood study.

Ecologists

95 The ecologists agree that Ramps B is likely to result in a loss of 0.22 ha of RFEF, requiring some offsetting which could be the subject of conditions of approval granted by PAC.

Traffic experts

96 The traffic experts agree that RMS concurrence to traffic signals at the intersection with Brickmakers Drive would be required. They disagree as to the design of the ramps connections shown on the Ramps B plans, relating mainly to queuing on the bridge because of the need for lights. Queuing would occur beyond the entry points of both ramps proposals to the traffic stream. Three of the four traffic experts agree that Ramps B provide a better traffic outcome. Merging of general traffic with recycling trucks creates safety issues and requires design in order to be managed. As proposed by Council's expert, Council submits that neither Ramps A nor Ramps B is wholly satisfactory and that a better solution may be to construct ramps on Council land not covered by the proposed easements, by moving the beginning of the up ramp a little further south to enable a lesser gradient or moving the beginning of the down ramp a little further north to avoid difficulties with the interaction between the down ramp and the intersection. This is one of the matters that the experts are likely to address in their report due today. Such matters are relevant to the approval authority's consideration of a development application for the ramps.

97 I do not need to resolve these traffic issues. I am satisfied that what is proposed (access by Lots 309 and 310) is practically possible, that it would be open to a consent authority to approve a development application for the ramps, and that such an application is not hopeless.

Acoustic experts

98 On the evidence of the acoustic experts, I am satisfied that the noise impacts from use of the bridge, ramps and access road can be managed by noise mitigation measures as conditions of any development approval. In May 2013 the Environment Protection Authority (EPA) made a submission to the Department, with which I agree, that "if residential development is not yet approved for the [Tanlane] site then it would be unreasonable for EPA to not support the proposed facility because approval for residential development is not guaranteed or may not occur for some time in the future" and that noise mitigation measures could be incorporated in any residential development approval. Such noise mitigation measures are expressly contemplated in DCP 2008.

Air quality experts

99 The air quality experts agree that NSW air quality assessment criteria are unlikely to be exceeded. They agree that the MRF should implement air quality measures that could be made the subject of conditions of a development approval.

Planners

100 The evidence of the planners was largely directed to their interpretation of various planning documents, about which the Court can form its own view. Mr Mitchelll (Tanlane's planning expert) proffered opinions about problems he perceived that I think are outside his area of expertise, irrelevant or outweighed by the evidence of other experts in various disciplines that noise impacts may be managed by noise mitigation measures, traffic issues can be addressed, potential flooding impacts will be minor, disturbance of threatened species or plants is unlikely and can be managed, engineering issues to which he refers can be resolved, and direct emissions from the proposed facility appear to be at acceptable levels.

101 The respondents' planners opined that an MRF is no longer a development that is appropriate to the area. I disagree for reasons discussed later. They dwelt on Council documents in the mid 1990's and Moorebank communications in

the mid 1990's and 2004 (to which I have referred) in connection with the rezoning application indicating that use of an MRF on the Moorebank land would be for a limited period. However, the fact is that the Moorebank land was rezoned in 2005, and confirmed in the LEP 2008, for an MRF without a sunset limitation on use. It is a matter for the approval authority, if it grants approval for an MRF, whether to impose a sunset condition on use.

SECTION 88K CONVEYANCING ACT 1919

102 Section 88K of the *Conveyancing Act* provides:

> **88K Power of Court to create easements**
>
> (1) The Court may make an order imposing an easement over land if the easement is reasonably necessary for the effective use or development of other land that will have the benefit of the easement.
>
> (2) Such an order may be made only if the Court is satisfied that:
>
> (a) use of the land having the benefit of the easement will not be inconsistent with the public interest, and
>
> (b) the owner of the land to be burdened by the easement and each other person having an estate or interest in that land that is evidenced by an instrument registered in the General Register of Deeds or the Register kept under the *Real Property Act 1900* can be adequately compensated for any loss or other disadvantage that will arise from imposition of the easement, and
>
> (c) all reasonable attempts have been made by the applicant for the order to obtain the easement or an easement having the same effect but have been unsuccessful.
>
> (3) The Court is to specify in the order the nature and terms of the easement and such of the particulars referred to in section 88 (1) (a)-(d) as are appropriate and is to identify its site by reference to a plan that is, or is capable of being, registered or recorded under Division 3 of Part 23. The terms may limit the times at which the easement applies.
>
> (4) The Court is to provide in the order for payment by the applicant to specified persons of such compensation as the Court considers appropriate, unless the Court determines that compensation is not payable because of the special circumstances of the case.
>
> (5) The costs of the proceedings are payable by the applicant, subject to any order of the Court to the contrary.
>
> (6) Such an easement may be:
>
> (a) released by the owner of the land having the benefit of it, or
>
> (b) modified by a deed made between the owner of the land having the benefit of it and the persons for the time being having the burden of it or (in the case of land under the provisions of the *Real Property Act 1900*) by a dealing in the form approved under that Act giving effect to the modification.
>
> (7) An easement imposed under this section, a release of such an easement or any modification of such an easement by a deed or dealing takes effect:
>
> (a) if the land burdened is under the *Real Property Act 1900*, when the Registrar-General registers a dealing in the form approved under that Act setting out particulars of the easement, or of the release or modification, by making such recordings in the Register kept under that Act as the Registrar-General considers appropriate, or
>
> (b) in any other case, when a minute of the order imposing the easement or the deed of release or modification is registered in the General Register of Deeds.
>
> (8) An easement imposed under this section has effect (for the purposes of this Act and the *Real Property Act 1900*) as if it was contained in a deed.
>
> (9) Nothing in this section prevents such an easement from being extinguished or modified under section 89 by the Court.

103 Section 88K raises five questions:

(1) Is the proposed easement "reasonably necessary for the effective use or development" of the applicant's land: s 88K(1)?

(2) Is the Court satisfied that the use of the applicant's land "will not be inconsistent with the public interest": s 88K(2)(a)?

(3) Is the Court satisfied that the owner of the servient tenement can be adequately compensated for any loss or other disadvantage that will arise from imposition of the easement: s 88K(2)(b)?

(4) Is the Court satisfied that the applicant has made all reasonable attempts without success to obtain the easement or an easement having the same effect: s 88K(2)(c)?

(5) If the above four preconditions are established, should the Court exercise its discretion to impose an easement: s 88K(1)?

104 The first four matters are conditions precedent to the fifth - the exercise of the Court's power to impose an easement - and therefore are jurisdictional facts. The first matter is objective. The second, third and fourth are subjective: that is, they are concerned with the primary judge's subjective state of mind being a state of "satisfaction". The question on judicial review of a subjective jurisdictional fact is not whether the reviewing court thinks that the state of satisfaction was unreasonable but whether it was so unreasonable that no reasonable body could have had that state of satisfaction; the latter requires something overwhelming: *Notaras v Waverley Council* [2007] NSWCA 333, 161 LGERA 230 at [124].

105 A leading decision on the meaning and application of s 88K is that of Hodgson CJ in Eq in *117 York Street Pty Ltd v Proprietors of Strata Plan No 16123* (1998) 43 NSWLR 504. There the plaintiff sought an easement under s 88K for the tail of a crane (to be used in the construction of a multi-storey building) to pass through the air space of land being common property of a strata title building owned by the defendants. It was proposed to erect the crane on a public street but consent to do so from the relevant consent authority was not forthcoming without owner's consent from the defendants. Hodgson J granted the easement on terms including a term that the defendants, on the written request of the plaintiff or its solicitors, forthwith given their written consent to the making of a development application under the EPA Act for the erection in the public street referred to in the easement and its use within the airspace of the defendants' land in the manner contemplated by the easement: at 522. His Honour held that the grant of an easement is also the grant of such ancillary rights as are reasonably necessary for its exercise or enjoyment; that such ancillary rights include, where appropriate, a right to written consent for the lodging of a development application; that such a right would probably be implied in any event in a statutory grant of an easement; and that to avoid doubt it should be granted expressly: at 521. His Honour emphasised that this did no more than overcome a legal obstacle to the making of a development application, that the defendants were not required to consent to the development itself, and that such a term of an easement leaves the servient owner at liberty to object to the development and to exercise rights under the planning laws. As the easement took effect only upon registration (s 88K(7)), his Honour took the view that it was not appropriate to stay the order creating the easements until appropriate consents had been given (as he had initially contemplated): rather, he ordered that the plaintiff not commence to erect the crane in the public street referred to in the easement until development consent was achieved for such erection: at 522. His Honour held at 508-509:

> *What does "reasonably necessary" mean?*
>
> It is clear that "reasonably necessary" in s 88K(1) does not mean "absolutely necessary", and thus that the requirement may possibly be satisfied even when the plaintiff's land could be effectively used or developed without the easement: *Tregoyd Gardens v Jervis* (Hamilton J, 25 September 1997, unreported); *Goodwin v Yee Holdings Pty Ltd* (Windeyer J, 6 November 1997, unreported); *Re Seaforth Land Sales Pty Ltd's Land [No 2]* [1977] Qd R 317. In my opinion: (1) the proposed easement must be reasonably necessary either for all reasonable uses or developments of the land, or else for some one or more proposed uses or developments which are (at least) *reasonable* as compared with the possible alternative uses and developments; and (2) in order that an easement be reasonably necessary for a use or development, that use or development *with* the easement must be (at least) substantially preferable to the use or development *without* the easement.
>
> The first of those requirements may seem contrary to a statement by Hamilton J in *Tregoyd Gardens* (at 14) that the Court "is not to judge upon the reasonableness of the particular development". However, that statement is qualified by the words "at least in this case". If there are some possible reasonable uses or developments of the land for which a proposed easement is not reasonably necessary, then it seems to me that the easement cannot be "reasonably necessary for the effective use or development" of the land, at least unless there is some *proposed* use or development, for which the proposed easement is reasonably necessary, which is itself a reasonable use or development. It may be that the particular proposed use or development would need also to be *preferable* to the alternatives; but whether or not that it so, it would in my opinion certainly need to be at least reasonable.

106 His Honour held at 511-512

> I turn to the question of illegality. If use of a proposed easement would be absolutely illegal, or (probably) if it were shown that there was no chance of obtaining a consent necessary to make it other than illegal, then this would in my opinion prevent the Court from finding that the easement was reasonably necessary. However, I do not think that the proposed use in this case is absolutely illegal, nor do I think that there is no chance of obtaining consent.

107 In *Khattar v Wiese* [2005] NSWSC 1014, (2005) 12 BPR 23,235 Brereton J held at [32]:

> ...the purpose of s.88K would be defeated if, it being equally efficacious to obtain an easement over either of two lots, it could then be said that it was not necessary for it to be obtained over one or the other of them. In such a situation, the applicant may, within reason, select that lot over which it desires to acquire an easement. This may require the court to undertake some evaluation of the alternatives, in order to be satisfied that the applicant's proposal is reasonable as between them, but this need not involve a precise assessment of the respective advantages and disadvantages of each course, nor necessarily acceptance that the applicant's preferred course is objectively superior to the alternatives, so long as it is reasonable. In this, the court may be guided by the inference that an applicant will ordinarily pursue that course which offers the greatest practical and economic advantages for the development, and incur the least liability to pay compensation: a developer's economic interests will powerfully influence it to select the most reasonable course.

108 In *Rainbowforce Pty Ltd v Skyton Holdings Pty Ltd* [2010] NSWLEC 2, (2010) 171 LGERA 286 a local council granted development consent to Rainbowforce for a high density residential development subject to a condition that it was not to operate until Rainbowforce satisfied the council that a right of carriageway had been created over adjoining land owned by the respondents. Pursuant to s 40 of the *Land and Environment Court Act* 1979, under which the Court may exercise the jurisdiction of the Supreme Court under s 88K of the Conveyancing Act, Preston CJ of LEC granted such an easement of carriageway. His Honour at [68] - [83] made the following points by reference to the authorities about the s 88K(1) power (omitting citations):

(1) It is a precondition of the exercise of the jurisdiction that there must be a finding that the easement sought is reasonably necessary for the effective use or development of the land which will have the benefit of it. A finding that that pre-condition is met is to be determined objectively and involves the making of a value judgment.

(2) The requirement in s 88K(1) is to be satisfied with respect to the particular easement that the Court is considering

ordering to be imposed. Section 88K(3) requires the Court to specify in the order, the nature and terms of the easement. The proposed easement will accord with the easement which the applicant has made all reasonable attempts to obtain, or have the same effect as that easement, so as to satisfy s 88K(2)(c). The Court's power to impose an easement under s 88K(1) would extend to amending the proposed easement of the applicant, including so as to ensure the easement which the Court orders to be imposed satisfies the requirement in s 88K(1).

(3) The "other land" referred to in s 88K(1) is the land of the applicant for the order. The easement may be reasonably necessary for either the effective use or the effective development or both of the applicant's land. The Court's power to impose an easement is enlivened not only if the easement is reasonably necessary for a particular development or use proposed by the applicant but also if the easement is reasonably necessary for any development or use of the applicant's land, which is within the law.

(4) If use or development of land for some planning purpose, such as residential, commercial or industrial purposes, cannot be achieved without the creation and use of an easement for, say, access to the land or services to the land or for drainage of the land, the easement is reasonably necessary for such use or development to be effective.

(5) The easement is to be reasonably necessary for the effective use or development of the land that will have the benefit of the easement; it is not sufficient for the easement to be reasonably necessary for the enjoyment of the land by any of the persons who, for the time being, are the proprietors. Accordingly, evidence as to the particular problems that one of the existing proprietors may have, or the hardship suffered as a result of those problems, would not be relevant.

(6) The requirement that the easement be "reasonably necessary" does not mean that there must be an absolute necessity for the easement. An easement may be able to be imposed although another means of right of way may exist or possibly even when the land could be effectively used or developed without the easement. There needs to be something more than mere desirability or preferability over the alternative means available. In general terms, the greater the burden the stronger the case needed to justify a finding of reasonable necessity.

(7) The proposed easement must be reasonably necessary either for all reasonable uses or developments of the land, or else for some one or more proposed uses or developments which are (at least) reasonable as compared with the possible alternative uses and developments; and in order that an easement be reasonably necessary for a use or development, that use or development with the easement must be (at least) substantially preferable to the use or development without the easement.

(8) The requirement of reasonable necessity does not demand that there be no alternative land over which an easement could be equally efficaciously imposed. It cannot be the intention of the Act that if an easement would be equally efficacious over two pieces of land it cannot be granted over either because it cannot be said that it is necessary for it to be granted over that piece of land as opposed to the other.

(9) The requirement of reasonable necessity is to be decided in light of the present circumstances at the time of the hearing of the application for an order. Hence, it would not matter for the purposes of deciding whether the easement is reasonably necessary that the present circumstances were due to the applicant for the order taking a gamble. However, if such reasonable necessity for an easement as presently exists arose from previous unreasonable conduct from the applicant, that could be a discretionary factor counting against the granting of relief.

(10) The requirement of reasonable necessity can be satisfied notwithstanding that some future action may be required, in addition to obtaining the easement, for the effective use or development of land, such as obtaining some statutory consent. For example, if an easement in the form of a right of carriageway is created, it may be necessary to obtain development consent under the EPA Act to construct the road in the right of carriageway. The requirement in s 88K(1) does not require that all other obstacles to the proposed use or development of the land that will have the benefit of the easement must have been overcome before the Court has power to grant an easement. Only if use of the proposed easement would be absolutely illegal and there was no chance of obtaining a consent necessary to make it other than illegal, would the Court be precluded from finding that the easement was reasonably necessary.

109 In *ING Bank (Australia) Ltd v O'Shea* [2010] NSWCA 71, (2010) 14 BPR 27,317, at [48]-[49] Giles JA (Campbell JA agreeing) held:

> 48 "Reasonably necessary" is a composite phrase, in which the necessity is qualified so that it must be a reasonable necessity. Necessity is quite an absolute concept. The qualification is not of the use or development, so that it must be reasonable, although no doubt reasonableness of the use or development comes into reasonable necessity for that use or development. It is of the necessity.
>
> 49 A qualification which did no more than reduce the necessity to a less absolute level is unlikely, and if that were intended some other word could have been used such as "convenient". Qualification whereby the necessity must be reasonable is apt to, and in my opinion does, permit regard to matters beyond the relatively absolute necessity for the effective use or development of the dominant tenement. It calls for an assessment of that necessity having regard to all relevant matters, according to the criterion of reasonableness. The impact of the easement on the

> servient tenement, and the fact that ordering an easement detracts from the property rights of the owner of the servient tenement, are matters readily to be taken into account in that assessment. It is difficult to see how reasonable necessity for an easement for the use or development of a dominant tenement, as distinct from necessity, can be arrived at without regard to the effect on the enjoyment of the servient tenement and on the property rights of the owner of the servient tenement.

110 In *Tanlane Pty Ltd v Moorebank Recyclers Pty Ltd (No 2)* [2011] NSWSC 1286 at [34] Young JA said he broadly agreed with what Preston CJ LEC said in *Rainbowforce.* On appeal in *Moorebank Recyclers Pty Ltd v Tanlane Pty Ltd* [2012] NSWCA 445 at 155 (**the *Tanlane Case***) the Court of Appeal qualified the fourth *Rainbowforce* point extracted above by saying that the desirability or economic effect of the proposed development on the applicant's land should also be considered. The Court of Appeal at [113] and [154] quoted with approval the passages quoted above from *117 York Street* at 508-509 and *ING*.

111 I have touched upon the *Tanlane Case* earlier. In the *Tanlane Case,* Tanlane sought an easement over Moorebank's panhandle under s 88K. The purpose of the easement was to allow Tanlane to build the road bridge to provide access via Council's Lot 309 from the Tanlane land to Brickmakers Drive (and thence to Newbridge Road), thus allowing it to pursue a planned residential development on its land. Moorebank opposed the imposition of an easement on the basis that the construction of the bridge would prevent it from gaining access to Brickmakers Drive from its own land across the surface of Lot 309 by the Marshall plan, in particular to pursue the development of a planned MRF on its land. The road bridge could not co-exist with the Marshall plan. Tanlane's answer was that the road bridge be built to accommodate ramps (Ramps A) which would run over Lot 310 to the panhandle, thus allowing Moorebank to access Brickmakers Drive. In 2011 Council determined to oppose Moorebank's proposed MRF and stated it would not consent to Moorebank having access over Council land for that purpose. As Council was landowner, its consent was necessary to effect both the ramps proposal and Marshall plan. Moorebank contended that (a) in those circumstances imposition of the easement sought would lead to the economic sterilisation of its land as the ramps proposal could not be effected; (b) the ramps may not have the load bearing capacity to accommodate the trucks it required for the MRF; (c) Tanlane did not require access to Newbridge Road, as alternative access from its land to a public road was available; and (d) in those circumstances the s 88K(1) precondition for the imposition of an easement that the easement be "reasonably necessary for the effective use or development of [the Tanlane] land", had not been made out. As mentioned previously, the primary judge considered the matter in three judgments delivered between 2008 and 2012 and found in favour of Tanlane, imposing an easement on (inter alia) the condition that Tanlane undertake to extinguish the easement if, despite the best endeavours of the parties, Moorebank was unable to obtain access to Newbridge Road by means of the ramps proposal. Moorebank appealed. The Court of Appeal set aside the order for the undertaking as being beyond power and, subject to a s 88K(4) order for compensation and assessment of compensation, said it would make an order imposing the easement in favour of Tanlane on the other terms ordered by the primary judge but, importantly, adding the following terms with the object of protecting Moorebank's interests under the ramps proposal, at [256]:

> (ca) The bridge is to comply with AS5100/Bridge Design Code and have the load bearing capacity required by SM1600 referred to in cl 6.2 of Part 2 of the Code.'
>
> (cb) The bridge design is to be sufficient to accommodate access ramps to and from the servient tenement themselves having the load bearing capacity required by SM1600.

112 The Court of Appeal recognised the following principles in relation to s 88K(1):

(1) "reasonably necessary" for the effective use or development of the applicant's land does not mean absolute necessity but means something more than mere desirability or preferability over the alternative means available. The correct approach was stated in *117 York Street*: at [154] (quoted above). This requirement was satisfied because (inter alia) there was no other viable alternative access to the proposed development on Tanlane's land other than through the imposition of an easement over Moorebank's panhandle: at [164], [204].

(2) If use or development for some planning purpose (such as residential, commercial or industrial purpose) cannot be achieved without the creation of the use of an easement for, say, access to the applicant's land, the easement is necessary for such use or development to be "effective" subject to consideration of the development's desirability or economic effect: at [155].

(3) In a case "where the easement is said to be necessary for the commercial development of the land, it is sufficient...to show that the proposed development is one which is appropriate to the area in which the land is situated and is at least an economically rational use of the land": at [155]. Use or development of the Tanlane land for a residential planning purpose could not be achieved without the creation and use of the easement for access appropriate to the area and was at least an economically rational use of the Tanlane's land.

(4) That is not to say an easement will always be granted in these circumstances because consideration is required of the effect of the grant of the easement on the servient tenement. The greater the burden on the servient tenement, the stronger the case needed to justify a finding of reasonably necessity. If the effect of construction of an easement

was to effectively preclude a reasonably available development or use of the servient tenement, then it would require a strong case of reasonable necessity before the easement was imposed: at [157]. Ultimately, the question whether the easement is reasonably necessary for the effective use or development of the applicant's land will be determined by an evaluation of the above factors not in isolation but in conjunction with each other: at [159].

(5) For the easement to be "reasonably necessary" for that use and development, as pointed out in *117 York Street*, the development with the easement must be substantially preferable to development without the easement. This is particularly the case if the grant of the easement would raise significant detriment to the servient tenement: at [163].

(6) The effect of the grant of the easement to Tanlane would put it out of Moorebank's power to itself obtain a s 88K easement from Council to implement the Marshall plan and then proceed with a development application with access to Brickmakers Drive as set out in the Marshall plan. However, it would be left with the opportunity to take similar steps in relation to the ramps proposal, which, if anything, would seem to hold better prospects of success than the Marshall plan. In these circumstances, the Tanlane easement was reasonably necessary for the use and development of the Tanlane land: at [203] - [204].

113 The Court of Appeal's decision, as the latest appellate authority, is important not only for the principles which it recognises, but also for application of the principles to the facts of the case:

(a) Tanlane was granted an easement for access over Moorebank's panhandle to enable Tanlane to construct a road bridge for which it had obtained development consent to construct but not use.

(b) The Court of Appeal attached terms to the order imposing the Tanlane easement which required both the bridge and its access ramps to have the load bearing capacity required by SM1600 referred to in cl 6.2 of Part 2 of AS5100/Bridge Design Code. This was in order to accommodate the trucks required for Moorebank's proposed MRF on its land: at [177] - [185], [256].

(c) Use and development of the Tanlane land for residential purposes was held to be an "effective use and development" within s 88K(1) because,

(i) the Tanlane land was rezoned for that purpose in 2008;

(ii) DCP 2008 approved at the same time referred to a proposed subdivision to a maximum of 216 dwellings on Tanlane's land and the social and environmental benefits to be derived from the subdivision; and

(iii) when a comparison is made between a subdivision in accordance with the DCP 2008 and a non conforming use pursuant to existing use rights for excavation and recycling, it must follow that the proposed development is at least reasonable compared to the alternative: at [160] - [162].

114 I do not think that there is no chance of obtaining approval for the proposed MRF on the Moorebank land. On the contrary, if it is necessary to go further, I consider that Moorebank has a substantial prospect of obtaining such approval if appropriate access is provided. The Moorebank land is zoned to permit an MRF, the Minister has paved the way toward a Part 3A approval by recently making an amended Part 3A declaration, and the consent authority is not the Council but the PAC, which is not bound by Council policies including as those contained in the 2008 LEP or the Development Control Plan.

115 Planning witnesses for the respondents expressed an opinion that if development consent were granted for an MRF on the Moorebank land, it would only be for a short or medium period because of the reference to 2018 in cl 11 of Schedule 1 of the 2008 LEP. Apart from the fact that the Minister and PAC are not bound by the LEP in the Part 3A context, I disagree that cl 11 has anything to say about restricting the period of the use. The 2018 reference only means that development consent has to be obtained by then.

CONSIDERATION

116 In my opinion, s 88K should be construed in accordance with the principle of statutory construction that statutes enacted by the same legislature "are to be construed so far as possible to operate in harmony and not in conflict": *Commissioner of Police v Eaton* [2013] HCA 2, (2013) 87 ALJR 267 per Gageler J. It is harmonious to construe s 88K as far as possible so that it does not require determination or consideration of matters that are required to be determined or considered by an approval authority under State planning laws.

Section 88K(1): reasonably necessary for the effective use and development of the Moorebank land

117 In summary, Moorebank submits that:

(a) as Council accepts, the easements sought by Moorebank are necessary for all reasonable uses of the Moorebank land (putting aside whether those uses include the MRF) and this is a sufficient basis on which to grant the easements subject to a Part 3A owner's consent term;

(b) alternatively, the effective use and development of the Moorebank land as an MRF satisfies s 88K;

(c) Part 4 is ousted because of Moorebank's Part 3A application or proposed amended Part 3A application by s 78R(1) of the EPA Act, therefore a Part 4 development consent for construction and use of the ramps would be unlawful, therefore it is futile to impose a Part 4 owner's consent term;

(d) in any event, as a matter of discretion, a Part 3A owner's consent term is preferable to a Part 4 owner's consent term.

Council offer

118 During the hearing Council's made an open offer by letter dated 28 May 2013. Although I do not think it matters, I doubt that the terms of the offer were sufficiently complete that it was capable of acceptance so as to form a contract. It was changed by a later agreement that compensation payable to Council for the easements under s 88K(4) is $25,000 and by Council's subsequent proposed short minutes of order. The essential element of the offer is that the easements be granted subject to a Part 4 owner's consent term and not subject to an unqualified Part 3A owner's consent term.

119 In summary, Council's position as expressed in the offer is as follows:

(a) Council accepts it is appropriate that the Moorebank land have road access to Brickmakers Drive over Lots 309 and 310, and that the road access, namely the ramps, have the load bearing capacity required by AS5100/Bridge Design Code. That position is consistent with Council's overall vision for the precinct, that access to all areas east of Brickmakers Drive should be via Lot 309.

(b) On that basis, Council consents to orders under s 88K imposing easements for access in favour of the Moorebank land over Lot 309 and part of Lots 308 and 310 on conditions that: (i) the easements do not prejudice the development plans or interests of other landowners east of Brickmakers Drive, particularly Tanlane; (ii) the easements are not imposed on the footing that they are reasonably necessary for the purpose of the proposed MRF, although Council accepts that, if the MRF is approved and proceeds, that is most likely what it will be used for and will not be seeking anything in the design of the ramps that would preclude their use in connection with the proposed MRF; and (iii) Council is not compelled to give landowner's consent to the lodgement of an (extended) Part 3A application in respect of the MRF. Council is prepared to write to the Department of Planning in the terms described in its letter of offer so as to enable the Part 3A MRF application to proceed.

(c) Council's approach takes up the Court's suggestion during the hearing that the issue of the desirability or appropriateness of the development of the Moorebank land for the proposed MRF, and the issue of the desirability or appropriateness of Moorebank having access to Brickmakers Drive from its land over Lot 309 and part Lot 310, can and should be treated as separate issues.

(d) It will be necessary for planning approval to be granted under either Part 3A or Part 4 of the EPA Act. If, as Council submits, the proposed ramps are not part of the development comprising the Part 3A project, then Part 4 applies and the construction of the ramps is a development that could not be carried out without development consent on any of Lots 308-310 (see the land use table in LEP 2008, which specifies that development for the purpose of "roads" is permitted with consent under both the RE2 and the E2 zonings). Construction of the ramps without development consent would amount to the carrying out of unauthorised development in contravention of s 76A(1) of the EPA Act and potentially would be an offence under s 125 of the EPA Act.

(e) There is no justification for orders (i) imposing an easement other than in terms of Council's offer, and (ii) compelling it to give owner's consent to the (extended) Part 3A application in respect of the MRF.

(f) Council does not concede that an easement for all uses of the Moorebank land, whatever its condition, is "reasonably necessary" for the purposes of s 88K(1) such that the only question before the Court is what conditions ought to be imposed on such an easement. Rather, Council offers specific easements subject to conditions, including that it is not compelled to give landowner's consent to the Part 3A application. It is the fact of that offer - which provides a way for Moorebank to obtain access to Brickmakers Drive over Lots 309 and 310 - that means the easements on different terms sought by Moorebank are not reasonably necessary for the purposes of s 88K(1).

(g) Because Moorebank seeks an order compelling Council to give landowner's consent to the lodging of a Part 3A application for the MRF, it must be a part of Moorebank's case that the MRF is a "reasonable" or "effective" use or development of the Moorebank Land and that it is "appropriate to the area in which (the

Moorebank Land) is situated" (*Tanlane Case* at [155]). Council cannot accept that proposition (particularly in light of the resolutions it has passed) and contests it. Council emphasises that this does not mean it will frustrate the proposed development of the ramps: Council accepts that ramps compliant with AS5100/Bridge Design Code, which will be capable of carrying Moorebank's trucks for the MRF, should be built and that Moorebank should have an unrestricted right of carriageway on them.

120 There was a counter-offer by Moorebank including provision for Moorebank to amend its Part 3A application to include ramps and a traffic control facility at the intersection with Brickmakers Drive, that Council give owner's consent to lodgement of a part 3A access application and that Moorebank agrees to pay Council compensation in the sum of $25,000. Council did not accept the counter-offer, although it agreed to the $25,000 compensation.

121 Subsequently, Council accepted that if a Part 4 development consent for the ramps were not forthcoming within twelve weeks after lodgement of a development application (being the time Council would require to process the application), a Part 3A owner's consent term would then be reasonably necessary for the effective use of the Moorebank land.

Principal issues

122 Council submits that as the case has evolved, the principal issues are now:

(a) whether the easements offered by Council, if accepted by Moorebank, would enable the "effective use or development" of the Moorebank land (to use Moorebank's language, whether it is "legally and practically workable"). If the answer is "yes", the appropriate course would be for the Court to impose the easements in the terms offered by the Council; and

(b) if the answer to (a) is "no", whether the development of the Moorebank land for an MRF is a "reasonable development" or is "appropriate to the area in which the land is situated", such that it would be appropriate and not inconsistent with the public interest for the Court to order that Council give landowner's consent to lodging of the Part 3A application;

123 As to the first principal issue identified by Council, Council (supported by Tanlane) submits that Moorebank is able to obtain access and achieve "effective use and development" of its land by accepting Council's offer and therefore the easements on the terms sought by Moorebank are not "reasonably necessary".

124 I do not accept the submission. It would give a respondent a power to veto an applicant's proposal in favour of the respondent's proposal. I do not accept that an applicant under s 88K must fail unless it accepts the respondent's proposal. Within reason, an applicant is entitled to select between alternative courses, although this may require the court to undertake some evaluation of the alternatives in order to be satisfied that the applicant's proposal is reasonable between them: *Khattar v Wiese* at [32]. The court's power extends to changing the easement proposed by the applicant, including so as to ensure that it complies with s 88K(1): *Rainbowforce* at [69]. Similarly, the court is not bound by a competing easement proposed by the respondent. The court has a discretion as to the scope and terms of any easement imposed and is not constrained by any party's proposal. Importantly, the easements offered by Council are identical to the easements sought by Moorebank. They only disagree on the ancillary owner's consent term for the making of a ramps approval application. In my evaluation, Moorebank's proposal is reasonable as between that proposal and the respondents' proposal. In circumstances where it is open to Moorebank under the planning laws to seek a Part 3A owner's consent (particularly where, as elsewhere considered, s 75R(1) of the EPA Act ousts Part 4 while Moorebank's expanded Part 3A application including access is on foot), I do not consider that s 88K(1) is offended by Moorebank rejecting an offer that in consequence of the imposition of a Part 4 owner's consent term requires it to give up that Part 3A course, backtrack, and go down the Part 4 course. This view may perhaps be fortified if one assumed a situation, which is no different in principle, where the owner of Lots 309 and 310 was not Council but insisted that Moorebank must seek ramps approval from Council under Part 4 rather than proceeding under Part 3A.

125 As to the second principal issue identified by Council, Council (supported by Tanlane) submits that an MRF is not an "effective development" of the Moorebank land because it is not "appropriate to the area in which [the Moorebank] land is situated": *Tanlane Case* at [155]. Reliance is placed on the opinion of the respondents' planning experts that an MRF is inconsistent with the residential development of the area in accordance with Council's long term planning objectives.

126 As the respondents accept, access via the road bridge is necessary for any development of the Moorebank land and the proposed easements are reasonably necessary for "all reasonable uses" of the Moorebank land - leaving aside whether reasonable uses include an MRF - in order to permit access via ramps and the road bridge to Brickmakers Drive. And, as the Court of Appeal required in the *Tanlane Case*, Council also accepts that the road bridge and ramps should have the load capacity required to carry heavy trucks that would service the proposed MRF. This is consistent with Council's vision for a decade that access to all lands in the precinct east of Brickmakers Drive should be via the

road bridge on Lot 309. In my opinion, that is sufficient to establish that the easements sought are reasonably necessary for the effective use and development of the Moorebank land. It satisfies the first part of the first test in *117 York Street* at 508 that a proposed easement must be reasonably necessary for "all reasonable uses or developments of the land". Planning approval is necessary for construction and use of the ramps whether under Part 3A or under Part 4. In my opinion, whether a Part 3A owner's consent term or a Part 4 owner's consent term (or both) is imposed is not relevant to whether the easements are "reasonably necessary for the effective use and development of" the Moorebank land. Rather, I think it is relevant to the Court's discretion.

127 If I am in error and s 88K(1) has to be considered by reference to the MRF, then in determining whether the MRF is an "effective use and development", the threshold set in the *Tanlane Case* at [155] applies. It is sufficient to show that the proposed development is one which is "appropriate to the area" in which the Moorebank land is situated and is "at least an economically rational use of the land". In the *Tanlane Case* there was no development application by Tanlane for residential development of its land and it was being used for an MRF. Nevertheless, the Court of Appeal concluded that the future use and development of the Tanlane land for residential purposes was an effective use and development of the land, relying on (a) its residential zoning in 2008; (b) DCP 2008 which referred to the possibility of redevelopment of the Tanlane land for residential and business uses; and (c) the fact that when a comparison is made between a subdivision in accordance with the DCP and a non-conforming use pursuant to existing use rights for excavation and recycling, it must follow that the proposed development is at least reasonable compared to the alternative: at [160] - [162].

128 Whether a development for which an easement is required is appropriate to the area calls for an evaluative judgment. The respondents' planners opined that an MRF is not appropriate for the area given its residential character and the potential impacts of the MRF. My evaluation is that an MRF is appropriate to the area at the present time having regard to the following:

(a) The Moorebank land was singled out in the area for rezoning as an MRF in 2005 and this was confirmed as recently as the LEP 2008 - notwithstanding that the DCP providing for residential development of the Tanlane land was made at the same time.

(b) Until 2011 Council apparently regarded an MRF on the Moorebank land as appropriate to the area not only because of the introduction of the 2005 zoning and 2008 confirmation of the zoning, but also in other ways by -

(i) making it a condition of Tanlane's 2006 development consent for construction of the road bridge that it be designed to carry the load of heavy trucks required for the MRF; and

(ii) consenting in 2009 to access over Lots 308 and 309 for the purpose of Moorebank's Part 3A MRF application.

(c) The Moorebank land, which is the site of a former tip, is clearly compatible with the current industrial activities on the Tanlane land, which it adjoins.

(d) The present residential development in the area is on the other side of Brickmakers Drive.

(e) the Moorebank land is screened by the existing vegetation, which has been protected through the Boral site rezoning.

(f) Any future development of the Moorebank site will need to take into consideration the environmental, traffic, drainage, acoustic and visual impacts.

(g) The Court does not look at the likelihood of the Part 3A MRF application being granted. However, the Court can determine whether there is no chance of it being granted and can consider whether an MRF is desirable compared with other possible uses. It is clear that it cannot be said that there is no chance of obtaining a Part 3A MRF approval. That makes it more difficult to say that an MRF is inappropriate to the area. I also think that an MRF is desirable compared with other possible uses under the zoning.

(h) in the *Tanlane Case*, the Court of Appeal provided for ramps for Moorebank's MFR without any suggestion that it was futile because an MRF was not appropriate for the area and therefore Moorebank could not obtain a s 88K easement.

129 Has anything much changed since the 2008 zoning of the Moorebank land for an MRF? Mr Mitchell, Tanlane's planning witness, proffered in evidence that three circumstances had changed since the 2008 LEP:

(a) There has been significant residential development in Georges Fair (the Boral land west of Brickmakers Drive). However, as Mr Kennan said, the zoning of Georges Fair for that purpose has existed since 2005 and the development is that which was then expected.

(b) Part of the golf course south of the Moorebank land has been zoned residential. However, as Mr Kennan said, if it was thought to be inconsistent with the MRF zoning for the Moorebank land, one would have expected the latter to be rezoned at the same time.

(c) A development application has recently been lodged for a marina on the Tanlane land. I do not think any conclusion of inconsistency should be drawn simply from that fact.

130 Council evidently did not think an MRF was inappropriate for the area until at least 2011 when it resolved to oppose it. The Court of Appeal in the *Tanlane Case* noted that this was "prompted by agitation from local residents": at [48]. The Court of Appeal found it unnecessary to deal with the suggestion that it was inspired by opposition from Tanlane and Boral: at [50]. The fact that Council was responsive to local agitation does not establish that objectively anything has changed such that the MRF has become inappropriate for the area. I accept that residential development in the area is likely to expand in the future. The time may come when an MRF on the Moorebank land may be inappropriate to the area. This may (or may not) influence an approval authority, if it approves an MRF on the Moorebank land, to impose a sunset term on the use of the MRF, but that is not a matter into which I have to enter in these proceedings.

Other issues

131 Council submits that an MRF is not reasonably necessary for the effective use of the Moorebank land because of unacceptable impacts of the Ramps B proposal compared with Ramps A. Council relies upon the evidence of its experts in flood impacts, traffic impacts and ecology. This is contested by the applicant's experts. I have considered the expert evidence earlier. An owner's consent term, if imposed, has nothing to say about whether Ramps B or Ramps A, or a variant, will ultimately find favour with the approval authority.

132 Tanlane submits that the MRF proposal is not an economically rational use of the land if limited in time. Mr Kennan agreed in cross-examination that if approval for an MRF was short term (5 years), it would not be an economically rational use of the land. So much may be accepted. If approval were granted for such a short period of use, I have no doubt that the MRF would not proceed because it would not be economically rational. If approval were granted for a substantially longer period that would make it economically rational, then the objection that the MRF would not be economically rational disappears.

133 If the focus has to be on the MRF, "reasonable necessity" under s 88K(1) cannot be established if Moorebank has "no chance" of obtaining approval for an MRF: *117 York Street* at 511-512. This stops well short of a merits review of the MRF application that an approval authority would embark upon. In my opinion, it cannot be said that Moorebank has no chance of obtaining a Part 3A approval for an MRF on its land. I did not understand the contrary to be submitted. The zoning of the Moorebank land permits an MRF with consent and Moorebank has a body of expert opinion available to support its Part 3A application.

134 The respondents' submissions concerning the MRF implicitly assume that a Part 3A approval for the MRF will be granted and do not confront the prospect of conditions being attached to the approval that appropriately address any adverse impacts. PAC's function is to determine whether approval for the MRF should be granted. It is virtually certain that, if approval is granted, it will be subject to conditions that PAC regards as appropriate to deal with potential impacts of the MRF. It is therefore unsafe to conclude that there will be unacceptable adverse impacts: *Annwrack Pty Ltd v Williams*, NSWSC, 8 February 1989, unreported, which was cited in *117 York Street* at 523. In *Annwrack* the defendant's land was burdened by an easement of carriageway in favour of the plaintiff's land. Waddell CJ in Eq ordered the defendants to consent to the plaintiff making a development application seeking consent to its use of the defendant's land and to enlargements and extensions of that use. The defendants had objected that what the plaintiff proposed would intensify the use of the plaintiff's land and increase the interference experienced by the defendants. Waddell CJ in Eq rejected the objection at 10-12:

> I pointed out to the parties that the defendants' submission assumed that the plaintiff's application would be granted and that, if granted, there would be no condition imposed which might safeguard the interests of the defendants. It is possible that the application might be refused, or that it might be allowed only in part, and one would like to think probable that conditions would be imposed which would prevent undue interference with the manner in which each of the defendants is entitled to enjoy their respective properties and to exercise their rights of access to and from Mulgoa Road.
>
> Having regard to these considerations, it is unsafe to conclude that any of the detriments which this Court can take into account in relation to a claim of excessive user will in fact occur because they may be prevented by the way in which the council deals with the development application. This being so it cannot be said that the fears about the future which the defendants have provide any justification for refusing to give their consent to the application.
>
> So far as a continuance of the present detriments is concerned, if the application is granted, these may well be modified by conditions imposed by the council. If the application is refused they will have suffered no adverse effects by having given their consent to the application. On this reasoning no case has been made out to justify the refusal of the defendants to give their consent to the making of the development application so far as it affects their respective lands. In this respect it should be pointed out that the consent sought is only to the making of the application. There is no justification for regarding such a consent as being a consent to the development proposed, nor is this suggested. The defendants would be at liberty to object to the development application and in this respect to exercise such rights as are given to them by the planning laws.

135 The respondents submit that an MRF on the Moorebank land is not an effective development because:

(a) In *117 York Street* at 508 Hodgson J said "the proposed easement must be reasonably necessary either for all reasonable uses or developments of the land, or else for some one or more proposed uses or developments which are (at least) reasonable as compared with the possible alternative uses and developments";

(b) therefore there is an onus on Moorebank to show that there is not some other commercial or industrial uses available that are preferable to an MRF;

(c) although an MRF is the only commercial or industrial use permissible with consent under the current zoning, Moorebank could have secured some other preferable commercial or industrial use by (i) applying for a rezoning, or (ii) seeking a Part 3A declaration and making a Part 3A application referable to that preferable use as a result of which the Minister would not be constrained by the current zoning (s 75R(3) EPA Act);

(d) such an application would have substance because there is a 2002 site audit by the Environment Protection Authority which indicates that the site is suitable for commercial/industrial use including a concrete recycling facility; on 27 March 2013 Council resolved to investigate alternative zoning options for the Moorebank East precinct to better reflect the emerging recreation and residential precinct and the environmental value of the area; and on 29 May 2013 (during the hearing) Council resolved to initiate an amendment to LEP 2008 to rezone the Moorebank land from E2 to RE2 and remove item 11 from Schedule 1 and to forward a planning proposal to the Department seeking gateway determination.

136 I do not accept the submission. In my view, s 88K(1) does not require an applicant for an easement to go to the extraordinary lengths of seeking to change the law through a rezoning or seeking to persuade the Minister to disregard the existing zoning and make Part 3A declaration for a development that is not permissible without consent or is prohibited under the existing zoning. The outcome of Council's resolution during the hearing to initiate an amendment to the zoning is unpredictable but it is known that the Department, which would be involved in a zoning amendment, appears to be somewhat supportive of the Part 3A application.

137 Tanlane submits that Moorebank has not established that the grant of the easements is reasonably necessary because there is no reason to conclude that it could not achieve access by entering into a voluntary planning agreement with Council for access via the proposed road bridge without the need for easements. I do not accept the submission. Until the hearing before me the prospect of any voluntary agreement with Council seemed unlikely given that Council's opposition to the MRF was such that it did not disassociate access for the MRF from access otherwise, as its offer during the hearing did. And the Court of Appeal in the *Tanlane Case* thought it very unlikely that Council would give owner's consent to a Part 4 application for ramps and it was not until the hearing before me that that consent was forthcoming. It is unnecessary to go further, but the 2008 deed between Council, Tanlane and Boral giving Tanlane exclusive rights of occupation to Lot 309 may contractually restrict Council from voluntarily agreeing to give Moorebank access over Lot 309 without s 88K easements.

138 Tanlane makes the following additional submissions as to why an MRF is not an effective development within s 88K(1):

(a) If the planning authorities were to refuse the Part 3A proposal on its merits, it must follow that the development is not appropriate (nor is it in the public interest); so having regard to the complexity of the proposal and the uncertainty of whether the project will be approved, the Court is not in a position to find that s 88K(1) is satisfied. I do not accept the submission. I am in a position to pass judgment on the material before the Court.

(b) Moorebank proposes to amend its Part 3A application but has not yet done so; having regard to the impacts or potential impacts of the proposal referred to by the experts, the Court cannot be satisfied of the matters in s 88K(1). I disagree for the same reason.

(c) The necessity that Moorebank relies upon is the necessity for owner's consent to permit the proposal to be extended under Part 3A to include access over Lots 308, 309 and 310; this is not a necessity within the meaning of s 88K(1); in the circumstances, Moorebank is seeking to have the Court exercise its discretion for an improper purpose and the grant of relief is beyond power. I do not accept the submission. Reasonable necessity under s 88K(1) is not governed by the scope of an ancillary owner's consent term. I can see no improper purpose.

(d) The fact that the Ramps A will only give access after Tanlane builds the bridge or if Moorebank builds part of the bridge does not establish necessity; nor does the fact that Moorebank cannot immediately obtain access establish necessity. I do not understand the submission and therefore do not accept it.

Part 4 owner's consent term

139 The respondents submit that:

(a) The Part 4 route is either open or could be made open by Moorebank amending its Part 3A application so as not to include access over Council land and ramps works and use, and that a consequence of it being open is that there is no basis for compelling Council to grant owner's consent to the lodgement of the (extended) Part 3A application.

(b) Any impediment to the Part 4 route is one of Moorebank's own making. Therefore, it cannot satisfy the reasonable necessity requirement for the imposition of an ancillary order that the Council, as landowner, consent to its extended Part 3A application. Moorebank's preference is to have the ramps approved under Part 3A rather than Part 4, but that preference cannot justify an order that is required to meet the test of reasonable necessity.

(c) There are sound practical reasons why the Part 4 route is preferable to the Part 3A route for considering the planning merits of the proposed ramps:

(i) The independent experts retained by Council have considered the planning issues carefully, as is apparent from their reports and joint reports.

(ii) The planning issues in relation to the ramps will require consideration of its interaction with the bridge to a greater or lesser degree. Council has granted a development consent to Tanlane in respect of the bridge. If that consent needs to be further modified (for instance, to increase the width of the bridge) to achieve a better design or traffic solution, that could better be achieved under Part 4 than Part 3A.

(iii) Council is the owner of the land on which both the bridge and ramps are to be situated. Some of the solutions to the traffic and design issues might require additional access to Council land (that is, beyond the boundaries of the easement sought). There is greater flexibility in dealing with the design issues (particularly the design issues relating to the merger problem identified by the traffic experts) if it proceeds under Part 4.

(d) Because the Part 4 route offered could be taken and is preferable, an order is not "reasonably necessary" for a Part 3A owner's consent term and in any event should be refused as a matter of discretion.

140 Moorebank submits that there are eleven objections to the Council's proposal for a Part 4 owner's consent term that make it unworkable both legally and practically.

Moorebank's first and second objections: lawfulness

141 First, Moorebank submits that a Part 4 owner's consent term is futile because, for two reasons, a Part 4 development consent for construction and use of the ramps would be unlawful and invalid: *Chambers v Maclean Shire Council* [2003] NSWCA 100, (2003) 57 NSWLR 152 at [37] - [38].

142 The first reason is said to be that s 75R(1) of the EPA Act ousts Part 4 in respect of an "approved project", which includes steps taken in determining a project application. Section 75R relevantly provides:

> **75R Application of other provisions of Act**
>
> (1) Part 4 and Part 5 do not, except as provided by this Part, apply to or in respect of an approved project (including the declaration of the project as a project to which this Part applies and any approval or other requirement under this Part for the project).
>
> ...
>
> (3) Environmental planning instruments (other than State environmental planning policies) do not apply to or in respect of an approved project.
>
> ...

143 Moorebank submits that three alternative ways lead to s 75R(1) ousting Part 4:

(a) First, access over Council's land has always been part of Moorebank's Part 3A MRF "project" on the proper construction of the Minister's 2005 Part 3A project declaration and the letter incorporated by reference in it. It is just the means of access that has changed over time (first Newbridge Road, then the Marshall plan, then the ramps).

(b) Secondly and alternatively, s 75B(3) deems access over the Council land to be part of its Part 3A MRF project because that project is part of a "development" and access over the Council land is the other part of the same development.

(c) Thirdly, and alternatively, access over the Council land will become part of the Part 3A project when Moorebank amends its Part 3A application to include Ramps B via a preferred project report under s 75H(6),

which its evidence at the hearing indicates that it will do this month.

(d) Therefore, access over the Moorebank land is ((a) above), or is taken to be ((b) above), or will be ((c) above), an "approved project" and Part 4 of the EPA Act does not or will not apply to or in respect of the approved project: s 75R(1), (3); *Rivers SOS Inc v Minister for Planning* [2009] NSWLEC 213, (2009) 178 LGERA 347 at [102] - [103]. Therefore, by s 75R(1), a Part 4 development application for construction of access works over Council's land under Part 4 of the EPA Act would be unlawful.

144 Section 75B of the EPA Act relevantly provides:

> **75B Projects to which Part applies**
>
> **(1) General**
>
> This Part applies to the carrying out of development that is declared under this section to be a project to which this Part applies:
>
> (a) by a State environmental planning policy, or
>
> ...
>
> **(3) Related development**
>
> If only part of any development is a project to which this Part applies, the other parts of the development are (subject to subsection (4)) taken to be a project to which this Part applies. The development is to be dealt with under this Part as a single project.
>
> ...
>
> **(5) Amendment or revocation of declaration**
>
> The declaration of a project may be amended or revoked at any time (including before or after an approval for the project is given under this Part).

145 I do not accept Moorebank's first two ways. They turn on the construction of the Minister's 2005 Part 3A declaration and Moorebank's 2006 Part 3A application, in particular how they describe "the development". In my opinion, they describe the development as being only on the Moorebank land (Lot 6): access over the Council land is separate.

146 I accept Moorebank's third way. The Minister's 2013 amended declaration overcomes a potential obstacle raised during the hearing before me as to whether Moorebank's Part 3A application could only be effectively amended to include access over the Council land and Ramps B if the Minister's 2005 declaration was likewise amended. I accept that Moorebank will shortly amend its Part 3A application to the same effect as the amended Minister's declaration. The question then is whether a Part 4 owner's consent term would be futile because, as Moorebank submits, s 75R(1) would make a Part 4 consent for the ramps unlawful.

147 The term "approved project" in s 75R(1), by reason of the words in brackets, is not limited to the project as approved but extends to the whole process of approval including the Minister's declaration that the project is a project to which Part 3A applies and the Minister's approval of the project. This extended meaning of s 75R(1), compared with s 75R(3), was noted in *Rivers SOS Inc v Minister for Planning* [2009] NSWLEC 213, (2009) 178 LGERA 347 at [102] - [103] per Preston CJ of LEC:

> 102. I do not agree that the term "approved project" in s 75R(3) bears the extended meaning it is given in s 75R(1).
> ...
> 103. The legislative draftsperson did not include in subs (3) the words in brackets inserted after "approved project" in subs (1). The words in brackets cause the term "approved project" to include not only the project as approved, but also things that are not the project itself but relate to the process of approval of the project, such as the declaration that the project is a project to which Pt 3A applies and the approval of the project by the Minister. The extension of the meaning of "approved project" in subs (1) beyond the definition of "approved project" in s 75A must be taken to be deliberate and intended to extend the exclusory operation of subs (1) in respect of Pt 4 and Pt 5 of the Act. Similarly, the non-inclusion of the words in brackets found in subs (1) in subs (3) should also be seen to be deliberate and intended to allow the term "approved project" to operate only as defined in s 75A and not have the extended meaning found in subs (1). Accordingly, on this construction, s 75R(3) does not cause SEPPs to apply to any of the things referred to in the words in brackets in subs (1), including to the approval of the project by the Minister.

148 The respondents submit that s 75R(1) only ousts Part 4 of the EPA Act from, as it were, the four walls of the Part 3A application such that, assuming there will be a Part 3A amended application for access over the Council land, there can still be a concurrent lawful Part 4 development application for construction and use of the ramps. I do not accept the submission. Section 75R(1) should be construed in light of the aim of Part 3A to transfer development control of "approved projects" to the State. On the respondents' submission there could be a Part 3A application to the Minister for major project approval of a development and a concurrent Part 4 development application to the local council for the same development. In my view, that is an unlikely legislative intention having regard to the aim of Part 3A and the text of s 75R(1). Section 75R(1) excludes the application of Part 4 not only "to" but also "in respect of" an "approved project" (which, as discussed earlier, has an extended meaning). A Part 4 application for the same project or part of the same project, would be an application "in respect of" the project. For these reasons, I am of the opinion that, by reason of s 75R(1), the amended Part 3A application would make unlawful a purported Part 4 application and consent for construction and use of the ramps.

149 However, it would not make unlawful a Part 4 owner's consent term of the easements. If, in the exercise of the Court's discretion, a Part 4 owner's consent term and no unqualified Part 3A owner's consent term were imposed, Moorebank would have no option if it wished to proceed with its Part 3A MRF application but to ensure it did not include access over the Council land and ramps work, thus avoiding s 75R(1) and enabling a lawful Part 4 consent for construction and use of the ramps to be made. It may also have to arrange for the Minister to amend the amended Part 3A declaration in the same way. However, I would not exercise the Court's discretion in this way for reasons expressed later in this judgment.

150 The second and alternative reason, Moorebank submits, why Council could not lawfully consent to a Part 4 development application for the ramps is that even if s 75R(1) does not preclude Part 4, as soon as Moorebank made a Part 4 application for ramps for the purpose of an MRF the ramps would become "State significant development" and under s 89D(1) of the EPA Act the Minister would become the consent authority. It is said that the ramps would be "State significant development" under cl 8(1)(b) of the State Environmental Planning Policy (State and Regional Development) 2011 (**SEPP**) because the ramps application would be to permit "development for the purpose of resource recovery on recycling facilities that handle more than 100,000 tonnes per year of waste" being the "purpose" nominated in cl 23(3) of Schedule 1 of the SEPP. Moorebank submits that the ramps cannot be said to be for any purpose because the ramps must accommodate Moorebank's trucks and Moorebank's sole purpose in making the application would be for an MRF. Moorebank submits that the line of authority represented by *Argyropoulos v Canterbury Municipal Council* (1988) 66 LGRA 202 does not assist because here because unlike the 2008 LEP (which the SEPP overrides to the extent of any inconsistency: s 36 EPA Act) there is no definition of "road".

151 Sections 89C and 89D of the EPA Act provide:

> **89C Development that is State significant development**
>
> (1) For the purposes of this Act, State significant development is development that is declared under this section to be State significant development.
>
> (2) A State environmental planning policy may declare any development, or any class or description of development, to be State significant development.
>
> ...
>
> **89D Minister consent authority for State significant development**
>
> (1) The Minister is the consent authority for State significant development.
>
> **Note**. Section 23 enables the Minister to delegate the consent authority function to the Planning Assessment Commission, the Director-General or to any other public authority.
>
> ...

152 The SEPP provides:

> **8 Declaration of State significant development: section 89C**
>
> (1) Development is declared to be State significant development for the purposes of the Act if:
>
> ...
>
> (b) the development is specified in Schedule 1 or 2.
>
> ...
>
> **Schedule 1 State significant development-general**
>
> **23 Waste and resource management facilities**
>
> (3) Development for the purpose of resource recovery or recycling facilities that handle more than 100,000 tonnes per year of waste.

153 I do not accept Moorebank's second reason for its unlawfulness submission. Under the 2008 LEP, roads are permissible on the Council land and the ramps are roads. *Argyropoulos* is indistinguishable. In that case the question was whether a use of land as a road in a residential zone was permitted where the purpose of the road was to provide access to an area zoned as a light industrial zone where the use of land in the residential zone for light industrial purposes was prohibited. It was submitted for the council in that case that because the access road was intended to serve the light industrial use, the land use for which consent was sought over the land in the residential zone ought to be characterised as being a use for the purpose of the storage of formwork material (the light industrial use) and not as a road (at 206). Cripps CJ of LEC rejected the submission. His Honour said, at 207, 208:

> I do not think that the innominate prohibited light industrial use excludes, in the present case, the nominate permissible use. It is true that the road will serve an area of land zoned light industrial but that circumstances does not give it a separate single "light industrial" purpose or, perhaps more precisely, a "formwork and materials storage" purpose within the meaning of the Canterbury Planning Scheme Ordinance. In my opinion "road" use is contemplated by the Scheme as a separate use. The function of a road is to permit the passing and repassing of vehicles. The use of the handle for a "road" which is a nominate, permissive use under the relevant residential zoning does not become an innominate, prohibited use because of the start and/or destination of vehicles passing over the road is light industrial land.

Moorebank's other objections to a Part 4 owner's consent term

154 Thirdly, Moorebank submits that (a) contrary to the assumption underlying Council's letter of offer, the proposal

advanced by the Council would not satisfy the DGR relating to suitable site access arrangements; (b) it could not be said that the letter the Council proposes to write to the Department would satisfy the requirement to "demonstrate that arrangements have been made to secure access to the site"; (c) it is only once the easements have been ordered and development consent has been obtained for the construction of the ramps, that Moorebank will be able to give the Department the assurance that it has secured legal access to the site. The DGR merely requires that "arrangements have been made" to secure access. In my opinion, the Council's proposed letter to the Department would satisfy that requirement.

155 Fourthly, Moorebank submits that (a) there is no guarantee that Council would approve the ramps proposal, either Ramps A or B; (b) all it promises to do is to write to the Department to the effect that it "approves in principle" the construction of the ramps (it does not specify which) and associated works on Lots 308, 309 and 310 to provide access to Brickmakers Drive; (c) the Council cannot fetter its discretion in advance of its consideration of the merits of the development application. Council replies that (a) it is correct that Council could not promise to approve the development application, there is no difficulty from the perspective of the no-fettering rule with it indicating that in principle it strongly favours granting consent to some form of the ramps proposal; (b) Council has investigated the ramps proposal through experts retained by it and has indicated that it will be guided by those experts; and (c) Court's orders can be crafted in a manner that does not offend the fettering rule but makes Council consent very likely, particularly given that Moorebank will have a right of merits appeal under s 97 of the EPA Act. In my view, notwithstanding the points made by Council, there remains a small possibility that consent of the ramps will not be obtained under the Part 4 route.

156 Fifthly, Moorebank submits that (a) the Council's offer only refers to a development application for the "construction" of the ramps and associated works, not their "use"; (b) Council has in the past imposed a condition limiting the bridge consent to its construction only; (c) Council has said nothing about its attitude, whether "in principle" or not, in relation to the issue of whether a planning consent would be granted by it for the "use" of the ramps for the purpose of a MRF. Council replies, and I accept, that this objection is met by moulding a Part 4 owner's consent term so that it extends to use as well as construction.

157 Sixthly, Moorebank objects that (a) there is no evidence that the Council resolution of 15 June 2011 has been rescinded; and (b) unless that resolution is rescinded, there is a serious question mark as to the authority of Council's solicitors to make the offer on behalf of Council. Council submits, and I accept, that (a) there is no question of Council officers not having the power to instruct that the offer be made since the terms of Council's resolution of 15 June 2011 were that "approval will not be granted for access of Part Lot 310 and Lot 309...for waste management/recycling purposes" and the offer does not grant access for those purposes; (b) it takes up the Court's suggestion that the question of access and the question of the MRF can be decoupled and grants access for the use of the Moorebank land, which use may include for an MRF.

158 The seventh and eighth objections can be dealt with together. Seventhly, Moorebank objects that the process of re-classification of Lot 310 from operational land to community land would be a lengthy one, requiring a local environmental plan (s 30 *Local Government Act* 1993) and possibly also a public hearing (EPA Act, s 57(5)) or, if by resolution of the Council, only after public notice has been given and submissions have been received (Local Government Act) - and there would be no guarantee of a successful outcome. Eighthly, Moorebank objects that (a) as Council's letter of offer itself acknowledges, unless Lot 310 were re-classified as operational land, the Court would still have to make an order under s 88K granting the easement; (b) the Court would still have to be satisfied as to the jurisdictional preconditions in s 88K; and (c) there is no indication that Tanlane would also consent to the grant of the easement by the Court. In short, Moorebank submits that without the re-classification, the proposal will not obviate the need for the Court to undertake the consideration of the matters that are currently the subject of dispute, thus not resulting in any saving of time or cost. Council submits, and I accept, that the community land issue is overcome by Council's consent to the Court making an order under s 88K on the basis that the easements are necessary for all reasonable uses of the Moorebank land.

159 The next three objections can be dealt with together. Ninthly, Moorebank objects that (a) there are other timing issues that make the Council's proposal highly undesirable from Moorebank's perspective; for example (based on its flood expert's evidence), Council might require a further flood study to be carried out which may take months if not years; (b) the Part 4 process itself would likely take months; (c) Moorebank should not have to wait any longer before it has certainty concerning its development proposal. Tenthly, Moorebank objects that (a) the Council's proposal is silent as to its preferred traffic treatment of the intersection with Brickmakers Drive; (b) unless Council's position is made clear, and involves a set of traffic lights, then the proposal could not work; (c) a roundabout at that location would not permit Moorebank's trucks to use the intersection, thereby defeating the purpose for which the ramps would be constructed, and the easement granted. Eleventhly, Moorebank objects that (a) contrary to the stated basis for Council's opposition to the grant of the easement sought by Moorebank, the RMS submission to the Department in respect of the EA for the

Part 3A application makes clear that the traffic control facility at the Brickmakers Drive intersection "should be provided to Council's satisfaction"; that advice is highly likely to be made the subject of a condition of any approval granted by the PAC. In other words, Council will not lose control over the traffic treatment at the intersection. Council submits, and I accept, that (a) the issues raised by these three objections can be dealt with by orders of the Court; (b) Moorebank will need ramps planning approval in one form or another; and (c) it is a matter for the Court's discretion whether it should get orders from the Court restricting its selection of the forum it regards as most desirable.

160 In my view, s 88K(1) is not offended by Moorebank pursuing a Part 3A ramps application nor is that or the other matters referred to by Council sufficient reason to exercise the Court's discretion to force Moorebank down the Part 4 consent path for the ramps through the imposition of a Part 4 owner's consent term (without an unqualified Part 3A owner's consent term in addition). The matters that I have mainly taken into consideration in reaching this conclusion are as follows:

(a) It is an implied term of the grant of an easement that the owner of the burdened land will give owner's consent to the lodgement of an application for statutory approval of work on and use of the burdened land for the purpose that the easement is granted. Under that implied term the applicant for statutory approval is entitled, in my opinion, to follow whatever statutory planning approval path is available: in the present case either Part 3A or Part 4 of the EPA Act.

(b) The Court will enforce such an implied term.

(c) When an easement is granted under s 88K, the Court may impose an express owner's consent term to the same effect as the implied term as Moorebank seeks in the present case.

(d) The Court should be cautious about exercising its discretion to cut down what would otherwise be implied by refusing a Part 3A owner's consent term.

(e) The time required for Moorebank to prepare and lodge a Part 4 development application for the ramps and the twelve weeks thereafter that Council says it would require to process and determine it, poses a significant risk that Moorebank's Part 3A MRF application will be refused. I accept that the Part 3A application is likely to be determined in substantially less time. The risk arises because of the Department's expressed intention that all pending Part 3A applications should be determined by 30 June 2013. Moorebank justifiably expects an extension of that time if by then it obtains the relief it seeks including a Part 3A owner's consent term. If it is forced down the Part 4 consent route for the ramps, I accept that there is a significant risk that this would not be acceptable to the Director-General or PAC in the Part 3A context such that the Part 3A MRF application may be rejected.

(f) There is a risk of conflict between the approval authorities if PAC regards the design of the ramps approved by Council under Part 4 as unacceptable for an approved MRF.

(g) Although Council approves ramps in principle, it cannot fetter its discretion; therefore there is a risk, albeit small, that Council would reject a Part 4 ramps application.

(h) I understand why Council wishes to be the consent authority for the ramps given the importance of the road bridge to the precinct. However, that has to be balanced against, and I think is outweighed by the intention of Part 3A of the EPA Act to make the Minister the approval authority for developments that the Minister declares to be within Part 3A and the fact that the Minister has made such a declaration in relation to the ramps.

(i) Since the road bridge and its intersection with Brickmakers Drive are important not just to Moorebank but to the precinct for which Council is responsible as the local planning authority, orders should be made to bolster Council's participation in the Part 3A process taking into account the parties' suggested draft orders provided to me. The parties' experts are already subject to a consent order to meet and endeavour to reach agreement today on a preferred design for the ramps. The draft orders I propose are attached to this judgment and I will give the parties an opportunity overnight to consider them. They include orders to the following effect:

(i) maximising as far as possible the prospect of an objector merits appeal by Council from a Part 3A determination under s 75L of the EPA Act;

(ii) if agreement is reached between the experts and the parties (or in the case of Council, a designated officer) on a preferred design for the ramps and bridge abutment, that design will be submitted to the Department as the agreed position of the parties. Council has said it will be guided by its experts. The parties (and, in the case of Council, a designated officer) will be directed to confer and endeavour to reach agreement within 14 days;

(iii) a similar order should be made in relation to the design for the traffic control works at the intersection

of Brickmakers Drive and Lot 309;

(iv) if no such agreement under (ii) or (iii) is reached, Moorebank will submit that the construction (but not the design) of the ramps and bridge abutments and the design of the traffic control works at the intersection of Brickmakers Drive and Lot 309 should be to Council's satisfaction. So far as traffic control works are concerned, this reflects an RMS requirement;

(v) Moorebank is to seek a condition of approval that the proposed "No left turn" sign for Lot 309 into Brickmakers Drive should be provided to the satisfaction of Council. This also reflects an RMS requirement.

(j) A Part 3A owner's consent term satisfies the DGR for suitable access arrangements to be made for the MFR, although so too does a Part 4 owner's consent term.

Conclusion

161 For these reasons, in my opinion the easements are reasonably necessary for the effective development of the Moorebank land.

Section 88K(2)(a) Public Interest

162 Under s 88K(2)(a) the Court must be satisfied that the use of the dominant tenement, being the Moorebank land having the benefit of the easement, will "not be inconsistent" with the public interest. In my view, this test of "will not be inconsistent" with the public interest is less exacting than a test of "will be in the public interest" or a test of "will be consistent with the public interest"'. In *Rainbowforce* Preston CJ of LEC held at [95] (omitting citations):

> Parliament in enacting s 88K recognised that the private development of land may be beneficial for the public and in the public interest. However, such development, if it requires an easement over neighbouring land, can be unreasonably frustrated or held to ransom by the neighbour not granting an easement. The Act empowers the Court to grant an easement but on condition that the party having the benefit pay reasonable compensation to the party whose land is burdened. In this way, there is a balancing of competing private interests as well as promotion of the public interest.

Approved in *Samy Saad v City of Canterbury* [2012] NSWSC 389 at [34] - [36] (Nicholas J).

163 In *Evans v Cornish Nominees Pty Ltd* [2009] NSWSC 1295, (2009) 14 BPR 27,257 at [63] White J held:

> ... If the requisite consents were obtained to the use of the plaintiff's land, that would not be inconsistent with the public interest. To the contrary, the public interest is in favour of landlocked land being able to be used.

164 The respondents submit that the Court could not have the requisite satisfaction of the matter under s 88K(2) (a) due to the incompatibility of the use with the existing and future planning for the area; (b) the fact that it might be possible to make amendments to the proposal, including to the access, to lessen that incompatibility, is not to the point as no amended proposal is made available for consideration; and (c) due to potential inconsistencies between, on the one hand, the proposal and, on the other hand, the approved road bridge and the easement the Court of Appeal is to grant.

165 I do not accept the submission. I have earlier explained why I consider that the use of the Moorebank land is appropriate for the area at the present time; I have no doubt that the amended Part 3A application will soon be made and that its contents have been sufficiently identified; and I do not see any such potential inconsistencies.

166 I am satisfied that use of Moorebank's land will not be inconsistent with the public interest.

Section 88(2)(c): attempts

167 I am satisfied that all reasonable attempts have been made by Moorebank to obtain the easements or easements having the same effect but have been unsuccessful.

Section 88K(4): Compensation

168 As noted earlier, compensation for the proposed easements has been agreed between Moorebank and the Council in the sum of $25,000 which I consider is appropriate. Therefore, any order for such easements will provide for the payment by Moorebank to Council of that sum as compensation.

Discretion

169 The respondents submit that the Court would refuse to exercise its discretion to grant the easements having regard to the matters they have raised to which I have earlier referred. I do not accept the submission. My earlier response to those matters satisfies me that the discretion should be exercised in favour of Moorebank.

TIMING OF REGISTRATION OF EASEMENTS

170 Tanlane proposes an order that any easements granted to Moorebank should not be registered before the Tanlane easement is registered. Tanlane offers an undertaking to do all things reasonable and proper to enable the Tanlane easement to be registered as soon as possible. Council proposes as an alternative that, if the Court is minded not to make such an order because of Moorebank's concerns about timing, there should be an order restraining Moorebank, before Tanlane's easement is registered, from exercising any rights in relation to the easements save for requiring Council to give landowner's consent. Moorebank opposes both proposals.

171 Tanlane obtained development consent in 2007 for construction of the road bridge and in January 2008 unsuccessfully requested Moorebank to agree not to hinder or obstruct it from undertaking works. Tanlane was successful in obtaining a grant of an easement in the Supreme Court before Young JA and orders were made in February 2012. Following Moorebank's appeal from that decision, in December 2012 the Court of Appeal found that an easement should be granted to Tanlane subject to compensation of not less than $26,500 being assessed. The matter was remitted to the Equity Division for assessment and set down for a hearing before Rein J on 9-11July 2013. Moorebank successfully sought a stay of the compensation proceedings until the outcome of these proceedings: *Tanlane Pty Ltd v Moorebank Recyclers Pty Ltd (No 3)* [2013] NSWSC 545. Rein J said at [29]:

> Since Moorebank's foreshadowed case for expanded compensation is dependent on it being unsuccessful in the Land and Environment Court and unsuccessful solely because of the Tanlane easement there is considerable utility in awaiting the outcome because the expanded compensation claim will not be advanced if Moorebank succeeds in the Land and Environment Court, or fails on a different basis, and the question of whether Moorebank's expanded claim can be advanced will not need to be determined.

172 His Honour said that Moorebank should be required within a specified period following delivery of judgment in this Court to advise Tanlane and the Supreme Court whether it wishes to proceed with its expanded claim. If it does, consideration would need to be given as to how the controversy surrounding Moorebank's entitlement to advance such a claim is to be dealt with.

173 Tanlane's access to Brickmakers Drive and ability to construct the road bridge depends upon registration of its easement. Moorebank has advanced the argument that its access via ramps to Brickmakers Drive should not be the "handmaiden" to Tanlane constructing the bridge. Tanlane submits that it is possible Moorebank would seek to "further frustrate" the completion of the Supreme Court proceedings, thus also further delaying any further construction of the bridge by Tanlane prior to any approval Moorebank may obtain via the Part 3A application. Tanlane submits that the Supreme Court proceedings may be delayed further because before Rein J Moorebank submitted that: "Assuming that Moorebank is granted its easement and is successful with its Part 3A application, then Moorebank would seek to adduce the following evidence: 1. Valuation...". Before me Moorebank indicated that if it obtains the easements, it may advance a compensation claim in the Supreme Court in excess of the $26,500 minimum: it mentioned a figure in the order of $50,000. Tanlane submits that the importance of the road bridge in the planning and redevelopment of the Tanlane land is clear and the Court should not enable Moorebank to make Tanlane's residential development the "handmaiden" to its Part 3A application. Tanlane submits that the Court should require Moorebank to act in good faith and ensure Tanlane obtains legal access to Brickmakers Drive by making orders to the effect that any easement over Lot 309 for the benefit of the Moorebank land may not be registered until Tanlane is able to register its easement.

174 Moorebank submits that:

(a) There is no prospect of Tanlane's rights being interfered with. The bridge could be built first or the ramps could be built first. In the case of Ramps B the cost to Moorebank of constructing the ramps first would be an additional $2 million.

(b) Tanlane has no standing to seek conditions to be imposed on Moorebank's easement because it was joined to the proceedings on a false premise, namely, that its easement rights would be affected by the grant of easements in favour of Moorebank.

(c) There should be no condition imposed relating to registration of Moorebank's easement. The only purpose of such a condition would be to hold Moorebank to ransom in relation to the compensation hearing in the Supreme Court, which has been stayed pending the outcome of these proceedings. If the condition imposed by Tanlane were to be imposed, then Moorebank would in effect have to accede to the $26,500 minimum compensation amount referred to by the Court of Appeal in order for its easement to be registered.

175 The Supreme Court proceedings aimed at securing the Tanlane easement have been on foot for some six years and the postponement of their conclusion until these proceedings are determined was at Moorebank's behest. In the circumstances, I am persuaded that Tanlane has a sufficient equity for an order that its easement be registered first, subject to giving its proposed undertaking to the Court. I do not accept Moorebank's submission that this holds Moorebank "to ransom" in the Supreme Court proceedings by compelling it to accept $26,500 compensation. It does, however, provide an incentive to get the Supreme Court proceedings concluded as soon as possible.

ORDERS

176 Orders will be made under s 88K granting the claimed easements on terms including (a) an owner's consent term for the making by Moorebank of any application for approval or consent for the ramps (whether under Part 3A or Part 4); (b) a term that the ramps design is to be sufficient to accommodates access ramps to and from the servient tenement having the load bearing capacity required by SM1600 referred to in cl 6.2 of Part 2 of AS 5100 Bridge Design Code (ie the same term as the Court of Appeal imposed in the *Tanlane Case* at [256]); and (c) a term postponing registration of the Moorebank easement until after registration of the Tanlane easement.

177 Draft orders are attached. The matter will be listed tomorrow at 2.15 pm for the purpose of making final orders. Counsel are to confer beforehand and any agreed or competing changes to the attached draft that are consistent with these reasons for judgment are to be emailed to my Associate before the hearing tomorrow.

178 It is possible that the area of the easements identified in the plan forming part of the attached draft instrument for registration may require enlargement if, as discussed earlier, the parties' experts or any of them contend that the beginning of the ramps should be relocated further north or south such that they are outside the proposed easements. This would require a relatively minor enlargement of the proposed area of the easements to provide for the possibility that the approval authority for the ramps might approve such a design. The experts are reporting today on whether they have agreed on a preferred design for the ramps. If they or any of them contend for a ramps design which would require enlargement of the easements, Council agrees to that enlargement. In that event, Council is to prepare an amended plan before the hearing tomorrow which may be incorporated in the final orders.

179 Prima facie, Moorebank should pay Council's costs of the proceedings pursuant to s 88K(5) of the Conveyancing Act, and there should be no order as to Tanlane's costs. The possibility has been raised of a different costs order. I propose to make the prima facie costs order subject to providing for any party to apply to vary it within seven days.

DRAFT ORDERS

ANNEXURE 1

ANNEXURE 2

ANNEXURE 3

DISCLAIMER - Every effort has been made to comply with suppression orders or statutory provisions prohibiting publication that may apply to this judgment or decision. The onus remains on any person using material in the judgment or decision to ensure that the intended use of that material does not breach any such order or provision. Further enquiries may be directed to the Registry of the Court or Tribunal in which it was generated.

Land and Environment Court
New South Wales

Medium Neutral Citation: Moorebank Recyclers Pty Ltd v Liverpool City Council (No 3) [2013] NSWLEC 95

Hearing Dates:	28 June, 8 July 2013
Decision Date:	08/07/2013
Jurisdiction:	Class 3
Before:	Biscoe J
Decision:	Orders made and undertakings noted set out in the attachment hereto.
Catchwords:	REAL PROPERTY - form of orders for easements under s 88K Conveyancing Act 1919 following earlier publication of reasons for judgment.
Legislation Cited:	Conveyancing Act 1919 s 88K Environmental Planning and Assessment Act 1979 Part 3A, Part 4
Cases Cited:	Moorebank Recyclers Pty Ltd v Liverpool City Council (No 2) [2013] NSWLEC 93
Category:	Consequential orders
Parties:	Moorebank Recyclers Pty Ltd (Applicant) Liverpool City Council (Respondent)
Representation:	SOLICITORS: Mark McDonald & Associates (Applicant) Minter Ellison (Second Respondent) Sparke Helmore (First Respondent) COUNSEL: J Lazarus (Applicant) J Hutton (First Respondent) L Walker, solicitor (Second Respondent)
File Number(s):	30141/13

EX TEMPORE JUDGMENT

1 In my reasons for judgment dated 27 June 2013, I decided that orders should be made under s 88K of the *Conveyancing Act* 1919 granting the easements sought by the applicant, Moorebank, on terms and I annexed draft orders and undertakings for the parties to address: *Moorebank Recyclers Pty Ltd v Liverpool City Council (No 2)* [2013] NSWLEC 93. The form of the final orders and undertakings has been debated before me at length. Without being exhaustive, the following subsequent developments and changes to the draft orders and undertakings may be noted:

(a) Immediately following publication of *Moorebank (No 2)* and as foreshadowed as a possibility at [178], I was informed that the parties' experts had agreed that day to a variant of Ramps B (for which Moorebank contended in the proceedings) as the preferred access ramps (**Ramps C**). Ramps C includes the following new features compared with Ramps B: there is a longer embankment for the road bridge and a correspondingly shortened suspended structure; the down ramp begins further north on Brickmakers Drive and is free of the road bridge; and the up ramp begins further south on the panhandle and connects to the extended embankment substantially further to the east. Ramps C necessitates, first, a modest enlargement of the area of the easements to be granted to Moorebank, to which Council consents, and, secondly, a proportionate increase in the amount of compensation payable by Moorebank to Council, which they agree at $28,575.

(b) Council and Tanlane support Ramps C but Moorebank reserves its position essentially because it estimates that the longer Ramp C's embankment will cost $900,000 more than the cost of the Ramps B embankment. Under Tanlane's existing development consent for construction of the road bridge, Tanlane would have to

bear the cost of any embankment. However, Moorebank has agreed to pay the Ramps B embankment costs: *Moorebank (No 2)* at [54], [174(a)]. To the extent of any additional cost, Tanlane would obtain an economic advantage at Moorebank's cost if Moorebank happens to proceed with a Part 3A approved Ramps C construction first, unless Tanlane agrees to compensate Moorebank for the additional cost. There will be an order for Moorebank and Tanlane to negotiate in good faith with a view to reaching agreement on Tanlane compensating Moorebank for such additional cost. Moorebank says its attitude to Ramps C may depend on the outcome of those negotiations, which are to occur tomorrow. Because this is really a coordination issue, there is considerable force in Council's contention that such agreement should be reached if negotiations are in good faith so that the economic effect is neutral if Moorebank happens to proceed with construction first.

(c) In relation to the Tanlane easement to be granted by the Supreme Court, on reflection I have decided that rather than ordering postponement of registration of the Moorebank easement until after registration of the Tanlane easement (to which I was initially attracted), it is more appropriate that there be an order restraining Moorebank before Tanlane's easement is registered from exercising any rights in relation to the Moorebank easements save for requiring Council to give landowner's consent: *Moorebank (No 2)* at [170] - [175]. Tanlane undertakes to the Court and to Moorebank to procure registration of the Tanlane easement within 14 days of the order being made imposing it.

(d) Moorebank undertakes to notify the other parties of the ramps design for which it will seek approval as soon as practicable and in any event within 16 days and to lodge its amended application or preferred project report under Part 3A of the *Environmental Planning and Assessment Act* 1979 (**EPA Act**) as soon as practicable and in any event within 28 days. The respondents agree to those time frames. Moorebank undertakes that if that design differs from Ramps B or Ramps C, it will not do so significantly. This regime will enable Tanlane to know what Part 4 modification application (if any) it may need to make to its existing development consent, and will minimise concerns of Tanlane and Council that a Part 3A approval may be inconsistent with Tanlane's consent or modified consent, which arguably might lead to the latter being declared invalid under s 75R(1) of the EPA Act. Moorebank undertakes (inter alia) not to object to any application by Tanlane to modify its development consent so that it is not inconsistent with the Part 3A application or approval.

(e) Tanlane undertakes not to commence construction of the road bridge before Moorebank obtains a Part 3A approval, but if such approval is not obtained within four months Tanlane may apply for release from or variation of the undertaking.

(f) There will be restraints on Moorebank and Tanlane interfering with construction, maintenance or use of the road, bridge, abutment and ramps by the other without Council's consent, which is not to be unreasonably withheld. In this way, Council will have a useful role in resolving any coordination difficulties that might arise.

2 The Court makes the orders and notes the undertakings set out in the attachment hereto.

ORDERS

ANNEXURE B

ANNEXURE C

DISCLAIMER - Every effort has been made to comply with suppression orders or statutory provisions prohibiting publication that may apply to this judgment or decision. The onus remains on any person using material in the judgment or decision to ensure that the intended use of that material does not breach any such order or provision. Further enquiries may be directed to the Registry of the Court or Tribunal in which it was generated.

ORDERS

Imposition of easement

1. Pursuant to s 88K(1) of the *Conveyancing Act* 1919 (NSW) the Court orders that easements be imposed over the land identified in, and on the terms set out in, Annexure A to these orders.

Compensation

2. The Court orders the applicant (**Moorebank**) to:

   (a) pay to the first Respondent (**Council**) compensation in the amount of $28,575 in respect of the easements imposed by order 1 above, such compensation to be paid upon registration of the easements; and

   (b) indemnify the Council in respect of any costs reasonably incurred by it in relation to the preparation or registration of the easement imposed by order 1 above.

3. The Court orders that Moorebank is restrained from exercising any rights in relation to the easements imposed pursuant to order 1 above save for requiring the Council to give owner's consent pursuant to term 1(b) of the easement, unless and until the easement to be granted in favour of Lot 7 in Deposited Plan 1065774, such easement having been the subject of proceedings before the NSW Court of Appeal in *Moorebank Recyclers Pty Ltd v Tanlane Pty Ltd* [2012] NSWCA 445 (**Tanlane easement**) is registered, provided that this order will cease to take effect in the event of a breach by Tanlane of its undertaking at paragraph 4 below.

Undertakings by Tanlane

4. The Court notes that the second respondent (**Tanlane**) undertakes to the Court and to Moorebank that it will forward to the Land and Property Information (LPI) office its application to register its easement within 14 days of the order being made imposing it .

4A. The Court notes that Tanlane undertakes to the Court and to Moorebank that it will not:

(a) interfere with the construction, maintenance and use by Moorebank of the bridge, road, bridge abutment and ramps in accordance with the easement imposed pursuant to order 1 above (including for the avoidance of doubt, it will not engage in any activity that would interfere with the future construction, maintenance and use of the bridge, road, bridge abutment and ramps by Moorebank) without the prior consent of the Council, such consent not to be unreasonably withheld; and

(b) commence construction of the approved road bridge in accordance with Development Consent 1552/06 prior to the determination of Moorebank's Part 3A application, reserving liberty to Tanlane to apply to be released from this undertaking in the event that Moorebank's Part 3A application is not determined by 8 November 2013.

4B. Tanlane undertakes to the Court and to Moorebank that it will not make any application to modify Development Consent No 1552/06, or for any new development consent, that would be inconsistent with any application lodged or approval obtained by Moorebank under Part 3A of the EPA Act, reserving liberty to Tanlane to apply to be released from this undertaking in the event that Moorebank's Part 3A application is not determined by 8 November 2013.

Undertakings by Moorebank in relation to Part 3A application

5. The Court notes that Moorebank undertakes to the Court and to the Council:

   (a) that it presently expects that there will not be any public hearing, Planning Assessment Commission (**PAC**) review or any other administrative step that would or might preclude an objector merits appeal from the Part 3A Application under s 75L of the *Environmental Planning & Assessment Act* 1979;

   (b) not to make any submission or representation to the Minister for Planning & Infrastructure (**Minister**), PAC or Department of Planning & Infrastructure (**Department**) to the effect that there should be a public hearing, PAC review or any other administrative step that would or might preclude an objector merits appeal from the Part 3A Application under s 75L;

   (c) Moorebank is to submit to the Minister, PAC, and/or Department that no administrative step should be taken that would or might preclude an objector merits appeal from determination of the Part 3A Application under s 75L insofar as it relates to access over or construction and use on Council land;

   (d) should an objector appeal under s 75L be brought by the Council and/or Tanlane, Moorebank will not submit in those proceedings that the Court lacks jurisdiction to entertain the appeal on the ground that the right of appeal under section 75L does not exist;

   (e) if agreement is reached between the experts and the parties on a preferred design for the ramps and bridge abutment, Moorebank will submit that design to the Department as the agreed position of Moorebank, the Council and Tanlane;

   (f) if agreement is reached between the experts and the parties on a preferred design for the traffic control works at the intersection of Brickmakers Drive and Lot 309 in DP 1118048, Moorebank will submit that design to the Department, and the PAC if the

determination of the Part 3A Application is delegated to the PAC, as the agreed position of Moorebank, the Council and Tanlane;

(g) if agreement is not reached between the experts and the parties on a preferred design for the ramps and bridge abutment, Moorebank will submit to the Department, and the PAC if the determination of the Part 3A Application is delegated to the PAC, that the construction (and not the design) of ramps and bridge abutment should be to the Council's satisfaction;

(h) if agreement is not reached between the experts and the parties on a preferred design for the traffic control works at the intersection of Brickmakers Drive and Lot 309 in DP 1118048, Moorebank will submit to the Department, and the PAC if the determination of the Part 3A Application is delegated to the PAC, that the design of these traffic control works should be to the Council's satisfaction;

(i) to seek a condition of approval from the Department, and the PAC if the determination of the Part 3A Application is delegated to the PAC, that the proposed "No left turn" sign from Lot 309 in DP 1118048 into Brickmakers Drive should be provided to the satisfaction of the Council.

The Court notes that Moorebank reserves its right to construct acoustic walls within the site of the easements if they are approved in that location by the approval authority.

5A. Moorebank gives an undertaking to the Court and the respondents that:

(1) As soon as practicable, but in any event within 16 days of these orders, it will notify the respondents of which ramp design, either the plan at Annexure B to these orders (the "Ramps B Plan") or the plan at Annexure C to these orders (the "Ramps C Plan") (or any modification thereof, which modification will not be a significant variant of the Ramps B Plan or the Ramps C Plan, noting that moving the location of the up ramp or its connection

point will not be considered to be a significant variant)) it seeks approval for;

(2) Within 28 days, it will lodge its amended Part 3A application or preferred project report;

(3) It will not object to any application by Tanlane to modify Development Consent No 1552/06 (including, for the avoidance of doubt, any future modifications or any related development consent to give effect to either the bridge design in the Ramp C Plan or the Ramps B Plan (or any modification thereof), whichever design is approved, whether by the PAC or by the Court in a merits appeal from a determination by the PAC.

(4) It will not dispute the validity of any development consent (whether a modified or new development consent) sought or obtained by Tanlane to enable the construction ofthe Ramps C Plan or the Ramps B Plan (or any modification thereof), so long as that consent is consistent with any application lodged or approval obtained by Moorebank under Part 3A of the EPA Act.

The Ramps C Plan

6. The Court notes that the agreed preferred design of the road, bridge, bridge abutment and ramps of the parties' experts, Council and Tanlane is as per the Ramps C Plan.

7. Moorebank and Tanlane are to negotiate in good faith within 7 days for Tanlane to compensate Moorebank for the difference in the cost of the embankment within Lot 309 in the Ramps C Plan (or any modification thereof) if the Ramps C Plan is approved by the approval authority and the cost of the embankment within Lot 309 in the Ramps B Plan (if the former is higher than the latter) in the event that Moorebank constructs the Ramps C Plan.

7A Each party has liberty to apply on 3 days' notice for the purpose of obtaining a direction of decision of the Court as to effectuating or implementing the amended orders.

Costs

8. Moorebank is to pay the Council's costs of these proceedings as agreed or assessed on the ordinary basis.

9. No order as to Tanlane's costs or as to Tanlane's liability to pay costs. Grant leave to any party to vary this order on notice of motion filed within 7 days.

10. Each party has liberty to apply on 3 days' notice.

11. The exhibits and documents marked for identification may be returned.

Dated: 8 July 2013

Annexure A

Part 1

Number of items shown in the intention panel on the plan	Identity of the easement, profit a prendre, restriction or positive covenant to be created and referred to in the plan	Burdened Lot(s) or parcels	Benefited Lot(s) road(s), bodies or Prescribed Authorities
1	Right of Carriageway 42.5 Wide and Variable "A"	309/1118048 310/1118048	6/1065574
2	Easement for Construction, Maintenance and Repair of a Road and Bridge and Bridge Abutment and Ramps 18, 42.5 Wide and Variable "B"	308/1118048 309/1118048 310/1118048	6/1065574

Part 2

1. **Terms of Easement for Construction, Maintenance and Repair of a Road, Bridge, Bridge Abutment and Ramps numbered 2 in the above mentioned plan:**

   (a) Easement to construct, maintain and repair a road, bridge, bridge abutment and ramps and any structure and services ancillary to a road, bridge, bridge abutment and ramps on the lots burdened and remain on the lots burdened.

   (b) Within one business day of the receipt of a written request by or on behalf of the owner of the lot benefitted, the owner of

the lots burdened is to give owner's consent to the lodgement of any application by or on behalf of the owner of the lot benefitted for approval or consent, including under Part 3A or Part 4 of the *Environmental Planning & Assessment Act* 1979 (NSW), required to construct and use the road and bridge and bridge abutment and ramps in the manner contemplated by the said easement and right of carriageway.

(c) The road, bridge, bridge abutment and ramps are to:

(i) comply with AS5100/Bridge Design Code and have the load bearing capacity required by SM1600 referred to in cl 6.2 of Part 2 of the Code; and

(ii) be capable of accommodating the ordinary operation of trucks of 19 metres in length and 48 tonnes in weight.

(d) The owner of the lot benefitted may not interfere with the construction and maintenance of the road bridge the subject of Development Consent No 1552/06 as modified from time to time (including, for the avoidance of doubt, any future modifications or any related development consent to give effect to the bridge design in the Ramps C Plan referred to in the orders made by Biscoe J in the Land and Environment Court on 8 July 2013 (or any modification thereof)), including, in the construction or maintenance of the road bridge, any party exercising express or implied rights pursuant to the easement to be granted in favour of Lot 7 in Deposited Plan 1065774, such easement having been the subject of proceedings before the NSW Court of Appeal in *Moorebank Recyclers Pty Ltd v Tanlane Pty Ltd* [2012] NSWCA 445, without the prior consent of the Council, such consent not to be unreasonably withheld.

(e) The owner of the lot benefitted may not interfere with the use, once approved by the Council, of the road bridge the subject of Development Consent No 1552/06 as modified from time to time (including, for the avoidance of doubt, any

future modifications or any related development consent to give effect to the bridge design in the Ramps C Plan (or any modification thereof)) without seeking prior consent from the Council, such consent not to be unreasonably withheld.

(f) The owner of the lot benefitted may, subject to its obligations under (d) and (e) above:

(i) At the expiration of one week's notice (except in the case of emergency when no notice is required) served on the owner or occupier of the lots burdened, use the lots burdened for the purpose of carrying out work to construct, maintain and repair a road, bridge, bridge abutment and ramps on the lots burdened; and

(ii) Do anything reasonably necessary for the purpose of constructing, maintaining and repairing a road, bridge, bridge abutment and ramps on the lots burdened, including the right of the owner of the lot benefitted, or any person authorised by the owner of the lot benefitted:

1. to enter the lots burdened and remain there for any reasonable time for the purpose;
2. to carry out works, including constructing, maintaining and repairing a road, bridge, gates, acoustic walls, retaining walls, bridge abutment and ramps.

(iii) In exercising the powers referred to in subparagraph (ii) above, the owner of the lot benefitted must:

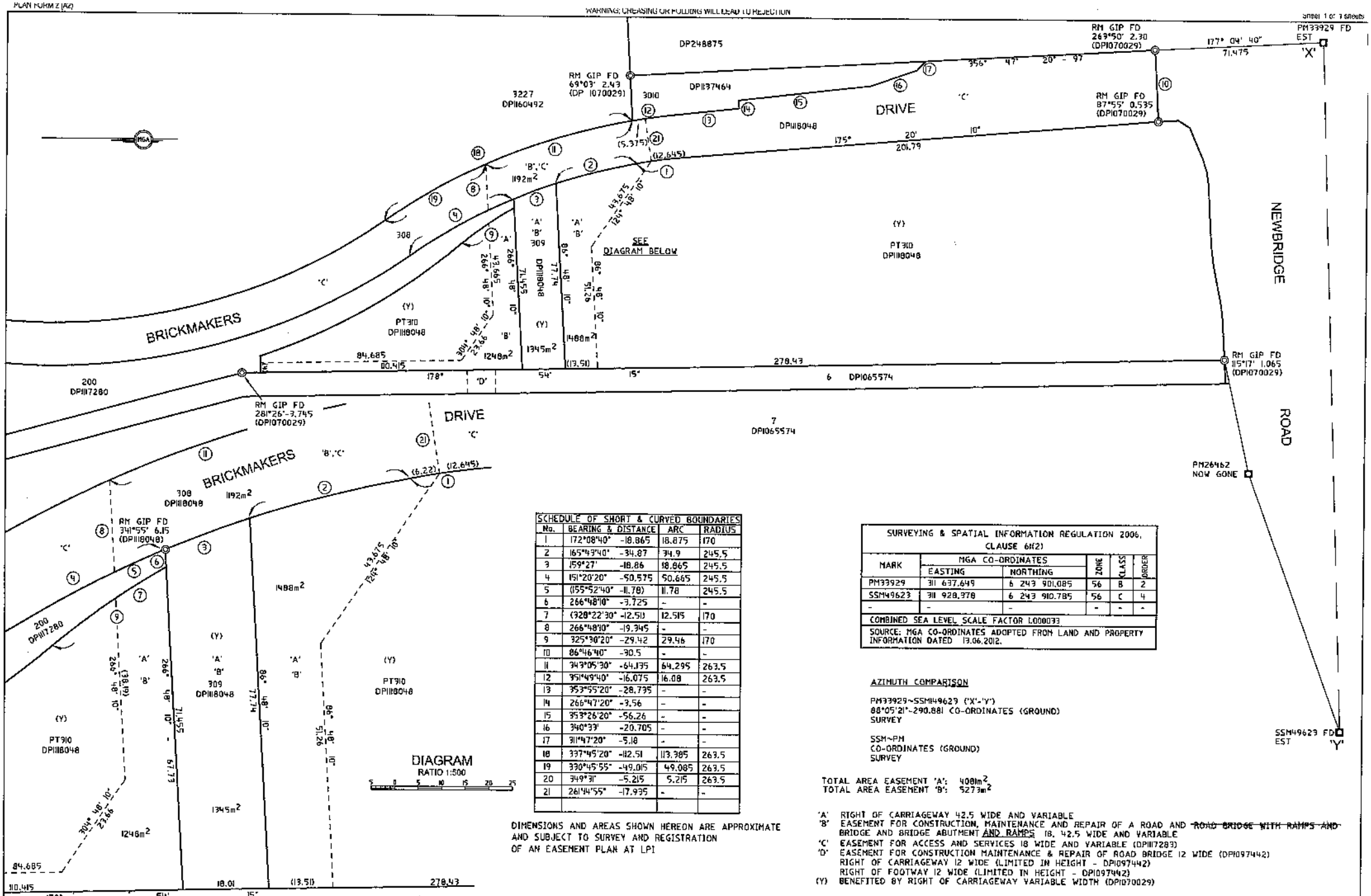
1. ensure all work is done properly; and
2. cause as little inconvenience as is practicable to the owner and any occupier of the lots burdened; and
3. cause as little damage as is practicable to the burdened lots and any improvements on these lots; and

4. restore the burdened lots as nearly as is practicable to their former condition; and
5. make good any collateral damage.

PLAN FORM 2 (A2)

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

Sheet 1 of 1 Sheets



SCHEDULE OF SHORT & CURVED BOUNDARIES			
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5	(155°52'40" -11.78)	11.78	245.5
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7	(328°22'30" -12.51)	12.515	170
8	266°48'10" -19.345	-	-
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10	86°46'40" -30.5	-	-
11	343°05'30" -64.135	64.295	263.5
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13	353°55'20" -28.735	-	-
14	266°47'20" -9.56	-	-
15	353°26'20" -56.26	-	-
16	340°33' -20.705	-	-
17	311°47'20" -5.18	-	-
18	337°45'20" -82.51	113.385	263.5
19	330°45'55" -49.015	49.085	263.5
20	349°31' -5.215	5.215	263.5
21	261°44'55" -17.935	-	-

DIMENSIONS AND AREAS SHOWN HEREON ARE APPROXIMATE AND SUBJECT TO SURVEY AND REGISTRATION OF AN EASEMENT PLAN AT LPI

SURVEYING & SPATIAL INFORMATION REGULATION 2006, CLAUSE 6(2)					
MARK	MGA CO-ORDINATES		ZONE	CLASS	ORDER
	EASTING	NORTHING			
PM33929	311 637.649	6 243 901.085	56	B	2
SSM49623	311 928.978	6 243 910.785	56	C	4
-	-	-	-	-	-
COMBINED SEA LEVEL SCALE FACTOR 1.000033					
SOURCE: MGA CO-ORDINATES ADOPTED FROM LAND AND PROPERTY INFORMATION DATED 13.06.2012.					

AZIMUTH COMPARISON

PM33929~SSM49623 ('X'-'Y')
88°05'21"-290.881 CO-ORDINATES (GROUND)
SURVEY

SSM~PM
CO-ORDINATES (GROUND)
SURVEY

TOTAL AREA EASEMENT 'A': 408m²
TOTAL AREA EASEMENT 'B': 5273m²

'A' RIGHT OF CARRIAGEWAY 42.5 WIDE AND VARIABLE
'B' EASEMENT FOR CONSTRUCTION, MAINTENANCE AND REPAIR OF A ROAD AND ~~ROAD BRIDGE WITH RAMPS AND~~ BRIDGE AND BRIDGE ABUTMENT AND RAMPS 18, 42.5 WIDE AND VARIABLE
'C' EASEMENT FOR ACCESS AND SERVICES 18 WIDE AND VARIABLE (DPII17283)
'D' EASEMENT FOR CONSTRUCTION MAINTENANCE & REPAIR OF ROAD BRIDGE 12 WIDE (DPI097442)
RIGHT OF CARRIAGEWAY 12 WIDE (LIMITED IN HEIGHT - DPI097442)
RIGHT OF FOOTWAY 12 WIDE (LIMITED IN HEIGHT - DPI097442)
(Y) BENEFITED BY RIGHT OF CARRIAGEWAY VARIABLE WIDTH (DPI070029)

Surveyor: WILLIAM LEWIS BACKHOUSE Date of Survey: Surveyor's Ref: CH5230A1	PLAN OF EASEMENTS WITHIN LOTS 308, 309 AND 310 IN DP1118048 ANNEXURE A	LGA: LIVERPOOL Locality: MOOREBANK Subdivision No: Lengths are in metres, Reduction Ratio 1:1000	Registered:	DP DRAFT

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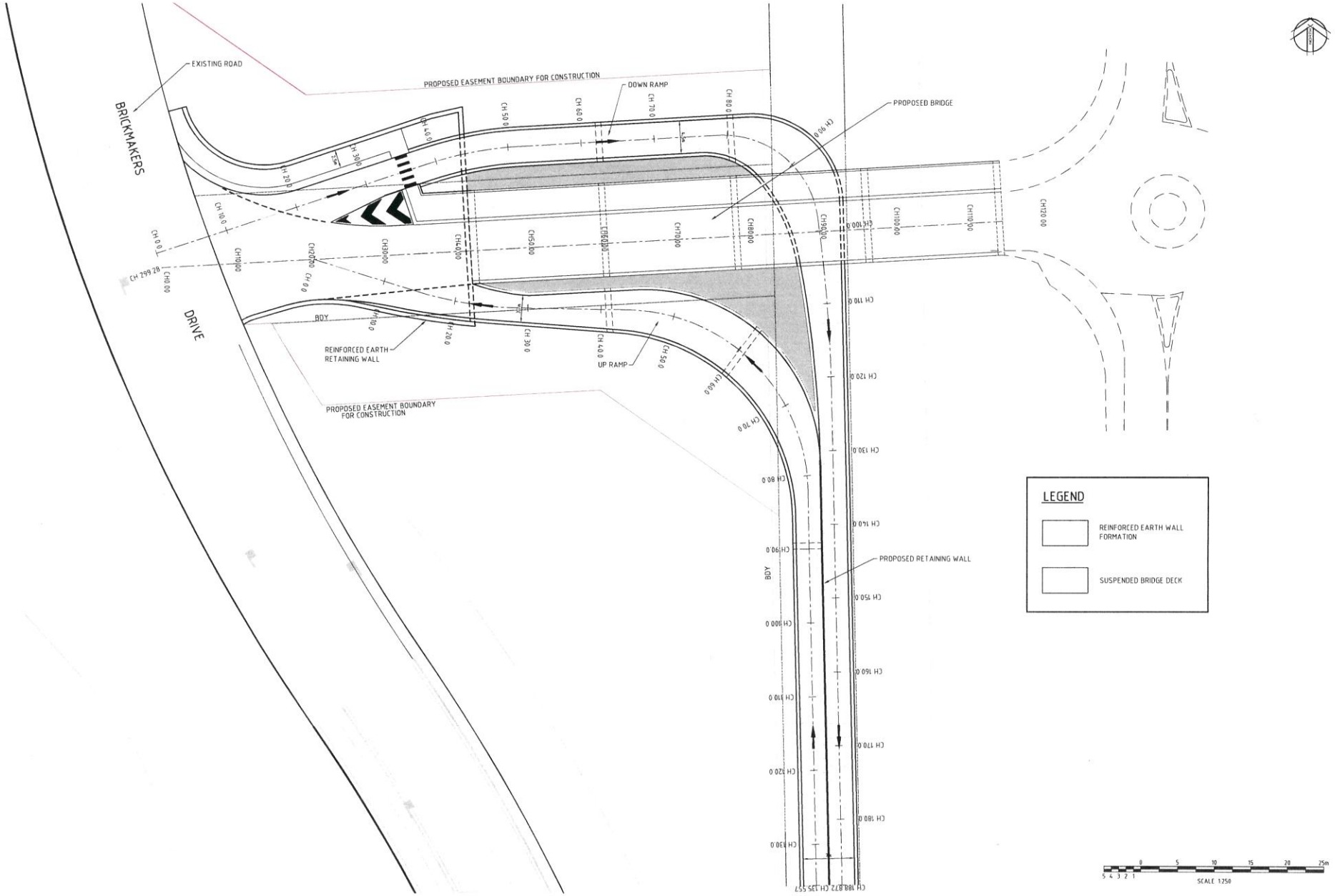

Rev	Date	Description	Drawn	Appr
E	21.02.13	RE-ISSUED FOR INFORMATION	J.C.	D.K.
D	21.02.13	RE-ISSUED FOR INFORMATION	D.B.	D.K.
C	20.02.13	RE-ISSUED FOR INFORMATION	D.B.	D.K.
B	19.02.13	RE-ISSUED FOR INFORMATION	D.B.	D.K.
A	18.02.13	PRELIMINARY ISSUE	D.B	D.K

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Designed	J.C	Date FEB'13
Verified	D.K	Date FEB'13
Approved	D.K	Date FEB'13

Client: CONCRETE RECYCLERS GROUP

WORKS PLAN

Status: FOR INFORMATION

Date	Datum	Scale	Size
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Drawing Number: SK101

Revision: E

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ANNEXURE B

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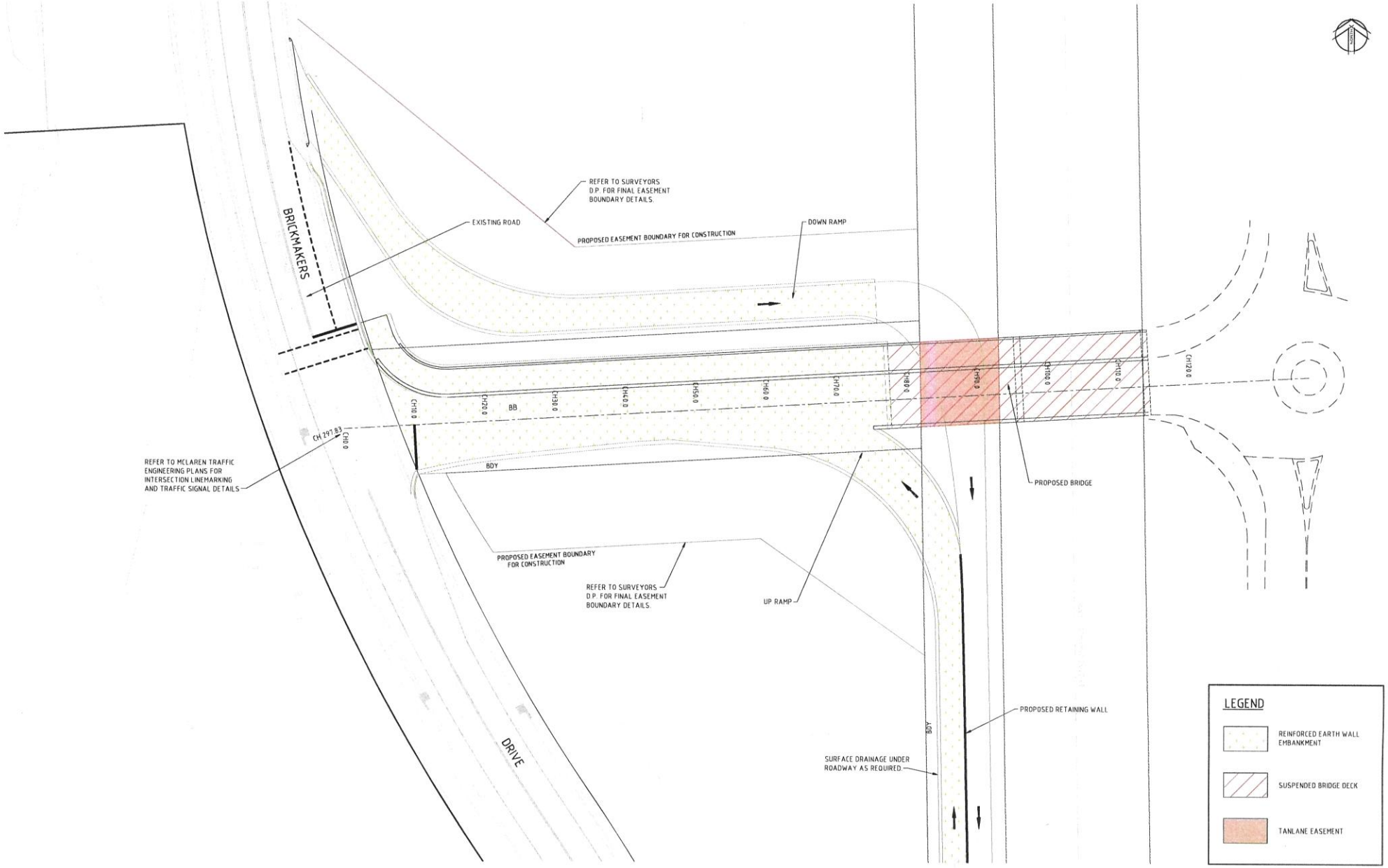

Rev	Date	Description	Drawn	Appr.
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A	26.06.13	ISSUED FOR INFORMATION	D.B	D.K

SCALE 1:250

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Drawn	D.B	Date JUN'13
Checked	J.C	Date JUN'13
Designed	J.C	Date JUN'13
Verified	D.K	Date JUN'13
Approved	D.K	Date JUN'13

Client: CONCRETE RECYCLERS GROUP

SITE PLAN

Status: FOR INFORMATION

Date	Datum	Scale	Size
JUN'13	AHD	1:250	A1

Drawing Number: SK1001

Revision: B

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ANNEXURE C

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DATE PLOTTED: 7/6/2013 BY: DAVID BALL (SYDNEY)

Land and Environment Court
New South Wales

Case Title:	Moorebank Recyclers Pty Ltd v Liverpool City Council (No 4)
Medium Neutral Citation:	[2013] NSWLEC 129
Hearing Date:	8 August 2013
Decision Date:	8 August 2013
Jurisdiction:	Class 3
Before:	Biscoe J
Decision:	(1) By consent, Moorebank's undertaking in paragraph 5A(2) of the orders of 8 July 2013 is varied so that it reads as follows: By 16 August 2013, it will lodge its amended Part 3A application or preferred project report. (2) By consent, the plan in annexure A to the orders of 8 July 2013 is substituted by the plan annexed hereto. (3) Tanlane's application to substitute the plan in annexure B to the orders of 8 July 2013 is stood over to 12 August 2013.
Catchwords:	JUDGMENTS AND ORDERS – variation of undertaking to the Court and slip rule amendments.
Cases Cited:	Moorebank Recyclers Pty Ltd v Liverpool City Council (No 3) [2013] NSWLEC 95
Category:	Consequential orders
Parties:	Moorebank Recyclers Pty Ltd (Applicant) Liverpool City Council (Respondent)

Representation

- Counsel:	J Lazarus (Applicant) C Morton, solicitors (First Respondent) T Hale (Second Respondent)
- Solicitors:	Mark McDonald & Associates (Applicant) Sparke Helmore (First Respondent) Minter Ellison (Second Respondent)
File number:	30141/13

EX TEMPORE JUDGMENT

1 The proceedings have been listed this morning to address three application for amendments to the orders made on 8 July 2013 attached to my reasons for judgment of that date: *Moorebank Recyclers Pty Ltd v Liverpool City Council (No 3)* [2013] NSWLEC 95.

2 The first is an application by Moorebank to vary its undertaking in paragraph 5A(2) of the orders, which reads:

> Moorebank gives an undertaking to the Court and the respondents that:
>
> ...
>
> (2) Within 28 days, it will lodge its amended Part 3A application or preferred project report.

3 The application is to delete "Within 28 days" and to substitute "By 16 August 2013". This represents an extension of time of 11 days. In support, an affidavit of Neal Kennan sworn on 7 August 2013 has been read, which indicates that the progress of preparation of a preferred project report has been reasonable but that nevertheless it could not be finalised and submitted within the 28 days referred to in the undertaking, but that it will be finalised and submitted by 16 August 2013. By consent, I propose to vary the undertaking in the way sought by the applicant.

4 The second application is by Moorebank for a slip rule amendment to the plan which is part of annexure A to the orders made on 8 July 2013. That plan contains the notation: "Total area easement B: 5273m^2". It has been ascertained that this is a mathematical error and that it should be 5354m^2. By consent, I will order substitution of an annexure A plan showing the correct area.

5 The third application is by Tanlane for a slip rule amendment to substitute the plan in annexure B of the orders of 8 July 2013. It appears to be common ground as between Tanlane and Moorebank that that the annexure B plan which the parties put forward at the hearing was not the

final edition that should have been put forward. Those parties are now in discussion with a view to agreeing on the edition of the plan that should be substituted for the existing annexure B plan. They ask that this application be stood over to next Monday 12 June when I will be dealing with a costs issue between those parties. I agree.

6 Tanlane raises a further matter relating to the Moorebank undertaking in paragraph 5A(1) of the orders of 8 July 2013, which reads

> 5A(1) As soon as practicable, but in any event within 16 days of these orders, it will notify the respondents of which ramp design, either the plan at Annexure B to these orders (the "Ramps B Plan") or the plan at Annexure C to these orders (the "Ramps C Plan") (or any modification thereof, which modification will not be a significant variant of the Ramps B Plan or the Ramps C Plan, noting that moving the location of the up ramp or its connection point will be considered to be a significant variant) it seeks approval for;

7 Tanlane currently thinks that Moorebank is proposing a modification of the Ramps C plan which will be a significant variant and therefore contrary to the undertaking in paragraph 5A(1). Tanlane indicates that it will be seeking to reach an accommodation with Moorebank with a view to this issue going away but that, if that does not occur, it may seek injunctive relief.

8 The orders of the Court are as follows:

(1) By consent, Moorebank's undertaking in paragraph 5A(2) of the orders of 8 July 2013 is varied so that it reads as follows:

> By 16 August 2013, it will lodge its amended Part 3A application or preferred project report.

(2) By consent, the plan in annexure A to the orders of 8 July 2013 is substituted by the plan annexed hereto.

(3) Tanlane's application to substitute the plan in annexure B to the orders of 8 July 2013 is stood over to 12 August 2013.

I CERTIFY THAT THIS AND THE **4** PRECEDING PAGES ARE A TRUE COPY OF THE REASONS FOR THE JUDGMENT OF THE HONOURABLE JUSTICE P.M. BISCOE.

Associate

Date **8 August 2013**

PLAN FORM 2 (A2)

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

Sheet 1 of 1 sheets

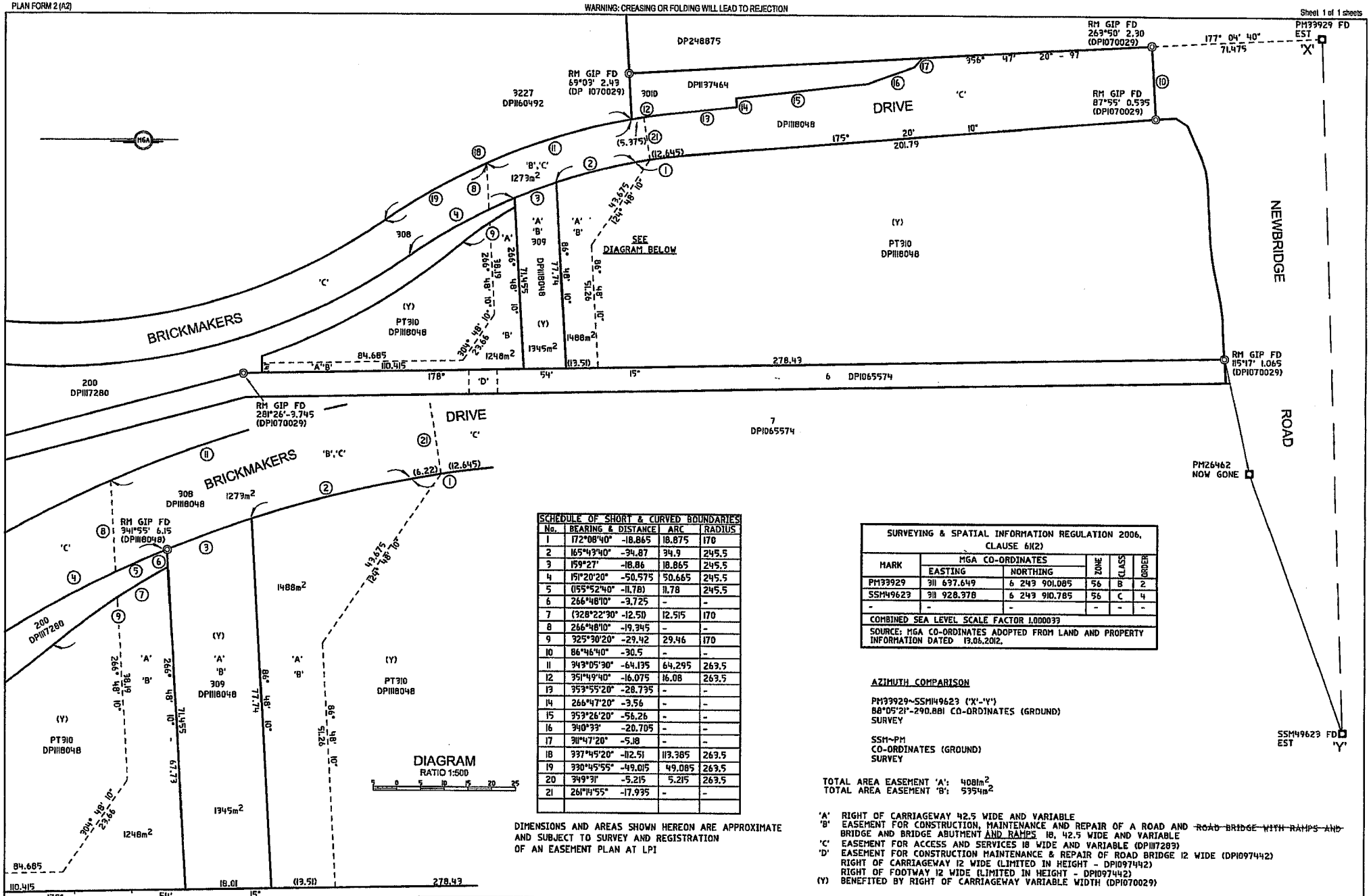

DIAGRAM
RATIO 1:500

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COMBINED SEA LEVEL SCALE FACTOR 1.000039					
SOURCE: MGA CO-ORDINATES ADOPTED FROM LAND AND PROPERTY INFORMATION DATED 13.06.2012.					

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SURVEY

SSM~PM
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SURVEY

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'C' EASEMENT FOR ACCESS AND SERVICES 18 WIDE AND VARIABLE (DPIII7283)
'D' EASEMENT FOR CONSTRUCTION MAINTENANCE & REPAIR OF ROAD BRIDGE 12 WIDE (DPI097442)
RIGHT OF CARRIAGEWAY 12 WIDE (LIMITED IN HEIGHT - DPI097442)
RIGHT OF FOOTWAY 12 WIDE (LIMITED IN HEIGHT - DPI097442)
(Y) BENEFITED BY RIGHT OF CARRIAGEWAY VARIABLE WIDTH (DPI070029)

Surveyor: WILLIAM LEWIS BACKHOUSE Date of Survey: Surveyor's Ref: CH5230A1	PLAN OF EASEMENTS WITHIN LOTS 308, 309 AND 310 IN DP1118048 ANNEXURE A	LGA. LIVERPOOL Locality MOOREBANK Subdivision No: Lengths are in metres. Reduction Ratio 1:1000	Registered:	DP DRAFT

10 20 30 40 50 Table of mm. 90 100 110 120 130 140

Attachment 10

13 July 2013 letter from Council

Liverpool city council
creating our future together

Our Ref: 155460.2013
Contact: Ian Lacy 9821 9216

12 July 2013

Sam Haddad, Director-General
Department of Infrastructure and Planning
23-33 Bridge Street
Sydney NSW 2000

Dear Mr Haddad

Re: Project Application by Moorebank Recyclers

Council refers to the project application by Moorebank Recyclers under the former Part 3A of the *Environmental Planning and Assessment Act* 1979 (as amended on 11 June 2013 so as to include lots 308, 309 and 310 in DP 1118048 owned by Liverpool City Council).

As owner of lots 308, 309 and 310 in DP 1118048, Council consents to lodgement of the application and its amendment.

Should you require any further information on this matter, please do not hesitate to contact Ian Lacy, Legal Services Coordinator on 9821 9216.

Yours sincerely

Farooq Portelli
Chief Executive Officer

Attachment 11

Pacific Environment Limited Air Quality Report

Pacific Environment Limited

Consulting • Technologies • Monitoring • Toxicology

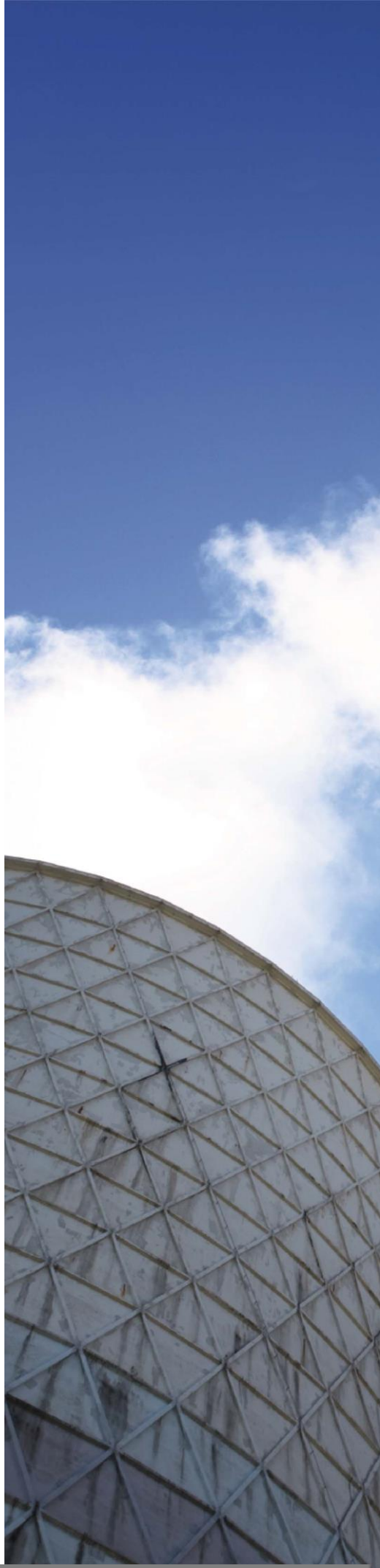
AIR QUALITY – RESPONSE TO SUBMISSIONS

PROPOSED MATERIALS RECYCLING YARD AT MOOREBANK

Moorebank Recyclers Pty Ltd

Job No: **3823b**

19 June 2013



PROJECT TITLE:	Proposed Materials Recycling Yard at Moorebank
JOB NUMBER:	3823b
PREPARED FOR:	Moorebank Recyclers Pty Ltd
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D1	03.06.2013	J. Cox	D. Roddis/B. Lawson
D2	17.06.2013	J. Cox	D. Roddis/B. Lawson/N. Kennan
D3	18.06.2013	J. Cox	B. Lawson/N. Kennan
D4	19.06.2013	J. Cox	B. Lawson/N. Kennan
R1	19.06.2013	J. Cox	B. Lawson/N. Kennan

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CONTENTS

1 INTRODUCTION 1

2 LOCAL SETTING AND PROJECT DESCRIPTION 1

3 REVISED AIR QUALITY ASSESSMENT 1
- 3.1 Sensitive receiver locations 1
- 3.2 Existing Air Quality 2
- 3.3 Dispersion Meteorology 3
- 3.4 Emission calculations 4
  - 3.4.1 Moorebank Recyclers 4
  - 3.4.1 Benedicts Sand and Gravel 7
- 3.5 Dispersion model selection 10
- 3.6 Results 10
  - 3.6.1 Annual average concentrations 10
  - 3.6.2 24-hour average concentrations 20
- 3.7 Conclusions 24

4 DUST MANAGEMENT STRATEGIES 24

5 ASBESTOS 25

6 SILICA 26

7 ODOUR 26

8 STOCKPILE MANAGEMENT 27

9 REFERENCES 28

Appendix A: Emission Calculations

Appendix B: Concrete Recyclers – Standard Operating Procedure – Dust Control

TABLES

Table 1: Annual average PM_{10} concentrations – EPA ambient monitors ($\mu g/m^3$) 3

Table 2: Frequency of winds from the south-eastern quadrant 3

Table 3: Proposed operations and controls at Moorebank Recycling Facility 4

Table 4: Crushing and Screening Emission Factors (kg/t) 6

Table 5: Annual emissions – Moorebank Recyclers 7

Table 6: Crushing and screening emission factors (kg/t) 9

Table 7: Annual emissions – Benedicts Sand and Gravel Facility 10

Table 8: Predicted concentrations at sensitive receivers – annual average TSP ($\mu g/m^3$) 11

Table 9: Predicted concentrations at sensitive receivers – annual average PM_{10} ($\mu g/m^3$) 12

Table 10: Predicted concentrations at sensitive receivers – annual average dust deposition (g/m^2/month) 13

Table 11: Predicted concentrations at sensitive receivers – maximum 24-hour average PM_{10} ($\mu g/m^3$) 20

FIGURES

Figure 1: Location of sensitive receivers 2

Figure 2: Predicted annual average TSP concentrations - Moorebank Recyclers only 14

Figure 3: Predicted annual average TSP concentrations - cumulative 15

Figure 4: Predicted annual average PM_{10} concentrations - Moorebank Recyclers only 16

Figure 5: Predicted annual average PM_{10} concentrations – cumulative 17

Figure 6: Predicted annual average dust deposition levels - Moorebank Recyclers only 18

Figure 7: Predicted annual average dust deposition levels - cumulative 19

Figure 8: Maximum predicted 24-hour average PM_{10} concentrations - Moorebank Recyclers only (maximum day) 21

Figure 9: Frequency distribution of 24-hour average concentration at R1 ($\mu g/m^3$) 23

Figure 10: Frequency distribution of 24-hour average concentration at R12 ($\mu g/m^3$) 23

Figure 11: Frequency distribution of 24-hour average concentration at R13 ($\mu g/m^3$) 24

Figure 12: Asbestos-containing Material Inspection Process 26

Figure 13: Application of fogger to unloading operations 27

1 INTRODUCTION

The original air quality assessment (AQA) for the proposed materials recycling yard at Moorebank was completed by Pacific Environment (formerly PAEHolmes) in late 2009/early 2010(**PAEHolmes, 2010**). Since this time there have been advances in dispersion model methodologies adopted in Australia, updates to the emission factors, and minor modifications to the proposed operations.

Further to the public exhibition of the Environmental Assessment, a number of submissions were received regarding the AQA, including a technical review of the original AQA completed on behalf of Investa (**EMM, 2013**).

This report presents an update to the AQA using current dispersion modelling methodologies and emission factors and addresses the concerns raised through the public submission process. It also takes into account the reporting and conclusions of the Joint Meeting of Expert Witnesses which took place in May 2013 between Judith Cox of Pacific Environment and Scott Fishwick of Environ for the Land and Environment Court proceedings Moorebank Recyclers Pty Ltd v Liverpool City Council and Tanlane Pty Ltd (No. 30141 of 2013).

2 LOCAL SETTING AND PROJECT DESCRIPTION

Moorebank Recyclers propose to develop a concrete and building waste recycling centre on a site at Moorebank. Operations at the site will involve the receiving of demolition waste by truck, stockpiling of the waste as feedstock, site reduction of feedstock by crushing, stockpiling of the crushed material as road-base and the out-loading of the crushed material by truck.

The plant will process up to 500,000 tonnes of building and construction waste per year, consisting predominantly of bricks, concrete and asphalt. On a busy day it is assumed that an average of 1,712 tonnes of material could be delivered to and from the site. Material delivery, load-out, and other site activities will occur between the hours of 7am and 6pm Monday to Saturday. The crusher will be operational between the hours of 7am and 5.30pm, Monday to Saturday. For modelling purposes, these hours have been extended to be between 7am and 6pm.

Dust emissions will arise predominantly from the following activities:

- Receiving material.
- Material processing.
- Vehicle traffic movements.
- Wind erosion.

3 REVISED AIR QUALITY ASSESSMENT

The following sections present the details of the revised AQA that was completed, having regard to the updates to:

- Sensitive receiver locations
- Meteorological data set
- Emission calculations

3.1 Sensitive receiver locations

As **Figure 1** shows, sensitive receivers for the revised AQA have been selected at the boundary of the Georges Fair residential development, the proposed Marina, and potential future residences on Benedicts Land.

Figure 1: Location of sensitive receivers

3.2 Existing Air Quality

PAEHolmes, 2010 used monitoring data collected at the NSW EPA monitoring station located at Rose Street, Liverpool to determine existing background levels. One submission suggested that these data may not be representative of the existing air quality in the area due to a tree obstruction. It has been confirmed with NSW EPA that the tree was removed in January 2013.

Table 1 compares the annual average PM_{10} concentrations recorded at the NSW EPA Liverpool site (located approximately 5km west of the site) with data collected at Chullora (located approximately 9km north-east of the site) and Earlwood (located 16km east of the site). As these data show, the measured concentrations are very similar at all three sites. It has also been confirmed with NSW EPA that they have found no evidence that the tree removal has had any significant effects on the PM_{10} monitoring data.

The elevated concentrations in 2009 were widespread across the state due to the extended drought and a number of dust storms during the year. Conversely, the low annual concentrations measured in 2010 – 2012 are due to above average rainfall.

The existing annual average PM_{10} concentration was assumed to be 22 $\mu g/m^3$, based on long-term monitoring data. There are no TSP data collected in the area, but this parameter can be broadly estimated from the PM_{10} measurements by assuming that 40% of the TSP is PM_{10}. This relationship was obtained from data collected by co-located TSP and PM_{10} monitors operated for long periods of time in the Hunter Valley (**NSW Minerals Council, 2000**), and is considered conservative when applied to an urban airshed. There are no such data available for Sydney. Use of this relationship on the adopted

PM_{10} annual average of 22 µg/m³ gives an existing annual average TSP concentration of is approximately 55 µg/m³. Existing dust deposition levels were assumed to be 2 g/m²/month, which again is considered conservative for the current study location.

In summary, for the purposes of assessing potential air quality impacts, the following existing air quality levels are assumed.

- Annual average PM_{10} concentration - 22 µg/m³
- 24-hour average PM_{10} concentrations – daily varying
- Annual average TSP concentration - 55 µg/m³
- Annual average dust deposition - 2 g/m²/month

Table 1: Annual average PM_{10} concentrations – EPA ambient monitors (µg/m³)

Date	Liverpool	Chullora	Earlwood
2002	23.8	--	24.2
2003	21.7	24.0	21.8
2004	21.6	22.5	22.4
2005	21.5	22.2	22.6
2006	21.6	21.9	23.4
2007	19.0	19.5	20.5
2008	17.6	19.5	19.3
2009	25.9	26.1	27.1
2010	17.0	17.7	17.9
2011	(a)	19.9	18.1
2012	19.8	18.1	19.6
AVERAGE	**21.0**	**21.1**	**21.5**

Note:
a) Less than 75% data capture required to calculate the annual average

3.3 Dispersion Meteorology

A review of the air assessment presented in the submission by Investa (**EMM, 2013**) commented that the meteorological dataset (2005) used in the original AQA does not represent worst-case dispersion conditions for receptors in the Georges Fair development area.

Table 2 presents a comparison of the percentage of winds from the south-eastern quadrant as presented in Table 4.1 of **EMM, 2013** and as calculated by Pacific Environment. Whilst there are slight differences in the calculated values, other than 2009, 2006 has the highest percentage of winds from the south-eastern quadrant (as calculated by Pacific Environment).

While 2009 and 2006 show comparable winds from the south east, to explicitly address the contention made in **EMM, 2013**, the 2006 data set has been adopted in this instance (see **Section 3.4.1**).

Table 2: Frequency of winds from the south-eastern quadrant

Year	% of hours (per Table 4.1 of EMM, 2013)	% of hours (per Pacific Environment)
2005	26	25
2006	30	28
2007	28	27
2008	27	24
2009	29	29
2010	25	25
2011	31	23

3.4 Emission calculations

3.4.1 Moorebank Recyclers

The emission inventory for the proposed Moorebank Recycling Facility has been updated to explicitly address the comments raised in **EMM, 2013** around uncertainties in the emission inventory. This updated emission inventory uses the most current emission factors available, and incorporates all relevant controls that are proposed to be applied at the site.

The activities that would occur on site and relevant controls are summarised in **Table 3**.

Table 3: Proposed operations and controls at Moorebank Recycling Facility

Year	Controls	% control assumed	Reference
Delivery trucks entering and leaving site on sealed access road	Tar sealed Regular water application Sweeping	Moderate silt loading assumed	US EPA, 2011
Delivery trucks entering and leaving site on unsealed internal roads	Cement sealed Regular water application	75	NPI, 2012
Vehicles unloading to tipping zone stockpiles	Water sprays/fog cannon	70	NPI, 2012
Pulverising of larger material	-	0	-
Excavators loading from stockpiles	-	0	-
Excavators unloading to crusher	-	0	-
Primary crushing	Wet suppression and indoors	85	NPI, 2012
Secondary crushing	Wet suppression and indoors	85	NPI, 2012
Screening	Wet suppression and indoors	85	NPI, 2012
Loading to product stockpiles	Water sprays	70	NPI, 2012
Loading from product stockpiles to trucks	Water sprays	70	NPI, 2012
Product trucks on paved surfaces entering/leaving site	Tar sealed Regular water application Sweeping	Moderate silt loading assumed	US EPA, 2011
Product trucks on unpaved surfaces entering/leaving site	Cement stabilised road base Regular water application	75	NPI, 2012
Vehicles exhausts/tyre & brake wear		0	
Wind erosion from tipping stockpiles	Water sprays/surface crusting	50	NPI, 2012
Wind erosion from product stockpiles	Water sprays/surface crusting	50	NPI, 2012
Wind erosion from open areas	Water sprays/surface crusting	50	NPI, 2012

The emission factor equations used for each operation are summarised below. A copy of the full inventories is provided in **Appendix A**.

Trucks entering and leaving site on sealed roads

The emission estimate of wheel generated dust associated with hauling material to and from the site on the sealed access road is based on the US EPA AP-42 emission equation for paved surfaces (**US EPA, 2011** Section 13.2.1) shown below:

$$E = k \times (sL)^{0.91} \times (W)^{1.02}$$

Where:
E = emission rate (g/VKT)

k = 3.23 (TSP); 0.62 (PM_{10})

sL = road surface silt loading (g/m^2)

W = average weight of vehicles travelling the road (t).

There is limited information available regarding the silt loading of paved roads at industrial facilities, and the AP-42 documentation does not provide any default numbers for waste recycling facilities. As the road would be tar sealed, regularly watered and swept, and there would be a wheel wash at the exit of the site, it has been assumed to have a silt loading of 2 g/m^2. To provide some context, this is more than three times the silt loading of 0.6 g/m^2 provided in AP-42 for publically accessible roads carrying less than 500 vehicles per day.

The mean vehicle weight used in the emissions estimates is an average of the loaded and unloaded gross vehicle mass, to account for one empty trip and one loaded trip. The trucks that would be used would be on average, 42.5 t loaded, 21.3 t unloaded, resulting in a mean vehicle weight of 32t, with an average load of 21.1 t.

Trucks entering and leaving site on unsealed roads

The emission estimate of wheel generated dust associated with hauling material to and from the site on unsealed roads is based on the US EPA AP-42 emission equation for unpaved surfaces at industrial sites (**US EPA, 2006a** Section 13.2.2) shown below:

$$E = \left(\frac{0.4536}{1.6093}\right) \times k * \left(\frac{s}{12}\right)^{a} \times \left(\frac{W \times 1.1023}{3}\right)^{0.45}$$

Where:

E = emission rate (kg/VKT)

k = 4.9 (TSP); 0.7 (PM_{10})

s = surface material silt content (%)

a = 0.7 (TSP); 0.9 (PM_{10})

W = mean vehicle weight (t)

The silt content (s) for the haulage routes is assumed to be 5%.

The mean vehicle weight used in the emissions estimates is an average of the loaded and unloaded gross vehicle mass, to account for one empty trip and one loaded trip. The trucks that would be used would be on average, 42.5 t loaded, 21.3 t unloaded, resulting in a mean vehicle weight of 32t, with an average load of 21.1 t.

Vehicles exhausts/tyre & brake wear

As the emission equation for paved road only accounts for emissions due to resuspended road surface material, emissions of PM_{10} from road vehicles (both 'hot' exhaust and non-exhaust) were calculated based on the method used in the NSW GMR 2008 emissions inventory (**NSW EPA, 2012**). The method involves the use of fleet-weighted average-speed emission factors for various vehicle types, as supplied by the EPA. Five road types (residential, arterial, commercial arterial, commercial highway, highway/freeway), are also specified in the emissions inventory. In this study we used only the emission factors for articulated trucks on commercial arterial roads in 2016, in conjunction with an average speed of 25 km/h.

Vehicles unloading to tipping zone stockpiles/excavators loading and unloading

Each tonne of material loaded/unloaded will generate a quantity of particulate matter that will depend on the wind speed and the moisture content according to the US EPA emission factor equation (**US EPA, 2006b** – Section 13.2.4) shown below:

$$E\ (kg/t) = k\ \times 0.0016\ \times \left(\frac{\left(\frac{U}{2.2}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} \right)$$

Where:

k = 0.74 for TSP and 0.35 for PM_{10}

U = wind speed (m/s)

M = moisture content (%)

The moisture content of waste material is assumed to be 2% and the wind speed was sourced from the 2006 Bankstown Airport Automatic Weather Station (AWS).

This equation was applied to the calculations for the following activities

- Vehicles unloading to tipping zone stockpiles
- Excavators loading from stockpiles
- Excavators unloading to crusher
- Loading to product stockpiles
- Loading from product stockpiles to trucks

Pulverising of larger material

There are no specific emission factors for pulverizing of materials and as such the emission factor of 0.0027 kg/t for tertiary crushing (uncontrolled) taken from the US EPA emission factors for Crushed Stone Processing and Pulverized Mineral Processing (**US EPA, 2004** – Section 11.19.2, Table 11.19.2-1) was used.

It was assumed that 10% of material received annually would require pulverising. i.e. 50,000 tpa.

Primary crushing/ Secondary crushing/Screening

The emission factors used for crushing and screening have been taken from the US EPA emission factors for Crushed Stone Processing and Pulverized Mineral Processing (**US EPA, 2004** – Section 11.19.2, Table 11.19.2-1), and are shown **Table 4**. There is no emission factors for primary or secondary crushing and Section 11.19.2 states that tertiary crushing can be used as an upper limit for primary or secondary crushing.

Table 4: Crushing and Screening Emission Factors (kg/t)

Activity	TSP	PM_{10}
Primary and secondary crushing (uncontrolled)	0.0027	0.0012
Screening (uncontrolled)	0.0125	0.0043

Wind erosion from tipping stockpiles/ product stockpiles/ open areas

Section 13.2.5 (Industrial Wind Erosion) of AP-42 provides a refined method to calculate emissions from wind erosion, however, as none of the data required to apply this method are available, the emission factor for wind erosion has been taken from the US EPA emission factors for mining (**US EPA, 1998** – Section 11.9, Table 11.9-4).

TSP wind erosion emissions = 0.85 t/ha/y = 0.1 kg/ha/h

Based on information in Section 13.2.5, it was assumed that PM_{10} emissions are 0.5 that of TSP.

PM_{10} wind erosion emissions = 0.5 * 0.1 = 0.05 kg/ha/h

The annual emissions are calculated based on these emission rates but the hourly emissions applied in the dispersion modelling have been varied according to the cube of the hourly average wind speed.

Emissions were calculated for the proposed maximum capacity of 500,000 tpa. Based on the assumption that the site would operate 292 days per year, this equates to a daily average of 1,712 t/day. It is acknowledged that there will be occasions when more than this quantity of material would be received and processed in a single day. Therefore to ensure the worst-case 24 hour average PM_{10} concentrations at the sensitive receivers are appropriately predicted, an additional (maximum 24-hour) PM_{10} inventory was developed based on the assumption that there would be a maximum of 3,000 t/day.

A summary of the annual emissions are presented in **Table 5**.

Table 5: Annual emissions – Moorebank Recyclers

ACTIVITY	Annual Emissions		Worst-case emissions for 24-hour average
	TSP emissions (kg/y)	PM_{10} emissions (kg/y)	PM_{10} emissions (kg/y)
	500, 000 tpa		3,000 t/day = 876,000 tpa
Delivery trucks on paved surfaces entering/leaving site	8,398	1,612	2,824
Delivery trucks on unpaved surfaces entering/leaving site	7,033	1,505	2,636
Vehicles unloading to tipping zones	426	202	353
Pulverising	135	60	105
Excavators loading from stockpile	1,421	672	1,177
Excavators unloading to crusher	1,421	672	1,177
Primary crushing	405	180	315
Secondary crushing	405	180	315
Screening	1,875	645	1,130
Loading to product stockpiles	426	202	353
Loading from product stockpiles to trucks	426	202	353
Product trucks on paved surfaces entering/leaving site	8,398	1,612	2,824
Product trucks on unpaved surfaces entering/leaving site	7,033	1,505	2,636
Vehicles exhausts/tyre & brake wear	130	130	130
Wind erosion from tipping stockpiles	514	257	257
Wind erosion from product stockpiles	238	119	119
Wind erosion from open areas	1,675	837	837
TOTAL	**40,358**	**10,590**	**17,544**

3.4.1 Benedicts Sand and Gravel

Comment was made that the dispersion modelling in the original AQA had excluded the potential impacts of emissions from the existing Benedict Sand and Gravel facility in the assessment of cumulative impacts.

As far as can be ascertained, there is no publically available information on the precise operations that occur at the Benedict Sand and Gravel facility, no air quality impact assessment for the operations, or any measurement of ambient air quality in the immediate vicinity of the site.

The facility has two Environment Protection Licences (EPLs; EPL 10490 and EPL 4612). Neither of these EPLs requires any ongoing air quality monitoring to be completed.

EPL 10490 allows for the recovery and storage of general solid waste (non-putrescible) and waste tyres to a maximum of 100,000 tonnes per annum (tpa).

EPL 4621 allows for land-based extractive activities and crushing and grinding to a maximum of 100,000 tonnes per annum.

On the basis of the EPLs, a high-level emission inventory was developed for the approved operations of 100,000 tpa. Due to the uncertainties surrounding the operations at Benedicts Sand and Gravel, an additional inventory for PM_{10} emissions was developed assuming 500,000 tpa of material is received and processed. This emission inventory was used for the determination of the worst-case 24-hour average PM_{10} concentrations from the facility.

It is assumed that standard dust control measures are employed at the Benedict Sand and Gravel site, including watering of access roads and wind erosion areas.

The activities assumed to be occurring at the Benedict Sand and Gravel facility are:

- Trucks entering and leaving site on unsealed roads
    - It is assumed that water is applied to the road surface to minimise the generation of dust.
- Excavators loading material from stockpiles
- Excavators unloading material to crushers/screens
- Screening and crushing of sand
- Wind erosion
    - It is assumed that the entire site (7ha) is a source of wind erosion and that water is applied to the exposed areas to minimise the generation of dust.

The following emission factors were applied to develop the emission inventory for the operations at the Benedict Sand and Gravel Facility. A copy of the full inventories is provided in **Appendix A**.

Trucks entering and leaving site on unsealed roads

The emission estimate of wheel generated dust associated with hauling material to and from the site is based on the US EPA AP-42 emission equation for unpaved surfaces at industrial sites (**US EPA, 2006a** Section 13.2.2) shown below:

$$E_{TSP} = \left(\frac{0.4536}{1.6093}\right) \times 4.9 * \left(\frac{s}{12}\right)^{0.7} \times \left(\frac{W \times 1.1023}{3}\right)^{0.45}$$

$$E_{PM_{10}} = \left(\frac{0.4536}{1.6093}\right) \times 1.5 * \left(\frac{s}{12}\right)^{0.9} \times \left(\frac{W \times 1.1023}{3}\right)^{0.45}$$

Where:

E_{TSP} = emission rate of total suspended particulates (kg/vehicle km travelled)
E_{PM10} = emission rate of $PM1_0$ (kg/vehicle km travelled)
s = silt content of road surface
W = mean vehicle weight

The silt content(s) for the haulage routes is assumed to be 5%.

The mean vehicle weight used in the emissions estimates is an average of the loaded and unloaded gross vehicle mass, to account for one empty trip and one loaded trip. In the absence of site-specific information, it was assumed that the trucks used and loads carried per load are the same as those proposed for use at Moorebank Recyclers, that is, 42.5 t loaded, 21.3 t unloaded, resulting in a mean vehicle weight of 32t, with an average load of 21.1 t.

Excavators loading/unloading material from stockpiles and to crushers/screens

Each tonne of material loaded/unloaded will generate a quantity of particulate matter that will depend on the wind speed and the moisture content according to the US EPA emission factor equation (**US EPA, 2006b** – Section 13.2.4) shown below:

$$E\ (kg/t) = k\ \times 0.0016\ \times \left(\frac{\left(\frac{U}{2.2}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}\right)$$

Where:

k = 0.74 for TSP and 0.35 for PM_{10}

U = wind speed (m/s)

M = moisture content (%)

The moisture content of waste material is assumed to be 2% and the wind speed was sourced from the 2006 Bankstown Airport Automatic Weather Station (AWS).

Screening and crushing of sand

The emission factor used for crushing and screening have been taken from the US EPA emission factors for Crushed Stone Processing and Pulverized Mineral Processinga (**US EPA, 2004** – Section 11.19.2, Table 11.19.2-1), as shown in **Table 6**. There is no emission factors for primary or secondary crushing and Section 11.19.2 states that tertiary crushing can be used as an upper limit for primary or secondary crushing.

Table 6: Crushing and screening emission factors (kg/t)

Activity	TSP	PM_{10}
Crushing (uncontrolled)	0.0027	0.0012
Screening (uncontrolled)	0.0125	0.0043

Wind erosion

The Industrial Wind Erosion section of AP-42 (**US EPA, 2006c** - Section 13.2.5) provides a refined method to calculate emissions from wind erosion, however, as none of the data required to apply this method are readily available, the emission factor for wind erosion has been taken from the US EPA emission factors for mining (**US EPA, 1998** – Section 11.9, Table 11.9-4).

TSP wind erosion emissions = 0.85 t/ha/y = 0.1 kg/ha/h

Based on information in Section 13.2.5, it was assumed that PM_{10} emissions are 0.5 that of TSP.

PM_{10} wind erosion emissions = 0.5 * 0.1 = 0.05 kg/ha/h

The annual emissions are calculated based on these emission rates but the hourly emissions applied in the dispersion modelling have been varied according to the cube of the hourly average wind speed.

A summary of the annual emissions are presented in **Table 7**.

[a] The AP-42 section for Sand and Gravel Processing (US EPA 1995 - Section 11.9.1) does not provide emission factors for crushing, screening, and handling and transfer operations and directs the user to apply the emission factors found in the Crushed Stone Processing section.

Table 7: Annual emissions – Benedicts Sand and Gravel Facility

ACTIVITY	TSP emissions (kg/y)	PM_{10} emissions (kg/y)	PM_{10} emissions (kg/y)
	100, 000 tpa		500,000 tpa
Trucks on unpaved surfaces entering/leaving site	2,675	687	3,437
Excavators loading from stockpile	284	134	672
Excavators unloading to crusher/screens	284	134	672
Sand Processing (crushing and screening)	1,520	550	550
Wind erosion	2,996	1,498	1,498
TOTAL (kg/y)	**7,760**	**3,004**	**6,829**

3.5 Dispersion model selection

The original AQA (**PAEHolmes, 2010**) used the AUSPLUME dispersion model which is a steady state Gaussian plume dispersion model developed by the Victorian EPA and frequently used in Australia for simple near-field applications. AUSPLUME is based on the US EPA Industrial Source Complex (ISC) model. Since December 2006, ISC has been replaced by AERMOD as the US EPA's recommended steady-state plume dispersion model for regulatory purposes as it provides more realistic results.

A significant feature of AERMOD is the Pasquill-Gifford stability based dispersion is replaced with a turbulence-based approach that uses the Monin-Obukhov length scale to account for the effects of atmospheric turbulence based dispersion.

The AERMOD system includes AERMET, used for the preparation of meteorological input files and AERMAP, used for the preparation of terrain data.

Terrain data was sourced from NASA's Shuttle Radar Topography Mission (SRTM) Data (3 arc-second (~90m) resolution) and processed within AERMAP to create the necessary input files.

AERMET requires surface and upper air meteorological data as input. Surface data, including cloud cover was sourced from the Bankstown Airport AWS. Where cloud cover data were missing, they were substituted with values generated by TAPM (The Air Pollution Model). Appropriate values for three surface characteristics are required for AERMET as follows:

- Surface roughness, which is the height at which the mean horizontal wind speed approaches zero, based on a logarithmic profile.
- Albedo, which is an indicator of reflectivity of the surface.
- Bowen ratio, which is an indicator of surface moisture.

Values of surface roughness, Bowen ratio and albedo were determined based on a review of aerial photography for a radius of 3 km centred on the site. Default values for urban where chosen for the entire area.

3.6 Results

3.6.1 Annual average concentrations

The predicted annual average ground-level concentrations and deposition rates at the sensitive receivers identified in **Figure 1** are presented in **Table 8** (TSP annual average), **Table 9** (PM_{10} annual average) and **Table 10** (dust deposition annual average monthly deposition rates).

Contour plots of the indicative concentrations that could potentially be reached under the conditions modelled are presented in **Figure 2** to **Figure 7**.

Each of these tables shows the predicted concentrations/deposition rates at each sensitive receiver for the following:

- Predicted glc due to the proposed operations at Moorebank Recycling
- Predicted glc from the assumed operations at Benedicts Sand and Gravel Processing
- Predicted cumulative glc due to Moorebank Recycling plus Benedicts Sand and Gravel Processing plus existing background levels.

Table 8: Predicted concentrations at sensitive receivers – annual average TSP (µg/m³)

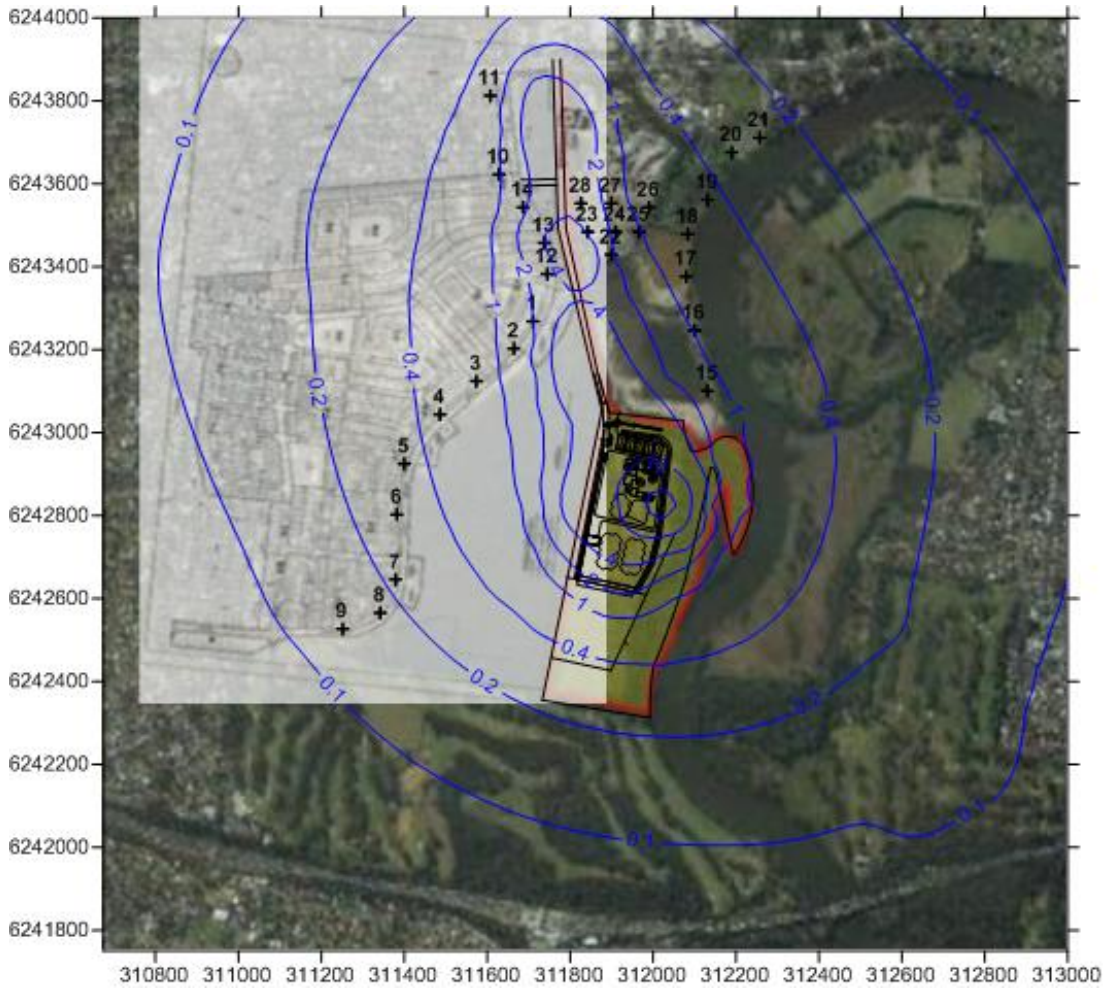
Location	ID	X (m)	Y (m)	TSP annual average concentrations (µg/m³)		
				Project only	Benedicts Sand	Cumulative
				Impact Assessment Criteria		
		MGA Zone 56		*N/A*	*N/A*	*90*
Georges Fair	1	311711	6243268	2.0	0.1	55.1
	2	311665	6243203	1.3	0.1	55.1
	3	311574	6243124	0.8	0.0	57.1
	4	311486	6243044	0.5	0.0	56.4
	5	311400	6242925	0.3	0.0	55.8
	6	311382	6242803	0.3	0.0	55.5
	7	311379	6242646	0.2	0.0	55.3
	8	311342	6242565	0.2	0.0	55.3
	9	311252	6242527	0.1	0.0	55.2
	10	311629	6243622	0.9	0.2	55.2
	11	311608	6243812	0.6	0.2	55.1
	12	311745	6243382	3.0	0.2	56.1
	13	311738	6243457	4.2	0.3	55.8
	14	311687	6243543	1.7	0.3	58.2
Proposed Marina	15	312131	6243101	1.3	0.1	59.5
	16	312100	6243246	1.0	0.1	57.0
	17	312080	6243376	0.8	0.2	56.4
	18	312084	6243479	0.6	0.4	56.1
	19	312131	6243561	0.5	0.3	56.0
	20	312190	6243675	0.3	0.2	56.0
	21	312257	6243711	0.3	0.2	55.8
Future residences on Benedicts Land	22	311899	6243429	1.9	Operations assumed to have ceased	55.6
	23	311843	6243484	3.6		55.4
	24	311910	6243484	1.5		56.9
	25	311966	6243484	1.0		58.6
	26	311991	6243542	0.8		56.5
	27	311899	6243553	1.4		56.0
	28	311826	6243553	3.4		55.8

Table 9: Predicted concentrations at sensitive receivers – annual average PM_{10} (µg/m³)

Location	ID	X (m)	Y (m)	PM_{10} annual average concentrations (µg/m³)		
				Project only	Benedicts Sand	Cumulative
				Impact Assessment Criteria		
		MGA Zone 56		*N/A*	*N/A*	*30*
Georges Fair	1	311711	6243268	1.2	0.1	23.3
	2	311665	6243203	0.9	0.1	22.9
	3	311574	6243124	0.5	0.0	22.6
	4	311486	6243044	0.4	0.0	22.4
	5	311400	6242925	0.3	0.0	22.3
	6	311382	6242803	0.2	0.0	22.3
	7	311379	6242646	0.2	0.0	22.2
	8	311342	6242565	0.2	0.0	22.2
	9	311252	6242527	0.1	0.0	22.1
	10	311629	6243622	0.6	0.3	22.8
	11	311608	6243812	0.4	0.2	22.6
	12	311745	6243382	1.6	0.2	23.9
	13	311738	6243457	2.1	0.3	24.5
	14	311687	6243543	1.0	0.3	23.3
Proposed Marina	15	312131	6243101	0.9	0.1	23.0
	16	312100	6243246	0.7	0.1	22.8
	17	312080	6243376	0.5	0.2	22.8
	18	312084	6243479	0.4	0.4	22.8
	19	312131	6243561	0.3	0.3	22.7
	20	312190	6243675	0.2	0.3	22.5
	21	312257	6243711	0.2	0.2	22.4
Future residences on Benedicts Land	22	311899	6243429	1.1	Operations assumed to have ceased	23.1
	23	311843	6243484	1.9		23.9
	24	311910	6243484	0.9		22.9
	25	311966	6243484	0.7		22.7
	26	311991	6243542	0.5		22.5
	27	311899	6243553	0.8		22.8
	28	311826	6243553	1.8		23.8

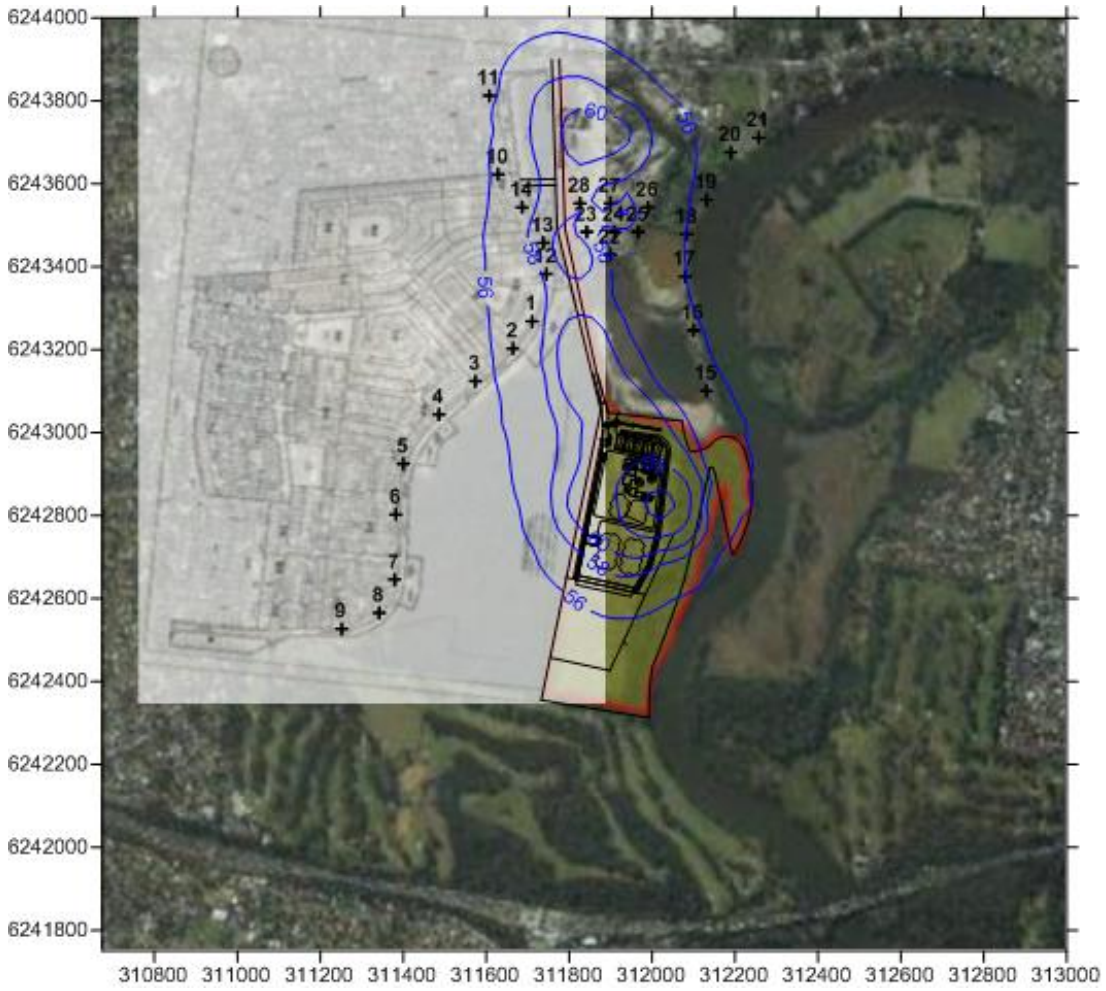
Table 10: Predicted concentrations at sensitive receivers – annual average dust deposition (g/m^2/month)

Location	ID	X (m)	Y (m)	Dust deposition annual average concentrations (g/m^2/month)		
				Project only	Benedicts Sand	Cumulative
				Impact Assessment Criteria		
		MGA Zone 56		*2*	*2*	*4*
Georges Fair	1	311711	6243268	0.6	0.0	2.6
	2	311665	6243203	0.3	0.0	2.4
	3	311574	6243124	0.2	0.0	2.2
	4	311486	6243044	0.1	0.0	2.1
	5	311400	6242925	0.1	0.0	2.1
	6	311382	6242803	0.1	0.0	2.1
	7	311379	6242646	0.1	0.0	2.1
	8	311342	6242565	0.0	0.0	2.1
	9	311252	6242527	0.4	0.0	2.5
	10	311629	6243622	0.3	0.1	2.4
	11	311608	6243812	1.3	0.1	3.4
	12	311745	6243382	1.8	0.1	3.9
	13	311738	6243457	0.7	0.2	2.9
	14	311687	6243543	0.6	0.2	2.6
Proposed Marina	15	312131	6243101	0.4	0.0	2.5
	16	312100	6243246	0.3	0.0	2.4
	17	312080	6243376	0.3	0.1	2.4
	18	312084	6243479	0.2	0.2	2.4
	19	312131	6243561	0.1	0.2	2.3
	20	312190	6243675	0.1	0.1	2.2
	21	312257	6243711	0.8	0.1	2.8
Future residences on Benedicts Land	22	311899	6243429	1.5	Operations assumed to have ceased	3.5
	23	311843	6243484	0.6		2.6
	24	311910	6243484	0.4		2.4
	25	311966	6243484	0.3		2.3
	26	311991	6243542	0.6		2.6
	27	311899	6243553	1.4		3.4
	28	311826	6243553	0.6		2.6



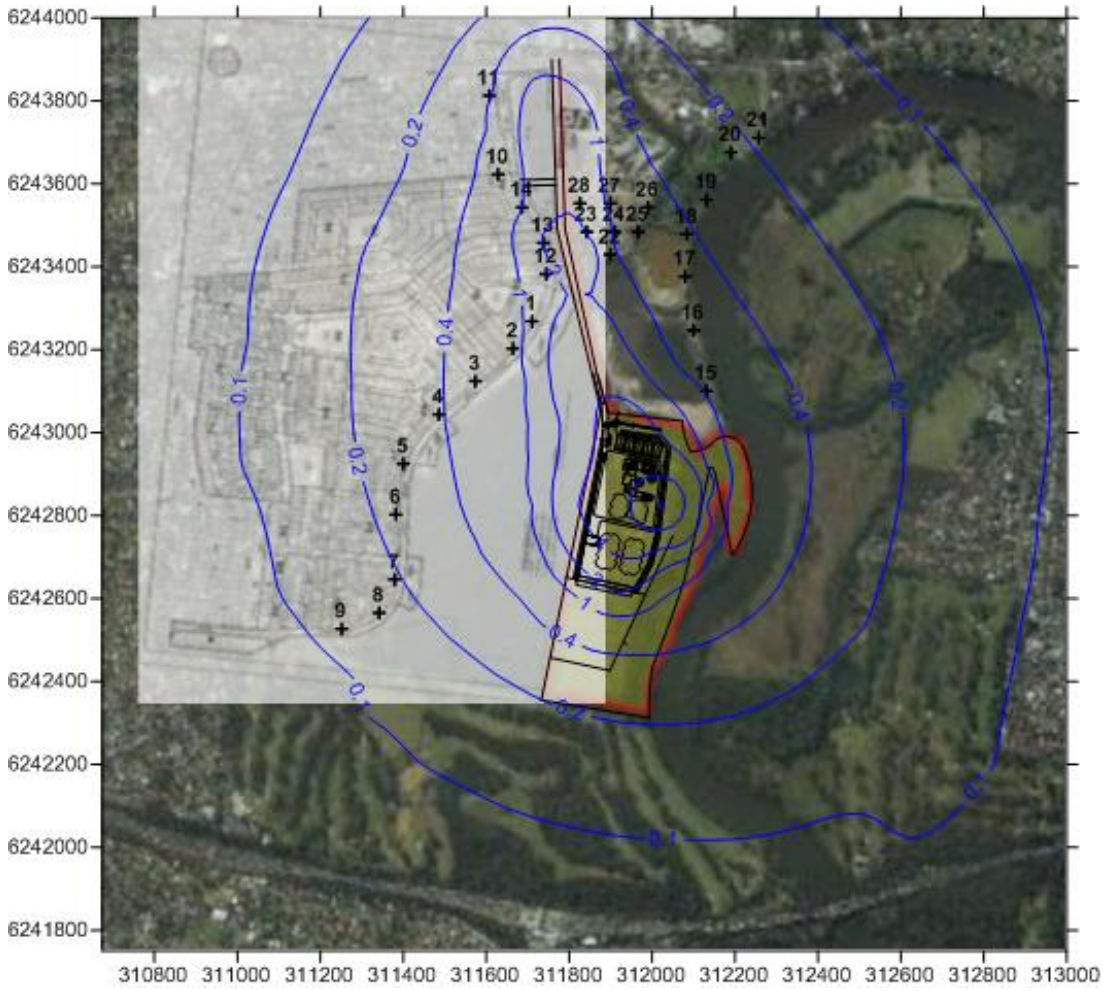
Species:	Location:	Scenario:	Percentile:	Averaging Time:
TSP	Moorebank Recyclers	Moorebank Recyclers Only	Average	Annual
Model Used:	**Units:**	**Guideline:**	**Met Data:**	**Plot:**
AERMOD v8.2.0	µg/m^3	N/A	AERMET generated	J. Cox

Figure 2: Predicted annual average TSP concentrations - Moorebank Recyclers only



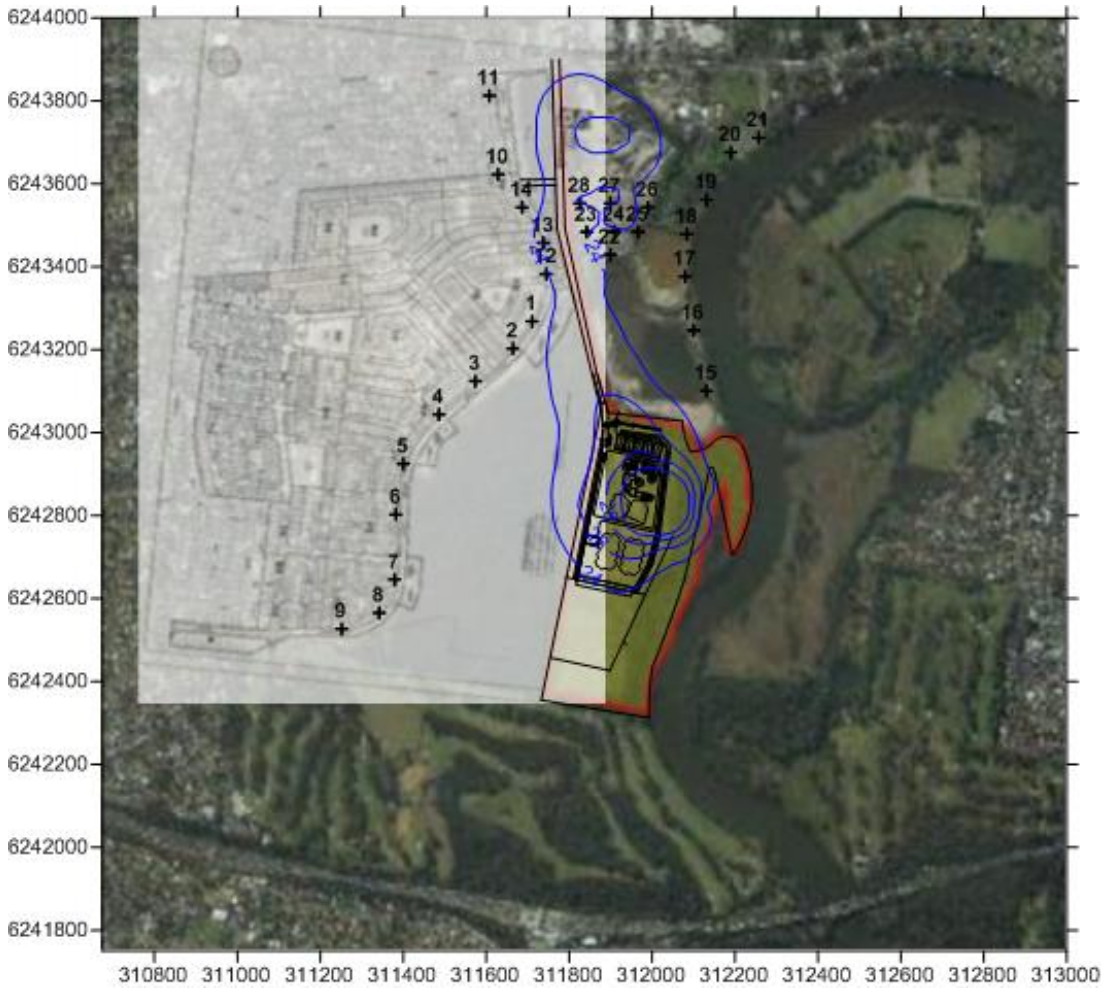
Species:	Location:	Scenario:	Percentile:	Averaging Time:
TSP	Moorebank Recyclers	Cumulative (Moorebank + Benedicts+ background)	Average	Annual
Model Used:	**Units:**	**Guideline:**	**Met Data:**	**Plot:**
AERMOD v8.2.0	µg/m^3	90 µg/m^3	AERMET generated	J. Cox

Figure 3: Predicted annual average TSP concentrations - cumulative



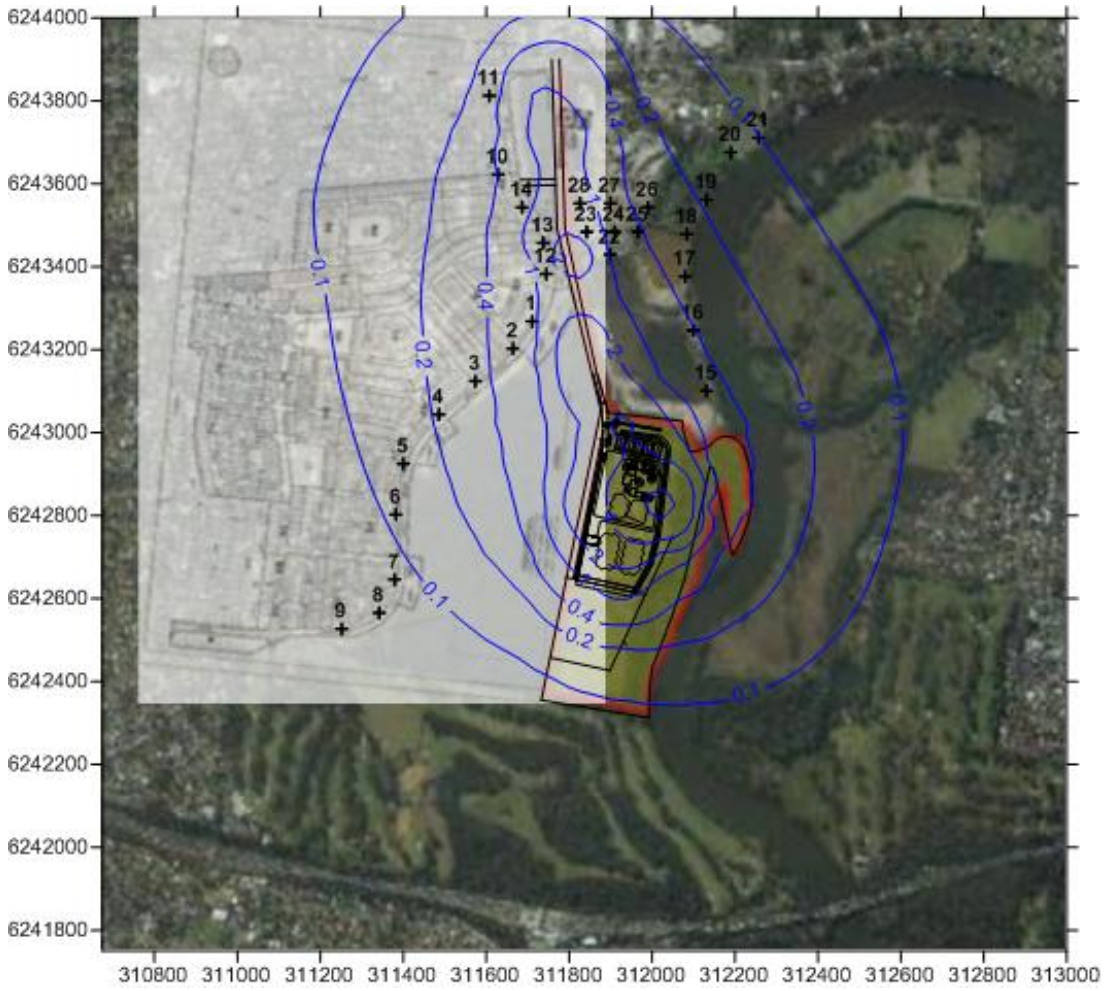
Species:	Location:	Scenario:	Percentile:	Averaging Time:
PM_{10}	Moorebank Recyclers	Moorebank Recyclers Only	Average	Annual
Model Used:	**Units:**	**Guideline:**	**Met Data:**	**Plot:**
AERMOD v8.2.0	µg/m^3	N/A	AERMET generated	J. Cox

Figure 4: Predicted annual average PM_{10} concentrations - Moorebank Recyclers only



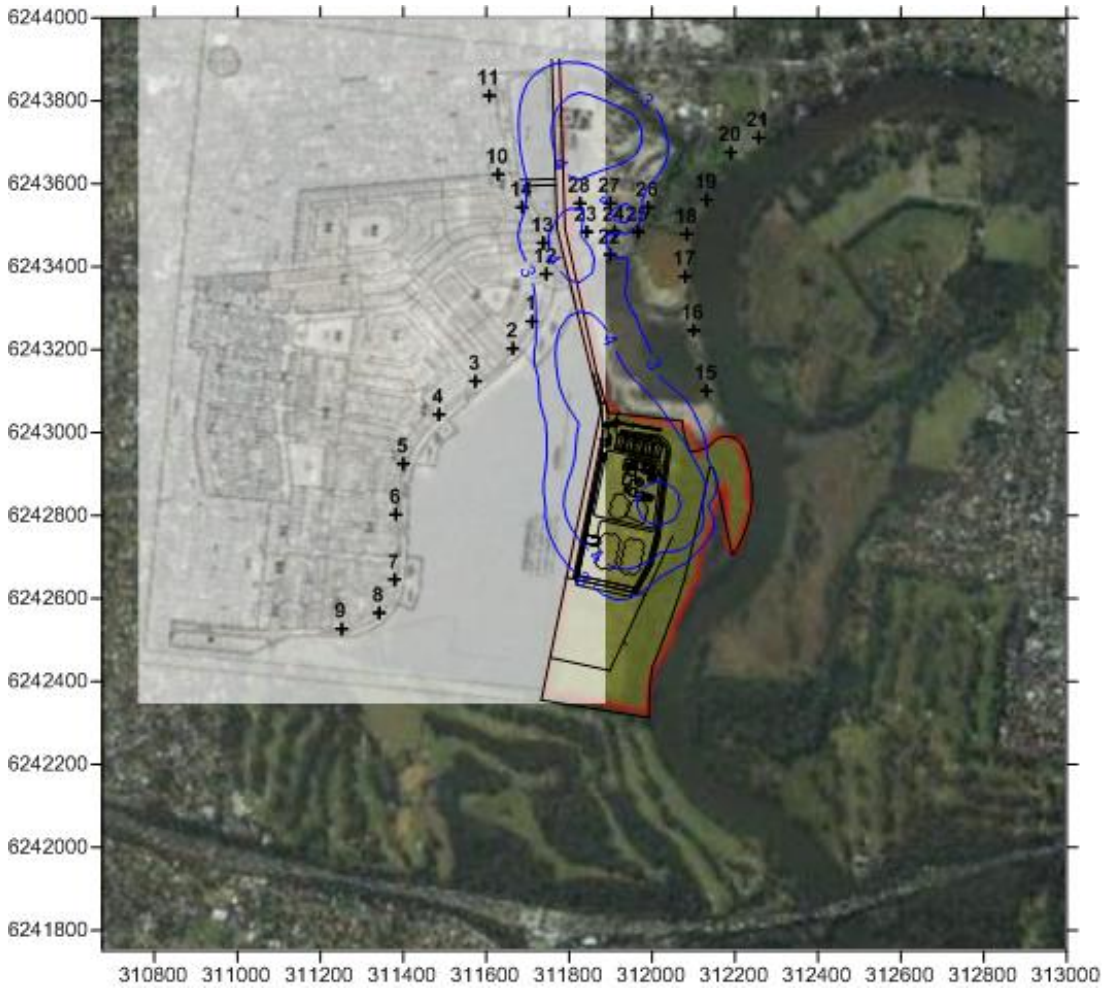
Species:	Location:	Scenario:	Percentile:	Averaging Time:
PM_{10}	Moorebank Recyclers	Cumulative (Moorebank + Benedicts+ background)	Average	Annual
Model Used:	**Units:**	**Guideline:**	**Met Data:**	**Plot:**
AERMOD v8.2.0	µg/m^3	50 µg/m^3	AERMET generated	J. Cox

Figure 5: Predicted annual average PM_{10} concentrations – cumulative



Species:	Location:	Scenario:	Percentile:	Averaging Time:
Dust Deposition	Moorebank Recyclers	Moorebank Recyclers Only	Average	Annual
Model Used:	**Units:**	**Guideline:**	**Met Data:**	**Plot:**
AERMOD v8.2.0	g/m^2/month	2 g/m^2/month	AERMET generated	J. Cox

Figure 6: Predicted annual average dust deposition levels - Moorebank Recyclers only



Species:	Location:	Scenario:	Percentile:	Averaging Time:
Dust Deposition	Moorebank Recyclers	Cumulative (Moorebank + Benedicts+ background)	Average	Annual
Model Used:	**Units:**	**Guideline:**	**Met Data:**	**Plot:**
AERMOD v8.2.0	g/m^2/month	4 g/m^2/month	AERMET generated	J. Cox

Figure 7: Predicted annual average dust deposition levels - cumulative

3.6.2 24-hour average concentrations

3.6.2.1 Incremental

The maximum predicted 24-hour average ground level concentrations (glcs) of PM_{10} at each sensitive receiver are presented in **Table 11**. These have been predicted based on the worst-case activities at the proposed operations at Moorebank Recycling and Benedicts Sand and Gravel Processing.

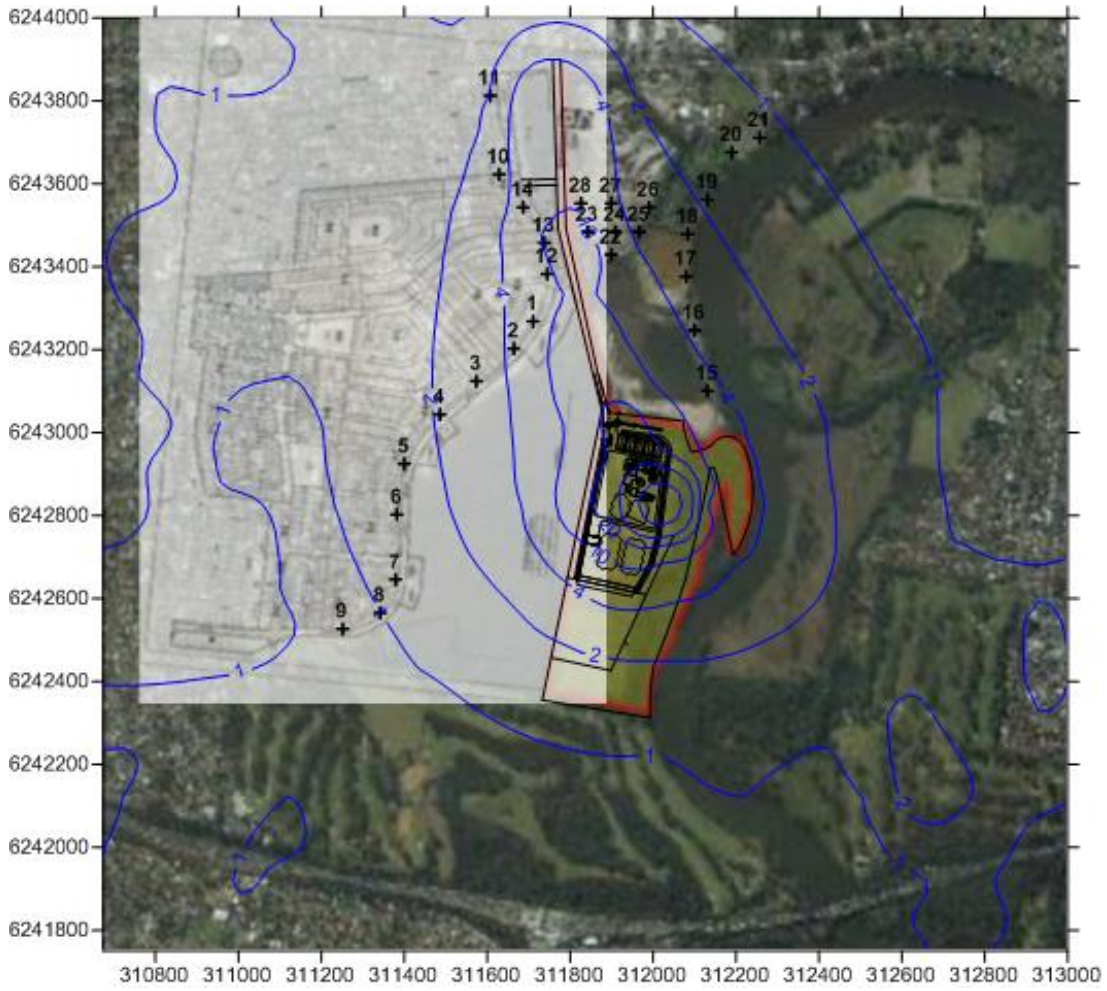
It is important to note that the cumulative predicted glcs do not always equal the sum of the predicted glcs from each individual operation as the maximum predicted glc from the individual sites may occur on different days than the maximum cumulative glc.

A contour plot showing the maximum predicted 24-hour average concentrations from the proposed operations at Moorebank Recycling is shown in **Figure 8**.

An assessment of the cumulative 24-hour average PM_{10} concentrations is presented in **Section 3.6.2.2**.

Table 11: Predicted concentrations at sensitive receivers – maximum 24-hour average PM_{10} (µg/m³)

Location	ID	X (m)	Y (m)	Maximum 24-hour average PM_{10} concentrations (µg/m³)		
				Project only	Benedicts Sand	Project + Benedicts
				Impact Assessment Criteria		
		MGA Zone 56		*N/A*	*N/A*	*N/A*
Georges Fair	1	311711	6243268	6.3	0.9	7.2
	2	311665	6243203	4.5	0.7	5.2
	3	311574	6243124	2.9	0.5	3.4
	4	311486	6243044	2.1	0.3	2.4
	5	311400	6242925	1.6	0.3	1.8
	6	311382	6242803	1.4	0.2	1.6
	7	311379	6242646	1.2	0.2	1.4
	8	311342	6242565	1.0	0.2	1.2
	9	311252	6242527	0.8	0.1	1.0
	10	311629	6243622	3.1	1.7	4.8
	11	311608	6243812	2.1	1.3	3.4
	12	311745	6243382	8.7	1.7	10.3
	13	311738	6243457	11.0	2.3	13.2
	14	311687	6243543	5.2	2.2	7.4
Proposed Marina	15	312131	6243101	4.9	0.6	5.4
	16	312100	6243246	3.7	1.0	4.6
	17	312080	6243376	3.0	1.8	4.7
	18	312084	6243479	2.5	2.7	4.9
	19	312131	6243561	1.9	2.6	4.3
	20	312190	6243675	1.4	1.8	3.1
	21	312257	6243711	1.1	1.3	2.3
Future residences on Benedicts Land	22	311899	6243429	6.0	Operations assumed to have ceased	6.0
	23	311843	6243484	9.8		9.8
	24	311910	6243484	5.0		5.0
	25	311966	6243484	3.7		3.7
	26	311991	6243542	3.0		3.0
	27	311899	6243553	4.6		4.6
	28	311826	6243553	9.3		9.3



Species:	Location:	Scenario:	Percentile:	Averaging Time:
PM_{10}	Moorebank Recyclers	Moorebank Recyclers Only (maximum day)	Maximum	24-hour
Model Used:	**Units:**	**Guideline:**	**Met Data:**	**Plot:**
AERMOD v8.2.0	$\mu g/m^3$	N/A	AERMET generated	J. Cox

Figure 8: Maximum predicted 24-hour average PM_{10} concentrations - Moorebank Recyclers only (maximum day)

3.6.2.2 Cumulative 24-hour average PM_{10} concentrations

It is difficult to accurately predict the cumulative 24-hour PM_{10} concentrations using dispersion modelling due to the difficulties in resolving (on a day to day basis) the varying intensity and duration of activities, the weather conditions at the time of the activity, or combination of activities. The difficulties in predicting cumulative 24-hour impacts are compounded by the day to day variability in ambient dust levels and the spatial and temporal variation in any other anthropogenic activity e.g. agricultural activity, bushfires etc., including mining in the future. Experience shows that the worst-case 24-hour PM_{10} concentrations are often strongly influenced by other sources such as bushfires and dust storms, which are essentially unpredictable.

Due to the difficulties outlined above, cumulative 24-hour average concentrations have been evaluated using a statistical approach (Monte Carlo Simulation). This approach has been provided to achieve the objectives of a Level 2 Assessment (i.e. refined dispersion modelling technique using site-specific input data) (see Section 11.2 of (**DEC, 2005**)). The cumulative assessment focuses on the receptors predicted to be most impacted by the proposed operations at Moorebank Recycling,

namely R1, R12 and R13. Pacific Environment has received feedback from EPA that if used appropriately, a Monte Carlo approach is an appropriate way to characterise cumulative 24-hour average concentrations and it has been applied in the assessment of a number of recent large-scale extractive operations, such as open-cut coal mines.

The Monte Carlo Simulation is a statistical approach that combines the frequency distribution of one data set (in this case background 24-hour average PM_{10} concentrations) with the frequency distribution of another data set (modelled concentrations at a given receptor). This is achieved by repeatedly randomly sampling and combining values within the two data sets to create a third, 'cumulative' data set and associated frequency distribution.

To generate greater confidence in the statistical robustness of the results, the Monte Carlo Simulation was repeated 250,000 times for each of the receptors. In other words, the same 1-year set of predicted (modelled) 24-hour PM_{10} concentrations due to the Project were added to 250,000 variations of the randomly selected background concentrations at each receptor (i.e. a different random background concentration is selected each time).

The background data used in the assessment were taken from the EPA monitoring stations at Liverpool, Chullora and Earlwood for the period January 2002 to 7 May 2013.

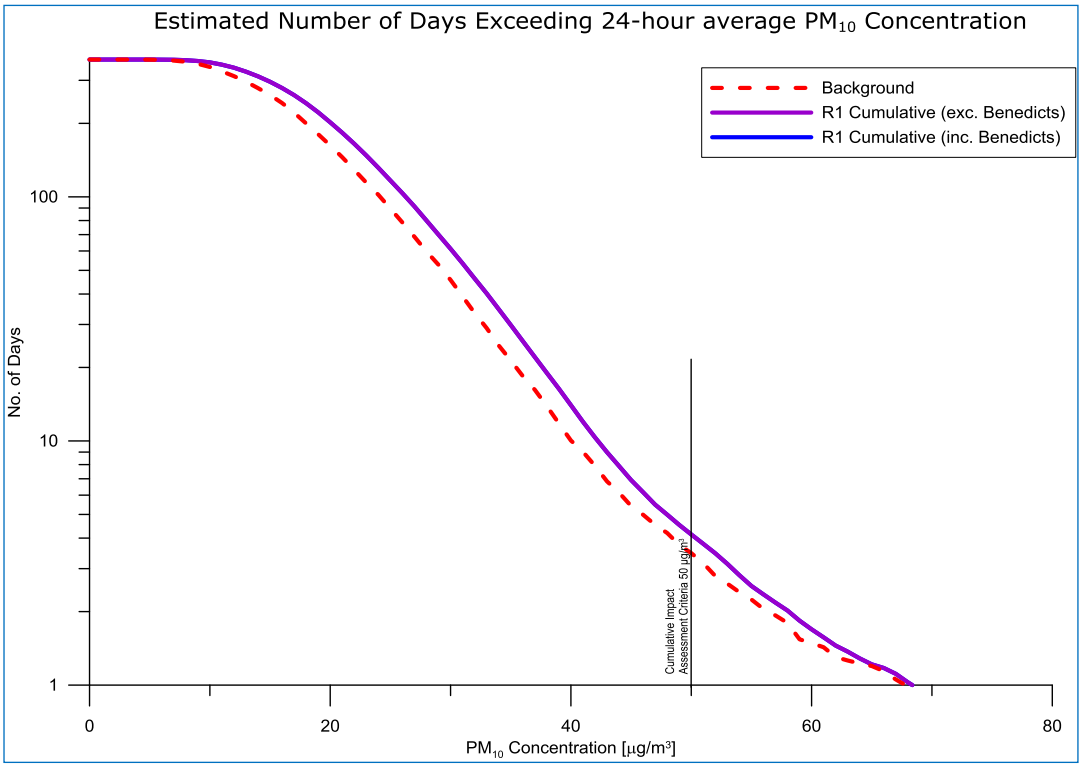
Individual 24-hour average glcs due to the proposed Moorebank Recycling were then added to a random value from the above data set. This process is repeated 250,000 of times yielding the 'cumulative' data set, which is then presented as a frequency distribution. The same process was repeated with the sum of the 24-hour average glcs from the proposed Moorebank Recycling and Benedicts Sand and Gravel.

The process assumes that a randomly selected background value would have a chance equal to that of any other background value from the data set of occurring on the given 'model day'. This is considered to be conservative as there is no consideration to prevailing wind directions. However, an analysis of the Monte Carlo method shows that over sufficient repetitions, this yields a good statistical estimate of the combined and independent effects of varying background and Project contributions to total PM_{10}.

The results of this analysis are presented graphically in **Figure 9** to **Figure 11**. The plots show the statistical probability of 24-hour average PM_{10} concentrations being above the EPA 24-hour average PM_{10} criterion of 50 $\mu g/m^3$. Note that the y-axis is a logarithmic scale.

It is noted that the actual number of exceedances per year due to cumulative impacts cannot be predicted precisely and would depend on actual Project activities, other activities in the area, weather conditions, and background levels in the future.

Whilst the actual number of exceedances per year cannot be predicted with certainty, the analysis shows that when cumulative impacts are considered, the probability of exceeding the impact assessment criterion of 50 $\mu g/m^3$ is not much different than the probability of it already being exceeded under background conditions.



NB: The prediction lines including and excluding Benedicts sit on top of each other.

Figure 9: Frequency distribution of 24-hour average concentration at R1 (µg/m³)

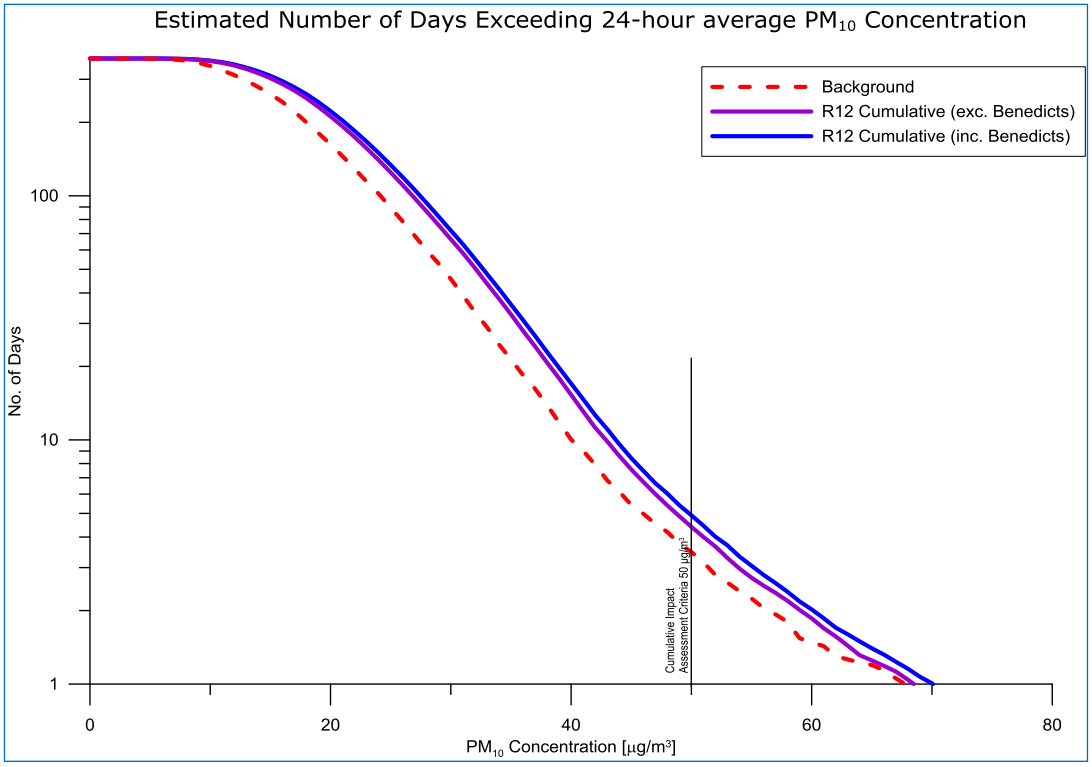


Figure 10: Frequency distribution of 24-hour average concentration at R12 (µg/m³)

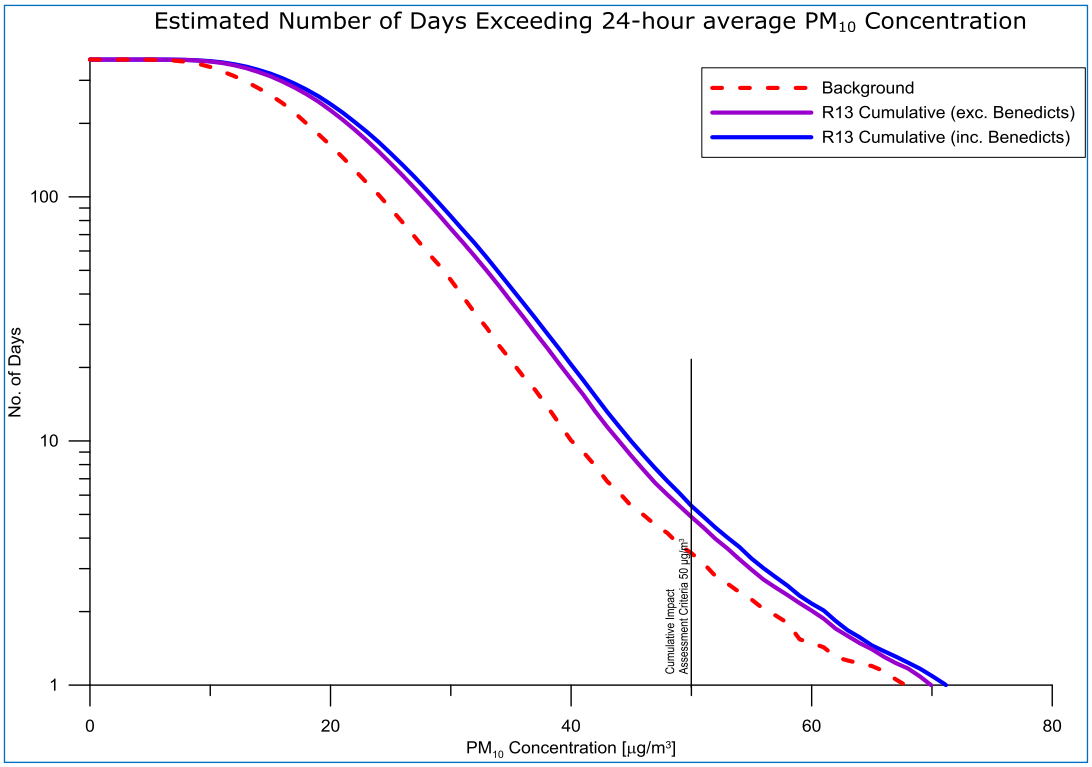


Figure 11: Frequency distribution of 24-hour average concentration at R13 (µg/m³)

3.7 Conclusions

Updated dispersion modelling completed for the proposed operations has demonstrated that it can be appropriately managed so as to comply with all the relevant NSW EPA air quality impact assessment criteria and not adversely affect local air quality (as shown on **Figure 3**, **Figure 5** and **Figure 7**). These criteria have been set at a level designed to safeguard the health and amenity of the general public.

The incremental change to 24-hour average PM_{10} concentrations due the proposed operations (as shown on **Figure 8**), are minimal compared to the peak concentrations that result from natural events such as dust storms and bushfires.

4 DUST MANAGEMENT STRATEGIES

A proactive and reactive air quality management plan (AQMP) would be developed and implemented in accordance with Department of Planning (DP&I) and NSW EPA requirements. The AQMP will detail the following:

- The dust emission controls to be applied on site.
- Dust monitoring to be undertaken.
- Wind speed and wind direction triggers with associated mitigation measures to be implemented during adverse weather conditions.

Table 3 details the dust emission controls that would be applied to operations at site. In summary, the following controls would be used:

- Delivery trucks entering and leaving site on sealed access road
  - Tar sealed
  - Regular water application
  - Sweeping
- Delivery trucks entering and leaving site on unsealed internal roads

    - Cement stabilised road base
    - Regular water application to road surface
- Vehicles unloading to tipping zone stockpiles
    - Water sprays/fog canon
- Primary crushing
    - Wet suppression and indoors
- Secondary crushing
    - Wet suppression and indoors
- Screening
    - Wet suppression and indoors
- Loading to product stockpiles from conveyors
    - Water sprays
- Loading from product stockpiles to trucks
    - Material already high moisture content from processing/water sprays as required
- Product trucks on paved surfaces entering/leaving site
    - Tar sealed
    - Regular water application
    - Sweeping
- Product trucks on unpaved surfaces entering/leaving site
    - Cement stabilised road base
    - Regular water application to road surface
- Wind erosion from tipping stockpiles
    - Water sprays/surface crusting
- Wind erosion from product stockpiles
    - Water sprays/surface crusting
- Wind erosion from open areas
    - Water sprays/surface crusting

It is envisaged that the monitoring would include the following:

- On-site meteorological station.
- Real-time monitoring of PM_{10} concentrations air quality in the vicinity of the residences predicted to be most impacted by the operations. An additional monitor would also be located to the south of the site. Analysis of the data from these two monitoring locations, in combination with meteorological data, will enable the Project contribution to measured concentrations to be determined. It proposed that the real-time monitoring would be completed for a limited period of time to demonstrate that the Project is not adversely impacting the local air quality.

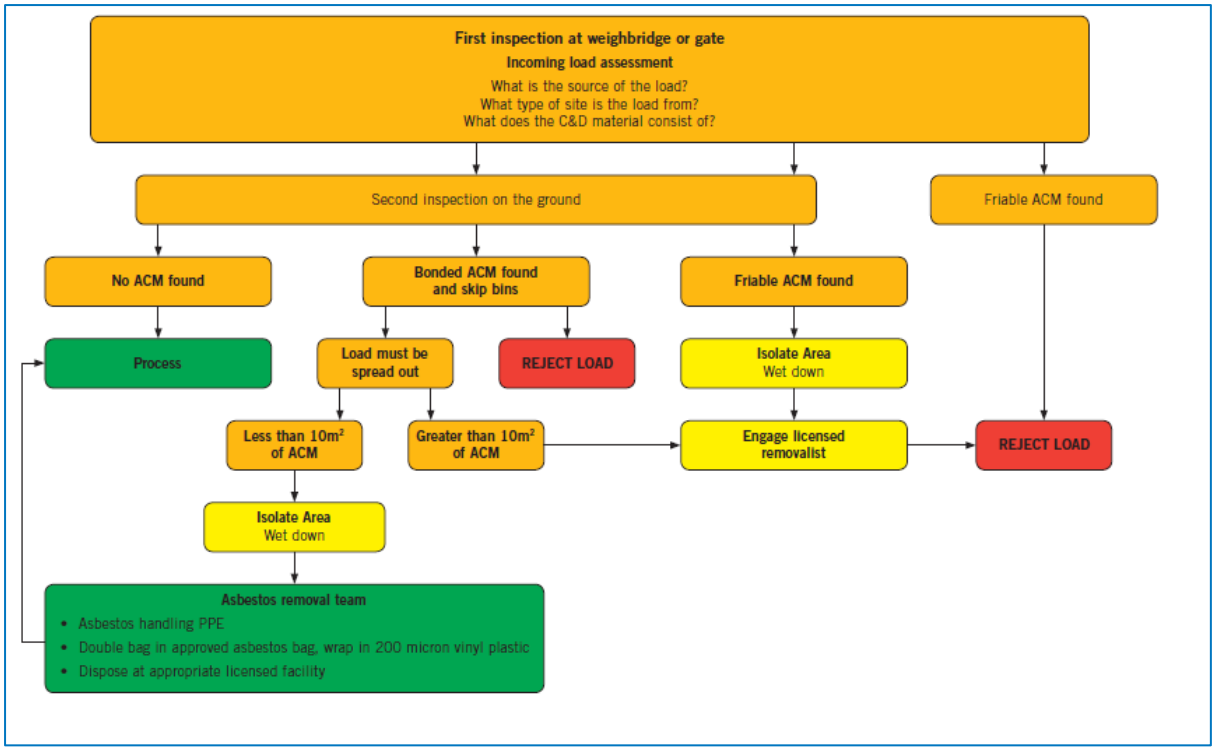
Concrete Recyclers have extensive experience in operating and controlling dust emissions from facilities such as that proposed at Moorebank and a copy of their Standard Operating Procedures for Dust Control from a similar facility are included in **Appendix B**.

5 ASBESTOS

In accordance with the Workcover NSW guide "*Management of asbestos in recycled construction and demolition waste*" (**Workcover, 2010**), the proposed facility will implement a waste screening and refusal procedure at weighbridge and the unloading area(s) to ensure only approved waste is accepted.

In addition to the multi-level inspection process shown in **Figure 12**, the site will:

- advise suppliers that asbestos and asbestos-containing material (ACM) will not be accepted
- incorporate a 'no asbestos clause' in contracts
- install highly visible signs indicating that NO ASBESTOS in C&D waste will be accepted
- ensures that workers who receive and inspect C&D materials are trained and provided with suitable equipment to complete their tasks
- have a site safety plan that documents a safe system of work



Source: **Workcover NSW (2010)**

Figure 12: Asbestos-containing Material Inspection Process

6 SILICA

As detailed in **Table 3**, extensive dust management measures will be applied at site to minimise the potential for any dust, including respirable crystalline silica, to reach the community.

It is also important to note, that whilst it is accepted there are a range of diseases that can be caused from workplace exposure to toxic dusts, in 2006 a Senate Inquiry on the subject (**Commonwealth of Australia, 2006**) stated (emphasis added):

> *"there have been **no observances of silicosis arising from exposure to respirable crystalline silica in the community**. This was not only the case in Australia, but overseas as well. Silicosis was seen as an industrial problem, not a community problem: .any source of silica dust that is industrial is dissipated in terms of its intensity very rapidly by distance. So, although there is a theoretical possibility that somebody could be living next to a source of respirable silica dust, in practice nobody has ever found such a case".*

This conclusion is agreeable with the statement made by the World Health Organisation that "to date, there are no known adverse health effects associated with non-occupational exposure to quartz dust" (**CICAD, 2000**).

7 ODOUR

The facility would only receive non-putrescible waste materials. Putrescible waste can be defined as organic material that is capable of being decomposed which often leads to the release of an offensive odour. Non-putrescible material is material that cannot be decomposed by microorganisms and hence would not generate this odour. The type of non-putrescible material likely to be received on-site may include; concrete, bricks, asphalt, sandstone and sand from the building and construction industry.

All loads will be inspected prior to entering the site and if any putrescible waste is found, the load will be rejected.

8 STOCKPILE MANAGEMENT

Dust emissions from the stockpiles will be managed as summarised below:

- All aggregates will be kept damp.
- Uncrushed brick and concrete and sandstone:
    - Water sprays/foggers will be applied to the material as each load tips to the uncrushed/brick rubble/concrete rubble stockpiles. An example of a fogger being applied to the unloading of materials is shown in **Figure 13**.
    - Additional water will be sprayed over the stockpiles, a surface crust then forms which prevents dust emissions due to wind erosion.
    - Water sprays will be used when loading from the stockpiles to the primary crusher.
- Crushed road base (product)
    - The material will be moist when it exits the crusher and is loaded to the product stockpiles.
    - Due to the inherent moisture of the material, a surface crust then forms which prevents dust emissions due to wind erosion.
    - Irrigation-type water sprays/foggers will be used during the load-out process.

Figure 13: Application of fogger to unloading operations

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Appendix A: Emission Calculations

Table A.1: TSP emissions – Benedicts Sand and Gravel (annual)

ACTIVITY	TSP emission (kg/y)	Intensity	Units	Emission factor	Units	Variable 1	Units	Variable 2	Units	Variable 3	Units	Variable 4	Units	Variable 5	Units	Control	Units
Trucks on unpaved surfaces entering/leaving site	2,675	100,000	t/y	0.107	kg/t	21.2	t/load	32	Mean vehicle weight (t)	1	km/trip	2.27	kg/VKT	5	% silt content	75	% control
Excavators loading from stockpile	284	100,000	t/y	0.003	kg/t	2.4	average of (wind speed/2.2)^1.3 in m/s	2	moisture content (%)								
Excavators unloading to crusher/screens	284	100,000	t/y	0.003	kg/t	2.4	average of (wind speed/2.2)^1.3 in m/s	2	moisture content (%)								
Sand Processing (crushing and screening)	1,520	100,000	t/y	0.0152	kg/t												
Wind erosion	2,996	7.05	ha	0.10	kg/ha/h	8760	h/y									50	% control

Table A.2: PM_{10} emissions – Benedicts Sand and Gravel (annual)

ACTIVITY	PM10 emission (kg/y)	Intensity	Units	Emission factor	Units	Variable 1	Units	Variable 2	Units	Variable 3	Units	Variable 4	Units	Variable 5	Units	Control	Units
Trucks on unpaved surfaces entering/leaving site	687	100,000	t/y	0.027	kg/t	21.2	t/load	32	Mean vehicle weight (t)	1	km/trip	0.58	kg/VKT	5	% silt content	75	% control
Excavators loading from stockpile	134	100,000	t/y	0.001	kg/t	2.4	average of	2	moisture content (%)								
Excavators unloading to crusher/screens	134	100,000	t/y	0.001	kg/t	2.4	average of	2	moisture content (%)								
Sand Processing (crushing and screening)	550	100,000	t/y	0.0055	kg/t												
Wind erosion	1,498	7.05	ha	0.05	kg/ha/h	8760	h/y									50	% control

Table A.3: PM_{10} emissions – Benedicts Sand and Gravel (maximum daily)

ACTIVITY	TSP emission (kg/y)	Intensity	Units	Emission factor	Units	Variable 1	Units	Variable 2	Units	Variable 3	Units	Variable 4	Units	Variable 5	Units	Control	Units
Trucks on unpaved surfaces entering/leaving site	3,437	500,000	t/y	0.027	kg/t	21.2	t/load	32	Mean vehicle weight (t)	1	km/trip	0.58	kg/VKT	5	% silt content	75	% control
Excavators loading from stockpile	672	500,000	t/y	0.001	kg/t	2.4	average of (wind speed/2.2)^1.3 in m/s	2	moisture content (%)								
Excavators unloading to crusher/screens	672	500,000	t/y	0.001	kg/t	2.4	average of (wind speed/2.2)^1.3 in m/s	2	moisture content (%)								
Sand Processing (crushing and screening)	550	100,000	t/y	0.0055	kg/t												
Wind erosion	1,498	7.05	ha	0.05	kg/ha/h	8760	h/y									50	% control

Table A.4: TSP emissions – Moorebank Recyclers (annual)

ACTIVITY	TSP emission (kg/y)	Intensity	Units	Emission factor	Units	Variable 1	Units	Variable 2	Units	Variable 3	Units	Variable 4	Units	Variable 5	Units
Delivery trucks on paved surfaces entering/leaving site	8,398	500,000	t/y	0.017	kg/t	21.2	t/load	32	Mean vehicle weight (t)	1.716	km/return trip	0.21	kg/VKT	2	silt loading (g/m2)
Delivery trucks on unpaved surfaces entering/leaving site	7,033	500,000	t/y	0.056	kg/t	21.2	t/load	32	Mean vehicle weight (t)	1	km/trip	1.19	kg/VKT	2	% silt content
Vehicles unloading to tipping zones	426	500,000	t/y	0.003	kg/t	2.4	average of (wind speed/2.2)^1.3 in m/s	2	moisture content (%)						
Pulverising	135	50,000	t/y	0.0027	kg/t										
Excavators loading from stockpile	1,421	500,000	t/y	0.003	kg/t	2.4	average of (wind speed/2.2)^1.3 in m/s	2	moisture content (%)						
Excavators unloading to crusher	1,421	500,000	t/y	0.003	kg/t	2.4	average of (wind speed/2.2)^1.3 in m/s	2	moisture content (%)						
Primary crushing	27	500,000	t/y	0.0027	kg/t	2.0	Number of stages								
Secondary crushing	27	500,000	t/y	0.0027	kg/t	2.0	Number of stages								
Screening	125	500,000	t/y	0.0125	kg/t	2.0	Number of stages								
Loading to product stockpiles	426	500,000	t/y	0.003	kg/t	2.4	average of (wind speed/2.2)^1.3 in m/s	2	moisture content (%)						
Loading from product stockpiles to trucks	426	500,000	t/y	0.003	kg/t	2.4	average of (wind speed/2.2)^1.3 in m/s	2	moisture content (%)						
Product trucks on paved surfaces entering/leaving site	8,398	500,000	t/y	0.017	kg/t	21.2	t/load	32	Mean vehicle weight (t)	1.716	km/return trip	0.21	kg/VKT	2	silt loading (g/m2)
Product trucks on unpaved surfaces entering/leaving site	7,033	500,000	t/y	0.056	kg/t	21.2	t/load	32	Mean vehicle weight (t)	1	km/trip	1.19	kg/VKT	2	% silt content
Vehicles exhausts/tyre & brake wear	130														
Wind erosion from tipping stockpiles	514	1.21	ha	0.10	kg/ha/h	8760	h/d								
Wind erosion from product stockpiles	238	0.6	ha	0.10	kg/ha/h	8760	h/d								
Wind erosion from open areas	1,675	3.9	ha	0.10	kg/ha/h	8760	h/d								

Table A.5: PM_{10} emissions – Moorebank Recyclers (annual)

ACTIVITY	TSP emission (kg/y)	Intensity	Units	Emission factor	Units	Variable 1	Units	Variable 2	Units	Variable 3	Units	Variable 4	Units	Variable 5	Units	Control	Units
Delivery trucks on paved surfaces entering/leaving site	1,612	500,000	t/y	0.003	kg/t	21.2	t/load	32	Mean vehicle weight (t)	1.716	km/return trip	0.04	kg/VKT	2	silt loading (g/m2)		
Delivery trucks on unpaved surfaces entering/leaving site	1,505	500,000	t/y	0.012	kg/t	21.2	t/load	32	Mean vehicle weight (t)	1	km/trip	0.26	kg/VKT	2	% silt content	75	% control
Vehicles unloading to tipping zones	202	500,000	t/y	0.001	kg/t	2.4	average of (wind speed/2.2)^1.3 in m/s	2	moisture content (%)							70	% control
Pulverising	60	50,000	t/y	0.0012	kg/t												
Excavators loading from stockpile	672	500,000	t/y	0.001	kg/t	2.4	average of (wind speed/2.2)^1.3 in m/s	2	moisture content (%)								
Excavators unloading to crusher	672	500,000	t/y	0.001	kg/t	2.4	average of (wind speed/2.2)^1.3 in m/s	2	moisture content (%)								
Primary crushing	12	500,000	t/y	0.0012	kg/t	2.0	Number of stages									99	% control
Secondary crushing	12	500,000	t/y	0.0012	kg/t	2.0	Number of stages									99	% control
Screening	43	500,000	t/y	0.0043	kg/t	2.0	Number of stages									99	% control
Loading to product stockpiles	202	500,000	t/y	0.001	kg/t	2.4	average of (wind speed/2.2)^1.3 in m/s	2	moisture content (%)							70	% control
Loading from product stockpiles to trucks	202	500,000	t/y	0.001	kg/t	2.4	average of (wind speed/2.2)^1.3 in m/s	2	moisture content (%)							70	% control
Product trucks on paved surfaces entering/leaving site	1,612	500,000	t/y	0.003	kg/t	21.2	t/load	32	Mean vehicle weight (t)	1.716	km/return trip	0.04	kg/VKT	2	silt loading (g/m2)		
Product trucks on unpaved surfaces entering/leaving site	1,505	500,000	t/y	0.012	kg/t	21.2	t/load	32	Mean vehicle weight (t)	1	km/trip	0.26	kg/VKT	2	% silt content	75	% control
Vehicles exhausts/tyre & brake wear	130																
Wind erosion from tipping stockpiles	257	1.21	ha	0.05	kg/ha/h	8760	h/d									50	% control
Wind erosion from product stockpiles	119	0.6	ha	0.05	kg/ha/h	8760	h/d									50	% control
Wind erosion from open areas	837	3.9	ha	0.05	kg/ha/h	8760	h/d									50	% control

Table A.6: PM_{10} emissions – Moorebank Recyclers (maximum daily)

ACTIVITY	TSP emission (kg/y)	Intensity	Units	Emission factor	Units	Variable 1	Units	Variable 2	Units	Variable 3	Units	Variable 4	Units	Variable 5	Units	Control	Units
Delivery trucks on paved surfaces entering/leaving site	2,824	876,000	t/y	0.003	kg/t	21.2	t/load	32	Mean vehicle weight (t)	1.716	km/return trip	0.04	kg/VKT	2	silt loading (g/m2)		
Delivery trucks on unpaved surfaces entering/leaving site	2,636	876,000	t/y	0.012	kg/t	21.2	t/load	32	Mean vehicle weight (t)	1	km/trip	0.26	kg/VKT	2	% silt content	75	% control
Vehicles unloading to tipping zones	353	876,000	t/y	0.001	kg/t	2.4	average of (wind speed/2.2)^1.3 in m/s	2	moisture content (%)							70	% control
Pulverising	105	87,600	t/y	0.0012	kg/t												
Excavators loading from stockpile	1,177	876,000	t/y	0.001	kg/t	2.4	average of (wind speed/2.2)^1.3 in m/s	2	moisture content (%)								
Excavators unloading to crusher	1,177	876,000	t/y	0.001	kg/t	2.4	average of (wind speed/2.2)^1.3 in m/s	2	moisture content (%)								
Primary crushing	315	876,000	t/y	0.0012	kg/t	2.0	Number of stages									85	% control
Secondary crushing	315	876,000	t/y	0.0012	kg/t	2.0	Number of stages									85	% control
Screening	1,130	876,000	t/y	0.0043	kg/t	2.0	Number of stages									85	% control
Loading to product stockpiles	353	876,000	t/y	0.001	kg/t	2.4	average of (wind speed/2.2)^1.3 in m/s	2	moisture content (%)							70	% control
Loading from product stockpiles to trucks	353	876,000	t/y	0.001	kg/t	2.4	average of (wind speed/2.2)^1.3 in m/s	2	moisture content (%)							70	% control
Product trucks on paved surfaces entering/leaving site	2,824	876,000	t/y	0.003	kg/t	21.2	t/load	32	Mean vehicle weight (t)	1.716	km/return trip	0.04	kg/VKT	2	silt loading (g/m2)		
Product trucks on unpaved surfaces entering/leaving site	2,636	876,000	t/y	0.012	kg/t	21.2	t/load	32	Mean vehicle weight (t)	1	km/trip	0.26	kg/VKT	2	% silt content	75	% control
Vehicles exhausts/tyre & brake wear	130																
Wind erosion from tipping stockpiles	257	1.21	ha	0.05	kg/ha/h	8760	h/d									50	% control
Wind erosion from product stockpiles	119	0.6	ha	0.05	kg/ha/h	8760	h/d									50	% control
Wind erosion from open areas	837	3.9	ha	0.05	kg/ha/h	8760	h/d									50	% control

Appendix B: Concrete Recyclers – Standard Operating Procedure – Dust Control

Concrete Recyclers

Standard Operating Procedure

Dust Control – Discharge Conveyors and Stockpiles

14 Thackeray Street, Camellia **SOP001** **20/11/11**

Description

Dust arising from the discharge of crushed material from an enclosed /semi-enclosed area is addressed with:

- Water sprays at discharge point.
- Water sprays at selected locations in plant.
- Water sprays on stockpiles.

Authorities / Permits

Crushing Plant Operators reporting to Yard Foreman is responsible for the execution of this procedure.

Warnings / Safety

- Constant spray may cause slippery areas. Staff should be aware and regularly clean away any silt or mud build-ups.
- Any electric equipment operated in the vicinity of the discharge head pulley should be designed to operate in a high humidity/damp environment.
- All electric outlets should be run on circuits that have suitable earth leakage devices fitted.

Location

- Spray heads at all product discharge conveyor at discharge end.
- Sprinklers located around stockpiles.

Access / Traffic Issues

Access for service, adjustment and cleaning by way of fixed catwalks or elevated work platform fitted to fork lift.

Procedure/s

ALL sprays on discharge chutes are turned on when crushers are operating

Brick Crushing Plant control valve is located inside the building at the south east corner.

Concrete Crushing Plant control valve is located at the south west corner of the perimeter fence surrounding the concrete plant sub-station. There is also an isolating switch controlling a solenoid valve located in the control booth.

Stockpiles – Portable and fixed sprinklers are used on material stockpiles. Water should be applied when the stockpiles are dry and prior to opportunity of discharging dust. The wetting of all stockpiles in the recycling yard to ensure that the stockpile develops a crust, known as crusting the stockpile.

Ensure that all stockpile and internal roads are wet and / or crusted prior to leaving for the night.

Maintenance

Daily

- Crusher staff must make a visual inspection of all water lines and spray nozzles, reporting blockages, failures or leaks to foreman.

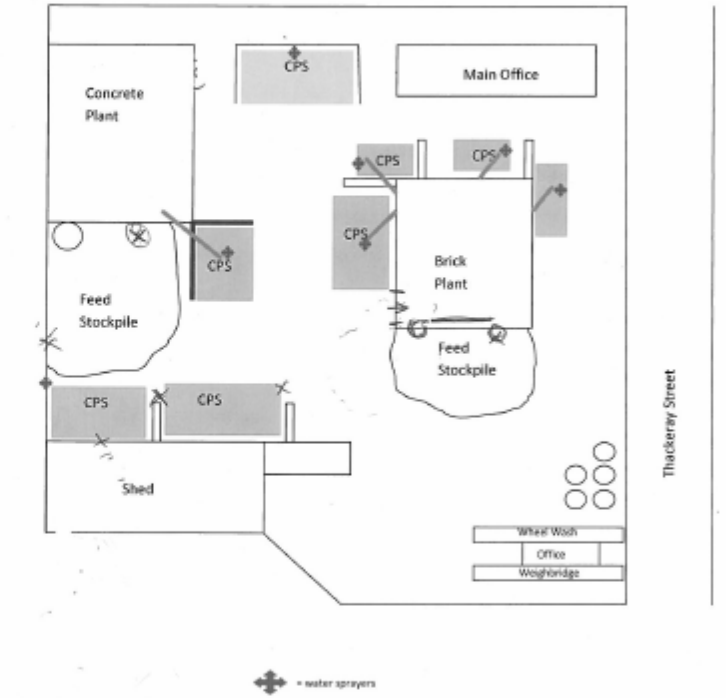
Concrete Recyclers

Standard Operating Procedure

Weekly

- Maintenance staff to check in-line filters, cleaning /clearing where necessary.

Site Plan



Concrete Recyclers

Standard Operating Procedure

Dust Control – Loading Steel

14 Thackeray Street, Camellia **SOP002** **25/11/11**

Description

When reinforcing and other steel is won in the processing of material it is stockpiled then loaded onto semi trailers to be taken off-site. When it is loaded some dust is liberated. Control of this dust is achieved by water spray, water cannon and regular wetting down of access roads with a spray water tanker.

Authorities / Permits

- Excavator operator is to be suitably qualified with a current LE licence.
- Yard foreman is responsible for the execution of this procedure.

Warnings / Safety

Staff use an excavator with grabs to load this material. As they are enclosed in an air conditioned cabin they are not exposed to this dust.

Location

See site map "Steel Load-out" location.

Access / Traffic Issues

This is an area where ground staff share space with delivery vehicles and mobile plant .

- High visibility garments to be worn by all ground staff.
- Ground staff to remain outside of the radius of operation for the excavator loading the steel – at least 10 metres at tipping.

Vehicles are to be directed to the steel stockpile area by gate / weighbridge staff. The Tanker driver will be called and the steel-pile will be sprayed with water prior to and as the material is being loaded.

- Ensure safe distance from location of loading is maintained (10 metres)
- Ensure adequate water is applied
- Ensure area is kept damp to minimise dust.
- Ensure Truck driver remains in the cab of the vehicle or at a safe location away from the vehicle.

Concrete Recyclers

Standard Operating Procedure

Dust Control – Perimeter Fences

14 Thackeray Street, Camellia **SOP003**

Figure 1: Weather Station Head

Description

Eastern and western perimeters are enabled with a dust suppressing water spray system. This system enables a fine spray of water to be directed into the facility at a height of approximately 1.5 metres and 2.5 metres on the western and eastern boundaries respectively.

A wind direction and speed monitoring system *(Figure 1)* is installed at two separate locations on site controlling solenoid valves to supply water to the spray lines.

If wind velocity exceed 18 knots form a westerly direction the eastern fence line sprays are activated. If wind velocity exceed 18 knots form a easterly direction the westerly fence line sprays are activated.

Authorities, Permits

Any adjustments to threshold or vector settings are to be authorised by Brent Lawson.

Warnings / Safety

Location

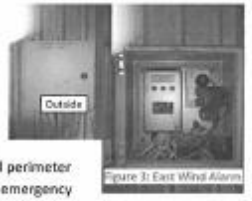


Figure 3: East Wind Alarm

Figure 2: East Control Box

Eastern Perimeter: Adjustment of wind velocity threshold and directional vector settings are executed from a control panel located on the inside wall at the north west corner of the concrete crushing plant shed adjacent to the air blower *(Figure 2)*. Sprinkler settings to enable full perimeter or part perimeter spraying, manual override and emergency stop are adjustable from control box located on the northeast outside wall adjacent to the Grundfos pump control box *(Figure 3)*.

Western Perimeter: Adjustment of wind velocity threshold and directional vector settings are executed from a control panel mounted in a sealed cabinet amongst the pump control gear, under the weather shelter in the centre of the tank farm located in the north western corner of the site, adjacent to the No2 wheel wash (*Figure 4*). Sprinkler settings to enable full perimeter or part perimeter spraying, manual override and emergency stop are adjustable from control a box set on the northern wall of the west perimeter wall substation fence.

Figure 3: West Wind Alarm

Figure 4: West Control Box

Access / Traffic Issues

Eastern weather station located on a-frame support for road-base discharge conveyor. Requires two men to lower for inspection or service.

Eastern Wind Alarm: Hard hat & hearing protection when concrete crushing plant is in operation.

Western alarm and controller located adjacent to main traffic route. Take precautions. Requires two men to lower for inspection or service.

Concrete Recyclers
Standard Operating Procedure

Procedure

The Monitor Sensors Wind Alarm Unit, when used with a Monitor Sensors Anemometer and Wind Direction Sensor, continually monitors the wind condition, and provides visible and audible alarms, whenever programmable wind conditions are sustained for a programmable time period. The alarm will persist whilst the alarm criterion persist and for an additional programmable time period before being reset. In addition to the visible and audible alarms, the unit also provides change-over relay contacts to operate external devices.

Knots	Km/hr	Knots	Km/hr
1	1.9	16	29.6
2	3.7	17	31.5
3	5.6	18	33.3
4	7.4	19	35.2
5	9.3	20	37.0
6	11.1	21	38.9
7	13.0	22	40.7
8	14.8	23	42.6
9	16.7	24	44.4
10	18.5	25	46.3
11	20.4	26	48.2
12	22.2	27	50.0
13	24.1	28	51.9
14	25.9	29	53.7
15	27.8	30	55.6

In all there are 5 settings available to the operator. They are: -

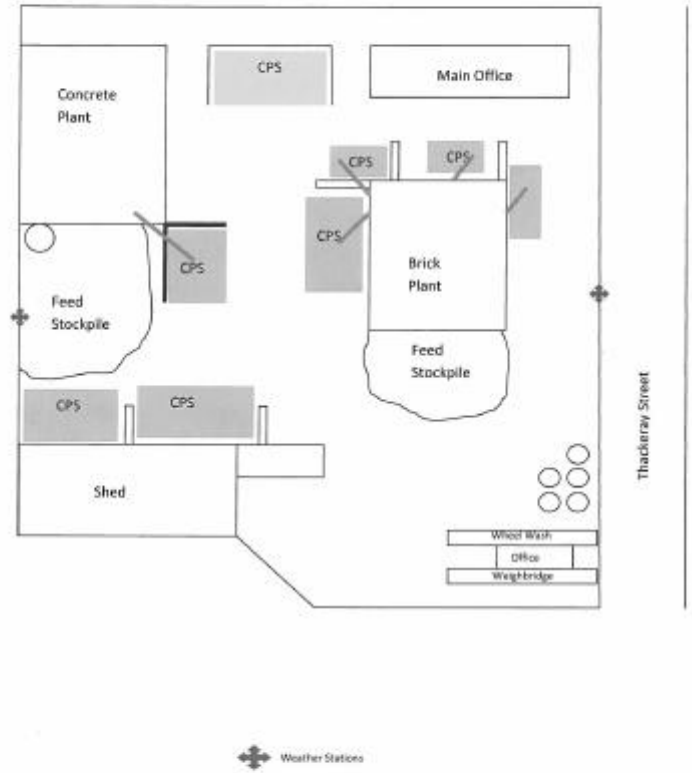
1. The wind speed threshold and whether the alarm should sound above or below this value.
2. The centre direction of the alarm arc.
3. The total alarm arc width.
4. The time period for which the wind conditions must persist before the alarm is triggered.
5. The time period for which the wind conditions must desist before the alarm resets.

The most common usage of the Wind Alarm Unit is to detect a significant wind coming from a particular direction. The strength of the wind to cause the alarm may be set from 1 km/h to 80 km/h in 1 km/h increments. Other units such as metres/sec, miles per hour, feet/sec or knots are available on request. The direction of the wind to cause the alarm may be set from 0 to 360 degrees in 3 degree increments. The width of the alarm arc about the centre direction may be set from 6 to 360 degrees in 6 degree increments.

m/s	km/hr	m/s	km/hr
1	3.6	8.5	30.6
1.5	5.4	9	32.4
2	7.2	9.5	34.2
2.5	9.0	10	36.0
3	10.8	10.5	37.8
3.5	12.6	11	39.6
4	14.4	11.5	41.4
4.5	16.2	12	43.2
5	18.0	12.5	45.0
5.5	19.8	13	46.8
6	21.6	13.5	48.6
6.5	23.4	14	50.4
7	25.2	14.5	52.2
7.5	27.0	15	54.0
8	28.8	15.5	55.8

If the alarm arc is set to the maximum of 360 degrees, then all wind will fall within the alarm arc and the alarm will depend on wind speed alone. The time period for which the wind conditions must persist before the alarm is triggered is called the "on-time". The on-time can be set from 1 to 80 minutes in 1 minute increments. Selecting a longer on-time prevents cycling of the alarm when the wind is gusting above and below the threshold. Similarly, the time period for which the wind conditions must desist before reset is called the "off-time". The off-time can be set from 1 to 80 minutes in 1 minute increments. This is the period of time for which non-alarm conditions must persist before the all-clear is given.

Site Plan



Dust Control – Loading Delivery Vehicles

14 Thackeray Street, Camellia **SOP004**

Description
When dispatching material it is taken from a stockpile and loaded onto trucks to be taken off-site. When it is loaded some dust can be liberated. Control of this dust generated in this process is achieved by water spray on stockpiled material and regular wetting down of access roads with a spray water tanker to prevet dust from loader/ truck manoeuvring.

Authorities / Permits
- Loader operator is to be suitably qualified with a current LL licence.
- Loader Operator and Yard foreman are responsible for the execution of this procedure.

Warnings / Safety
Staff use a wheel loader to load this material. As they are enclosed in an air conditioned cabin they are not exposed to this dust.

Location
Many Locations around the yard.

Access / Traffic Issues
This is an area where ground staff share space with delivery vehicles and mobile plant .

- High visibility garments to be worn by all ground staff.
- Ground staff to remain outside of the radius of operation for the loader loading the product.
- See traffic management plan for other considerations.

Procedure
Vehicles are to be directed to the loading area by gate / weighbridge staff.

- Ensure safe distance from location of loading is maintained
- Ensure adequate water has been applied
- Ensure area is kept damp to minimise dust.
- Ensure truck driver remains in the cab of the vehicle.

Concrete Recyclers

Standard Operating Procedure

Dust Control – Pulling Up

14 Thackeray Street, Camellia **SOP005** **20/11/11**

Description

Feed material tipped at ground level is pushed up by wheel loaders. The stock pile height attained by the wheel loader may be insufficient to allow an excavator working on a pad behind the crushers to reach it or the distribution of material within the stockpile may require adjustment or maintenance. In this case another excavator is deployed to move the material or make it accessible to the excavator feeding the plant. This process is called "pulling-up". Dust may be liberated during this process and must be controlled, by keeping material damp.

Authorities/ Permits

- Excavator operator is to be suitably qualified with a current LE licence.
- Yard foreman is responsible for the execution of this procedure and ensuring that any dust generated is not allowed to leave the site.

Warnings / Safety

- All precautions associated with operating an excavator on uneven and sloping ground to apply.

Location

- Brick and concrete raw feed stockpiles
- Crushed roadbase stockpiles

Access / Traffic Issues

This is an area where ground staff share space with delivery vehicles and mobile plant .

- High visibility garments to be worn by all ground staff.
- Ground staff to remain outside of the radius of operation for the loader loading and excavator pulling up.
- See traffic management plan for other considerations.

Procedures

- All material to be pulled up should be well wet-down prior to commencing work.
- Operations should only proceed when wind conditions do not cause dust to leave site, during high winds (+25 kts) or when dust is generated this activity is to cease.
- Stockpile height not to exceed 8 meters, as seen on the signs in the yard.

Concrete Recyclers

Standard Operating Procedure

Dust Control – Pulverizing/Hammering

14 Thackeray Street, Camellia **SOP006** **20/11/11**

Description

Feed material is sometimes too large or inappropriately shaped to fit into the primary crusher. This material is reduced to a suitable size/shape by breaking the large pieces with a pulverizor or hydraulic hammer attached to an excavator. This process is called "pulverizing". Dust may be liberated during this process and must be controlled.

Authorities/ Permits

- Excavator operator is to be suitably qualified with a current LE licence.
- Yard foreman is responsible for the execution of this procedure and ensuring that any dust generated is not allowed to leave the site.

Warnings / Safety

- All precautions associated with operating an excavator to apply.

Location

- Concrete and brick plant raw feed stockpile.

Access / Traffic Issues

- High visibility garments to be worn by all ground staff.
- Ground staff to remain 10 meters clear of the radius of operation for the excavator pulverising product.
- See traffic management plan for other considerations.
- As hammering takes place close to the tipping area hammering must stop when the tipping truck comes too close to the excavator.

Procedures

- All material to be pulverized should be well wet-down prior and during to commencing work, if dust is generated.
- Material to be hammered may be wet down before or during the breakage, if dust is generated.

Dust Control – Tipping

14 Thackeray Street, Camellia **SOP008**

Description
When material is tipped from vehicles and back-bladed for inspection some dust is liberated. Control is achieved by water spray, water cannon and regular wetting down of access roads with a spray water tanker.

Warnings / Safety
Appropriate PPE should be used by all staff associated with inspecting and supervising the receipt of material.

This may include:

- Dust Mask. Disposable P1 or P2.
- Sunscreen. SPF 30+
- Suitable work attire for prevailing weather.

Authorities/ Permits
Operators and inspectors to have completed the Asbestos Awareness Induction.

Location
See site map "Tipping / Inspection Zone" locations.

Access / Traffic Issues
This is an area where ground staff share space with delivery vehicles and mobile plant .

- High visibility garments to be worn by all ground staff.
- Ground staff to remain outside of the radius of operation for the loader performing back-blading or the truck tipping material – at least 10 metres at tipping.
- Traffic management plan for other considerations.

Procedure
Vehicles are to be directed to the area appropriate to their load by gate / weighbridge staff. The load inspector at that location will spray the load with water prior to and as the load is being tipped.

- Ensure safe distance from location of tipping is maintained (10 metres)
- Ensure adequate water is applied.
- Ensure area is kept damp to minimise dust.

Concrete Recyclers

Standard Operating Procedure

Dust Control – Water Yard

14 Thackeray Street, Camellia **SOP009**

Description
To contain dust at the road surface, water is sprayed onto the ground by a water tanker fitted with a spray nozzle.

Authorities/ Permits
Only persons competent in the operation of the water cart and the spray pump may undertake this task.

Warnings / Safety
Do not allow spray to contact ground staff or site buildings.

Location
In Camellia yard operation ONLY.

Access / Traffic Issues
Not to be driven on street.
For the purpose of definition the water tanker is said to be an item of mobile plant.

Procedure/s
Filling Tanker

- Tanker is parked adjacent to Thackeray Street tank farm or the Concrete crushing plant sub-station.
- Truck Engine and pump motor to be turned off.
- Tank is filled from recycled water tank.

Spray Operation for Nissan UD

- Ensure pump has fuel.
- Ensure area around rear of tanker is clear of personnel.
- Ensure spray control valve is closed and pump throttle is in idle position.
- Start pump.
- Start Truck, wait for pressures to reach correct operating level.
- Check rear vision for clear of traffic and reverse onto the yard track.
- Proceed around traffic areas spraying recycled water onto the track.

Spray Operation for Mitsubishi

- Ensure area around rear of tanker is clear of personnel.
- Ensure spray control valve is closed and the PTO is not engaged.
- Start truck, wait for pressures to reach correct operating level.
- Check rear vision for clear of traffic and reverse onto the yard track.
- Engage PTO and activate pneumatic spray valve.
- Proceed around traffic areas spraying recycled water onto the track.

General

- Ensure all areas are sprayed where truck and loader traffic operate.
- Try to minimise over wetting of the internal roads which may cause a build up of mud. If a build up of mud occurs loader operator are to scrape internal roads and dump mud on uncrushed stockpiles.
- Operators are to spray steel pile as required and prior to loading steel onto recycling truck.
- Spray crusher material stockpile as required.
- Water cart is not to operate in the street unless instructed by foreman. To operate in the street driver must have a current truck licence and the vehicle must be registered.

Maintenance

Daily

- Check fluid levels; Engine Oil, Hydraulic Oil, Coolant Level, Radiator cleanliness.
- General Cleanliness.
- Walk around checking for leaks or damage.
- General servicing

Accountability

Yard Foreman to dictate frequency based on weather and traffic conditions.

Concrete Recyclers
Standard Operating Procedure

Sweeping Street – Dust Control & Tracking Mud Control

14 Thackeray Street, Camellia **SOP010** **25/11/11**

Description

Small amounts of material may accumulate on the road surface as a result of vehicles tracking across the unsealed section of Thackeray Street from the camellia site. This material can form on the road as dust or mud as a result of the weather conditions. Concrete Recyclers wish to restrain the dust being blown and mud being track along the street. Concrete Recyclers utilised a street sweep and manually sweep the gutter to remove any material.

Plant & Equipment

Roadsweeper, Isuzu / Schwarze

Authorities/ Permits

- Operator must hold a current MR Licence.
- Vehicle must have current registration.

Warnings / Safety

- All precautions associated with operating a vehicle on a public street must be observed.
- Operator must ensure flashing amber beacon is operating when vehicle is in use.
- Operator must use left hand drive when operating as a sweeper.

Locations

- Camellia workshop/crusher shed
- Thackeray Street, Camellia
- No 6, Grand Avenue, Camellia

Access / Traffic Issues

- When not in use, park between the two wheel wash's adjacent to the Camellia Weighbridge office.
- All precautions associated with the operation of a vehicle on a public street must be observed.

Street Sweeping Procedure

1. Operation of the Street Sweeper

- Operate all sweepers according to the manufacturer's recommended procedures.
- While sweeping, drive between 5 to 20 Km/h.
- Make sure brushes and water spray hoses are functional before leaving the workshop.
- Fill the water tank daily or as needed.
- Replace brushes when bristle length is less than 100 mm.

2. Sweeping Frequency

- Streets should be swept at a minimum of two times a day or as required due to weather conditions require the road to be cleaned.

3. Disposal of Sweeper Wastewater and Debris

- All sweeper wastewater is to be decanted into Concrete Recyclers holding tank used to hold storm water, this water is to be reused as dust control.
- Dispose of debris and dust that has been picked up by the street sweep is to be dumped onto the uncrushed material stockpiles, ensure that water is sprayed while tipping.

4. Cleaning the Sweeper

- Scrape out left over debris from the hopper after the last dump of the day.
- Always wash sweepers in an area that drains to recycled water.
- The wash area is located adjacent to the workshop.

5. Manually cleaning gutters and drains

- A laborer is to maintain the gutters and silt socks during the working hours of the day, time to time the laborer will manually sweep gutter and clean additional material way from the silt sock and gutters. The laborer is to remove any dirt, silt and waste material from the gutter using brush, shovel and wheelbarrow. Tipping dirt and silt on the uncrushed stockpiles and placing all other waste in the site bin as required.

6. Silt socks

- Silt socks are to be placed around the council storm water drain at the northern end of Thackeray street.

7. Note the as a requirement of the council Concrete Recyclers cannot use a water cart to wet the external street.

Maintenance

Daily Maintenance

1. Remove all waste water and material collected in the hopper. (Dust, leaves,plastic bags, small pieces of timber, etc.)
2. Check brushers and sprayers are correctly operating.
3. Ensure that the water tanks are full.
4. Complete daily machine check list (i.e Water, oil levels, etc)

Weekly Maintenance

1. Complete daily maintenance 1 through to 4.
2. Complete wash down the street sweeper and remove any dust and dirt for body of the vehicle.
3. Measure and adjust the brushers.
4. Ensure all sprayers are operational.

Concrete Recyclers
Standard Operating Procedure

Fortnightly Maintenance

1. Check all sprayers and clear any blocked sprayers. Ensure care is taken when replacing sprayer jets, do not cross thread or over tighten.
2. Check all pipes for leaks.
3. Test that all sprayers are corrected position and aimed at the correct position.
4. Check all values are operational. Take the time to open and close all valves on the street sweeper, ensure that the valves can completely close and open correctly.
5. Check all nuts and bolts; ensure all nuts and bolts are tight.
6. Check for broken welds.
7. Check all tyres and ensure that they have the correct tyre pressure.

Monthly Maintenance

1. Listen to motor and pumps while operating for any undue noise, item to listen for include; rattling caused by cavitations and broken impeller, vibration caused by worn and or broken bearings.
2. Visually check all impellers, ensure that all seals and inspection points are closed before the pump starts.
3. Check all seals for leaks
4. Check all pipe work is satisfactory.

Mechanical Maintenance

Mechanical maintenance is to be performed as per the Isuzu / Schwarze maintenance schedule.

Concrete Recyclers

Standard Operating Procedure

Waste Storage

14 Thackeray Street, Camellia **SOP020** **25/11/11**

Description

Non-Recyclable rubbish removed from material brought to the yard is collected and accumulated. When sufficient material is amassed, a contractor is called to transfer it to a licensed waste depot.

Authorities/ Permits

Approximately three loads is the maximum quantity to be accumulated.

Warnings / Safety

Ground staff are not permitted in the shed while loading activities are in progress.

Location

Shed on the northern perimeter of the yard.

Access / Traffic Issues

Vehicle booked for collection of the rubbish contacts the yard foreman on approach. Yard Foreman arranges traffic control to allow the vehicle to reverse into the shed.

Procedure

Material is loaded into the vehicle with one of the yard wheel loaders, where required water is to be sprayed onto waste material that is being loaded.

Maintenance

Visual inspection to ensure pest infestation does not occur. Bait using environmentally safe / stable baiting systems, as appropriate.

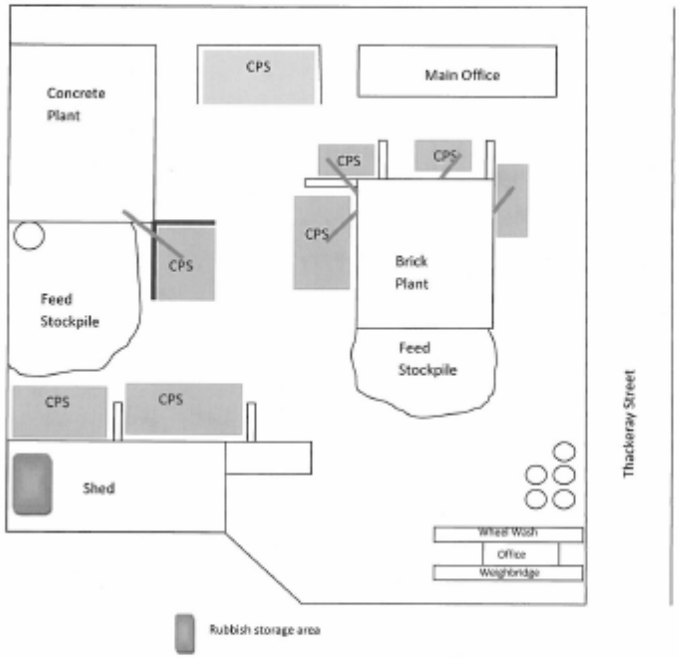
Accountability

- Yard foreman to determine when quantities are reaching maximum limit.
- Yard foreman to contact transport contractor to arrange disposal.

Concrete Recyclers

Standard Operating Procedure

Site Plan



Concrete Recyclers

Standard Operating Procedure

Wheel Wash Cleaning & Maintenance Procedures

14 Thackeray Street, Camellia **SOP021** **25/11/11**

Concrete Recyclers Exit Wheel Wash

The wheel wash is a drive through facility that automatically washes the wheels and tyres of road vehicles leaving the Concrete Recyclers yards. It is designed to remove dirt, mud, slurry form the external surface of the vehicles wheels and chassis.

The wheel wash consists of;

- A drive through concrete pond, with slopping entry and exit ramps.
- Corrugated concrete floor.
- Elbow spray jet facing the oncoming vehicles.
- Corrugated cattle grid for the final removal of waste water.
- Silt trap and re-circulating pump system.

Drainage from the wash pond is via water pipes to the silt trap and sediment tank for the settling of sediment which has entered the system.

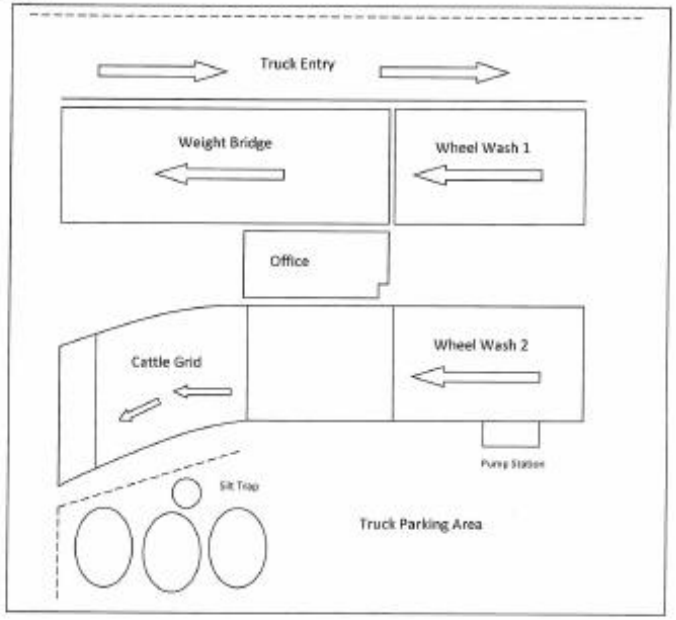
The wash is active during the operational hours of the yard. Water loss from the wash cycles is replaced by adding water into the system during the course of the day.

Photo to the left shows the exit wheel wash, with wash pond and cattle grids.

Concrete Recyclers

Standard Operating Procedure

Site Plan



Traffic Management Plan

During wheel wash 1 cleaning procedure, wheel wash 2 must be kept open and all exiting traffic is to be redirected through wheel wash 2. The cleaning of wheel wash 1 is to be limited to end of the day when there are limited loader vehicles leaving the site. Weighing of material will be done using loader scales

During wheel wash 2 cleaning procedure all exiting traffic is to be redirected through wheel wash 1.

Cleaning Procedure

Wheel Wash 2 Cleaning Procedure

1. Shut down wheel wash pump at pumping station.
2. Cordon off the particular wheel wash with safety cones or barricades, to ensure that no vehicle enter the wheel wash.
3. Removal all floating waste.
4. Set up trash pump with sediment float on the suction hose and waste hose.
5. Build temporary sediment pond in the yard.
6. Feed waste hose into sediment pond that is located in the yard.
7. Start trash pump.
8. Clean wheel wash with additional water during the cleaning procedure.
9. Monitor trash pump to ensure the pump is not run dry.
10. Remove suction hose from pond.
11. Enter pond and shovel remaining sediment into wheel barrow.
12. Allow sediment pond to drain and remove sediment with wheel load, tip sediment onto stockpile of uncrushed brick in the yard.
13. Fill wheel wash with water.
14. Start wheel wash pump at pumping station.

Wheel Wash 1 Cleaning Procedure

1. Shut down wheel wash pump at pumping station.
2. Cordon off the particular wheel wash with safety cones or barricades, to ensure that no vehicle enter the wheel wash.
3. Remove all grates.
4. Remove sediment laden water with wheel loader and tip sediment onto stockpile of uncrushed brick in the yard.
5. Fill wheel wash with water.
6. Start wheel wash pump at pumping station

Silt trap Cleaning Procedure

1. Shut down wheel wash pump at pumping station.
2. Drain excess water from silt trap.
3. Drain silt and sediment from the silt trap to wheel barrow.
4. Tip sediment onto stockpile of uncrushed brick in the yard.
5. Start wheel wash pump at pumping station.

Maintenance Procedure

Daily Maintenance

1. Remove all floating waste (plastic bags, timber, etc.)
2. Remove silt from silt trap.
3. Add water to ensure sufficient water level is maintained.

Concrete Recyclers
Standard Operating Procedure

Weekly Maintenance

1. Remove all floating waste (plastic bags, timber, etc.)
2. Remove & Replace water in the wheel wash.
3. Remove silt from silt trap.
4. Note: remove and replace water in the wheel wash twice a week if wheel wash has high amounts of soil to water ratio.

Fortnightly Maintenance

1. Check all jets and clear any blocked jets. Ensure care is taken when replacing jet, do not cross thread or over tighten.
2. Check all pipes for leaks.
3. Test that all jets are corrected position and aimed at vehicles wheels.
4. Check all values are operational. Take the time to open and close all valves in the wheel wash system, ensure that the valves can completely close and open correctly.
5. Remove all floating waste (plastic bags, timber, etc.)
6. Check all nuts and bolts; ensure all nuts and bolts are tight.
7. Check for broken welds.

Monthly Maintenance

1. Listen to motor and pumps while operating for any undue noise, item to listen for include; rattling caused by cavitations and broken impeller, vibration caused by worn and or broken bearings.
2. Visually check all impellers, ensure that all seals and inspection points are closed before the pump starts.
3. Check all seals for leaks
4. Check all pipe work is satisfactory.

Annual Maintenance

1. Tag and test the electrical pumps and components.

Frequency of cleaning

Cleaning of the wheel wash is depend on the weather condition, if the raining wheel wash may require cleaning twice weekly, when dry then the wheel wash may need cleaning once a week.

Attachment 12

Wilkinson Murray Acoustic Impact Assessment

ACOUSTICS AND AIR

MOOREBANK RECYCLING FACILITY

NOISE IMPACT ASSESSMENT

REPORT NO. 03124-DA
VERSION D

AUGUST 2013

PREPARED FOR

MOOREBANK RECYCLERS PTY LTD
PO BOX 238
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WILKINSON MURRAY

DOCUMENT CONTROL

Version	Status	Date	Prepared By	Reviewed By
A	Draft	19 February 2010	Jimi Ang	-
B	Final	13 April 2011	Simon Kean/Neil Gross	Rob Bullen
C	Final	27 November 2012	Irfan Mohamed	Neil Gross
D	Final	5 August 2013	Irfan Mohamed	Neil Gross

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TABLE OF CONTENTS

Page

GLOSSARY OF ACOUSTIC TERMS

1 INTRODUCTION 1

2 AREA DESCRIPTION & PROPOSED OPERATION 4

2.1 Area Description 4

2.2 Proposed Operations 6

3 EXISTING NOISE ENVIRONMENT 8

3.1 Unattended Noise Monitoring 8

4 OPERATIONAL NOISE CRITERIA 12

5 PREDICTION OF OPERATIONAL NOISE LEVELS 13

5.1 Meteorological Conditions 13

5.2 Prediction Methodology 13

5.3 Predicted Operational Noise Levels 16

6 TRAFFIC NOISE ON PUBLIC ROADS 18

6.1 Noise Criteria for Traffic on Future Public Roads 18

6.2 Prediction of Traffic Noise Levels 18

6.2.1 Brickmakers Drive 19

6.2.2 Newbridge Road and Nuwarra Road 20

7 NOISE FROM CONSTRUCTION ACTIVITIES 21

7.1 Noise Criteria for Construction Activities 21

7.2 Predicted Construction Noise Levels 22

8 CONCLUSION 25

APPENDIX A – Noise Measurement Results

APPENDIX B – EPA Correspondence 3 April 2013

APPENDIX C – Traffic Volumes – Brickmakers Drive

APPENDIX D – Truck Passby Noise Levels

GLOSSARY OF ACOUSTIC TERMS

Most environments are affected by environmental noise which continuously varies, largely as a result of road traffic. To describe the overall noise environment, a number of noise descriptors have been developed and these involve statistical and other analysis of the varying noise over sampling periods, typically taken as 15 minutes. These descriptors, which are demonstrated in the graph below, are here defined.

Maximum Noise Level (L_{Amax}) – The maximum noise level over a sample period is the maximum level, measured on fast response, during the sample period.

L_{A1} – The L_{A1} level is the noise level which is exceeded for 1% of the sample period. During the sample period, the noise level is below the L_{A1} level for 99% of the time.

L_{A10} – The L_{A10} level is the noise level which is exceeded for 10% of the sample period. During the sample period, the noise level is below the L_{A10} level for 90% of the time. The L_{A10} is a common noise descriptor for environmental noise and road traffic noise.

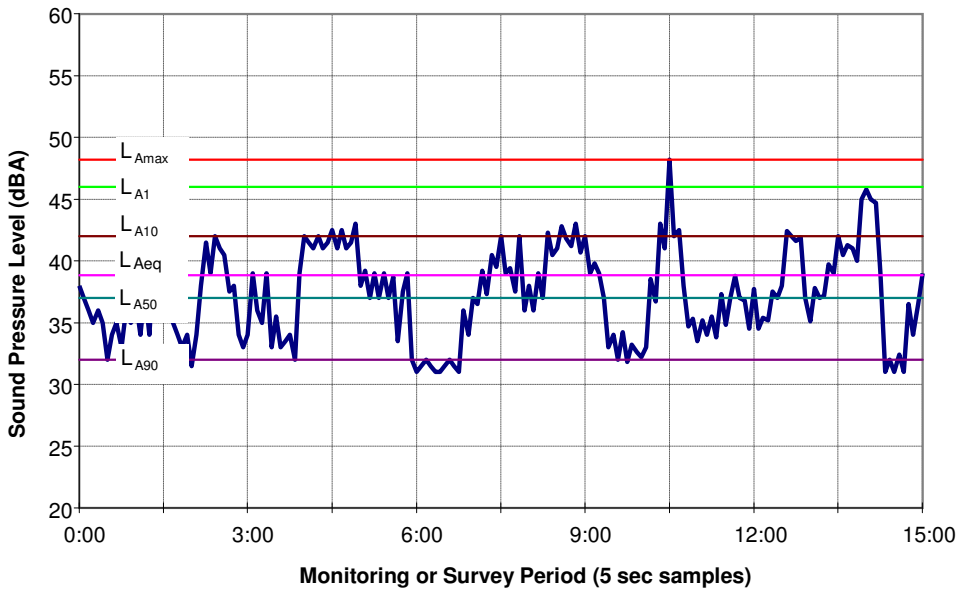
L_{A90} – The L_{A90} level is the noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the L_{A90} level for 10% of the time. This measure is commonly referred to as the background noise level.

L_{Aeq} – The equivalent continuous sound level (L_{Aeq}) is the energy average of the varying noise over the sample period and is equivalent to the level of a constant noise which contains the same energy as the varying noise environment. This measure is also a common measure of environmental noise and road traffic noise.

ABL – The Assessment Background Level is the single figure background level representing each assessment period (daytime, evening and night time) for each day. It is determined by calculating the 10th percentile (lowest 10th percent) background level (L_{A90}) for each period.

RBL – The Rating Background Level for each period is the median value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period – daytime, evening and night time.

Typical Graph of Sound Pressure Level vs Time



1 INTRODUCTION

Nexus Environmental Planning has been engaged by Moorebank Recyclers Pty Ltd to prepare an Environmental Assessment (EA) with regard to a proposed recycling facility at *Lot 6 DP 1065574 Newbridge Road, Moorebank*.(the site). The site is to be developed into a recycling facility which will cater for building and construction waste from the Sydney metropolitan area. It is intended that the proposed facility will cater for approximately 500,000 tonnes per annum of building and construction waste.

The proposed Moorebank Recyclers' site shown in red in Figure 1-1 is large in comparison to the area required for recycling operations. It is proposed that recycling operations will occur in the north western portion, with the southern and eastern areas not utilised.

Figure 1-1 Proposed Site Showing Activities Limited to North Western Part

This report provides an assessment of potential noise impacts from the proposed recycling facility, associated haulage activities and construction of mitigation measures, using guidelines from the NSW Environment Protection Authority (EPA) including the *Industrial Noise Policy (INP)*, *Environmental Criteria for Road Traffic Noise (ECRTN)* and *Environmental Noise Control Manual (ENCM)*. Ameliorative measures are recommended where necessary to ensure that appropriate noise criteria would be met.

Noise during the temporary construction phase has also been assessed in accordance with the EPA *Interim Construction Noise Guidelines (ICNG).*

An original noise assessment was undertaken in April 2011 to accompany the EA. A number of submissions were received during the exhibition of the EA, many relating to the original noise assessment.

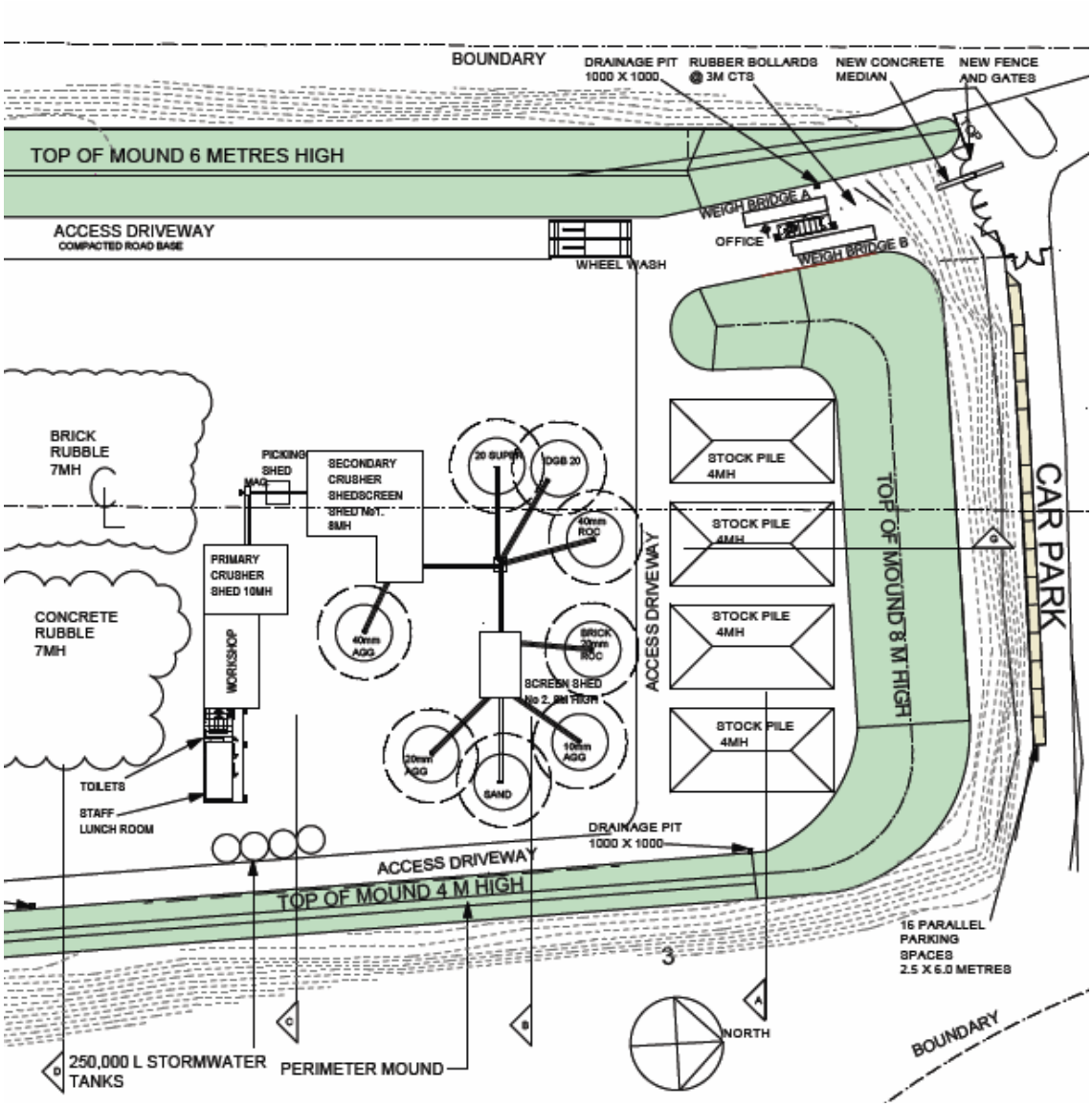
A 3 April 2013 submission to the EA from the EPA (full letter is provided in Appendix B) dealt with the requirements of the EPA for noise assessment. Of particular note is the reference of the EPA to the assessment of noise impact to the Georges Fair residential development and the possible future residential development on the Benedict land (refer Figure 2-1). In this regard, the EPA stated:

> *"There do not appear to be residences to the immediate west of Brickmakers Drive in the area described as the "Boral" area or the Georges Fair residential development. However, the area is zoned R3 residential in the Liverpool LEP, some houses do already exist and housing construction appears to be progressing from the west of this area eastwards towards Brickmakers Drive. Assuming residential development across this entire site is already approved then there are limited options for adding noise mitigation measures, such as setbacks or roadside noise mounds or barriers. Therefore, it does appear reasonable and appropriate to consider the entire area west of Brickmakers Drive as residential.*
>
> *The area to the north of the proposed facility, described as "Tanlane" in the Noise Impact Assessment Appendix and elsewhere as the Benedict Sands site does not, however, have any residences existing or being constructed on it and appears currently to be still operating as an industrial activity. It too is zoned R3 Residential in the Liverpool LEP and the EPA understands that there is an eighteen month sunset clause on the existing industrial activity. However, if residential development is not yet approved for this site then it would be unreasonable for EPA to not support the proposed facility because approval for residential development is not guaranteed or may not occur for some time in the future. In addition, conceivable there are options, such as setbacks, roadside barriers or building layout and design measures that are still available for noise mitigation measures that could be incorporated in any residential development approval."*

This report has been prepared to include updated background noise monitoring data undertaken in May 2013. The report also addresses subsequent minor changes to the proposed recycling facility. These changes are shown in Figure 1-2 and include:

- Modification to bunding at site entrance
- Increase in bunding height along northern perimeter to 8m
- Increase in bunding height along western perimeter to 6m.

Figure 1-2 Proposed Bunding Changes



2 AREA DESCRIPTION & PROPOSED OPERATION

2.1 Area Description

The site is bounded to the north by the current Benedict sand extraction and waste recycling operation (which is referred to as the Tanlane site in this report). The eastern boundary of the site is the Georges River with a passive recreation area (Vale of Ash Reserve) and the Riverland Golf Course across the river. To the south, the site is bound by the New Brighton Golf Course. To the west of the site is the old "Boral" site, part of which is now known as the Georges Fair residential estate. The old "Boral" site is bisected by Brickmakers Drive which extends from Governor Macquarie Drive at the intersection of Newbridge Road, through to Nuwarra Road. The Georges Fair residential development will be on the western side of Brickmakers Drive. A large parcel of significant bushland is located between the Georges Fair residential development and the site. Figure 2-1 presents a locality map showing the site in yellow, with the utilised part in red. This plan also shows the access road from the North West corner of the site, which joins with Brickmakers Drive. This access road follows the existing alignment and uses a short section of "Link" Road to join with Brickmakers Drive. Figure 2-2 shows the approved Georges Fair Masterplan. Figure 2-3 shows an indicative Tanlane residential layout.

Figure 2-1 Locality Map

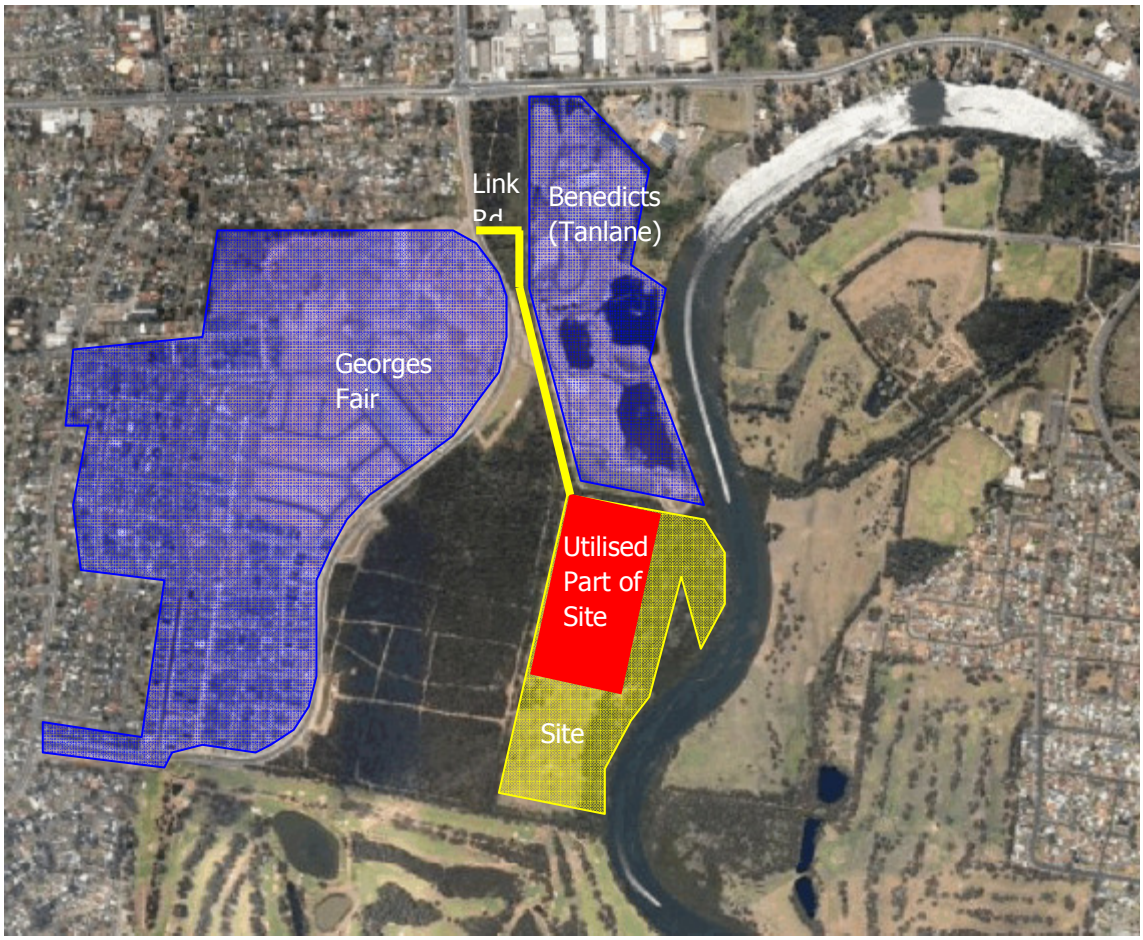


Figure 2-2 Approved Georges Fair Masterplan

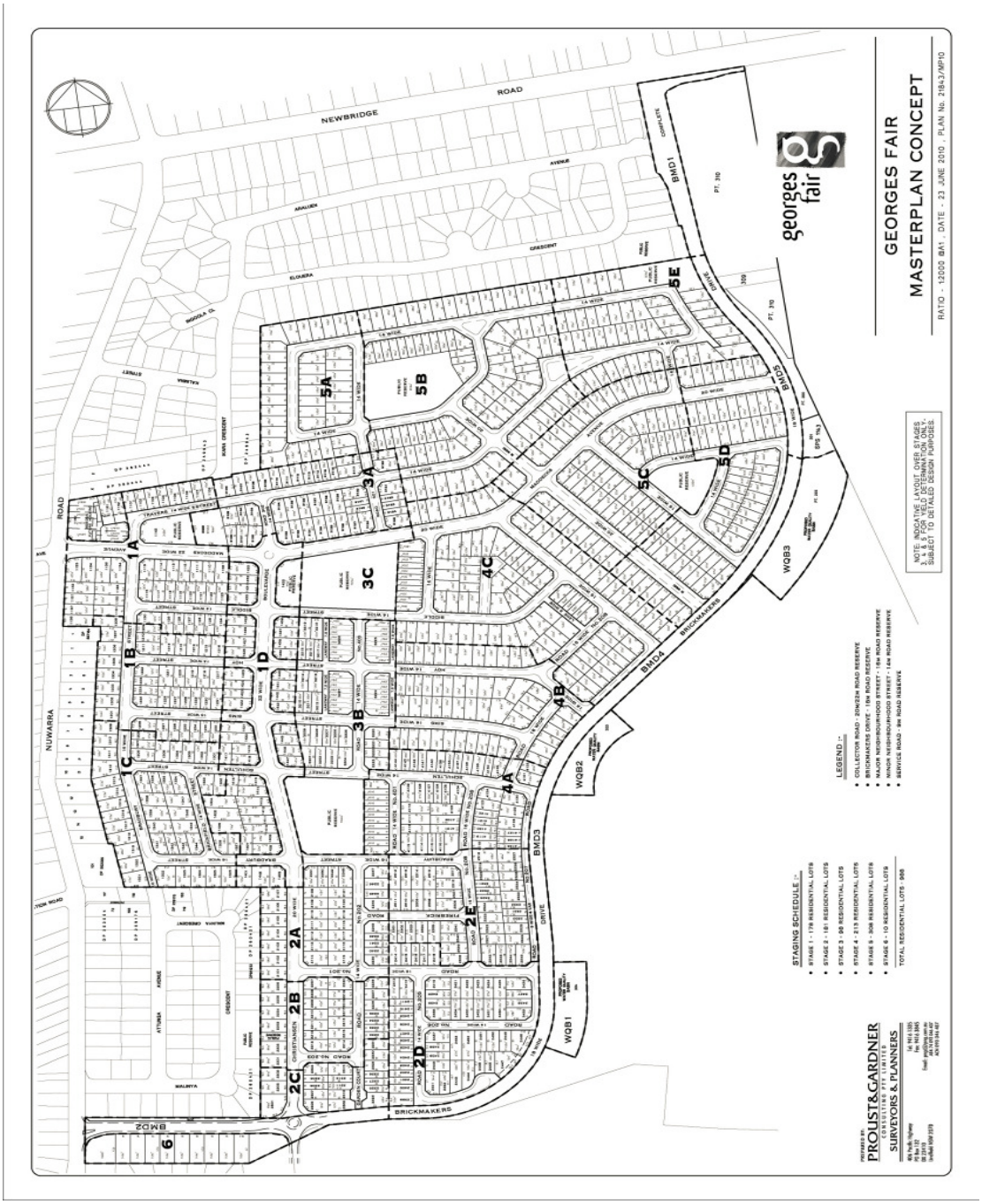


Figure 2-3 Indicative Tanlane Site Layout

2.2 Proposed Operations

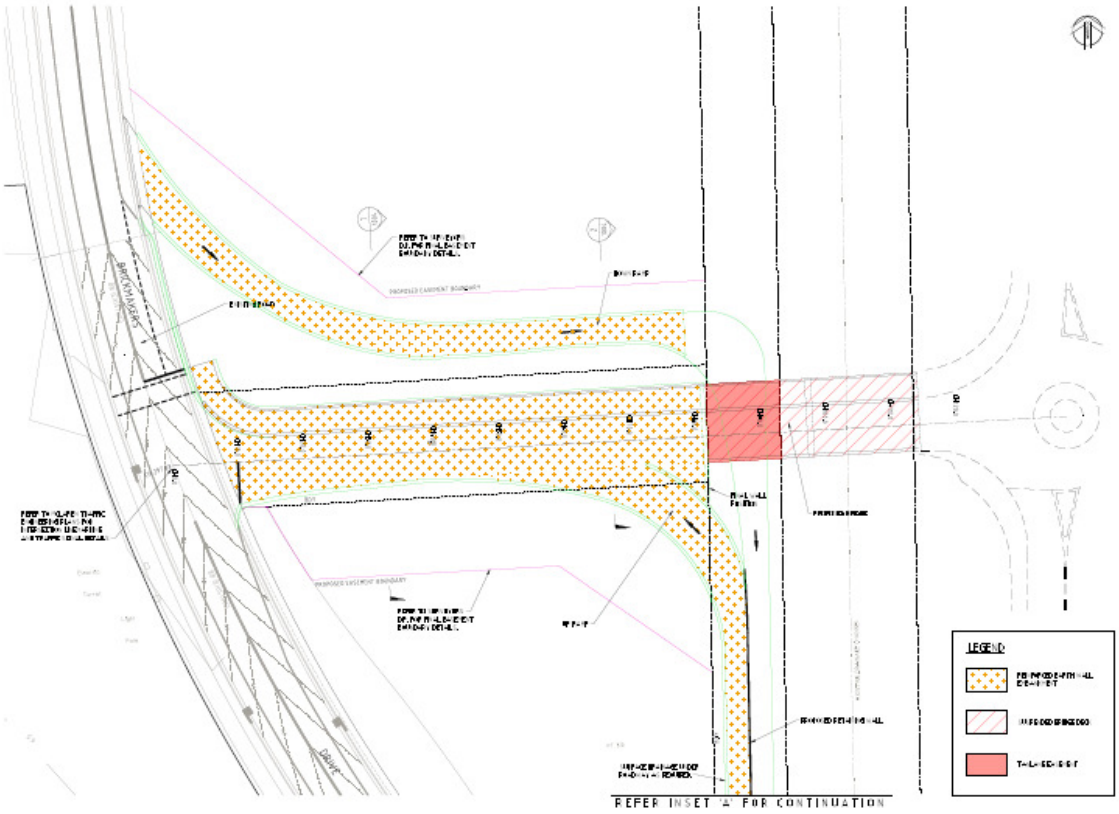
The recycling operation typically includes the delivery of raw materials by trucks, loading of raw materials by excavator into the primary crusher, secondary crushing and screening, stockpiling and loading of crushed material to trucks using a front end loader.

Crushing / screening activities will occur within buildings with only mobile plant outside. In addition, an earth mound will be constructed around the western, northern and eastern perimeter of the site to improve noise control for the proposed operation. Liverpool Council development consent No.1417/2005 included the construction of 4m high earth bund around the perimeter of the site. This bund will be increased to up to 6m along the western perimeter and 8m along the northern perimeter to further increase shielding and reduce noise emissions from the site.

The proposed operating hours are 7.00am-6.00pm, Monday to Friday with reduced hours for the crusher which will cease operation at 5.30pm.

A plan of the Link Road arrangement is shown in Figure 2-4. This arrangement shows two access ramps either side of a future bridge.

Figure 2-4 Proposed Link Road Arrangement Showing Ramps



3 EXISTING NOISE ENVIRONMENT

3.1 Unattended Noise Monitoring

Ambient noise levels were monitored at three residences between Tuesday, 20 February and Monday, 5 March 2007. These monitoring locations are shown in red circles in Figure 3-1, as follows:

- Residence 1 37 Malinya Crescent, Moorebank;
- Residence 2 26 Elouera Crescent, Moorebank; and
- Residence 3 41 Martin Crescent, Milperra.

Subsequent ambient noise data has been collected between Wednesday 1 May 2013 and Thursday 9 May 2013 at three residences also shown in red in Figure 3-1 as follows:

- Residence 4S 16 Bushview Lane, Georges Fair;
- Residence 2 28 Elouera Crescent, Moorebank; and
- Residence 8 81 Bradbury Street, Georges Fair.

The purpose of these measurements was to repeat one of the previous locations to gauge any change in background noise levels and to monitor at existing residences (one fronting Brickmakers Drive and one representative of receivers set back from Brickmakers Drive).

The unattended noise monitoring equipment used consisted of environmental noise loggers set to A-weighted, fast response, continuously monitoring over 15-minute sampling periods. This equipment is capable of remotely monitoring and storing noise level descriptors for later detailed analysis. The equipment calibration was checked before and after the survey and no significant drift occurred.

The logger determines L_{A1}, L_{A10}, L_{A90} and L_{Aeq} levels of the ambient noise. L_{A1}, L_{A10} and L_{A90} are the levels exceeded for 1%, 10% and 90% of the sample time respectively. L_{Aeq} represents the average noise energy during a measurement period.

Times when there was rainfall or wind speeds above 5m/s were excluded in accordance with the *INP*. Detailed results of the noise monitoring from both monitoring periods are shown graphically in Appendix A.

Background noise levels may be expressed in terms of the Rating Background Level (RBL), a standard measure of background noise which is used in the *INP*.

Figure 3-1 Unattended Noise Monitoring (Red) Locations & Prediction (Red and Blue) Locations

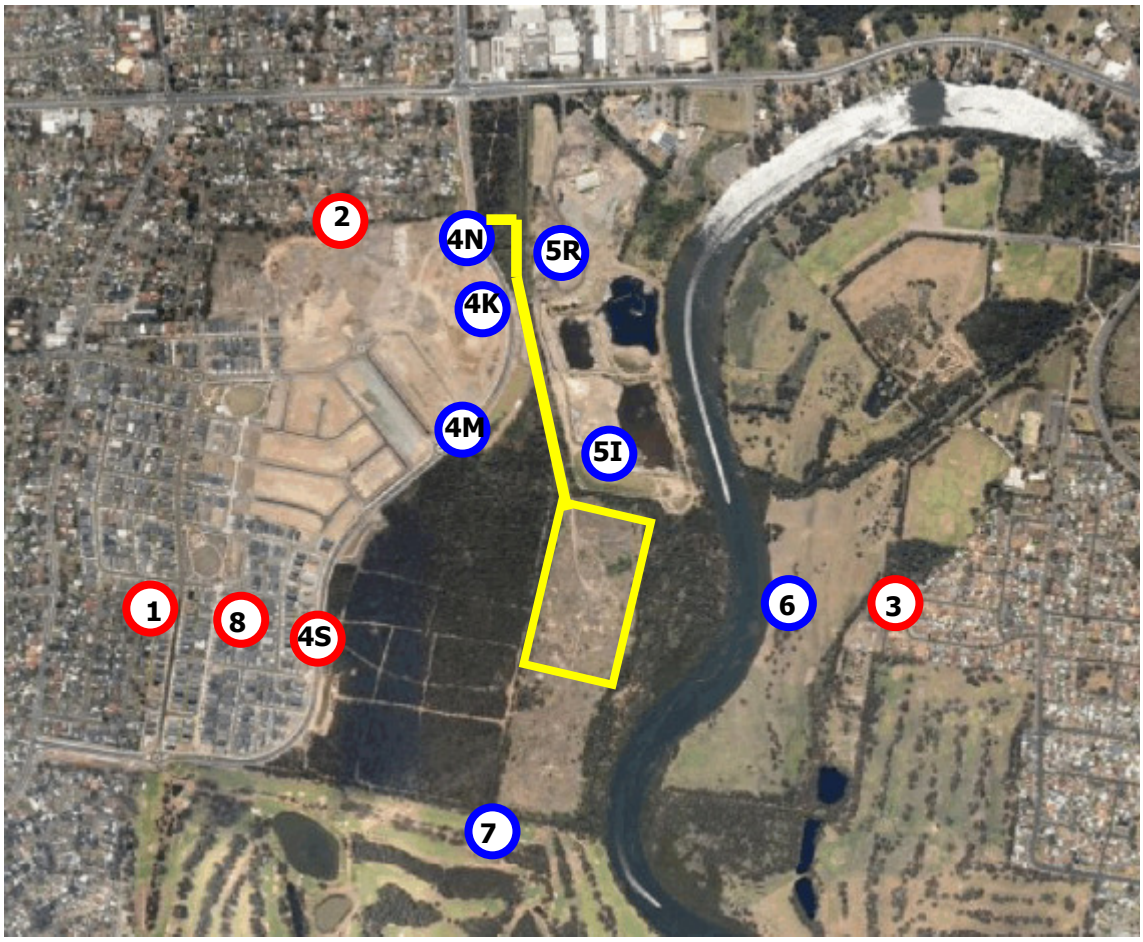


Table 3-1 shows calculated RBL levels over all time periods relevant for this assessment.

Table 3-1 Measured RBL & $L_{Aeq,period}$ Values

Location	RBL (dBA)			$L_{Aeq,period}$ (dBA)		
	Day	Evening	Night	Day	Evening	Night
1 – Malinya	44	43	41	54	56	48
2 – Elouera (2007)	43	41	37	59	56	49
3 – Martin	43	39	36	56	59	47
4S – Bushview	47	44	37	62	59	57
2 – Elouera (2013)	42	40	35	53	48	45
8 – Bradbury	36	39	34	48	53	47

Note: 1. Daytime 7.00am-6.00pm, Evening 6.00pm-10.00pm, Night 10.00pm-7.00am.

Noise levels were dominated by distant and local traffic, and typical suburban noise. There was little existing industrial noise during site visits to install and collect the noise loggers.

At the proposed new residential receivers in the Georges Fair development (and Tanlane), future background noise levels will be affected by future traffic noise on Brickmakers Drive. Predicted future traffic volumes on this road were originally provided by Lyle Marshall & Associates in 2011. The minimum future hourly daytime traffic volume was predicted to be 950 vehicles per hour, with 15% heavy vehicles at that time and a speed of 60 km/h.

Estimated daytime RBL's for each of the prediction locations shown in Figure 3-1 are shown in Table 3-2. Where necessary, justification for these estimated levels is provided in the text after Table 3-2.

Tanlane has been included for completeness even though EPA has indicated in the absence of a Development Approval this receiver does not need to be considered.

Table 3-2 Estimated Future Daytime RBL Values

Location	Daytime RBL (dBA)
1 – Malinya Cr	44
2 – Elouera Cr	43
3 – Martin St	43
4N – Georges Fair near Link Road (1)	48
4K – Georges Fair near kink in access road(1)	48
4M – Georges Fair Middle area(1)	48
4S – Georges Fair Southern area (Bushview Lane?) (1)	48
5R – Tanlane	46
8 – Bradbury St	37

Note: 1. At residences not shielded from Brickmakers Drive

The measured background noise levels from 16 Bushview Lane (4S) which fronts Brickmakers Drive have been compared with the current hourly volumes (based on traffic counts north of Maddecks Avenue in October 2012 refer Appendix B) to understand the relationship between traffic volumes on Brickmakers Drive and background noise levels at existing residences which front Brickmakers Drive.

This data can then be used to determine future background noise levels at residences fronting Brickmakers Drive based on future projected traffic volumes.

A traffic modelling report by Road Delay Solutions in July 2010, (prepared for the Georges Fair development) indicates peak hour traffic volumes in 2011 were projected to be approximately 400-450 vehicles per hour, and by 2021 to be 1200-1500 per hour in the peak hours (depending on which section of Brickmakers Drive), with the higher numbers just south of the proposed new ramps to the access road.

Currently during daytime hours the vehicle volumes range between approximately 250-750 per hour, with the lower volumes occurring between 10am and 2pm and the higher volumes in the am and pm peak periods. The existing traffic count data from 2012 shows the projected 2011 data (prepared by Road Delay Solutions) is already being exceeded.

Using Roads and Maritime Services (RMS) published economic assessment data (Appendix C) it is possible to estimate traffic volumes in the non peak hour periods (the period of day between 10am and 2pm). The Table 10 in Appendix C indicates that traffic volumes are likely to be between 53-70% of the average of the am and pm peak periods.

This RMS expected percentage range is marginally high, based on the actual October 2012 hourly counts, which shows an average of peak hours of approximately 750 vehicles with a minimum of 250 vehicles (i.e. the non peak hours are approximately 33% rather than between 535 and 70%). On this basis there is no reason to believe the current percentages of average am and pm flows won't remain in the future, such that during the middle of the day in 2021 the hourly volumes in non peak hours are a similar (33%) percentage of the projected future peak hour flows estimated as (1200-1500). 33% of 1,200-1,500 is estimated to be approximately 400-500 vehicles. These traffic volumes (400-500) are lower than those projected by Lyle Marshall and Associates in 2011. The Lyle Marshall data is more in line with the RMS percentage range of 53-70% of the average am and pm peak hour flows.

The current traffic flow data indicates vehicle volumes of 400-500 occur in the shoulder peak periods. Review of existing background data at Bushview Lane in Appendix A indicates peak hour and shoulder peak background levels between 7-10am and between 2pm-6pm often at 50dBA or higher and mostly above 48dBA.

A review of the background noise data and traffic volumes, indicates a weekday RBL of 48dBA would apply to residences fronting Brickmakers Drive in the future when the Recycling Facility has reached its maximum nominated capacity of 500,000 tonnes per annum, which is expected to be in 2018.

The weekday background noise levels away from Brickmakers Drive detailed in the EA were noted as "around 43/44dBA" based on data collected in 2007. It was this data, on which basis the EPA nominated a Project Specific Noise Level (PSNL) for this project of "around 48/49dBA" (43/44+5) in their submission letter of 3 April 2013 (Appendix B).

Based on more recent background noise data from May 2013 from Bushview Lane a more realistic background level of 48dBA has been adopted and the PSNL should therefore be higher (53dBA). It is recommended updated background noise measurements should be carried out once the northern release areas (5D & 5E) of Georges Fair are occupied and PSNL limits set accordingly for both the weekday and Saturday as appropriate.

4 OPERATIONAL NOISE CRITERIA

The *INP* seeks to control noise from newly introduced industrial noise sources by means of its "intrusiveness" and "amenity" noise criteria.

The "intrusiveness" criterion requires that the $L_{Aeq,15min}$ noise level from any new source should not exceed the existing Rating Background Level (RBL) for that period by more than 5dBA. Intrusiveness criterion values for potentially-affected residences follow directly from the RBL values in Table 3-2.

These criteria apply to $L_{Aeq,15min}$ noise levels measured under specific meteorological conditions, determined as outlined in the *INP*. However, in general it has been accepted that an appropriate, and conservative, assessment procedure is to compare the intrusiveness criterion with the $L_{Aeq,15min}$ noise level which is exceeded for 10% of 15-minute periods during any season. This procedure has been adopted for this assessment.

The "amenity" criterion applies to the $L_{Aeq,period}$ noise level due to all industrial sources affecting a location. It sets an upper limit to the total noise level ($L_{Aeq,Period}$) in an area from all industrial noise (existing and future). The criterion depends on the time of the day, area classifications and the relationship of the total measured L_{Aeq} (and contribution from existing industrial noise) to determine the Acceptable Noise Level (ANL) for the development.

The potentially-affected areas are classified as *"Suburban"* by the *INP*. Given this, the acceptable and Maximum amenity levels ($L_{Aeq,Period}$) which apply over the whole day, evening and night period are as follows:

- Day (7.00am-6.00pm) 55-60dBA
- Evening (6.00pm-10.00pm) 45-50dBA
- Night (10.00pm-7.00am) 40-45dBA

Table 4-1 summarises the noise criteria adopted for assessment of this development. This also includes amenity criteria for active and passive recreation areas.

Table 4-1 Summary of Intrusive & Amenity Noise Criteria (dBA)

Location	Intrusive Criterion	Amenity Criterion
	Day (dBA)	
1 – Malinya	49	55-60
2 – Elouera	48	55-60
3 – Martin	48	55-60
4N – Georges Fair near Link Road	53	55-60
4K – Georges Fair near kink in access road	53	55-60
4M – Georges Fair Middle area	53	55-60
4S – Georges Fair Southern area (Bushview Lane)	53	55-60
5R – Future Tanlane (for information)	51	55-60
5I – Benedict Sand (industrial)	-	70-75
8 – Georges Fair Shielded (Bradbury)	42	55-60
Passive Recreation	-	50-55
Active Recreation	-	55-60

5 PREDICTION OF OPERATIONAL NOISE LEVELS

5.1 Meteorological Conditions

The *INP* requires that in predicting operational noise levels, wind speed and direction should be taken into account if wind speeds of up to 3m/s in the source to receiver direction occur more than 30% of the time in any season.

Records of wind speed and direction were obtained from the meteorological station at Bankstown Airport, approximately 3km east of the site, for a typical year (January 2006 to December 2006).

Table 5-1 indicates that during the daytime, winds at between 0.5 and 3m/s occur from the north-westerly direction for more than 30% of the time during autumn and winter. Although these winds will result in adverse effects only for a proportion of the surrounding receivers, to provide a conservative assessment, calculations will take account of adverse meteorological conditions for all receivers.

Table 5-1 Percentage Occurrence of Wind Speeds Between 0.5 to 3m/sec

Period	Season	N	NE	E	SE	S	SW	W	NW
Day	Autumn	10.7%	3.7%	6.3%	5.3%	6.0%	14.3%	21.3%	32.3%
	Spring	11.3%	7.4%	5.9%	3.9%	5.9%	8.4%	24.1%	5.4%
	Summer	13.6%	10.2%	8.7%	12.1%	6.3%	11.7%	13.6%	23.8%
	Winter	11.9%	5.0%	4.0%	5.2%	7.1%	11.4%	18.7%	36.8%
Evening	Autumn	6.5%	14.9%	14.9%	9.1%	7.1%	24.7%	14.9%	7.8%
	Spring	12.7%	22.9%	20.3%	7.6%	9.3%	15.3%	4.2%	7.6%
	Summer	5.4%	18.8%	25.9%	17.0%	14.3%	8.0%	5.4%	5.4%
	Winter	9.0%	4.8%	4.8%	5.4%	11.4%	17.4%	26.9%	20.4%
Night	Autumn	14.0%	1.6%	2.9%	1.8%	6.0%	23.6%	27.6%	22.7%
	Spring	16.2%	3.4%	2.7%	5.2%	8.6%	27.8%	15.8%	20.3%
	Summer	6.8%	10.5%	11.3%	10.2%	13.0%	20.4%	17.0%	10.8%
	Winter	19.7%	0.6%	0.4%	0.9%	3.0%	8.9%	25.9%	40.6%

5.2 Prediction Methodology

Table 5-2 shows all equipment included in noise modelling, and the assumed sound power levels. For activities which do not occur continuously over a 15-minute period, the L_{Aeq} is adjusted to account for the duration over which it occurs in any 15-minute period.

Calculations were performed using the CadnaA software implementing ISO algorithms with CONCAWE to model meteorological conditions. Topographical information for the project area was provided by Moorebank Recyclers Pty Ltd and BMD in relation to the proposed road and redevelopment of the Boral site.

Acoustically neutral conditions have been modelled using ISO 9613. For daytime calculations, the worst-case noise levels are likely to be experienced with wind in the direction from source(s) to the receiver. These potentially worst-case adverse conditions have been modelled using CadnaA implementing ISO 9613 and CONCAWE for adverse meteorological conditions. This corresponds to wind speeds of up to 3m/s from the source to the receiver with Pasquill Stability D (stable atmosphere with no temperature inversion).

Measurements of existing similar equipment to be used on site were measured at an existing facility in Camellia operated by the same Client. In response to clarification on Sound Power Levels (SWL) by the EPA, the measurements at Camellia were repeated and the data used previously was considered to be appropriate. The model has been updated and the levels adopted are summarised in Table 5-2.

Table 5-2 Modelled Equipment & Sound Power Levels

Plant (Refer Figure 5-1 for location)	N°	SWL $L_{Aeq,15min}$ (dBA)
Front End Loader (FEL1 & FEL2)	2	110
Excavator (Exc) on top of 4 m stockpile to load crusher from southern facade	1	108
Primary Crusher (PC) Building (10m high) Internal facade level assumed as 98dBA with sheet metal construction with 10 m^2 opening on each façade in middle of building and 25m^2 opening on each façade at ground level. Building Sources split into 4 heights on each elevation at 1.5, 4, 6.5 & 9m,	1	98 internal
Secondary Crusher (SC) Building (8m high) Internal facade level assumed as 98dBA with sheet metal construction with 10 m^2 opening on each façade near top of building and 25 m^2 opening on each façade at ground level. Building Sources split into 4 heights on each elevation at 1, 3, 5 & 7m,	1	98 internal
Screen building (S) (8m high) Internal facade level assumed as 90dBA with sheet metal construction with 10 m^2 opening on each façade near top of building on 3 facades and 25 m^2 opening at ground level on southern façade. Building Sources split into 4 heights on each elevation at 1, 3, 5 & 7m,	1	90 internal
Trucks tipping (5 in 15 minutes)	-	104
Trucks over wash bay (10 in 15 minutes)	-	93
10 Trucks per 15 minutes on level access road	Line	78/m
5 Trucks per 15 minutes on down ramp from Brickmakers Drive	Line	75/m
5 Trucks per 15 minutes on up ramp to Brickmakers Drive	Line	81/m

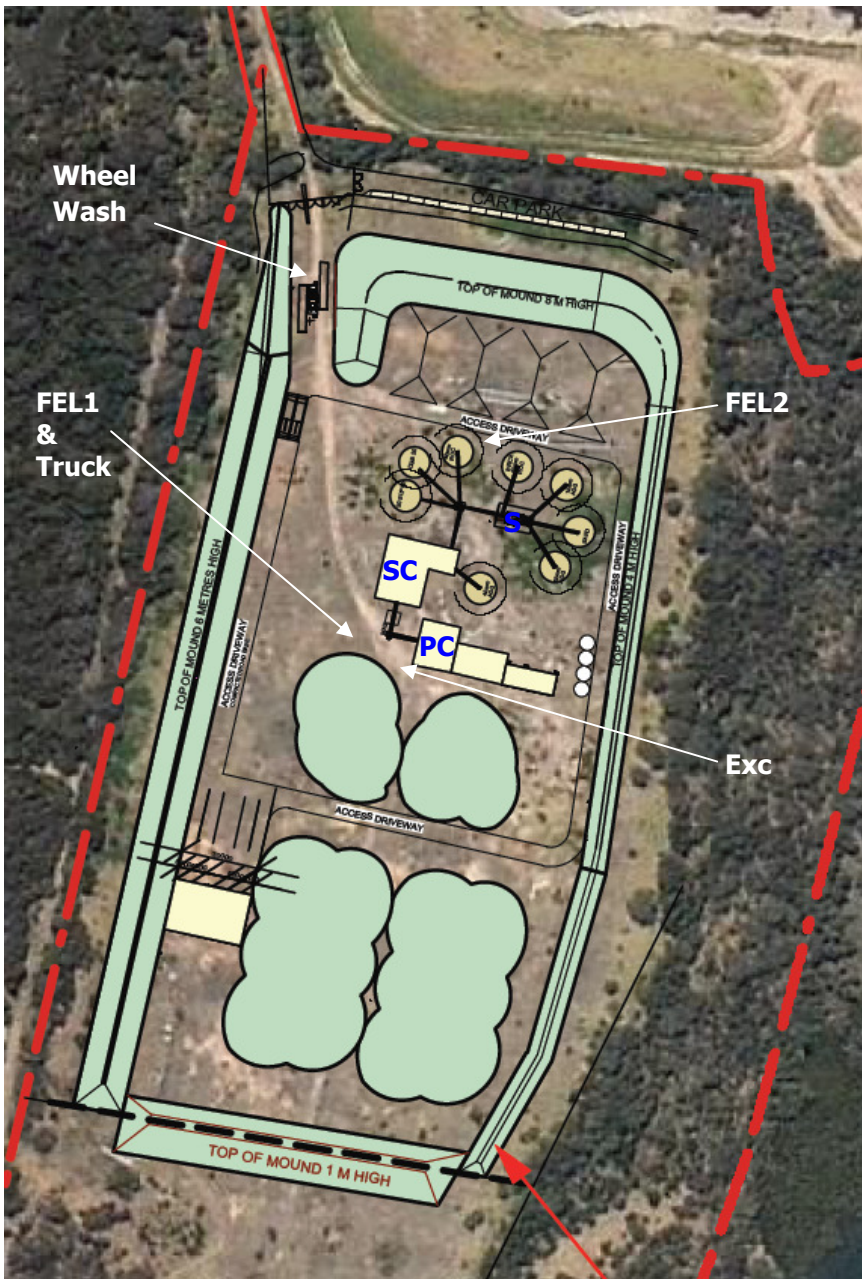
Noise modelling included the following assumptions.

- All front end loaders used on site would have an L_{Aeq} sound power emission of 110dBA;
- Ten truck movements within a 15 minute period (a truck entering and then leaving is counted as two single movements); and

- Trucks would have a sound power level of not greater than 106dBA (at 25km/hr) based on measurements of 33 truck pass bys at this speed at Camellia (provided by applicant based on previous measurements and summarised in Appendix D). It is understood that similar trucks would be operating in the proposed development. For the short section of up ramp to Brickmakers Drive and the site entrance where the road is at a gradient the Sound Power Level is increased to 112dBA.

A site plan showing buildings and sources is shown below. Mobile plant is mostly assumed at a height of 1.5m above the site finished level, with the exception of the Excavator loading the Primary Crusher which is assumed to be 6m above site level.

Figure 5-1 Site Plan showing Noise Sources (See Table 5-2 for Key)



5.3 Predicted Operational Noise Levels

Table 5-3 indicates the operational noise levels predicted at potentially-affected residences, for the case where all equipment is working as shown in Figure 5-1 and for acoustically neutral conditions. Calculations include the effect of shielding by the perimeter noise bunds and site buildings described above.

Whilst not required by the INP for information purposes about range of noise levels likely to occur at receivers, predicted noise levels are also shown for adverse meteorological conditions.

Whilst most receivers adopted are the worst case assessment locations in the various noise sensitive areas, an assessment point has been included at Receiver 8 (Bradbury Street) in a location representative of a rear garden shielded by the surrounding houses. This is to compare with the background noise levels and criterion established at this location.

Table 5-3 Predicted L_{Aeq} Operational Noise Levels, dBA

Receiver No.	Operational Noise Criterion, $L_{Aeq,15min}$ (dBA)	Predicted Operational Noise Level $L_{Aeq,15min}$ (dBA)	
		Neutral Conditions	Adverse Conditions
1 – Malinya	49	39	44
2 – Elouera	48	41	45
3 – Martin	48	44	48
4N – Georges Fair	53	53	54
4K – Georges Fair	53	53	54
4M – Georges Fair	53	48	51
4S – Georges Fair	53	44	48
5R – Tanlane (Future)	51	52	53
5I – Benedict	70-75 $L_{Aeq,period}$	57 (55 $L_{Aeq,period}$)	58 (56 $L_{Aeq,period}$)
6 – Vale of Ash	50-55 $L_{Aeq,period}$	48 (46 $L_{Aeq,period}$)	52 (50 $L_{Aeq,period}$)
7 – New Brighton GC	55-60 $L_{Aeq,period}$	44 (42 $L_{Aeq,period}$)	48 (46 $L_{Aeq,period}$)
8 – Bradbury St	42	30	34

The predicted noise levels meet the relevant criteria at all existing receivers for both adverse and neutral conditions. At all future receivers in Georges Fair the predicted levels meet the criteria for neutral meteorological conditions. Criteria are also predicted to be achieved at all receivers under adverse meteorological conditions with the exception of the future receivers between 4N and 4K opposite the northern end of the access road and ramps to Brickmakers Drive where a marginal 1dBA exceedance is predicted.

Based on measurements at 16 Bushview Lane (4S) existing L_{Aeq} noise levels are typically 60-65dBA at daytime and this noise levels is expected to represent future ambient noise levels at receivers close to 4N. On this basis the potential impact of intermittent truck passbys during the daytime is not considered significant.

At the internal access road near the south west corner of the existing Benedict's site, the New Brighton Golf Course and the Vale of Ash reserve, noise levels are predicted to comply with the criteria since they relate to a $L_{Aeq,period}$ assessment and it is expected $L_{Aeq,period}$ would be 2-3dBA lower than the $L_{Aeq,15min}$ levels summarised in Table 5-3.

At the receiver location in the middle of the Georges Fair site (8), based on the rear garden of Bradbury Street the predicted noise levels meet the criterion.

Whilst the facility is designed to process 500,000 tonnes of material per annum it is unlikely this volume will be reached for several years after the facility opens (estimated to be 2018 at the earliest). There is no certainty which areas of Georges Fair would be occupied at this time.

This assessment has shown compliance with the intrusiveness criterion, based on estimated future background noise levels of 48dBA at future residences fronting Brickmakers Drive within the Georges Fair development in release areas 5D and 5E. On this basis we do not consider any mitigation measures along the access road are necessary to achieve noise criteria even when the facility is operating at capacity.

However, it is possible that if background noise levels do not increase between now and 2018, then intrusiveness criteria would be lower and our predictions indicate they may be exceeded.

Even if noise levels from trucks on the access road / ramps don't meet a potentially lower intrusive criterion, a barrier alongside this access road / ramps will have minimal change to the overall acoustic environment at these future residences. This is because the ambient noise environment will be dominated by traffic on Brickmakers Drive which is closer to the residences and currently carrying traffic (including other heavy vehicles) at higher speeds. Whilst noise barriers may be "feasible" along the access road (if they were needed to meet an intrusive criterion) they would not normally be considered as "reasonable" given the overall traffic noise at these future residences.

Therefore noise barriers on the eastern side of the access ramps to protect Georges Fair are not recommended as a reasonable mitigation measure for this project.

We recommend the EPA consider the following approach for this project;

- When Georges Fair is occupied in release areas 5D and 5E, background noise levels can be measured and appropriate intrusiveness limits (PSNL) established for weekdays and Saturdays.
- If lower background noise levels (and lower intrusive criteria) at Georges Fair indicate noise attenuation measures such as noise barriers are needed to control noise from truck movements then, subject to EPA requirements, noise barriers will be constructed at appropriate locations along the access road and ramps.
- Moorebank Recyclers can manage their hourly / daily truck movements to remain within the intrusiveness criteria at all residences until any barriers deemed necessary by the EPA are built.

At a future Tanlane residential development there is potential to exceed intrusiveness criterion, although, as indicated by the EPA, it would be expected that a future development would be able to mitigate potential impacts with appropriate set backs and perimeter shielding. In addition future traffic on Brickmakers Drive is likely to generate similar L_{Aeq} noise levels to the proposed trucks on the access road / ramps.

6 TRAFFIC NOISE ON PUBLIC ROADS

6.1 Noise Criteria for Traffic on Future Public Roads

The RMS will not allow access from the site directly onto Newbridge Road. Trucks will access via the access road and ramps onto Brickmakers Drive and then north to Newbridge Road.

In accordance with the definitions outlined in the *ECRTN*, Brickmakers Drive would be classified as a collector road and Newbridge Road an arterial road.

Truck movements would only occur during the daytime period. The relevant criterion for "land use developments with potential to create additional traffic on collector road" is that total traffic noise levels should not exceed 60dBA $L_{Aeq,1hr}$ during any daytime hour. Where existing traffic noise levels already exceed this value, the *ECRTN* states that:

> *"Where feasible and reasonable, existing noise levels should be mitigated to meet the noise criteria. Examples of applicable strategies include appropriate location of private access roads; regulating times of use; using clustering; using 'quiet' vehicles; and using barriers and acoustic treatments.*
>
> *In all cases, traffic arising from the development should not lead to an increase in existing noise levels of more than 2dB."*

6.2 Prediction of Traffic Noise Levels

A traffic study was prepared by Lyle Marshall & Associates Pty Ltd. This report predicted future traffic generation by the recycling facility based upon processing 500,000 tonnes of raw materials per annum. The assessment was based upon 292 working days per annum and an average truck load of 21.2 tonnes for raw materials coming into the site and finished product out. Table 6-1 presents the estimated number of truck movements daily.

Table 6-1 Summary of Estimated Number of Daily Truck Movements

	Direction	No. of Trucks Movements
Raw Materials	In	81 loaded trucks
	Out	81 empty trucks
Finished Product	In	81 empty trucks
	Out	81 loaded trucks
Total No. of Daily Movements:		**324**

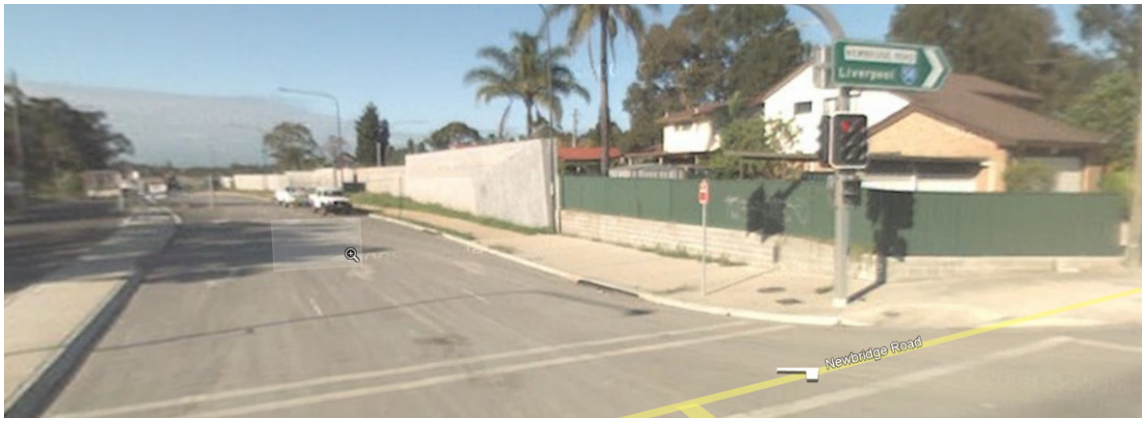
Assuming an 11 hour day, this equates to an average of 29.5 movements per hour, however the traffic report indicates a range of hourly movements through a typical day.

For assessment purposes, it is considered that 38 movements would be representative of a typical busy hour in the daytime.

6.2.1 Brickmakers Drive

The northern section of Brickmakers Drive, near the intersection with Newbridge Road, includes a 2.5m masonry noise barrier on the western edge adjacent to the existing single storey residences located on Araluan Avenue and Elouera Crescent in this area. There is a short 3m section of barrier nearer to the intersection where two 2 storey residences are located as shown in the photo in Figure 6-1.

Figure 6-1 View South along Brickmakers Drive showing existing Barrier



These shielded residences are set back typically 20-35m from the centre of Brickmakers Drive. There are some residences on Elouera Crescent set back approximately 95m which currently have line of sight across Paine Park to the road alignment with a 90 degree angle of view. Once Georges Fair is completed the angle of view from existing residences is likely to reduce further as indicated in Figure 6-2.

Figure 6-2 Plan with future angle of view from residences to Brickmakers Drive

Traffic volumes (24 hours) on Brickmakers Drive are currently approximately 7,500 vehicles, split approximately 6,600 per day and 900 at night time and 5-6% heavy vehicles overall. These volumes are expected to increase in the future as a result of further residential development.

The residences to the north of Araluen Avenue would be affected by traffic noise from Newbridge Road as well as Brickmakers Drive. The increase in traffic noise levels as a result of the additional trucks would be higher at those residences south of Araluen Avenue.

Existing daytime traffic noise levels at the eastern end of Elouera Crescent (No 41) were predicted using the *Calculation of Road Traffic Noise (CORTN)* predictive procedure to be 52-55dBA $L_{Aeq,1hr}$ depending on the time of day. The proposed extra trucks per hour (up to 38) would result in an increase varying from 1.5dBA to 3.1dBA depending on the time of day. The predicted future noise levels of 55-56dBA comply with the daytime base criterion of 60dBA.

6.2.2 Newbridge Road and Nuwarra Road

Residences front Newbridge Road to the west of the intersection with Brickmakers Drive. Many of these receivers are set back 10m from the edge of the closest lane. The existing peak hours along Newbridge Road are 7.00am-9.00am and 4.00pm-6.00pm based upon information in the traffic report. The two way hourly volumes are typically 5,200-5,700 vehicles.

Given the existing high traffic volumes on Newbridge Road, existing noise levels are likely to exceed the *ECRTN* base criterion. The increased noise level due to traffic from the proposed recycling facility based on the 45% to the west and 55% to the east split at the intersection has been calculated to be less than 0.2dB, which meets the allowance criterion. Negligible impact is therefore expected.

Residences front Nuwarra Road to the south of the intersection with Newbridge Road. Most of these receivers are set back 15-20m from the edge of the closest lane. The existing peak hour volumes along Nuwarra Road are typically 1,000-1,500 vehicles.

Given the existing relatively high traffic volumes on Nuwarra Road, existing noise levels are likely to exceed the *ECRTN* base criterion. The increased noise level due to traffic from the proposed recycling facility based on the 20% of total movements using Nuwarra Road (64 per day and up to 8 per hour) has been calculated to be less than 0.3dB, which meets the allowance criterion. Negligible impact is therefore expected.

7 NOISE FROM CONSTRUCTION ACTIVITIES

7.1 Noise Criteria for Construction Activities

The *NSW Interim Construction Noise Guideline (ICNG)* presents the process to assess construction in NSW. The *ICNG* was developed by the Department of Environment Climate Change & Water (DECCW) taking into consideration that construction is temporary, noisy and difficult to ameliorate. As such, the *ICNG* was developed to focus on applying a range of work practices most suited to minimising construction noise impacts, rather than focusing only on achieving a numeric noise level.

The *ICNG* recommends that standard construction work hours should typically be as follows:

- Monday to Friday 7.00am to 6.00pm.
- Saturday 8.00am to 1.00pm.
- No work on Sundays or public holiday.

Additionally, it recommends quantitative management noise goals at residences as presented in Table 7-1.

Table 7-1 Construction Noise at Residences using Quantitative Assessment

Time of Day	Management Level $L_{Aeq\ (15\ min)}$	How to Apply
Recommended standard hours: Monday to Friday 7am to 6pm Saturday 8am to 1pm No work on Sundays or public holidays	Noise affected RBL + 10dBA	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured $L_{Aeq\ (15\ min)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to minimise noise. The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected 75dBA	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the proponent should consider very carefully if there is any other feasible and reasonable way to reduce noise to below this level. If no quieter work method is feasible and reasonable, and the works proceed, the proponent should communicate with the impacted residents by clearly explaining the duration and noise level of the works, and by describing any respite periods that will be provided.
Outside recommended standard hours	Noise affected RBL + 5dBA	A strong justification would typically be required for works outside the recommended standard hours. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable practices have been applied and noise is more than 5dBA above the noise affected level, the proponent should negotiate with the community.

The *ICNG* presents the following noise management levels for non-residential premises:

- Active recreation areas (such as parks) external $L_{Aeq\ (15\ min)}$ 65dBA
- Passive Recreation areas external $L_{Aeq\ (15\ min)}$ 60dBA
- Industrial premises: external $L_{Aeq\ (15\ min)}$ 75dBA
- Offices, retail outlets external $L_{Aeq\ (15\ min)}$ 70dBA
- Classrooms, hospitals, places of worship internal $L_{Aeq\ (15\ min)}$ 45dBA

The construction noise management levels at all the existing residences surrounding the proposed development site are shown in Table 7-2. Future residences are also identified, although it is not clear at this stage which residences will be occupied at the time of construction. Table 7-2 also shows the management levels at other receivers.

Table 7-2 Construction Noise Criteria for Daytime Construction

Location	Construction Noise Management Levels, L_{Aeq} (dBA)
Residence 1 – 37 Malinya Cr, Moorebank	54
Residence 2 – 26 Elouera Cr, Moorebank	53
Residence 3 – 41 Martin Cr, Milperra	53
4 (N,K,M) – Georges Fair (not fully developed during construction)	58
4S – Georges Fair existing	58
5R – Tanlane (unlikely to be developed during construction)	56
5I – Benedict	75
6 – Vale of Ash Reserve	60
7 – New Brighton GC	65

7.2 Predicted Construction Noise Levels

Construction of the earth mounds around the site's boundary would generate the highest noise levels from the main site area during the construction period. Short-term higher noise levels are expected during the works required for the access road and ramps. With the exception of the perimeter bunds it is expected that the fill material for the site will come from within the site boundary. There will need to be import of select material to construct the access road and ramps, so whilst overall there is not expected to be a need to import a large proportion of fill during the remaining construction, there will be short periods with up to 80 truck loads per day (160 movements). Most noise generation over the construction period will therefore occur from within the site itself, with intermittent noise along the access road, plus works on the access road and ramps themselves.

Similar noise levels from the same construction plant would be generated during levelling of the site. Other construction is considered to be the delivery and construction of the "buildings" to house conveyers and crushing plant which will require the use of cranes and power tools.

Road works including drainage will mainly require the use of excavator / grader / compactor and delivery of road base, plus asphalting plant. The ramps will require bored piling, plus concrete construction.

Construction plant assumed to be required for these works, and the total L_{Aeq} sound power level for are presented in Table 7-3.

Table 7-3 Construction Plant Total Sound Power Level (SWL)

Activity	Typical Equipment Used	Total $L_{Aeq,15min}$ Sound Power Level (dBA)
Earthworks	Dozer, Front end loader, Roller, Excavator and Truck	115
Roadworks / Ramps	Dozer, Grader, Trucks + Bored Piling Rig and Concrete Pours for ramps	113
Buildings and Conveyers	Cranes, Delivery trucks and Power Tools	110

Table 7-4 shows the predicted construction noise levels for the main phases.

Table 7-4 Predicted Noise Levels from Construction

Receiver No.	Construction Noise Management Level, $L_{Aeq,15min}$ (dBA)	Predicted Construction Noise Level $L_{Aeq,15min}$ (dBA)		
		Site Earthworks (+ Trucks)	Site Buildings	Roadworks & Drainage Works
1 – Malinya	54	49 (49)	43	47-53[1]
2 – Elouera	53	50 (51)	44	47-54[1]
3 – Martin	53	53 (53)	47	49
4N – Georges Fair	58	54 (56)	49	52-68[1]
4K– Georges Fair	58	55 (56)	50	55-72[1]
4M – Georges Fair	58	56 (56)	51	54-65[1]
4S – Georges Fair	58	55 (55)	49	53
5R – Tanlane (future)	56	55	49	53-73[1]
5I – Benedict	75	81 (82)	70	53-73[1]
6 – Vale of Ash	60	57 (57)	52	53
7 – New Brighton GC	65	55 (55)	47	51

Note: 1. For the roadworks and drainage works, for certain receivers the noise levels will vary depending on the proximity of the works along the driveway to the receiver.

Predicted noise levels at residences are expected to comply with criteria from works within the main site area; however, some exceedances of criteria are expected from works on the access road and ramps for the relatively short duration of time when they are closest to the "future" receivers in the northern part of the Georges Fair site (Release 5D & 5E) see Figure 2-2 or in the future Tanlane site. These potential impacts are only realised if the residences have been constructed and are occupied.

There will be exceedance of construction noise limits at the southern boundary of the existing Benedict's site, when construction of the northern mound is occurring. This boundary of the site is not occupied on a regular basis as we understand it is a pond used for dredging purposes. Within the site boundary at the location of internal access roads, the limit of 75dBA is complied with. Negligible impact is expected.

It is recommended a further review of potential impacts on neighbouring properties can be conducted at the time the proposed construction commences. The predicted noise levels do not exceed the highly noise affected limit of 75dBA for residences and are proposed to only occur in standard daytime construction hours.

Beyond standard mitigation practices, to use modern well maintained plant there are no further mitigation measures which are considered feasible and reasonable for the proposed works.

8 CONCLUSION

The proposed development of a materials recycling facility by Moorebank Recyclers Pty Ltd at *Lot 6 DP 1065574* at Newbridge Road, Moorebank has been assessed against NSW government policies in relation to industrial noise, construction noise and traffic noise on the road network.

Industrial noise has been assessed in accordance with the NSW EPA *Industrial Noise Policy (INP)*. The predicted noise levels indicate compliance with adopted future background noise levels at all existing residences. In relation to future residences within the Georges Fair site opposite the proposed link road (4N) the predicted noise levels comply under neutral meteorological conditions.

It should be noted at these receivers which front Brickmakers Drive noise levels from traffic on Brickmakers Drive varies between 60-65dBA, up to 10dBA higher than the Moorebank Recycler trucks. On this basis negligible impact would be expected from the trucks, even if background noise levels do not reach 48dBA by 2018. No noise barriers are therefore deemed necessary to satisfy the *INP* requirements.

Additionally, Moorebank Recyclers are prepared to measure background noise levels for weekdays and Saturdays, establish intrusiveness criteria (Project Specific Noise Limits - PSNL) on this basis, manage truck numbers and if necessary monitor operational noise levels to demonstrate compliance with the PSNL. If significantly lower background noise levels than expected occur by the time the operation reaches capacity and the residences are occupied, then it will be necessary to construct a barrier on the access road / ramps to show a technical compliance with the PSNL. However, as discussed above, the construction of this barrier would not result in measurably lower noise levels at these residences due to the dominant contribution of noise from traffic on Brickmakers Drive. For this reason a barrier is not considered "reasonable" to construct.

Whilst the EPA has indicated the Tanlane site does not require consideration at this stage, the assessment indicates marginal non compliance of intrusive criteria. It is considered this can be addressed by the developer in terms of their masterplan for the site and include set backs and perimeter barriers where they feel they are necessary.

Potential noise impacts from traffic on Brickmakers Drive, Nuwarra Road and Newbridge Road arising from additional truck movements associated with the operation of the recycling facility would be within relevant base criteria or allowance criteria at all residences.

Noise levels associated with the construction of the facility, including the earth mound around the perimeter of the site and works within the site, are predicted to be within the relevant criteria for construction noise at nearby existing and possible future residences within Georges Fair and Tanlane.

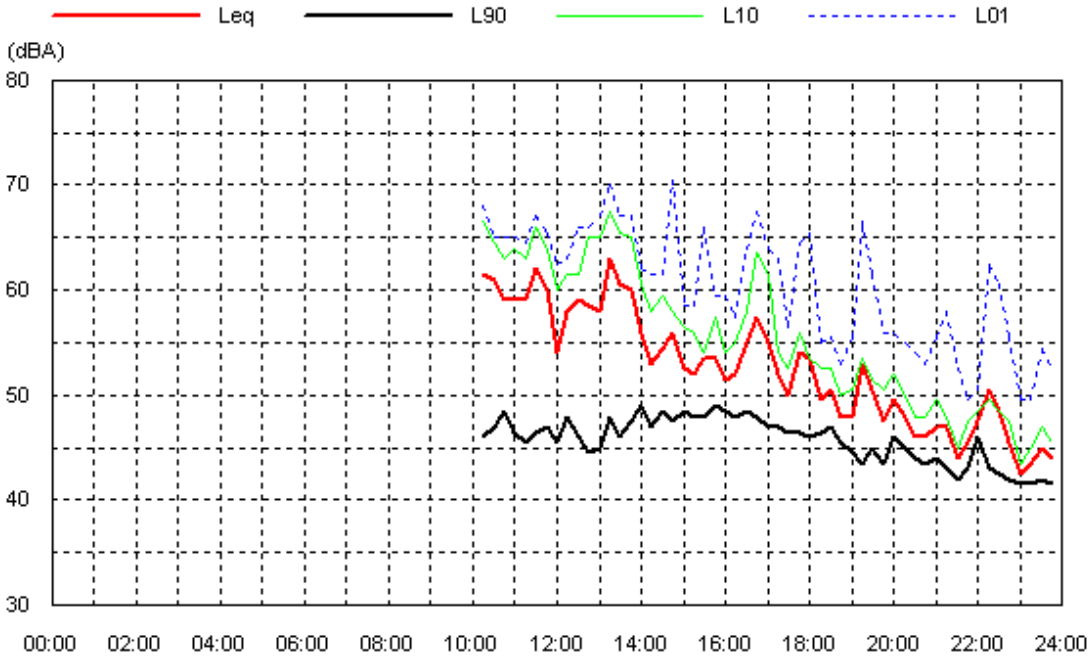
Construction noise from the shorter term upgrade of the driveway and ramps is predicted to meet noise criteria at existing residences, but would exceed criteria at future residences within the Georges Fair site and Tanlane site, especially when construction occurs at its closest point. The "highly annoyed" construction noise limit of 75dBA is not predicted to be exceeded. Since construction is limited to standard daytime hours, these road works are short term, no further mitigation measures are considered feasible and reasonable.

APPENDIX A

NOISE MEASUREMENT RESULTS

Location: 37 Malinya Crescent, Moorebank
Data shaded: Extraneous Noise; Wind; Rain

Tue 20 Feb 07



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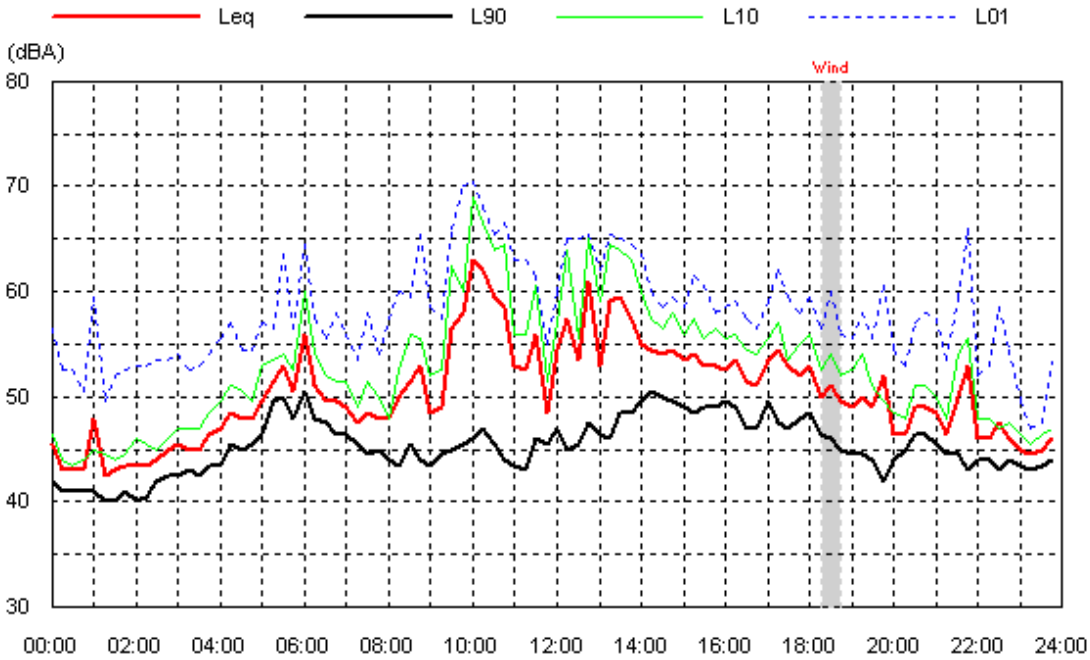

Location: 37 Malinya Crescent, Moorebank
Data shaded: Extraneous Noise; Wind; Rain

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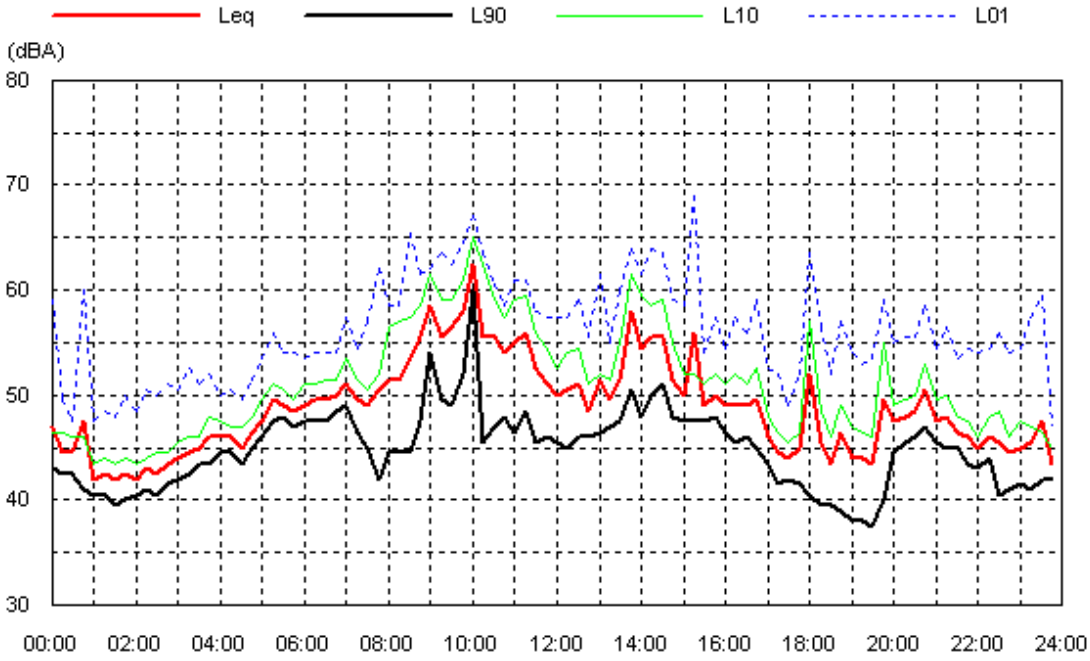

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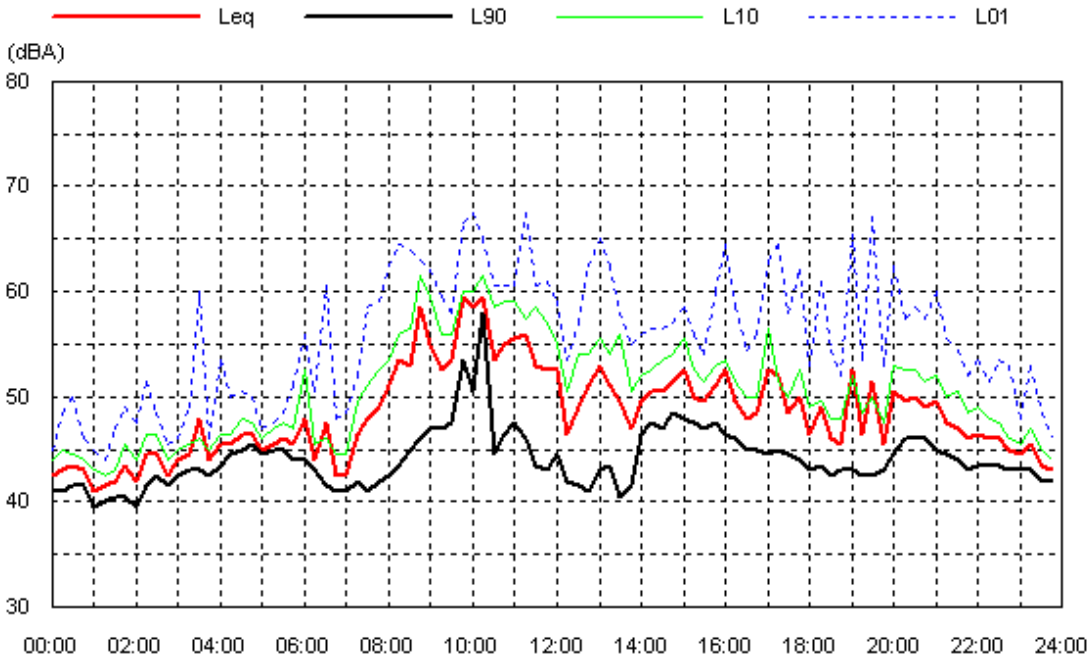

Location: 37 Malinya Crescent, Moorebank
Data shaded: Extraneous Noise; Wind; Rain

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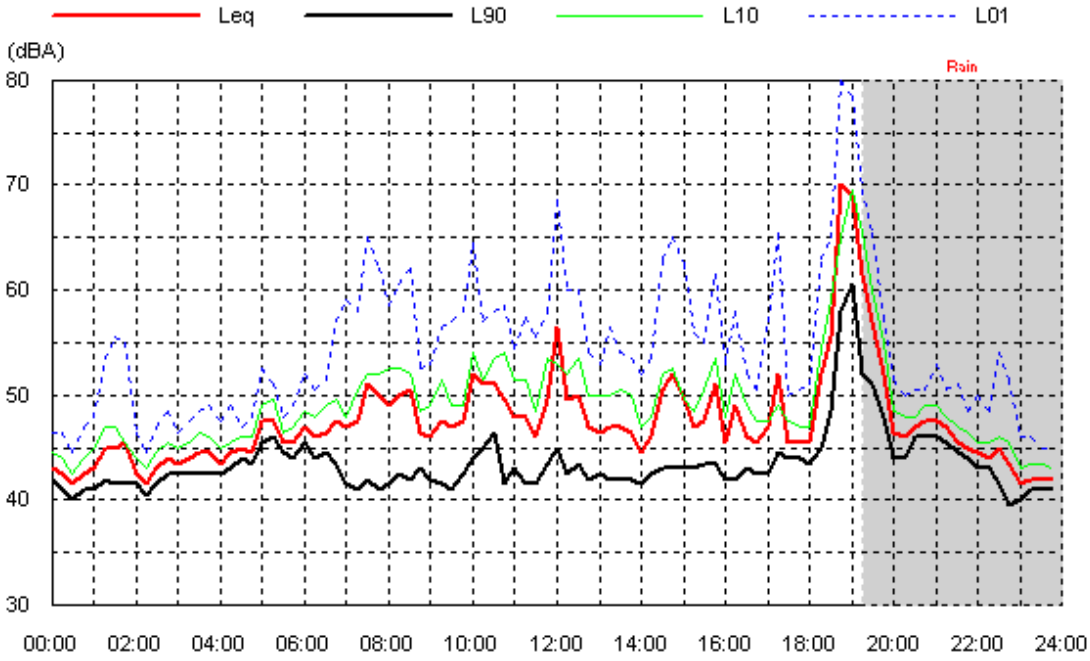

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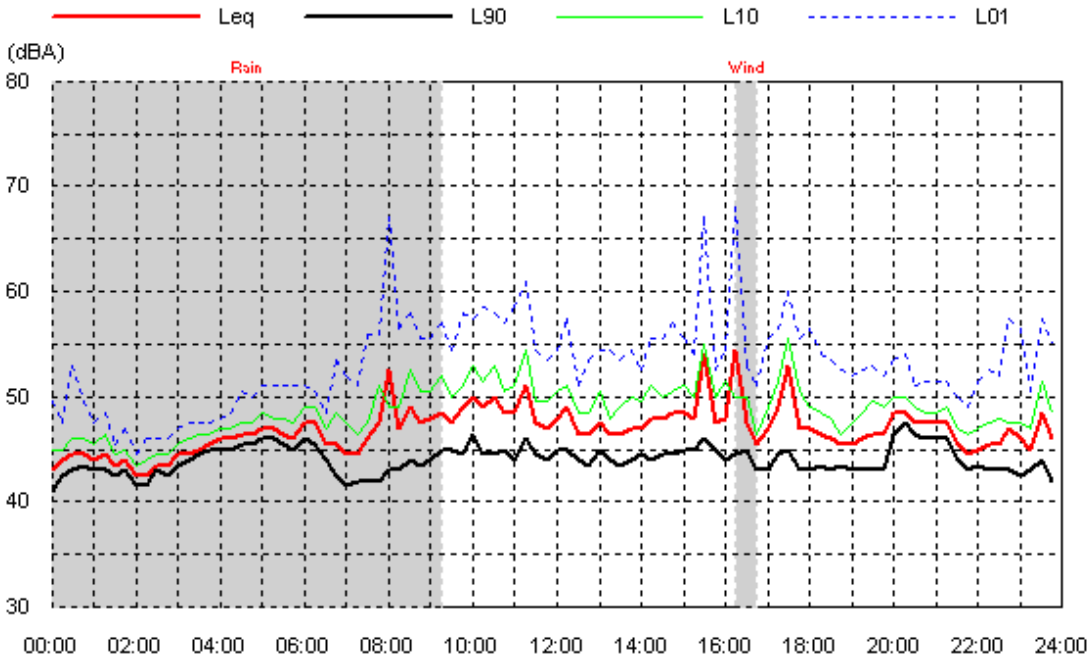

Location: 37 Malinya Crescent, Moorebank
Data shaded: Extraneous Noise; Wind; Rain

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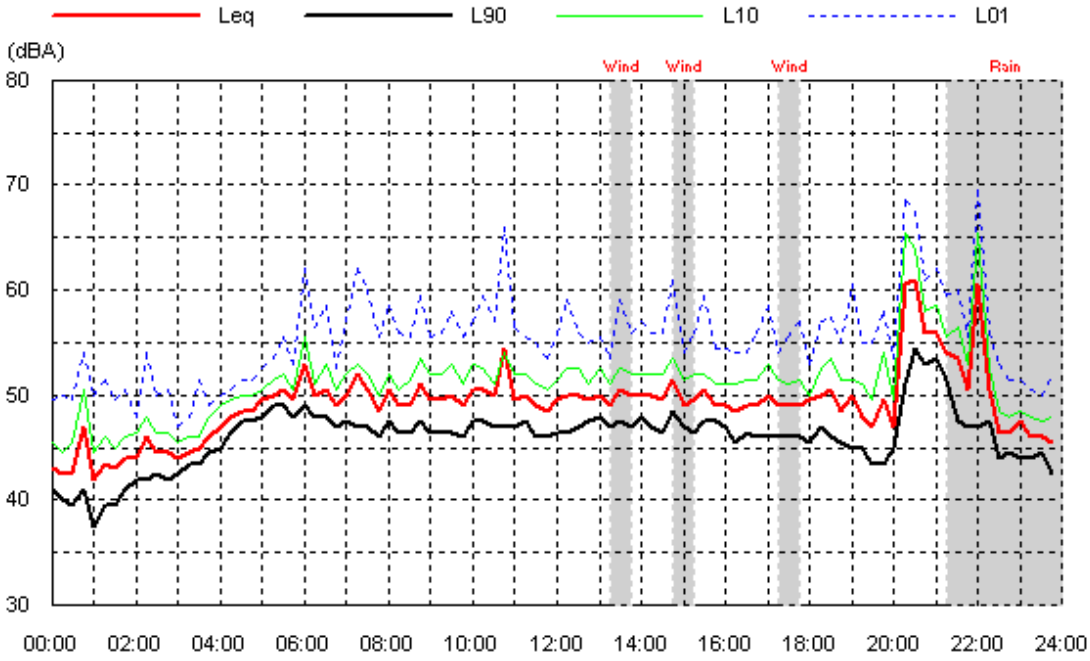

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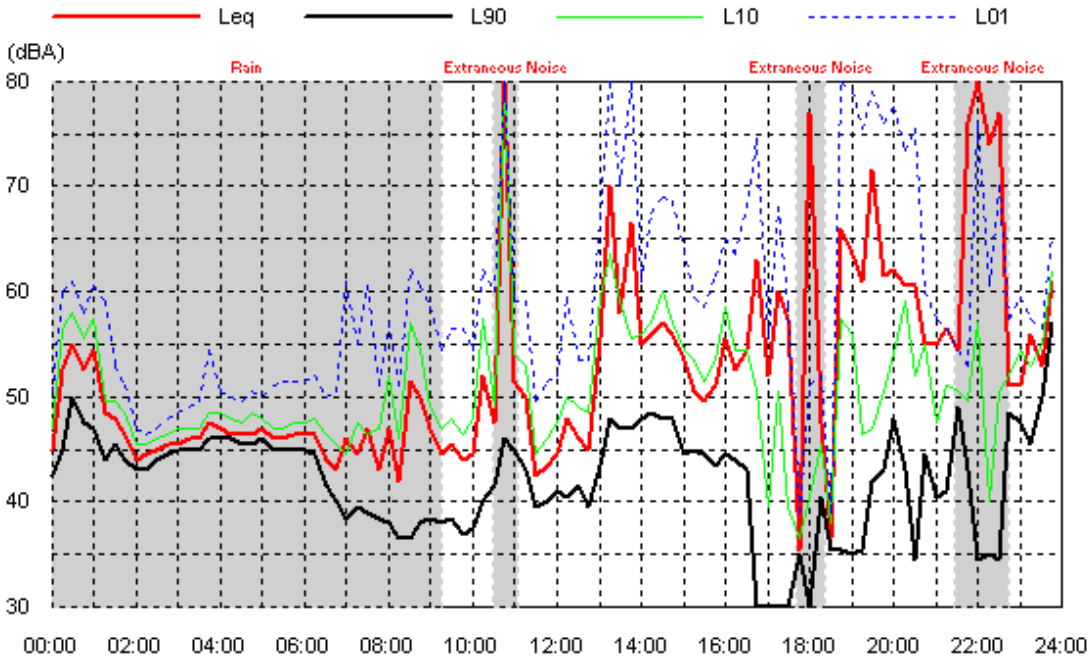

Location: 37 Malinya Crescent, Moorebank
Data shaded: Extraneous Noise; Wind; Rain

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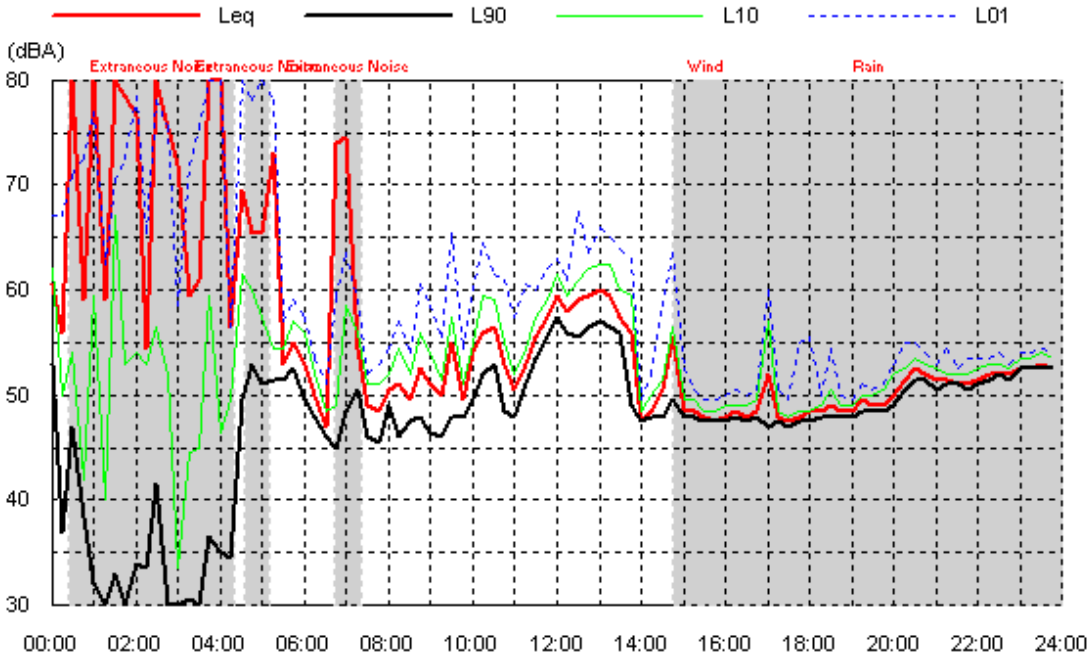

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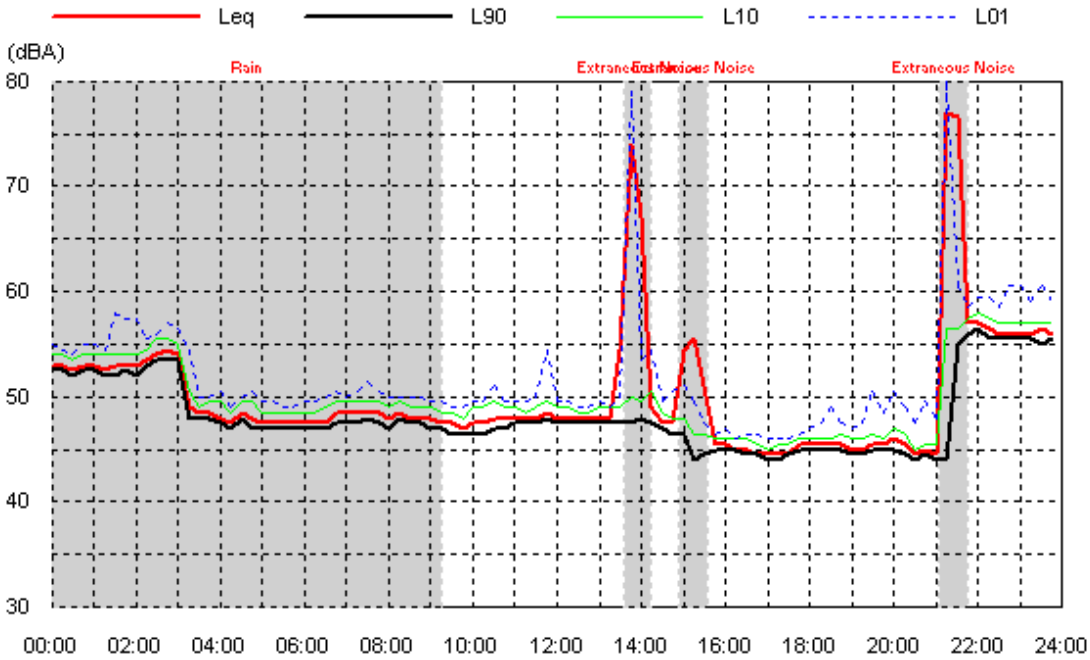

Location: 37 Malinya Crescent, Moorebank
Data shaded: Extraneous Noise; Wind; Rain

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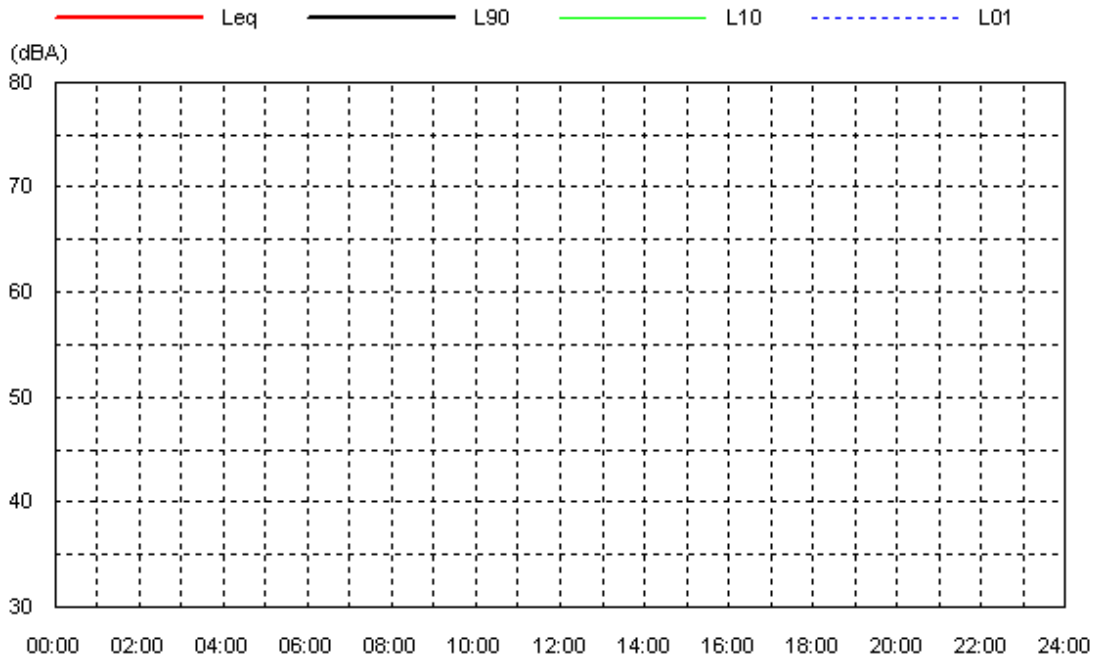

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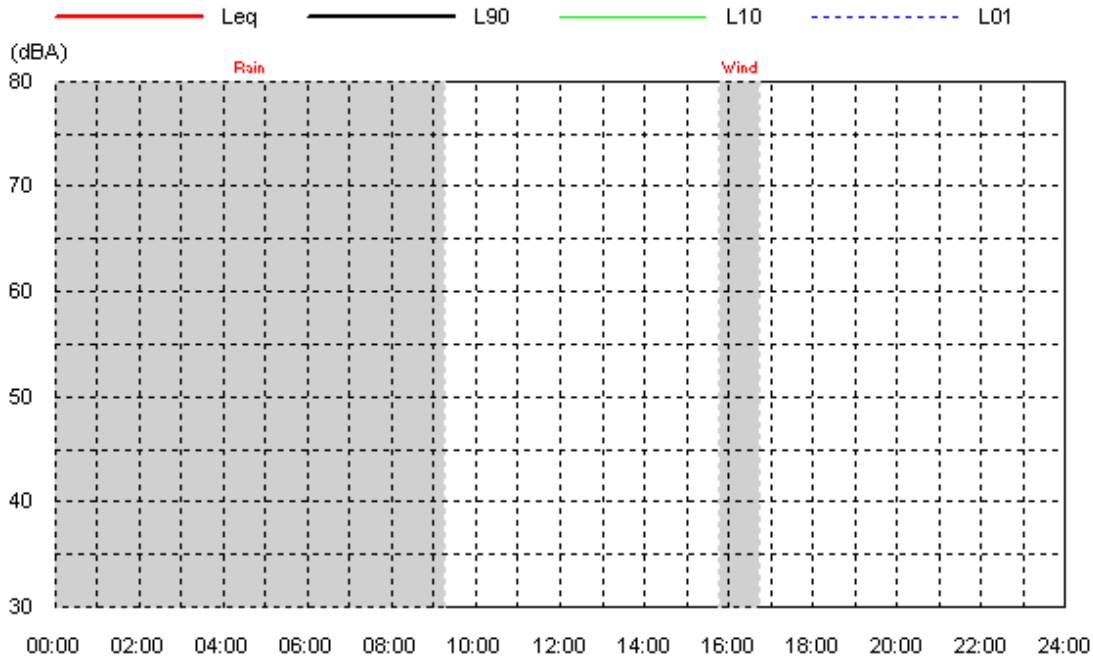

Location: 26 Elouera Crescent, Moorebank
Data shaded: Extraneous Noise; Wind; Rain

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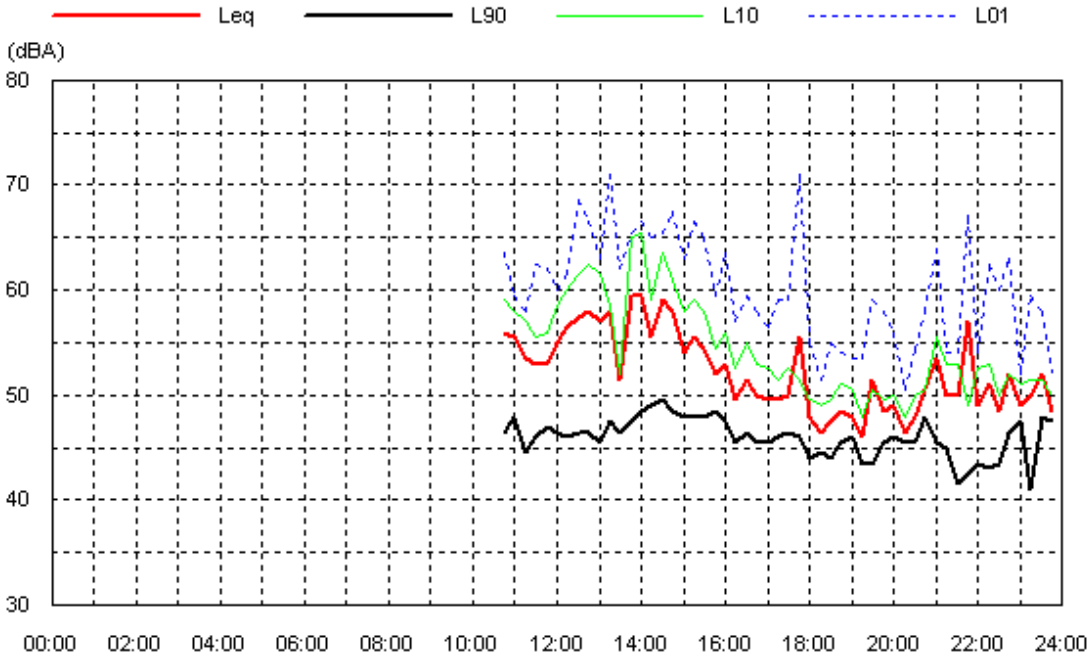

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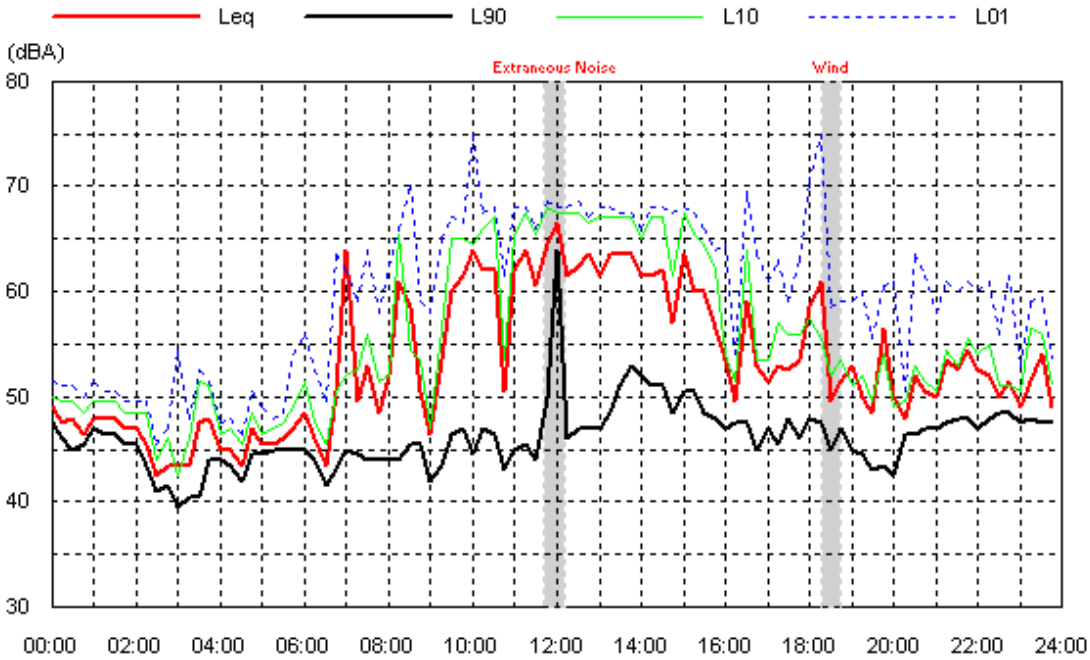

Location: 26 Elouera Crescent, Moorebank
Data shaded: Extraneous Noise; Wind; Rain

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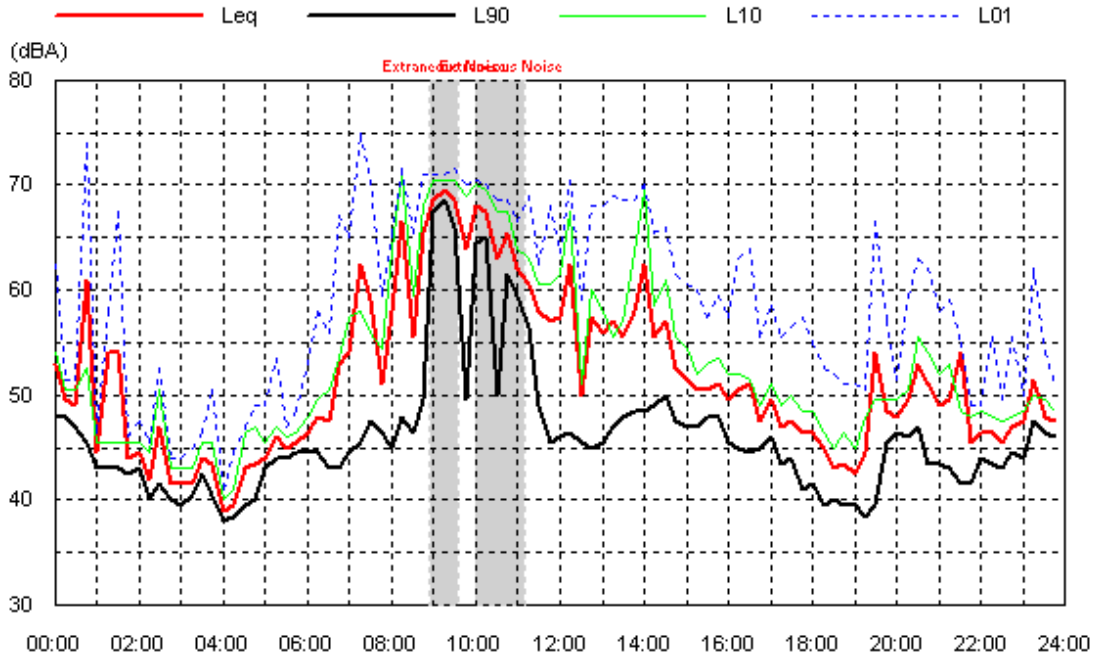

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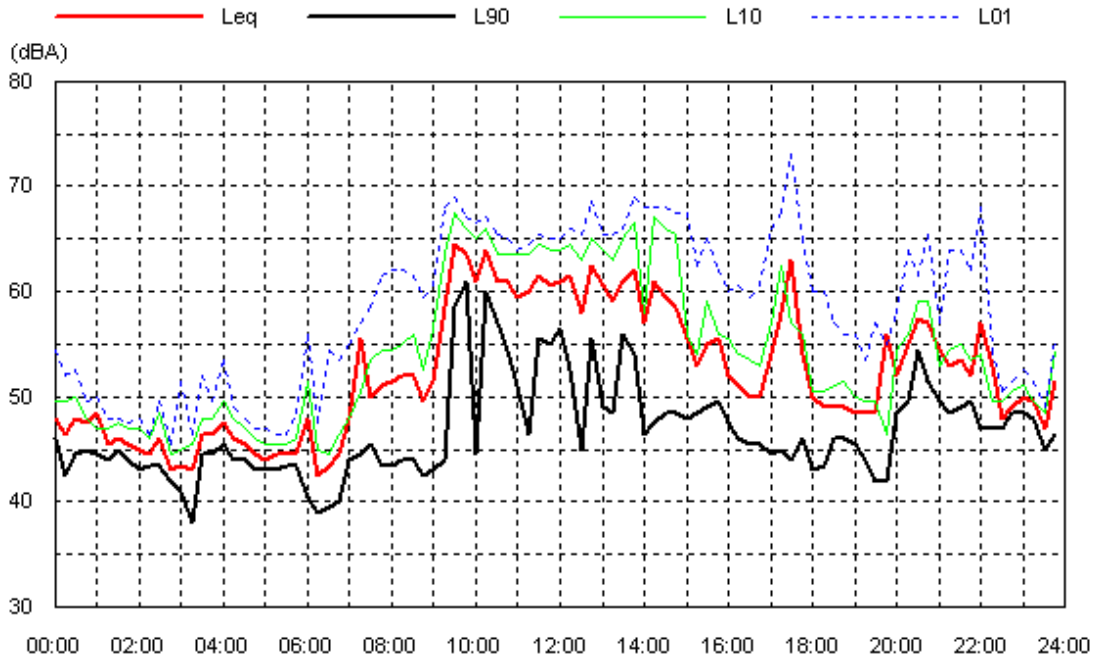

Location: 26 Elouera Crescent, Moorebank
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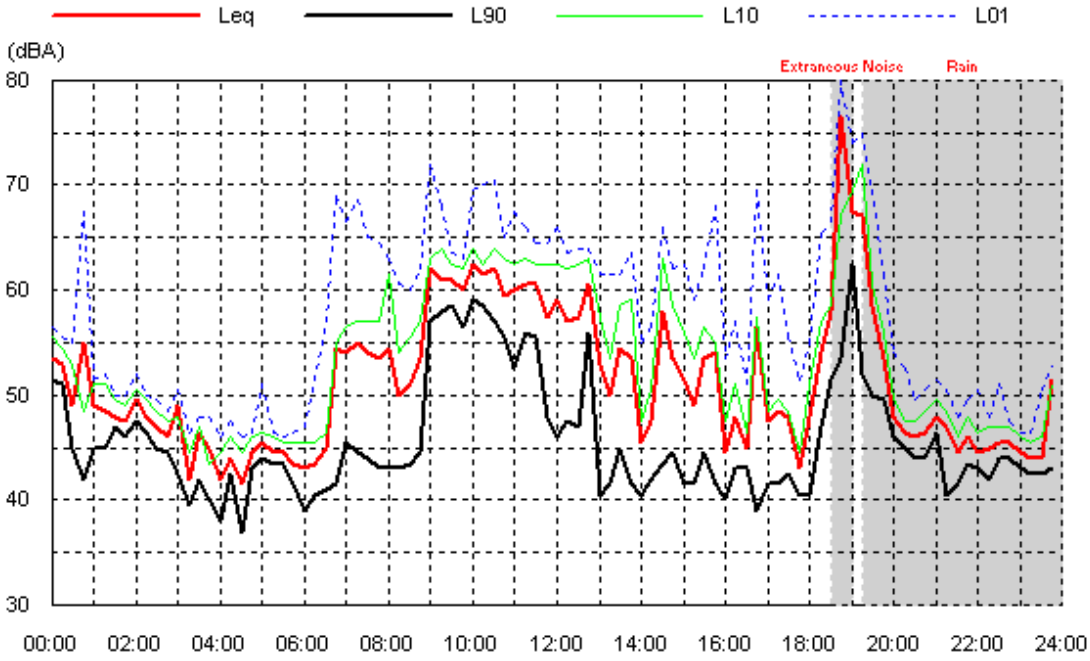

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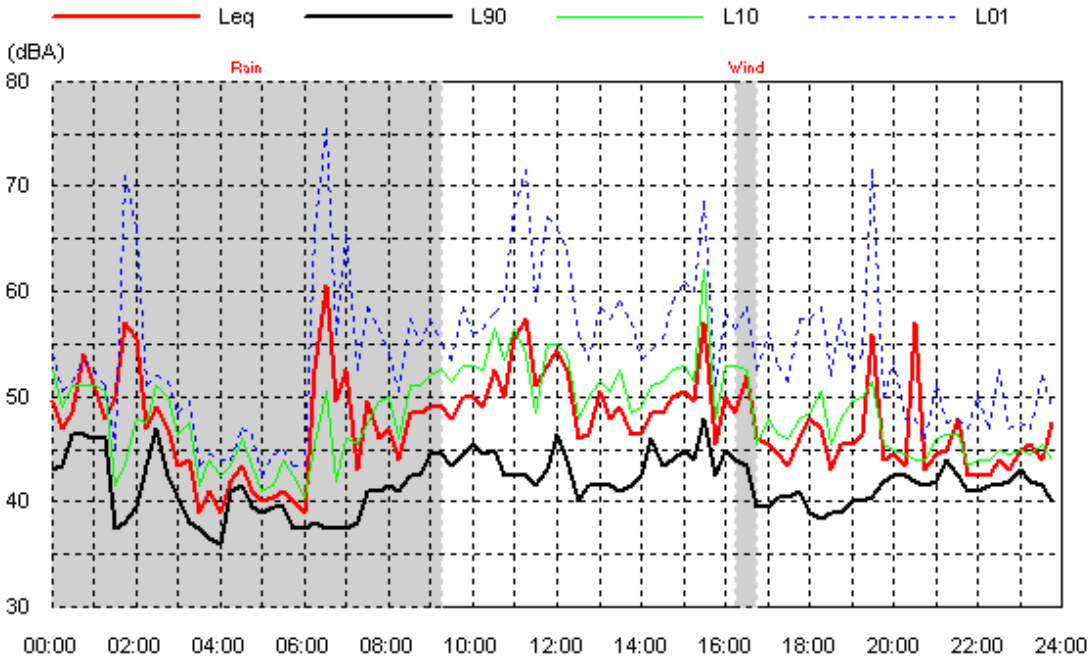

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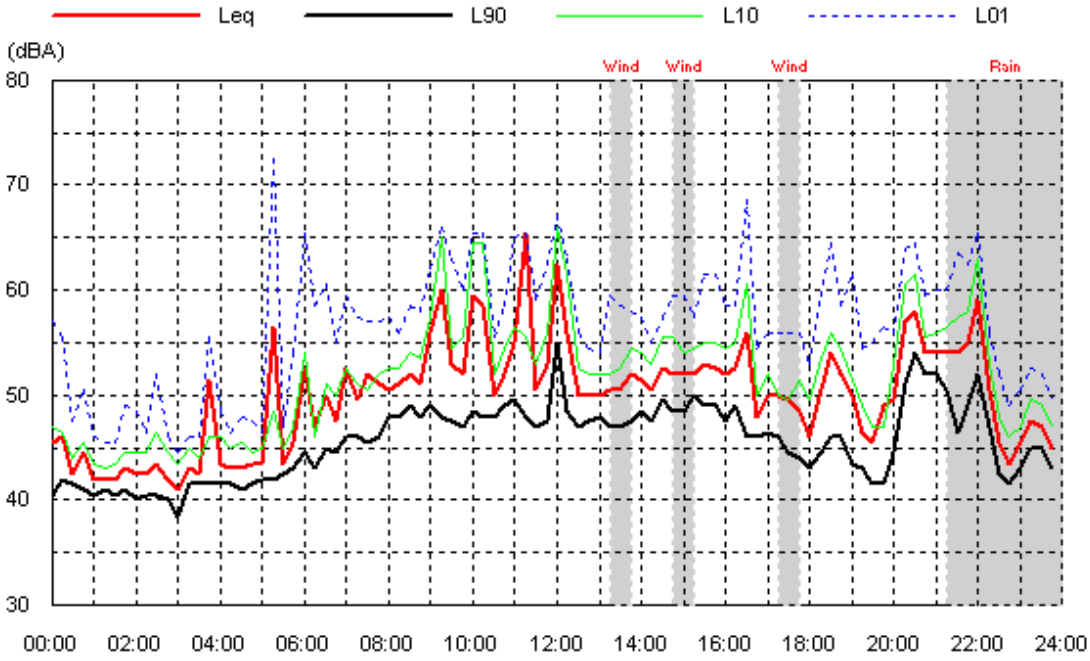

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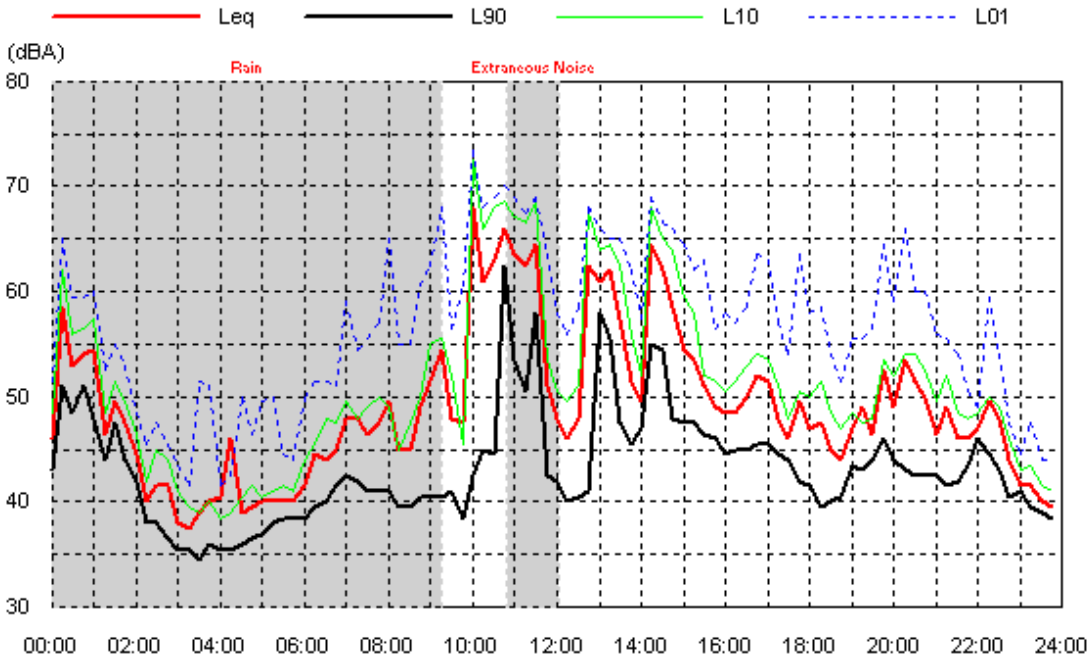

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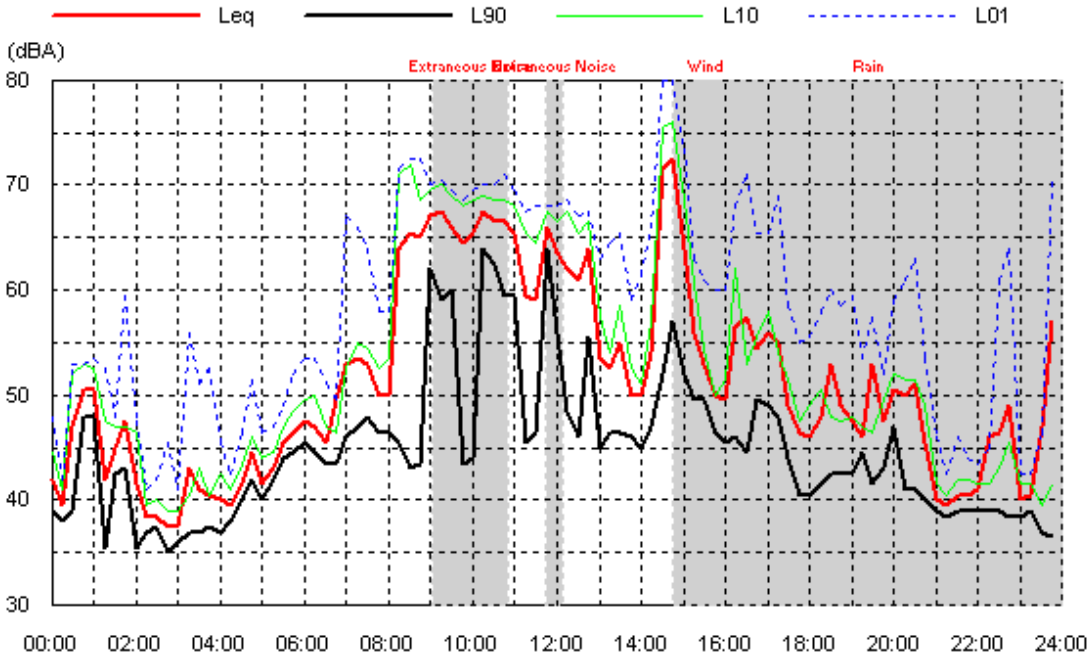

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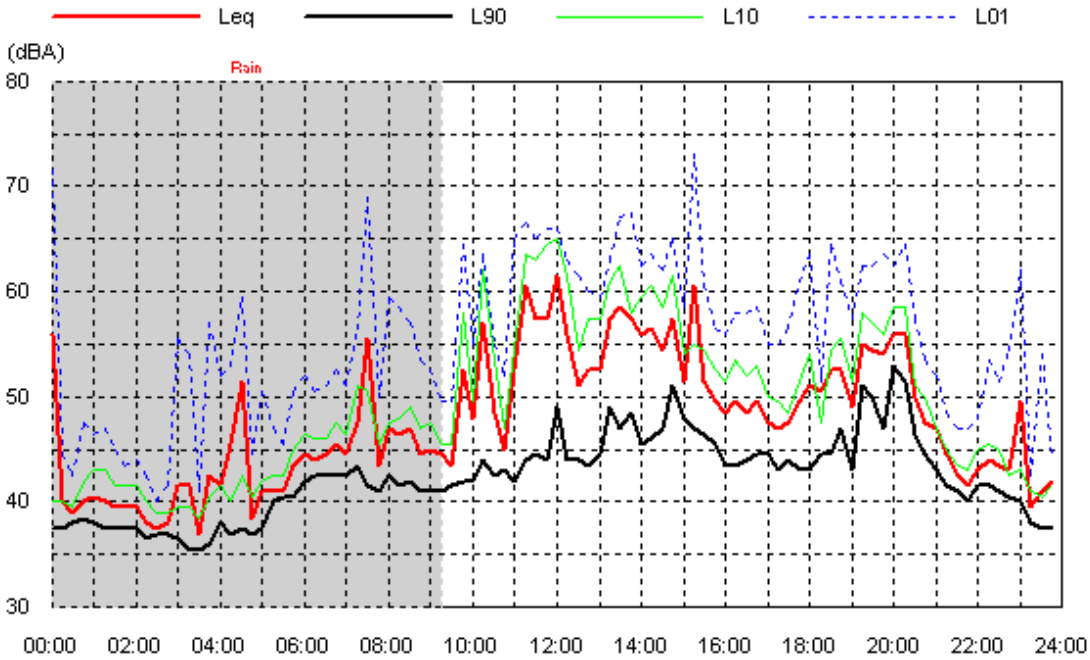

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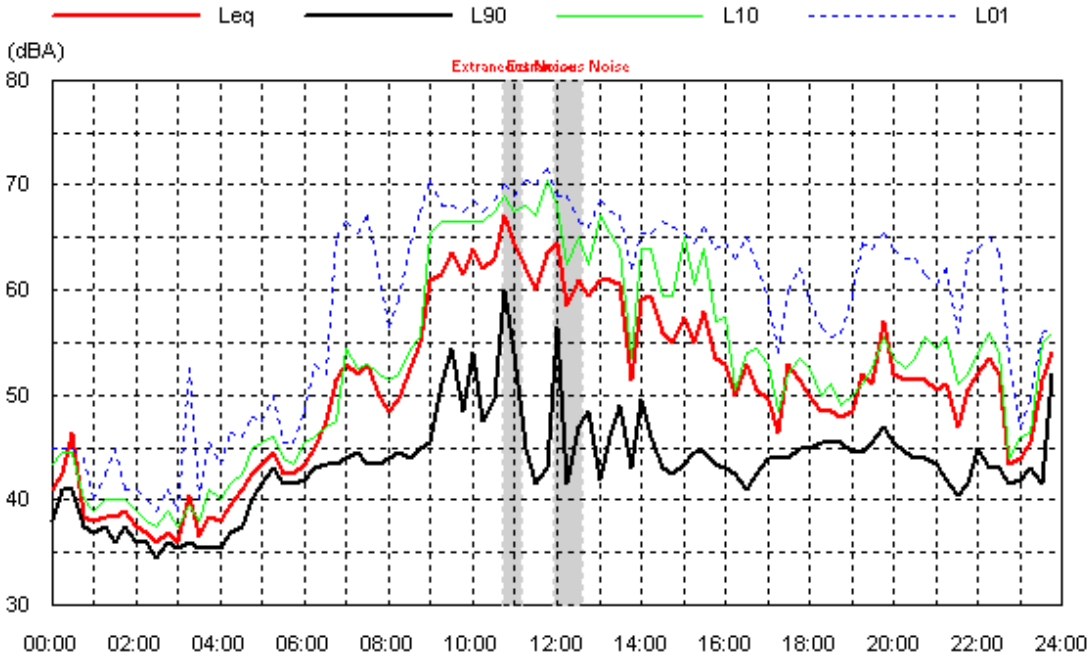

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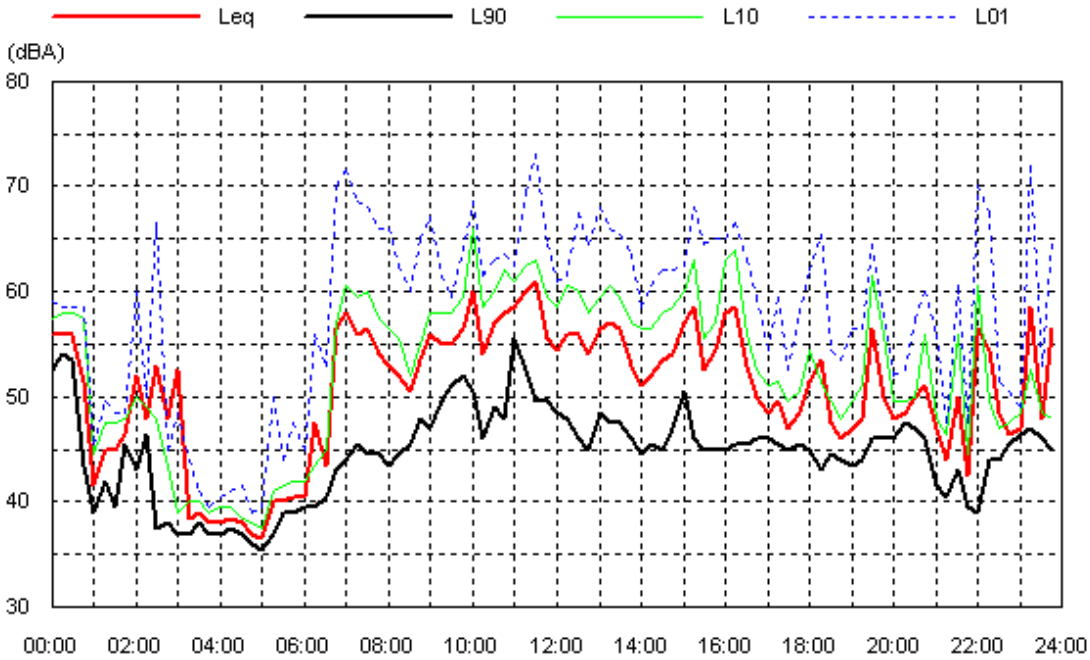

Location: 26 Elouera Crescent, Moorebank
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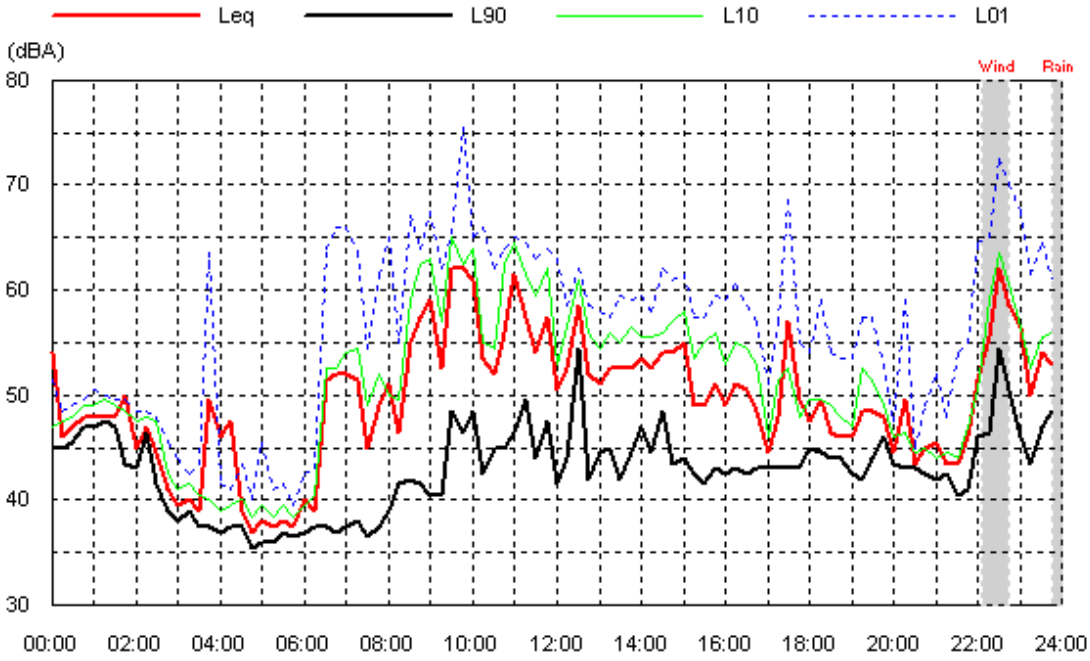

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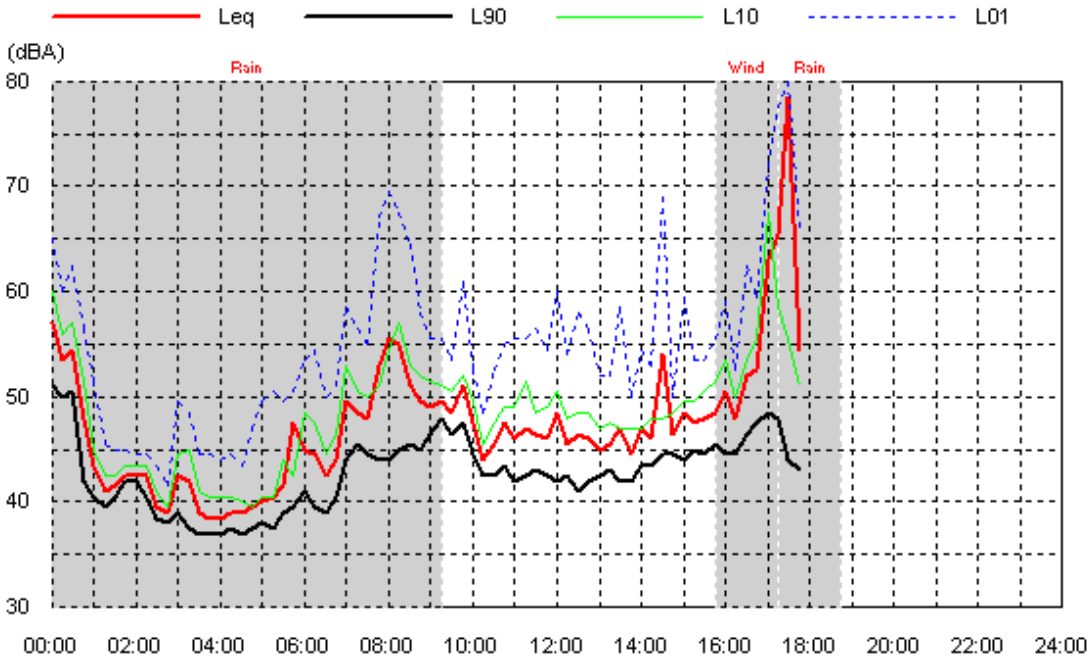

Location: 41 Martin Crescent, Milperra
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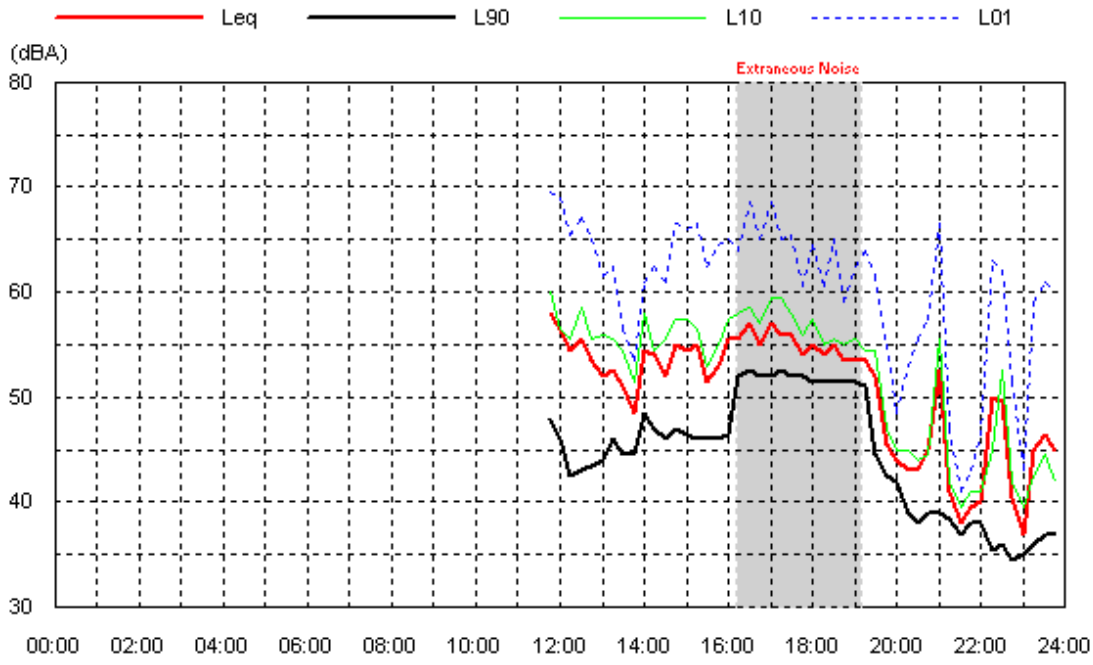

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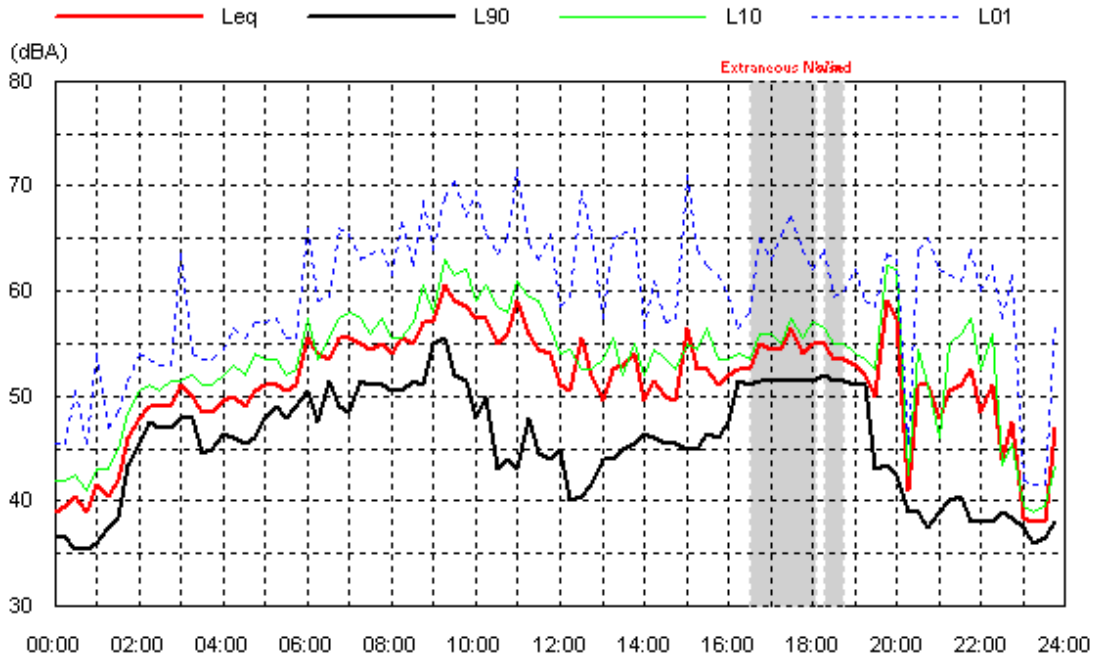

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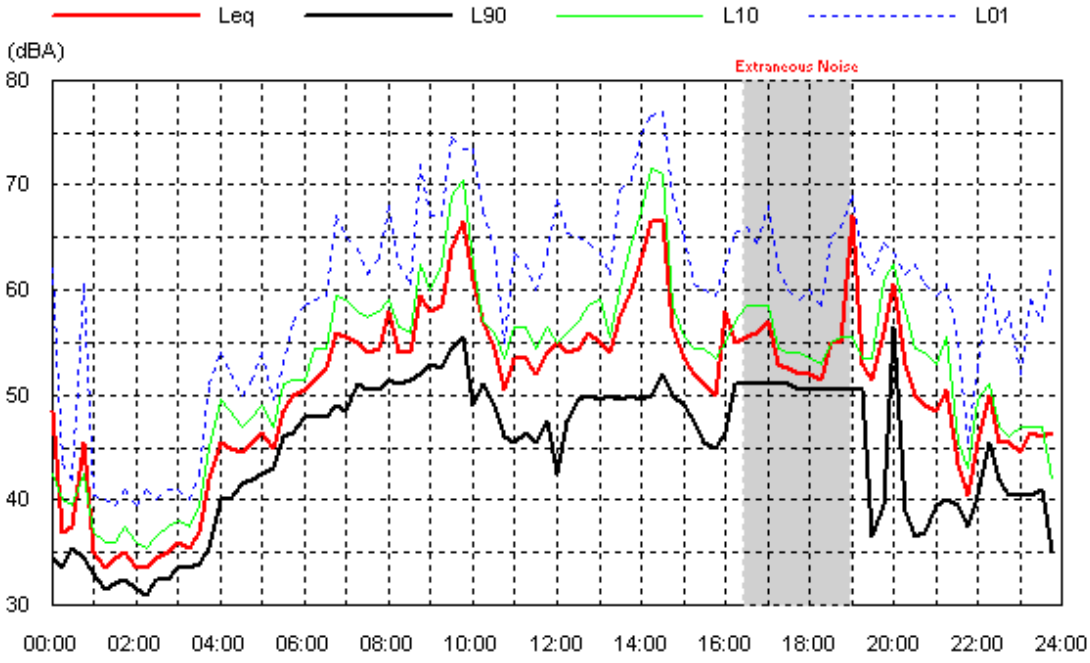

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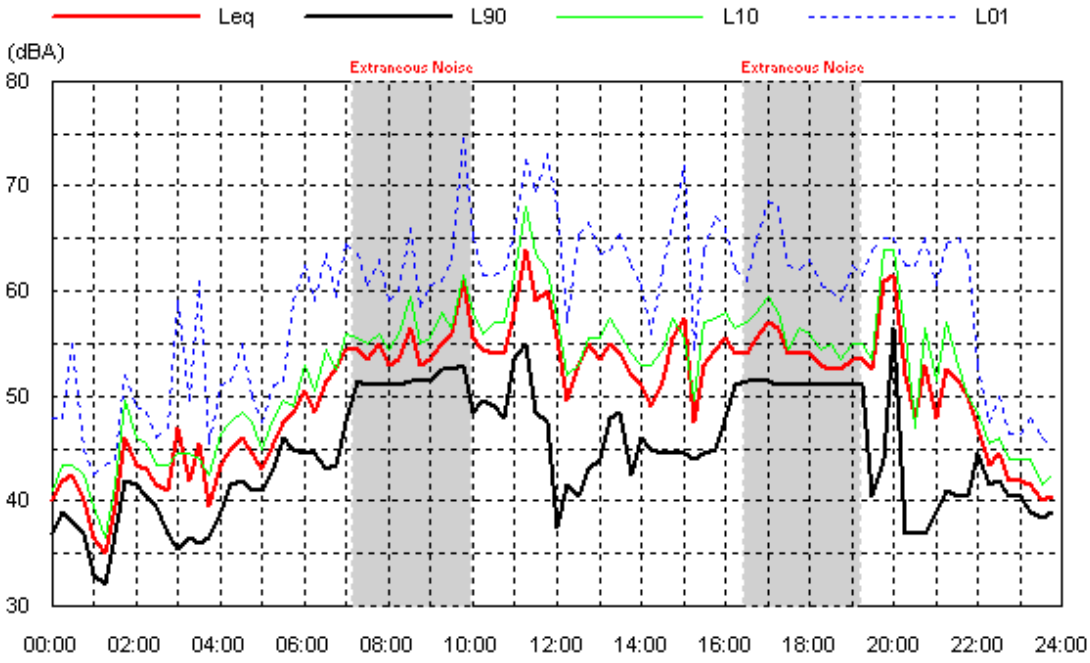

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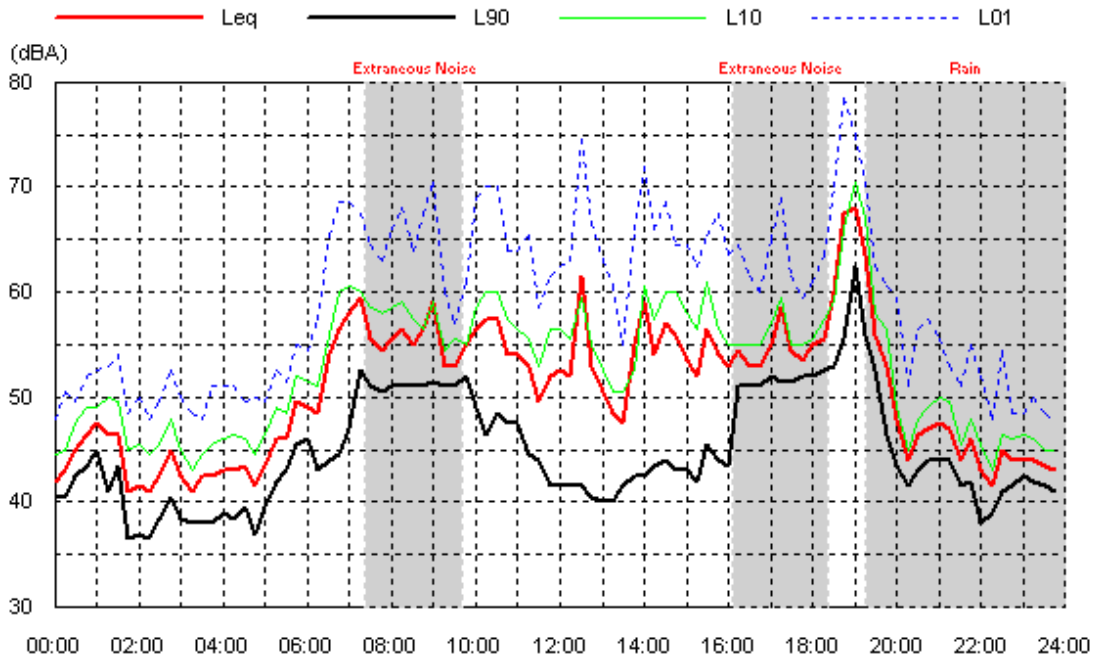

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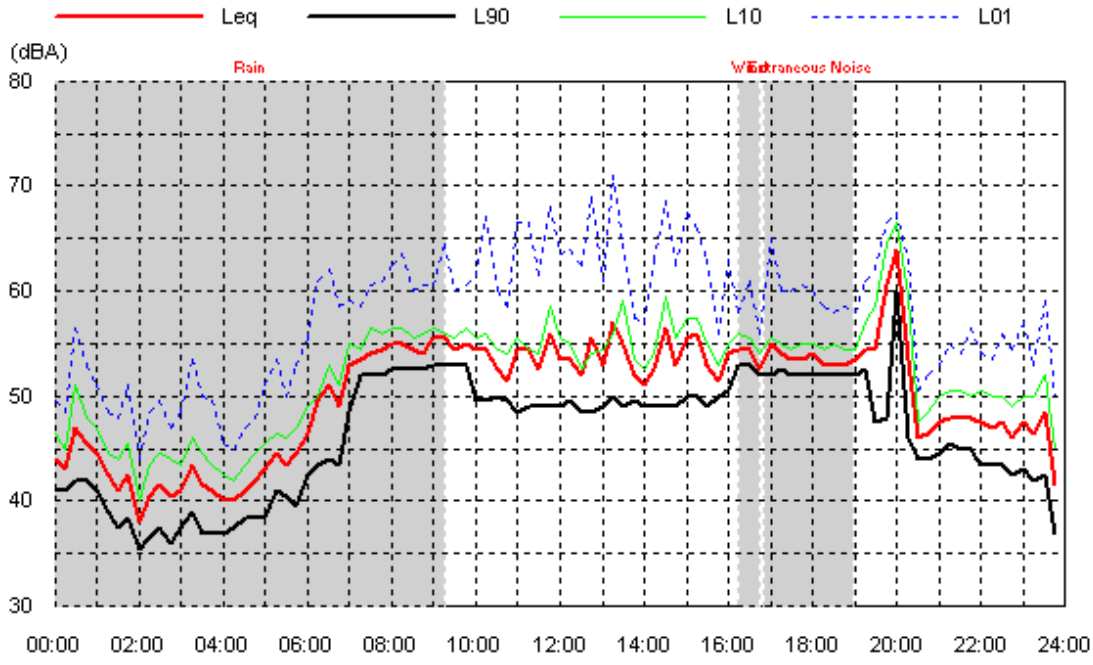

Location: 41 Martin Crescent, Milperra
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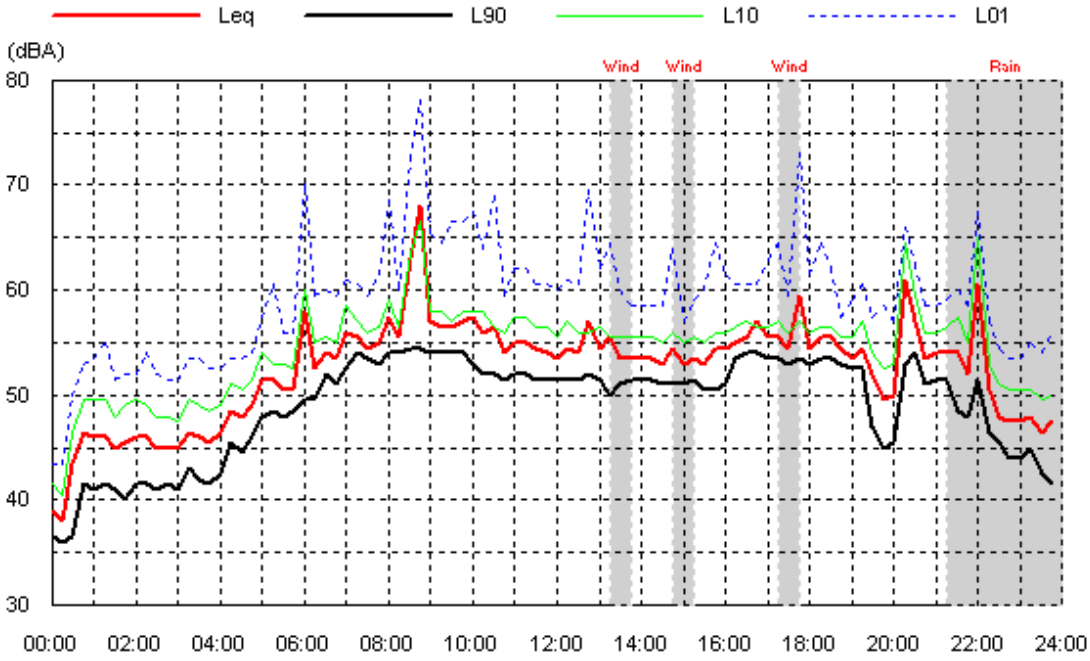

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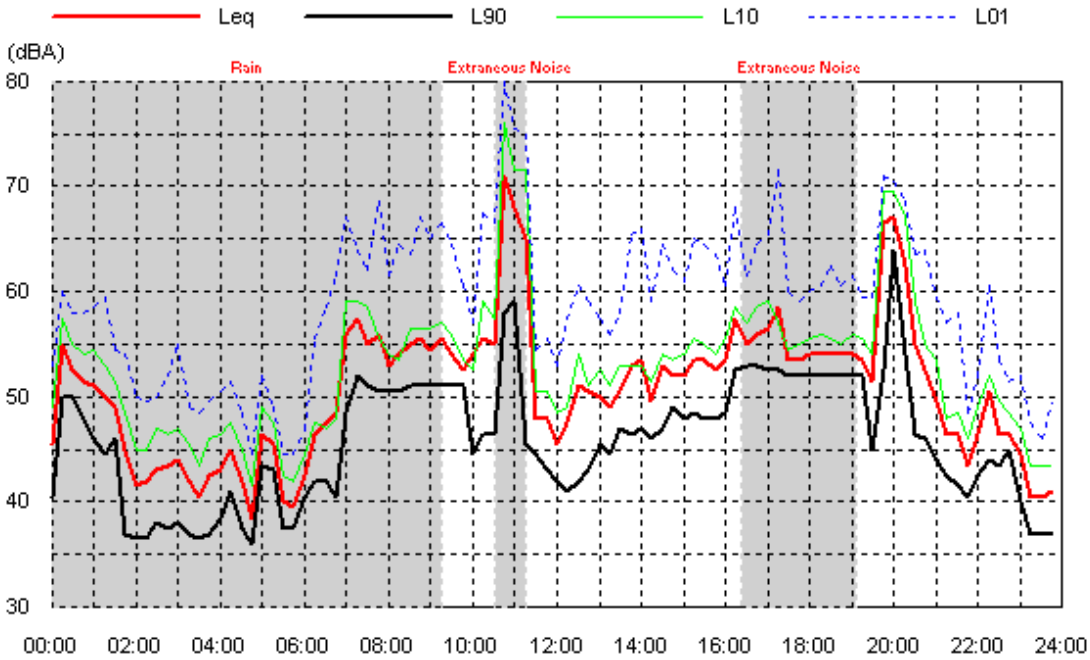

Location: 41 Martin Crescent, Milperra
Data shaded: Extraneous Noise; Wind; Rain

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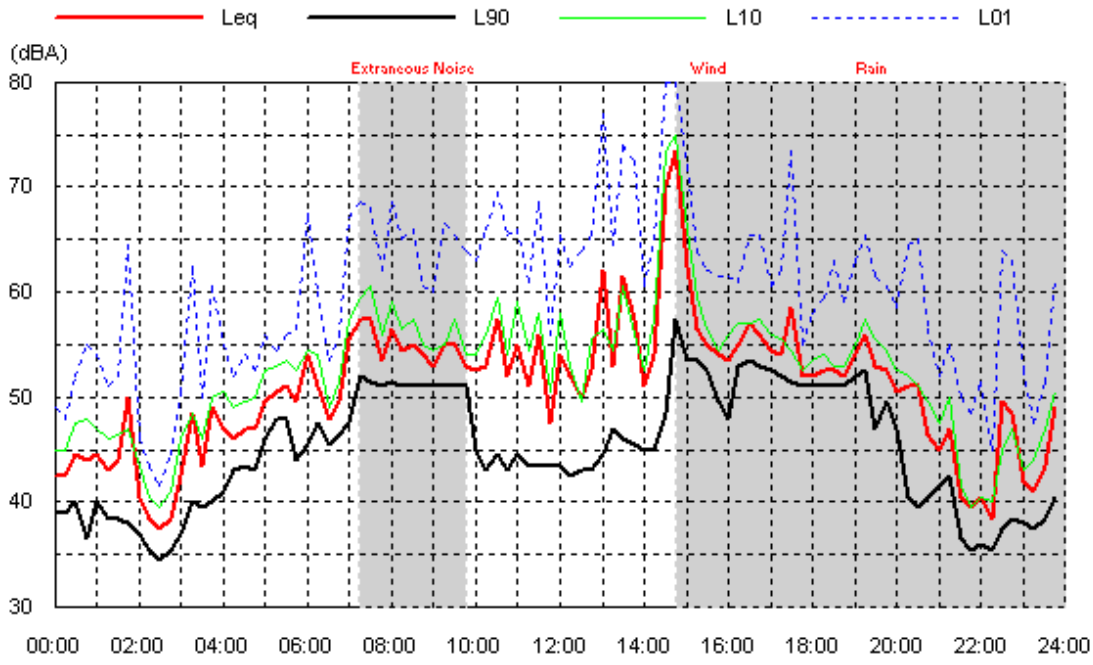

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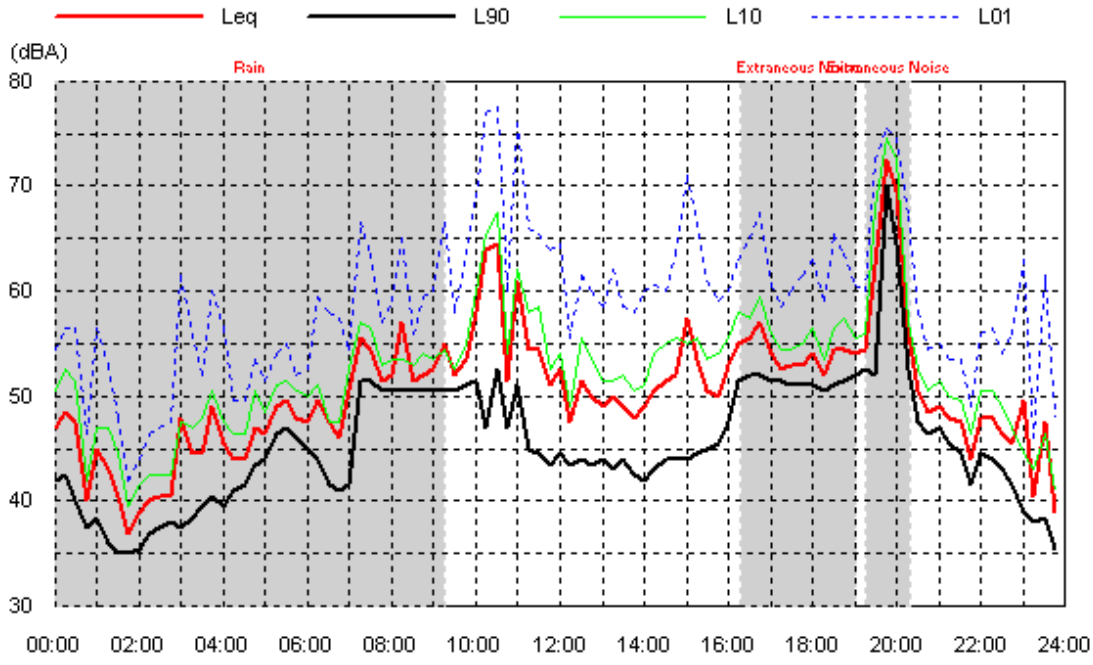

Location: 41 Martin Crescent, Milperra
Data shaded: Extraneous Noise; Wind; Rain

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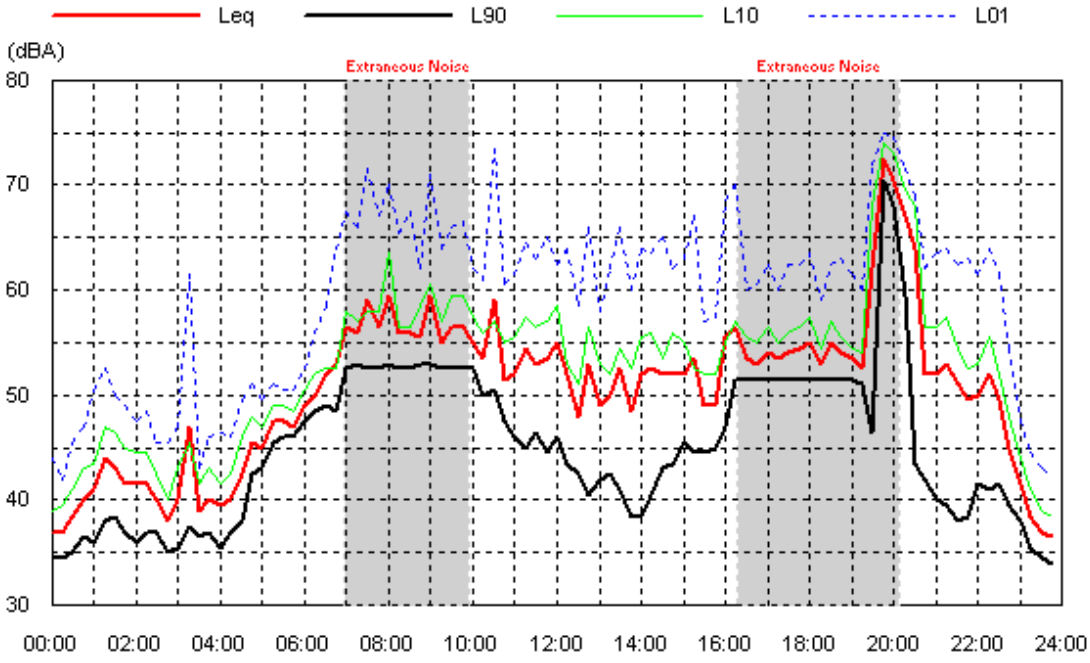

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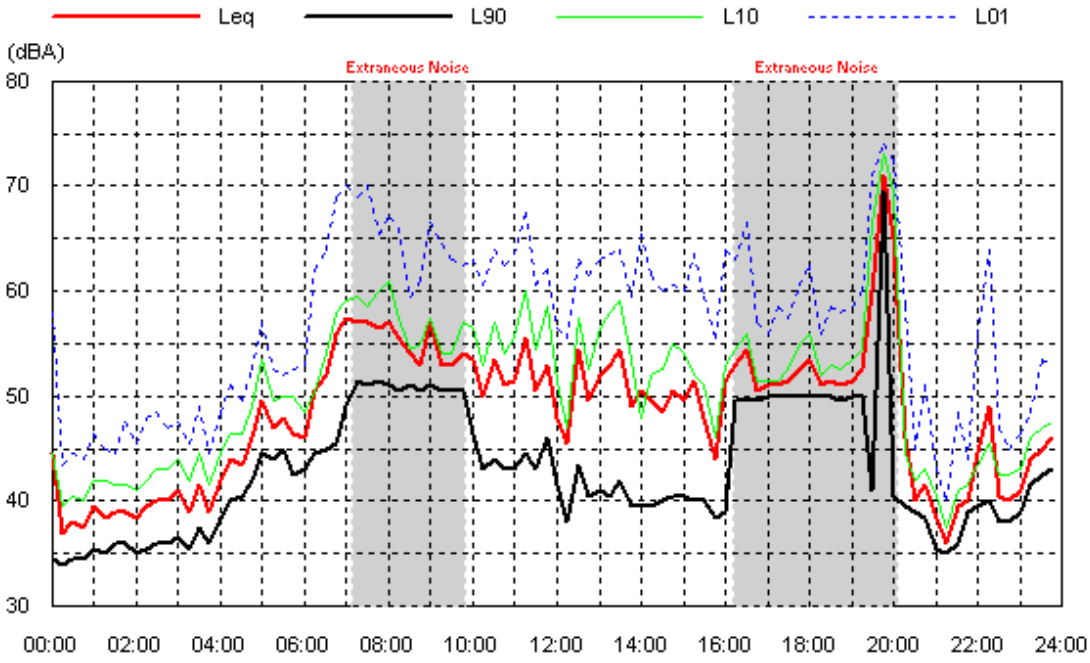

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Data shaded: Extraneous Noise; Wind; Rain

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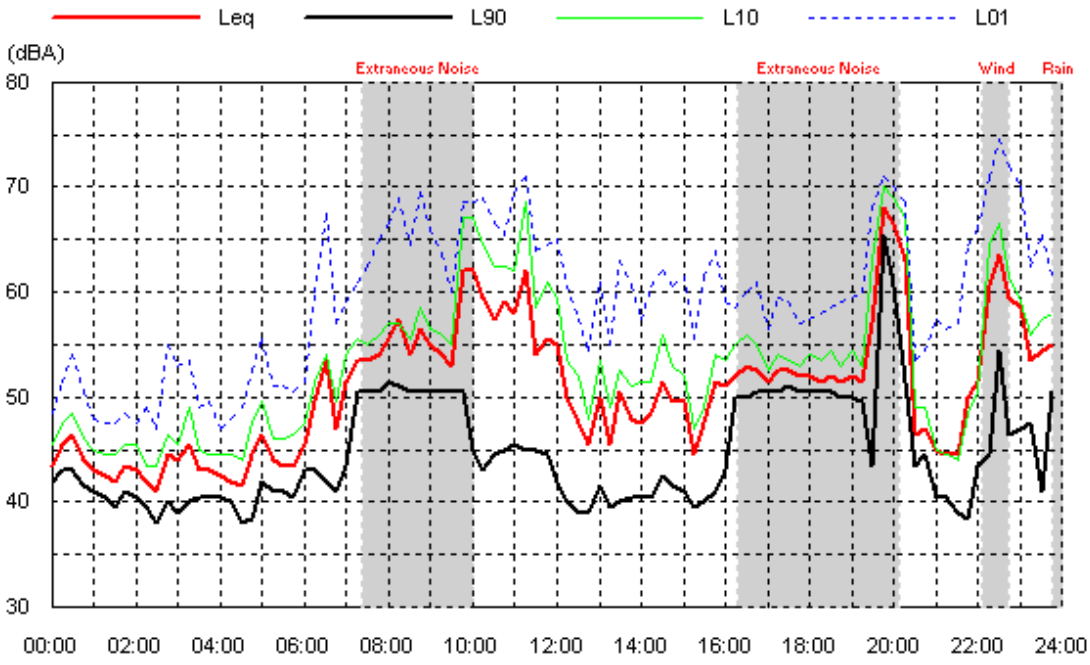

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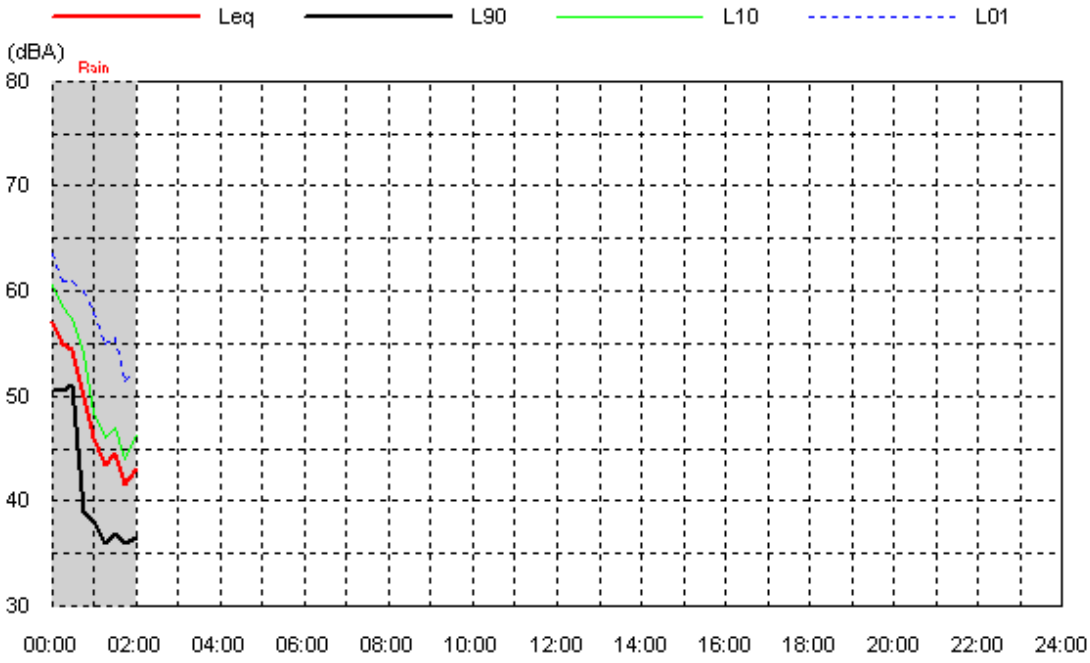
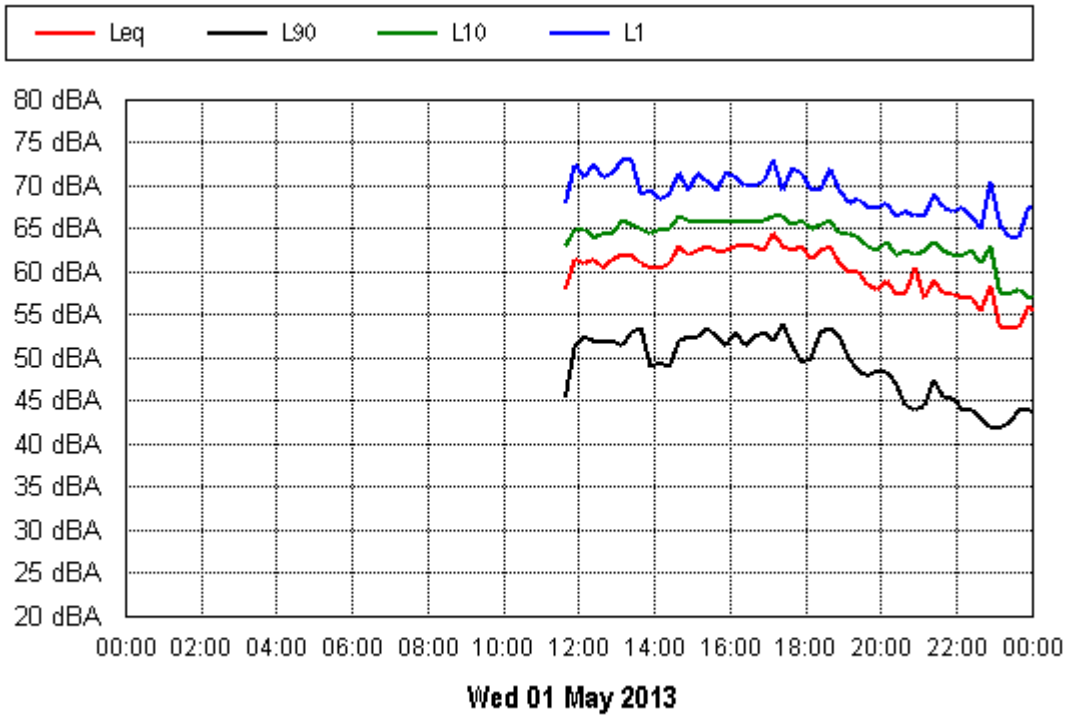
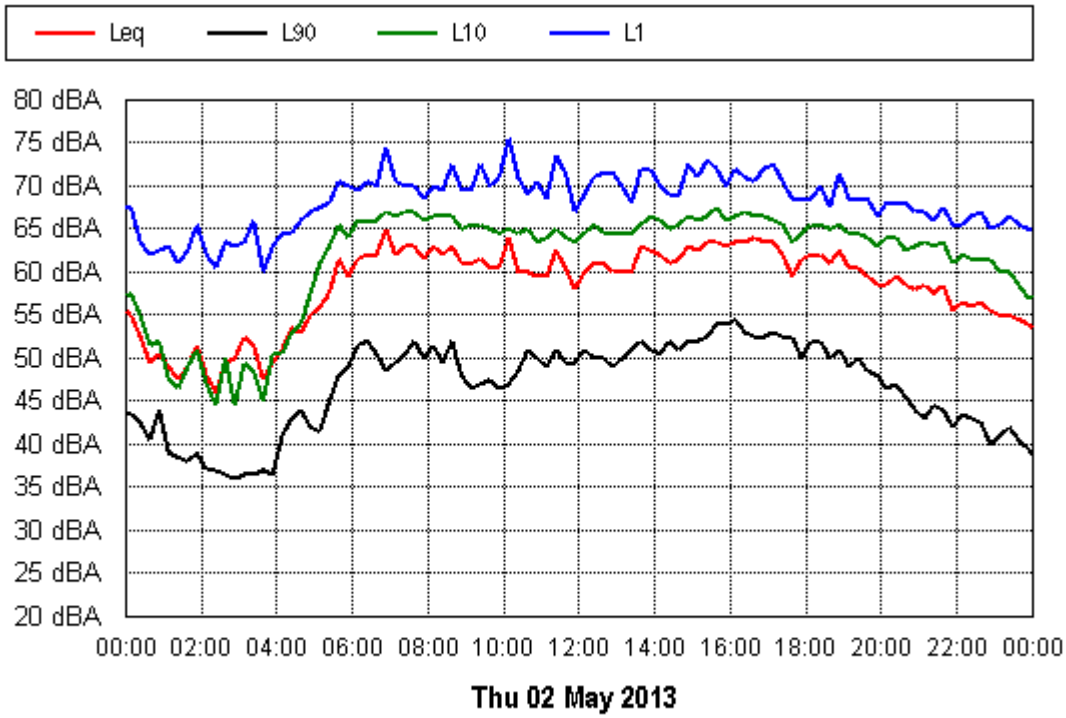


Location: 16 Bushview Lane





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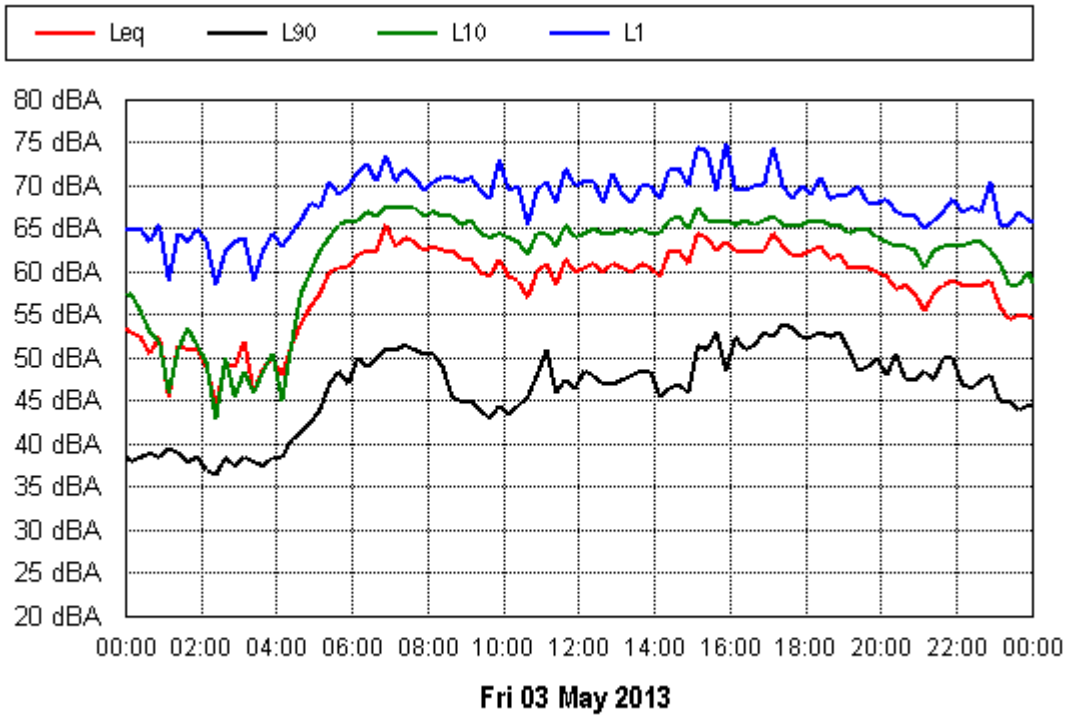
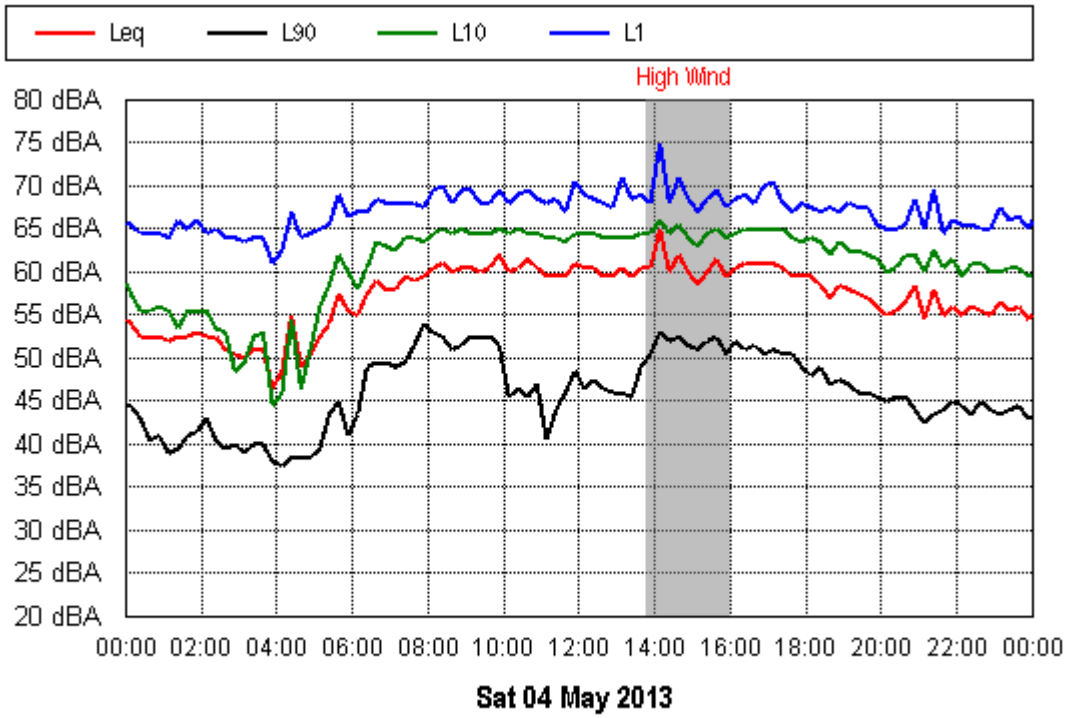
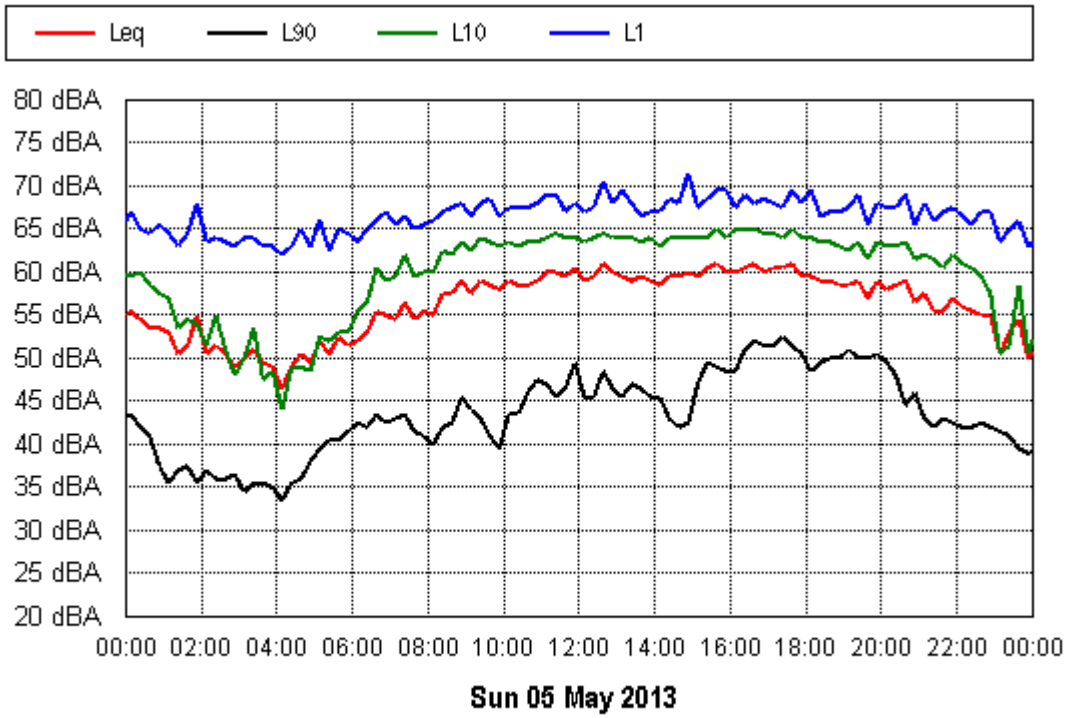
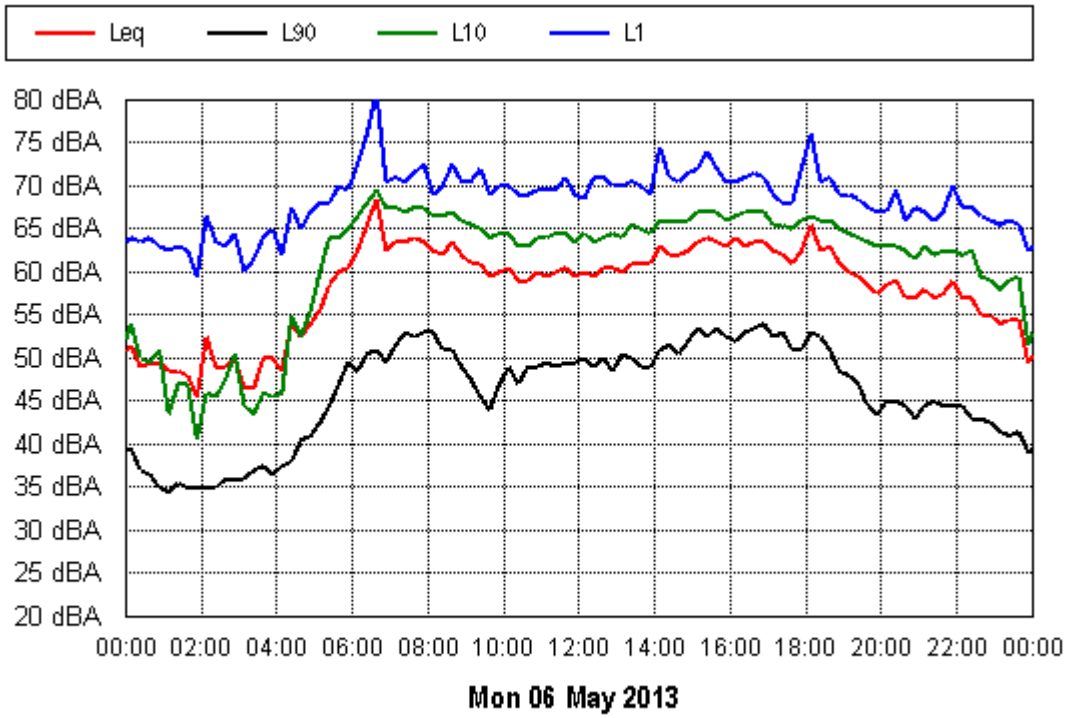




Location: 16 Bushview Lane





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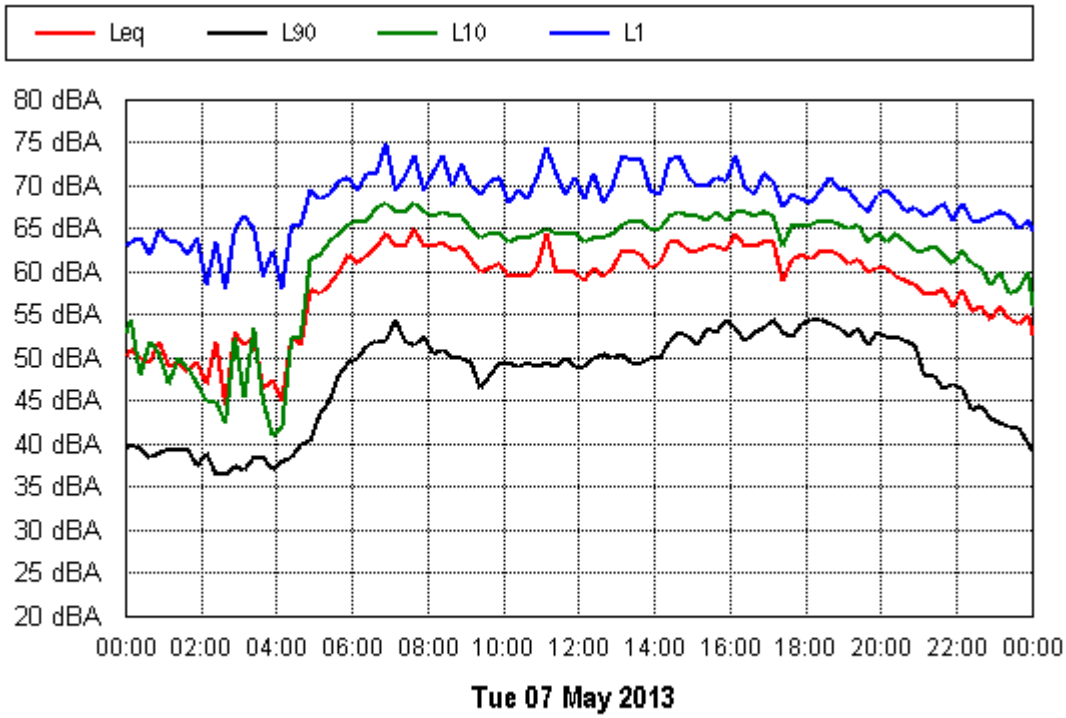

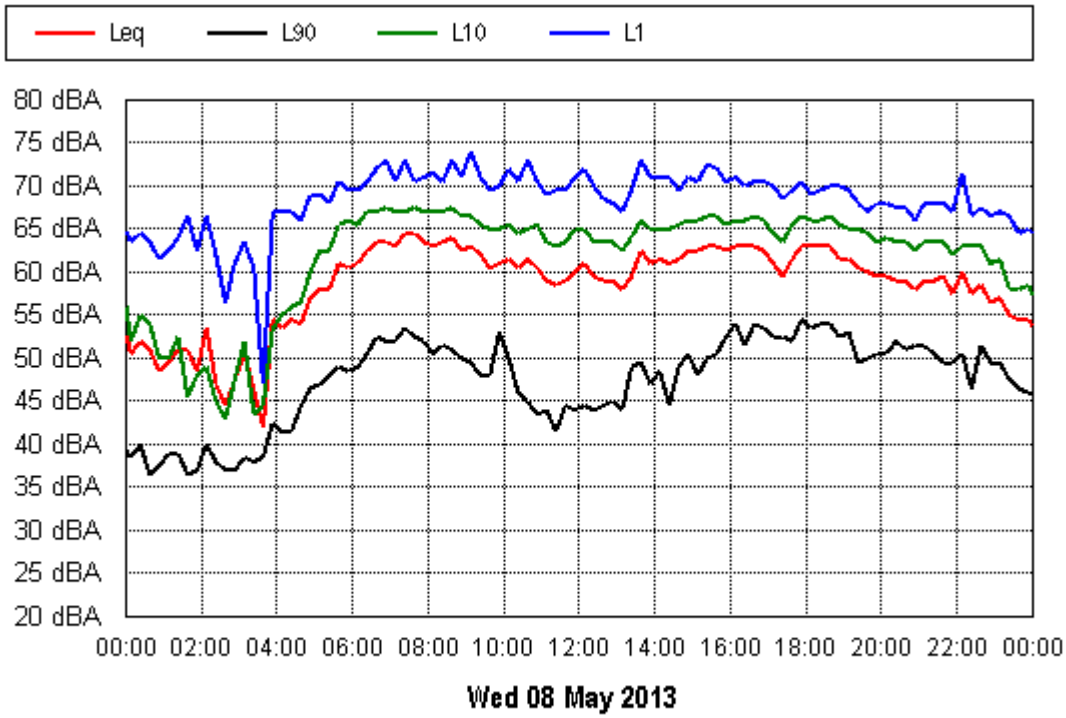

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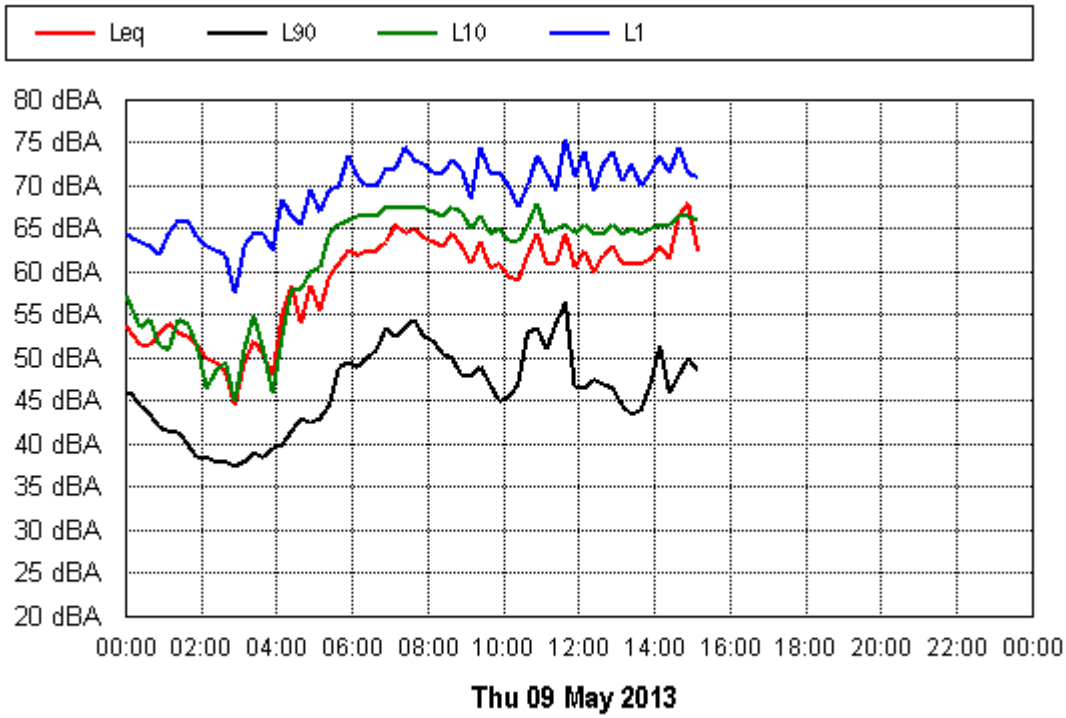
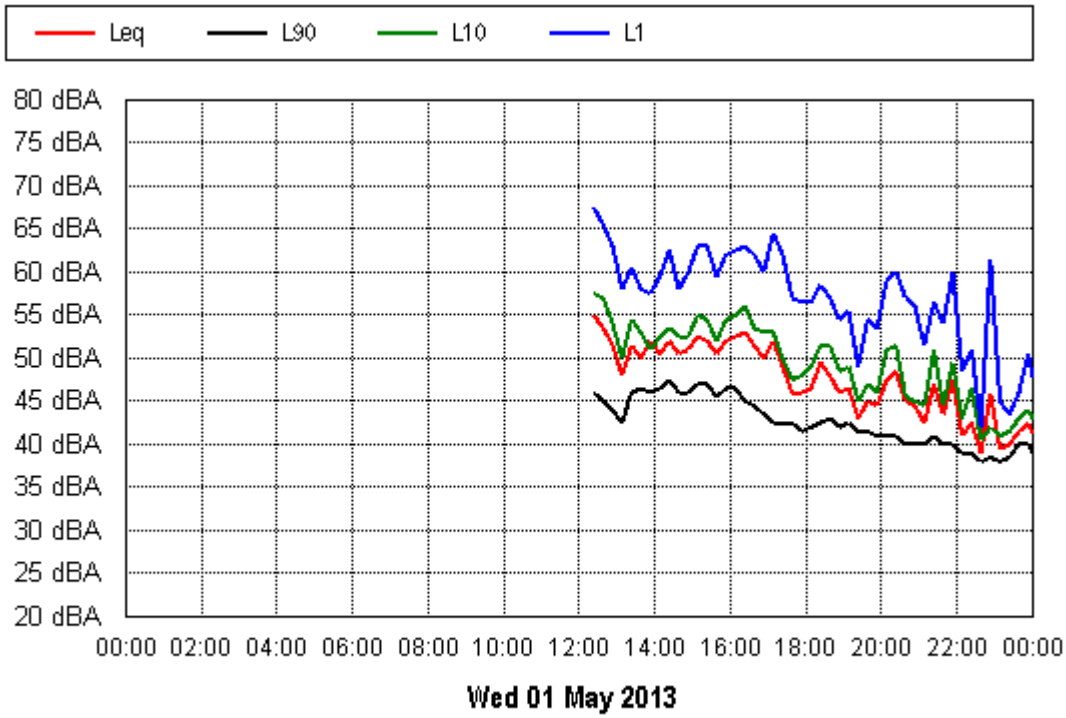
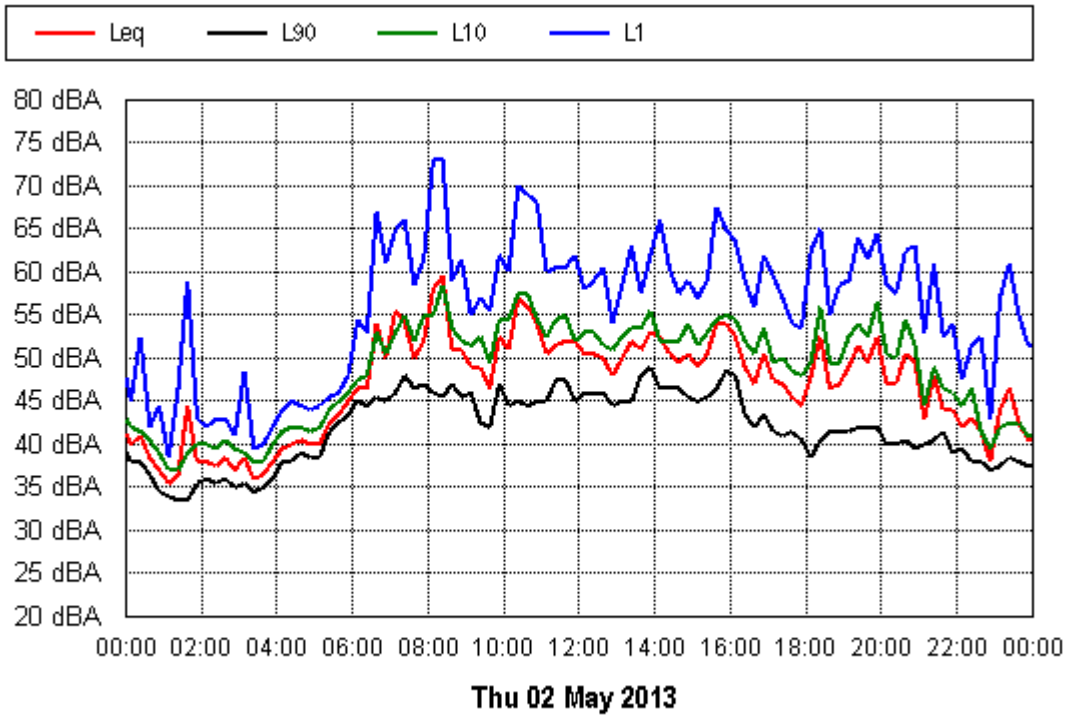


Location: 28 Elouera Cr





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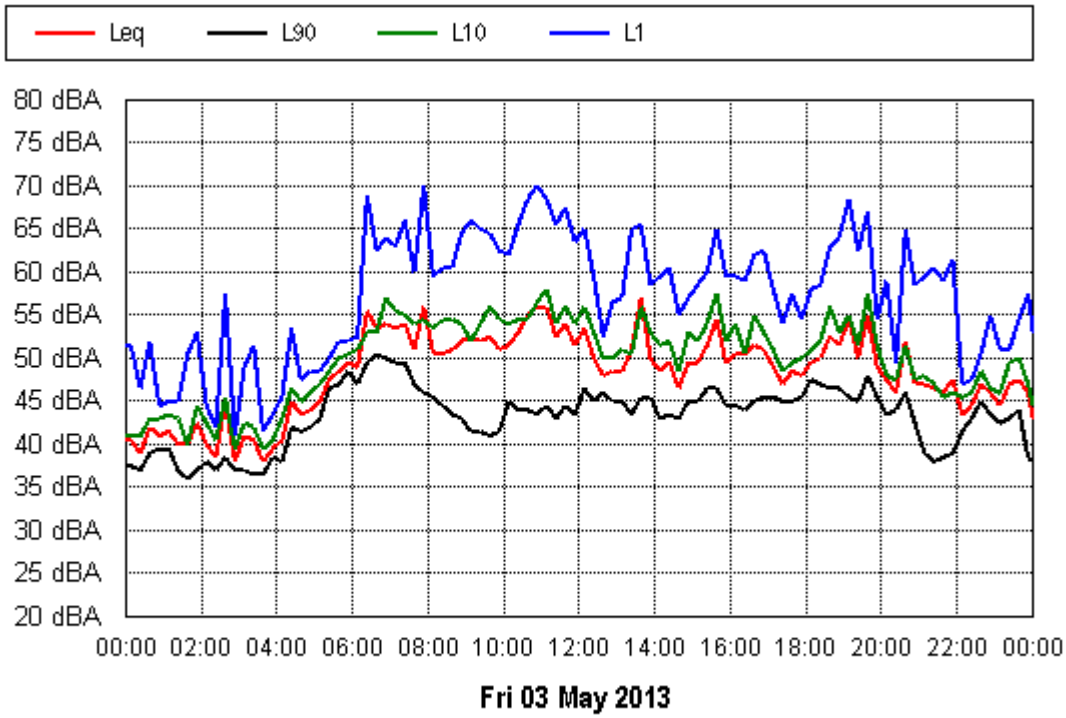

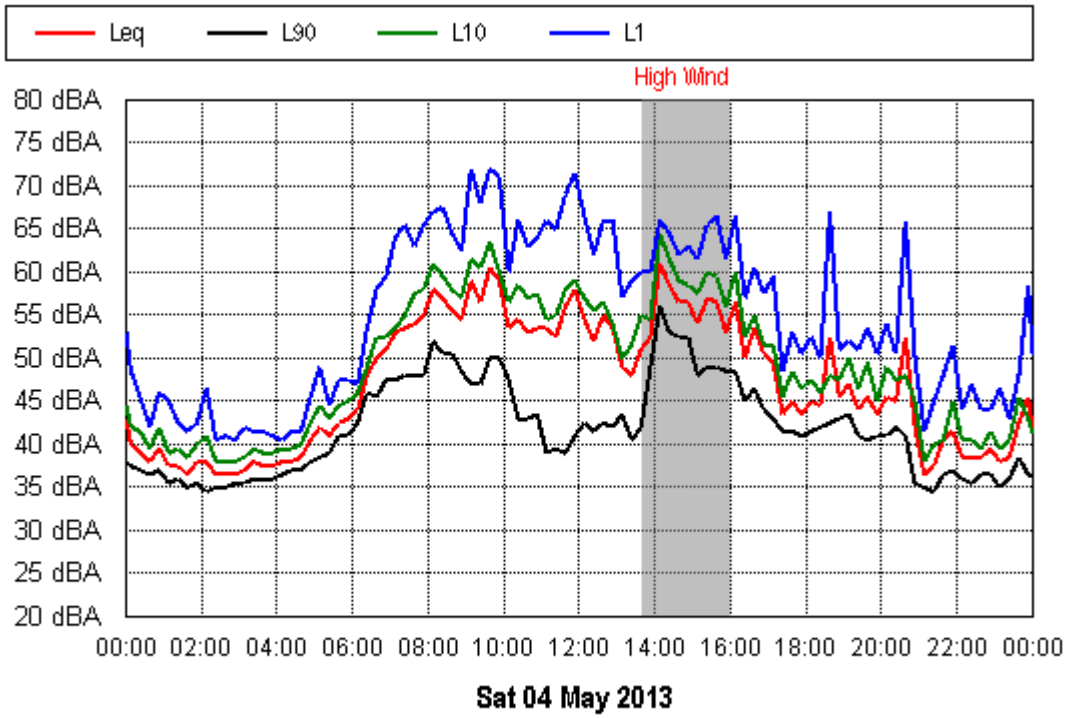

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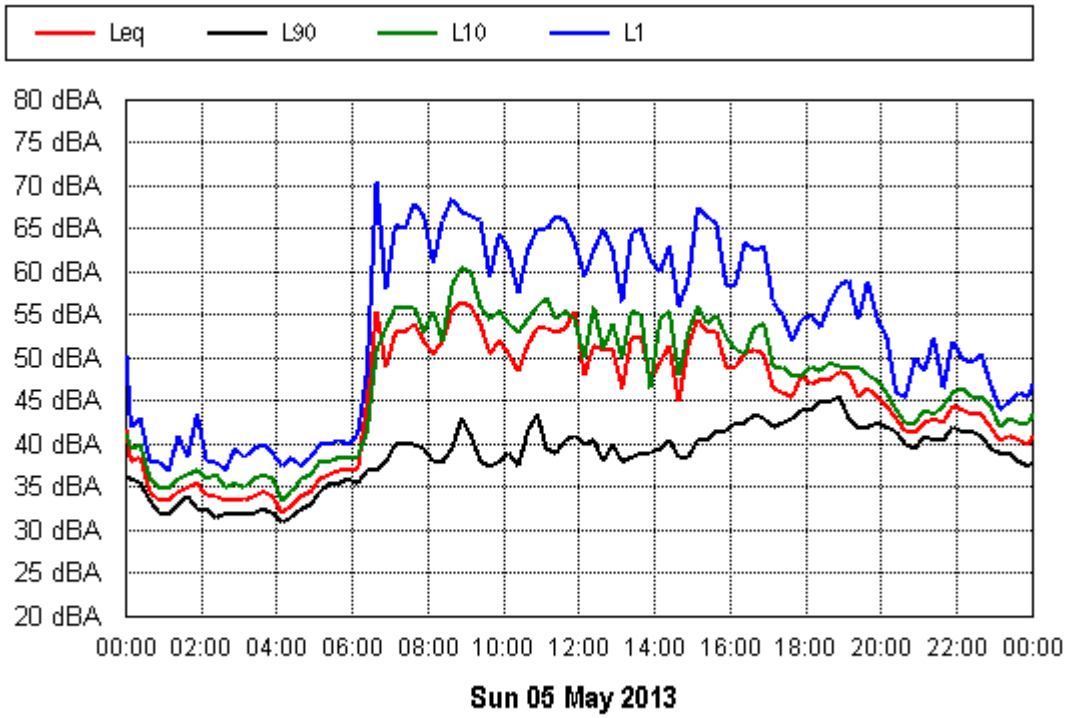

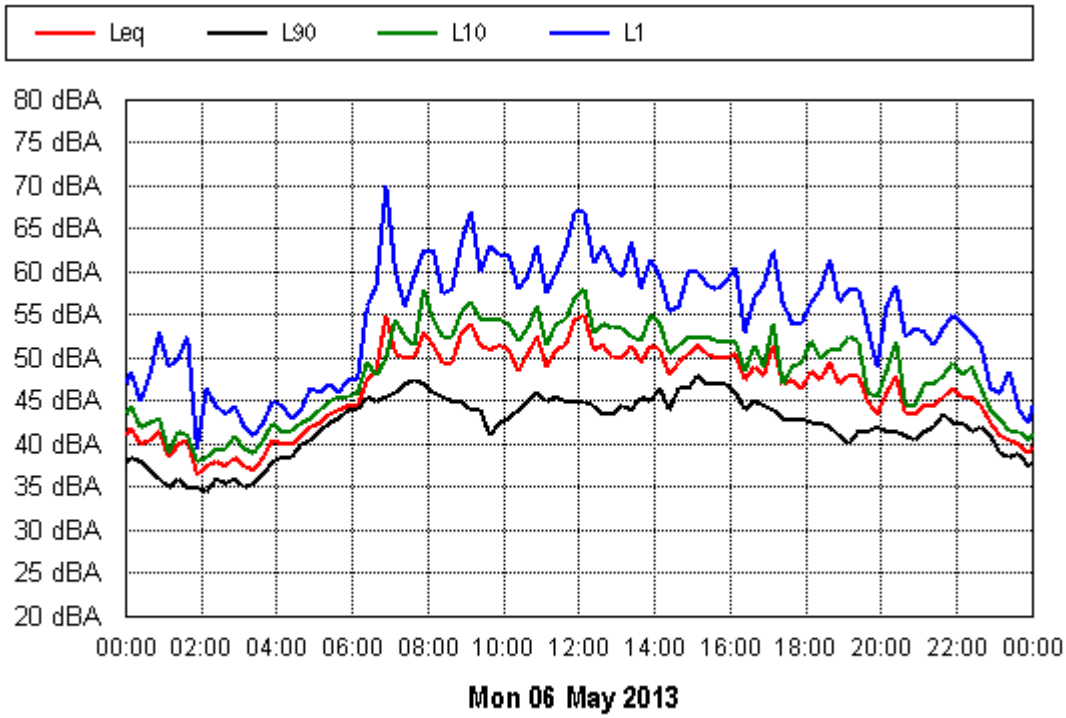

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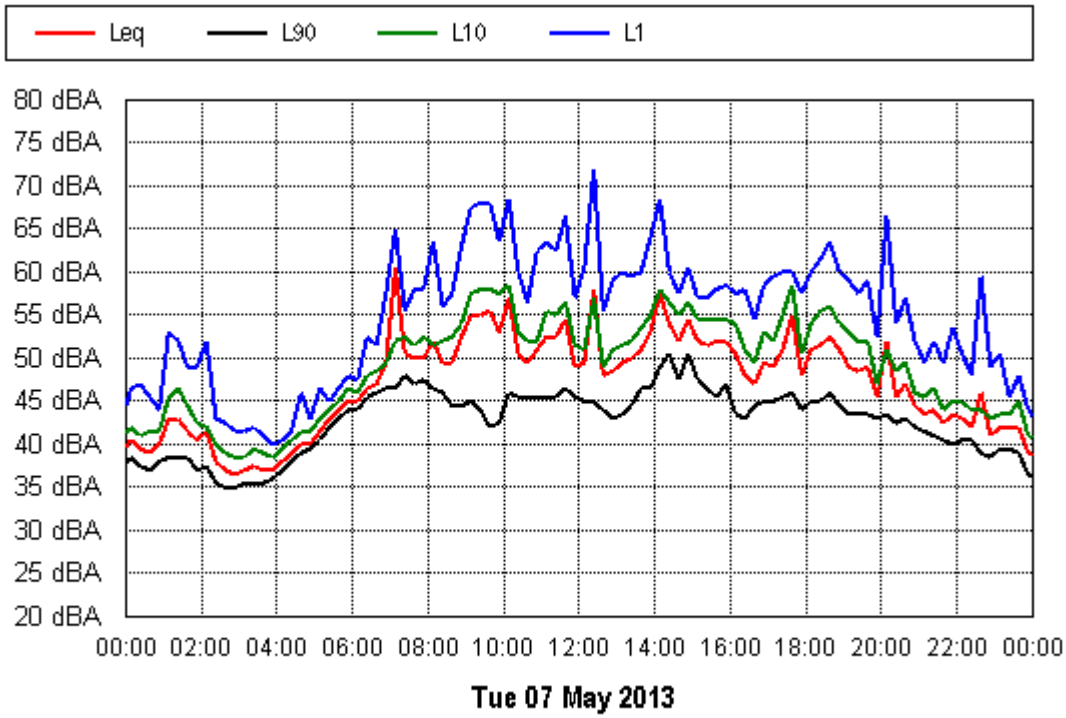

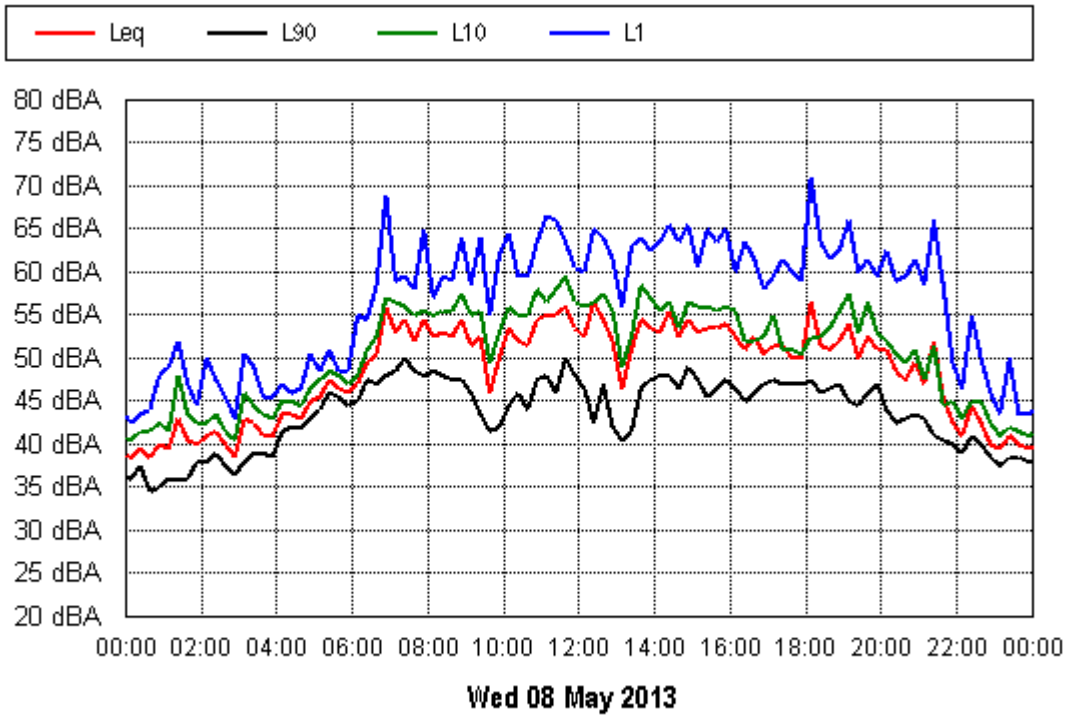

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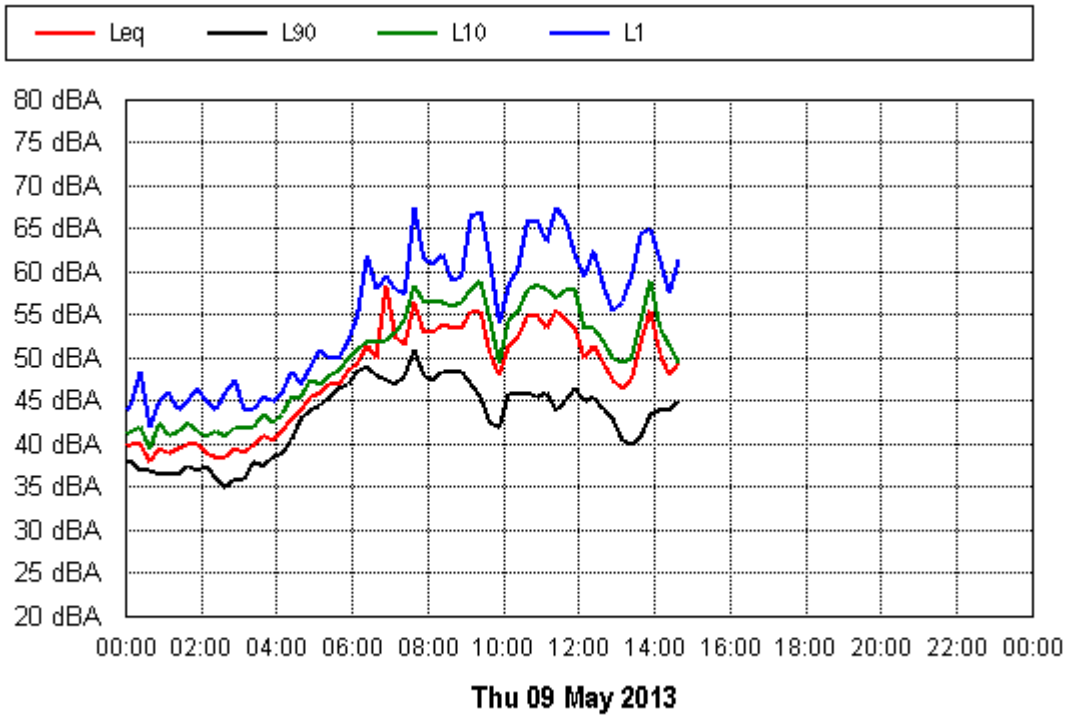

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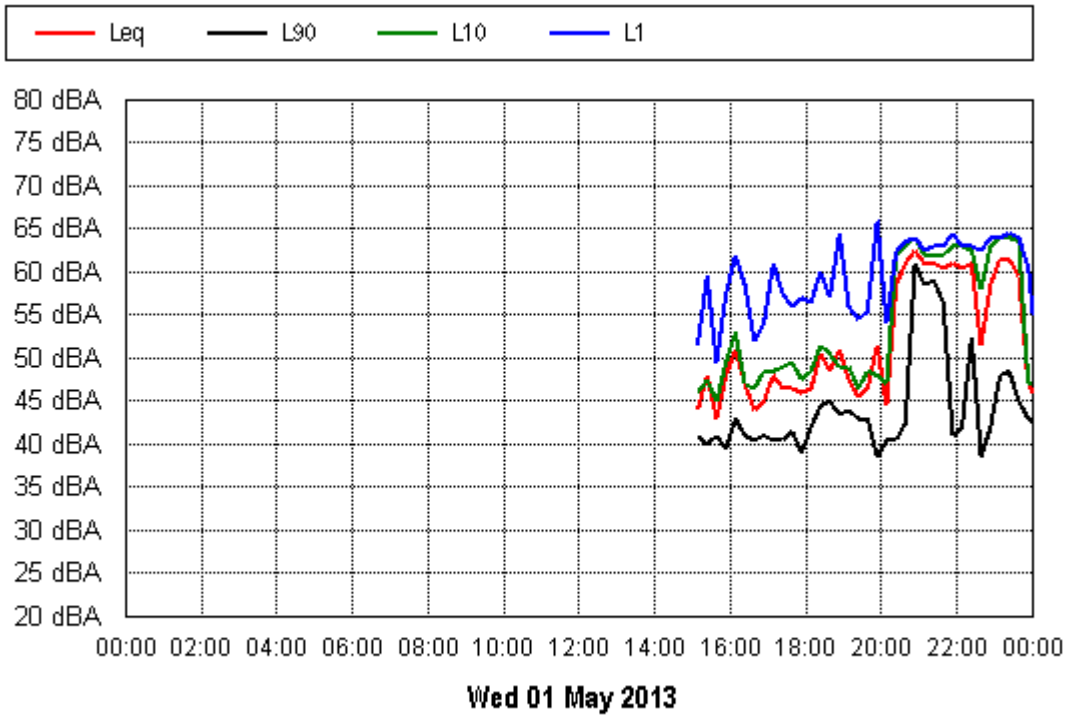

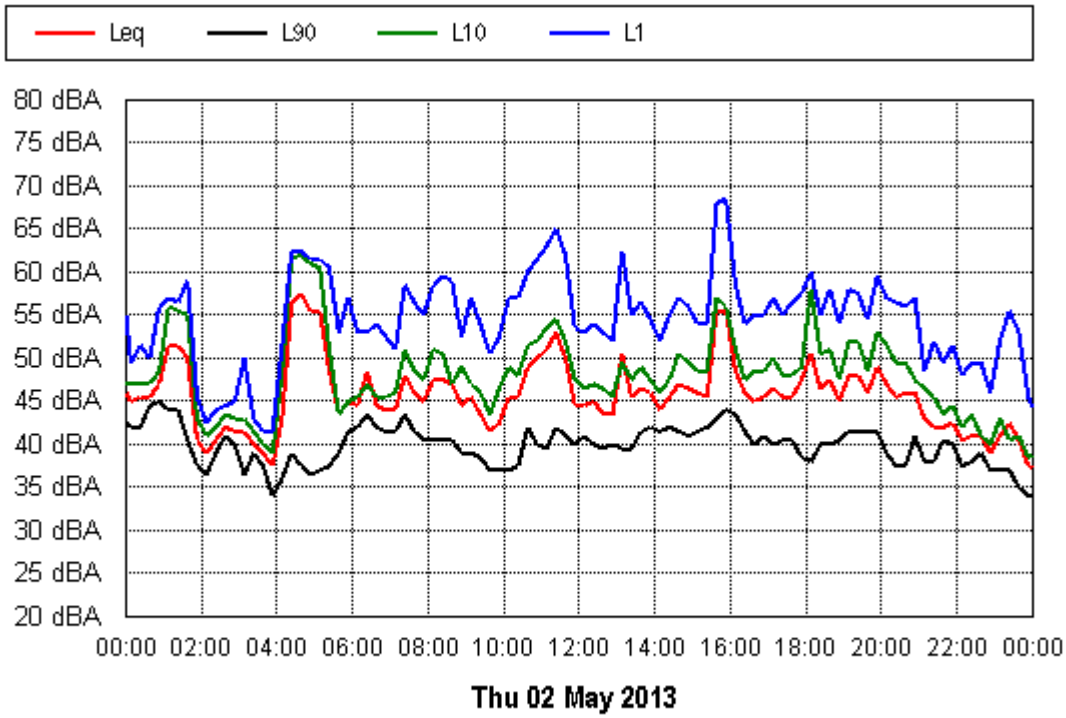

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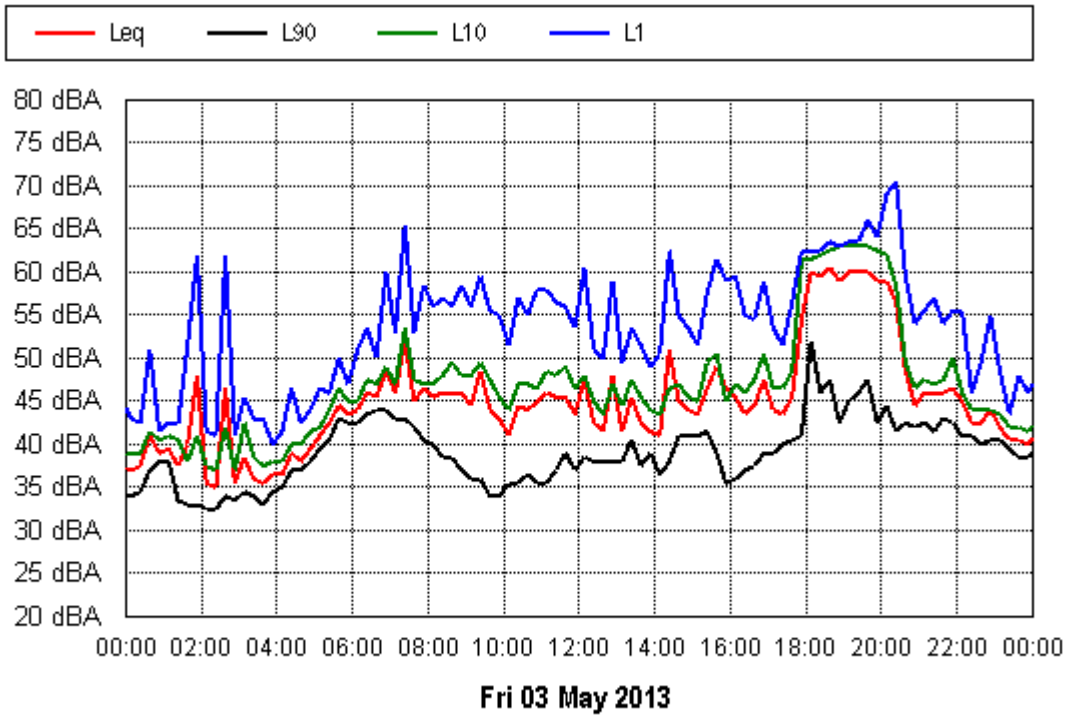

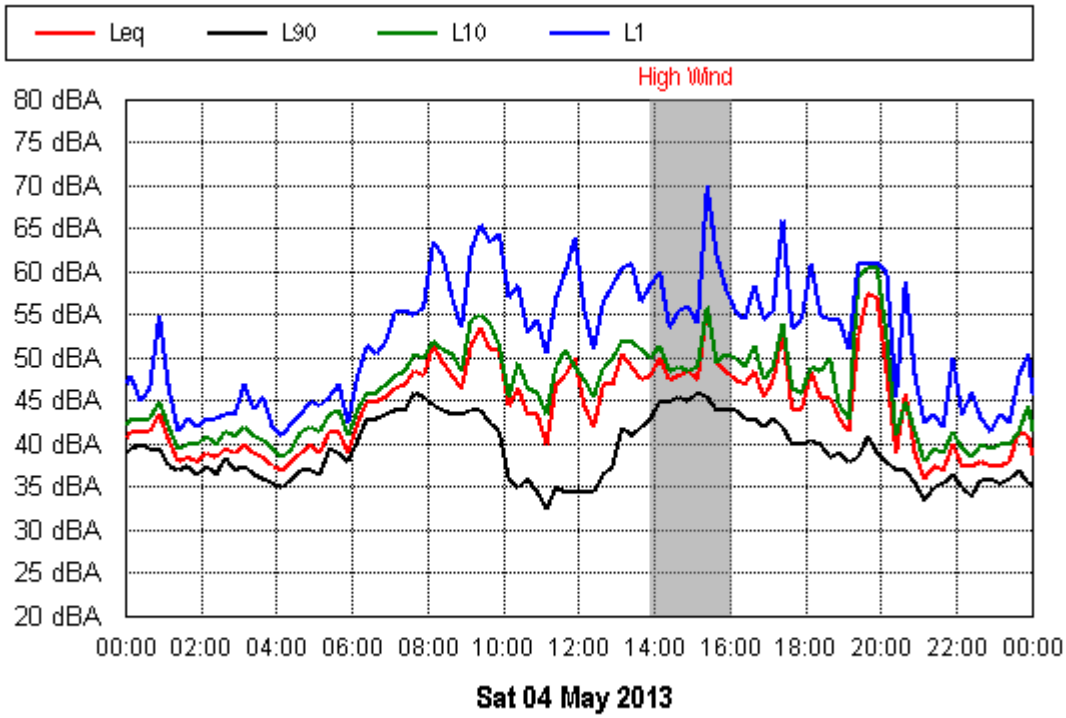

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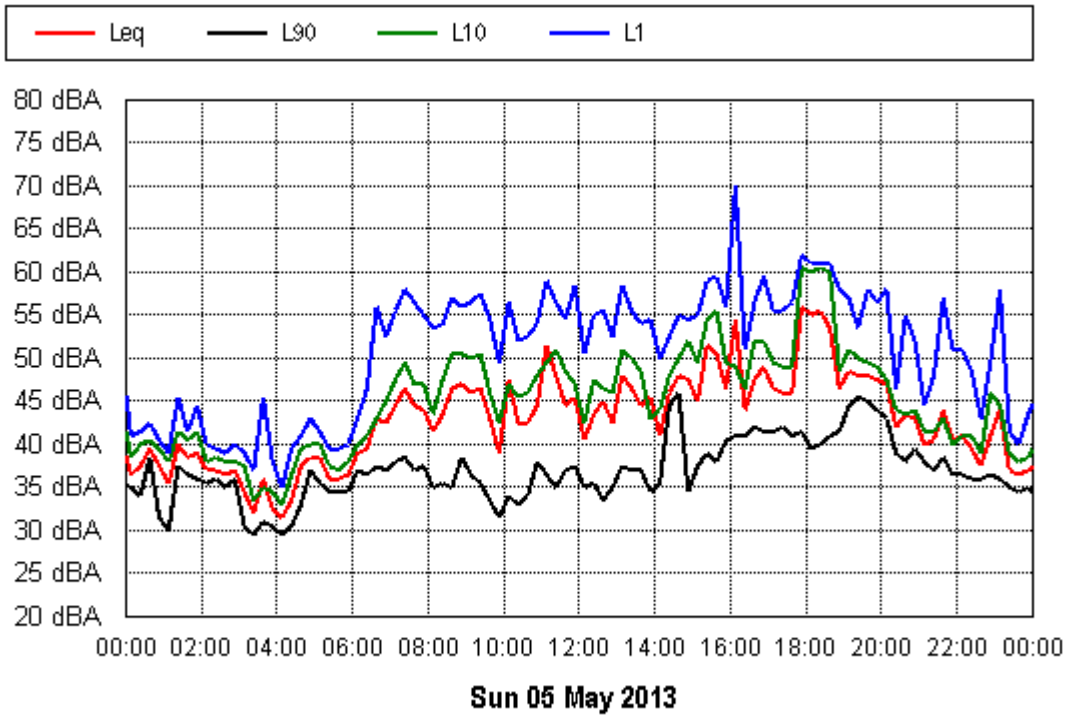

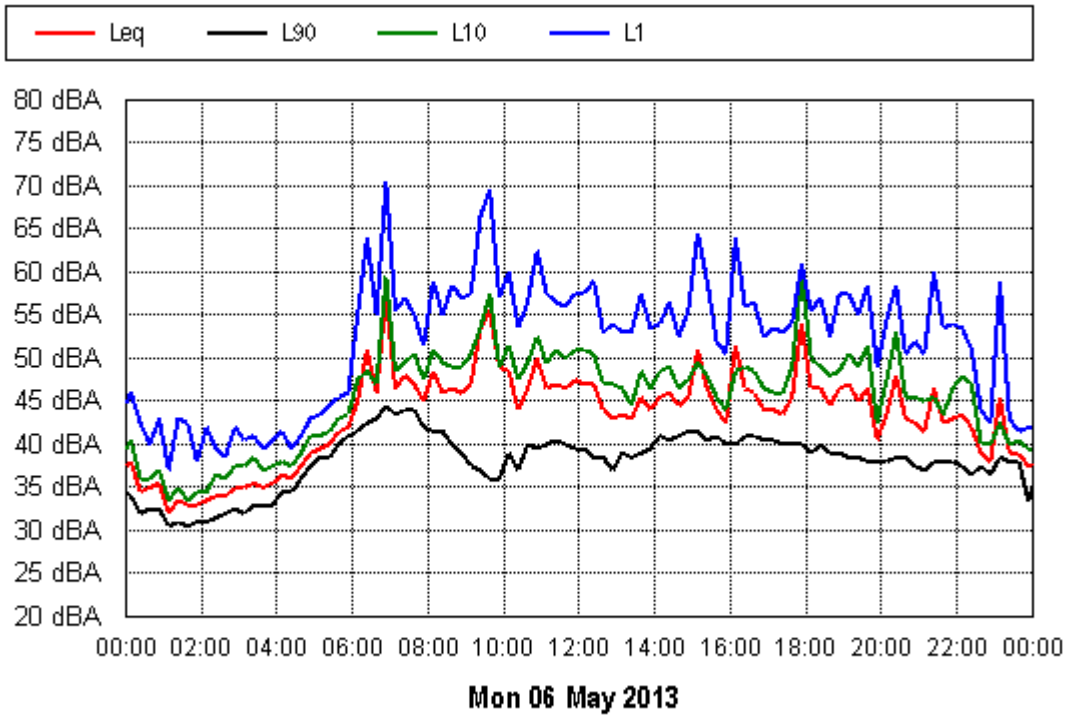

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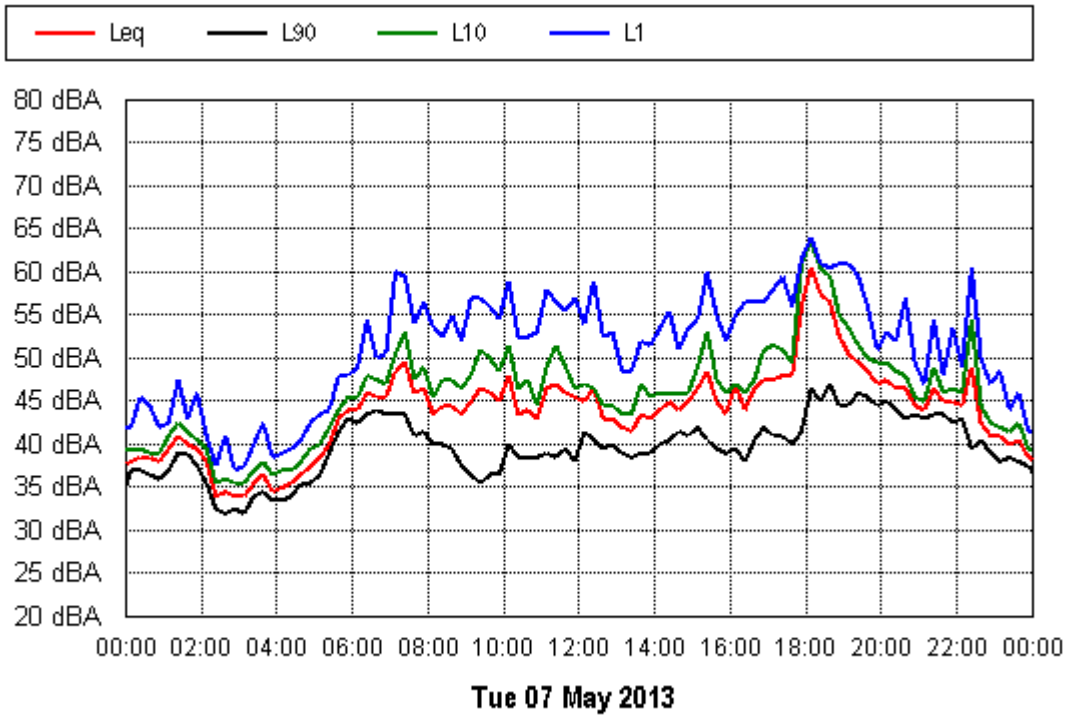

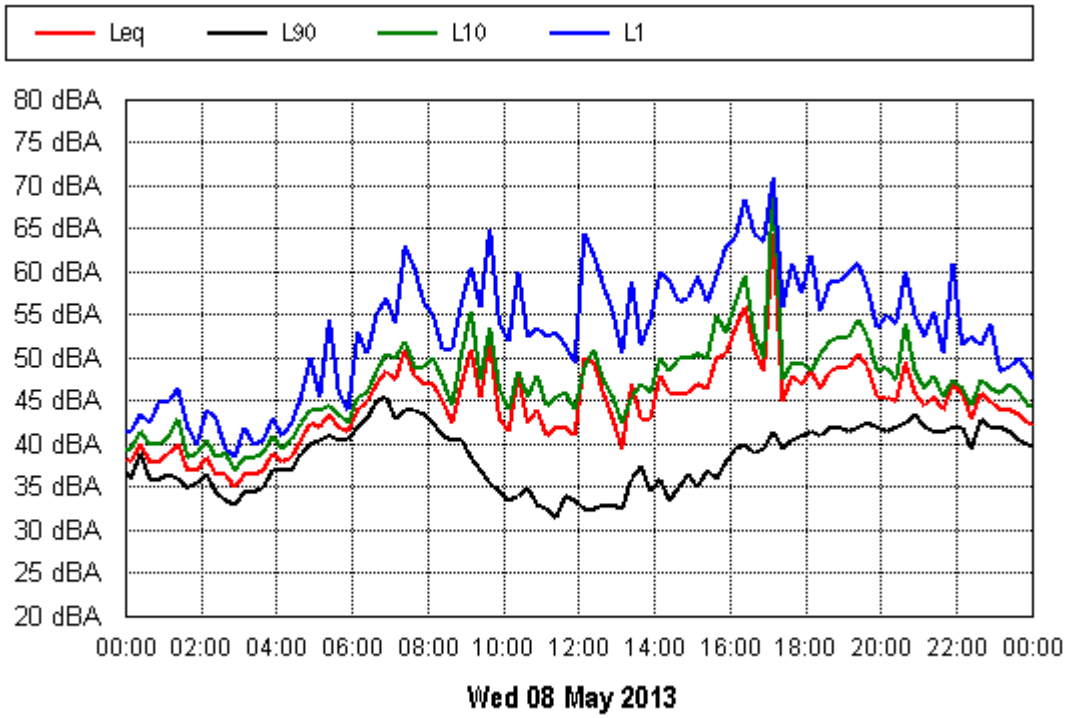

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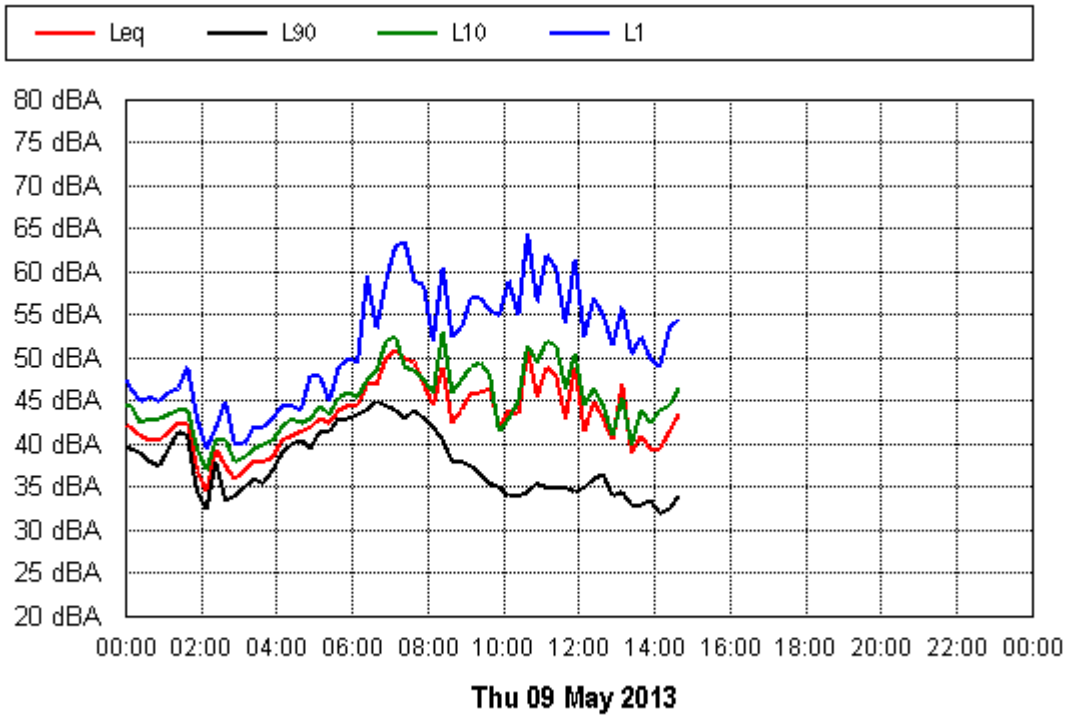

APPENDIX B

EPA CORRESPONDENCE APRIL 2013

NSW EPA
ENVIRONMENT PROTECTION AUTHORITY

Our reference: DOC13/12794

Mr Chris Ritchie
Manager - Industry
Planning & Infrastructure
GPO Box 39
SYDNEY NSW 2001

EMAIL & STANDARD POST

Dear Mr Ritchie

Re: Moorebank Waste Recycling Project MP05_0157

I refer to your correspondence received on 27 February 2013 by the Environment Protection Authority ("EPA") requesting comments on the Moorebank Waste Recycling Project MP05_0157.

I refer to the Nexus Environmental Planning Pty Ltd "*Environmental Assessment Materials Recycling Facility Lot 6, DP 1065574 Newbridge Road Moorebank*" dated 19 February 2013 and attached with your correspondence (the "EA").

The EPA has reviewed the EA for the proposed materials recycling facility at Lot 6 DP 1065574 at Newbridge Road, Moorebank, NSW ("the Proposal"). The proposed facility would receive building and construction waste including concrete, brick, asphalt, sandstone, and sand from the Sydney metropolitan area for crushing, stockpiling and resale. The proposed facility would have a maximum capacity of 500,000 tonnes per annum with a maximum daily processing rate of 1600 tonnes and proposed hours of operation are Monday to Saturday 7am to 6 pm, with crushing equipment operated from 7 am to 5:30 pm.

I also refer to the EMM "*Submission regarding Moorebank Waste Facility*" prepared for Investa Land Pty Limited 5 April 2013, received by EPA on 5 April 2013. Environ Australia Pty Ltd ("Environ") was appointed by EMM to conduct a peer review of the air quality impact assessment of the EA.

Air Quality Assessment

The EPA has reviewed the EA and submissions provided for the proposed Moorebank facility and in particular a peer review of the air quality impact assessment for the proposal conducted by Environ. The EPA notes that Environ have highlighted the following issues:

- That the use of a 2005 meteorological dataset may under represent worst case dispersion conditions for the proposal.
- Impacts have not been predicted at the nearest sensitive receptors given the increase residential development since the AQIA was compiled in 2010
- Concern as to whether impacts from the adjacent Benedict Sands facility were adequately included in the background data set used for the cumulative impact assessment
- Whether the emissions reductions used in the emissions inventory have been adequately accounted for.

The EPA acknowledges that these are areas where the assessment could be improved.

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To ensure assessment robustness, additional information is requested from the proponent. The proponent should provide:

- Predicted impacts at the nearest sensitive receptors as of 2013 (ie account for new residential development),
- Demonstration that the meteorological data used in the assessment adequately describes the meteorological patterns at the site by correlating it against a longer duration site representative meteorological database of at least five years duration (preferably consecutive),
- Incorporation of Benedict Sands operations in the cumulative assessment, and
- Clear justification for all emissions calculations reductions in the emissions inventory and all proposed management measures.

The EPA would then need to assess this revised information prior to providing any recommended conditions of approval for the proposal.

If the proposal is approved the focus will need to be on conditions of approval that formalise the requirement for both proactive and reactive dust management strategies. As previously stated, no information was provided in the air quality impact assessment addressing dust management in detail, for example potential complaints management or planning day to day activities with consideration of meteorological conditions to minimise the risk of impacts. These issues should also be addressed in the revised air quality impact assessment.

Noise

The EPA usually assesses noise impacts at existing noise-sensitive receivers, or locations where a development approval has been granted but building has not commenced, or where a development application has been lodged but not yet determined. Where residences do not currently exist but might conceivably in the future it would be unreasonable for EPA to assign conditions or limits on industry for something that may or may not occur and for which the timing cannot be specified. Exceptions to this approach may occur where for example an area has been identified in planning documents for future residential land release.

There do not appear to be residences to the immediate west of Brickmakers Drive in the area described as the "Boral" area or the Georges Fair residential development. However, the area is zoned R3 residential in the Liverpool LEP, some houses do already exist and housing construction appears to be progressing from the west of this area eastwards towards Brickmakers Drive. Assuming residential development across this entire site is already approved then there are limited options for adding noise mitigation measures, such as setbacks or roadside noise mounds or barriers. Therefore it does appear reasonable and appropriate to consider the entire area west of Brickmakers Drive as residential.

The area to the north of the proposed facility, described as "Tanlane" in the Noise Impact Assessment Appendix and elsewhere as the Benedict Sands site does not, however, have any residences existing or being constructed on it and appears currently to be still operating as an industrial activity. It too is zoned R3 Residential in the Liverpool LEP and the EPA understands that there is an eighteen month sunset clause on the existing industrial activity. However, if residential development is not yet approved for this site then it would be unreasonable for EPA to not support the proposed facility because approval for residential development is not guaranteed or may not occur for some time in the future. In addition, conceivably there are options such as setbacks, roadside barriers or building layout and design measures that are still available for noise mitigation measures that could be incorporated in any residential development approval.

EPA assesses noise from the proposed facility against the NSW Industrial Noise Policy (INP). The INP generally required that Project Specific Noise Levels ("PSNL") are set, based on existing background noise levels. The proponent, however, has set PSNL based on estimated future background noise levels for nearby residential areas. The EPA would only consider adopting these estimate future background noise levels and associated PSNL if more detail and justification about how these have

been set, can be provided and are to the EPA's satisfaction. Based on the current information provided to the EPA, the future background levels appear to be unjustifiably high.

Background noise levels appear from the assessment provided to be around 43 / 44 dBA daytime at nearby residences, giving Project Specific Noise Levels (PSNL) for this proposal of around 48 / 49dBA. Predicted noise levels are either less, or marginally more, than the PSNLs for the Boral area. There may be additional feasible and reasonable noise mitigation measures that the proponent could incorporate in the proposed facility to reduce predicted levels for the Boral area.

The predicted noise level for Tanlane is acceptable for the existing industrial use, but exceeds a level the EPA would usually licence to for a residential area. Truck movements on the access road to the proposed facility are the significant noise source and there are likely to be limited options for the proponent to reduce these levels, other than to limit truck speeds. However, noise mitigation options may be available to the residential developer of the Tanlane area.

Before providing recommended GTAs, the EPA requests:

- Planning provide advice from Liverpool Council, as the consent authority for any application for residential development of Tanlane, confirming that any such consent would include requirements for noise mitigation measures to be incorporated that provide for an acceptable noise amenity for residents; and
- The proponent provide more details on the feasible and reasonable noise mitigation measures that would be incorporated in the proposal with the objective of not exceeding the PSNLs for the Boral residential area.

EPA is aware that an application has been submitted for a marina development in the vicinity of this development. It has not been considered in preparing this advice; however, this proposal is not likely to be significant because the marina would be considered a commercial land use and not a noise-sensitive receiver.

If you have any further queries regarding this matter, please contact Alex Bourne on 9995 5595.

Yours sincerely

21/5/13

JACQUELINE INGHAM
Unit Head Waste Operations
Environment Protection Authority

APPENDIX C

BRICKMAKER DRIVE TRAFFIC VOLUMES OCTOBER 2012 & PRESCRIBED RMS ECONOMIC PARAMETERS TABLE 10

BRICKMAKERS DRIVE AT CH300m NORTH OF MADDOCKS AVENUE INTERSECTION BI-DIRECTIONAL 5 DAY (WEEKDAY) AVERAGE HOURLY VOLUMES AND VEHICLE CLASSIFICATIONS OCTOBER 2012.

	Light Vehicle Classes		Heavy Vehicle Classes		Total Vehicles	
Hour of Day	Number	%	Number	%	Number	% of Total
Midnight-1am	26.6	99.25	0.2	0.75	26.8	0.35
1-2am	17.6	98.9	0.2	1.10	17.8	0.25
2-3am	10.2	100.0	0	0	10.2	0.13
3-4am	16.0	97.6	0.4	2.4	16.4	0.22
4-5am	39.6	91.2	3.8	8.8	43.4	0.57
5-6am	158.2	91.7	14.4	8.7	172.6	2.28
6-7am	429.4	93.1	31.8	6.9	461.2	6.10
7-8am	585.6	94.5	34.4	5.5	620.0	8.20
8-9am	571.4	94.6	32.6	5.6	604.0	8.00
9-10am	280.2	91.0	27.8	9.0	308.0	4.07
10-11am	195.2	89.0	24.2	11.0	219.4	2.90
11-12 Midday	203.6	88.1	27.4	11.9	231.0	3.06
12-1pm	245.2	90.0	27.2	10.0	272.4	3.60
1-2pm	276.8	90.9	27.8	9.1	304.6	4.03
2-3pm	433.0	91.8	38.8	8.2	471.8	6.24
3-4pm	700.4	95.2	35.6	4.8	736.0	9.73
4-5pm	735.2	96.3	28.0	3.7	763.2	10.09
5-6pm	811.8	97.5	21.0	2.5	832.8	11.01
6-7pm	564.8	98.1	11.0	1.9	575.8	7.62
7-8pm	296.4	96.9	9.6	3.1	306.0	4.05
8-9pm	199.4	97.7	4.6	2.3	204.0	2.70
9-10pm	171.8	98.7	2.2	1.3	174.0	2.30
10-11pm	122.0	99.3	0.8	0.7	122.8	1.62
11-Midnight	66.0	98.8	0.8	1.2	66.8	0.88
Total	**7156.4**	**94.65**	**404.6**	**5.35**	**7561**	**100.0**

TABLE 10
URBAN – AVERAGE HOURLY VALUE FOR TRAVEL TIME, SEPTEMBER 2009

Period	Time + Freight Value ($) per Vehicle (1)	Default Yearly Hours (2)	Proportion of Peak Hourly Volume * (3)
No flow	0	660	0.00
Off Peak	23.28	1000	0.11
Medium Off Peak	23.28	1650	0.28
Medium Business Peak	28.57	1650	0.53
Business Peak	28.57	1800	0.70
AM Peak Shoulder	18.33	400	0.75
AM Peak	18.33	600	1.00
PM Peak Shoulder	18.33	400	0.75
PM Peak	18.33	600	1.00

APPENDIX D

TRUCK PASSBY NOISE LEVELS

File No	Truck No	Truck Description	LAeq(1sec) Max	kph
005	1	3A Truck 22 kph	82.2	22
	2	2A Truck 23 kph	72.8	23
	3	3A truck 31 kph	86.4	31
	4	3A Truck 28 kph	81.9	28
	5	3A Truck 16 kph	78.9	16
	6	3A Truck 23 kph	74.9	23
	7	3A Truck 32 kph	81.2	32
	8	3A Truck 26 kph	80.7	26
	9	3A Truck (CR) 23 kph	74.9	23
006	10	3A Truck (CR) 28 kph	81	28
	11	3A Truck (CR) 24 kph	75.6	24
	12	6A Semi 25 kph	80.4	25
	13	2A Truck 34 kph	77.6	34
	14	3A Truck + 3A Dog 25 kph	80.5	25
	15	3A Truck 29 kph	81.3	29
	16	3A Truck + 3A Dog 20 kph	84.7	20
	17	3A Truck 29 kph	77.3	29
	18	3A Truck + 3A Dog 22 kph	81.6	22
007	19	3A Truck + 3A Dog 28 kph	75.3	28
	20	3A Truck + 3A Dog (CR) 25 kph	81.1	25
	21	3A Truck 25 kph	73.9	25
	22	6A Semi 28 kph	79.9	28
008	23	3A Truck + 3A Dog 27 kph	82.2	27
	24	3A Truck 20 kph	76.2	20
	25	3A Truck (CR) 20 kph	79.5	20
	26	3A Truck + 3A dog 25 kph	80.5	25
	27	3A Truck 26 kph	76	26
	28	3A Truck + 3A Dog 24 kph	81.1	24
	29	3A Truck 32 kph	83.9	32
	30	3A Truck + 3A Dog 26 kph	76.4	26
	31	2A truck 25 kph	80.8	25
	32	3A Truck 25 kph	74.7	25
	33	3A Truck 33 kph	81.5	33

Attachment 13

Aquila Ecological Surveys Report

Response to Submissions
Proposed Materials Recycling Facility Lot 6 D.P. 1065574, Newbridge Road, Moorebank.

Introduction

During 2010, Aquila Ecological Surveys [AES] undertook a flora and fauna assessment [FFA] of a proposed materials recycling facility at Lot 6 D.P. 1065574, Newbridge Road, Moorebank (AES 2010). This report was included in the Environmental Assessment report for the proposal prepared by Nexus Environmental Planning.

A number of submissions were received from interested parties including Liverpool City Council, the Office of Environment and Heritage, local residents and adjacent landholders regarding a variety of issues relevant to the FFA.

In summary, the issues were as follows:

- Impacts on the threatened Green and Golden Bell Frog were not adequately considered;
- The Protected Matters Search Tool database was not queried to develop a list of EPBC Act listed species that may occur at the site;
- Lack of targeted surveys for threatened owls and bats;

- Lack of discussion of operational impacts such as noise and dust on adjoining vegetation and fauna habitat.
- Clarification on the vegetation affected and possible impacts from run-off on retained vegetation.

Each of these matters is addressed below under their relevant headings.

Green and Golden Bell Frog

In the FFA it was stated "Depressions in the Cabbage Gum Open Forest may fill with rainwater and form small, ephemeral ponds suitable for habitat by some frog species. The Mosquito Fish (*Gambusia affinis*) was detected in local freshwater ponds, precluding the likelihood of the threatened Green and Golden Bell occurring."

It could be argued that the presence of Mosquito Fish reduces the likelihood of the presence of the Green and Golden Bell Frog rather than precluding it. Therefore, assessments of likely impacts on this species are also attached at the rear of this report (Appendix 1).

It is still considered that the proposal is unlikely to have a significant effect on this species. Nevertheless, the grassed depressions that run in a north-south direction along the eastern side of the site could be enhanced as Green and Golden Bell Frog habitat by the placement of protective cover such as woody debris, rocks or even concrete to provide protective cover.

The Protected Matters Search Tool

The FFA did not include a review of those species listed on the *EPBC Act* that the Commonwealth's Protected Matters Search Tool (PMST) may occur in the local area. To overcome this omission a review has been undertaken of those species the PMST (DSEWPC 2013a) indicated were known, may occur or may have habitat. This review is attached as Appendix 2.

It was found that the only species with any likelihood of occurring in the environs of the site were the Green and Golden Bell Frog, White-bellied Sea-eagle, Great Egret and Cattle Egret. Assessments of the likely impacts on these species have found that there is unlikely to be a significant effect upon them. Therefore, it is found that the proposal is not a controlled action requiring referral to the Federal Minister for the Environment for approval.

The Rufous Fantail, which is listed as migratory on the *EPBC Act* was found on the property to the west of the site by EMM (2013). However, it is considered unlikely that this species would be directly or indirectly affected by the proposal. It would not use the area directly affected by the proposal and would only occur in the Riverflat forest along the Georges River on occasions. It is considered there is no need for an assessment under the *EPBC Act*.

Level of Survey for Microbats and Owls

AES did not undertake a survey of microbats as the initial site inspection found that no critical habitat resources that these taxa rely on (i.e. tree hollows and caves) would be affected. Though the site adjoins potential foraging areas for such species, the proposed development, which is confined to already cleared and modified areas, is unlikely to affect the quantity or quality of this potential foraging habitat. There is unlikely to be any indirect impact on adjacent habitat for such species. Therefore, it was considered that surveys for such taxa would be superfluous.

Operational and indirect impacts

Dust

In relation to the operational impacts and the generation of dust, Pacific Environmental (2013) has found "updated dispersion modelling completed for the proposed operations has demonstrated that it can be appropriately managed so as to comply with all the relevant NSW EPA air quality impact assessment criteria and not adversely affect local air quality. These criteria have been set at a level designed to safeguard the health and amenity of the general public."

It is recognised that due to their smaller size most fauna species are likely to be more sensitive to air quality changes than humans. However, given the location of the site in a metropolis the size of Sydney and proximate to an airport and a motorway, any possible incremental change to air quality is likely to be insignificant. Similarly, impacts on flora in adjacent lands are likely to be negligible.

Noise

As discussed in the assessment of impacts on the White-bellied Sea-eagle (Appendix 1), in the short-term there may be some repulsion of birds from woodland habitat immediately adjacent to the site due to the increased noise emanating from the site. However, over time this impact is likely to dissipate as fauna habituates to the disturbance regime. It should be noted that the site is in an urban area with noise being generated by other industries and transport infrastructure such as the M2 Motorway and Bankstown Airport.

Impacts on Vegetation

As mentioned on Page 10 of the FFA, "the proposed development would be confined to already cleared or modified areas of the site." The area of Ironbark Open Forest would be retained. This is illustrated in the aerial photo of the site (attached at rear) showing the extent of the proposed development. Some native shrubs do occur within the cleared area. However, they only represent limited habitat for native fauna species as they are fragmented from larger intact areas of habitat.

There is unlikely to be any impact on the Cabbage Gum Open Forest (which is part of the *TSC Act* listed Endangered Ecological Community, Riverflat Eucalypt Forest on Coastal Floodplains). This vegetation is buffered from the development by the intervening Wattle Scrub. Any sediment that may bypass the proposed sediment control devices would settle in this vegetation before run-off enters the forest.

Conclusion

In summary, it is considered that there are unlikely to be any significant impacts on the ecology of the local area as a result of the proposal. In particular, there is unlikely to be a significant effect on threatened species, populations or communities listed on the *TSC Act* or Matters of National Environmental Significance listed on the *EPBC Act*.

Paul Burcher

Aquila Ecological Surveys 2/07/2013

Appendix 1: Environmental Assessments

Environmental Planning & Assessment Act 1979

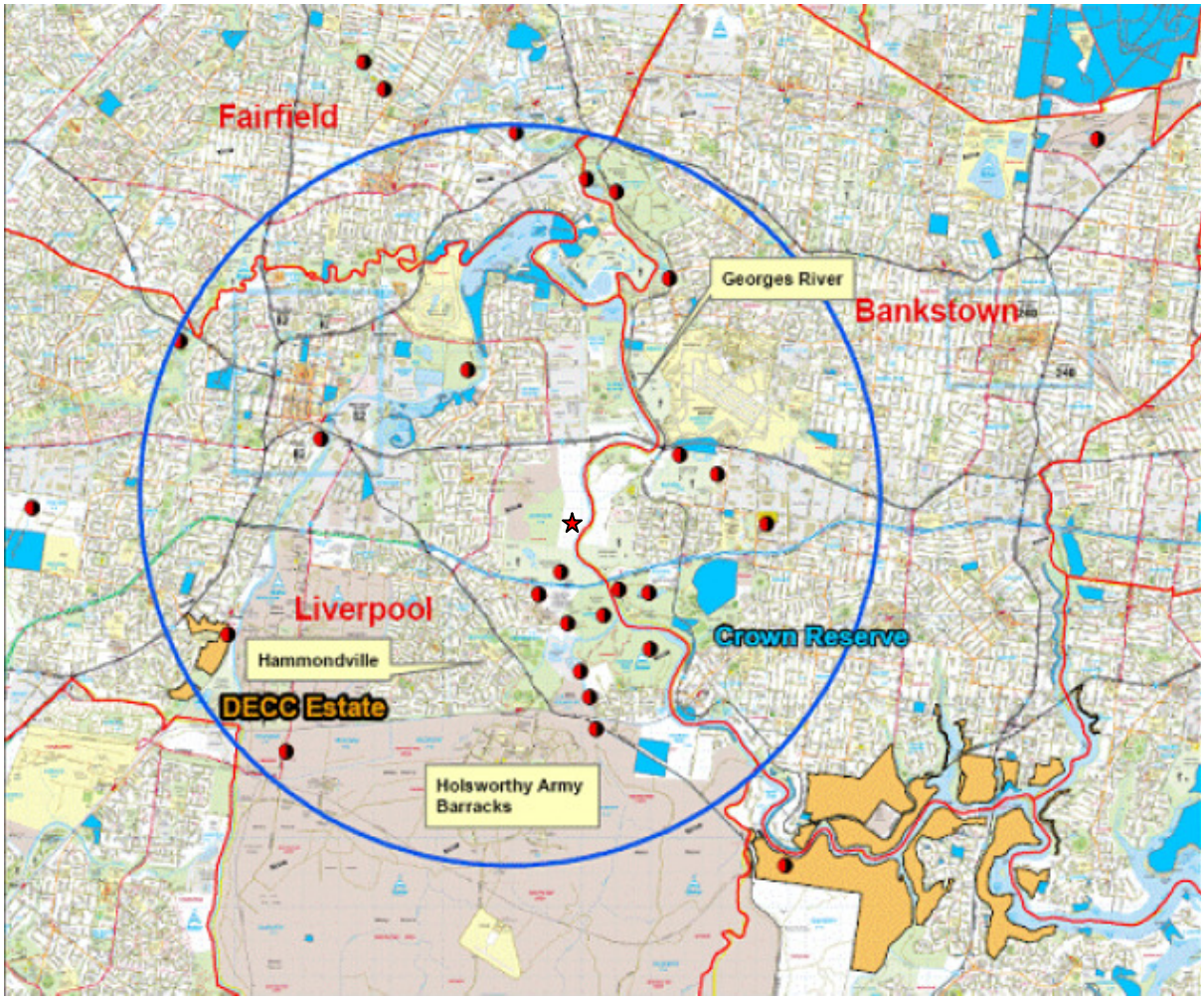
The Green and Golden Bell Frog is listed as endangered on the *NSW Threatened Species Conservation Act 1995*. Section 5A of the EP&A Act (the seven-part test) requires that an assessment of the likely impacts of the proposed action on threatened species, populations and communities listed on the TSC Act be undertaken to determine whether there is likely to be a significant effect on them, or their habitats. If so, a Species Impact Statement must accompany the development application

Each of the seven factors required to be taken into account when deciding if "there is likely to be a significant effect on threatened species, populations or ecological communities or their habitats" are addressed below.

(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

The local population of the Green and Golden Bell Frog (GGBF) is considered to be the population covered by the management plan for the Georges River Green and Golden Bell Frog Key Population (DECC 2008). The known GGBF population on the lower Georges River occurs in several locations, including in the vicinity of the wetlands at Hammondville, at Holsworthy and East Hills, and along Prospect Creek and Orphan School Creek., The subject site is located between records of the species in New Brighton Golf Course (1993) and Bankstown Golf Course (1964 and 1980).

Figure 1. Subject Site (red star) in relation to known occurrences of the Green and Golden Bell Frog in the local area (extract from DECC 2008).



It is considered unlikely that the local population permanently inhabits the subject site. It may occasionally inhabit ponds within the forested wetlands to the east of the site. These are unlikely to be affected by the proposed development either directly or indirectly, as there is a sufficient buffer of vegetation between the development and any such ponds that they would not be affected.

Therefore, it is considered that the local population would not be placed at risk of extinction should the proposed action proceed.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

As the Green and Golden Bell Frog is listed as an endangered species, no populations of the species are eligible for listing as endangered.

(c) in the case of a critically endangered or endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii)is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

The Green and Golden Bell Frog is a threatened species, not an endangered ecological community.

(d) in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed,

The proposed action would not affect any known or potential habitat of the species.

(ii) and whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action,

Possible corridors for movement for the species occurs either side of the site. To the east is Cabbage Gum Open forest adjacent to the Georges River that includes ponding areas. To the west is the former Boral property which is well vegetated providing protective cover. The proposed action would be undertaken on already cleared land and would not affect the functioning of these corridors either directly or indirectly.

(iii) and the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

The area proposed for the action is not a confirmed area of occupancy of the species nor is it likely to be habitat for the species. Therefore, it is not likely to be an important habitat area.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

The subject site does not contain, nor is it in proximity to, any area of critical habitat.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

As mentioned previously, a recovery plan has been prepared for the Georges River Key population of the species, the duration of which was mid-2008 to mid-2011 (DECC 2008). The three objectives of the Georges River Green and Golden Bell Frog Management Plan were

1 To maintain the GGBF population and its outliers;

2. Where possible enhance existing GGBF habitat and thus measures of population viability; and

3. To increase connectivity within and between sub-populations.

It is considered that the proposed development is consistent with the objectives of the plan. Opportunities arise from landscaping of the site to improve habitat for the species.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

The Georges River Green and Golden Bell Frog Management Plan (DECC (2008) mentions a number Listed Key Threatening Processes that affect the local population of this species. They are ''Predation by the Plague Minnow (*Gambusia holbrooki*),' 'High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition,' 'Predation by the European Red Fox *Vulpes vulpes* (Linnaeus 1758),' 'Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands' and 'Anthropogenic Climate Change' and (inter alia) 'Clearing of native vegetation[1].' Apart from Anthropogenic Climate Change, which almost every development

[1] The management plan discusses habitat loss, which may or may not involve Clearing of native vegetation.

contributes to, it is considered unlikely that the proposed action would result in the operation of, or increase the impact of, these key threatening processes.

Furthermore, the management plan lists specific developments that are a threat to the Georges River population of the species. The subject development is not amongst those mentioned even though the original application predates the management plan.

7-part test Conclusion

On the basis of the above discussion, it is considered unlikely that the proposed action would have a significant effect on the Green and Golden Bell Frog, or its habitat. Therefore, a Species Impact Statement need not accompany the development application.

Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

The Green and Golden Bell Frog is listed as vulnerable on the *EPBC Act*. It may inhabit forested wetland areas to the east of the site. The White-bellied Sea-eagle, which is listed as migratory on the EPBC Act was detected adjacent to the site. Two other migratory species, the Cattle Egret and the Great Egret, may also occasionally inhabit the forested wetland areas to the east of the site.

Vulnerable and Migratory Species listed on the Act are Matters of National Environment Significance and there is a requirement to assess impacts on such species with regard to the Significant Impact Guidelines that accompany the Act (Australian Government 2009a).

Green and Golden Bell Frog

Under the guidelines an action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population[2] of a species;*

[2] An important population is a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans and/or that are:

- Key source populations either for breeding or dispersal;
- Populations that are necessary for maintain genetic diversity; and/or
- Populations that are near the limit of the species range.

A precautionary approach has been taken that considers the local population an important population.

It is considered unlikely that the local population inhabits the area proposed for development. Some potential habitat occurs within the Cabbage Gum Open Forest to the east which has some ponding areas. The proposed action would not diminish the potential for this area to provide habitat for the species. Therefore, the proposed action is unlikely to lead to a long-term decrease in the size of the population.

- *reduce the area of occupancy of an important population;*

The area proposed for the action is not a confirmed area of occupancy of the species nor is it likely to be habitat for the species. Therefore, the area of occupancy of the population would not be reduced

- *fragment an existing important population into two or more populations;*

A possible corridor of movement for the species occurs through forested land adjacent to the Georges River and in former Boral property to the west. The proposed action would not interfere with the functionality of either of these corridors that maintain possible links between individuals that occur to the south and north of the site.

- *adversely affect habitat critical to the survival of a species*;

It is considered unlikely that the subject site is critical to the survival of the species.

- *disrupt the breeding cycle of an important population*;

It is considered unlikely that the proposed action would disrupt the population's breeding cycle. All potential breeding areas are off-site in the Cabbage Gum Open Forest and would not be affected by the proposed action.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*;

It is considered unlikely that the proposed action would modify, destroy, remove or isolate or decrease the availability or quality of any habitat. The species is unlikely to decline as a result of the proposal.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*;

The invasive Plague Minnow is a threat to the Green and Golden Bell Frog. The species is already present in potential habitat in the Cabbage Gum Open Forest area of the site that would remain unaffected by the proposal.

- *introduce disease that may cause the species to decline*;

The Green and Golden Bell Frog is susceptible to the *Chytrid* fungus. It is unlikely that the proposed action would result in introduction of this disease into the population.

- *or interfere substantially with the recovery of the species*.

Given its location within already heavily modified land, and the scope and extent of the proposed action, it is considered that it would not interfere with the recovery of this species.

<u>EPBC Act Conclusion</u>

The significant impact guidelines for this particular species (Australian Government 2009b) state that "there is a possibility of a significant impact on the green and golden bell frog, and a referral under the *EPBC Act* should be considered, if the action results in:

1. the removal or degradation of aquatic or ephemeral habitat either where the green and golden bell frog has been recorded since 1995 or habitat that has been assessed as being suitable according to these guidelines. This can include impacts from chytrid, (and) Gambusia originating off-site;
2. the removal or degradation of terrestrial habitat within 200 metres of habitat identified in threshold 1; and
3. breaking the continuity of vegetation fringing ephemeral or permanent waterways or other vegetated corridors linking habitats meeting the criteria in threshold 1.

The guidelines also state that these thresholds are not considered prescriptive and significant impact judgements must be made on a case-by-case basis and with consideration for the context of the action.

It is considered that there would be no removal of potential habitat nor disruption to any potential corridors for movement adjacent to the area proposed for the action. Therefore, referral to the Federal Minister for the Environment to determine whether the proposal is a controlled action is considered unnecessary.

White-bellied Sea-eagle. Great Egret and Cattle Egret.

Under the guidelines an action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

- *substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles; or altering hydrological cycles), destroy or isolate an area of important habitat[3] for a migratory species*;

The White-bellied Sea-eagle was detected during the site survey in the Cabbage Gum Open Forest adjacent to the area proposed for the action. The Great Egret and Cattle Egret may also occasionally use this habitat area. As the area proposed for the action is largely cleared, it is unlikely to be inhabited by the species. It is unclear whether habitat adjacent to the site along the Georges River is "important habitat" for the any of the three species.

In the short-term the species may avoid this habitat area due to noise associated with site activity. These species are all already apparently accustomed to human activity, as evidenced by their habitation of the busy Georges River besides which are numerous residential areas, industries and transport corridors such as the M2. Therefore, were they to be repulsed from the habitat adjacent to the site in the short-term, it is likely that they would return in the medium term. Therefore, it is unlikely that substantial modification, destruction or isolation of habitat would occur.

[3] An area of 'important habitat' for a migratory species is:
a. habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species, and/or
b. habitat that is of critical importance to the species at particular life-cycle stages, and/or
c. habitat utilised by a migratory species which is at the limit of the species range, and/or

- *result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species, or*

The proposed action is unlikely to result in further introduction of invasive species into the habitat of the White-bellied Sea-eagle, Great Egret or cattle Egret.

- *seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species*.

No evidence of breeding (e.g. large stick nests) was observed in the Cabbage Gum Open Forest during the site survey. Whist there may be some short-term disruption to resting (roosting) and possibly feeding behaviour as a result of the proposed action, it is considered unlikely that this would seriously disrupt the lifecycle of the White-bellied Sea-eagle, Great Egret or Cattle Egret.

It is considered unlikely that the proposed action would have a significant impact on the White-bellied Sea-eagle, Great Egret or Cattle Egret. Therefore, referral to the Federal Minister for the Environment to determine whether the proposal is a controlled action is considered unnecessary.

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d. habitat within an area where the species is declining.

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Appendix 2: Assessment of species listed by the *EPBC* Protected Matters Search tool as occurring or having habitat within 5km of the Site

Key

CE – Critically Endangered. E – Endangered. V – Vulnerable. M –Migratory.

Note: Fish and marine and pelagic species such as turtles and albatrosses have been excluded.

Species	**Legislation**		**Primary habitat requirements**[4]	**Likelihood of occurrence**	**Possible impacts**	**Significance assessment undertaken**
	EPBC Act	**TSC Act**				
FLORA						
Siah's Backbone *Streblus pendulinus*	E		Warmer rainforests, chiefly along watercourses	Low. Habitat not present.	None.	No.
Hibbertia sp. Bankstown (R.T.Miller & C.P.Gibson s.n. 18/10/06)	CE	CE	Known to occur in only one population at Bankstown Airport where it is associated with heavily disturbed and weed-infested Castlereagh Ironbark Forest.	Low. Habitat not present.	None.	No.
Omeo Stork's-bill *Pelargonium sp. striatellum* (G.W.Carr	E		Just above the high water level of irregularly inundated or ephemeral lakes	Low. Habitat not present.	None.	No.

[4] Habitat requirements were generally extracted OEH (2013b and DSEWPC (2013b).

Species	Legislation		Primary habitat requirements[4]	Likelihood of occurrence	Possible impacts	Significance assessment undertaken
	EPBC Act	**TSC Act**				
10345)						
Asterolasia elegans	E	E	Restricted to the lower Hawkesbury valley where it occurs in forest dominated by Turpentine (*Syncarpia glomulifera* subsp. *glomulifera*), Smooth-barked Apple (*Angophora costata*), Sydney Peppermint (*Eucalyptus piperita*), Forest Oak (*Allocasuarina torulosa*) and Christmas Bush (*Ceratopetalum gummiferum*).	Low. Habitat not present.	None.	No.
Allocasuarina glareicola	E	E	Primarily restricted to the Richmond district, but with an outlier population found at Voyager Point, Liverpool. Grows in Castlereagh woodland on lateritic soil. Found in open woodland with *Eucalyptus parramattensis*, *Eucalyptus fibrosa*, *Angophora bakeri*, *Eucalyptus sclerophylla* and *Melaleuca decora*.	Low. Habitat not present.	None.	No.
Woronora Beard-heath *Leucopogon exolasius*	V	V	Woodland on sandstone along the upper Georges River area and in Heathcote National Park.	Low. Habitat not present.	None.	No.
Pimelea spicata	E	E	On the Cumberland Plain it is associated with Grey Box and Ironbark on well-structured clay soils. In the Illawarra region, *P. spicata* is found in open woodland and also in coastal	Low. Habitat not present.	None.	No.

Species	Legislation		Primary habitat requirements[4]	Likelihood of occurrence	Possible impacts	Significance assessment undertaken
	EPBC Act	**TSC Act**				
			grassland communities with emergent shrubs.			
Pimelea curviflora var. curviflora	E	E	Shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands.	Low. Habitat not present.	None.	No.
Small-flower Grevillea *Grevillea parviflora subsp. parviflora*	V	V	In a range of vegetation types from heath and shrubby woodland to open forest on sandy or light clay soils usually over thin shales. Nearest record is some 20km west.	Low. Outside species' range.	None.	No.
Nodding Geebung *Persoonia nutans*	E	E	Restricted to the Cumberland Plain where it grows within Agnes Banks Woodland or Castlereagh Scribbly Gum Woodland.	Low. Habitat absent.	None.	No.
Acacia pubescens	V	V	Concentrated around the Bankstown-Fairfield-Rookwood area and the Pitt Town area, with outliers occurring at Barden Ridge, Oakdale and Mountain Lagoon. Occurs in open woodland and forest, in a variety of plant communities, including Cooks River/Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland.	Low. Habitat absent.	None.	No.
Narrow-leaved Peppermint *Eucalyptus nicholii*	V	V	Widespread on the New England Tablelands from Nundle to north of Tenterfield. Commonly planted in Sydney.	Low. Habitat absent.	None.	No.
Biconvex Paperbark	V	V	Scattered and dispersed populations of this	Low.	None.	No.

Species	Legislation		Primary habitat requirements[4]	Likelihood of occurrence	Possible impacts	Significance assessment undertaken
	EPBC Act	TSC Act				
Melaleuca biconvexa			species are found in the Jervis Bay and the Gosford-Wyong areas. It occurs in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects.	Site beyond species' distribution and habitat absent.		
Deane's Melaleuca *Melaleuca deanei*	V	V	Heath and woodland on clay-influenced sandstone ridgetops.	Low. Habitat absent.	None.	No.
Thick-lipped Spider-orchid *Caladenia tessellata*	V	E	Little is known of the precise habitat requirements of this species. In NSW it is generally found in grassy dry sclerophyll woodland on clay loam or sandy soils, less commonly in heathland on sandy loam soils.	Low. Habitat absent.	None.	No.
Leafless Tongue-orchid *Cryptostylis hunteriana*	V	V	Occurs in a range of communities, including swamp-heath and woodland.	Low. Habitat absent	None.	No.
Illawarra Greenhood *Pterostylis gibbosa*	E	E	Known from Forest Red Gum woodland in the Illawarra.	Low. Habitat absent	None.	No.
Sydney Plains Greenhood *Pterostylis saxicola*	E	E	Restricted to small pockets of shallow soil in depressions on sandstone rock shelves above cliff lines in western Sydney between Freemans Reach in the north and Picton in the south.	Low. Habitat not present.	None.	No.
Kangaloon Sun-orchid *Thelymitra sp. Kangaloon*	CE	CE	Restricted to the Fitzroy Falls/Robertson/ Kangaloon area where it grows in Coastal	Low. Habitat not	None.	No.

Species	Legislation		Primary habitat requirements[4]	Likelihood of occurrence	Possible impacts	Significance assessment undertaken
	EPBC Act	**TSC Act**				
(D.L. Jones 18108)			Upland Swamp.	present.		
FAUNA						
MAMMALS						
Spotted-tailed Quoll *Dasyurus maculatus*	V	V	Wet and dry sclerophyll forests through to rainforests.	Low. Habitat not present.	None.	No.
Koala *Phascolarctos cinereus*		V	Open eucalypt forest and woodland, containing a variety of "preferred" food tree species.	Low. Habitat not present.	None.	No.
Long-footed Potoroo *Potorous longipes*	E	E	Temperate rainforest, riparian forest, damp or wet sclerophyll forest, associated with a sparse to dense understorey or sclerophyllous shrubs and a ground layer of ferns, grasses and sedges.	Low. Habitat not present.	None.	No.
Brush-tailed Rock-wallaby *Petrogale penicillata*	V	E	Areas containing numerous ledges, caves and crevices, cliffs (usually over 15m high) with many mid-level ledges and caves and/or overhangs; and isolated rock stacks.	Low. Habitat not present.	None.	No.
Grey-headed Flying-fox *Pteropus poliocephalus*	V	V	Rainforests, open forests, woodlands, Melaleuca swamps, Banksia woodlands and commercial fruit crops.	Low. Habitat not present.	None.	No.
Large-eared Pied Bat	V	V	Cave roosting bat that forages in timbered	Low.	None.	No.

Species	Legislation		Primary habitat requirements[4]	Likelihood of occurrence	Possible impacts	Significance assessment undertaken
	EPBC Act	TSC Act				
Chalinolobus dwyeri			woodland and dry sclerophyll forest.	Habitat not present.		
BIRDS						
Cattle Egret *Ardea ibis*	M		Wet pasture with tall grass, shallow open wetland and margins, mudflats.	Moderate. May occur in more open areas of Cabbage Gum Open Forest and Swamp Oak Woodland adjacent to site	Negligible.	Yes.
Great Egret *Ardea alba*	M		Wide range of wetland habitats including swamps and marshes; margins of rivers and lakes; damp or flooded grasslands, pastures or agricultural lands; reservoirs; sewage treatment ponds; drainage channels; salt pans and salt lakes; salt marshes; estuarine mudflats, tidal streams; mangrove swamps; coastal lagoons; and offshore reef	Moderate. May occur in more open areas of Cabbage Gum Open Forest and Swamp Oak Woodland adjacent to site	Negligible.	Yes.
Australasian Bittern *Botaurus poiciloptilus*	E	V	Shallow, vegetated freshwater or brackish swamps, usually dominated by tall, dense reed beds of Cumbungi, rushes and reeds.	Low. Habitat not present.	None.	No.
Latham's Snipe *Gallinago hardwickii*	M		Wet treeless tussocky grasslands, short grasses and/or marshes along freshwater streams and	Low. Habitat not	None.	No.

Species	Legislation		Primary habitat requirements[4]	Likelihood of occurrence	Possible impacts	Significance assessment undertaken
	EPBC Act	TSC Act				
			channels.	present.		
Australian Painted Snipe *Rostratula australis*	MV	E	Shallow freshwater swamps.	Low. Habitat not present.	None.	No.
White-bellied Sea-Eagle *Haliaeetus leucogaster*	M		Large rivers, fresh and saline lakes, reservoirs, estuaries, coastal seas, islands.	Detected adjacent to site.	Negligible.	Yes.
Swift Parrot *Lathamus discolor*	E	E	Eucalypt forests and woodlands. When over-wintering on the mainland, this species is dependent on winter-flowering eucalypt species and lerp.	Low. Habitat not present.	None.	No.
White-throated Needletail *Hirundapus caudacutus*	M		Summer migrant that is almost exclusively aerial foraging above a variety of habitats.	Low. No habitat within the study area, but may occasionally fly over site.	None.	No.
Fork-tailed Swift *Apus pacificus*	M		Summer migrant that is almost exclusively aerial foraging over inland plains but sometimes above foothills or in coastal areas	Low. No habitat within the study area, but may occasionally fly over site.	None.	No.
Rainbow Bee-eater *Merops ornatus*	M		Open forests and woodlands, shrublands, and in various cleared or semi-cleared habitats, usually close proximity to permanent water	Low. No suitable habitat present.	None	No.

Species	Legislation		Primary habitat requirements[4]	Likelihood of occurrence	Possible impacts	Significance assessment undertaken
	EPBC Act	**TSC Act**				
Eastern Bristlebird *Dasyornis brachypterus brachypterus*	E	P	Dense, low vegetation including heath and open woodland with a heath understorey.	Low. No suitable habitat present.	None	No.
Regent Honeyeater *Anthochaera phrygia*	E,M	E	Temperate eucalypt woodlands and open forests containing key eucalypt species utilised during foraging periods such as Mugga Ironbark, Yellow Box, Blakely's Red Gum, White Box and Swamp Mahogany.	Low. No suitable habitat present	None.	No.
Rufous Fantail *Rhipidura rufifrons*	M		Rainforests, moist sclerophyll forests and vegetated riparian corridors	Low. No suitable habitat present.	None	No.
Satin Flycatcher *Myiagra cyanoleuca*	M		Eucalypt woodlands, forests and timbered watercourses.	Low. No suitable habitat present.	None	No.
Black-faced Monarch *Monarcha melanopsis*	M		Rainforest and wet eucalypt forest.	Low. No suitable habitat present.	None	No.
REPTILES						
Broad-headed Snake *Hoplocephalus bungaroides*	E	E	Woodland on Hawkesbury Sandstone in the Sydney Basin with exfoliated material, rock crevices and caves.	Low. No suitable habitat present	None	No.
AMPHIBIANS						
Giant Burrowing Frog	V	V	Restricted to areas of Hawkesbury Sandstone,	Low.	None	No.

Species	Legislation		Primary habitat requirements[4]	Likelihood of occurrence	Possible impacts	Significance assessment undertaken
	EPBC Act	**TSC Act**				
Heleioporus australiacus			this frog prefers sandstone ridge top habitat and broader upland valleys that run through heathland and woodland. Small semi-permanent to slightly flowing streams.	No suitable habitat present.		
Giant Barred Frog *Mixophyes iteratus*	E	E	Deep, damp leaf litter in rainforests, moist eucalypt forest and nearby dry eucalypt forest, at elevations below 1000m.	Low. No suitable habitat present.	None	No.
Green and Golden Bell Frog *Litoria aurea*	V	E	Inhabits a variety of environments, including disturbed sites, ephemeral ponds, wetlands, marshes, dams and stream-sides, particularly those that contain one or more of the following aquatic plants: bullrush (*Typha* spp.), spikerush (*Eleocharis* spp.), *Juncus kraussii, Schoenoplectus littoralis* and *Sporobolus virginicus.*	Moderate. Some suitable habitat present adjacent to site.	Negligible.	Yes.
Littlejohn's Tree Frog *Litoria littlejohni*	V	V	Restricted to sandstone woodland and heath communities within dams, creeks and lagoons at mid to high altitude.	Low. No suitable habitat present.	None	No.

Attachment: Aerial photo of site illustrating proposed development footprint and location of Retained Ironbark Open Forest.

Attachment 14

Evans and Peck Report

EVANS & PECK
think through the future

Moorebank Recyclers

Materials Recycling Facility, Newbridge Road, Moorebank

Water Management and Pollution Control Assessment

August 2013

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Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Site Location and Features 1
1.3 Approved Works 3
2 Existing Environment 5
2.1 Climate 5
2.2 Local Drainage System 5
2.3 Site Drainage 9
2.4 Water Quality 9
2.5 Flooding 10
2.5.1 Approved Earthworks DA 12
3 Water Management Facilities and Operations 13
3.1 Water Management Objectives 13
3.2 Key Water Management Issues 13
3.3 Flooding 13
3.3.1 Protection of Operational Area 13
3.3.2 Access Road 17
3.3.3 Flood Evacuation 19
3.4 Water Management and Pollution Control Strategy 20
3.4.1 Collection Sumps 22
3.4.2 Overflow Discharge from Collection Sumps 23
3.4.3 Grass Swales 23
3.4.4 Bio-retention Swale 25
3.4.5 Refuelling 25
3.4.6 Dust Suppression 26
3.4.7 Soil Contamination and Acid Sulfate Soils 26
3.4.8 Erosion and Sediment Control during Construction 26
3.4.9 Waste Water 26
3.5 Water Balance and Sediment Discharge 27
3.6 Harvestable Rights 30
3.7 Impact of Site Discharge 30
3.7.1 Impact on Local Drainage Channels 31
3.7.2 Impact on Vegetation 31
3.7.3 Impact on Georges River 31
4 Monitoring, Management and Performance Assessment 33
4.1 Monitoring Program 33
4.2 Continual Improvement Program 33
5 References 35

List of Figures

Figure 1 – Site Layout and Location in Relation to the Georges River
Figure 2 – Extract from Liverpool 1:25,000 Topographic Map
Figure 3 – Existing Drainage in the Vicinity of the Site
Figure 4 – Georges River Flood Levels at Site
Figure 5 – Flood Frequency Curve at Milperra Bridge
Figure 6 – Proposed Site Layout
Figure 7 – Proposed Site Contours
Figure 8 – Proposed Access Ramps
Figure 9 – Water Management System Schematic
Figure 10 – General Arrangement for Stormwater Collection Sump
Figure 11 – Typical Bio-retention Swale Cross Section

List of Tables

Table 1: Climate Statistics
Table 2: Water Quality Data for Georges River at Milperra
Table 3: 100 Year ARI Georges River Flood Levels
Table 4: Maximum Depth of Floodwater over the Access Road
Table 5: Collection Sump Features
Table 6: Adopted Site Runoff Characteristics
Table 7: Performance of the Stormwater Capture and Re-use System
Table 8: Water Quality Monitoring Parameters

List of Annexures

Annexure A **A3 Figures**
Annexure B **Effect of Heavy Compaction on Surface Levels in 'Area 2'**
Annexure C **Flood Impact Assessment**
Annexure D **Flood Evacuation Plan**
Annexure E **Pollution Control Performance of Grass Swales**
Annexure F **Geotechnical Aspects of Septic Tank Construction**

1 Introduction

1.1 Background

This report has been prepared to form an appendix to the Preferred Project Report being compiled by Nexus Environmental Planning for the proposed Materials Recycling Facility at Newbridge Road Moorebank. This report addresses the issues relating to site water management, pollution control and flooding. A detailed site history and description of the proposed development is included in the body of the Preferred Project Report.

An existing Development Application (1417/05) for bulk earthworks at the site has been approved by Liverpool City Council. This approval includes all necessary bulk earthworks for the proposed use, including exclusion of the 100 year average recurrence interval (ARI) flood from the operational area of the site. This report addresses the issues that arise from the works relating to the development of the site as a materials recycling facility following completion of the approved earthworks and works required to provide access to Brickmakers Drive.

The NSW Minister for Planning is the consent authority. The Director General provided a list of requirements along with submissions from relevant agencies regarding their requirements for the Environmental Assessment prior to its public exhibition. This report covers the relevant requirements relating to the water and flood management aspects of the site as set out by the Director General, as well as addressing the comments from agencies in response to the public exhibition of the Environmental Assessment.

The mitigation measures discussed in this report are presented in the form of an integrated site water management system that accounts for management of flood risk and measures to minimise site discharge and maximise stormwater reuse on the site. This report also addresses the flooding issues arising from the construction of an access road to the site and evacuation of the site in the event of a significant flood.

For purposes of this report, the “Site” refers to the area of land on which it is proposed to construct the facilities for materials recycling and associated support services such as car parking and staff amenities. The access road linking the Site to Brickmakers Drive is referred to as the “Access Road”.

For ease of reference A3 size copies of site plans are provided in **Annexure A** in addition to the copies within the text of this report. **Annexures B - F** provide supporting details.

1.2 Site Location and Features

The Site is located adjacent to the George River, about 1 km south of the Milperra Bridge, Moorebank. The Site rises from a minimum elevation of 1.96 m AHD at a location on the Access Road to 5.5 m AHD near the northern end of the Site.

Figure 1 (A3 size copy provided in **Annexure A**) shows the position of the Site in relation to the Georges River together with the proposed layout of the Site for materials recycling. As shown on **Figure 1**, the area of the Site located to the north of the line “limit of surplus fill” (on which materials recycling operations are proposed, designated as ‘*Area 1*’) is located a minimum of 60 m from the bank of the Georges River.

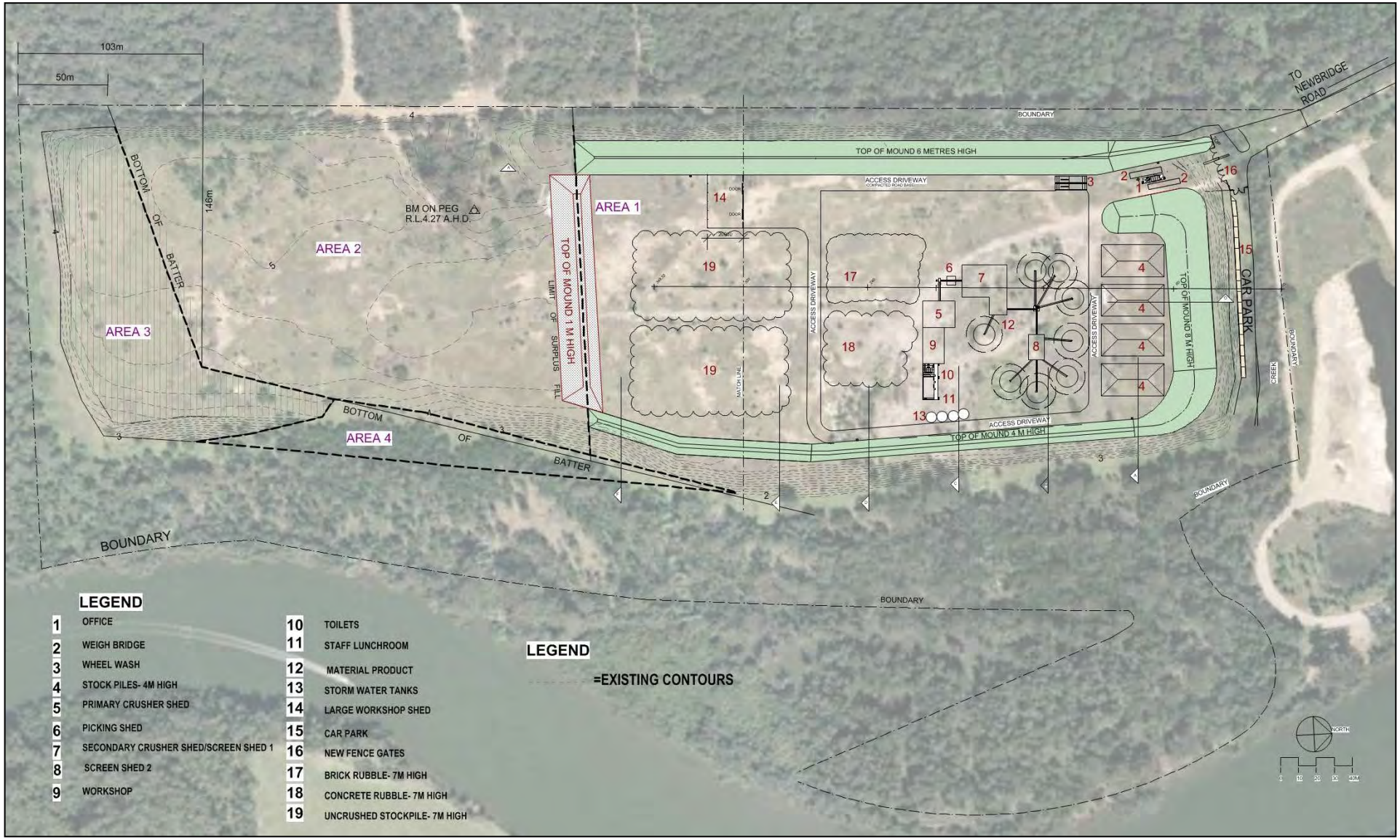

Figure 1 – Site Layout and Location in Relation to the Georges River

1.3 Approved Works

The works which have been approved to date (under a Liverpool Council Approved Earthworks Development Application (1417/05)) involve the excavation of approximately 40,000 m^3 of spoil from the southern portion of the Site in order to reinstate the original natural ground levels. This will allow natural exchange of floodwater between the Georges River and the area of Ironbark Open Forest and Woolybutt – Blue Box Open Forest located immediately west of the Site during a relatively minor flood event (approximately 2 year ARI). Restoration of natural flooding in this area will restore wetland flooding; and improve water quality and habitat, all of which complement the *Georges River Water Quality and River Flow Objectives* (DECCW, 2006).

The excavated material from the southern end of the Site will be used to construct a series of perimeter mounds and to fill the operational area of the site, designated as '*Area 1*' on **Figure 1**.

As demonstrated in the flood analysis that supported DA-1417/05 (Hughes Trueman 2004), the approved earthworks will have no adverse effect on flood levels in the Georges River. The modelling analysis undertaken by Patterson Britten using the MIKE-11 program to support the 2004 Report indicated that if the operational area of the site were filled to above the 100 year ARI flood level, the only changes to 100 year ARI flood levels either upstream or downstream of the site would be very small reductions in flood level.

As demonstrated in the flood storage analysis that supported DA-1417/05 (Evans & Peck 2005), which is referenced in Liverpool Council's approval of DA-1417/05, the approved earthworks would result in no loss of flood storage due to the large increase in flood storage volume provided by the lowering of '*Area 3'* and '*Area* 4', which offsets the exclusion of the 100 year ARI flood from '*Area 1*'.

On 27 June 2013 the Land & Environment Court (matter 30141/13) granted easements sought by Moorebank Recyclers to allow the construction of ramps that would permit vehicle access between Brickmakers Drive and the access road leading to the site. The earthworks associated with these ramps were not included in DA-1417/05, and therefore form part of the current application and are assessed in **Section 3.3.2** of this report.

The approved bulk earthworks for the Site have been taken into account in developing the operational drainage strategy for this Project. The operational working area of the Site (*Area 1*) will be protected from flooding in a 100 year ARI flood by means of approved site levels, the surrounding mounds that were approved as part of the bulk earthworks consent, and a low mound at the southern end of *Area 1*. The low mound will serve to exclude the 100 year ARI flood from *Area 1*. This exclusion of floodwaters from *Area 1* is an approved aspect of the bulk earthworks consent. The approved bulk earthworks will also enable the Site to be contoured to direct overland flow to various low points or collection sumps within *Area 1* from where the water will be pumped to holding tanks for reuse. Further details on the water management and drainage strategy for the Site are provided in **Section 3**.

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2 Existing Environment

2.1 Climate

The nearest active Bureau of Meteorology (BOM) station to the Site is Bankstown Airport (66137) where the rainfall and temperature recordings span a period from 1968 to 2010. Evaporation data was sourced from Prospect Dam (67019) for a period from 1965 to 2010. The climate records are summarised in **Table 1** below.

Table 1: Climate Statistics

Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean maximum temperature (°C)	28.1	27.7	26.2	23.6	20.4	17.7	17.2	18.9	21.5	23.7	25.2	27.3	23.1
Mean minimum temperature (°C)	18.0	18.0	16.1	12.7	9.6	6.6	5.1	6.0	8.6	11.8	14.2	16.6	11.9
Mean rainfall (mm)	93.3	108.8	97.6	84.7	70.2	73.5	44.6	49.7	44.6	61.9	76.1	67.0	870
Median rainfall (mm)	74.6	77.0	77.3	67.6	60.4	44.8	33.1	23.2	37.0	40.9	68.6	57.1	900
Mean number of days of rain ≥ 10 mm	2.7	2.9	2.8	2.4	2.2	2.0	1.3	1.1	1.2	1.9	2.3	2.1	24.9
Mean number of days of rain ≥ 25 mm	1.0	1.2	0.9	1.0	0.6	0.7	0.3	0.5	0.3	0.5	0.7	0.7	8.4
Mean pan evaporation (mm)	170	136	124	90	62	48	56	81	108	136	150	180	1,341

Table 1 shows that the mean annual rainfall is 870 mm and mean annual pan evaporation is 1,341 mm. It also shows that there are 8.4 days per year on average with rainfall exceeding 25 mm.

2.2 Local Drainage System

A copy of the current edition of the Liverpool 1:25,000 Topographic Map (9030-2S 3rd edition 2001) was obtained from NSW Land and Property Information in May 2013. **Figure 2** is an extract from this map which shows a first order stream flowing from west to east and entering the Georges River level with the north boundary of the site. This is the only such stream shown on the topographic map on the western side of the Georges River in proximity to the site. There are no second order streams shown on the topographic map in the vicinity of the site.

Figure 2 – Extract from Liverpool 1:25,000 Topographic Map

Figure 3 shows the drainage systems in the vicinity of the site as at June 2013 which include some remnant natural creek lines and a number of constructed drains:

- The pre-existing creek line which drains from the area to the west of the site. In addition to draining water from the Ironbark Open Forest area, this creek line receives stormwater drainage from Brickmakers Drive and the Georges Fair development, particularly the northern stormwater basin located to the east of Brickmakers Drive.
- Flow from the creek is conveyed towards Georges River by means of a culvert under the existing access road which leads from Newbridge Road to the Site by;

- Downstream of the access road, the pre-existing creek that formerly ran through the adjacent site to the north (see **Figure 2**) has been re-aligned (presumably as a result of works on the neighbouring site operated by Benedict Sand & Gravel) to run in a constructed drain along the northern boundary of the Site for a distance of about 200 m (see **Photograph 1**);
- The final section of creek between the end of the constructed drain and Georges River (about 200 m) appears to represent the original natural creek;
- An existing constructed drain runs in a south to north direction between the site and an existing track along the western boundary of the site. This drain connects to the existing creek line near the north-west corner of the Site.
- A constructed drain runs in a north to south direction on the eastern side of the site access road and connects to the drain just downstream of the culvert under the access road. This drain conveys runoff from a section of Newbridge Road and a local catchment of about 75 ha, located mainly to the north of Newbridge Road.
- A natural depression (flood runner) runs from north to south along the eastern boundary of the site through the area of wattle scrub immediately adjacent to the raised site area. Due to the low ground level within this natural depression, it is probable that it becomes a flood runner when the Georges River experiences floods in excess of a 2 year ARI flood.
- A constructed V drain runs towards the Georges River along the southern boundary of the site.

Photograph 1 – View Looking East along the Constructed Drain along the Northern Site Boundary

Figure 3 – Existing Drainage in the Vicinity of the Site

2.3 Site Drainage

The existing site contains a raised area with a gentle ridge that runs from north to south through the centre of the site. Runoff flows generally east or west off the raised area of the Site, entering the existing drain on the western side or the natural depression that runs along the eastern side of the raised area. Some runoff also drains to the drain along the southern boundary.

Once the approved bulk earthworks are complete and the site is developed, runoff from the operational area ('*Area 1*' on **Figure 1**) will be collected in sumps, with the limited overflow being directed to the existing drains and depressions on the eastern and western sides of the operational area. The runoff from the developed site will therefore maintain the existing runoff direction and the existing locations of inflow to the Georges River. Runoff from non-operational area ('*Area 2*' on **Figure 1**) will continue to drain in the current manner.

2.4 Water Quality

The reach of the Georges River adjacent to the Site is a transition zone between the upper freshwater and lower estuarine (salty) water of the River. The river is used for a number of water-based activities including water skiing, boating and fishing. Public health and safety is an issue of importance in this catchment along with environmental and aesthetic values (DECCW, 2006).

The '*Georges River Data Compilation and Estuary Processes Study'* (prepared by SMEC for the Georges River Combined Councils Committee, February 2010) summarises and interprets water quality for the Georges River, including a reach of the river at Milperra, which is adjacent to the Site. The report draws on data collected by Bankstown Council between 1997 and 2009. The report also references water quality data collected between 1973 and 1992 by Chipping Norton Lake Authority. A summary of the study's findings is presented in **Table 2**. The findings show that water quality in this section of the River does not comply with the ANZECC default criteria for freshwater ecosystems:

- 76% of the time for dissolved oxygen,
- 26% of the time for pH,
- 65% of the time for turbidity and
- 33% of the time for faecal coliforms.

These results indicate the water quality is generally poor.

Table 2: Water Quality Data for Georges River at Milperra

	DO (%)	pH	Turbidity (NTU)	Faecal Coliform (cfu/ 100mL)
ANZECC default guideline (lower limit)	80	6.50	6	150
Percentage of water quality results beneath the ANZECC default guideline lower limit	67%	8%	44%	43%
ANZECC default guideline (upper limit)	110	8.00	50	1,000
Percentage of water quality results above ANZECC default guideline upper limit	8%	18%	20%	33%
Total % outside ANZECC Guideline Limits	76%	26%	65%	33%

(Source: SMEC, 2010)

2.5 Flooding

A flood study prepared for the Bulk Earthworks DA 1417/2005 (Hughes Trueman, 2004) examined flood levels in the vicinity of the Site and the effect of the proposed bulk earthworks (described in **Section 1.3**) on flood levels. **Table 3**, which has been extracted from the Flood Study, shows flood levels in the vicinity of the Site including the chainage locations marked on **Figure 4**.

Table 3: 100 Year ARI Georges River Flood Levels

Cross Section Chainage Location (m)	100 Year ARI Flood Level (m AHD)
12,620	5.56
12,890	5.48
13,030	5.45
13,200	5.42
13,350	5.39
13,520	5.35
13,820	5.26

The data in **Table 3** shows that in a 100 year ARI flood there is a gradient from about 5.49 m AHD at the northern boundary of the Site (approx. CH 12,900) to 5.39 m AHD at the southern boundary (CH 13,350). **Figure 4** is a plan from the Bulk Earthworks DA which shows the locations of the flood levels identified in **Table 3** above. The shaded areas on **Figure 4** indicate the cut and fill '*Area 1'* to '*Area 4'* that relate to the approved bulk earthworks. The DA approval states that "*Cut and fill on the site shall be in accordance with plans prepared by Asher McNeill & Partners Pty Ltd marked "Drawing No: 9226 flood 01, amendment B dated 22 August 2005" and supporting information provided by Evans & Peck dated 2 August 2005*". An A3 size copy of **Figure 4** is included in **Annexure A**.

Figure 4.3 of *the Georges River Floodplain Risk Management Study and Plan (2004 - Volume 1)* shows a long section of the Georges River including the modelled PMF water levels. The PMF level adjacent to the site is estimated to be approximately 10.3 m AHD. This is well above the site levels approved under the bulk earthworks DA, and would overtop the perimeter mound on the eastern and southern sides of the site. The tops of the northern and western mounds would, however, remain above flood level. The potential impact of such extreme floods is discussed further in **Section 3.3.1**.

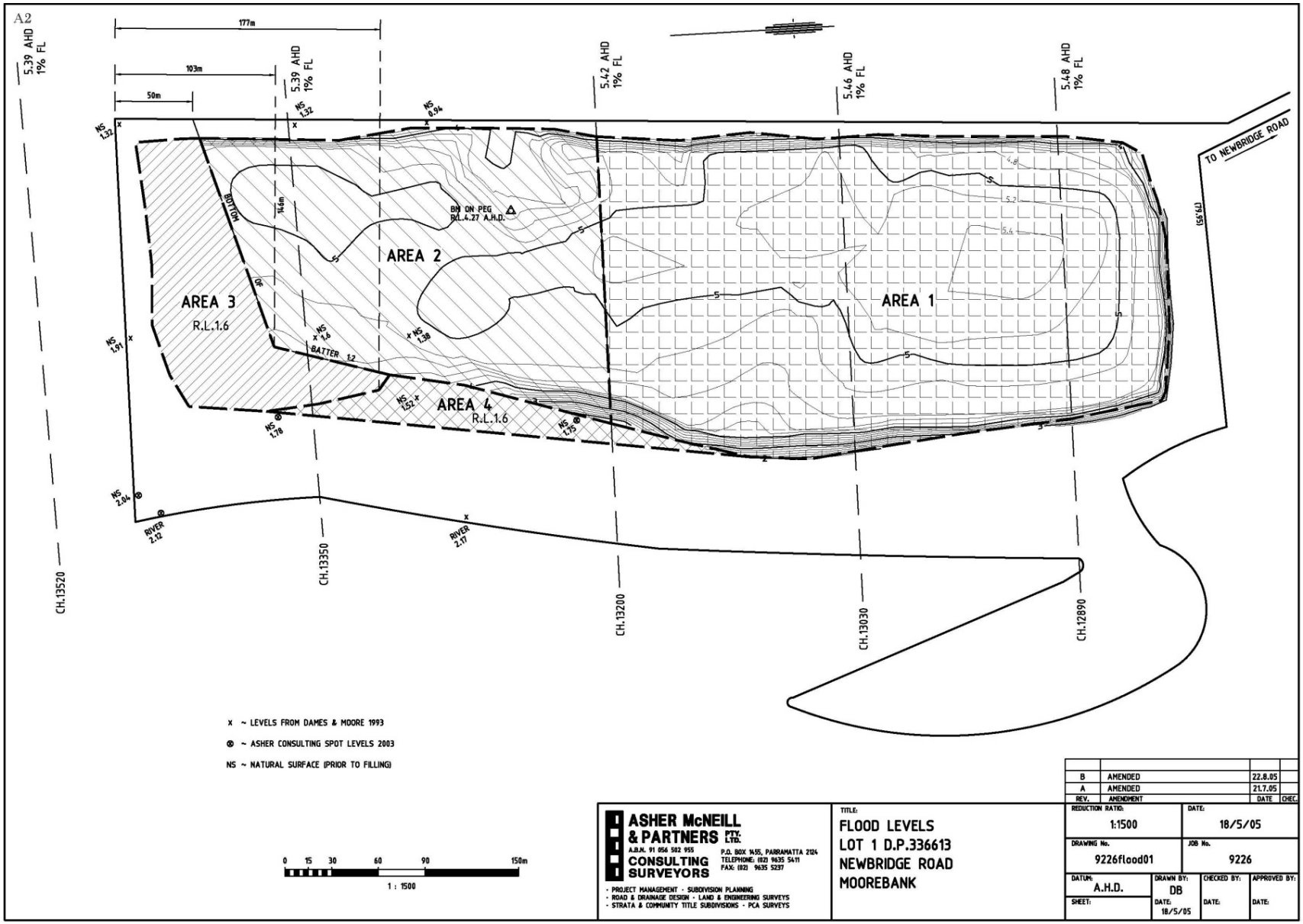

Figure 4 – Georges River Flood Levels at Site

For the purposes of assessing flood risks associated with site evacuation, additional flood data has been obtained from the Manly Hydraulics Laboratory which maintains a continuous water level gauge at Milperra Bridge (operational since 1980). **Figure 5** shows the flood frequency curve for Milperra Bridge derived from a composite of the historic record and the 20, 50 and 100 year ARI flood level data derived from the hydraulic model study prepared by PWD (1991). The flood levels shown in **Figure 5** have been taken into account during the design of the access road between Brickmakers Drive and the Site, and in the preparation of a *Site Flood Evacuation Plan* (see **Annexure D**). The Site levels, perimeter mound (approved in the bulk earthworks DA) and low mound at the southern end of '*Area 1'* ensure that the Site will be flood free in a 100 year ARI flood.

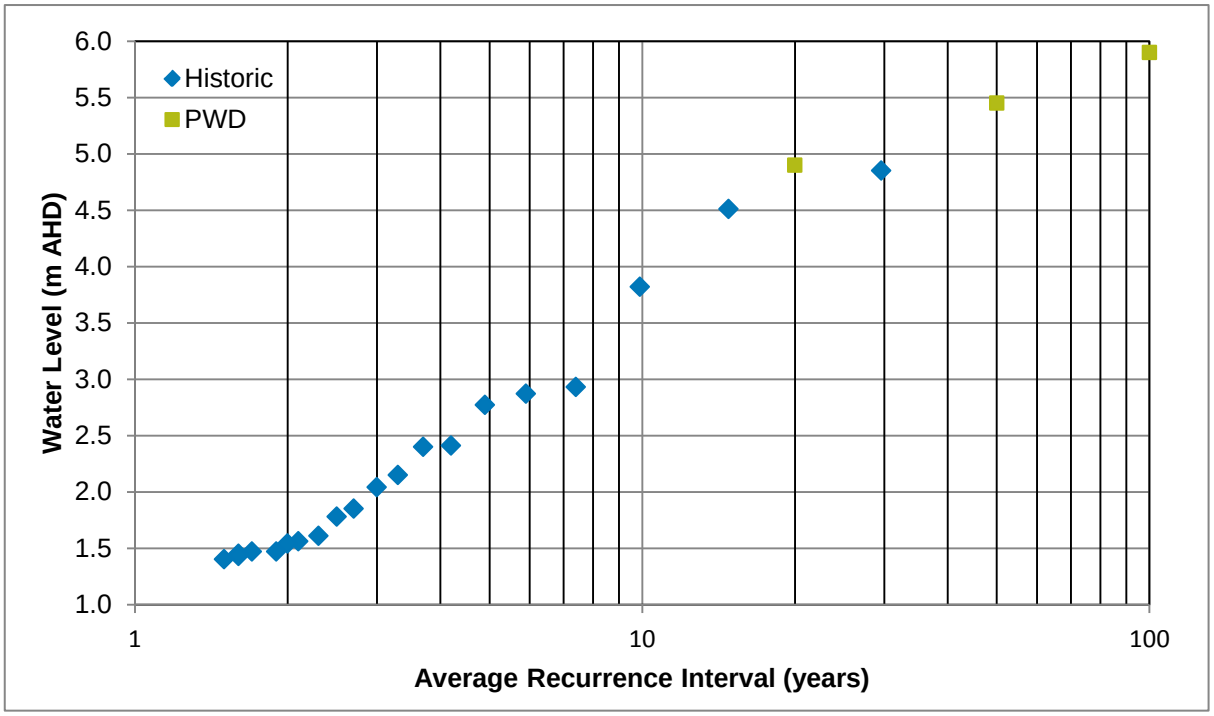

Figure 5 – Flood Frequency Curve at Milperra Bridge

2.5.1 Approved Earthworks DA

As described in **Section 1.3**, the bulk earthworks proposed for the site have been approved by Liverpool Council (DA1417/05).

As demonstrated in the flood analysis that supported DA-1417/05 (Hughes Trueman 2004), the approved earthworks will have no adverse effect on flood levels in the Georges River. The modelling analysis undertaken by Patterson Britten using the MIKE-11 program to support the 2004 Letter Report indicated that if the operational area of the site were filled to above the 100 year ARI flood level, the only changes to 100 year ARI flood levels either upstream or downstream of the site would be very small reductions in flood level.

As demonstrated in the flood storage analysis that supported DA-1417/05 (Evans & Peck 2005), which is referenced in Liverpool Council's approval of DA-1417/05, the proposed earthworks would result in no loss of flood storage due to the large increase in flood storage volume provided by the lowering of '*Area 3*' and '*Area 4'*, which offsets the exclusion of the 100 year ARI flood from '*Area 1'* (as designated on **Figure 1**).

3 Water Management Facilities and Operations

3.1 Water Management Objectives

The following water management objectives have been adopted for the project:

- Minimise potential impacts on water quality in the Georges River;
- Implement stormwater re-use to minimise the potable water requirements for the Site;
- Minimise flood impacts associated with the construction of access to Brickmakers Drive;
- Ensure an effective flood evacuation procedure is in place.

An objective of the approved bulk earthworks was to ensure no impacts on flood levels in adjacent areas. This has been addressed in the approved bulk earthworks DA and is therefore not specifically addressed in this report.

3.2 Key Water Management Issues

As the prime activities at the facility will include aggregate and materials handling (including crushing and processing) in an area close to the Georges River, the key issues in relation to water management include:

- Control and minimisation of sediment runoff from construction and operation activities;
- Response procedures to be in place to deal with any oil spills and hazardous substance emergency so as to ensure no discharge to waterways;
- Preventing the movement of stored material off site in flood events; and
- Re-use of site runoff to minimise the requirement for use of potable water supply for dust suppression purposes.

3.3 Flooding

3.3.1 Protection of Operational Area

The operational layout of the Site including the material stockpiling locations, associated handling facilities (crusher and screen facilities), workshop, site offices and the weighbridge etc. is shown in **Figure 6,** while **Figure 7** shows the proposed contour levels of the Site. **Figure 6** and **Figure 7** are also included at A3 size in **Annexure A**. Once complete, the approved bulk earthworks will ensure all operational activities associated with the materials recycling facility will be protected from flooding up to a 100 year ARI flood by means of perimeter mounds, site levels and a low mound at the southern end of '*Area 1'* (see **Section 1.3**). The operational area of the site would therefore be flood free in a 100 year ARI flood event.

As discussed in **Section 1.3** and **Section 2.5.1**, the earthworks required to exclude the 100 year ARI flood from the operational area have been approved by Liverpool Council, on the understanding that the approved earthworks do not reduce 100 year ARI flood storage and have no adverse impact on 100 year ARI flood levels.

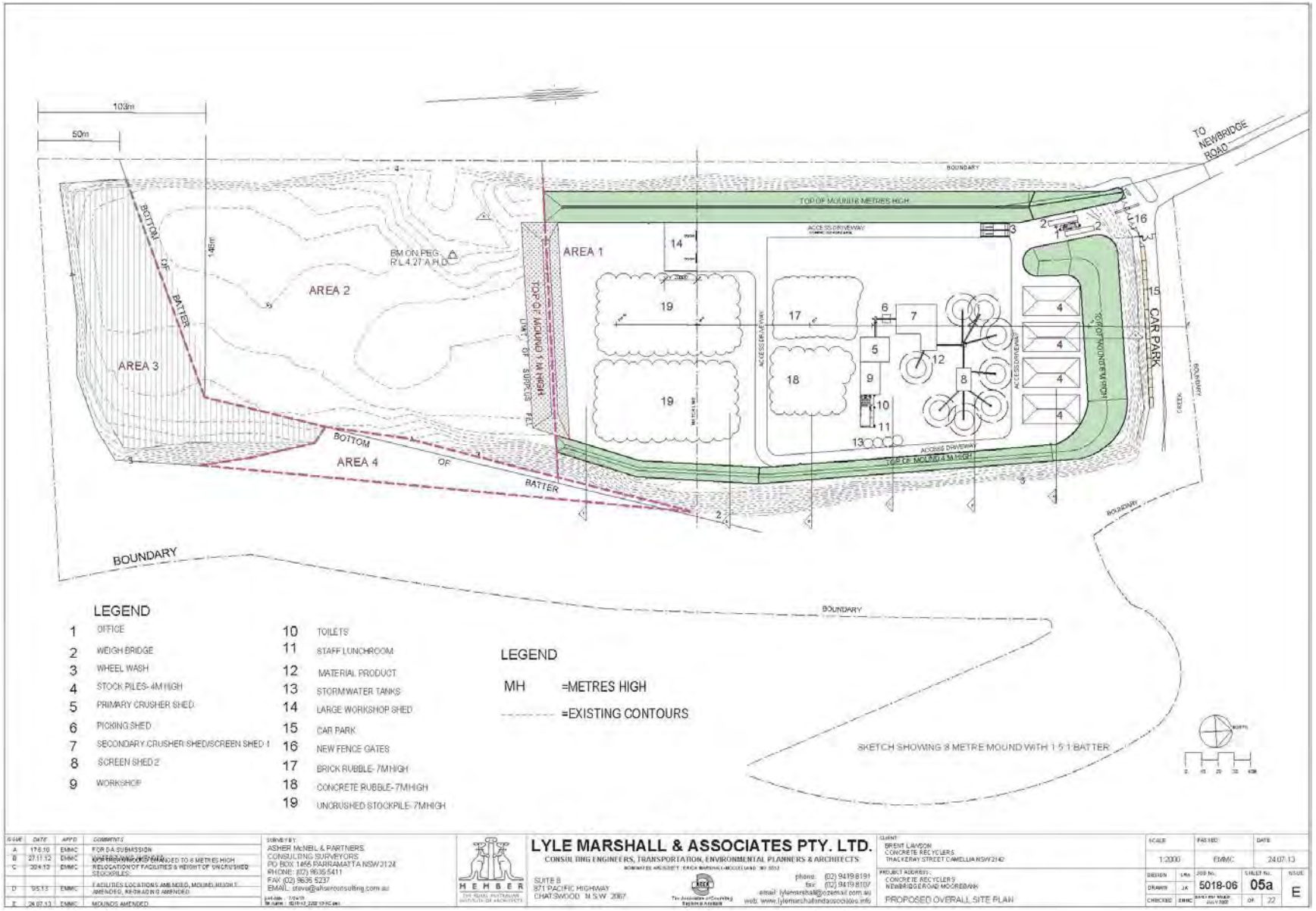

Figure 6 – Proposed Site Layout

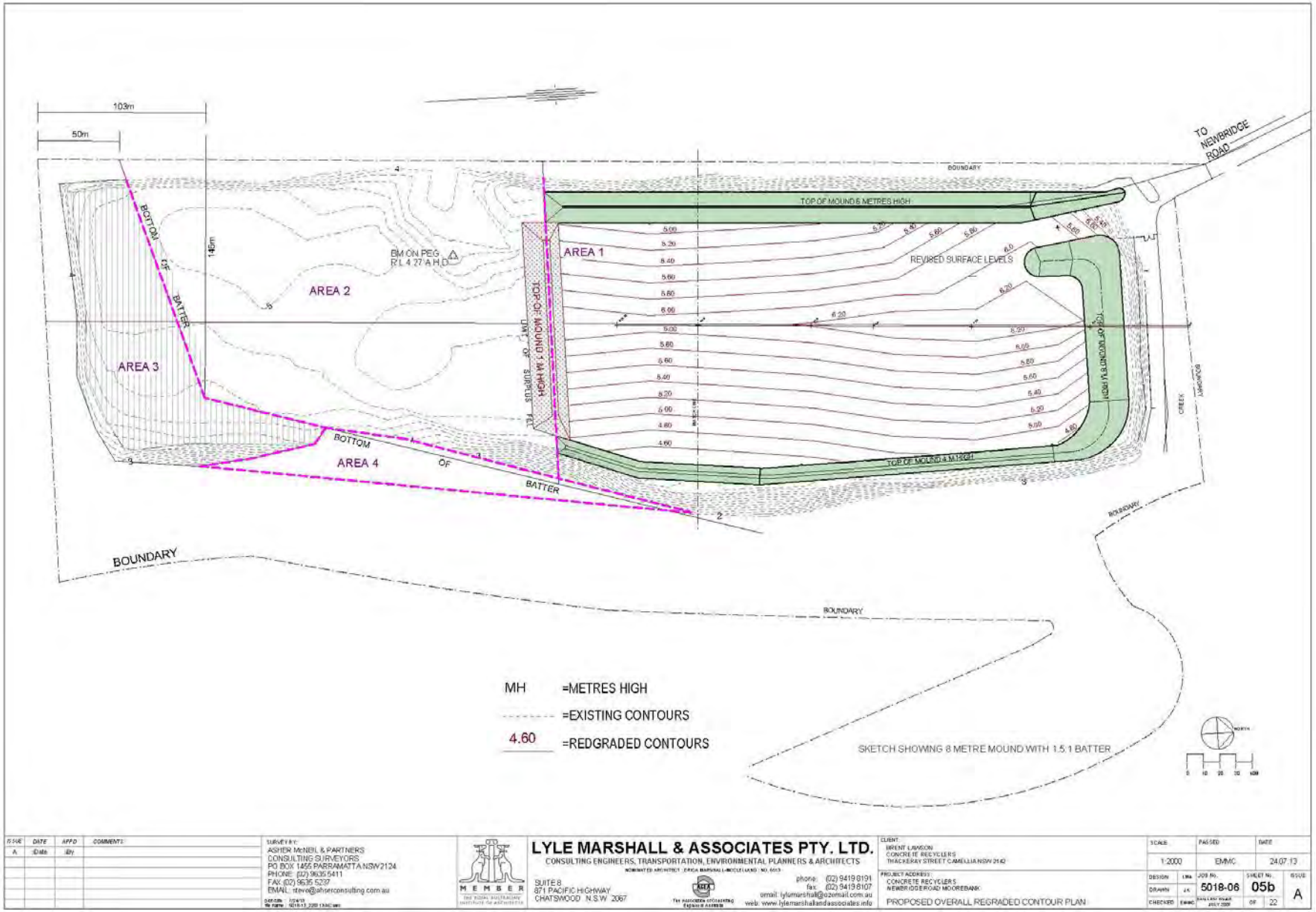

Figure 7 – Proposed Site Contours

The *Flood Evacuation Plan* for the site (**Annexure D**) includes a series of flood proofing actions to be incorporated into the site development. The majority of these actions involve establishing key elements of the on-site infrastructure (building/shed floor levels, electrical equipment, control panels etc.) between 0.5–1.5 m above the 100 year ARI flood level. This will ensure that these key elements will be protected from damage during floods in excess of the 100 year ARI flood.

The site will be surrounded to the north, west and east by large perimeter mounds following completion of the bulk earthworks, which will act to prevent the entry of floodwaters into the operational area of the site along much of the site boundary. The mounds along the northern boundary of the operational area will be approximately 8 m in height and those on the western side approximately 6 m high, while the remaining mounds will be approximately 4 m in height. Floodwaters well in excess of the 100 year ARI flood level may enter the site via the vehicle access point in the north-west corner, or over the low mound along the southern edge of *Area 1*. As the flow of the Georges River is approximately north to south, these perimeter mounds will afford protection to the site and prevent floodwaters in large floods from moving through the site with any appreciable velocity.

As mentioned in **Section 2.5**, the estimated PMF level at the site is approximately 10.3 m AHD. At this level it is possible that floodwater would overtop some of the perimeter mounds. However, due to the additional height of the mounds along the northern and western boundaries of the site, floodwater could only enter the site at the site entrance and over the southern and eastern perimeter mounds. In such an event, the flow velocity within the site would potentially be higher than those events that remain below the perimeter mound level. However, extreme events with the potential to overtop perimeter mounds would be very rare.

Volume 2-Planning Issues of the *2004 Georges River Floodplain Management Study and Plan* includes a definition of flood planning precincts shown in Illustration 7. It indicates that areas outside the 100 year ARI flood extent but within the PMF flood extent are in the low flood risk precinct where "*Risk of damages are low, Modifications to building structures are not cost effective*" and where there are "*No development controls on most uses*". Given that the operational area will be largely protected from flows during most extreme floods by the perimeter mounds around much of the site boundary, and that flood proofing measures for buildings will be incorporated as outlined above, it is not considered that further flood proofing of key infrastructure on site is warranted.

The potential for materials on site such as oil, fuels and oxyacetylene tanks to be washed off site during extreme floods is addressed by the proposed storage measures for those materials:

- Waste oil will be kept in a 1,200 L tank, while clean oil will be kept in three 400-600 L above-ground tanks. These tanks will be secured to prevent their movement. Any oil kept in 200 L drums will be kept in a bunded area within the workshop (floor level 5.9 m AHD or 0.4 m above the 100 year ARI flood level). The workshop will be able to be closed and locked during flood events to prevent materials and equipment inside from being washed off site in an extreme flood.
- The mobile fuel truck (capacity 8,000 L) will be parked in the workshop building, which will be closed up and locked when flood warnings are received. A small fuel tank (capacity 2,000 L) will be located in the primary crushing shed within a bund.
- Oxyacetylene tanks would be kept in a locked cage at all times, which would prevent their movement off site in an extreme flood.

3.3.2 Access Road

Vehicle access to the site will be provided via an on-grade road that follows the alignment of the existing access road for a distance of about 500 m north of the operational area, at which point ramps will be constructed to provide access to Brickmakers Drive. As shown in **Figure 8**, these ramps will join Brickmakers Drive alongside the alignment of a previously approved bridge to link Brickmakers Drive to the site currently operated by Benedict Sand & Gravel. Engineering details of the access ramps and associated bridge are provided in an appendix to the Preferred Project Report '*Report on Ramp Access to Moorebank Recyclers Pty Ltd*' (Cardno, 2013)

3.3.2.1 Flood Storage Volume

As discussed in **Sections 1.3** and **2.3.1**, the bulk earthworks proposed for the Site have previously been approved by Liverpool City Council. The DA application for the bulk earthworks contained all relevant information on the flood storage balance for the earthworks and the impact on flood levels of the proposed earthworks, and demonstrated that the approved earthworks would result in no net loss of flood storage.

After allowing for the earthworks volume for the abutment for the previously approved bridge, the earthworks volume for the ramps to provide access to the Moorebank Recyclers site (**Figure 8**) is 5,100 m^3.

The loss of flood storage resulting from the construction of the access ramps will be offset by the use of compaction rolling to lower the surface level of '*Area 2'* (as designated on **Figure 1**, an area of approximately 32,250 m^2) by a minimum of 150 mm (see advice from Jeffery & Katauskas dated 9 May 2013 – **Annexure B**) to provide at least an additional 4,840 m^3 of storage below the 100 year ARI flood level. Consequently, there would be minimal (260 m^3) loss of floodplain storage as a result of the proposed access ramps.

3.3.2.2 Flood Level Impacts

The flood level impacts associated with the proposed ramps to provide access to the Moorebank Recyclers site as well as the possible future construction of a bridge (see *Report on Ramp Access to Moorebank Recyclers Pty Ltd*') have been assessed by means of a two dimensional hydraulic model that covers a 5 km section of the Georges River floodplain extending from 1 km upstream of Newbridge Road to 2 km downstream of the Site. Topographic details of the model area were derived from 1 m spatial resolution LiDAR data for the whole area supplemented by cross section details of the river. Full details of the model configuration are provided in the *Flood Impact Assessment* in **Annexure C**. The flood model was used to examine the following flood situations with and without the proposed bridge and ramps:

- 100 year ARI flood in the Georges River;
- 100 year ARI flood from the local 75 ha catchment (mainly located north of Newbridge Road);
- 100 year ARI flood from the local catchment coinciding with the peak from the 20 year ARI flood in the Georges River.

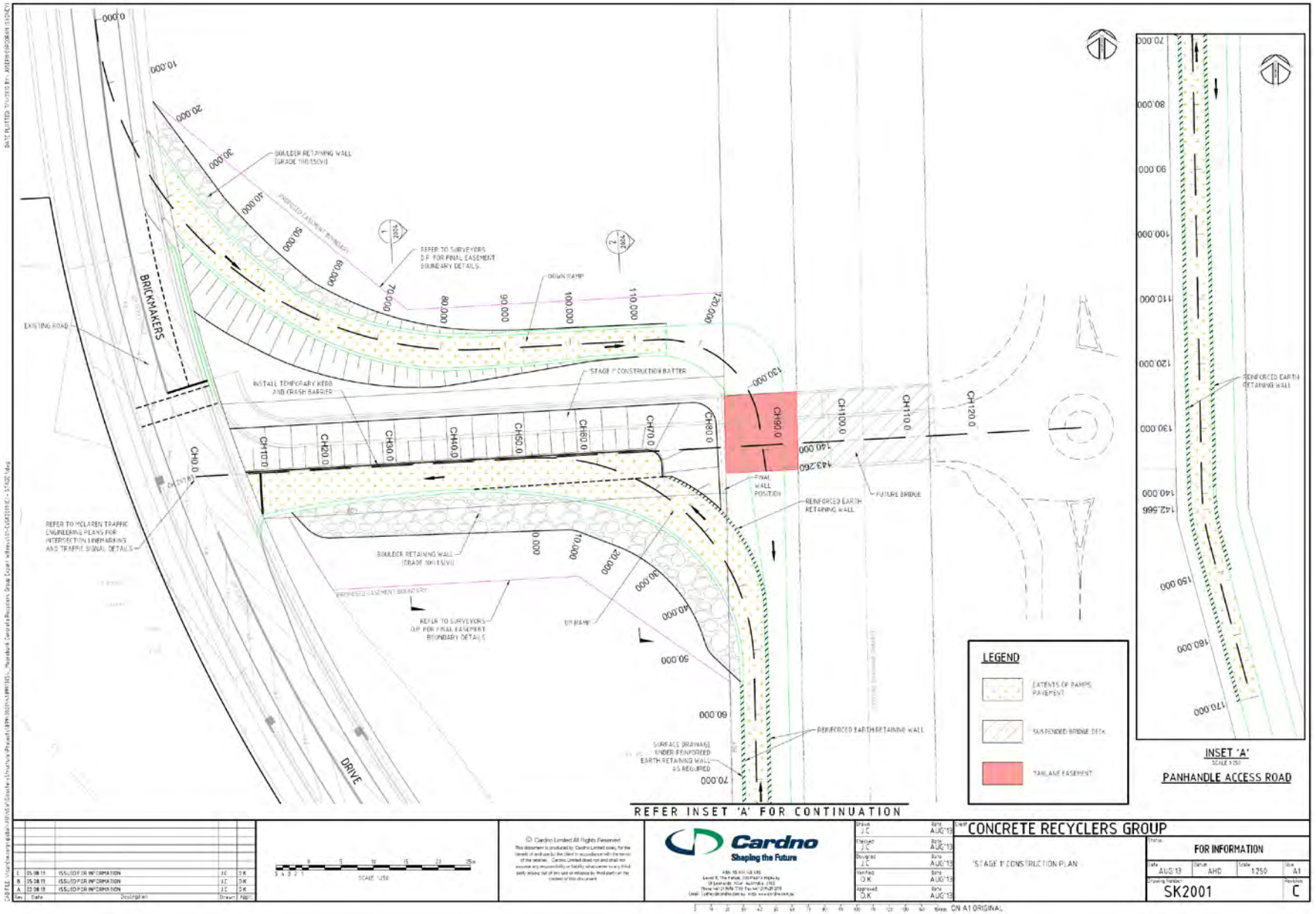

Figure 8 – Proposed Access Ramps

In order to identify any effects of the proposed works, the 'without project' conditions took account of:

- 'As constructed' levels along Brickmakers Drive together with the stormwater treatment ponds and sewerage pumping station on the eastern side of the road;
- The embankment for the previously approved bridge;
- The approved earthworks for the Moorebank Recyclers site including exclusion of floodwater from the operating area ('*Area 1*' on **Figure 1**) and the lowering of the southern end of the site *('Area 3'* and *'Area 4'* on **Figure 1**) to natural ground levels.

The flood modelling did take account of the proposed offset for loss of flood storage attributable to the access ramps by impact rolling on '*Area 2*' (see **Section 3.3.2.1**).

The analysis showed that:

- For a 100 year ARI flood in the Georges River, the flood level at the site of the proposed bridge and ramps would be 5.5 m AHD. The proposed bridge embankment and ramps would cause a localised flood increase of 2-3 mm which is well below the standard applied tolerance of 10 mm, and, as such, can be considered to be no impact;
- 100 year ARI flood level as a result of a flood from the local catchment would be 3.0 m AHD (2.5 m lower that the 100 year ARI flood in the Georges River). The proposed bridge embankment and ramps would lead to a maximum flood level increase of 0.03 m (30 mm) immediately upstream of the bridge. There would be no increase in flood level on Newbridge Road. The area affected by any increase would be confined between the elevated land on the site operated by Benedict Sand & Gravel to the east and Brickmakers Drive to the west where land levels are in excess of 5 m AHD. Because the flood level attributable to local flooding is 2.5 below the 100 year ARI flood level from the Georges River, which is the bases for setting floor levels, it would have no impact on any buildings in the vicinity.
- For the 100 year ARI level from the local catchment combined with the 20 year ARI flood in the Georges River, the flood level at the site of the bridge and ramps would be 4.77 m AHD (0.73 m lower that the 100 year ARI flood in the Georges River). The proposed bridge embankment and ramps would lead to a maximum flood level increase of 1.5 mm immediately upstream of the bridge.

Even without taking account of the proposed compensatory flood storage by impact rolling on '*Area 2*', but taking account of the full effect of the bridge abutment (not part of this proposal), the results of the flood modelling indicate that the effect of the proposed access works would be trivial and would be confined to the immediate vicinity of the works.

3.3.3 Flood Evacuation

The Site itself will be flood free up to a 100 year ARI flood. However, the access road has a minimum level of 1.96 m AHD and would be subject to the depths of flooding shown in **Table 4** for moderate frequency floods. Accordingly, a flood evacuation strategy has been developed for the Project. The plan "*Warning System and Site Emergency Response Flood Plan: Rev 1*" is attached as **Annexure D**. This plan is designed to ensure timely evacuation of the site in the event of an impending flood without the need to call on the SES or other emergency services.

While the *Flood Evacuation Plan* in **Annexure D** has been developed using the SES *Business FloodSafe Toolkit* as a guide, Section N7.2 of the NSW *Floodplain Development Manual* (2005)

clearly states that the SES is opposed to proposals seeking endorsement of private flood plans from the SES. Accordingly the endorsement of the SES has not been sought.

Table 4: Maximum Depth of Floodwater over the Access Road

Flood ARI (years)	Depth (m)
2	0
3	0.10
4	0.45
5	0.80

3.4 Water Management and Pollution Control Strategy

To ensure sediment laden runoff is controlled and potable water use for site operations is minimised, all runoff from the operational area will be collected at four appropriately sized collection sumps, from where it will be pumped to holding tanks for re-use. In addition to sediment retention, the design of the sumps provides for retention of any oil or other floatable material. All overflow from the sumps will flow along grass swales or a bio-retention swale for further retention of sediment prior to discharge from the property boundary.

Figure 9 is a schematic diagram that illustrates the main features of the proposed water management system that are described in further detail below:

- The Site will be subdivided into four drainage catchments;
- Primary stormwater pollution control will be achieved by directing all Site runoff to collection sumps from where it will be pumped to re-use holding tanks;
- Water in the re-use holding tanks will be utilised for dust suppression purposes throughout the site;
- The collection sumps will provide for sediment settling and retention of any free oil/fuel or floatable material;
- Overflow from the sumps will only occur when the combined capacity of the collection sumps and holding tanks is exceeded;
- Overflow from the sumps will discharge from the cleanest water near the surface of the ponded water.
- Outlet pipes will direct overflow from the sumps to a series of grass swales or a bio-retention swale which will provide a secondary means to reduce sediment concentrations before water leaves the Site boundary;
- The rate of overflow from the collections sumps will be controlled by the outlet pipe size, which will limit overflows to flow rates lower than the existing site peak runoff rates;
- Stormwater runoff from the car park will be directed to a bio-retention swale for treatment before discharge to the existing drainage channel that runs along the northern boundary of the site before discharging to the Georges River.

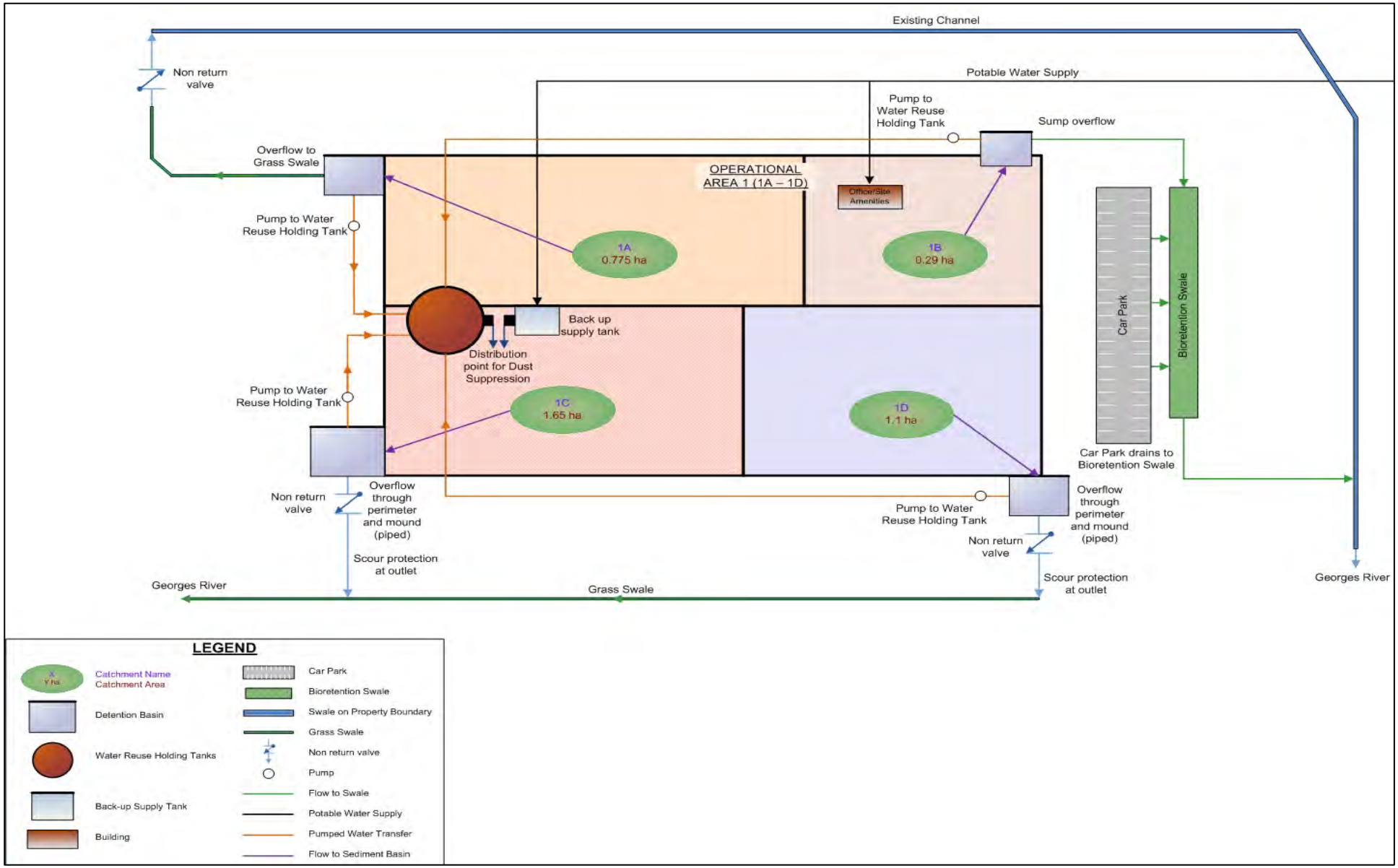

Figure 9 – Water Management System Schematic

3.4.1 Collection Sumps

The sizing of the collection sumps and associated pumping capacity have been based on the criteria for sediment basin sizing and management set out in *Managing Urban Stormwater: Soils & Construction* (Landcom 2004).

The types of recycled materials that will be produced at the Moorebank site can be categorised as coarse materials with low proportions of fines. Some of the main types of materials produced on-site will be DGB20 Road Base and Envirosand.

- DGB20 Road Base has approximately 8% of particles finer than 0.075 mm and <5% finer than 0.0135 mm, which indicates that 5-6% of particles are finer than 0.02 mm;
- Envirosand contains only 10% of particles finer than 0.075 mm, which means that well below 10% of particles would be finer than 0.02 mm.

These materials would be classified as 'coarse' materials ('Type C' with less than 33% of particles finer than 0.02 mm) by the definitions in *Managing Urban Stormwater: Soils & Construction* (Landcom 2004).

Although the sediments derived from site operations are expected to conform to Type C classification, basin designs based on Type F sediments have been adopted for the sake of conservatism, because they are designed to retain both coarse and fine sediments.

For a site with an operational life in excess of three years that drains to a sensitive environment, Table 6.1 in "*Managing Urban Stormwater, Soils and Construction, Volume 2E Mines and Quarries*" (DECC, 2008) specifies that sediment basins for Type F sediments should be designed to retain all runoff from a 95th percentile storm of 2, 5, 10 or 20 days duration. For this site, the collection sumps and pumps have been designed to achieve equivalent performance to basins designed and operated in accordance with this standard.

The collection sumps will operate in the following manner:

- Coarse sediment will be retained in the bottom of the sump. Accumulated sediment will be removed regularly;
- A float controlled pump will be set to operate as soon as any water drains into the sump. Water will be pumped to one of the holding tanks;
- Because of the nature of the operation, temporary ponding of water within the work area up to a depth of 200 mm will not inhibit work activities and has been allowed for in the analysis;
- In the event that the volume of runoff exceeds the design storm volume and capacity of the transfer pump and holding tanks, overflow from the sump will discharge from the operational area via an outlet that ensures oil and any floatable material is retained within the sump (see **Section 4.5**). Any overflow would have benefited from treatment via sedimentation within the sump prior to overflow occurring;
- Overflow discharge from all sumps will be via non-return valves to ensure that external floodwater does not enter the operational area of the site; and
- All overflow from the collection sumps will be directed into a grass swale or a bio-retention swale for supplementary treatment before draining to the Georges River.

Table 5 sets out the key features of the collection sumps for each of the catchments designated in **Figure 9** based on the 95th percentile rainfall data for Bankstown and runoff coefficients set out in *Managing Urban Stormwater: Soils & Construction* (Landcom 2004). The potential collection volume is based on the volume that can be pumped out of the sump over 48 hours and assumes that the sump is full at the end of the storm event. The potential collection volumes show that the proposed system provides over 100% of the runoff volume for the 95th percentile 2 day design storm.

Table 5: Collection Sump Features

Catchment	Area (ha)	2 Day 95th Percentile Runoff (m^3)	Sump Volume (m^3)	Minimum Pump Rate (L/s)	Potential Collection Volume over 2 Days (m^3)
1A	0.775	257	25	1.5	284
1B	0.29	96	25	0.5	111
1C	1.65	547	200	2.2	580
1D	1.1	365	35	2.2	415

3.4.2 Overflow Discharge from Collection Sumps

Figure 10 illustrates the functioning of the collection sumps. In order to eliminate any risk of oil or other floatable material being discharged during an overflow, the collection sumps will be fitted with a custom designed baffle / riser outlet which will only discharge from below the water surface. The customised outlet is based on the standard RMS pollution control design that is configured to prevent any oily surface waters from being discharged. The discharge pipes will penetrate through the perimeter mound and will allow overflow from the collection sumps in the event of rainfall greater than design event. Any oil floating on the surface of the collection sump will be cleaned up after a storm.

As the pipe outlets will be below the level of the 100 year ARI flood, non-return valves will be placed on each outlet to ensure flood waters do not backflow into the collection sumps and the operational area. All overflows will be directed to a grass swale or a bio-retention swale with scour protection at the outlet. Further detail of these treatment systems are provided in **Section 3.4.3** and **Section 3.4.4** below.

3.4.3 Grass Swales

Overflow discharge from the collection sumps for Catchments 1C and 1D (see **Figure 9**) will be directed to a natural grassed depression within the Site that runs along the eastern side of the landfill mound. This natural drainage depression (see location on **Figure 3**) runs in a north-south direction along the foot of the landfill embankment and is separated from the Georges River by a natural terrace. The drainage depression, which is located between 60 m and 100 m from the banks of the Georges River, has a lateral grade of about 0.3% towards the south and would provide over 400 m of swale length.

Overflow from the sumps for Catchments 1C and 1D will be piped to the foot of the embankment by means of 150 mm diameter pipes which have been sized to regulate the flow rate from the collection sump. Analysis based on *Managing Urban Stormwater: Treatment Techniques* (DECC and Sydney Metro CMA, 2007) indicates that the nominated area of swale will provide further reduction of suspended solids in the range of 70-75% (see **Annexure E** for more detail on pollutant reduction).

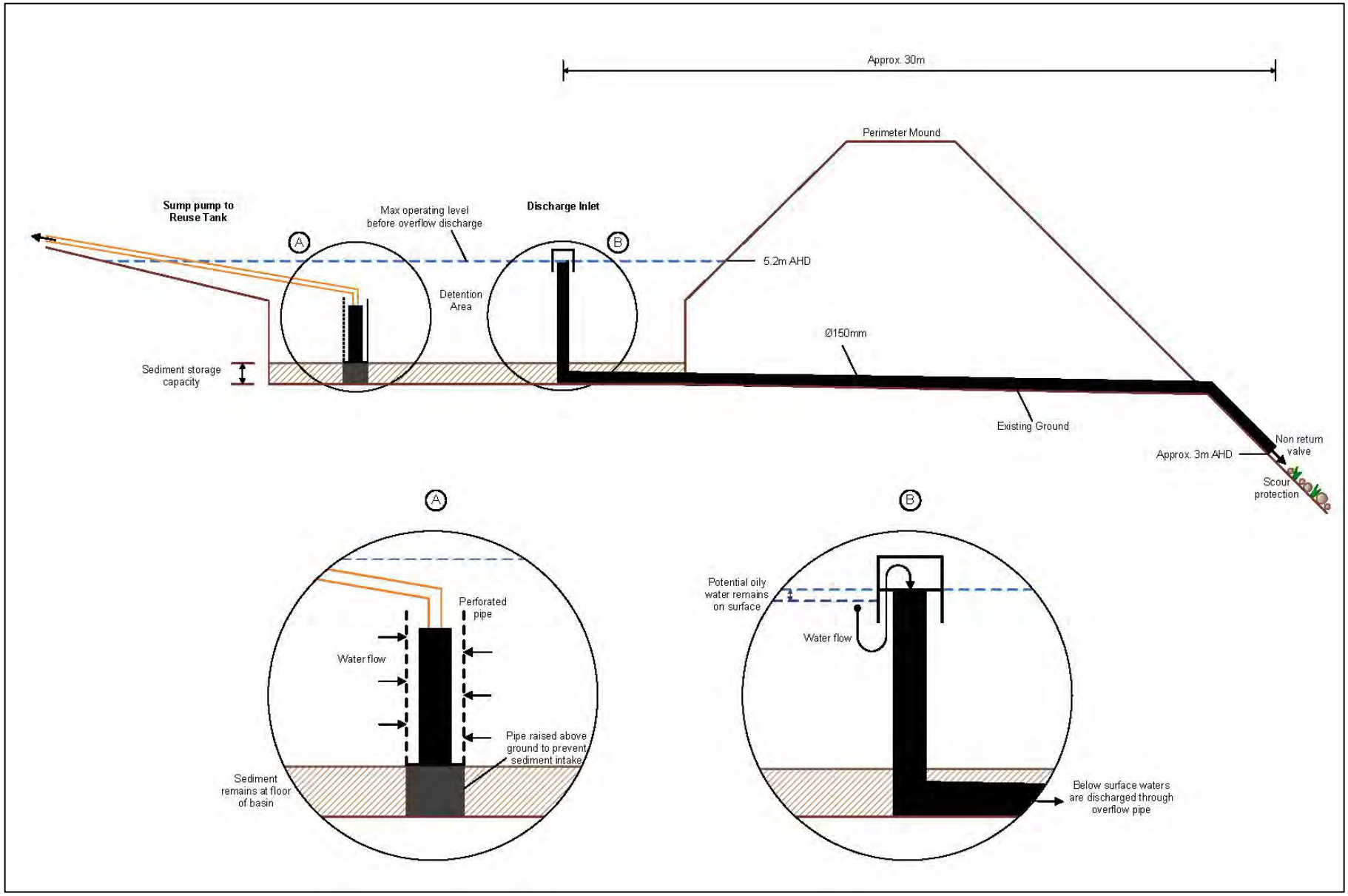

Figure 10 – General Arrangement for Stormwater Collection Sump

A 65 m long 6 m wide grassed swale will constructed to the south of the Large Workshop Shed (numbered 14 on **Figure 6**). Overflow from the collection sump for Catchment 1A will be directed into this swale which will drain in a southerly direction. The grassed swale will provide an approximate 75% reduction in suspended solids concentration in the overflow from Catchment 1A (see **Annexure E**). A pipe with a non-return valve will convey flow from the swale through the mound and into the existing drain on the western side of the fill area (see **Figure 3**). As described in **Section 2.2** this drain eventually joins the channel which runs to the Georges River along the northern boundary of the Site.

3.4.4 Bio-retention Swale

Overflow from Catchment 1B (see **Figure 9**), will be directed to a bio-retention swale which will be located adjacent to the car park. Runoff from the car park will also be directed to the bio-retention swale which will discharge into the drainage line adjacent to the northern boundary of the site. The swale will cover a surface area of approximately 220 m^2. Analysis based on *Managing Urban Stormwater: Treatment Techniques* (DECC and Sydney Metro CMA, 2007), indicates that the bio-retention swale has the capability of removing 75% of suspended solids from the runoff from Catchment 1B and the car park (see **Annexure E**). **Figure 11** shows a typical cross section for a bio-retention swale.

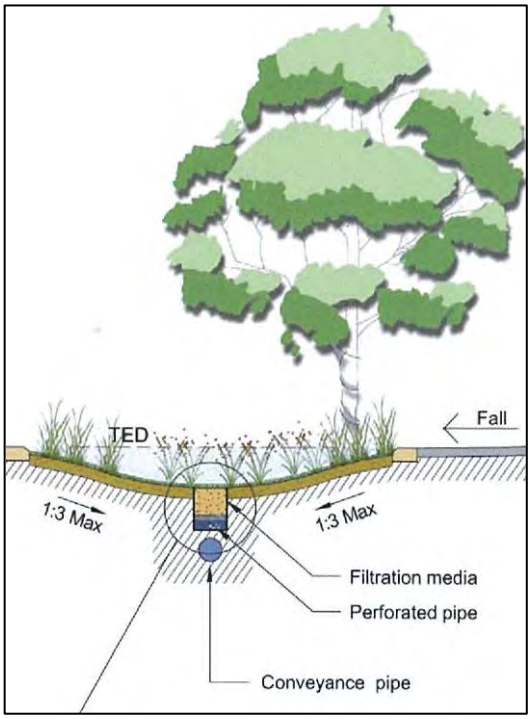

Figure 11 – Typical Bio-retention Swale Cross Section

3.4.5 Refuelling

A mobile fuel truck with a capacity of approximately 8,000 L will operate on the site. All plant and equipment on the site will be powered by diesel fuel, and will be refuelled by the mobile fuel truck. When not in operation, the mobile fuel truck will be parked in the workshop building. In addition, there will be a small fuel tank (approximately 2,000 L) in the primary crushing shed that will fuel the generator that drives the crushing plant. This small fuel tank will be located inside the shed (and therefore covered) and will be bunded with a bund capacity in excess of the tank capacity.

Spill kits will be kept in each main building on the site where refuelling occurs, and adjacent to operating locations of large equipment. As noted in **Section 3.4.1** and shown in **Figure 10**, the configuration of the sumps will prevent any oil/fuel that does reach the sump from leaving the operational area.

3.4.6 Dust Suppression

Water for dust suppression will be sourced primarily from runoff stored in on-site storage tanks, supplemented by off-site sources. Dust suppression will occur in the form of a water cart for vehicle tracks and stockpile sprays. As discussed in **Section 3.5** below, a maximum daily usage of 130 kL has been anticipated. The rate of application of dust suppression water will be controlled so as to prevent runoff occurring. Further detail on dust control and air quality can be found in the *Air Quality* report appended to the Preferred Project Report.

3.4.7 Soil Contamination and Acid Sulfate Soils

The works necessary to develop the Site as a materials recycling facility following the bulk earthworks (covered by approval of DA 1417/2005 from Liverpool Council) will be minimal and will only require excavation of the collection sumps. These works will not disturb any of the material beneath the capping layer or natural soil which could have the potential to expose acid sulphate soils. Therefore no mitigation measures are required for acid sulphate or contaminated soils.

3.4.8 Erosion and Sediment Control during Construction

Temporary erosion and sediment controls will be implemented prior to the construction of the facilities that comprise the water management system. A combination of localised controls including silt fencing and temporary sediment basins, etc. will be used. Following project approval, a detailed Erosion and Sediment Control Plan will be prepared in accordance with the requirements of *Managing Urban Stormwater: Soils & Construction* (Landcom, 2004).

3.4.9 Waste Water

Wastewater will be held in a storage tank and periodically emptied by a licensed contractor as often as necessary. There would be no direct connection to the water table or the environment generally. The tank will be protected from flooding in a 100 year ARI flood event by having all inlets and outlets located above the 100 year ARI flood level. These measures will minimise the potential for any wastewater pollution from the wastewater holding system.

Geotechnical and engineering issues associated with the wastewater tank have been considered by Jefferey & Katauskas (see **Annexure F**) who note that:

- The tank itself could be of fibreglass construction which would not be subject to chemical attack from any leachate within the landfill. These tanks are readily available as petroleum storage tanks which are commonly used at service stations.
- It would be a straightforward engineering detail to provide a tank installation that ensured no hydraulic connection through the landfill cap. For example a collar could be provided around the tank that sat within the cap and the immediate surround to the tank could be backfilled with bentonite and/or use made of self-sealing geo-composite materials such as Bentofix matting.
- The tank would have to be located such that it received effluent under normal gravity flow. It may be that the depth to which the tank could be installed would be limited by the presence of

the water table but this issue could also be addressed in the same way that underground storage tanks are installed at service stations in similar circumstances by means of concrete dead-weights or screw-pile anchors.

- One-way valves could be installed in pipelines to prevent effluent escaping and, if necessary, to allow the holding tank to deliberately fill in the event of flooding to counteract buoyancy effects.

The design and operation of the wastewater storage tank will be in accordance with Liverpool City Council's on-site sewage management requirements. Liverpool City Council will be given the opportunity to conduct inspections in line with its obligations under the Local Government Act.

3.5 Water Balance and Sediment Discharge

As noted in **Section 3.4**, the primary mechanism for stormwater pollution control will be by means of the capture and re-use of stormwater runoff from the site.

MUSIC (Model for Urban Stormwater Improvement Conceptualisation) is widely used to assess the effectiveness of water sensitive urban designs and stormwater pollution control systems. The model is particularly useful for assessing the performance of proposed stormwater systems for residential land development projects. However the model takes a simplistic approach to stormwater capture and reuse – which is a key aspect of this proposal. In particular, the MUSIC model does not adequately account for the variation in water demand for dust suppression that characterises the water usage on a materials recycling site. In view of the limitations of MUSIC, a site specific water balance model has been prepared to assess the portion of the site water requirements that would be met from on-site runoff and to quantify the volume and frequency of overflow discharge from the sediment sumps. This model is based on previous modelling undertaken to assess the performance characteristics of sediment basins as set out in Table 6.2 of *Managing Urban Stormwater: Soils and Construction, Volume 2E Mines and Quarries* (DECC, 2008).

The further reduction in sediment load that would be achieved with the proposed grass swales and bio-retention swale which has been assessed using the sediment capture relationships set out in *Managing Urban Stormwater: Treatment Techniques* (DECC and Sydney Metro CMA, 2007) (see **Annexure E** for details).

Based on experience at an existing recycling facility at Camellia, and allowing for differences in site area, a maximum of 130 kL/day of water will be required for dust suppression on stockpiles and internal work areas on dry windy days. Initially, water will also be required for establishing landscaping.

The site water balance model accounts for all the flows in the water management system (as illustrated in **Figure 9)** on a daily basis using 33 years of local rainfall and evaporation data (see **Section 2.1**). The model accounts for:

- Areas of different surfaces (stockpiles, work area, roofs, landscaping, etc.) based on the site layout in **Figure 6**;
- Runoff from different surfaces (the model uses a simple initial loss model with the parameters as set out in **Table 6**);
- Runoff held in the collection sumps is pumped to storage tanks at the rates set out in **Table 5**;
- Water from the storage tanks is used on a daily basis and allowance is made for the variation of daily evaporation. The model assumes that, after accounting for rainfall and evaporation,

sufficient water is required to maintain a moist surface on the working area and stockpiles, with a maximum daily requirement of 130 kL;

- Overflow from the collection sumps to the swales occurs as described in **Section 3.4.3** and **Section 3.4.4**; and
- Any shortfall of water from the stormwater runoff storage tanks is assumed to be supplied by reserve tanks that will be either filled using EPA approved industrial wastewater imported by tanker or, as a last resort, topped-up over-night from the mains supply.

Table 6: Adopted Site Runoff Characteristics

Surface	Area (m^2)	Initial Loss (mm)	Runoff Coefficient	Overall Volumetric Runoff
Roofs	2,000	0.5	0.95	89%
Stockpiles	7,750	10.0	0.5	22%
Roadways and parking	6,150	2.0	0.8	65%
Grass and landscaping	3,100	5.0	0.3	19%
Other operating areas	19,150	2.0	0.8	65%

The water balance model keeps account of:

- The volume of water that overflows because it cannot be retained in the storage tanks or sumps;
- The number of overflow events, where any occasion on which overflow occurs on consecutive days due to persistent rainfall is counted as a single event; and
- The volume of supplementary supply required to meet the full water requirements for dust suppression on the site.

The water balance model was first run for the proposed water management and re-use arrangements on the site as set out in the bullet points above. For comparative purposes, a water balance analysis was also carried out for a hypothetical situation in which the Site drained to a series of sediment basins that were designed and operated in accordance with the requirements for 'Type F' sediment basins that retained all runoff from a 2 day 95th percentile rainfall event as set out in Chapter 6 of *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004) (see column 3 of **Table 5** for details of the volume of runoff from the design rainfall event). This hypothetical water balance model assumes that the water retained in the basins would be treated and discharged within 2 days of the end of a runoff event, in accordance with the operational requirements. The hypothetical model assumes that any runoff in excess of the capacity of the sediment basins would overflow from the site. An account is kept of the volume of overflow and the number of overflow events. The results of the hypothetical model enable comparison of the number of overflows between the hypothetical scenario and the proposed water management system.

The Site water balance model was run using alternative holding tank sizes to identify the optimal size of the holding tanks that would provide for cost-effective retention of stormwater runoff while achieving overflow frequency that was comparable with the hypothetical scenario (that which would be achieved if the Site pollution control was based on treating all runoff from a 2 day 95th percentile

storm). Key performance characteristics of the Site water management system based on 33 years of daily climate data for three different sizes of storage tank volume are set out in **Table 7**.

Table 7: Performance of the Stormwater Capture and Re-use System

Characteristic			
Runoff storage tank volume (m^3)	500	1,000	1,500
Percentage of runoff captured	67%	71%	75%
Percentage of demand met from runoff	51%	55%	58%
Percentage of demand met from external sources	49%	45%	42%
Total water usage (m^3/year)	25,446	25,446	25,446
Average annual site overflow (m^3)	5,663	4,862	4,308
Average annual overflow events	4.3	3.5	3.0
Average annual overflow events from basins designed to capture runoff from a 2 day 95th percentile storm (Hypothetical Scenario)	2.8	2.8	2.8

The water balance model results in **Table 7** show that:

- For an increase in storage tank volume from 500 m^3 to 1,500 m^3 there is only a small increase in the percentage of runoff that could be captured and re-used. The marginal additional proportion of water provided by larger storage tanks does not warrant consideration of tanks of greater than 1,500 m^3 capacity;
- Similarly, the average annual volume of overflow does not reduce significantly with the increase of storage tank size. This occurs because overflow occurs as a result of periods of persistent heavy rainfall over several days when large volumes of runoff occur; and
- The range of tank storage sizes set out in **Table 7** would provide for a frequency of overflow from the Site that is comparable to that which would be achieved if stormwater pollution was achieved by a system that relied only on sediment basins that were designed and operated in accordance with the requirements for a site with an operational life in excess of three years that drained to a sensitive environment.

On the basis of the modelling results in **Table 7**, storage tanks with a total capacity of 1,000 m^3 are proposed. This will provide a system that, on average, would have only fractionally more overflow events per year than if pollution control was provided by sediment basins (3.5 overflow events per year as compared to 2.8).

However, the marginally elevated number of overflow events will be more than offset by the secondary treatment systems comprising grass swales and a bio-retention swale that are proposed. These will provide significant additional reduction in the residual suspended solids concentrations before water leaves the boundary of the Site (see **Sections 3.4.3** and **3.4.4**). Additionally, the overflows from the operational area will be conveyed to the swales within the Site area, and a small proportion of that flow will infiltrate into the ground within the swales, meaning that not all of the 'overflow' volume will actually leave the Site.

The potential total suspended solids load within runoff from the developed site would be significantly reduced by the proposed water management system. As shown in **Table 7**, the proposed system will capture 71% of runoff, which would effectively remove 71% of the suspended solid load in runoff from the site. Additionally, within the 29% of runoff that overflows, a portion of

the sediment load will be removed during its passage through the sediment basins (sumps), meaning that less than 29% of the total sediment load in runoff from the operational area would leave the Site boundary. As detailed previously the proposed swale and bio-retention swale would remove 75% of the suspended solids in the runoff that overflows to those swales. In combination, this means that the water management system would remove over 93% of the suspended sediment load from runoff off the operational area. In general, for urban catchments a target reduction of 80% for suspended solids is set by local government.

The 1,000 m^3 tanks would also ensure that about 55% of water required for site operations would be from stormwater runoff. This would equate to a potential saving of approximately 14,000 m^3 of potable water annually.

3.6 Harvestable Rights

In response to the public exhibition of the Environmental Assessment for the proposed development, the Department of Primary Industries provided comments in relation to harvestable rights.

> *The Harvestable Right gives landholders the right to capture and use for any purpose 10% of the average annual runoff from their property. The Harvestable Right has been defined in terms of an equivalent dam capacity called the Maximum Harvestable Right Dam Capacity (MHRDC). The MHRDC is determined by the area of the property (in hectares) and a site-specific run-off factor.*
>
> *The rainfall runoff factor for this site is 0.08. Given the property size of 20.5 ha, as outlined in the EA, the maximum harvestable right dam capacity for the subject site is 1.6 ML.*

The *Water Management Act 2000* and associated regulations provide exemption from harvestable rights restrictions for certain classes of water storage structures. Schedule 1(3) of the *NSW Water Management (General) Regulations 2004* states:

> *"Dams solely for the capture, containment and recirculation of drainage and/or effluent, consistent with the best management practice or required by a public authority to prevent the contamination of a water source, provided such dams are located on a minor stream referred to in section 53 (3) (b) of the Act."*

There are no restrictions on the use of water from dams that comply with this provision. These provisions are applicable to the sediment sumps that collect runoff from site operational areas.

3.7 Impact of Site Discharge

As mentioned previously, 71% of site runoff will be captured and reused on site, which means that only 29% of runoff from the operational area will discharge from the site via overflow of the sumps. Any overflow discharge will have been subject to sediment capture within the sediment basins (prior to discharge) and swales as well as capture of any oil due to the sediment basin configuration before reaching local drainage channels and the Georges River. The potential impact of this overflow discharge on surrounding vegetation, local drainage channels and the Georges River is discussed below.

3.7.1 Impact on Local Drainage Channels

As shown on **Figure 3** and discussed in **Section 2.2** the majority of the drainage systems in the vicinity of the site are constructed channels. In particular, constructed channels convey flow from the western side of the site and from a fully developed catchment located to the north of Newbridge Road. In addition, the construction of Brickmakers Drive and the Georges Fair will significantly increase the proportion of impervious surfaces that drain (via a stormwater basin) towards the creek and channel that run along the northern boundary of the site.

The runoff from the existing site can be expected to be only a minor contributor compared to the runoff from the Georges Fair development and the existing developed catchment to the north of Newbridge Road.

Because all stormwater discharge from the site will be via 150 mm diameter pipe outlets, the site will act as a stormwater detention basin and will control the peak rate of discharge. This will reduce the peak discharge rate from the site compared to the current uncontrolled conditions.

3.7.2 Impact on Vegetation

Discharge from the site will continue to drain to the same locations as it does currently, but at reduced frequency and rate:

- On the western side of the site, any stormwater overflow will be directed into an existing constructed channel that runs along the toe of the batter slope at the edge of the site. As described in **Section 2.2**, this drain directs drainage in a northerly direction where it joins a channel that runs under the access road and eventually drains to the Georges River. This drainage water will be directed away from the area of Ironbark Open Forest and Woolybutt – Blue Box Open Forest located immediately to the west of the site.
- On the eastern side of the site stormwater overflow will be directed into a natural depression (flood runner) along the eastern boundary of the site runs from north to south through a shallow depression of cleared wattle scrub immediately adjacent to the raised site area. The general alignment of this depression is shown on **Figure 3** and is located within the area defined as 'Wattle Scrub' in the *Flora and Fauna Assessment* (Aquila Ecological Surveys, 2010).

3.7.3 Impact on Georges River

Pollutants that could potentially originate from the materials recycling facility include suspended solids in Site runoff, and oil or fuel used on the Site. All runoff from the operational area of the site will be captured in sumps, and as detailed in **Section 3.4.2**, the sump design would prevent the escape of oils and fuels from the Site. The sumps also give the Site operator the opportunity to respond to any spills by preventing such spills flowing immediately off site. As such, the principal pollutant of concern to the Georges River is suspended solids.

As discussed in **Section 2.2**, the background water quality in the Georges River is poor, with turbidity outside the ANZECC range 65% of the time.

As discussed in **Section 3.5** above, over 93% of the suspended solid load within runoff from the operational area will be captured on the Site.

As a result of the above, it is not envisaged that the proposed development will have any adverse impact on water quality in the Georges River.

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4 Monitoring, Management and Performance Assessment

4.1 Monitoring Program

Ongoing environmental monitoring will be undertaken to assess the performance of the water management system during construction and operation of the Materials Recycling Facility. The following monitoring and inspections will be undertaken:

Construction

- Monitoring will include a daily site inspection of sediment controls and machinery.
- Samples of water retained in the sumps will be collected for analysis in line with the water quality monitoring during the operational phase (see below).

Operation

- Water retained in the sumps will be collected for analysis four times per year. Water will be sent to a NATA registered laboratory for analysis of the parameters listed in **Table 8**.
- Inspections of collection sumps will be undertaken on a weekly basis and after storm events. Sediment will be removed from the sumps using readily available site equipment as necessary to maintain the water holding capacity.
- Weekly inspections will also be undertaken on the pumping system and holding tanks.
- Daily start-up inspections will be undertaken on all machinery for OH&S and environmental purposes (oil leaks etc).

Table 8: Water Quality Monitoring Parameters

Analyte	Units
pH	pH
EC	µs/cm
Total Suspended Solids	(mg/L)
Total Dissolved Solids	(mg/L)
Oil & Grease	(mg/L)

4.2 Continual Improvement Program

Results obtained during monitoring will be used to assess performance and refine the monitoring program and management measures as required. Formal reporting will occur annually as part of the requirements of the Environment Protection Licence.

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5 References

Aquila Ecological Surveys, (2010), *Flora and Fauna Assessment*

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Annexure A

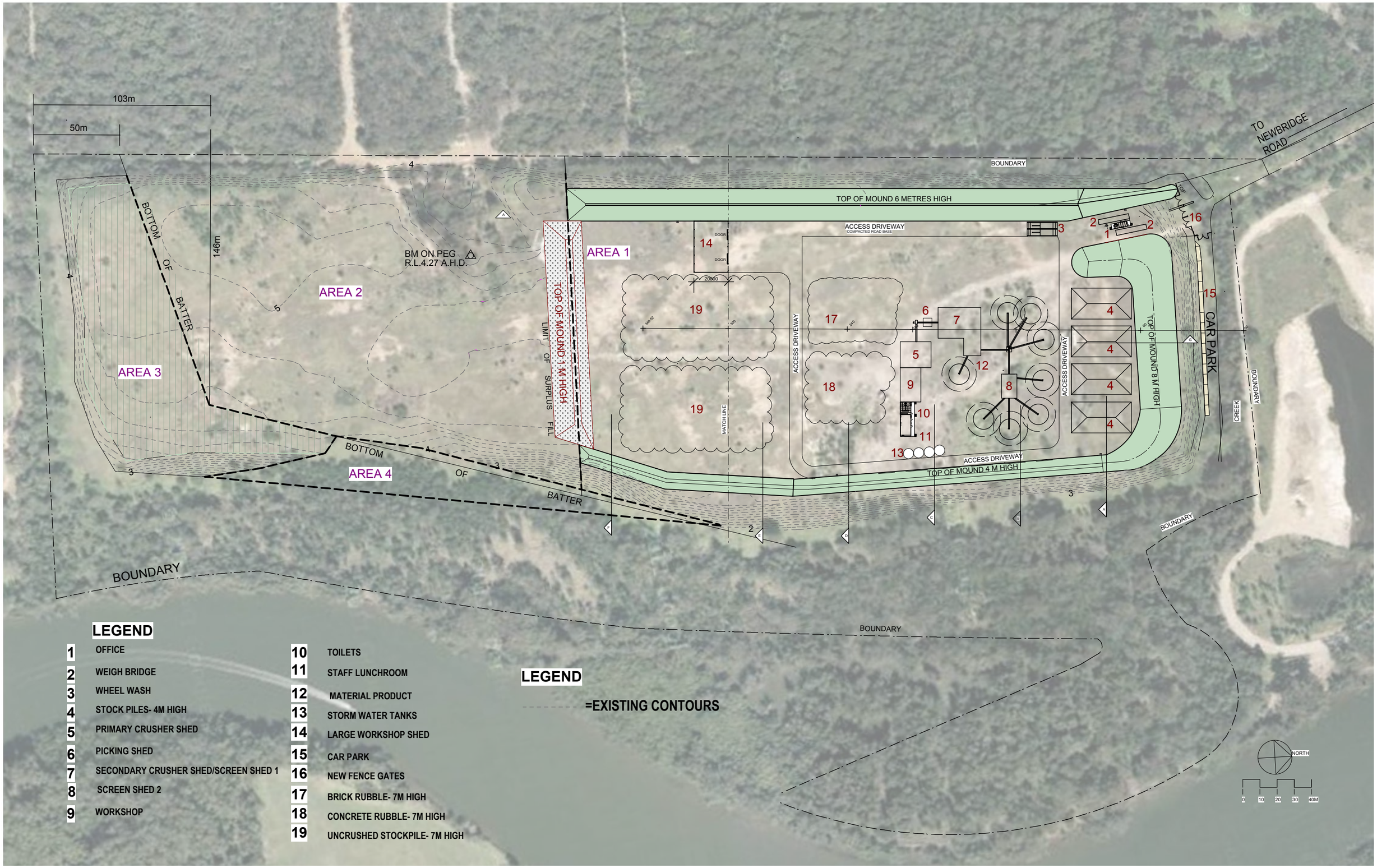
A3 Figures

Figure 1 – Site Layout and Location in Relation to the Georges River

Figure 4 – Georges River Flood Levels at Site

Figure 6 – Proposed Site Layout

Figure 7 – Proposed Site Contours



LEGEND

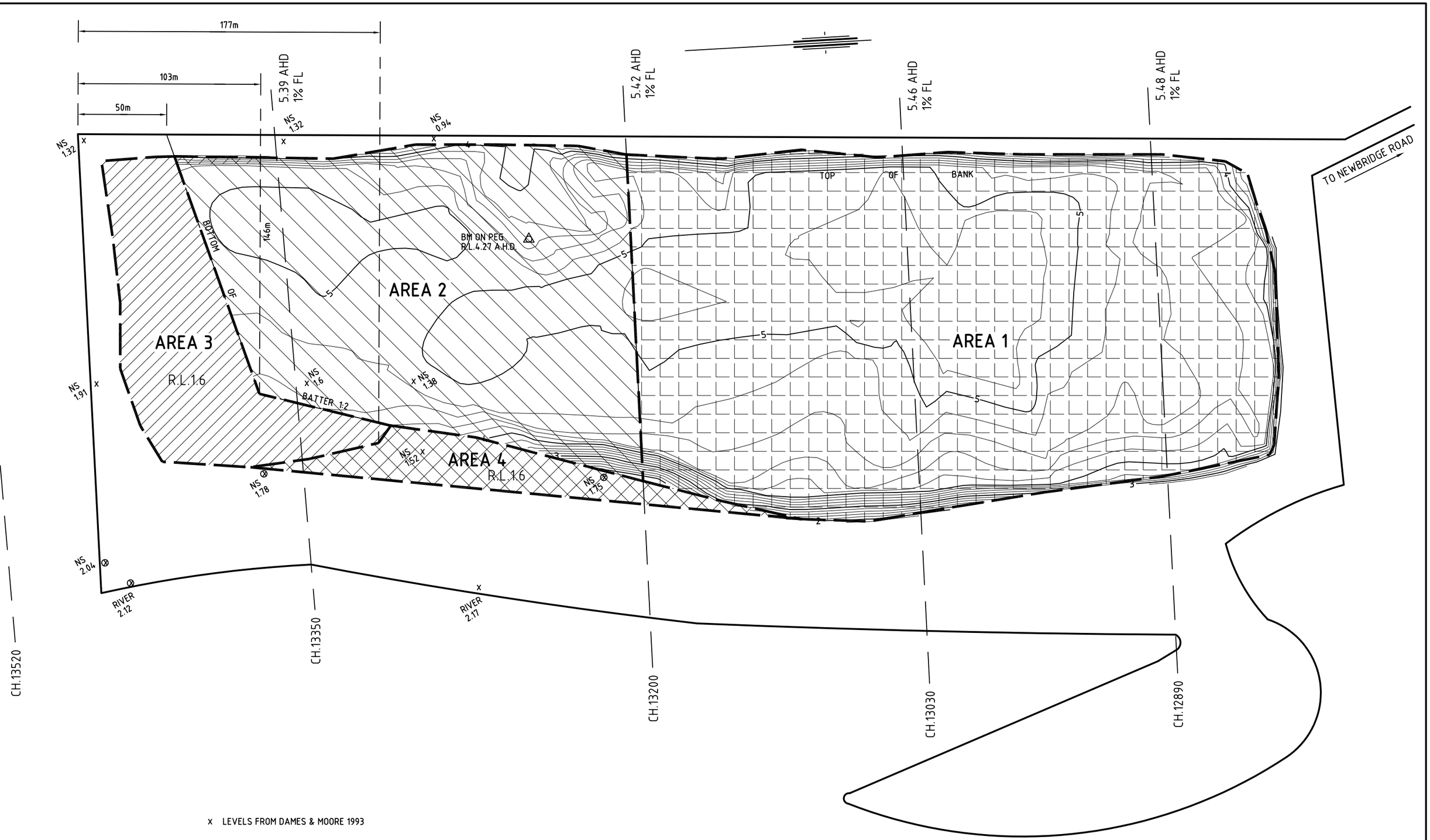
1	OFFICE
2	WEIGH BRIDGE
3	WHEEL WASH
4	STOCK PILES- 4M HIGH
5	PRIMARY CRUSHER SHED
6	PICKING SHED
7	SECONDARY CRUSHER SHED/SCREEN SHED 1
8	SCREEN SHED 2
9	WORKSHOP
10	TOILETS
11	STAFF LUNCHROOM
12	MATERIAL PRODUCT
13	STORM WATER TANKS
14	LARGE WORKSHOP SHED
15	CAR PARK
16	NEW FENCE GATES
17	BRICK RUBBLE- 7M HIGH
18	CONCRETE RUBBLE- 7M HIGH
19	UNCRUSHED STOCKPILE- 7M HIGH

LEGEND

=EXISTING CONTOURS

Figure 1 – Site Layout and Location in Relation to the Georges River

A2



x LEVELS FROM DAMES & MOORE 1993

⊗ ASHER CONSULTING SPOT LEVELS 2003

NS NATURAL SURFACE (PRIOR TO FILLING)

0 15 30 60 90 150m

1 : 1500

Figure 4 - Georges River Flood Levels at Site

REV.	AMENDMENT	DATE	CHEC.
B	AMENDED	22.8.05	
A	AMENDED	28.7.05	

ASHER CONSULTING PTY LTD

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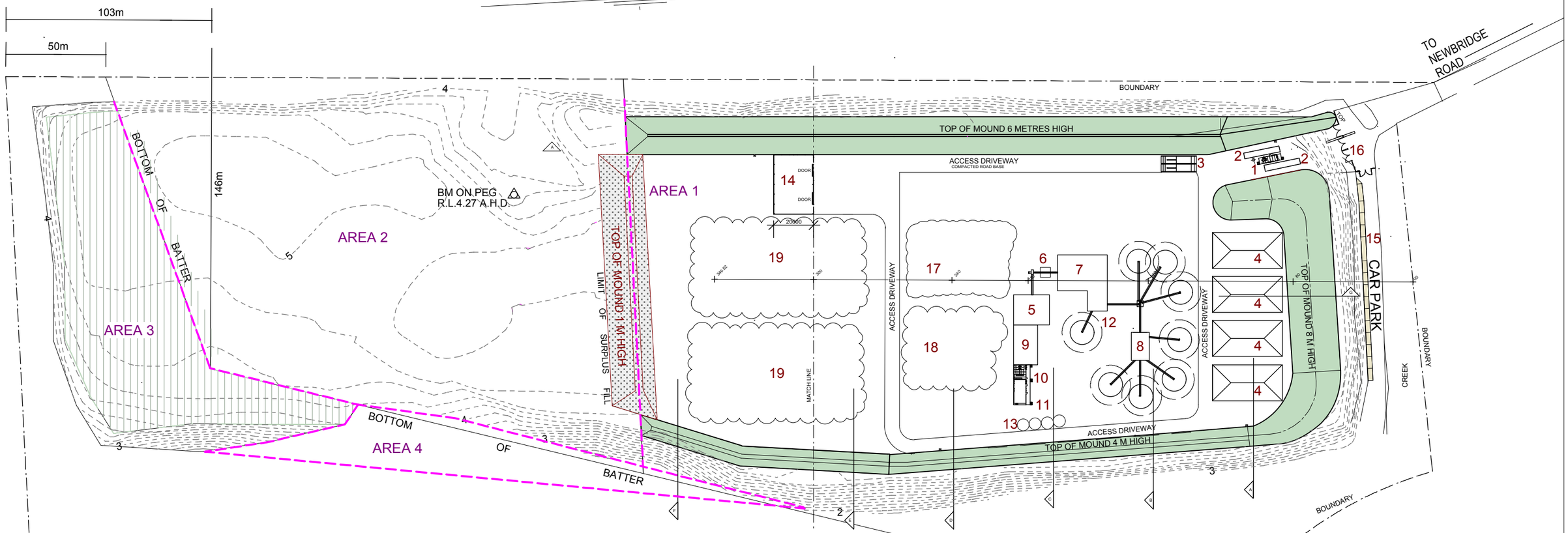
SURVEYORS, ENGINEERS & PROJECT MANAGERS

TITLE:
FLOOD LEVELS
LOT 1 D.P.336613
NEWBRIDGE ROAD
MOOREBANK

REDUCTION RATIO: 1:1500	DATE: 18/5/05
DRAWING No. 9226flood02	JOB No. 9226
DATUM: A.H.D.	DRAWN BY: DB, DATE: 18/5/05
SHEET:	CHECKED BY: DATE:
	APPROVED BY: DATE:



LEGEND

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4	STOCK PILES- 4M HIGH
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6	PICKING SHED
7	SECONDARY CRUSHER SHED/SCREEN SHED 1
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15	CAR PARK
16	NEW FENCE GATES
17	BRICK RUBBLE- 7M HIGH
18	CONCRETE RUBBLE- 7M HIGH
19	UNCRUSHED STOCKPILE- 7M HIGH

LEGEND

MH =METRES HIGH

- - - - - - - =EXISTING CONTOURS

SKETCH SHOWING 8 METRE MOUND WITH 1.5:1 BATTER

NORTH

0 10 20 30 40M

ISSUE	DATE	APPD	COMMENTS
A	17.6.10	EMMC	FOR DA SUBMISSION
B	27.11.12	EMMC	WATER TANKS AMENDED
C	30.4.13	EMMC	NORTHERN MOUND CHANGED TO 8 METRES HIGH RELOCATION OF FACILITIES & HEIGHT OF UNCRUSHED STOCKPILES
D	9.5.13	EMMC	FACILITIES LOCATIONS AMENDED, MOUND HEIGHT AMENDED, REGRADING AMENDED
E	24.07.13	EMMC	MOUNDS AMENDED

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plot date : 7/24/13
file name : 5018-13_220713-KC.vwx

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CLIENT:
BRENT LAWSON
CONCRETE RECYCLERS
THACKERAY STREET CAMELLIA NSW 2142

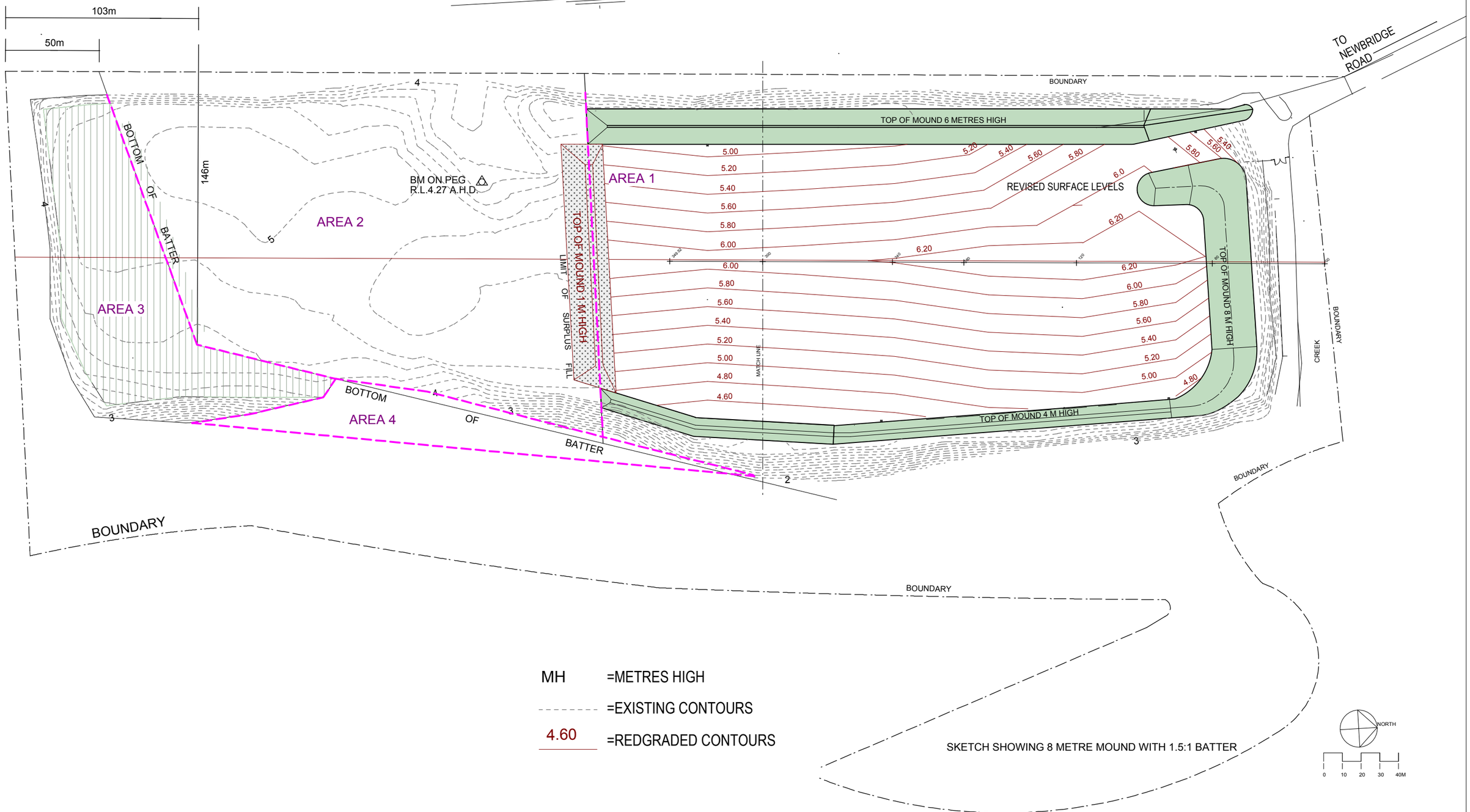
PROJECT ADDRESS:
CONCRETE RECYCLERS
NEWBRIDGE ROAD MOOREBANK

PROPOSED OVERALL SITE PLAN

SCALE	PASSED	DATE
1:2000	EMMC	24.07.13

DESIGN	LMA	JOB No.	SHEET No.	ISSUE
DRAWN	JK	5018-06	**05a**	E
CHECKED	EMMC	DATE FIRST ISSUED: JULY 2007	OF 22	

Figure 6 - Proposed Site Layout



ISSUE	DATE	APPD	COMMENTS
A	:iDate	:iBy	

SURVEY BY:
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EMAIL: steve@ahserconsulting.com.au
plot date : 7/24/13
file name : 5018-13_220713-KC.vwx

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PROJECT ADDRESS:
CONCRETE RECYCLERS
NEWBRIDGE ROAD MOOREBANK

PROPOSED OVERALL REGRADED CONTOUR PLAN

SCALE	PASSED	DATE
1:2000	EMMC	24.07.13

DESIGN	LMA	JOB No.	SHEET No.	ISSUE
DRAWN	JK	5018-06	05b	A
CHECKED	EMMC	DATE FIRST ISSUED. JULY 2007	OF 22	

Figure 7 - Proposed Site Contours

Annexure B

Effect of Heavy Compaction on Surface Levels in ‘Area 2’

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GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

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Tel: 02 9888 5000 Fax: 02 9888 5001
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9 May 2013
Ref No M22833Slet2

Concrete Recyclers (Group) Pty Ltd
PO Box 238
Rydalmere NSW 1701

ATTENTION: Mr B Lawson

Dear Sir

GEOTECHNICAL ISSUES ARISING FROM PART 3A ENVIRONMENTAL ASSESSMENT LOT 6, DP 1065574 NEWBRIDGE ROAD, MOOREBANK

In response to the exhibition of the above environmental assessment, Benedict Industries Pty Ltd have made an objection to the proposal to reduce the volume of the landfill by impact rolling to compensate for the loss of flood storage at the site arising from construction of a new access road into the site.In their letter of 5 April 2013 it is stated:

> *This is not appropriate engineering and we object to the construction of any structures which would result in the loss of flood storage or flood impedance. In any event, we also request that if the Department of Planning supports filling in flood prone areas, that it makes the proponent remove at least an equivalent amount of fill from the floodplain region entirely.*

In a previous letter we prepared we stated that:

The details of your email dated 23 November 2010 have been noted. We understand that additional flood storage capacity is required in Area 2, as shown on Asher McNeill & Partners Pty Ltd Drawing No. 9226flood01$^{REV\ B}$. Area 2 is located across the capping layer of a former landfill, and its surface area is approximately 30,000m^2.

We expect that heavy compaction using a Broons BH-1300 "square" impact roller or equivalent will cause significant subsidence of the landfill cap. Based on our knowledge of the landfill depth and constituent materials, such heavy compaction should lower the landfill cap surface level in Area 2 to a maximum depth of about 500mm. The required 150mm depth should be easily achieved.

From an engineering perspective the objection seems illogical as impact rolling is a proven technique and there is no effective difference between reducing the landfill surface levels by impact rolling or excavation and removal of soil from site. Furthermore there is a sound environmental benefit in leaving the fill in place as disturbance would lead to an increased risk of undesirable impact on the environment and placing the fill in another landfill simply reduces the other landfill capacity unnecessarily.

Recent work we have been involved with at another Sydney landfill has confirmed that producing a minimum settlement of 150mm is a realistic target. The outcome is easily confirmed by survey. Should the rolling fail for any reason to fully achieve the required target then excavation is available as a fall-back position and there is thus no likelihood the required outcome could not be achieved.

Yours faithfully
For and on behalf of
JK GEOTECHNICS

P STUBBS (Principal)

Annexure C

Flood Impact Assessment

MOOREBANK RECYCLERS
PROPOSED WORKS
FLOOD IMPACT ASSESSMENT

wma water

July 2013

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Sydney, NSW, 2000

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Email: wma@wmawater.com.au
Web: www.wmawater.com.au

MOOREBANK RECYCLERS – PROPOSED WORKS FLOOD IMPACT ASSESSMENT

FINAL REPORT

JULY 2013

Project Moorebank Recyclers – Proposed Works Flood Impact Assessment	**Project Number** 113041
Client Moorebank Recyclers	**Client's Representative** Steve Perrens
Authors Stephen Gray Dr. Philip Conway	**Prepared by**
Date 31 JULY 2013	**Verified by**

Revision	Description	Date
1	Preliminary Report	24 July 2013
2	Draft Report	30 July 2013
3	Final Report	31 July 2013

TABLE OF CONTENTS

PAGE

1. INTRODUCTION 3

2. BACKGROUND 4

2.1. Existing Flood Regime 4

2.2. Liverpool Council Flood Related Development Controls 4

2.3. Model Utilised in the Assessment 4

3. METHODOLOGY 6

4. HYDROLOGY 7

4.1. 1% AEP Georges River 7

4.2. 1% AEP Local Catchment 7

4.3. 1% AEP Local Catchment with 5% AEP Georges River 7

5. RESULTS 8

6. CONCLUSION 9

7. REFERENCES 10

LIST OF FIGURES

Figure 1: Study Area
Figure 2: Site Model Layout
Figure 3: SOBEK Model Layout
Figure 4: Ramps – Plan View
Figure 5: Ramps – Longitudinal Cross-Section
Figure 6: 1% AEP – Impact – Scenario A – 1% Georges River
Figure 7: 1% AEP – Impact – Scenario A – 1% Local Catchment
Figure 8: 1% AEP – Impact – Scenario A – 1% Local Catchment 5% Georges River
Figure 9: 1% AEP – Flood Level – Scenario A – 1% Georges River
Figure 10: 1% AEP – Flood Level – Scenario A – 1% Local Catchment
Figure 11: 1% AEP – Flood Level – Scenario A – 1% Local Catchment 5% Georges River

1. INTRODUCTION

Moorebank Recyclers Pty Ltd propose to develop a materials recycling facility on the site outlined in Figure 1. The site is located in Moorebank NSW on the Western floodplain of Georges River immediately downstream of Newbridge Road. An existing Development Application (1417/05) for bulk earthworks at the site has been approved by Liverpool City Council. This approval includes all necessary bulk earthworks for the proposed use, including exclusion of the 1% AEP flood from the operational area of the site.

In June 2013 the Land & Environment Court granted an easement to allow access from the existing site access road to Brickmakers Drive. In the course of the Land & Environment Court proceedings, traffic, engineering and hydrology experts representing all parties agreed that the preferred access arrangements would involve ramps on fill associated with an extension of the abutment for the approved bridge that would provide access from Brickmakers Drive to the site operated by Benedict Sand & Gravel. The location of the proposed ramps is denoted on Figure 1.

WMAwater have been engaged to assess the flood impact due to the proposed earthworks associated with the extension of the bridge abutment and construction of access ramps. Impacts have been assessed for three flood event scenarios:

- The 1% AEP flood in the Georges river;
- The 1% AEP flood from a local catchment upstream (to the north) of the site; and
- The 1% AEP flood from the local catchment coinciding with the peak of a 5% AEP flood in the Georges River.

2. BACKGROUND

The existing approved development relevant to the flood impact assessment consists of:

- The removing of fill from the southern end of the site (see Figure 2); and
- Bulk earthworks which have the effect exclusion of the 1% AEP flood from the operational area of the site (Area 1 on Figure 2).

The excavation at the Southern end of the site serves to both compensate for the loss of flood storage from the already approved developments as well as to facilitate flow exchange between the Georges River and the Wurrungwuri Reserve to the west.

Further works are now proposed in order to facilitate access to the site including the building of ramps so that the site may be accessed from Brickmakers Drive. Details of the proposed works are provided in Section 3.

2.1. Existing Flood Regime

The approved bridge connecting Brickmakers Drive to the site operated by Benedict Sand & Gravel and the proposed ramps adjacent to the bridge are located in an area which is currently flood affected and, as such, necessitates the flood impact assessment carried out herein. Various flood scenarios are examined, including those based on flows from the local catchment immediately upstream of the proposed site (identified in Figure 1), those based on Georges River flooding, and a combination of both.

2.2. Liverpool Council Flood Related Development Controls

In regard to development on the Georges River floodplain, Liverpool City Council (Council) has a Development Control Plan (DCP) (Reference 1, Reference 2 and Reference 3). The DCP states that any proposed development must not produce flood level impacts on adjoining property and must not lead to a loss of flood storage[1].

This report assesses the impact of the proposed works in regard to the 1% AEP flood event. It is noted that some loss of flood storage is related to the proposed works. The loss of flood storage does not cause an impact on modelled flood levels. In theory however, the loss of flood storage should lead to a slightly increased peak flow downstream of the floodplain storage lost as well as a slightly faster rate of rise and slightly higher peak flow. As per footnote below, the intended balanced cut and fill approach is detailed separately.

2.3. Model Utilised in the Assessment

The 1D/2D Sobek model is used in the assessment of impacts. Sobek is a relatively well known hydraulic model in Australia and widely utilised in Europe. The model was established as part of

[1] This document discusses the issues of flood impacts due to the proposed development. The impact of the proposed development on flood storage is dealt with in a separate submission.

previous work undertaken by WMAwater in the Moorebank area.

The model extent and input boundary conditions are illustrated in Figure 3 with the model extending approximately 3 km upstream and 2 km downstream of the subject site. This extent is adequate in resolving flood impacts due to the proposed works.

3. METHODOLOGY

As described in Section 2.3, a 2D flood model has been used to quantify the flood impact of the proposed earthworks. This model was previously established to quantify impacts of various developments in submission to Council. Upstream and downstream boundary conditions consist of flow hydrographs and stage-discharge relationships respectively, and these are obtained from the 1999 Georges River Model Study (Reference 4). A further hydrograph for the local catchment upstream (north) of the site is detailed in Section 4. The model is fundamentally based on 1 m resolution Lidar data (Figure 3) which has been used to describe the overbank area. River bathymetry is described as per Reference 4. Flood impacts are calculated by subtracting base case results from the "proposed development" scenario and the difference is presented as an impact map.

The base case adopted for this analysis includes development already approved in the general area:

- The most recent levels of Brickmaker's Drive (from approved construction plans);
- The recently constructed Sewage Pumping Station platform (to the East of Brickmaker's Drive) as well as the stormwater runoff basins;
- The approved works on the Moorebank Recycler's site, i.e. levee banks protecting the northern two thirds of the site (Area 1 as shown in Figure 2);
- The raised ground level within the site to above 1% AEP flood levels;
- The approved excavation for the southern end of the Moorebank Recycler's site; and
- The approved abutment and bridge connecting Brickmaker's Drive with the site operated by Benedict Sand & Gravel.

Proposed developments tested for impact comprises:

- The extension of the bridge abutment for the approved bridge linking Brickmakers Drive to the site operated by Benedict Sand & Gravel (agreed by experts representing all parties in the Land & Environment Court matter that led to the granting of an easement in favour of Moorebank Recylers);
- The proposed ramps (on fill) which will provide a connection between Brickmaker's Drive and the north – south aligned access road to the Moorebank Recyclers site as shown in Figure 4 and Figure 5.

4. HYDROLOGY

4.1. 1% AEP Georges River

The hydrograph for the 1% AEP Georges River flood event is applied approximately 3 km upstream of the proposed ramps and is obtained from the 1999 Georges River Model Study (Reference 4)

4.2. 1% AEP Local Catchment

Using ALS and contour maps, the local catchment upstream of the Moorebank Recycler's site is estimated to be 75.2 Ha (see Figure 1). Rainfall Intensity Frequency Values for the centre of the catchment obtained from the Bureau of Meteorology website, an estimated catchment slope of 0.4%, and a 95% imperviousness ratio (selected due to the predominantly industrial and high density residential land-use of the catchment) is then input into the RAFTS hydrological model. A peak flow of 35.9 m^3/s is estimated. This hydrograph is conservatively high due to the large imperviousness ratio and is applied as a local inflow in the 2D model which is made to coincide with a stormwater outfall consisting of 4 x 0.65 m high x 1.75 wide box culverts underneath Newbridge Road (see Figure 1). The local catchment flow scenario is run with an assumed base flow of 200 m^3/s in the Georges River (compared to approximately 2100 m^3/s for the 1% AEP Georges River flow).

4.3. 1% AEP Local Catchment with 5% AEP Georges River

A high tailwater is expected to diminish impacts for the relatively small flow from the local catchment. Nevertheless, a 1% AEP local catchment hydrograph coinciding with the peak water level at the proposed ramps from a 5% AEP Georges River flow (originating as per the 1% AEP Georges River event, approximately 3 km upstream) is investigated.

5. RESULTS

Figure 6 shows the impact map for a 1% AEP Georges River flow. The proposed ramps have no impact on peak water levels for the 1% Georges River event. Modelled impacts are between two and three mm's and as such may be considered to be no impact given that this is well below the standard applied tolerance of 0.01 m.

The impact of the proposed bridge abutment and access ramps on the 1% AEP flood from the local catchment is presented in Figure 7. The increased water level between the base case and the proposed works scenario is at a maximum immediately upstream of the ramps where a peak impact of 0.03 m is observed. The impact propagates upstream towards Newbridge Road and averages 0.02 m. Newbridge Road itself is not impacted, no impact is obtained on the fringe of the leveed Benedict Sand & Gravel site to the east and inundation levels are well below Brickmakers Drive to the west.

Figure 8 presents impacts for the 1% AEP local catchment flow made to coincide with the timing of the peak water level at the location of the proposed ramps from a 5% AEP Georges River flow. A negligible peak afflux of 1.5 mm is obtained immediately upstream of the ramps confirming that an elevated tailwater level reduces impacts for the small (relative to the Georges River flow) catchment flow.

The minimal base flow assumed in the Georges River for the 1% AEP local catchment event maximises impacts. However, the event peak flood levels in the vicinity of the proposed works (Figure 10) of approximately 3.04 mAHD (0.58 m depth) is significantly lower than the same event combined with a 5% AEP Georges River Flow (Figure 11) resulting in a peak flood level of approximately 4.77 m AHD (2.32 m depth) for which the afflux for the proposed works is acceptable. The critical flood level of approximately 5.50 mAHD (3.04 m depth) is obtained for the 1% AEP Georges river flood (Figure 9) for which the impact from the proposed ramps is within the standard applied tolerance of 0.01 m.

6. CONCLUSION

A flood impact assessment has been carried out for proposed earthworks to provide access to the Moorebank Recyclers site. Impact has been assessed for both the riverine and local 1% AEP events.

The Georges River 1% AEP event is critical for the site in question with a flood level of approximately 5.50 mAHD at the proposed access ramps. The impact of the proposed works on this flood level (which is used to inform floor levels of adjoining developments) is nil. These proposed works assessed for flood impact herein then do not impact on design flood levels.

A small peak impact of 0.03 m is calculated for the local catchment flood scenario however, as discussed above, Georges River 1% AEP levels inform design flood levels and as such this impact is trivial. The impact for the local catchment event reduces to negligible levels when coinciding with higher events from the Georges River such as the 5% AEP event investigated herein.

7. REFERENCES

Reference 1 City of Liverpool
Floodplain Management Plan
December 1987

Reference 2 City of Liverpool
Liverpool City Council Local Environment Plan
1997

Reference 3 City of Liverpool
Liverpool Development Control Plan 2008
April, 2012

Reference 4 Bewsher Consulting Pty Ltd
Georges River Model Study
1999

Figures

FIGURE 1
STUDY AREA

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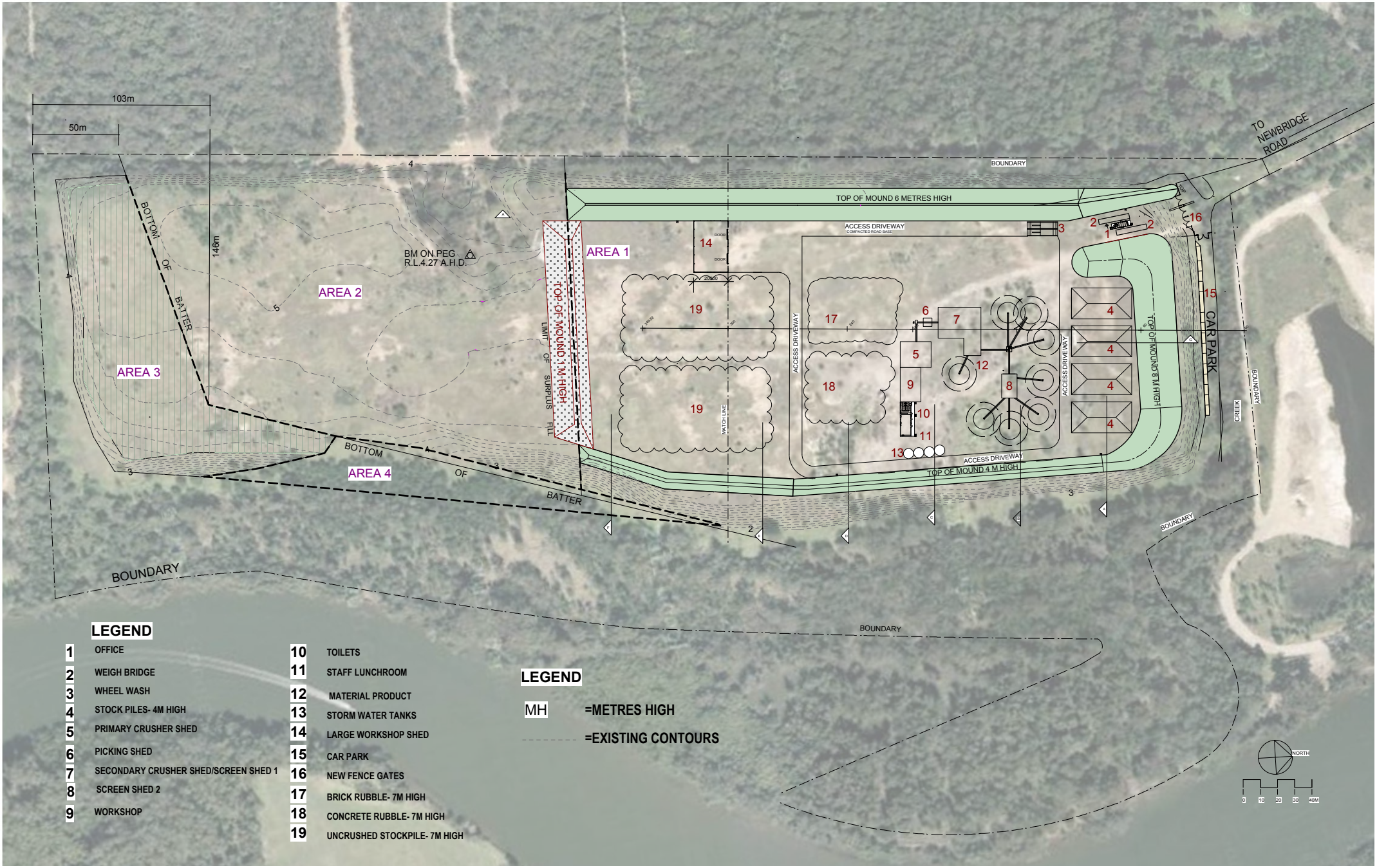

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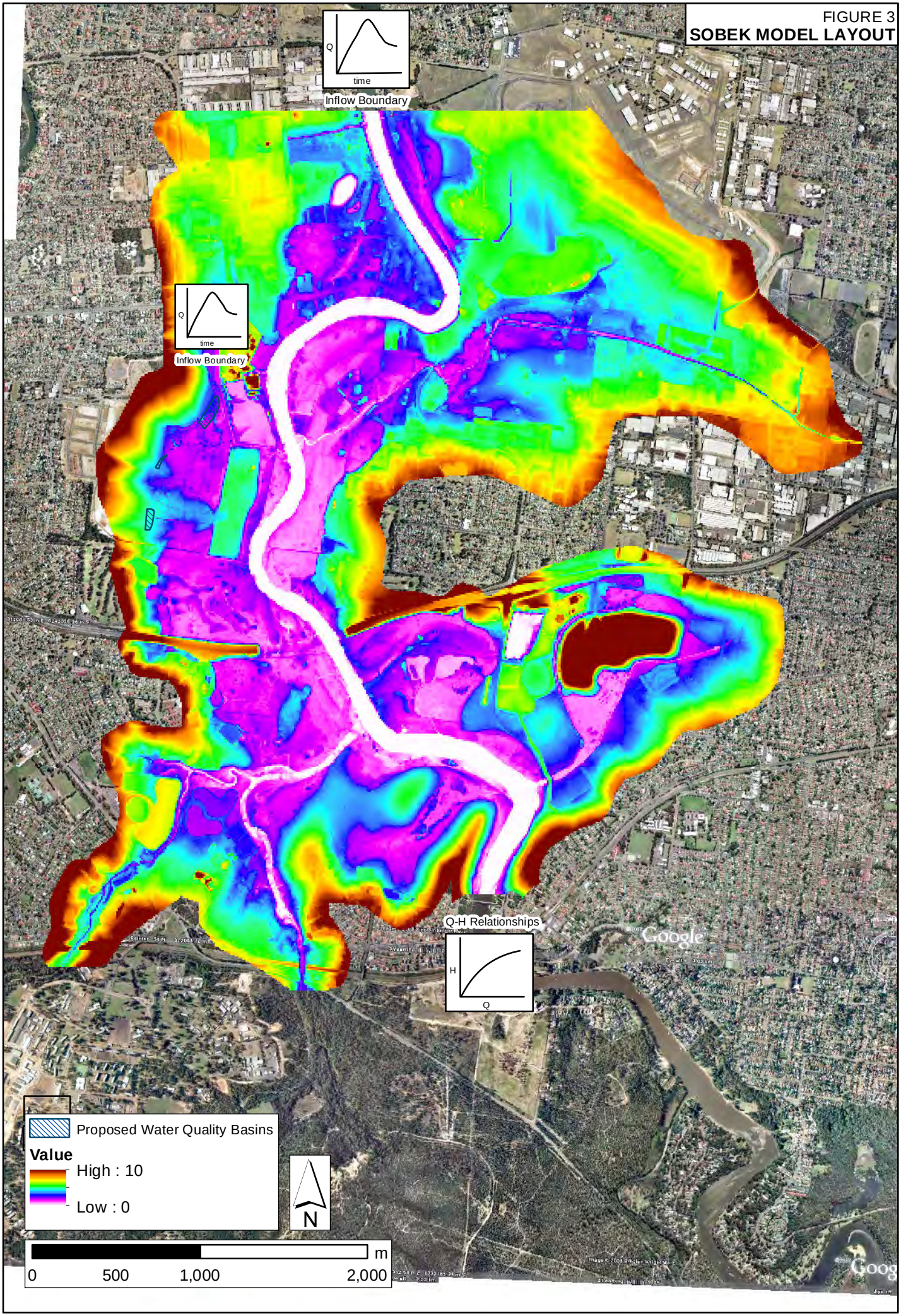
LEGEND

MH =METRES HIGH

=EXISTING CONTOURS

FIGURE 3
SOBEK MODEL LAYOUT



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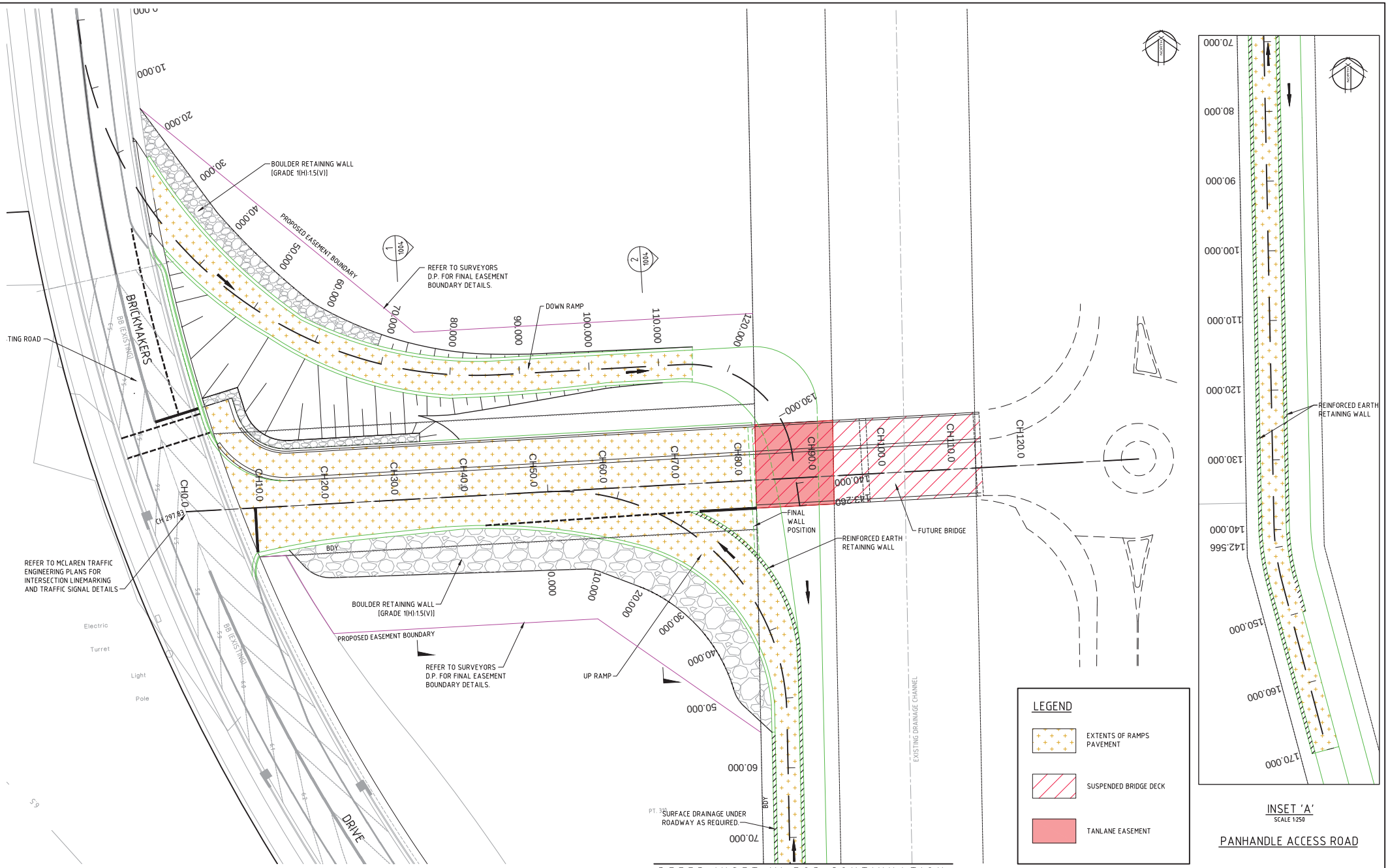

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J	05.08.13	RE-ISSUED FOR INFORMATION	J.C	D.K
H	31.07.13	RE-ISSUED FOR INFORMATION	J.C.	D.K
G	30.07.13	RE-ISSUED FOR INFORMATION	J.C	D.K
F	29.07.13	RE-ISSUED FOR INFORMATION	D.B	J.C
E	26.07.13	RE-ISSUED FOR INFORMATION	J.C.	D.K
D	16.07.13	RE-ISSUED FOR INFORMATION	D.B	D.K
C	28.06.13	RE-ISSUED FOR INFORMATION	D.B	D.K
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Designed	J.C	Date JUN'13
Verified	D.K	Date JUN'13
Approved	D.K	Date JUN'13

Client: CONCRETE RECYCLERS GROUP

SITE PLAN

Status: FOR INFORMATION

Date	Datum	Scale	Size
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Drawing Number: SK1001
Revision: K

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm ON A1 ORIGINAL

DATE PLOTTED: 7/4/2018 BY : JOSEPH CORCORAN (SYDNEY)
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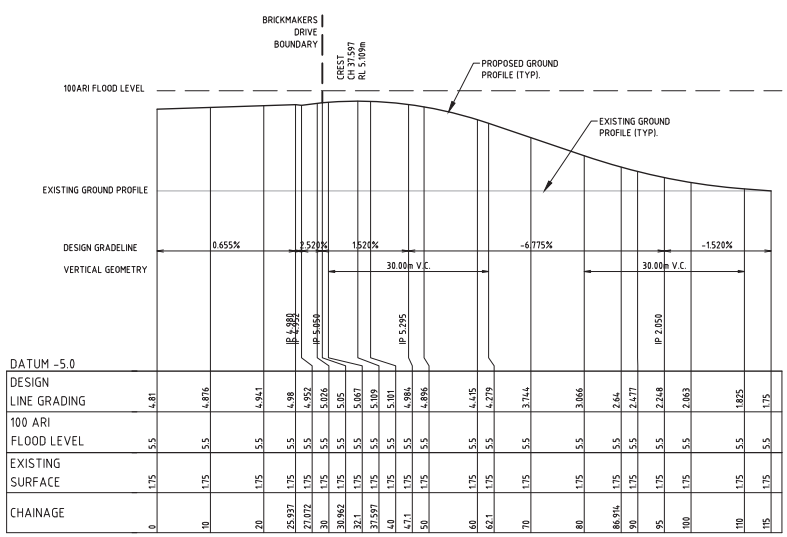
DATE PLOTTED: 7/4/2018 BY : JOSEPH CORCORAN (SYDNEY)



LONGITUDINAL SECTION DOWN RAMP

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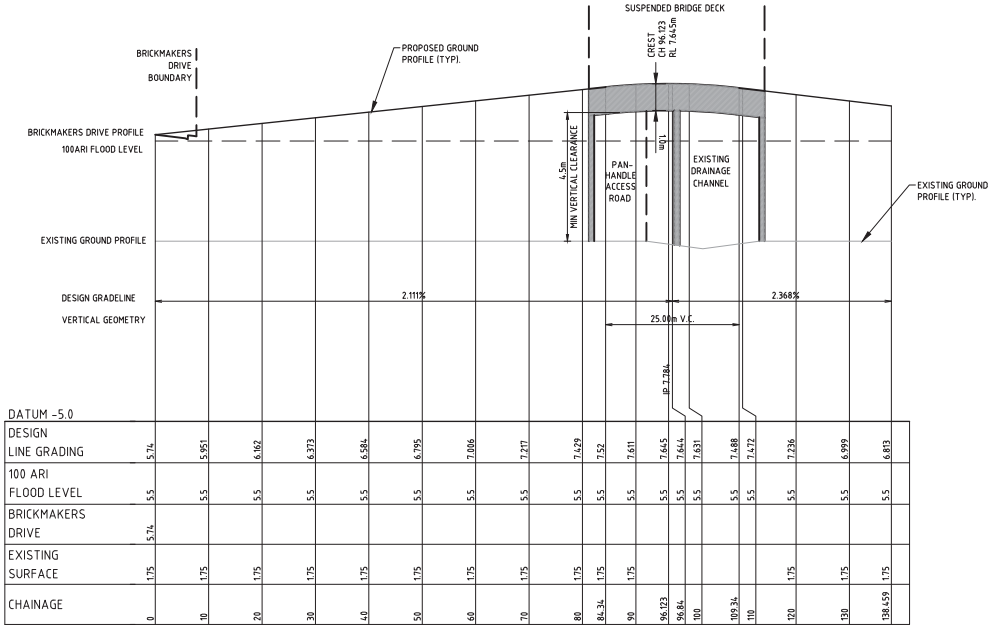
VERTICAL SCALE 1:100



LONGITUDINAL SECTION BRIDGE ALIGNMENT

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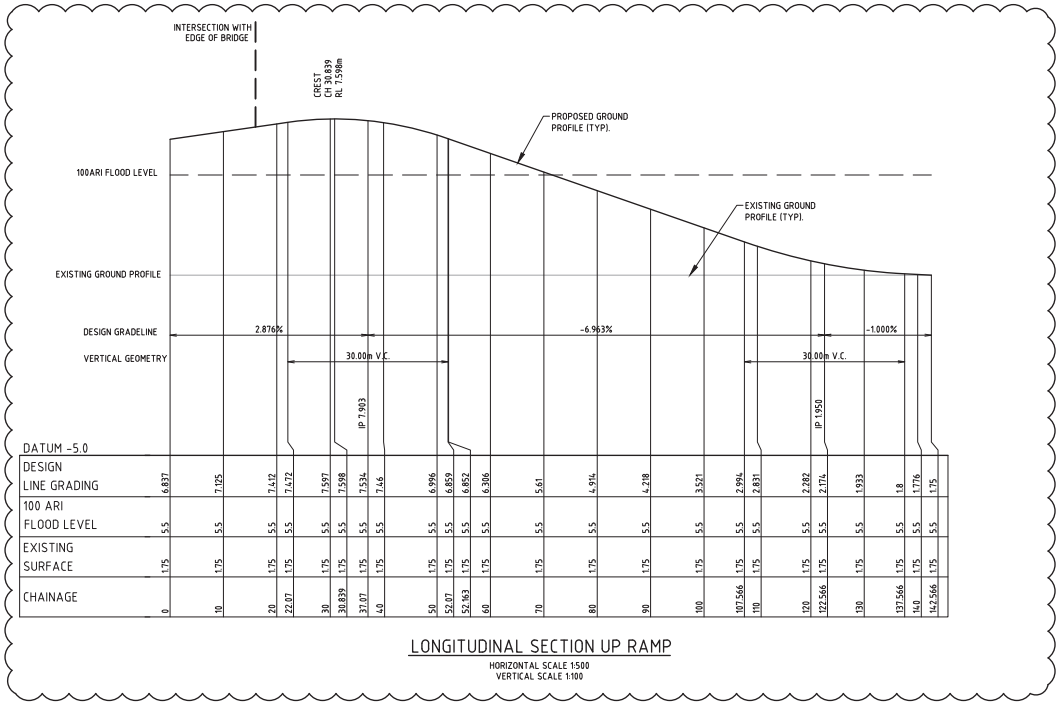

LONGITUDINAL SECTION UP RAMP

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100

Rev	Date	Description	Drawn	Appr.
E	01.08.13	ISSUED FOR INFORMATION	J.C.	D.K
D	31.07.13	ISSUED FOR INFORMATION	J.C.	D.K
C	30.07.13	ISSUED FOR INFORMATION	J.C.	J.C.
B	16.07.13	ISSUED FOR INFORMATION	J.C.	J.C.
A	28.06.13	ISSUED FOR INFORMATION	D.B	D.K

0 10 20 30 40 50m
10 8 6 4 2
SCALE 1:500

0 2 4 6 8 10m
2 1
SCALE 1:100

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Drawn	D.B	Date	JUN'13
Checked	J.C	Date	JUN'13
Designed	J.C	Date	JUN'13
Verified	D.K	Date	JUN'13
Approved	D.K	Date	JUN'13

Client: CONCRETE RECYCLERS GROUP

LONGITUDINAL SECTIONS

Status: FOR INFORMATION

Date	Datum	Scale	Size
JUN'13	AHD	AS SHOWN	A1

Drawing Number: SK1003

Revision: E

CAD FILE: \\cardno.corp\global\AUNSW\DirectoryStructure\Projects\8999\10001\NA8993054_Moorebank Concrete Recyclers Group Expert Witness\01-GoSK1003 (E) L-SECTION.dwg

FIGURE 6

GEORGES RIVER FLOW - 1% AEP IMPACT MAP FOR RAMP ON FILL

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FIGURE 7

LOCAL CATCHMENT FLOW - 1%AEP IMPACT MAP FOR RAMP ON FILL

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FIGURE 8

LOCAL CATCHMENT FLOW - 1% AEP
GEORGES RIVER FLOW - 5% AEP
IMPACT MAP FOR RAMP ON FILL

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FIGURE 9

GEORGES RIVER FLOW - 1% AEP
PEAK FLOOD LEVELS FOR RAMP ON FILL

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FIGURE 10

LOCAL CATCHMENT FLOW - 1% AEP
PEAK FLOOD LEVELS FOR RAMP ON FILL

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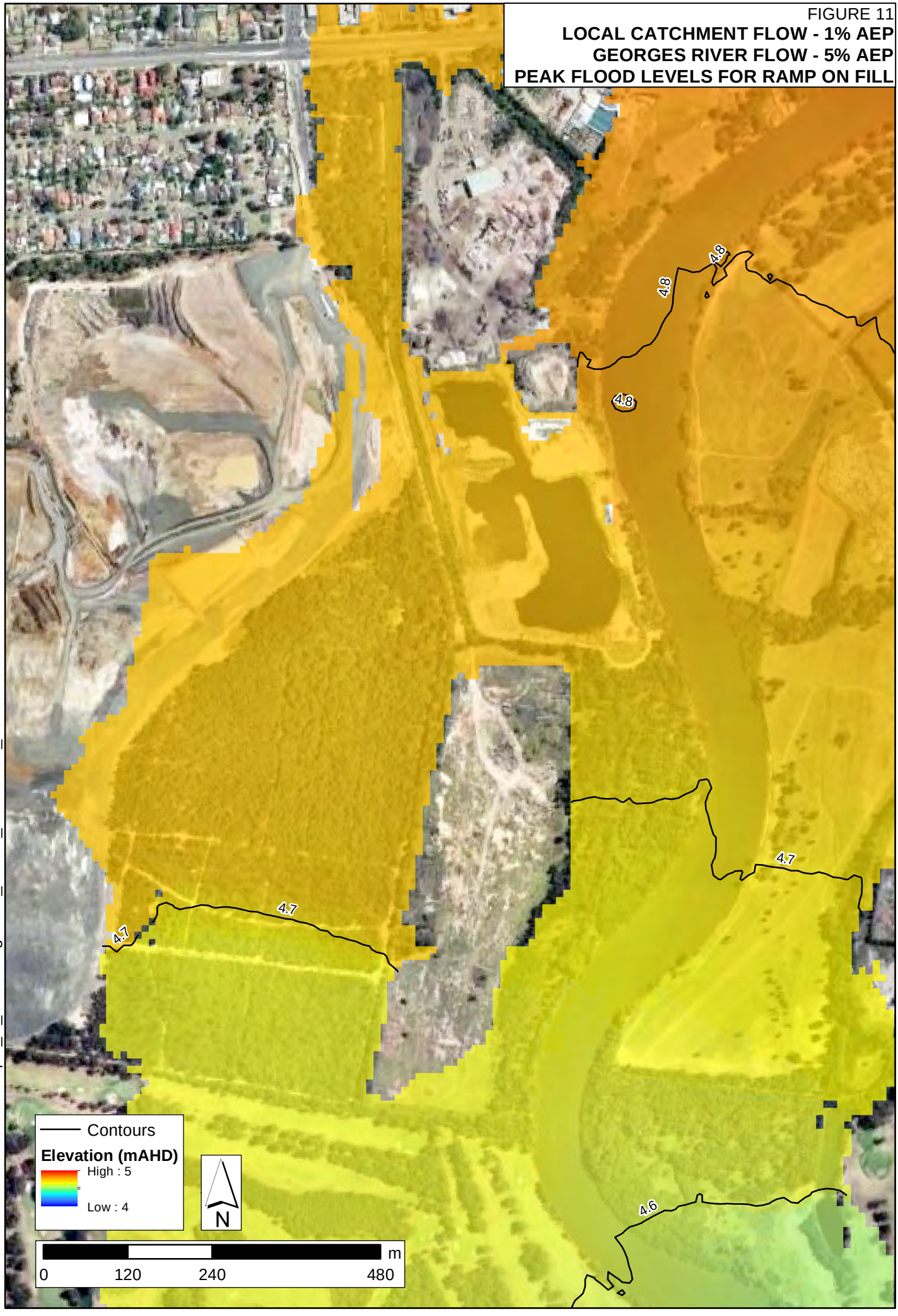
FIGURE 11

LOCAL CATCHMENT FLOW - 1% AEP
GEORGES RIVER FLOW - 5% AEP
PEAK FLOOD LEVELS FOR RAMP ON FILL



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Annexure D

Flood Evacuation Plan

Moorebank Recyclers Pty Ltd

FLOOD EVACUATION PLAN

Warning System and Site Emergency Response

Moorebank Recyclers Site
Newbridge Road, Moorebank

This copy to be kept at:

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May 2013

Table of Contents

1 PURPOSE 1
2 BACKGROUND INFORMATION 2
3 FLOOD BEHAVIOUR AND WARNINGS 3
4 PLAN STAGES AND TRIGGERS 5
4.1 Flood Proofing and Preparation 5
4.2 Preparation 5
4.3 Response – When a Flood is Likely 5
4.4 Response – During a Flood 5
4.5 Recovery 5
4.6 Maintain and Implement the Plan 5
5 FLOOD PROOFING 6
6 PREPARATION 7
7 RESPONSE – WHEN A FLOOD IS LIKELY 10
8 RESPONSE – DURING A FLOOD 11
9 RECOVERY 12
10 MAINTAIN AND IMPLEMENT THE PLAN 13

Annexure

Annexure A 100, 50 and 20 Year Flood Levels

Tables

Table 1 Flood Levels and Depth of Inundation 3
Table 2 Flood Emergency Kit 7
Table 3 Emergency Contacts 8
Table 4 Occupational Health and Safety 9

Figures

Figure 1 Location of Moorebank Recyclers' Property 2

1 PURPOSE

Access to the Moorebank Recyclers' Site and surrounding local areas are relatively low lying and prone to flooding from the Georges River. The direct access road to the Site is subject to minor inundation during a 3 year ARI flood. This *Flood Evacuation Plan - Warning System and Site Emergency Response* (the Plan) has been developed to ensure the safe, orderly and timely evacuation of all persons from the Moorebank Recyclers' Site during times of flood, without the need for rescue by the State Emergency Service (SES) or other authorized emergency services personnel.

The Plan has been developed using the SES *Business Floodsafe Toolkit* as a guide, and is consistent with the report *Georges River Floodplain Risk Management Study and Plan* (2004) prepared by Bewsher Consulting and adopted by Liverpool City Council.

The Plan is site specific for Moorebank Recyclers' property at Newbridge Road Moorebank.

2 BACKGROUND INFORMATION

Moorebank Recyclers' Site is located about 1 km south of Newbridge Road, Moorebank (Lot 6 DP 1065574) as shown in **Figure 1**. Entry to the Site from Newbridge Road is via Brickmakers Drive and a low-lying access road (elevation of 1.96 m to 2.46 m AHD). Levels on the existing Site vary with a large area above 5.0 m AHD and a smaller area above 5.5 m AHD (the 100 year ARI flood level). The 100 year ARI flood will be excluded from the operational area of the site through a combination of site levels and bunds, as approved in Liverpool Council's approval of bulk earthworks DA1417/05.

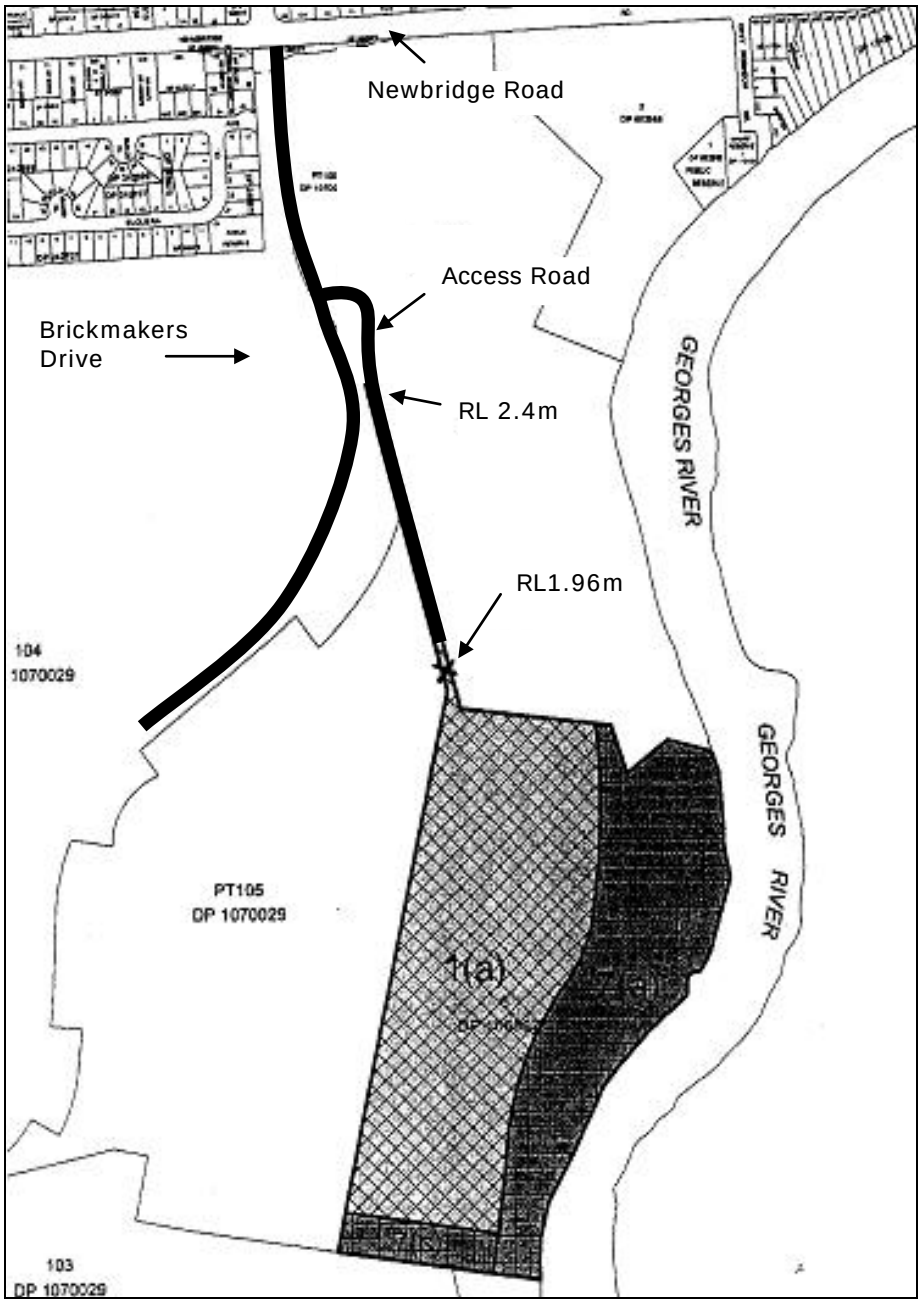


Figure 1 Location of Moorebank Recyclers' Property

3 FLOOD BEHAVIOUR AND WARNINGS

Georges River water levels are measured at various locations. The nearest continuous water level gauge is at the Milperra Bridge (Newbridge Road), just upstream of Moorebank Recyclers' Site and access road.

Flood levels for the 100 year, 50 year and 20 year floods have been obtained from the report *Georges River Flood Study*, PWD Report N^{o} 91066 prepared by the Water Research Laboratory, University of NSW for the Public Works Department (December 1991). These are plotted on the figures in **Annexure A** and show that the access road and parts of the Site are inundated for these flood events. Flood levels at the site for the 2 year, 5 year and 10 year average recurrence interval (ARI) floods have also been derived from the historic data collected at Milperra Bridge.

The flood levels and maximum depth of inundation of the access road at the peak of the flood are also shown in **Table 1**.

Table 1 - Flood Levels and Depth of Inundation

Flood ARI (years)	Flood level at Milperra Bridge (m AHD)	Estimated flood level along access road (m AHD)	Road level (m AHD)	Depth of flood water over access road (m)
2	1.5	1.3 – 1.2	1.96 – 2.4	N/A
5	2.85	2.65 – 2.55	1.96 – 2.4	0.25 - 0.6
10	3.9	3.7 – 3.6	1.96 – 2.4	1.3 – 1.6
20	4.9	4.7 – 4.6	1.96 – 2.4	2.3 – 2.6
50	5.45	5.3 – 5.2	1.96 – 2.4	2.9 – 3.2
100	5.9	5.75 – 5.65	1.96 – 2.4	3.3 – 3.7

The river water levels at Milperra Bridge are influenced by tidal behaviour, and generally rise and fall by around one metre daily. The tide level can be up to 1 m AHD and the rate of rise or fall can be around 0.2 m/hr. In times of flooding, the rate of water level rise at Milperra Bridge is around 0.3 m/hr for historic floods, and can be up to 0.5 m/hr for the 100 year flood (Bewsher Consulting 2004).

A flood warning scheme for the Georges River is operated by the SES based on advice issued by the Bureau of Meteorology (BoM). The BoM issues a number of different types of weather and flood warnings, as described in the document *New South Wales State Flood Sub Plan* (SES, 2008) and below:

1. Severe Thunderstorm Warnings – Sydney/Newcastle/Wollongong – (Cell - Based)

When severe thunderstorms are actually occurring or are about to move into the heavily populated region around Sydney, Newcastle and Wollongong, the BoM will issue a more detailed Severe Thunderstorm Warning for people in the affected region. High quality, full-time weather radar coverage for this region allows these warnings to illustrate the current location of individual thunderstorms, and the places likely to be affected within the next 30 to 60 minutes. The radar image shows the location of the severe thunderstorms and the forecast path of the storm. These warnings are distributed widely to the media and emergency services, and are available to the public via the internet and various telephone and fax based services.

2. Severe Weather Warnings

These are issued when severe weather is expected to affect land-based communities within the next 24 hours. They are not directly the result of severe thunderstorms, nor are they covered by tropical cyclone or fire weather warnings. Severe Weather Warnings aim to provide advance notice of very heavy rainfall or strong winds which can lead to flash flooding or storm surge which can sometimes be exacerbated by abnormally high tides. These warnings are distributed to the media by the BoM and are available to the public via the internet and various telephone and fax based services.

3. Flood Watches

These are targeted at large catchments and can provide up to 24-36 hours advance warning of large-scale weather systems that have the potential to cause flooding. They are issued prior to Flood Warnings for most river valleys that are covered by flood warning services. They are not distributed directly to the media by the BoM, however they must be incorporated in Region Flood Bulletins released by the SES. Flood Watches are published on the BoM website.

4. Preliminary Flood Warnings

These warnings usually predict which class of flooding (minor, moderate or major) will occur rather than providing quantitative forecasts. They are the first in a series of warnings and will typically be followed by more detailed flood warnings. These warnings are disseminated directly to media outlets by the BoM and are published on the BoM website.

For the Georges River below Milperra Bridge, the flood classification levels are:

- 2.0m (minor)
- 3.3m (moderate)
- 4.2m (major)

The BoM is required to give 6 hours notice for river heights between 2.0m and 3.9m and 12 hours notice for river heights 4.0m and above (although only 9 hours is generally available).

5. Flood Warnings

These normally predict flood heights at a particular gauge (location) which will be reached at a specified time in the future. After the issuing of a Preliminary Flood Warning, Flood Warnings are renewed at frequent intervals until the relevant waterway drops to below the minor flood level. Flood Warnings are not distributed directly to the media by the BoM, however they are incorporated in Region Flood Bulletins and released by the SES. Flood warnings are published on the BoM website.

Because the access road is likely to be inundated relatively early in a flood event on the Georges River, a combination of these different weather and flood warnings form part of this Plan.

4 PLAN STAGES AND TRIGGERS

There are six stages of the Plan:

4.1 Flood Proofing and Preparation

The actions listed in **Section 5** will be taken during site development to minimise the potential risk of flood impact to buildings and their contents to flooding.

4.2 Preparation

Section 6 includes the flood "readiness" actions to ensure the site is appropriately prepared for flood. The "readiness" actions will be undertaken by Moorebank Recyclers during business establishment and operation.

4.3 Response – When a Flood is Likely

Section 7 lists the actions Moorebank Recyclers will take when a flood is likely.

The actions will be triggered by one of the following warnings issued by the BoM (**Section 3**):

- Severe Thunderstorm Warning:
- Severe Weather Warning; or
- Flood Watch.

These triggers will give Moorebank Recyclers at least 24 hours notice of flooding and the possible need for evacuation.

4.4 Response – During a Flood

The trigger for evacuation is the issue of a "Preliminary Flood Warning" of "minor" flooding by the BoM (see **Section 3**). Such a warning means that the flood level at Milperra Bridge is predicted to reach 2.0 m AHD in 6 hours. The access road to the property would be inundated shortly after 6 hours.

As Newbridge Road is also low-lying, the evacuation actions in **Section 8** should be commenced as soon as the preliminary flood warning is issued by the BoM.

4.5 Recovery

The Georges River can flood relatively quickly, however the duration of flooding is relatively short-lived. The report by Bewsher Consulting (2004) indicates that in a 100 year flood event, the water level would be above 2 m AHD at Milperra Bridge for around 35 hours. Moorebank Recyclers could thus have access to the property within two days of evacuation.

Recovery actions to help restore operations are listed in **Section 9**.

4.6 Maintain and Implement the Plan

Actions to maintain, implement and review the Plan are listed in **Section 10.**

5 FLOOD PROOFING

The following actions will be undertaken during site development to improve the resistance of buildings and their contents to flooding:

- To the extent practical, the site office and facilities will be set up with a floor level above 6.0 m AHD. This level is 500mm above the 100 year flood level and will help minimise the risk of damage to furniture, floor coverings and fittings;
- All electrical wiring and outlets will be located at least 1.0 m above the 100 year flood level, i.e. above 6.5m AHD;
- Office equipment including electrical equipment, eg computers etc, will be kept as high above the floor as practical, or can be easily lifted or removed if a flood occurs;
- Furniture, floor coverings and fittings will be made of flood resistant materials such as metal and ceramic tiles. Where possible, timber composites such as pine board, chip boards and masonite will be avoided;
- Wherever practical, the site storage sheds and equipment will be located above 5.5 m AHD;
- All chemicals, empty drums or any floatable equipment will be locked in a storage shed whenever the site is unoccupied. The shed floor will be at a minimum of 5.5 m AHD;
- Control panels for security control, air conditioning, etc will be located as high as practical above ground level, preferably at a minimum of 1.5 m above the floor level of the site office; and
- Drains and gutters will be regularly cleaned.

6 PREPARATION

The following flood "readiness" actions will be undertaken by Moorebank Recyclers prior to the commencement of site operations and will be reviewed regularly:

- Assemble and maintain a flood emergency kit (**Table 2**);
- Obtain and update staff and other emergency contact numbers in **Table 3;**
- Document Occupational Health and Safety (OH&S) procedures for a flood in **Table 4**;
- Include flood evacuation procedures in mandatory site safety induction for all employees;
- Regularly back-up records, accounts and computer files, and store them off-site and out of the floodplain;
- Identify what critical functions, such as payroll and banking, must be maintained during and after flooding;
- Make call diversion arrangements to be able to continue some business operations off-site; and
- Maintain site attendance register.

Table 2 Flood Emergency Kit

Portable radio with spare batteries (to listen for flood warnings)
Torch with spare batteries
First aid kit and manual
Waterproof bags for storage
Emergency contact numbers
Waterproof footwear with non-slip soles
Water and puncture resistant gloves
Cleaning products for clean-up after the flood
Boxes for storage

Table 3 Emergency Contacts

Staff emergency contact telephone numbers		
Name	**Emergency Number**	**Alternative Number**
Telephone Numbers of Other Emergency Contacts		
Need	**Name**	**Number**
Flood or storm	State Emergency Service	132 500
Site Manager		
Security		
Electricity	Energy Australia	
Telephone		
Medical		

Table 4 Occupational Health and Safety

OH&S procedures to be followed during and after a flood. This procedure is to be added to the site OH&S plan.

DURING A FLOOD

Risk	Actions to manage risks
Evacuation – ensure workers have enough time to evacuate safely to a location beyond the reach of flood waters.	
Manual handling of plant and equipment to be removed.	
Darkness – ensure adequate light if flood preparations have to be made at night or in overcast conditions.	
Protective clothing – solid non-slip footwear is an essential minimum.	
Slips, trips and falls, particularly in wet conditions	
Avoid entering floodwaters on foot or in vehicles – risk of electrocution, drowning, injury from submerged objects or uneven ground	
Other risks	

AFTER A FLOOD

Only enter premises after floodwaters have completely subsided and the SES advises that it is safe to do so.

Undertake an OH&S risk assessment (below) before entering buildings.

During clean-up, all workers should:

- Wear protective clothing, including enclosed, waterproof, non-slip footwear and waterproof, puncture-resistant gloves;
- Use safe manual handling procedures when moving stock, plant or equipment; and
- Wash thoroughly after cleaning premises to remove any potential flood borne contaminants.

Risk	Assessment
Structural safety of buildings	
Safety of electrical and gas supplies	
Slips, trips and falls, particularly with mud and water	
Contamination – sewage, chemicals and disease in floodwaters	
Safety of plant and equipment – checked by a qualified tradesperson	
Sharp debris	
Venomous animals – snakes and spiders in buildings and debris	
Manual handling and lifting	
Other risks	

7 RESPONSE – WHEN A FLOOD IS LIKELY

Any one of the following warnings issued by the BoM (**Section 3**) will give Moorebank Recyclers at least 24 hours notice of possible flooding and the need to prepare for evacuation:

- Severe Thunderstorm Warning:
- Severe Weather Warning; or
- Flood Watch.

The following actions are the responsibility of the Site Manager:

- Tune the radio to a local radio station, and ensure it has spare batteries;
- Maintain awareness of weather forecasts and be alert for BoM warnings in the event of forecasts of bad weather;
- Have the flood emergency kit ready for use;
- Inform all workers and sub-contractors (including suppliers and known haulage clients) of the likelihood of flooding;
- Allocate responsibilities to move and/or secure plant, equipment and floatable items;
- Regularly remove waste generated to landfill (picking station waste, office and amenities putrescibles waste) and the recycling depot off-site (scrap steel, waste oil and office paper);
- Move hazardous materials/chemicals into safe storage or off-site to a location above the predicted flood peak;
- Move plant and equipment to a location above the predicted flood peak;
- Secure objects that are likely to float or cause damage, e.g. open fridges, to prevent them floating;
- Divert calls to an appropriate alternative number, e.g. Site Manager's mobile;
- Back-up computer files and critical records and take them off-site;
- If practical, make arrangements to temporarily continue business office operations from another location; and
- Maintain critical business functions if possible.

8 RESPONSE – DURING A FLOOD

The trigger for evacuation is the issue of a preliminary flood warning of minor flooding on the Georges River by the BoM (**Section 3**). This means that the flood level at Milperra Bridge is predicted to reach 2.0 m AHD within about 6 hours. The access road to the site would be inundated shortly after 6 hours.

As Newbridge Road is also low-lying, the following evacuation actions (which are the responsibility of the Site Manager), should be commenced as soon as the preliminary flood warning is issued by the BoM:

- Keep the radio tuned to a local radio station for flood warnings including updates on forecast flood heights and timings;
- Inform all personnel including contractors and haulage operators of flood warning details;
- Remind staff of the OH&S procedures related to flooding (**Table 4**);
- Move mobile plant including any on-site diesel stored in a mobile fuel truck to a location above the predicted peak flood level, or if an extreme flood is predicted, move mobile plant to the workshop building which can then be secured;
- Move staff vehicles to a flood free location;
- Allow staff with their own property at risk to leave;
- Evacuate all staff before the access road is flooded;
- Postpone supply deliveries;
- Before leaving, turn off all services (electricity, gas, water); and
- Lock the site when leaving, and notify security.

9 RECOVERY

Georges River flooding can occur relatively quickly, however the duration of flooding is relatively short-lived. The report by Bewsher Consulting (2004) indicates that the 100 Year flood event is above 2 m AHD Milperra Bridge for around 35 hours. Moorebank Recyclers could thus have access to the site within two days of evacuating it.

Recovery actions to help restore site works are the responsibility of the site manager and include:

- Keep the radio tuned to a local radio station and return to the site only after the SES has advised it is safe to do so;
- Carry out an OH&S risk assessment listed in **Table 4** before entering flood-damaged premises;
- Clean up premises using the flood emergency kit (**Table 2**);
- Carry out clean up in accordance with the OH&S procedures in **Table 4**;
- Ensure proper personal washing after cleaning any flood-damaged facilities;
- Remove debris and clean and repair premises;
- Salvage, clean and dry equipment;
- Return any equipment, etc that was moved off-site;
- Replace any lost or equipment when and if feasible; and
- Advise customers and suppliers that the business is reopened.

10 MAINTAIN AND IMPLEMENT THE PLAN

The Plan is part of the Moorebank Recyclers business continuity planning.

The Site Manager is responsible for implementing and maintaining the plan.

The Plan will be located in the on-site office, and another copy kept off-site out of the floodplain.

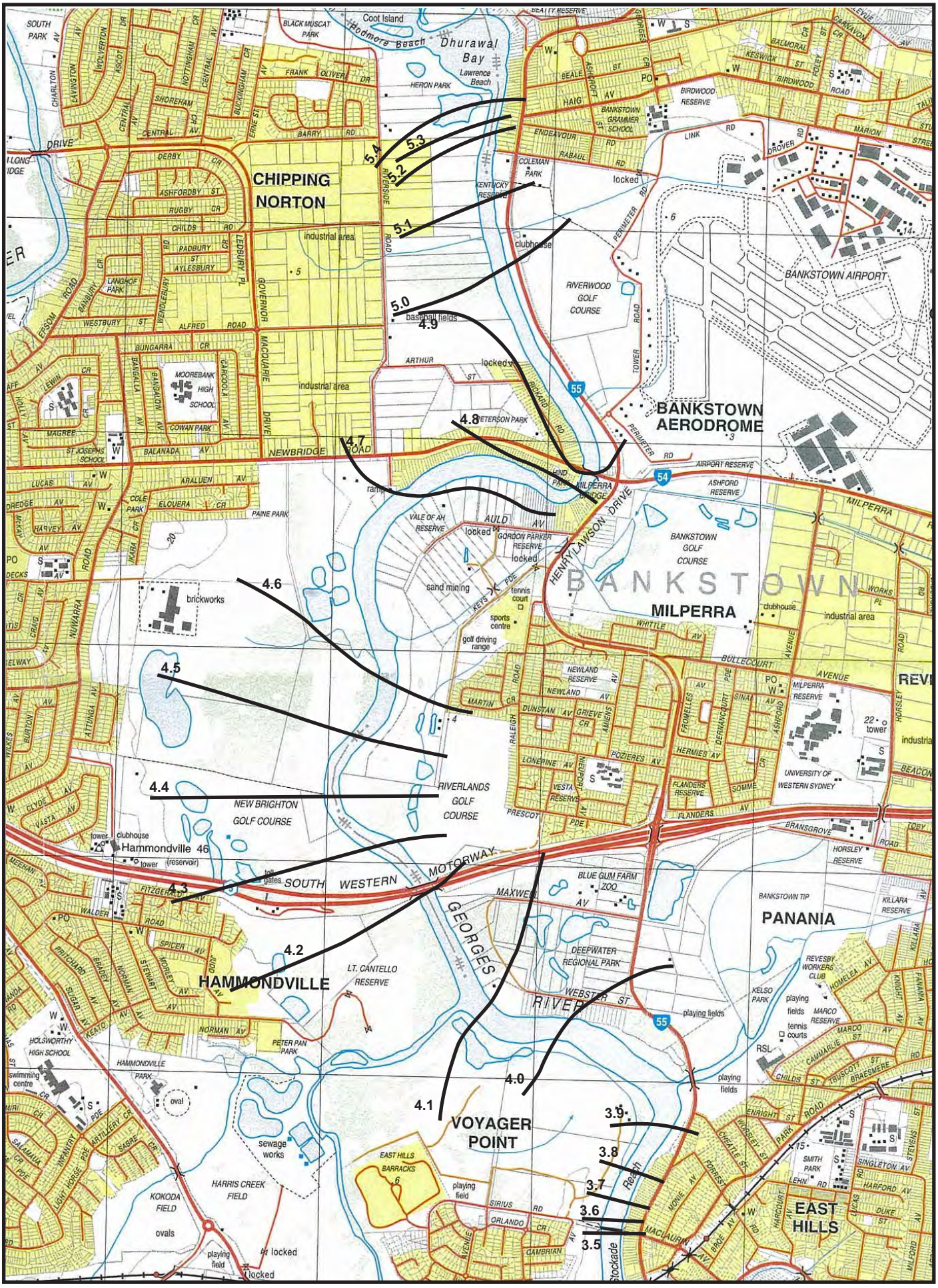
Employees will be trained in understanding this Plan and their roles in its implementation. Training will be conducted regularly, and new staff trained during their induction.

The SES *Don't Let Your Business Go Under* poster and SES *FloodSafe Georges River Business* brochure will be displayed in the staff lunch room.

This Plan will be maintained by keeping all details up-to-date and by ensuring that the flood emergency kit and other elements needed for flood preparation are in place.

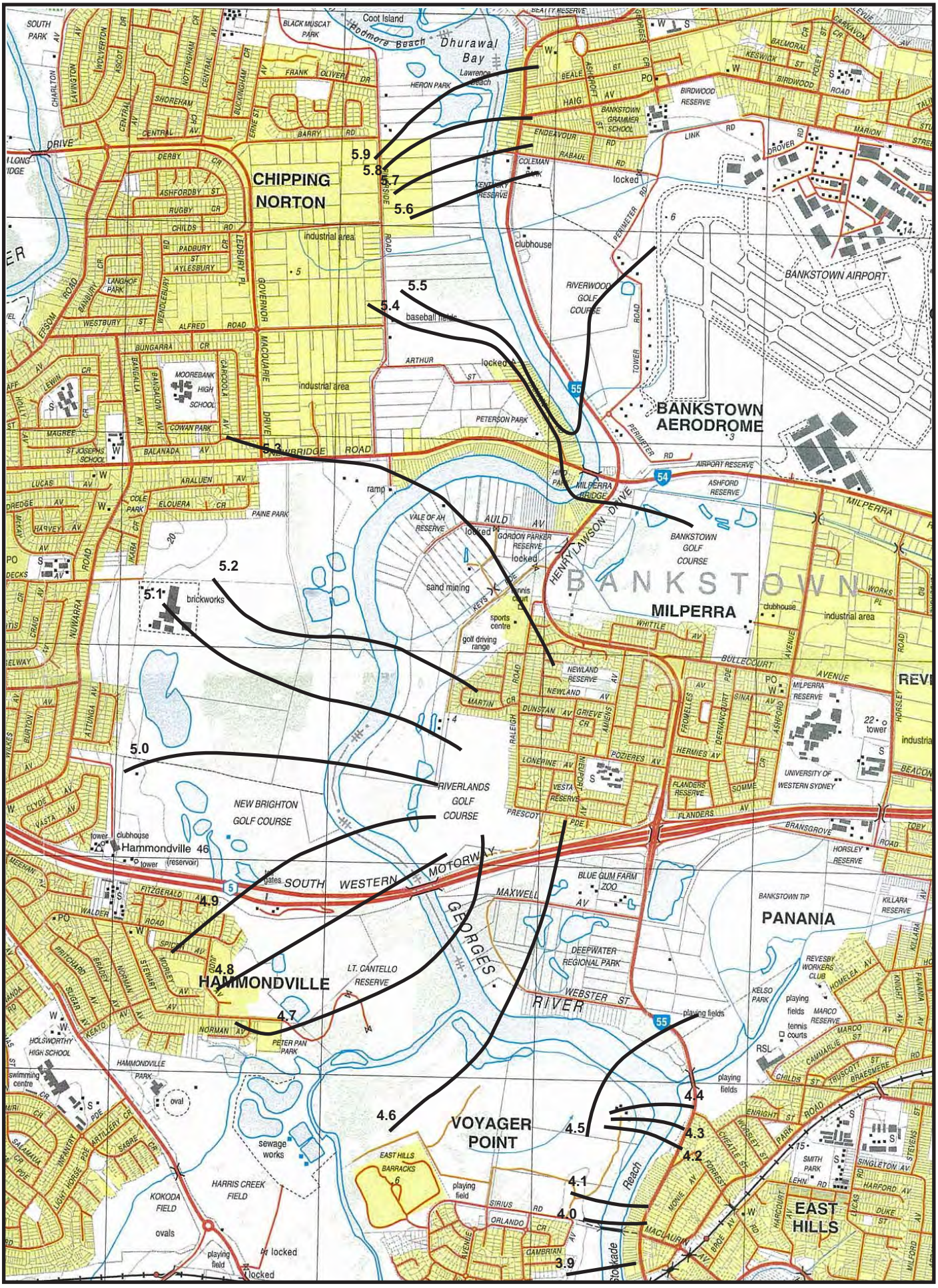
The Plan will be reviewed annually.

Annexure A
20, 50 and 100 Year ARI Flood Levels



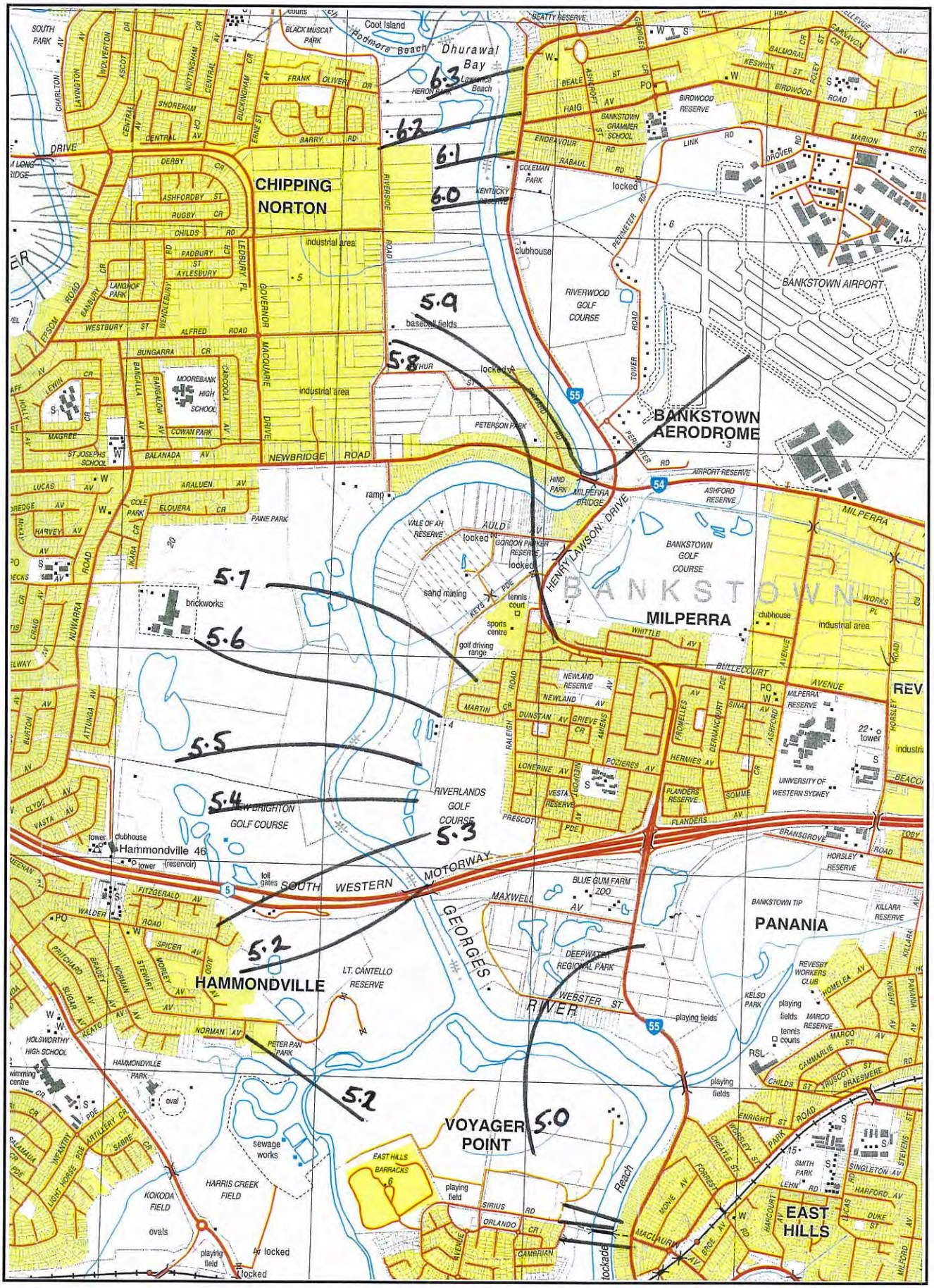
20 Year Flood Levels

(*Source Figures 28a and 28b, Georges River Flood Study, 1991*)



50 Year Flood Levels

(*Source Figures 28a and 28b, Georges River Flood Study, 1991*)



100 Year Flood Levels

(Source Figures 28a and 28b, Georges River Flood Study, 1991)

Annexure E

Pollution Control Performance of Grass Swales

Moorebank Recyclers Site

Grass Swale Performance

Discharge rate from capture sump (150mm diameter)	(L/s)	70	*Source: Iplex Pipe Design Manual*
Assumed 'n' value for grass swale		0.03	
Base width	(m)	3	
Side slopes	1:X	5	
Longitudinal slope		0.10%	

Flow Depth	(m)	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12
Cross Section Area	(m2)	0.16	0.20	0.23	0.27	0.32	0.35	0.39	0.43
Wetted Perimeter	(m)	3.2	3.3	3.3	3.4	3.4	3.5	3.5	3.6
Hydraulic Radius	(m)	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12
Flow Velocity	(m/s)	0.14	0.16	0.18	0.20	0.22	0.23	0.24	0.26
Discharge	(L/s)	23	32	42	54	70	80	95	112

Catchment >		**1A**	**1C**	**1D**
Swale length (nominal)	(m)	65	200	200
Swale arean (m2)	(m2)	390	600	600
Catchment (ha)	(ha)	0.775	1.65	1.1
Area Ratio		0.050	0.036	0.055
TSS Removal		**75%**	**70%**	**75%**

*Source: "Treatment Techniques" Figure 5.3**

Bioretention Swale Performance

Catchment		**1B**	**Carpark**	**Total**
Area	(m2)	2,900	1,200	4,100
Bio-swale Area	(m2)			220
Area Ratio				0.05
TSS removal				**75%**

*Source: "Treatment Techniques" Figure 6.4**
**Managing Urban Stormwater: Treatment Techniques*
(DECC, 2008)

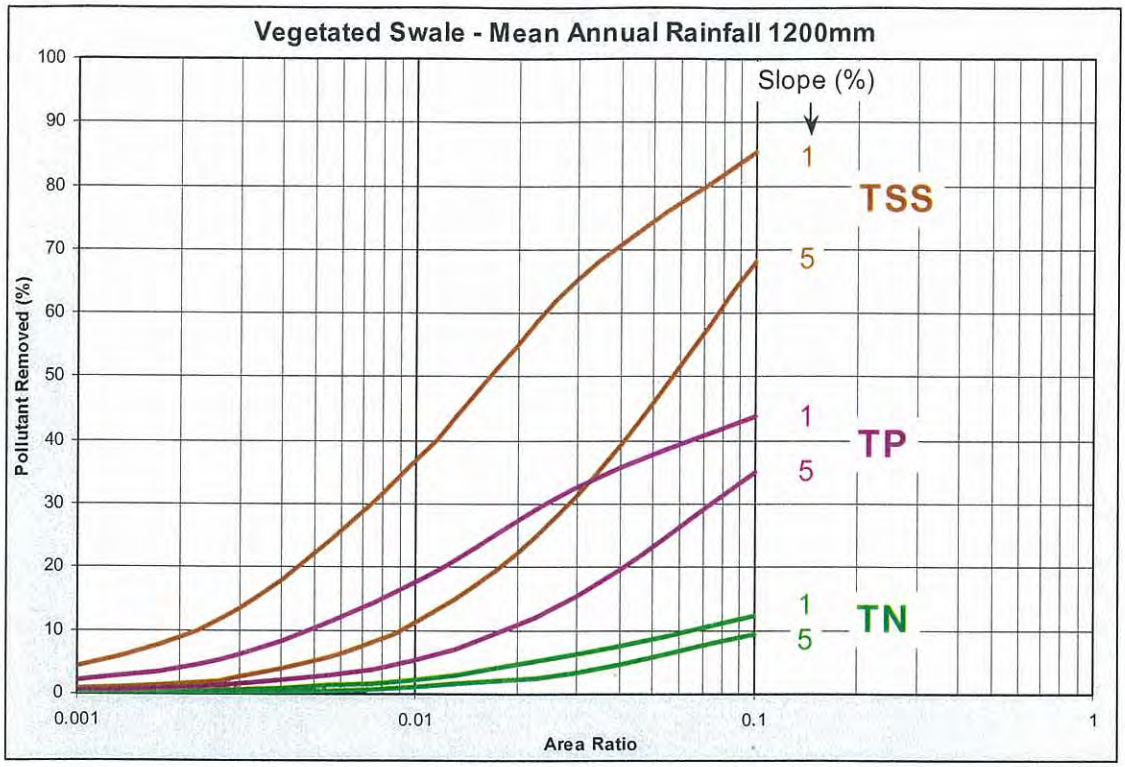


Figure 5.3 Indicative swale pollutant removal performance for area with 1200 mm average annual rainfall

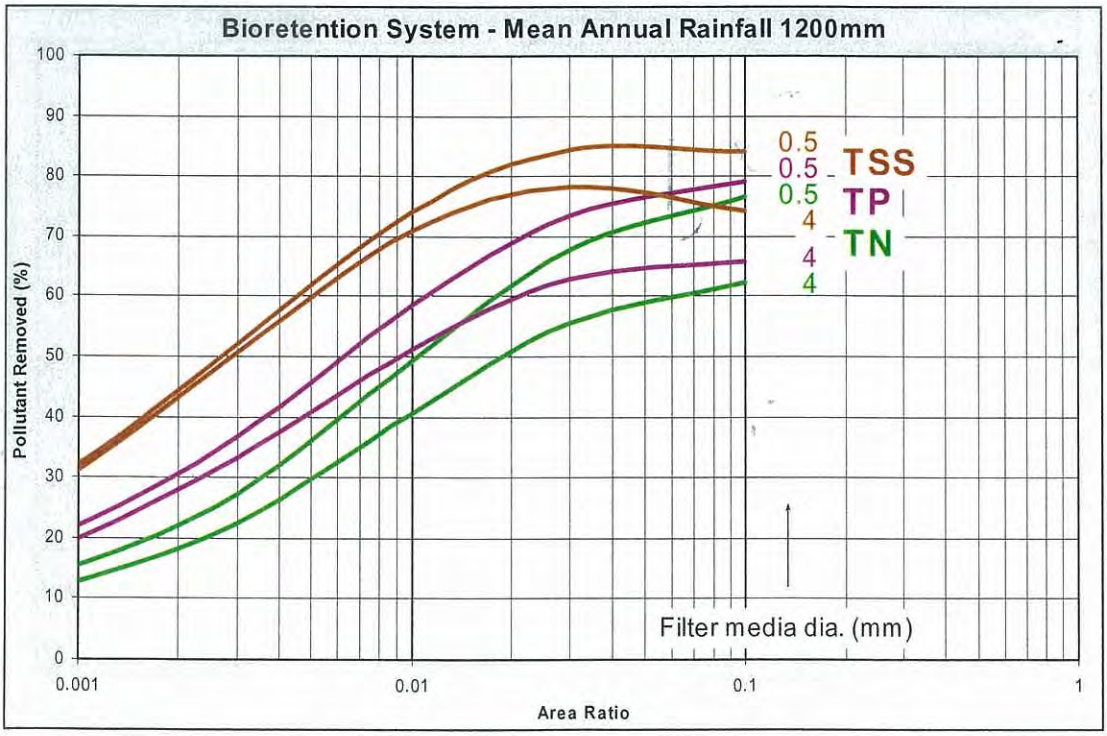


Figure 6.4 Indicative bioretention swale pollutant removal performance for area with 1200 mm average annual rainfall

Annexure F

Geotechnical Aspects of Septic Tank Construction

JK Geotechnics
GEOTECHNICAL & ENVIRONMENTAL ENGINEERS

PO Box 976, North Ryde BC NSW 1670
115 Wicks Rd, Macquarie Park NSW 2113
Tel: 02 9888 5000 Fax: 02 9888 5001
www.jkgeotechnics.com.au

9 May 2013
Ref No M22833Slet

Concrete Recyclers (Group) Pty Ltd
PO Box 238
Rydalmere NSW 1701

ATTENTION: Mr B Lawson

Dear Sir

GEOTECHNICAL ISSUES ARISING FROM PART 3A ENVIRONMENTAL ASSESSMENT LOT 6, DP 1065574 NEWBRIDGE ROAD, MOOREBANK

In response to the exhibition of the above environmental assessment, Liverpool Council have expressed reservations concerning the proposal to install a septic tank at the site. The following comments should alleviate the concerns they have raised:

- The proposed septic tank is only to be a holding tank and would be emptied by a road tanker as often as necessary. There would therefore be no direct connection to the water table or the environment generally.
- It would be a straightforward engineering detail to provide a tank installation that did not provide a hydraulic connection through the landfill cap. For example a collar could be provided around the tank that sat within the cap and the immediate surround to the tank could be backfilled with bentonite and/or use made of self-sealing geocomposite materials such as Bentofix matting.
- The tank would have to be located such that it received effluent under normal gravity flow. It may be that the depth to which the tank could be installed would be limited by the presence of the water table but this issue could also be addressed in the same way that underground storage tanks are installed at service stations in similar circumstances by means of concrete deadweights or screw-pile anchors.
- One-way valves could be installed in pipelines to prevent effluent escaping and, if necessary, to allow the holding tank to deliberately fill in the event of flooding to counteract buoyancy effects.
- The tank itself could be of fibreglass construction which would not be subject to chemical attack. Such tanks are readily available as petroleum storage tanks which are commonly used at service stations.

In summary, we do not consider there to be any particular difficulties in designing a tank installation which would satisfy environmental concerns. Should you require any further more specific details please do not hesitate to contact the undersigned.
Yours faithfully
For and on behalf of
JK GEOTECHNICS

P STUBBS (Principal)

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Canberra ACT 2601

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London

Parkview, Great West Road
Brentford, Middlesex TW8 9AZ
United Kingdom

Telephone: +44 (0)208 326 5347

Attachment 15

Reduced copies of amended site layout plans

DRAWING SCHEDULE

CONCRETE RECYCLERS PLANT FACILITY
NEWBRIDGE ROAD MOOREBANK

TITLE	SCALE	DWG NO.	ISSUE
COVER SHEET	NTS	00	A
PROPOSED OVERALL REGRADED CONTOUR PLAN	1:2000	01	A
PROPOSED SITE CONTROLS	1:2000	02	A
PROPOSED OVERALL SITE PLAN	1:2000	03	A
PROPOSED DETAILED SITE PLAN	1:1000	04	A
PROPOSED SITE SECTIONS SHEET 1	1:500	05	A
PROPSOED SITE SECTIONS SHEET 2	1:500	06	A
OFFICE FLOOR AND WEIGHBRIDGES - PLAN	1:100	07	A
OFFICE FLOOR AND WEIGHBRIDGES - SECTIONS AND ELEVATIONS	1:100	08	A
STAFF LUNCH ROOM / AMENITIES - PLAN	1:100	09	A
STAFF LUNCH ROOM / AMENITIES - SECTIONS AND ELEVATIONS	1:100	10	A
WHEEL WASH STRUCTURE - PLAN	1:100	11	A
WORKSHOP BUILDING - PLAN	1:100	12	A
WORKSHOP BUILDING - SECTIONS AND ELEVATIONS	1:100	13	A
PRIMARY CRUSHER SHED - PLAN	1:100	14	A
PRIMARY CRUSHER SHED - SECTIONS AND ELEVATIONS	1:100	15	A
SECONDARY CRUSHER SHED & SCREEN SHED 1 - PLAN	1:100	16	A
SECONDARY CRUSHER SHED & SCREEN SHED 1 - SECTIONS AND ELEVATIONS	1:100	17	A
SCREEN SHED 2 - PLAN	1:100	18	A
SCREEN SHED 2 - SECTIONS AND ELEVATIONS	1:100	19	A
WORKSHOP SHED - PLAN	1:100	20	A
WORKSHOP SHED - SECTIONS AND ELEVATIONS	1:100	21	A

ISSUE	DATE	APPD	COMMENTS
A	25.07.13	KC	FOR SUBMISSION

SURVEY BY:

plot date : 7/25/13
file name : 5018-13_250713-KC.vwx

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THACKERAY STREET CAMELLIA NSW 2142

PROJECT ADDRESS:
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NEWBRIDGE ROAD MOOREBANK

COVER SHEET

SCALE	PASSED	DATE
NTS	EMMC	25.07.13

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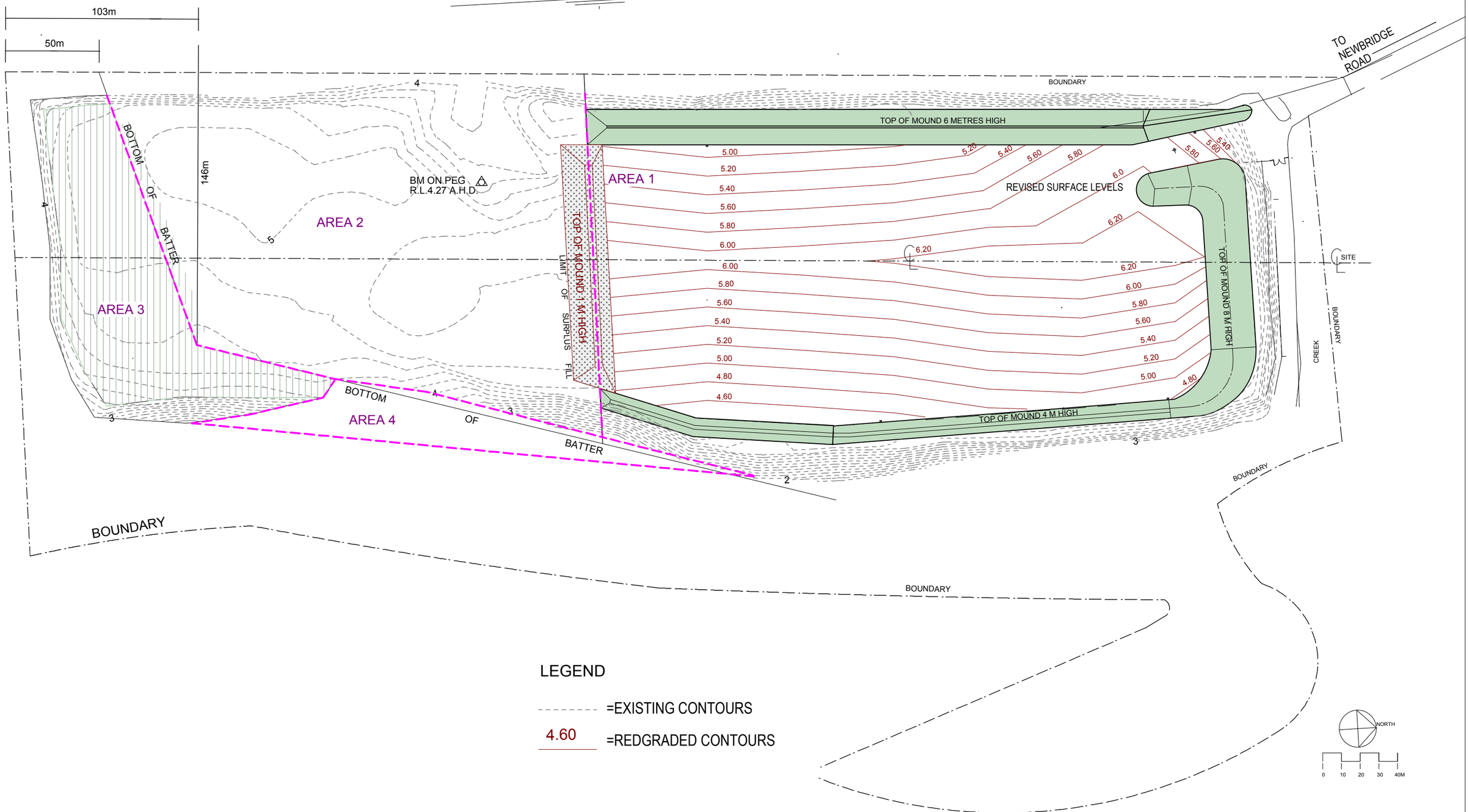

LEGEND

=EXISTING CONTOURS

4.60 =REDGRADED CONTOURS

ISSUE	DATE	APPD	COMMENTS
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PROPOSED OVERALL REGRADED CONTOUR PLAN

SCALE	PASSED	DATE
1:2000 @ A3	EMMC	25.07.13

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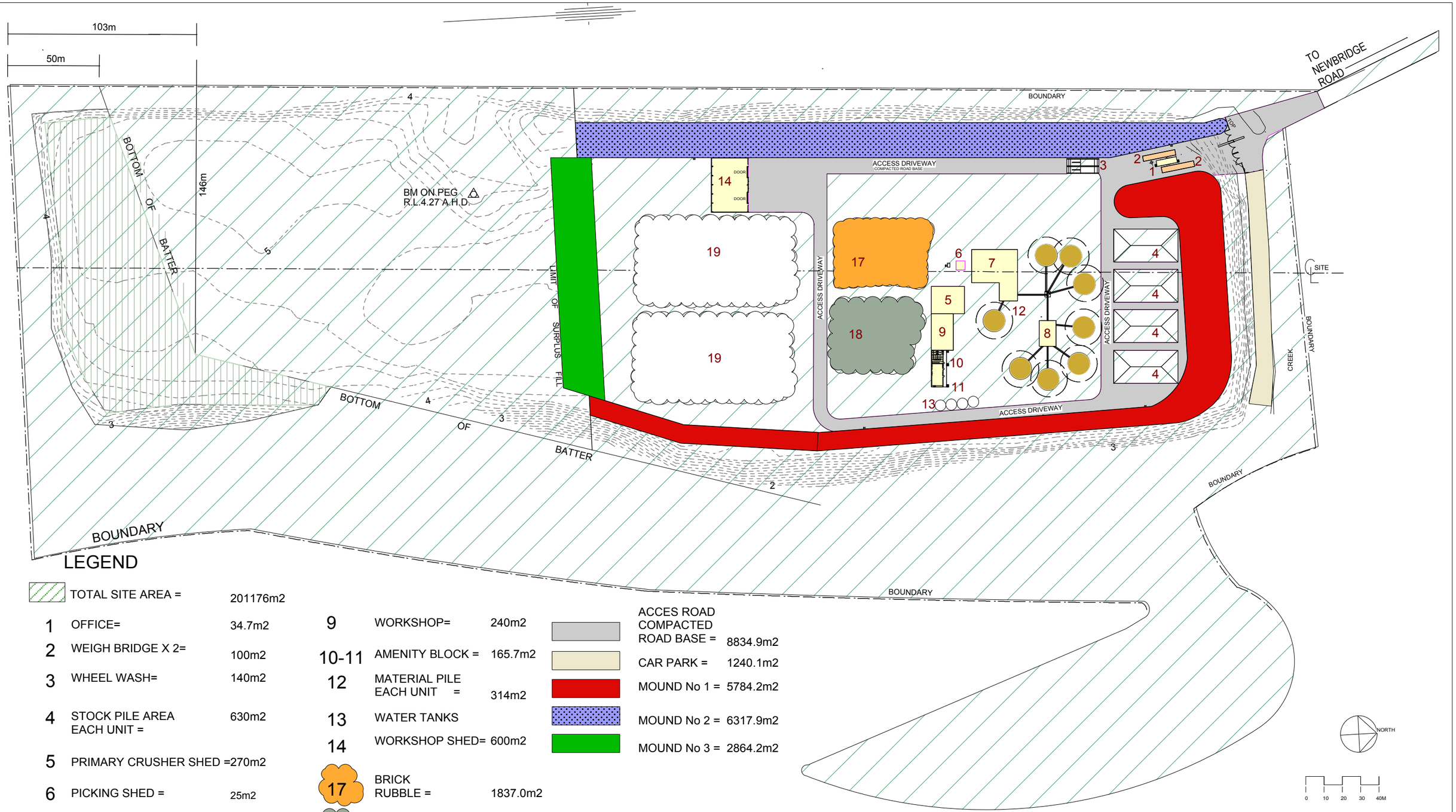

LEGEND

	TOTAL SITE AREA =	201176m2			
1	OFFICE=	34.7m2	9	WORKSHOP=	240m2
2	WEIGH BRIDGE X 2=	100m2	10-11	AMENITY BLOCK =	165.7m2
3	WHEEL WASH=	140m2	12	MATERIAL PILE EACH UNIT =	314m2
4	STOCK PILE AREA EACH UNIT =	630m2	13	WATER TANKS	
5	PRIMARY CRUSHER SHED =	270m2	14	WORKSHOP SHED=	600m2
6	PICKING SHED =	25m2	17	BRICK RUBBLE =	1837.0m2
7	SECONDARY CRUSHER SHED/ SCREEN SHED No. 1 =	550m2	18	CONCRETE RUBBLE =	1620.6m2
8	SCREEN SHED No 2 =	126m2	19	UNCRUSHED STOCKPILE =	7459.5m2

ACCES ROAD COMPACTED ROAD BASE =	8834.9m2	
CAR PARK =	1240.1m2	
MOUND No 1 =	5784.2m2	
MOUND No 2 =	6317.9m2	
MOUND No 3 =	2864.2m2	

NORTH

0 10 20 30 40M

ISSUE	DATE	APPD	COMMENTS
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PROPOSED SITE CONTROL PLAN

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1:2000 @ A3	EMMC	25.07.13

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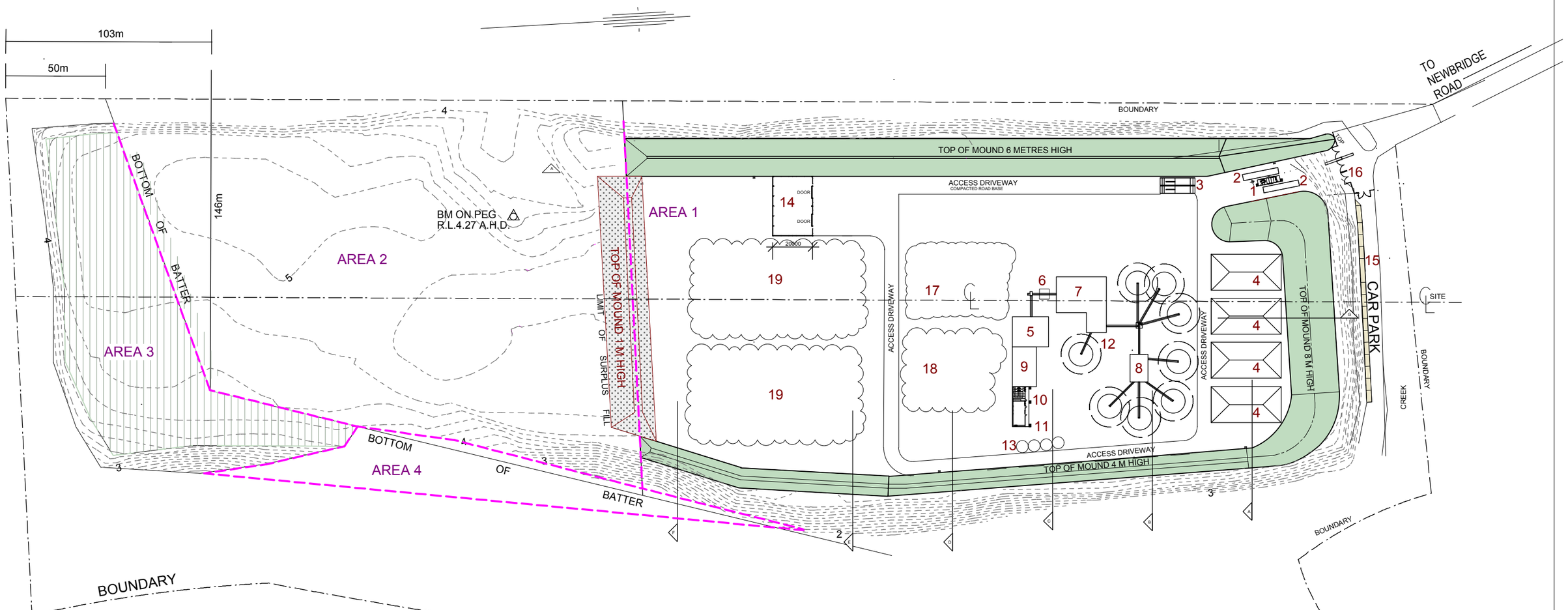

LEGEND

1	OFFICE
2	WEIGH BRIDGE
3	WHEEL WASH
4	STOCK PILES- 4M HIGH
5	PRIMARY CRUSHER SHED
6	PICKING SHED
7	SECONDARY CRUSHER SHED/SCREEN SHED 1
8	SCREEN SHED 2
9	WORKSHOP
10	TOILETS
11	STAFF LUNCHROOM
12	MATERIAL PRODUCT
13	STORM WATER TANKS
14	LARGE WORKSHOP SHED
15	CAR PARK
16	NEW FENCE GATES
17	BRICK RUBBLE- 7M HIGH
18	CONCRETE RUBBLE- 7M HIGH
19	UNCRUSHED STOCKPILE- 7M HIGH

- - - - - - - - =EXISTING CONTOURS

ISSUE	DATE	APPD	COMMENTS
A	25.07.13	KC	FOR SUBMISSION

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PROPOSED OVERALL SITE PLAN

SCALE	PASSED	DATE
1:2000 @ A3	EMMC	25.07.13

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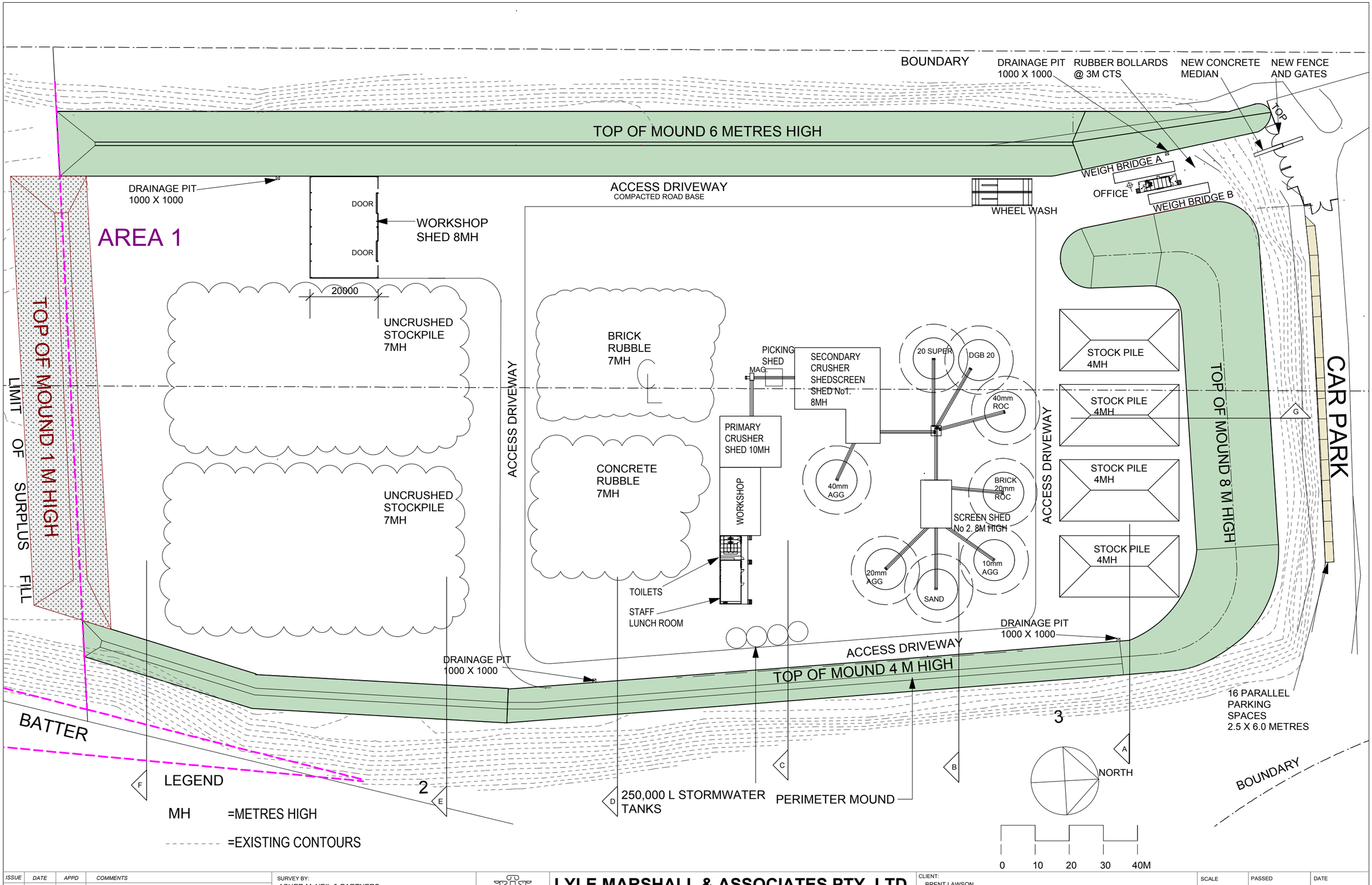

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NEWBRIDGE ROAD MOOREBANK

PROPOSED DETAILED SITE PLAN

SCALE	PASSED	DATE
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DRAWN	KC			
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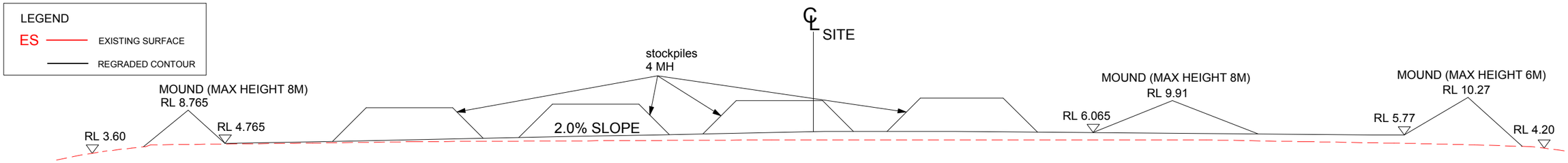

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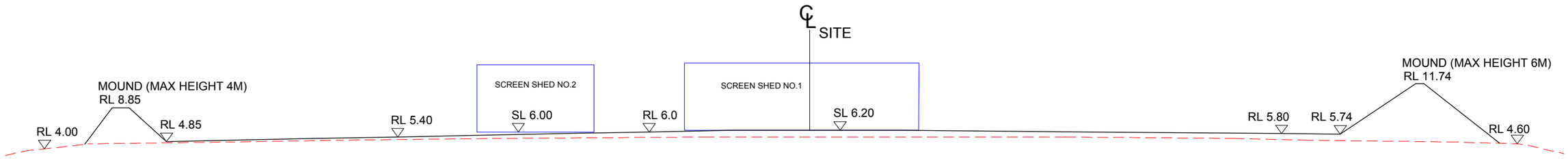

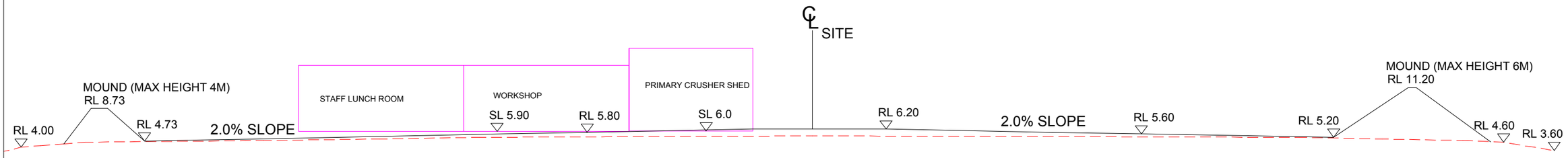

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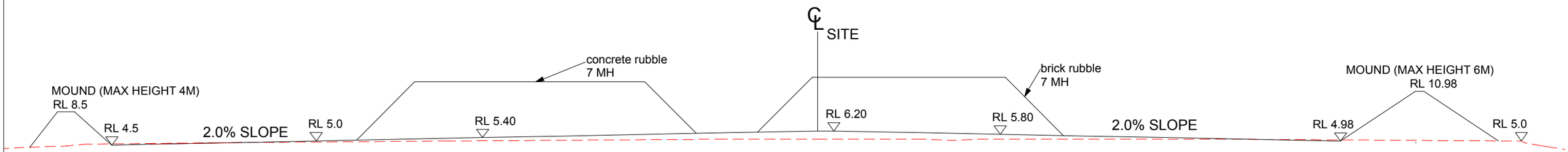

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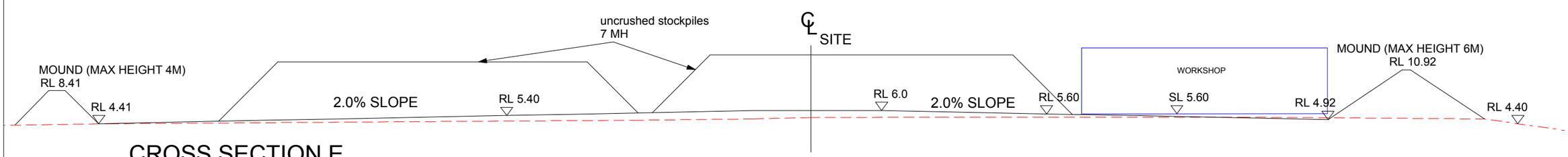

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PROJECT ADDRESS:
CONCRETE RECYCLERS
NEWBRIDGE ROAD MOOREBANK

PROPOSED SITE SECTIONS SHEET 1

SCALE	PASSED	DATE
1:500 @ A3	EMMC	25.07.13

		JOB No.	SHEET No.	ISSUE
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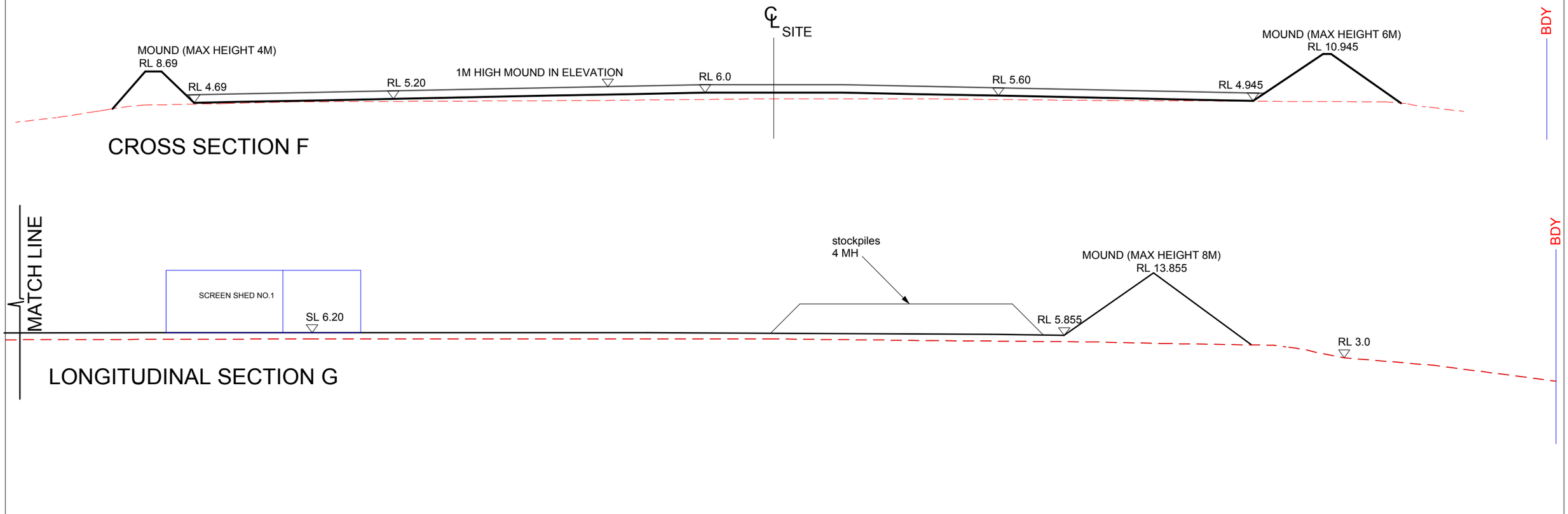
DRAWN	JK			
CHECKED	EMMC	DATE FIRST ISSUED: JULY 2013	OF	



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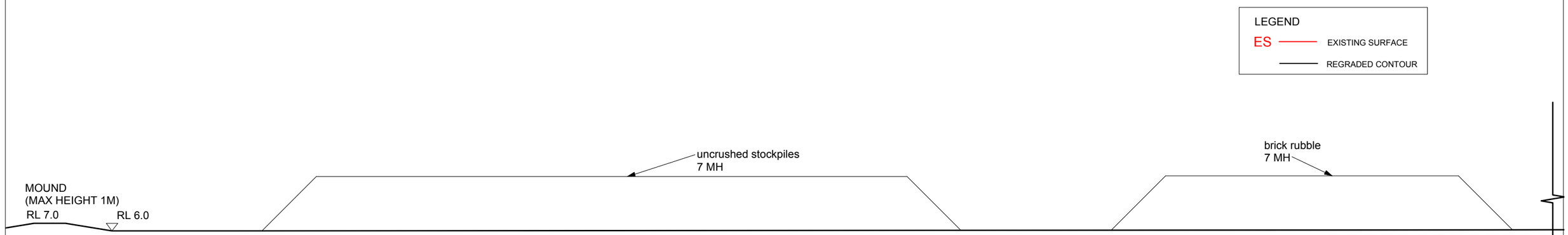
LONGITUDINAL SECTION G



LONGITUDINAL SECTION G

ISSUE	DATE	APPD	COMMENTS
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THACKERAY STREET CAMELLIA NSW 2142

PROJECT ADDRESS:
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NEWBRIDGE ROAD MOOREBANK

PROPOSED SITE SECTIONS SHEET 2

SCALE	PASSED	DATE
1:500 @ A3	EMMC	25.07.13

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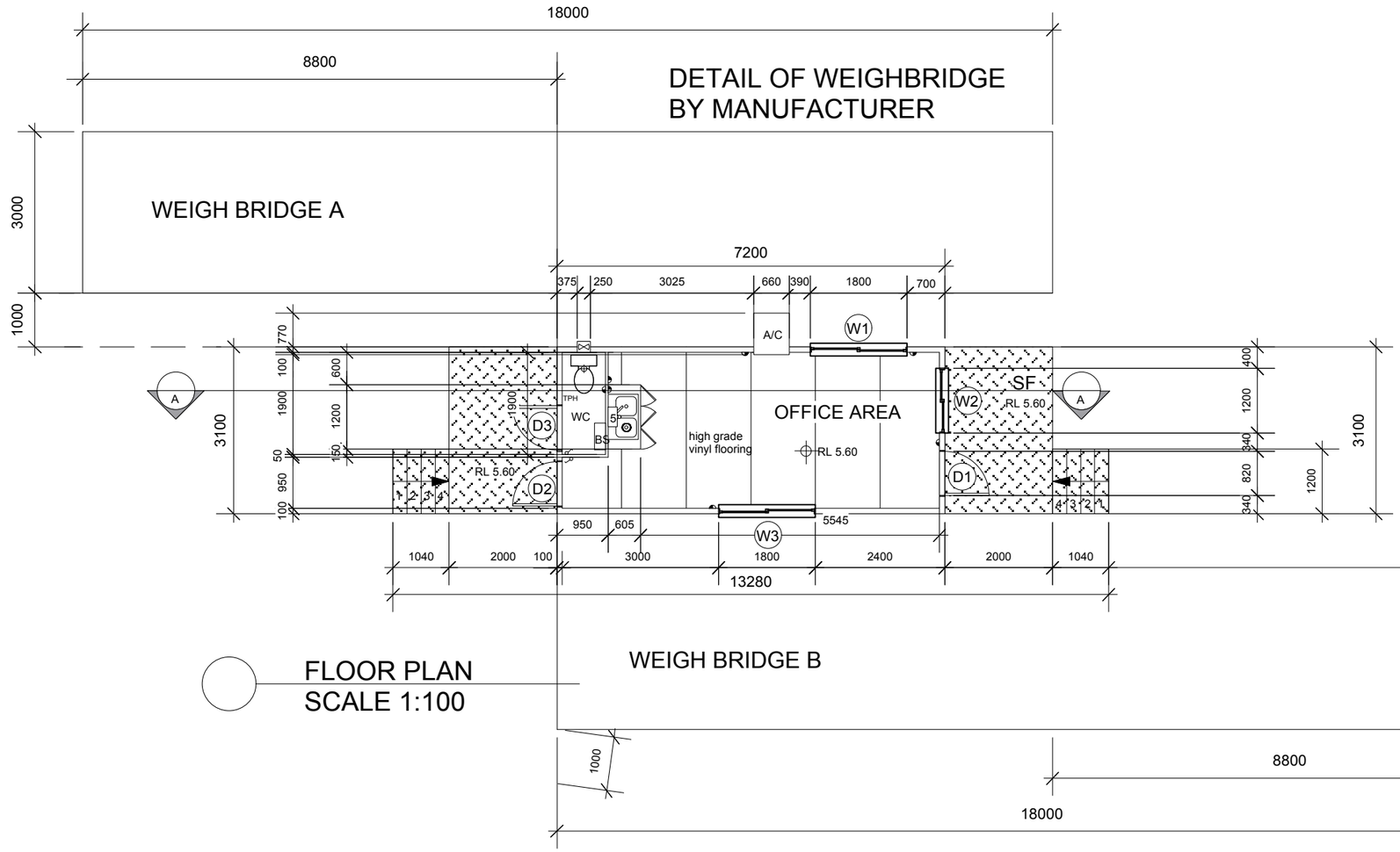
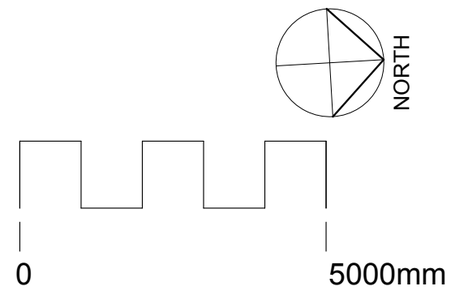
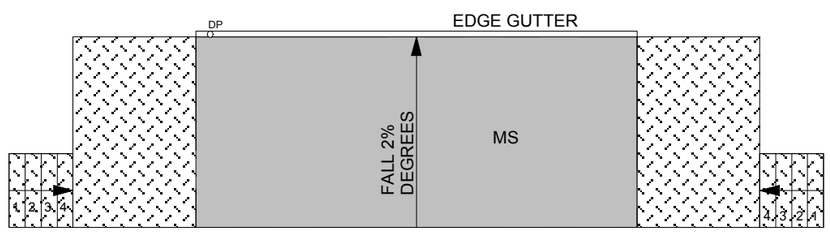
CHECKED	EMMC	DATE FIRST ISSUED. JULY 2013	OF	



FLOOR PLAN
SCALE 1:100





NOTE:
DETAIL OF WEIGHBRIDGE
BY MANUFACTURER

ROOF PLAN
SCALE 1:100

LEGEND

BS	BASIN - COLOUR WHITE
BT	BENCH TOP
CT1	CERAMIC TILES (200x200 TBA)
FW	FLOOR WASTE
SF	STEEL CHECKERBOARD METAL PLATE FLOORING
TPH	TOILET PAPER HOLDER
WC	WATER CLOSET - CAROMA, WHITE
DP	DOWN PIPE
MS	METAL ROOF SHEETING

LIGHT SWITCH

DOUBLE GPO

FLOOR WASTE

ISSUE	DATE	APPD	COMMENTS
A	25.07.13	KC	FOR SUBMISSION

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plot date : 7/25/13
file name : 5018-13_250713-KC.vwx

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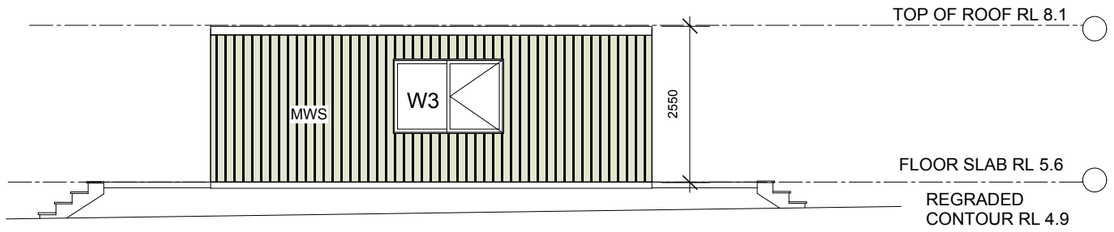
PROJECT ADDRESS:
CONCRETE RECYCLERS
NEWBRIDGE ROAD MOOREBANK

OFFICE FLOOR PLAN AND WEIGHBRIDGES

SCALE	PASSED	DATE
1:100 @ A3	EMMC	25.07.13

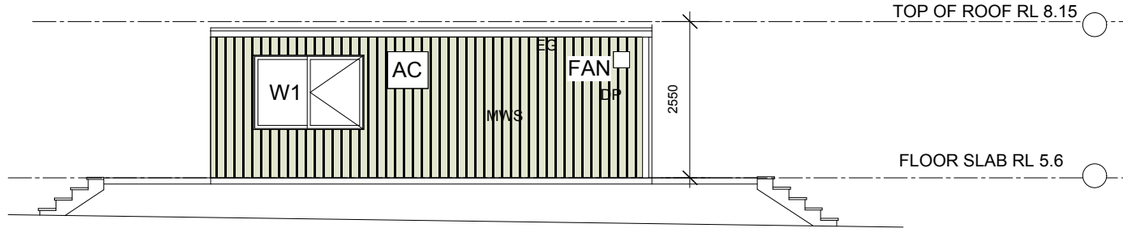
		JOB No.	SHEET No.	ISSUE
DESIGN	LMA	5018-13	07	A
DRAWN	KC			
CHECKED	EMMC	DATE FIRST ISSUED: JULY 2013	OF	



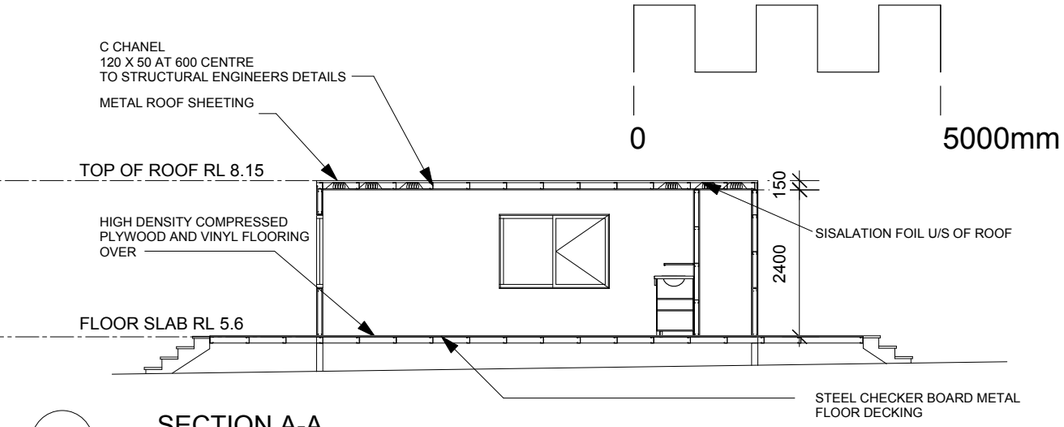
WEST ELEVATION
SCALE 1:100

LEGEND

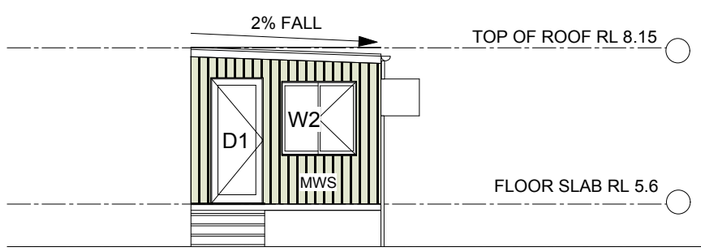
MWS	Metal wall sheet (Colorbond Wilderness Green)
MS	Metal Roof Sheeting - (Colourbond Bushland)
EG	Edge Gutter
DP	Down Pipe



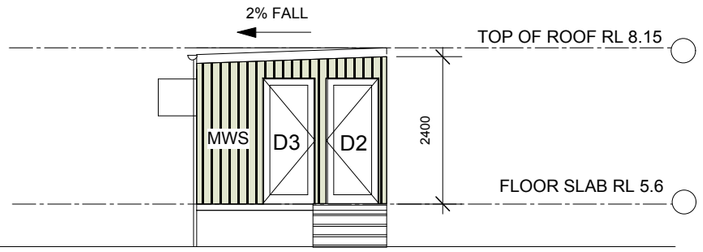
EAST ELEVATION
SCALE 1:100



SECTION A-A
SCALE 1:100



SOUTH ELEVATION
SCALE 1:100



NORTH ELEVATION
SCALE 1:100

ISSUE	DATE	APPD	COMMENTS
A	25.07.13	KC	FOR SUBMISSION

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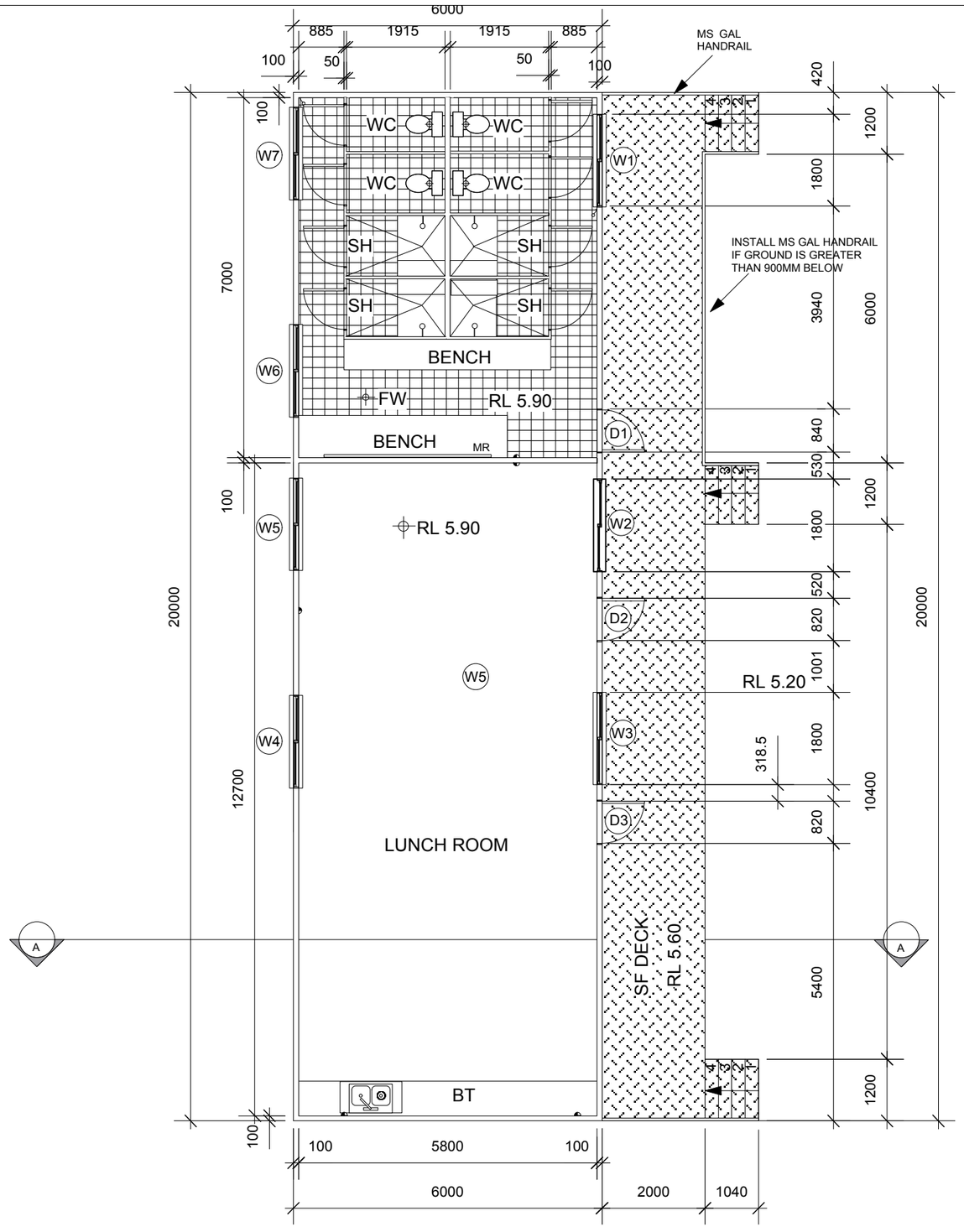
NEWBRIDGE ROAD MOOREBANK

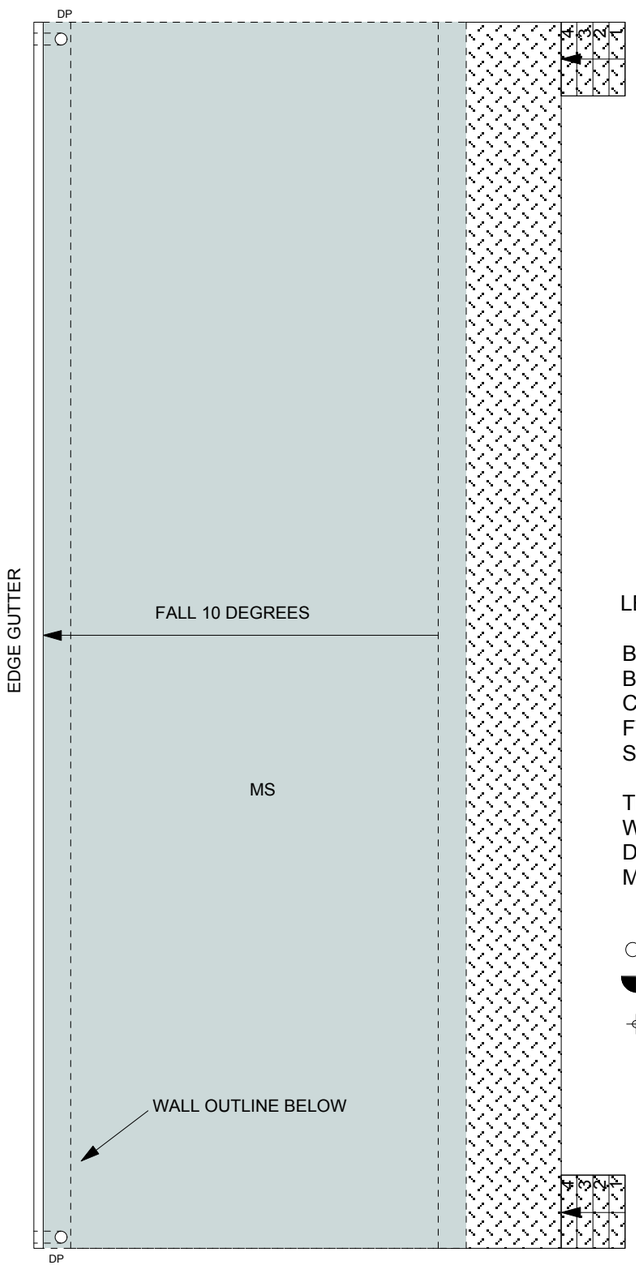
OFFICE ELEVATIONS AND SECTION

SCALE	PASSED	DATE
1:100 @ A3	EMMC	25.07.13

DESIGN	LMA	JOB No.	SHEET No.	ISSUE
DRAWN	KC	5018-13	08	A
CHECKED	EMMC	DATE FIRST ISSUED: JULY 2013	OF	



FLOOR PLAN
SCALE 1:100



ROOF PLAN
SCALE 1:100

LEGEND

BS	BASIN - COLOUR WHITE
BT	BENCH TOP
CT1	CERAMIC TILES (200x200 TBA)
FW	FLOOR WASTE
SF	STEEL CHECKERBOARD METAL PLATE FLOORING
TPH	TOILET PAPER HOLDER
WC	WATER CLOSET - CAROMA, WHITE
DP	DOWN PIPE
MS	METAL ROOF SHEETING

LIGHT SWITCH

DOUBLE GPO

FLOOR WASTE

ISSUE	DATE	APPD	COMMENTS
A	25.07.13	KC	FOR SUBMISSION

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plot date : 7/25/13
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PROJECT ADDRESS:
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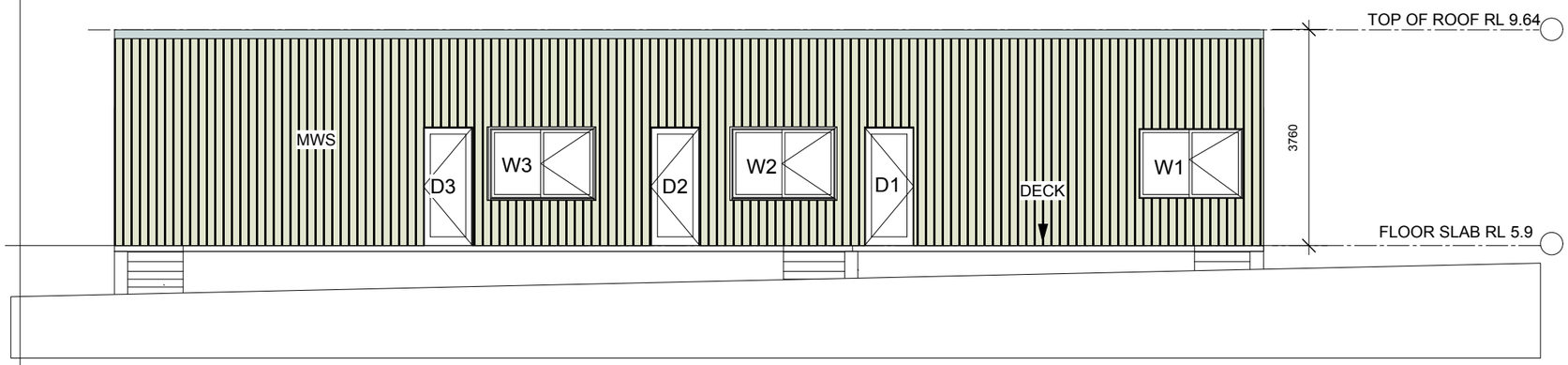
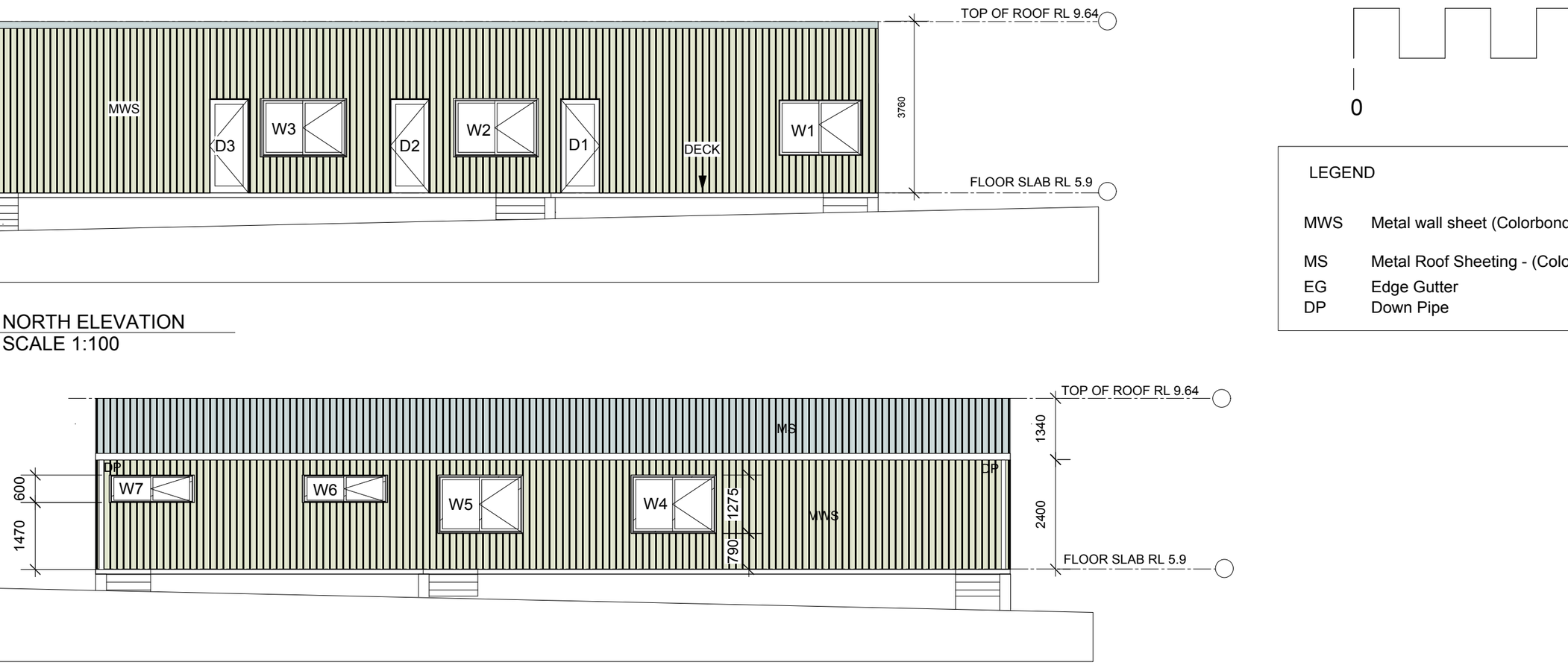
NEWBRIDGE ROAD MOOREBANK

STAFF LUNCH ROOM / AMENITIES PLAN

SCALE		PASSED	DATE
1:100 @ A3		EMMC	25.07.13
DESIGN	LMA	JOB No. 5018-13	SHEET No. 09
DRAWN	JK		ISSUE A
CHECKED	EMMC	DATE FIRST ISSUED. JULY 2013	OF



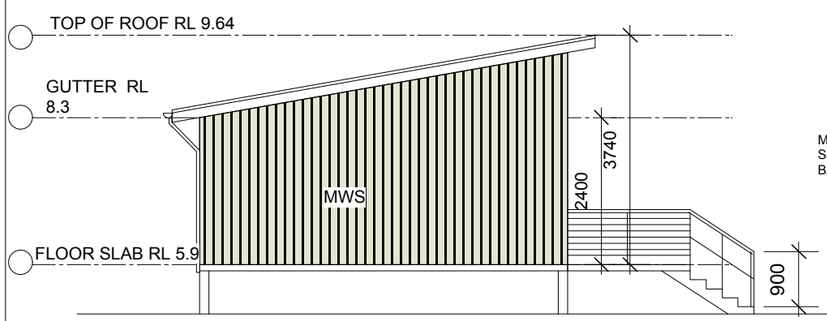
NORTH ELEVATION
SCALE 1:100



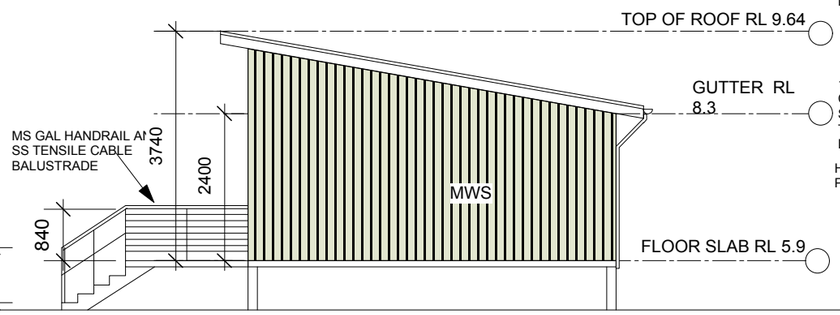
LEGEND

MWS	Metal wall sheet (Colorbond Wilderness Green)
MS	Metal Roof Sheeting - (Colourbond Bushland)
EG	Edge Gutter
DP	Down Pipe

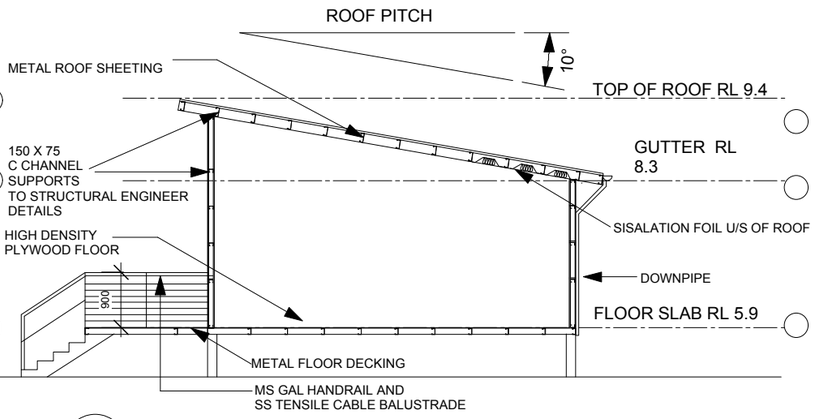
SOUTH ELEVATION
SCALE 1:100



EAST ELEVATION
SCALE 1:100



WEST ELEVATION
SCALE 1:100



SECTION A-A
SCALE 1:100

ISSUE	DATE	APPD	COMMENTS
A	25.07.13	KC	FOR SUBMISSION

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PROJECT ADDRESS:
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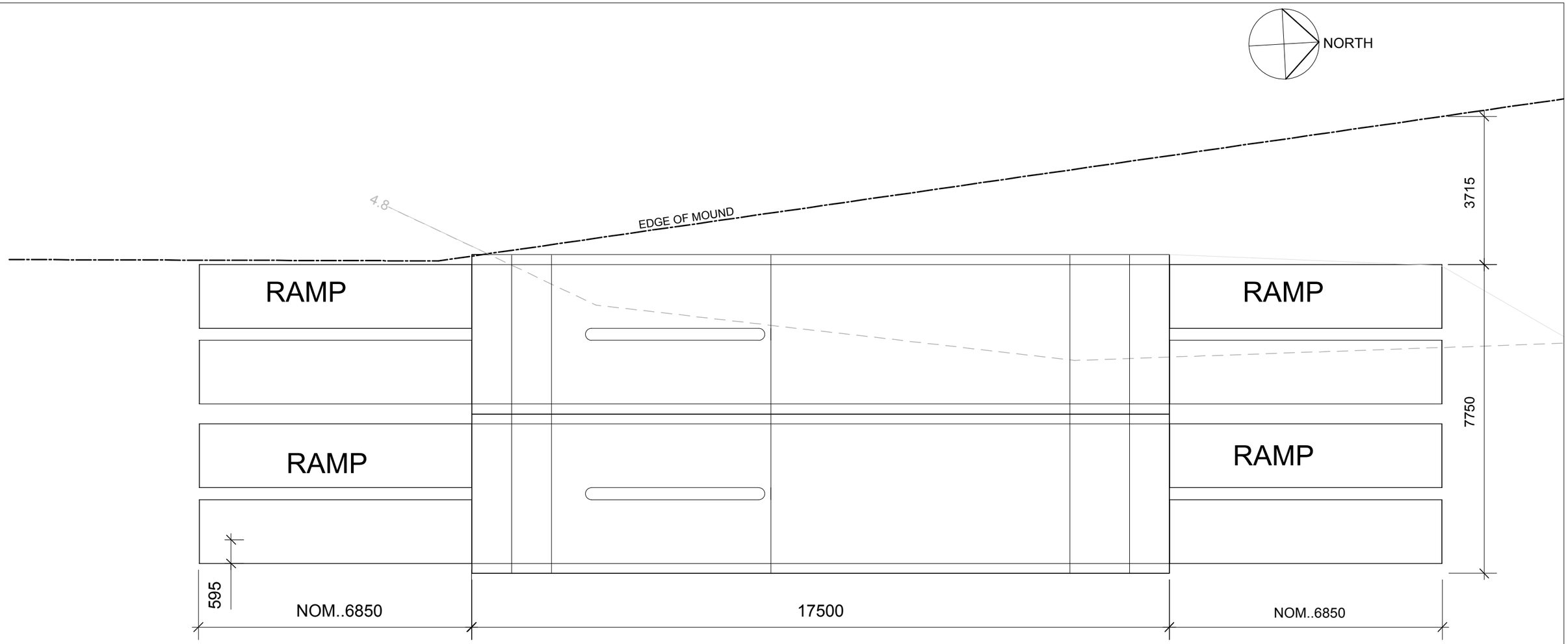
NEWBRIDGE ROAD MOOREBANK

STAFF LUNCH ROOM / AMENITIES SECTION AND ELEVATIONS

SCALE	PASSED	DATE
1:100 @ A3	EMMC	25.07.13

DESIGN	LMA	JOB No.	SHEET No.	ISSUE
DRAWN	JK	5018-13	10	A
CHECKED	EMMC	DATE FIRST ISSUED: JULY 2013	OF	



5.0

PLAN ONLY
DETAIL BY OTHERS

ISSUE	DATE	APPD	COMMENTS
A	25.07.13	KC	FOR SUBMISSION

SURVEY BY:
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plot date : 7/25/13
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PROJECT ADDRESS:
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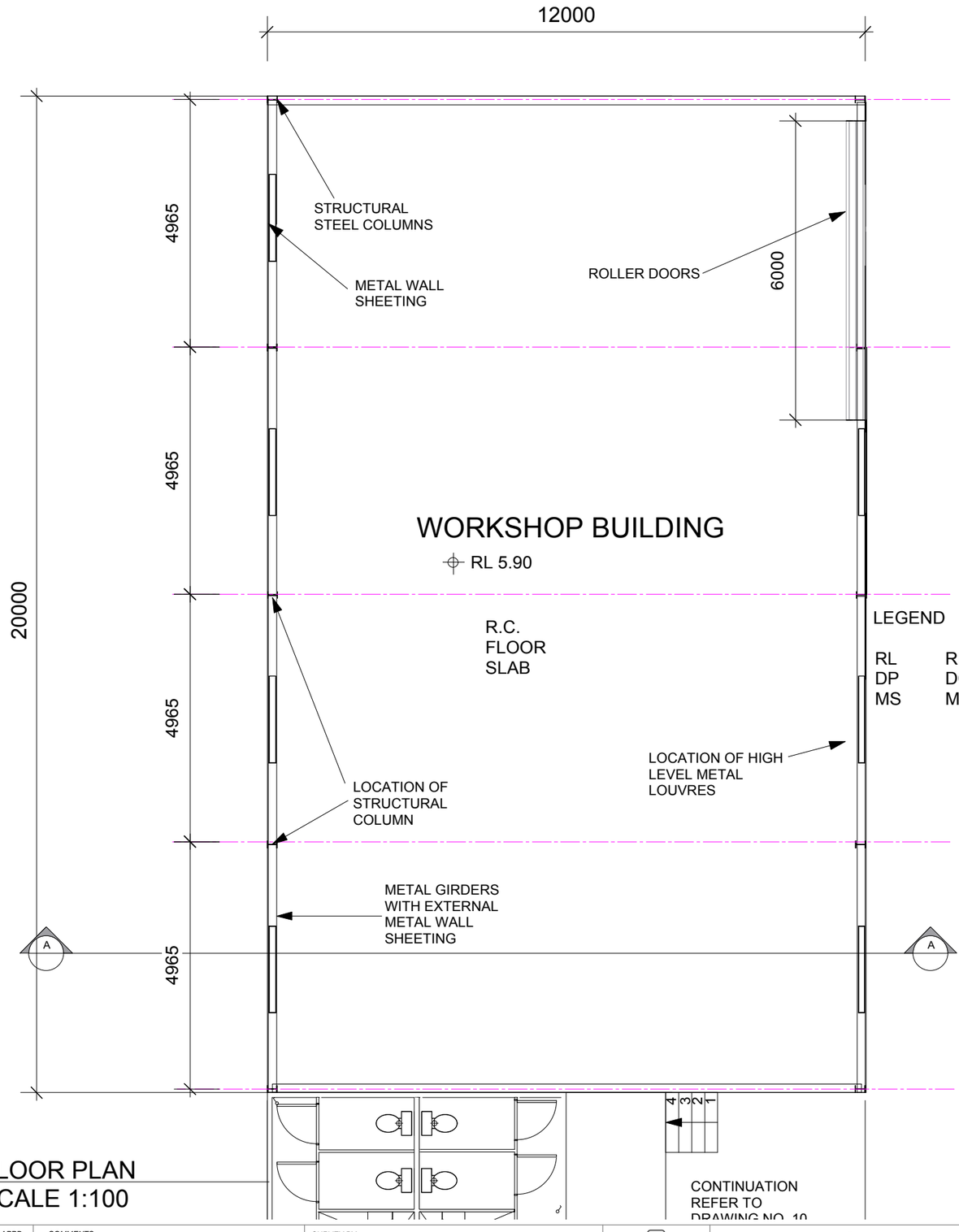
NEWBRIDGE ROAD MOOREBANK

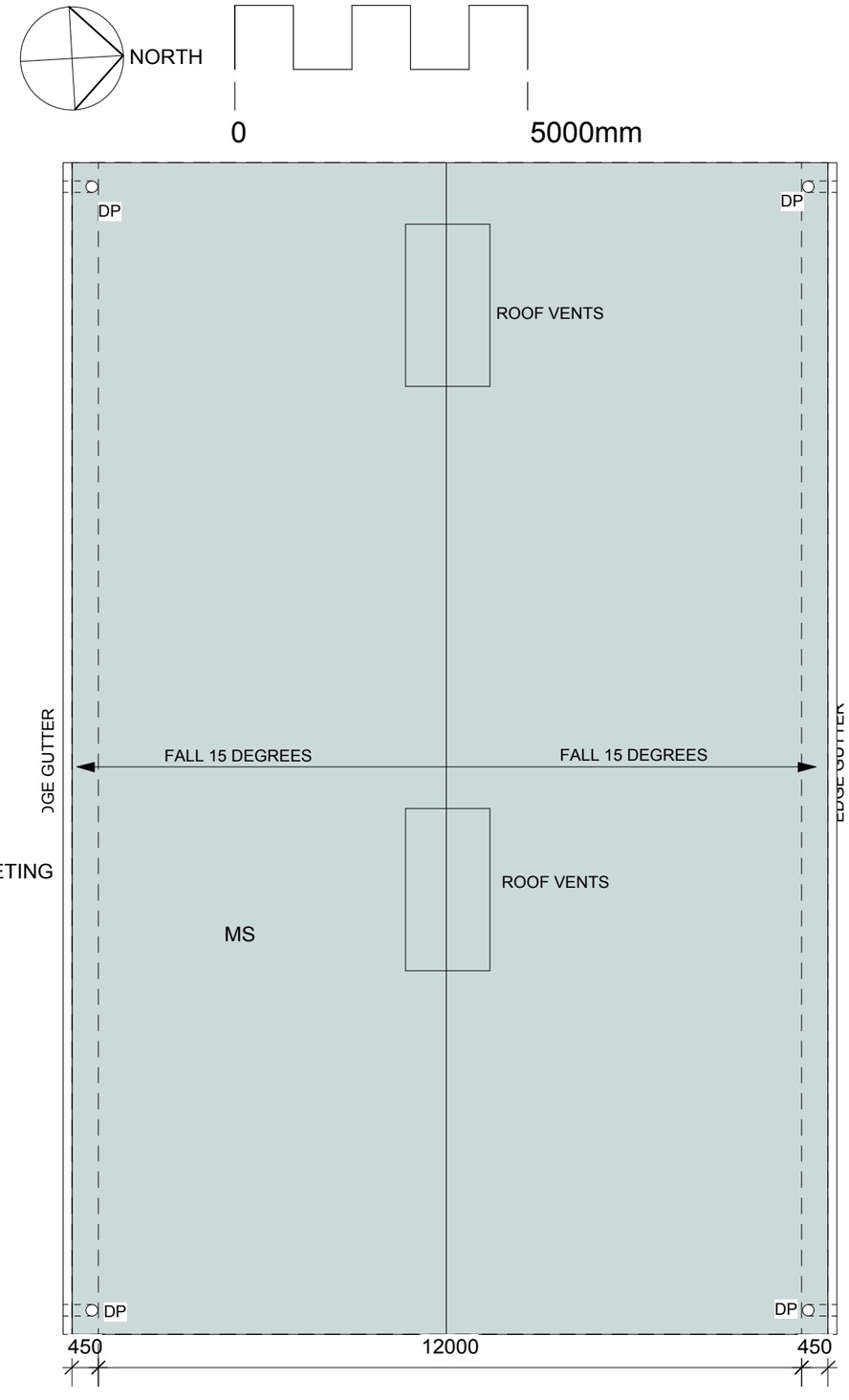
WHEEL WASH STRUCTURE PLANS AND SECTIONS

SCALE	PASSED	DATE
1:100 @ A3	EMMC	25.07.13

DESIGN	LMA	JOB No.	SHEET No.	ISSUE
DRAWN	KC	5018-13	11	A
CHECKED	EMMC	DATE FIRST ISSUED. JULY 2013	OF	



FLOOR PLAN
SCALE 1:100



ROOF PLAN
SCALE 1:100

ISSUE	DATE	APPD	COMMENTS
A	25.07.13	KC	FOR SUBMISSION

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plot date : 7/25/13
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PROJECT ADDRESS:
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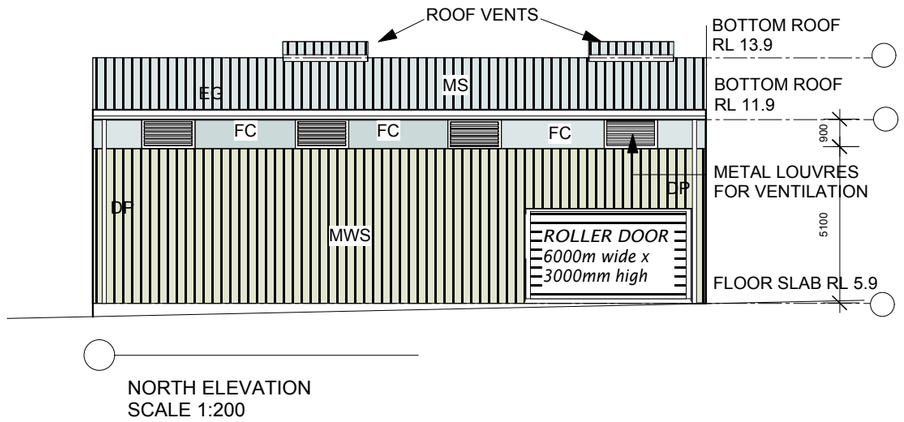
NEWBRIDGE ROAD MOOREBANK

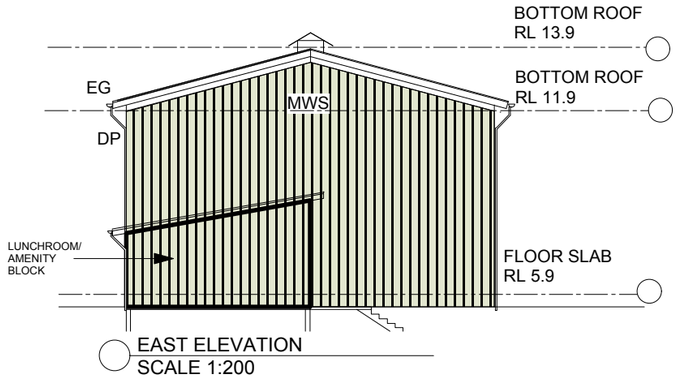
WORKSHOP BUILDING PLAN

SCALE	PASSED	DATE
1:200 @ A3	EMMC	25.07.13

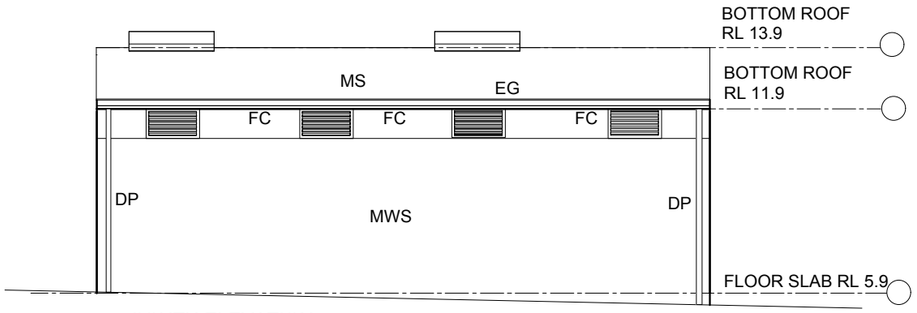
DESIGN	LMA	JOB No.	SHEET No.	ISSUE
DRAWN	KC	5018-13	12	A
CHECKED	EMMC	DATE FIRST ISSUED. JULY 2013	OF	



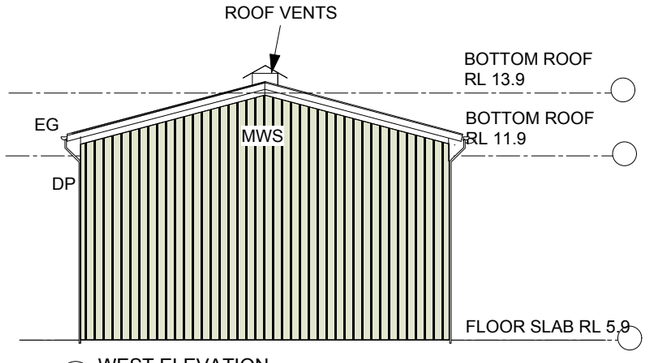
NORTH ELEVATION
SCALE 1:200



EAST ELEVATION
SCALE 1:200



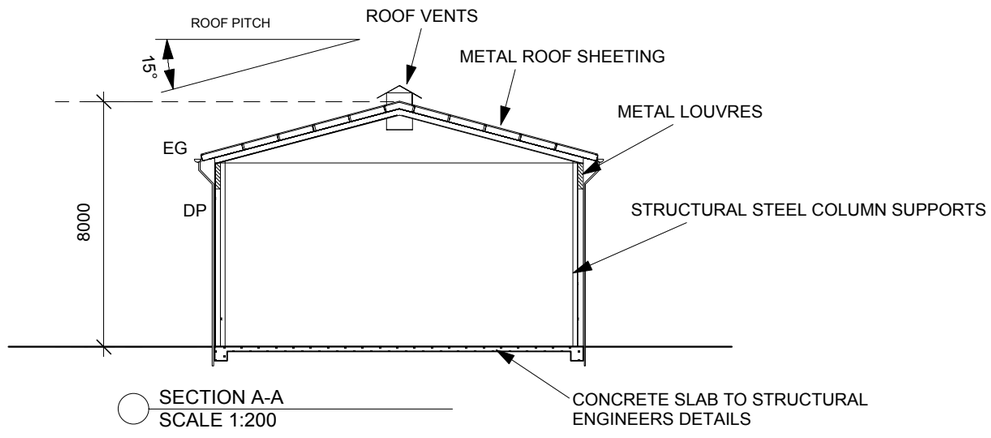
SOUTH ELEVATION
SCALE 1:200



WEST ELEVATION
SCALE 1:200

LEGEND

MWS	Metal wall sheet (Colorbond Wilderness Green)
MS	Metal Roof Sheeting - (Colourbond Bushland)
EG	Edge Gutter
DP	Down Pipe



SECTION A-A
SCALE 1:200

ISSUE	DATE	APPD	COMMENTS
A	25.07.13	KC	FOR SUBMISSION

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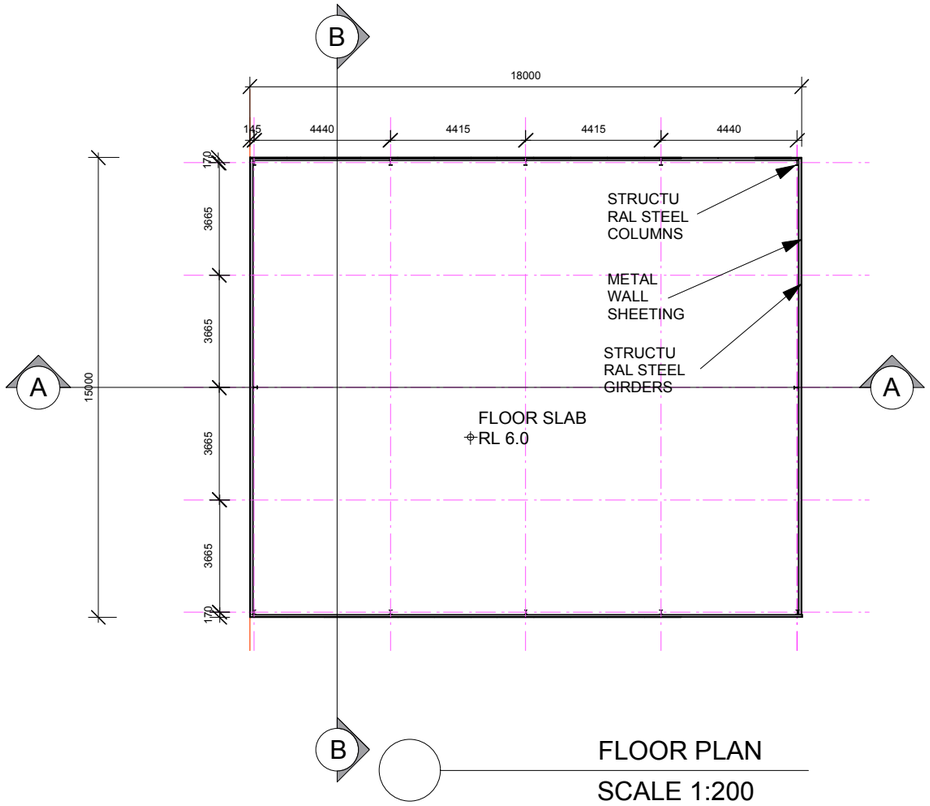
NEWBRIDGE ROAD MOOREBANK

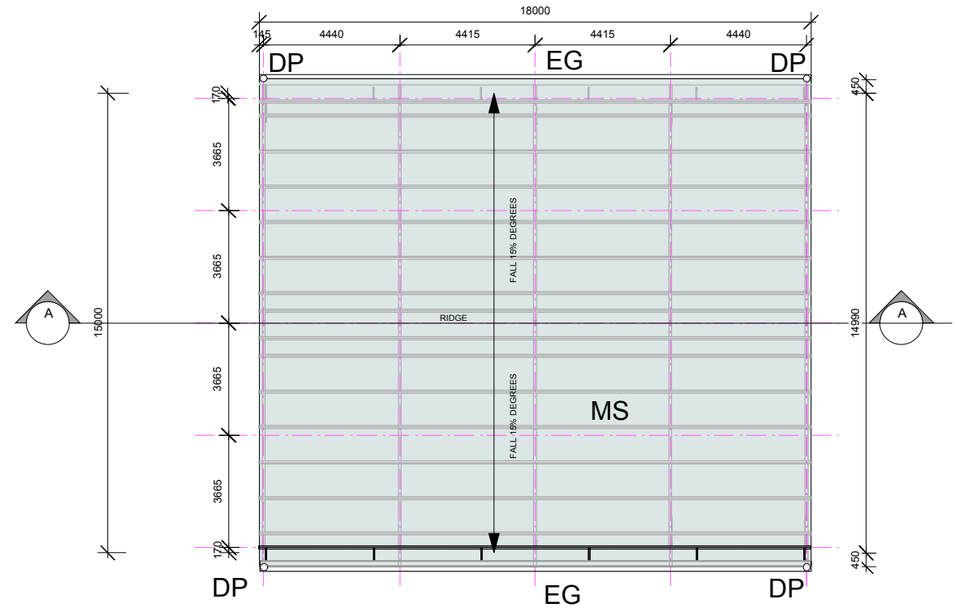
WORKSHOP BUILDING SECTIONS AND ELEVATIONS

SCALE	PASSED	DATE
1:200 @ A3	EMMC	25.07.13

DESIGN	LMA	JOB No.	SHEET No.	ISSUE
DRAWN	KC	5018-13	13	A
CHECKED	EMMC	DATE FIRST ISSUED: JULY 2013	OF	



FLOOR PLAN
SCALE 1:200



ROOF PLAN
SCALE 1:200

NOTE

DETAIL BY OTHERS
OVERALL DIMENSIONS AND STRUCTURE
SHOWN BE DETAILED FURTHER BY MANUFACTURERS

LEGEND

MWS	Metal wall sheet (Colorbond Wilderness Green)
MS	Metal Roof Sheeting - (Colourbond Bushland)
EG	Edge Gutter
DP	Down Pipe

ISSUE	DATE	APPD	COMMENTS
A	25.07.13	KC	FOR SUBMISSION

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plot date : 7/25/13
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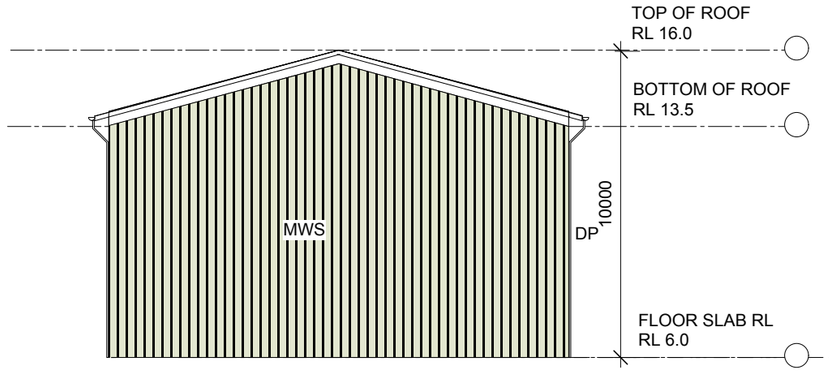
PROJECT ADDRESS:
CONCRETE RECYCLERS
NEWBRIDGE ROAD MOOREBANK

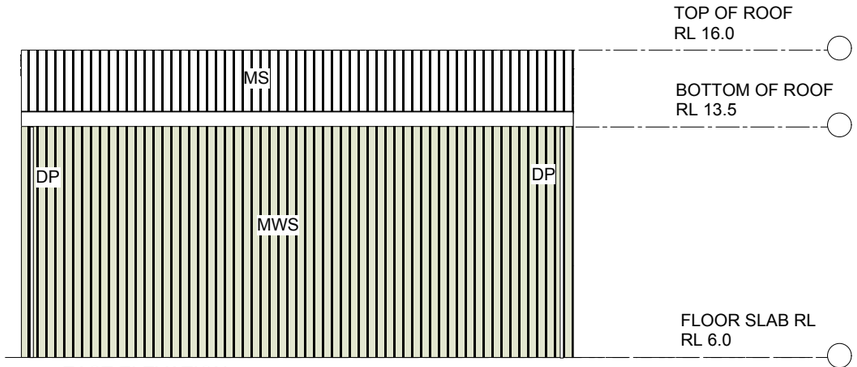
PRIMARY CRUSHER SHED PLAN

SCALE	PASSED	DATE
1:200 @ A3	EMMC	25.07.13

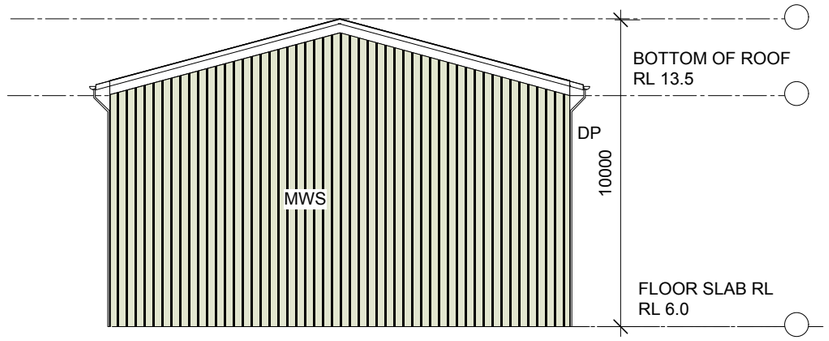
DESIGN	LMA	JOB No.	SHEET No.	ISSUE
DRAWN	KC	5018-13	14	A
CHECKED	EMMC	DATE FIRST ISSUED: JULY 2013	OF	



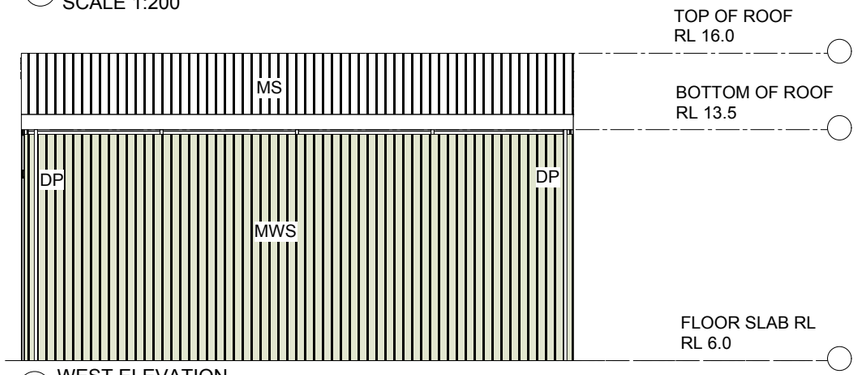
NORTH ELEVATION
SCALE 1:200



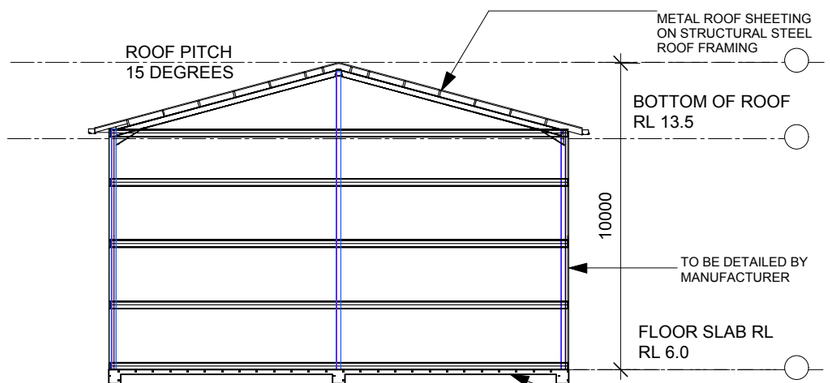
EAST ELEVATION
SCALE 1:200



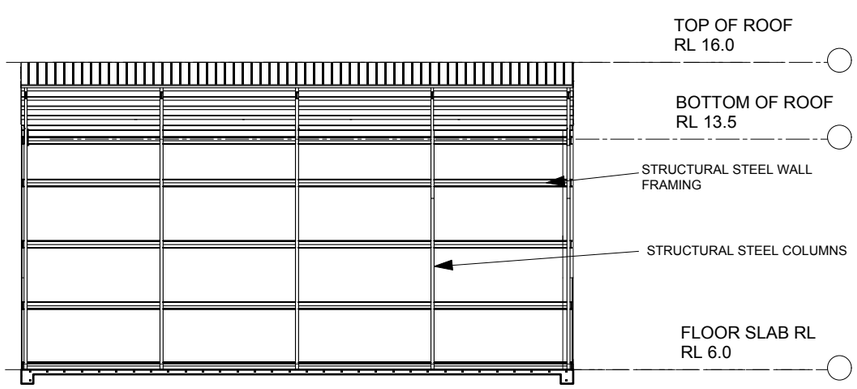
SOUTH ELEVATION
SCALE 1:200



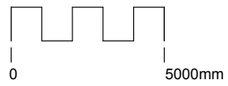
WEST ELEVATION
SCALE 1:200



SECTION B-B
SCALE 1:200



SECTION A-A
SCALE 1:200



LEGEND

MWS	Metal wall sheet (Colorbond Wilderness Green)
MS	Metal Roof Sheeting (Colourbond Bushland)
EG	Edge Gutter
DP	Down Pipe

ISSUE	DATE	APPD	COMMENTS
A	25.07.13	KC	FOR SUBMISSION

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plot date : 7/25/13
file name : 5018-13_250713-KC.vwx

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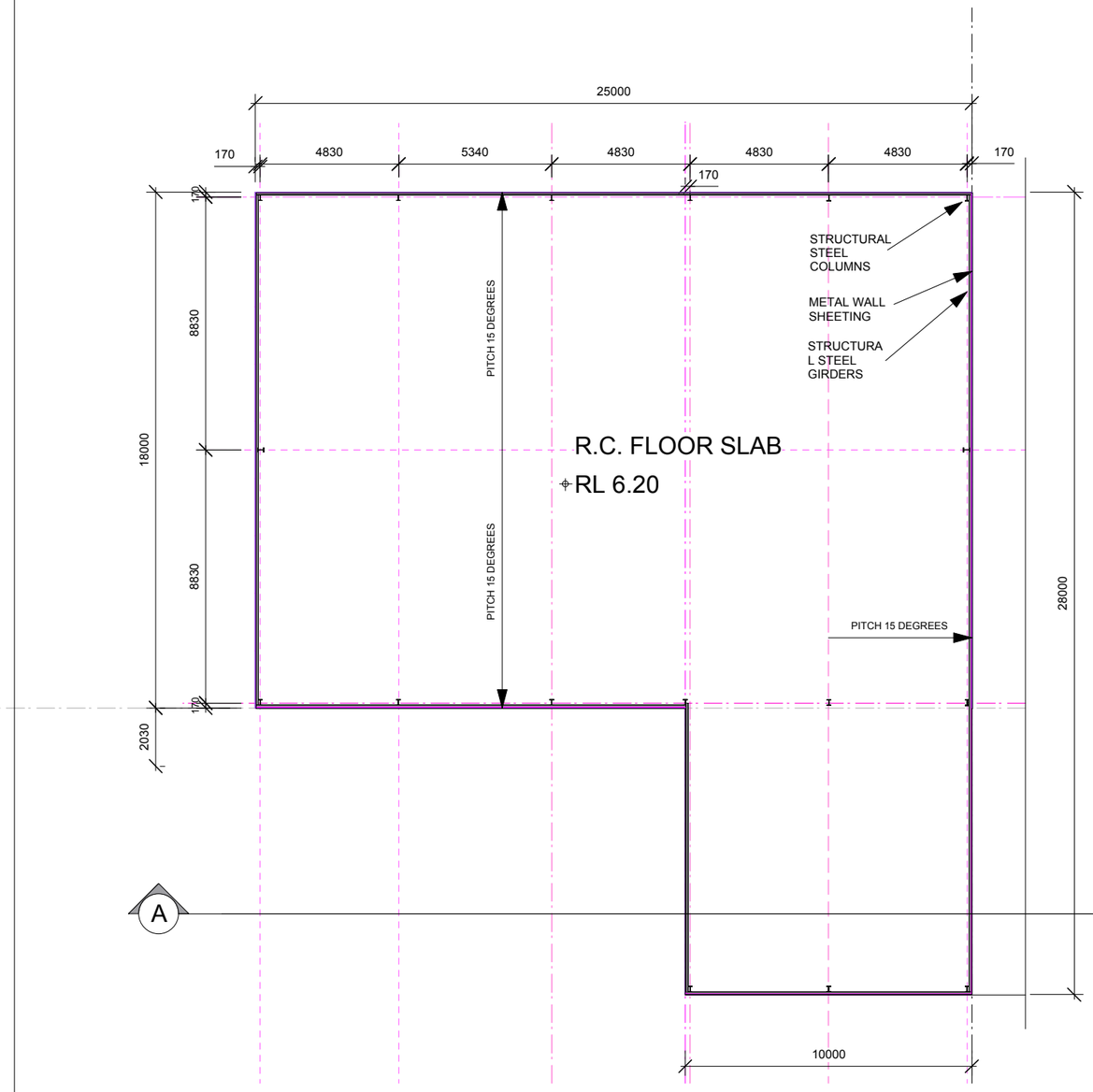
PROJECT ADDRESS:
CONCRETE RECYCLERS
NEWBRIDGE ROAD MOOREBANK

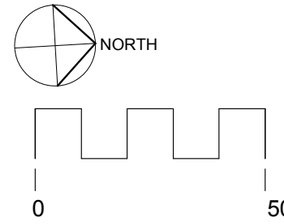
PRIMARY CRUSHER SHED SECTION AND ELEVATIONS

SCALE	PASSED	DATE
1:200 @ A3	EMMC	25.07.13

DESIGN	LMA	JOB No.	SHEET No.	ISSUE
DRAWN	KC	5018-13	15	A
CHECKED	EMMC	DATE FIRST ISSUED. JULY 2013	OF	



FLOOR PLAN
SCALE 1:200



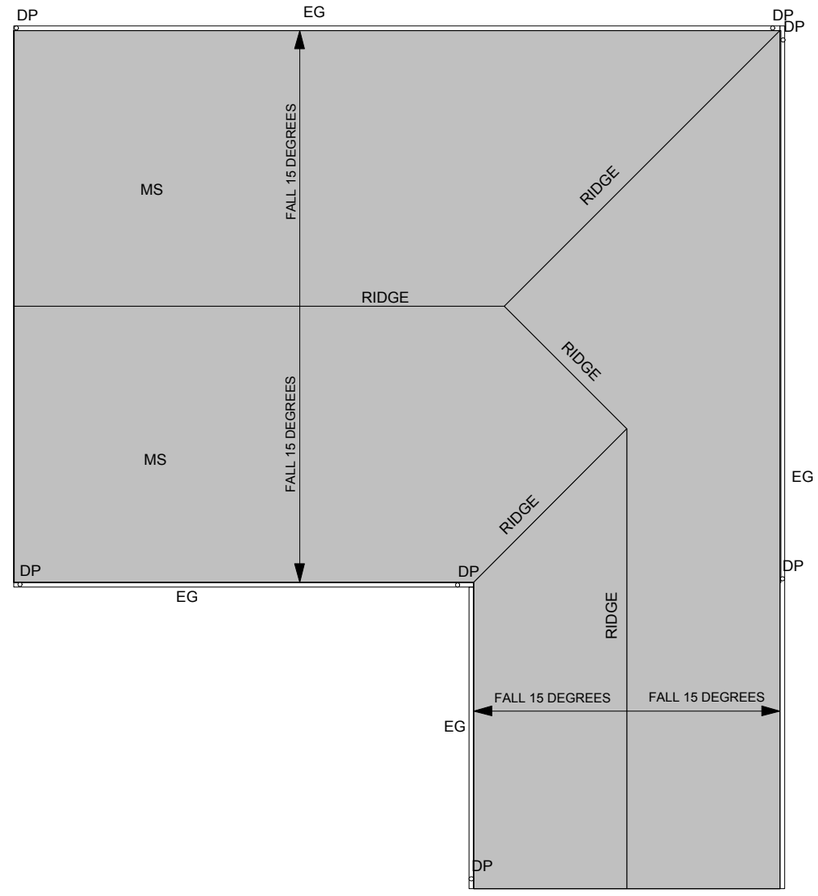
LEGEND

MWS Metal wall sheet (Colorbond Wilderness Green)

MS Metal Roof Sheeting - (Colourbond Bushland)

EG Edge Gutter

DP Down Pipe



ROOF PLAN
SCALE 1:200

DETAIL BY OTHERS
OVERALL DIMENSIONS AND STRUCTURE SHOWN
TO BE DETAILED WITH THE EQUIPMENT BY MANUFACTURER

ISSUE	DATE	APPD	COMMENTS
A	25.07.13	KC	FOR SUBMISSION

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plot date : 7/25/13
file name : 5018-13_250713-KC.vwx

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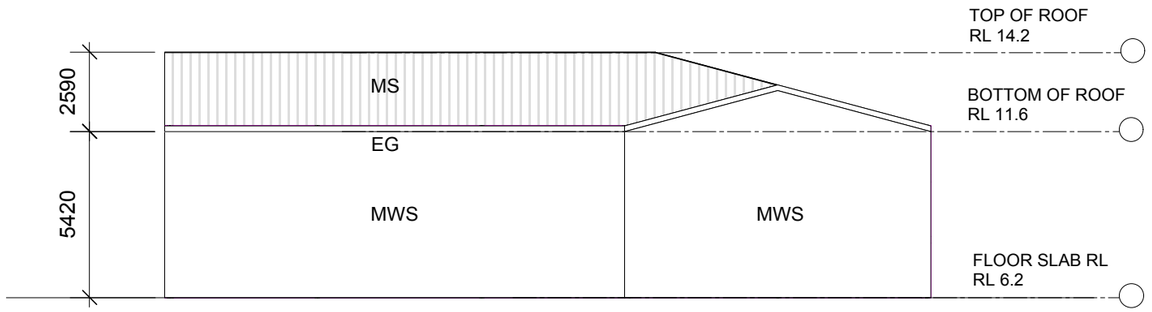
PROJECT ADDRESS:
CONCRETE RECYCLERS
NEWBRIDGE ROAD MOOREBANK

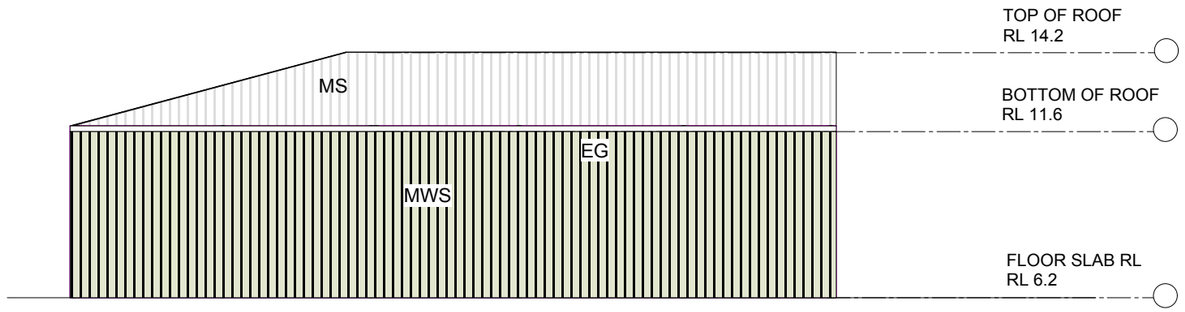
SECONDARY CRUSHER SHED AND SCREEN SHED NO1 PLAN

SCALE	PASSED	DATE
1:200 @ A3	EMMC	25.07.13

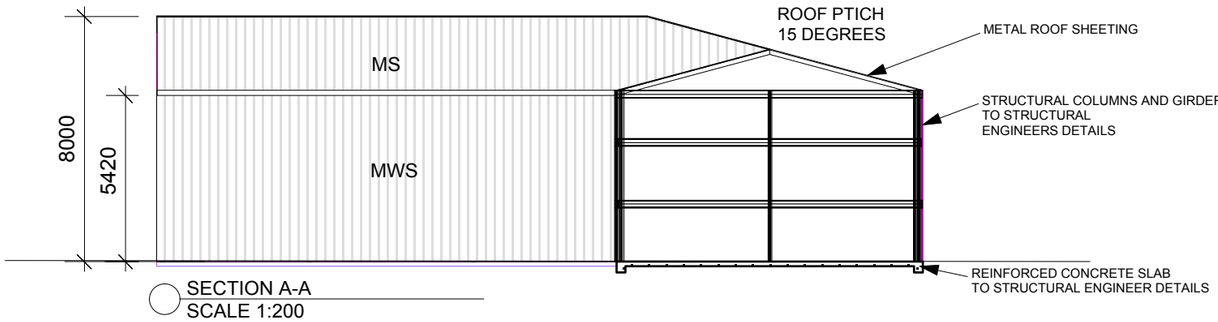
		JOB No.	SHEET No.	ISSUE
DESIGN	LMA	5018-13	16	A
DRAWN	KC			
CHECKED	EMMC	DATE FIRST ISSUED. JULY 2013	OF	



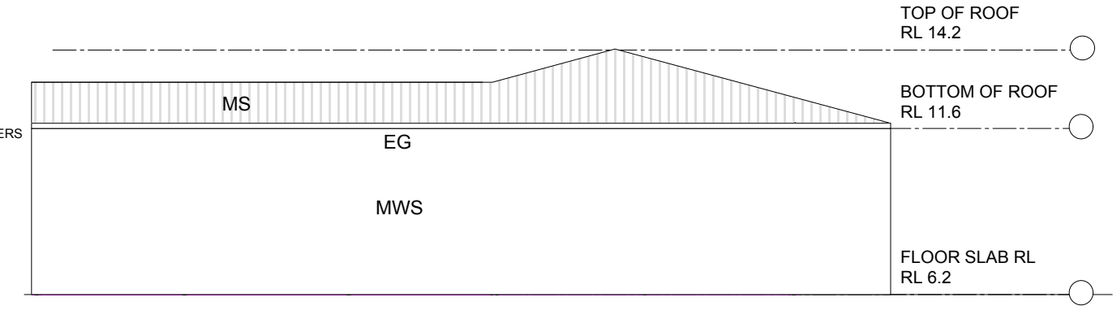
EAST ELEVATION
SCALE 1:200



WEST ELEVATION
SCALE 1:200



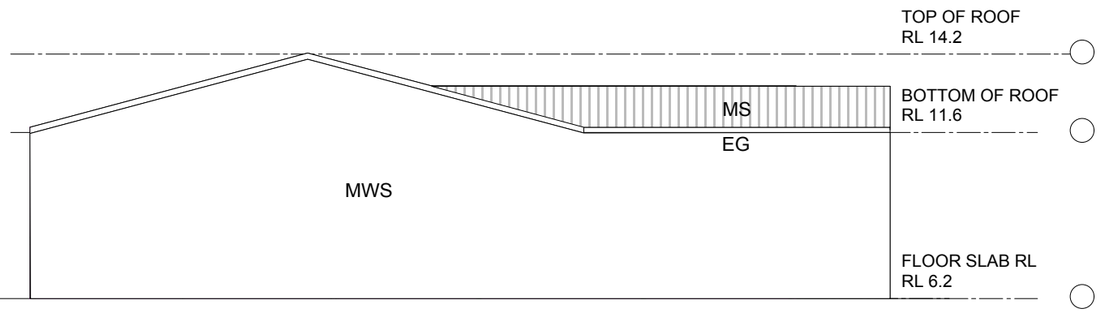
SECTION A-A
SCALE 1:200



NORTH ELEVATION
SCALE 1:200

LEGEND

MWS	Metal wall sheet (Colorbond Wilderness Green)
MS	Metal Roof Sheeting - (Colourbond Bushland)
EG	Edge Gutter
DP	Down Pipe



SOUTH ELEVATION
SCALE 1:200

0 5000mm

ISSUE	DATE	APPD	COMMENTS
A	25.07.13	KC	FOR SUBMISSION

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NEWBRIDGE ROAD MOOREBANK

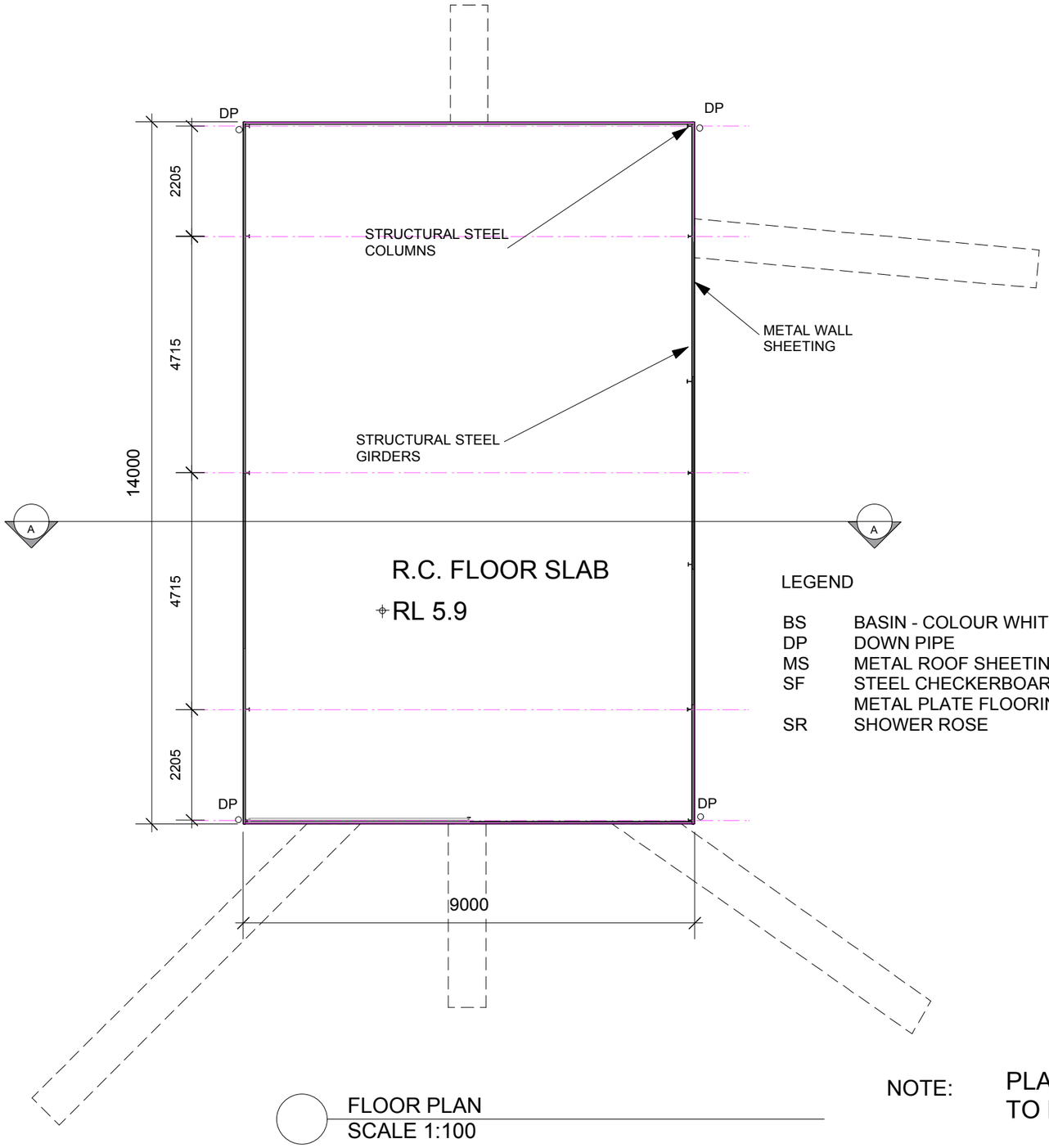
SECONDARY CRUSHER SHED AND SCREEN SHED NO1 SECTION AND ELEVATIONS

SCALE	PASSED	DATE
1:200 @ A3	EMMC	25.07.13

DESIGN	LMA	JOB No.	SHEET No.	ISSUE
DRAWN	KC	5018-13	17	A
CHECKED	EMMC	DATE FIRST ISSUED: JULY 2013	OF	

NORTH

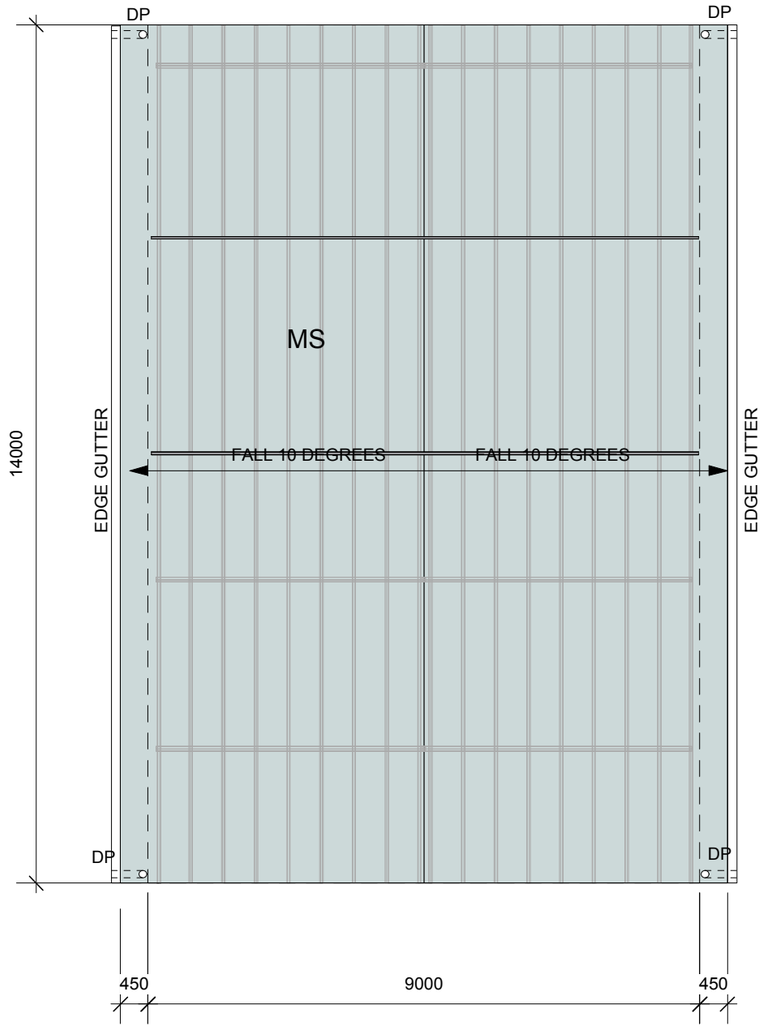
0 5000mm



FLOOR PLAN
SCALE 1:100

LEGEND

BS	BASIN - COLOUR WHITE
DP	DOWN PIPE
MS	METAL ROOF SHEETING
SF	STEEL CHECKERBOARD METAL PLATE FLOORING
SR	SHOWER ROSE



ROOF PLAN
SCALE 1:100

NOTE: PLAN ONLY SHOWING OVERALL DIMENSIONS, MATERIALS TO BE DETAILED BY OTHERS

ISSUE	DATE	APPD	COMMENTS
A	:iDate	:iBy	

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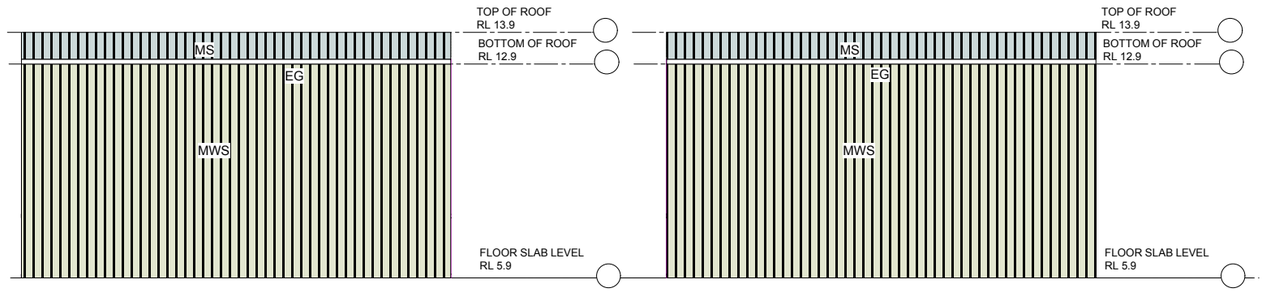
NEWBRIDGE ROAD MOOREBANK

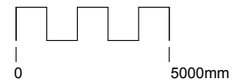
SCREEN SHED NO 2 PLAN

SCALE		PASSED	DATE
1:100 @ A3		EMMC	25.07.13
DESIGN	LMA	JOB No. 5018-13	SHEET No. 18
DRAWN	JK		ISSUE A
CHECKED	EMMC	DATE FIRST ISSUED. JULY 2013	OF



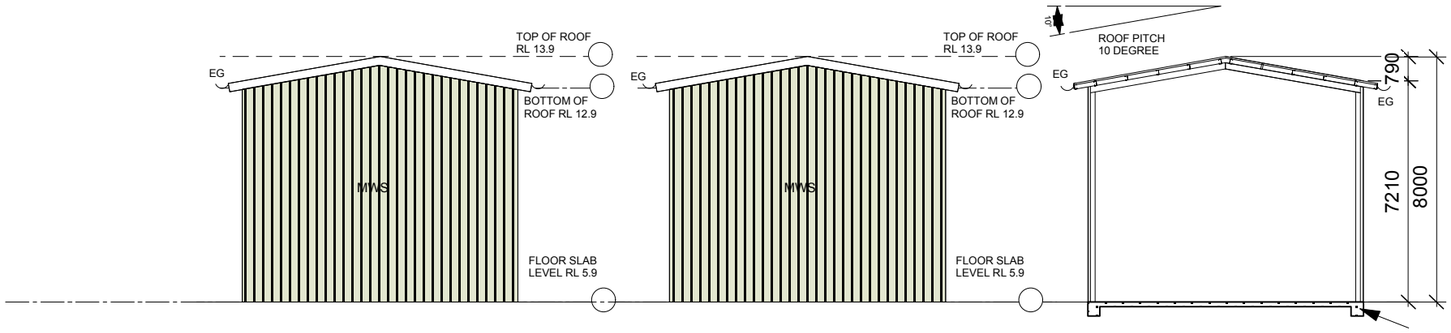
NORTH ELEVATION
SCALE 1:200

SOUTH ELEVATION
SCALE 1:200



LEGEND

MWS	Metal wall sheet (Colorbond Wilderness Green)
MS	Metal Roof Sheeting (Colourbond Bushland)
EG	Edge Gutter
DP	Down Pipe



WEST ELEVATION
SCALE 1:200

EAST ELEVATION
SCALE 1:200

SECTION A-A
SCALE 1:200

ISSUE	DATE	APPD	COMMENTS
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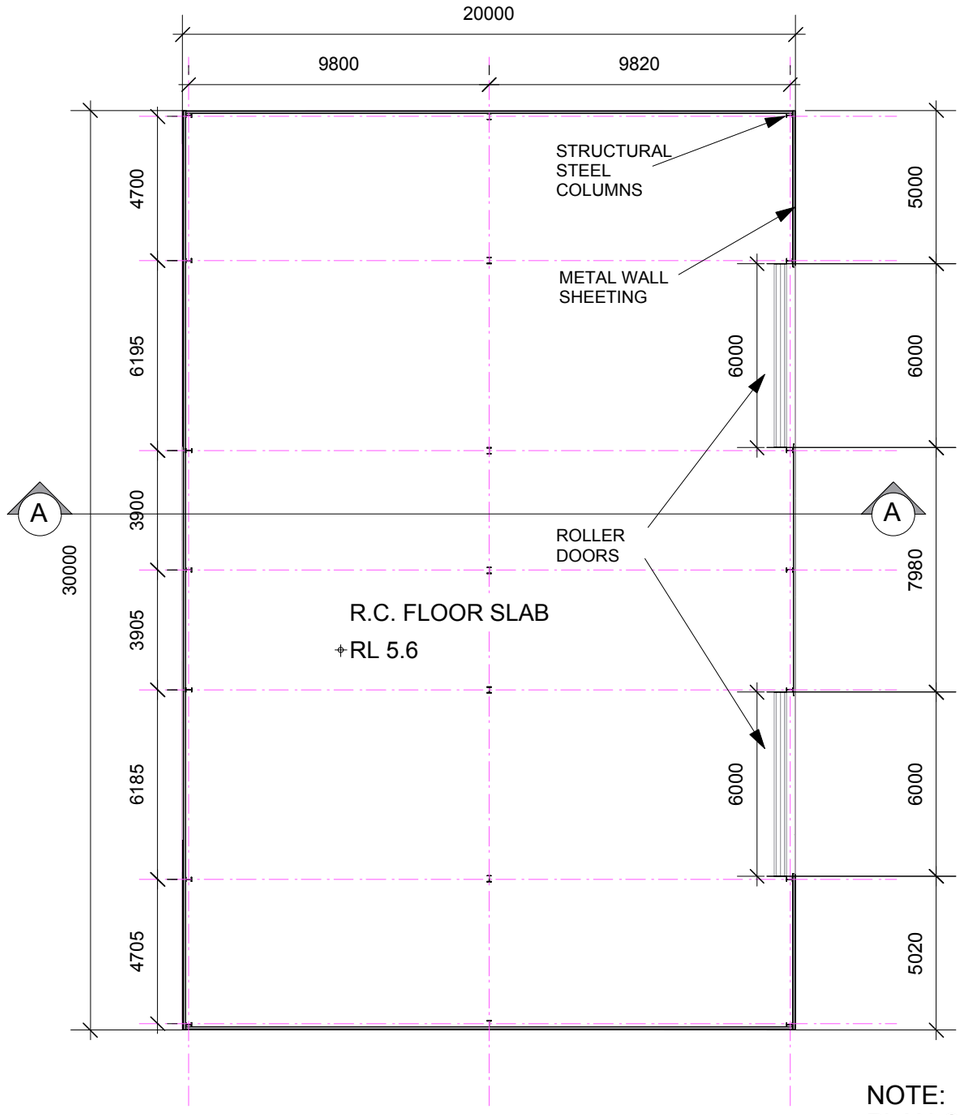
NEWBRIDGE ROAD MOOREBANK

SCREEN SHED NO 2 SECTION AND ELEVATIONS

SCALE	PASSED	DATE
1:200 @ A3	EMMC	25.07.13

DESIGN	LMA	JOB No.	SHEET No.	ISSUE
DRAWN	KC	5018-13	19	A
CHECKED	EMMC	DATE FIRST ISSUED. JULY 2013	OF	

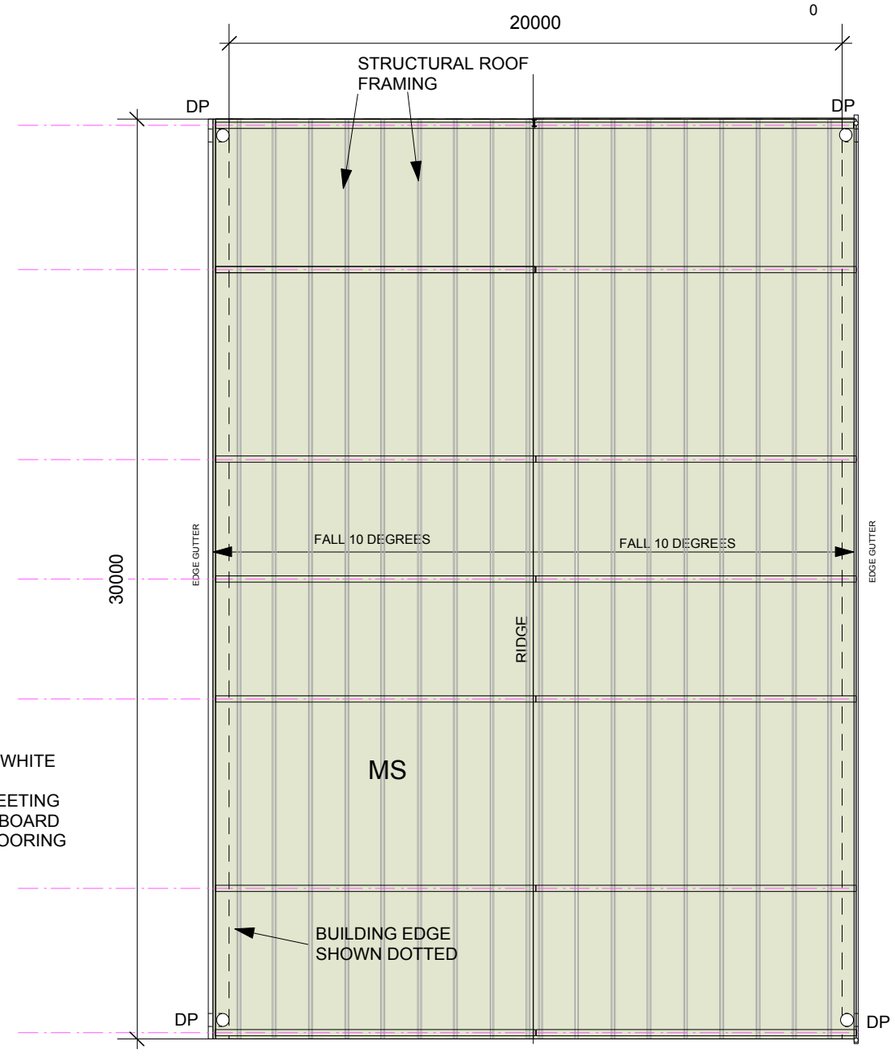


LEGEND

BS	BASIN - COLOUR WHITE
DP	DOWN PIPE
MS	METAL ROOF SHEETING
SF	STEEL CHECKERBOARD METAL PLATE FLOORING
SR	SHOWER ROSE

PLAN ONLY
DETAIL BY OTHERS

FLOOR PLAN
SCALE 1:200



NOTE:
PLAN ONLY
DETAIL TO BE DONE BY MANUFACTURER

ROOF PLAN
SCALE 1:200

ISSUE	DATE	APPD	COMMENTS
A	25.07.13	KC	FOR SUBMISSION

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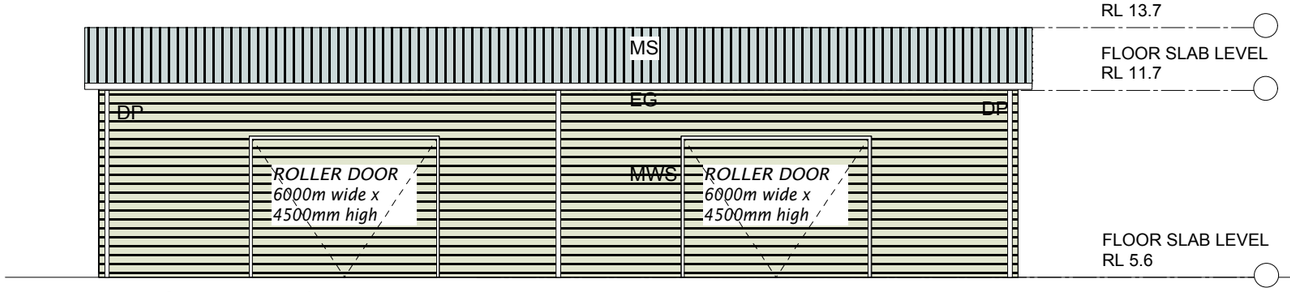
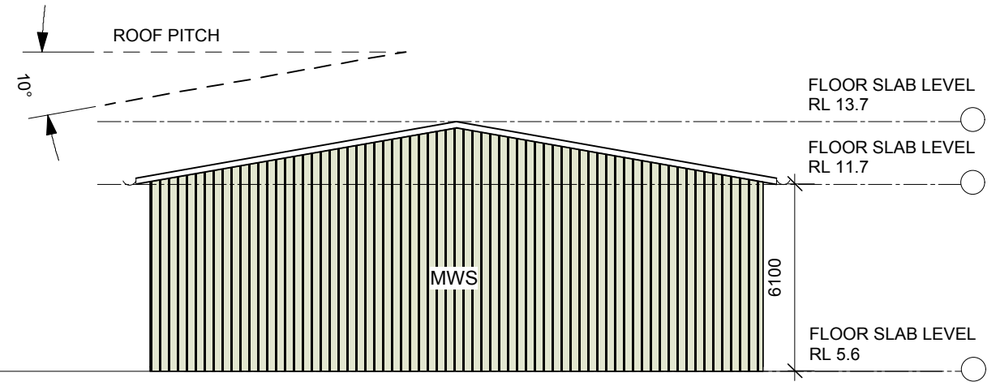
WORKSHOP SHED PLAN

SCALE	PASSED	DATE
1:200 @ A3	EMMC	25.07.13

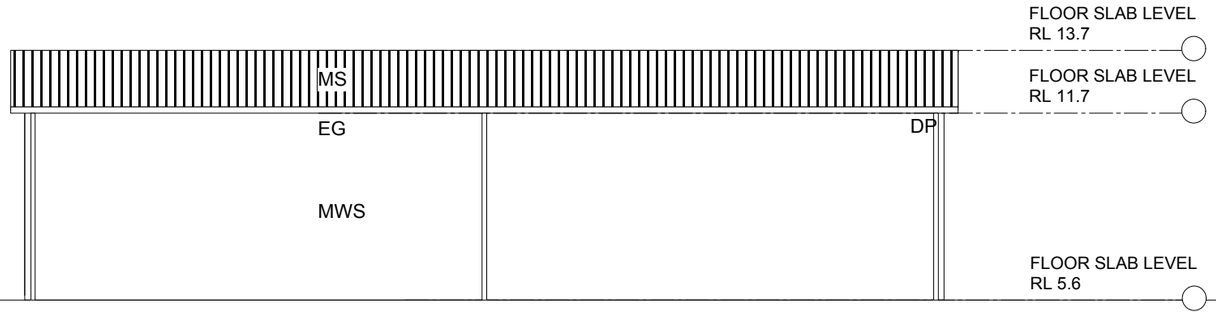
DESIGN	LMA	JOB No.	SHEET No.	ISSUE
DRAWN	KC	5018-13	20	A
CHECKED	EMMC	DATE FIRST ISSUED: JULY 2013	OF	



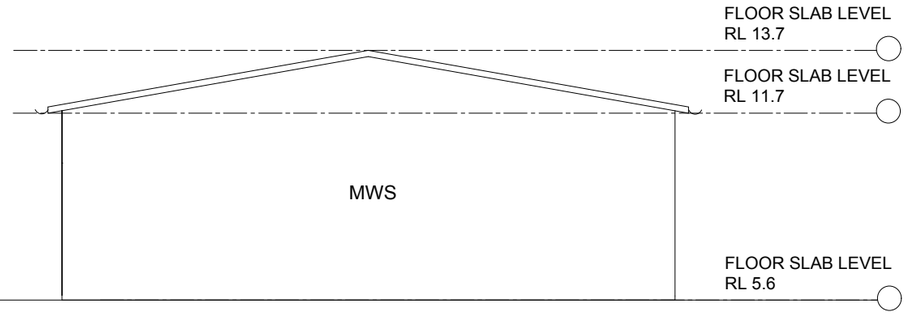
NORTH ELEVATION
SCALE 1:200



EAST ELEVATION
SCALE 1:200



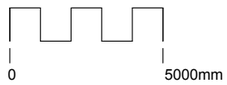
SOUTH ELEVATION
SCALE 1:200

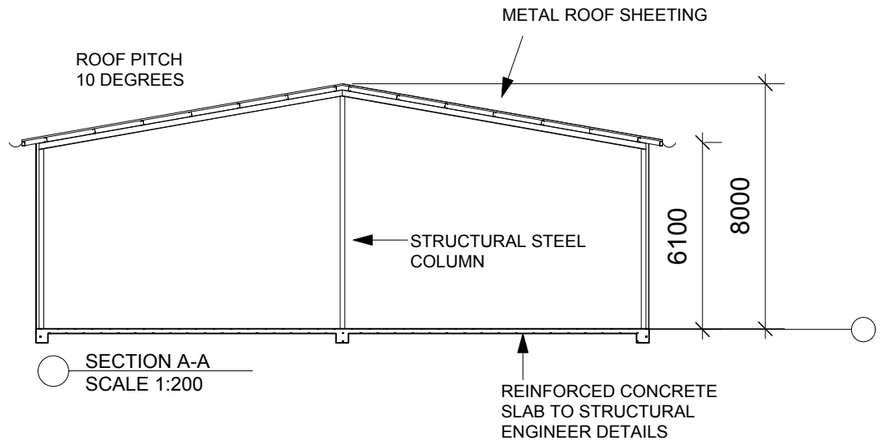


WEST ELEVATION
SCALE 1:200

LEGEND

MWS	Metal wall sheet (Colorbond Wilderness Green)
MS	Metal Roof Sheeting - (Colourbond Bushland)
EG	Edge Gutter
DP	Down Pipe





SECTION A-A
SCALE 1:200

ISSUE	DATE	APPD	COMMENTS
A	25.07.13	KC	FOR SUBMISSION

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NEWBRIDGE ROAD MOOREBANK

WORKSHOP SHED ELEVATIONS AND SECTIONS

SCALE	PASSED	DATE
1:200 @ A3	EMMC	25.07.13

DESIGN	LMA	JOB No.	SHEET No.	ISSUE
DRAWN	KC	5018-13	21	A
CHECKED	EMMC	DATE FIRST ISSUED: JULY 2013	OF	

Attachment 16

Flood Evacuation Plan

Moorebank Recyclers Pty Ltd

FLOOD EVACUATION PLAN

Warning System and Site Emergency Response

Moorebank Recyclers Site
Newbridge Road, Moorebank

This copy to be kept at:

.....

May 2013

Table of Contents

1 PURPOSE 1
2 BACKGROUND INFORMATION 2
3 FLOOD BEHAVIOUR AND WARNINGS 3
4 PLAN STAGES AND TRIGGERS 5
4.1 Flood Proofing and Preparation 5
4.2 Preparation 5
4.3 Response – When a Flood is Likely 5
4.4 Response – During a Flood 5
4.5 Recovery 5
4.6 Maintain and Implement the Plan 5
5 FLOOD PROOFING 6
6 PREPARATION 7
7 RESPONSE – WHEN A FLOOD IS LIKELY 10
8 RESPONSE – DURING A FLOOD 11
9 RECOVERY 12
10 MAINTAIN AND IMPLEMENT THE PLAN 13

Annexure

Annexure A 100, 50 and 20 Year Flood Levels

Tables

Table 1 Flood Levels and Depth of Inundation 3
Table 2 Flood Emergency Kit 7
Table 3 Emergency Contacts 8
Table 4 Occupational Health and Safety 9

Figures

Figure 1 Location of Moorebank Recyclers' Property 2

1 PURPOSE

Access to the Moorebank Recyclers' Site and surrounding local areas are relatively low lying and prone to flooding from the Georges River. The direct access road to the Site is subject to minor inundation during a 3 year ARI flood. This *Flood Evacuation Plan - Warning System and Site Emergency Response* (the Plan) has been developed to ensure the safe, orderly and timely evacuation of all persons from the Moorebank Recyclers' Site during times of flood, without the need for rescue by the State Emergency Service (SES) or other authorized emergency services personnel.

The Plan has been developed using the SES *Business Floodsafe Toolkit* as a guide, and is consistent with the report *Georges River Floodplain Risk Management Study and Plan* (2004) prepared by Bewsher Consulting and adopted by Liverpool City Council.

The Plan is site specific for Moorebank Recyclers' property at Newbridge Road Moorebank.

2 BACKGROUND INFORMATION

Moorebank Recyclers' Site is located about 1 km south of Newbridge Road, Moorebank (Lot 6 DP 1065574) as shown in **Figure 1**. Entry to the Site from Newbridge Road is via Brickmakers Drive and a low-lying access road (elevation of 1.96 m to 2.46 m AHD). Levels on the existing Site vary with a large area above 5.0 m AHD and a smaller area above 5.5 m AHD (the 100 year ARI flood level). The 100 year ARI flood will be excluded from the operational area of the site through a combination of site levels and bunds, as approved in Liverpool Council's approval of bulk earthworks DA1417/05.

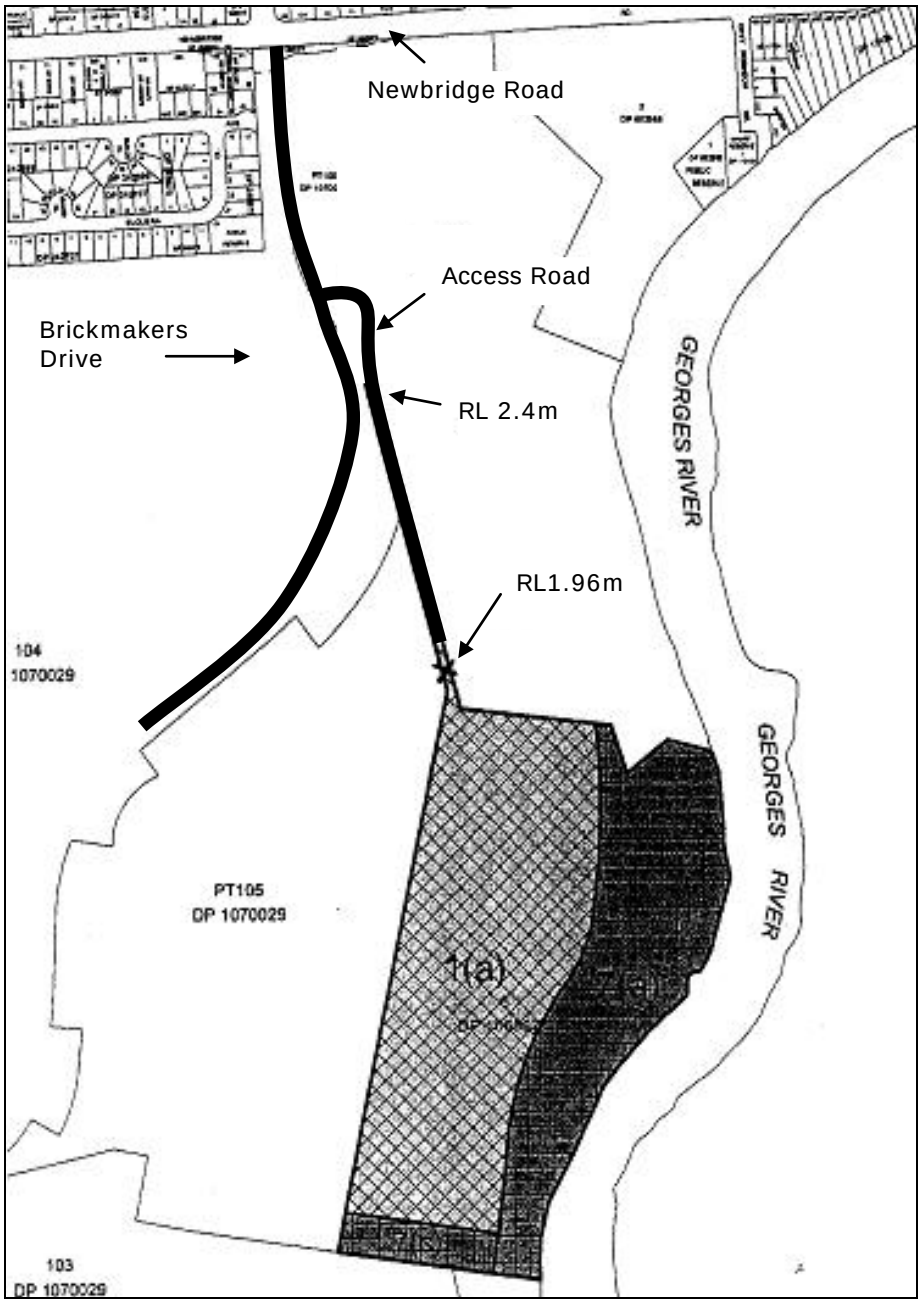


Figure 1 Location of Moorebank Recyclers' Property

3 FLOOD BEHAVIOUR AND WARNINGS

Georges River water levels are measured at various locations. The nearest continuous water level gauge is at the Milperra Bridge (Newbridge Road), just upstream of Moorebank Recyclers' Site and access road.

Flood levels for the 100 year, 50 year and 20 year floods have been obtained from the report *Georges River Flood Study*, PWD Report N^{o} 91066 prepared by the Water Research Laboratory, University of NSW for the Public Works Department (December 1991). These are plotted on the figures in **Annexure A** and show that the access road and parts of the Site are inundated for these flood events. Flood levels at the site for the 2 year, 5 year and 10 year average recurrence interval (ARI) floods have also been derived from the historic data collected at Milperra Bridge.

The flood levels and maximum depth of inundation of the access road at the peak of the flood are also shown in **Table 1**.

Table 1 - Flood Levels and Depth of Inundation

Flood ARI (years)	Flood level at Milperra Bridge (m AHD)	Estimated flood level along access road (m AHD)	Road level (m AHD)	Depth of flood water over access road (m)
2	1.5	1.3 – 1.2	1.96 – 2.4	N/A
5	2.85	2.65 – 2.55	1.96 – 2.4	0.25 - 0.6
10	3.9	3.7 – 3.6	1.96 – 2.4	1.3 – 1.6
20	4.9	4.7 – 4.6	1.96 – 2.4	2.3 – 2.6
50	5.45	5.3 – 5.2	1.96 – 2.4	2.9 – 3.2
100	5.9	5.75 – 5.65	1.96 – 2.4	3.3 – 3.7

The river water levels at Milperra Bridge are influenced by tidal behaviour, and generally rise and fall by around one metre daily. The tide level can be up to 1 m AHD and the rate of rise or fall can be around 0.2 m/hr. In times of flooding, the rate of water level rise at Milperra Bridge is around 0.3 m/hr for historic floods, and can be up to 0.5 m/hr for the 100 year flood (Bewsher Consulting 2004).

A flood warning scheme for the Georges River is operated by the SES based on advice issued by the Bureau of Meteorology (BoM). The BoM issues a number of different types of weather and flood warnings, as described in the document *New South Wales State Flood Sub Plan* (SES, 2008) and below:

1. Severe Thunderstorm Warnings – Sydney/Newcastle/Wollongong – (Cell - Based)

When severe thunderstorms are actually occurring or are about to move into the heavily populated region around Sydney, Newcastle and Wollongong, the BoM will issue a more detailed Severe Thunderstorm Warning for people in the affected region. High quality, full-time weather radar coverage for this region allows these warnings to illustrate the current location of individual thunderstorms, and the places likely to be affected within the next 30 to 60 minutes. The radar image shows the location of the severe thunderstorms and the forecast path of the storm. These warnings are distributed widely to the media and emergency services, and are available to the public via the internet and various telephone and fax based services.

2. Severe Weather Warnings

These are issued when severe weather is expected to affect land-based communities within the next 24 hours. They are not directly the result of severe thunderstorms, nor are they covered by tropical cyclone or fire weather warnings. Severe Weather Warnings aim to provide advance notice of very heavy rainfall or strong winds which can lead to flash flooding or storm surge which can sometimes be exacerbated by abnormally high tides. These warnings are distributed to the media by the BoM and are available to the public via the internet and various telephone and fax based services.

3. Flood Watches

These are targeted at large catchments and can provide up to 24-36 hours advance warning of large-scale weather systems that have the potential to cause flooding. They are issued prior to Flood Warnings for most river valleys that are covered by flood warning services. They are not distributed directly to the media by the BoM, however they must be incorporated in Region Flood Bulletins released by the SES. Flood Watches are published on the BoM website.

4. Preliminary Flood Warnings

These warnings usually predict which class of flooding (minor, moderate or major) will occur rather than providing quantitative forecasts. They are the first in a series of warnings and will typically be followed by more detailed flood warnings. These warnings are disseminated directly to media outlets by the BoM and are published on the BoM website.

For the Georges River below Milperra Bridge, the flood classification levels are:

- 2.0m (minor)
- 3.3m (moderate)
- 4.2m (major)

The BoM is required to give 6 hours notice for river heights between 2.0m and 3.9m and 12 hours notice for river heights 4.0m and above (although only 9 hours is generally available).

5. Flood Warnings

These normally predict flood heights at a particular gauge (location) which will be reached at a specified time in the future. After the issuing of a Preliminary Flood Warning, Flood Warnings are renewed at frequent intervals until the relevant waterway drops to below the minor flood level. Flood Warnings are not distributed directly to the media by the BoM, however they are incorporated in Region Flood Bulletins and released by the SES. Flood warnings are published on the BoM website.

Because the access road is likely to be inundated relatively early in a flood event on the Georges River, a combination of these different weather and flood warnings form part of this Plan.

4 PLAN STAGES AND TRIGGERS

There are six stages of the Plan:

4.1 Flood Proofing and Preparation

The actions listed in **Section 5** will be taken during site development to minimise the potential risk of flood impact to buildings and their contents to flooding.

4.2 Preparation

Section 6 includes the flood "readiness" actions to ensure the site is appropriately prepared for flood. The "readiness" actions will be undertaken by Moorebank Recyclers during business establishment and operation.

4.3 Response – When a Flood is Likely

Section 7 lists the actions Moorebank Recyclers will take when a flood is likely.

The actions will be triggered by one of the following warnings issued by the BoM (**Section 3**):

- Severe Thunderstorm Warning:
- Severe Weather Warning; or
- Flood Watch.

These triggers will give Moorebank Recyclers at least 24 hours notice of flooding and the possible need for evacuation.

4.4 Response – During a Flood

The trigger for evacuation is the issue of a "Preliminary Flood Warning" of "minor" flooding by the BoM (see **Section 3**). Such a warning means that the flood level at Milperra Bridge is predicted to reach 2.0 m AHD in 6 hours. The access road to the property would be inundated shortly after 6 hours.

As Newbridge Road is also low-lying, the evacuation actions in **Section 8** should be commenced as soon as the preliminary flood warning is issued by the BoM.

4.5 Recovery

The Georges River can flood relatively quickly, however the duration of flooding is relatively short-lived. The report by Bewsher Consulting (2004) indicates that in a 100 year flood event, the water level would be above 2 m AHD at Milperra Bridge for around 35 hours. Moorebank Recyclers could thus have access to the property within two days of evacuation.

Recovery actions to help restore operations are listed in **Section 9**.

4.6 Maintain and Implement the Plan

Actions to maintain, implement and review the Plan are listed in **Section 10.**

5 FLOOD PROOFING

The following actions will be undertaken during site development to improve the resistance of buildings and their contents to flooding:

- To the extent practical, the site office and facilities will be set up with a floor level above 6.0 m AHD. This level is 500mm above the 100 year flood level and will help minimise the risk of damage to furniture, floor coverings and fittings;
- All electrical wiring and outlets will be located at least 1.0 m above the 100 year flood level, i.e. above 6.5m AHD;
- Office equipment including electrical equipment, eg computers etc, will be kept as high above the floor as practical, or can be easily lifted or removed if a flood occurs;
- Furniture, floor coverings and fittings will be made of flood resistant materials such as metal and ceramic tiles. Where possible, timber composites such as pine board, chip boards and masonite will be avoided;
- Wherever practical, the site storage sheds and equipment will be located above 5.5 m AHD;
- All chemicals, empty drums or any floatable equipment will be locked in a storage shed whenever the site is unoccupied. The shed floor will be at a minimum of 5.5 m AHD;
- Control panels for security control, air conditioning, etc will be located as high as practical above ground level, preferably at a minimum of 1.5 m above the floor level of the site office; and
- Drains and gutters will be regularly cleaned.

6 PREPARATION

The following flood "readiness" actions will be undertaken by Moorebank Recyclers prior to the commencement of site operations and will be reviewed regularly:

- Assemble and maintain a flood emergency kit (**Table 2**);
- Obtain and update staff and other emergency contact numbers in **Table 3;**
- Document Occupational Health and Safety (OH&S) procedures for a flood in **Table 4**;
- Include flood evacuation procedures in mandatory site safety induction for all employees;
- Regularly back-up records, accounts and computer files, and store them off-site and out of the floodplain;
- Identify what critical functions, such as payroll and banking, must be maintained during and after flooding;
- Make call diversion arrangements to be able to continue some business operations off-site; and
- Maintain site attendance register.

Table 2 Flood Emergency Kit

Portable radio with spare batteries (to listen for flood warnings)
Torch with spare batteries
First aid kit and manual
Waterproof bags for storage
Emergency contact numbers
Waterproof footwear with non-slip soles
Water and puncture resistant gloves
Cleaning products for clean-up after the flood
Boxes for storage

Table 3 Emergency Contacts

Staff emergency contact telephone numbers		
Name	**Emergency Number**	**Alternative Number**
Telephone Numbers of Other Emergency Contacts		
Need	**Name**	**Number**
Flood or storm	State Emergency Service	132 500
Site Manager		
Security		
Electricity	Energy Australia	
Telephone		
Medical		

Table 4 Occupational Health and Safety

OH&S procedures to be followed during and after a flood. This procedure is to be added to the site OH&S plan.

DURING A FLOOD

Risk	Actions to manage risks
Evacuation – ensure workers have enough time to evacuate safely to a location beyond the reach of flood waters.	
Manual handling of plant and equipment to be removed.	
Darkness – ensure adequate light if flood preparations have to be made at night or in overcast conditions.	
Protective clothing – solid non-slip footwear is an essential minimum.	
Slips, trips and falls, particularly in wet conditions	
Avoid entering floodwaters on foot or in vehicles – risk of electrocution, drowning, injury from submerged objects or uneven ground	
Other risks	

AFTER A FLOOD

Only enter premises after floodwaters have completely subsided and the SES advises that it is safe to do so.

Undertake an OH&S risk assessment (below) before entering buildings.

During clean-up, all workers should:

- Wear protective clothing, including enclosed, waterproof, non-slip footwear and waterproof, puncture-resistant gloves;
- Use safe manual handling procedures when moving stock, plant or equipment; and
- Wash thoroughly after cleaning premises to remove any potential flood borne contaminants.

Risk	Assessment
Structural safety of buildings	
Safety of electrical and gas supplies	
Slips, trips and falls, particularly with mud and water	
Contamination – sewage, chemicals and disease in floodwaters	
Safety of plant and equipment – checked by a qualified tradesperson	
Sharp debris	
Venomous animals – snakes and spiders in buildings and debris	
Manual handling and lifting	
Other risks	

7 RESPONSE – WHEN A FLOOD IS LIKELY

Any one of the following warnings issued by the BoM (**Section 3**) will give Moorebank Recyclers at least 24 hours notice of possible flooding and the need to prepare for evacuation:

- Severe Thunderstorm Warning:
- Severe Weather Warning; or
- Flood Watch.

The following actions are the responsibility of the Site Manager:

- Tune the radio to a local radio station, and ensure it has spare batteries;
- Maintain awareness of weather forecasts and be alert for BoM warnings in the event of forecasts of bad weather;
- Have the flood emergency kit ready for use;
- Inform all workers and sub-contractors (including suppliers and known haulage clients) of the likelihood of flooding;
- Allocate responsibilities to move and/or secure plant, equipment and floatable items;
- Regularly remove waste generated to landfill (picking station waste, office and amenities putrescibles waste) and the recycling depot off-site (scrap steel, waste oil and office paper);
- Move hazardous materials/chemicals into safe storage or off-site to a location above the predicted flood peak;
- Move plant and equipment to a location above the predicted flood peak;
- Secure objects that are likely to float or cause damage, e.g. open fridges, to prevent them floating;
- Divert calls to an appropriate alternative number, e.g. Site Manager's mobile;
- Back-up computer files and critical records and take them off-site;
- If practical, make arrangements to temporarily continue business office operations from another location; and
- Maintain critical business functions if possible.

8 RESPONSE – DURING A FLOOD

The trigger for evacuation is the issue of a preliminary flood warning of minor flooding on the Georges River by the BoM (**Section 3**). This means that the flood level at Milperra Bridge is predicted to reach 2.0 m AHD within about 6 hours. The access road to the site would be inundated shortly after 6 hours.

As Newbridge Road is also low-lying, the following evacuation actions (which are the responsibility of the Site Manager), should be commenced as soon as the preliminary flood warning is issued by the BoM:

- Keep the radio tuned to a local radio station for flood warnings including updates on forecast flood heights and timings;
- Inform all personnel including contractors and haulage operators of flood warning details;
- Remind staff of the OH&S procedures related to flooding (**Table 4**);
- Move mobile plant including any on-site diesel stored in a mobile fuel truck to a location above the predicted peak flood level, or if an extreme flood is predicted, move mobile plant to the workshop building which can then be secured;
- Move staff vehicles to a flood free location;
- Allow staff with their own property at risk to leave;
- Evacuate all staff before the access road is flooded;
- Postpone supply deliveries;
- Before leaving, turn off all services (electricity, gas, water); and
- Lock the site when leaving, and notify security.

9 RECOVERY

Georges River flooding can occur relatively quickly, however the duration of flooding is relatively short-lived. The report by Bewsher Consulting (2004) indicates that the 100 Year flood event is above 2 m AHD Milperra Bridge for around 35 hours. Moorebank Recyclers could thus have access to the site within two days of evacuating it.

Recovery actions to help restore site works are the responsibility of the site manager and include:

- Keep the radio tuned to a local radio station and return to the site only after the SES has advised it is safe to do so;
- Carry out an OH&S risk assessment listed in **Table 4** before entering flood-damaged premises;
- Clean up premises using the flood emergency kit (**Table 2**);
- Carry out clean up in accordance with the OH&S procedures in **Table 4**;
- Ensure proper personal washing after cleaning any flood-damaged facilities;
- Remove debris and clean and repair premises;
- Salvage, clean and dry equipment;
- Return any equipment, etc that was moved off-site;
- Replace any lost or equipment when and if feasible; and
- Advise customers and suppliers that the business is reopened.

10 MAINTAIN AND IMPLEMENT THE PLAN

The Plan is part of the Moorebank Recyclers business continuity planning.

The Site Manager is responsible for implementing and maintaining the plan.

The Plan will be located in the on-site office, and another copy kept off-site out of the floodplain.

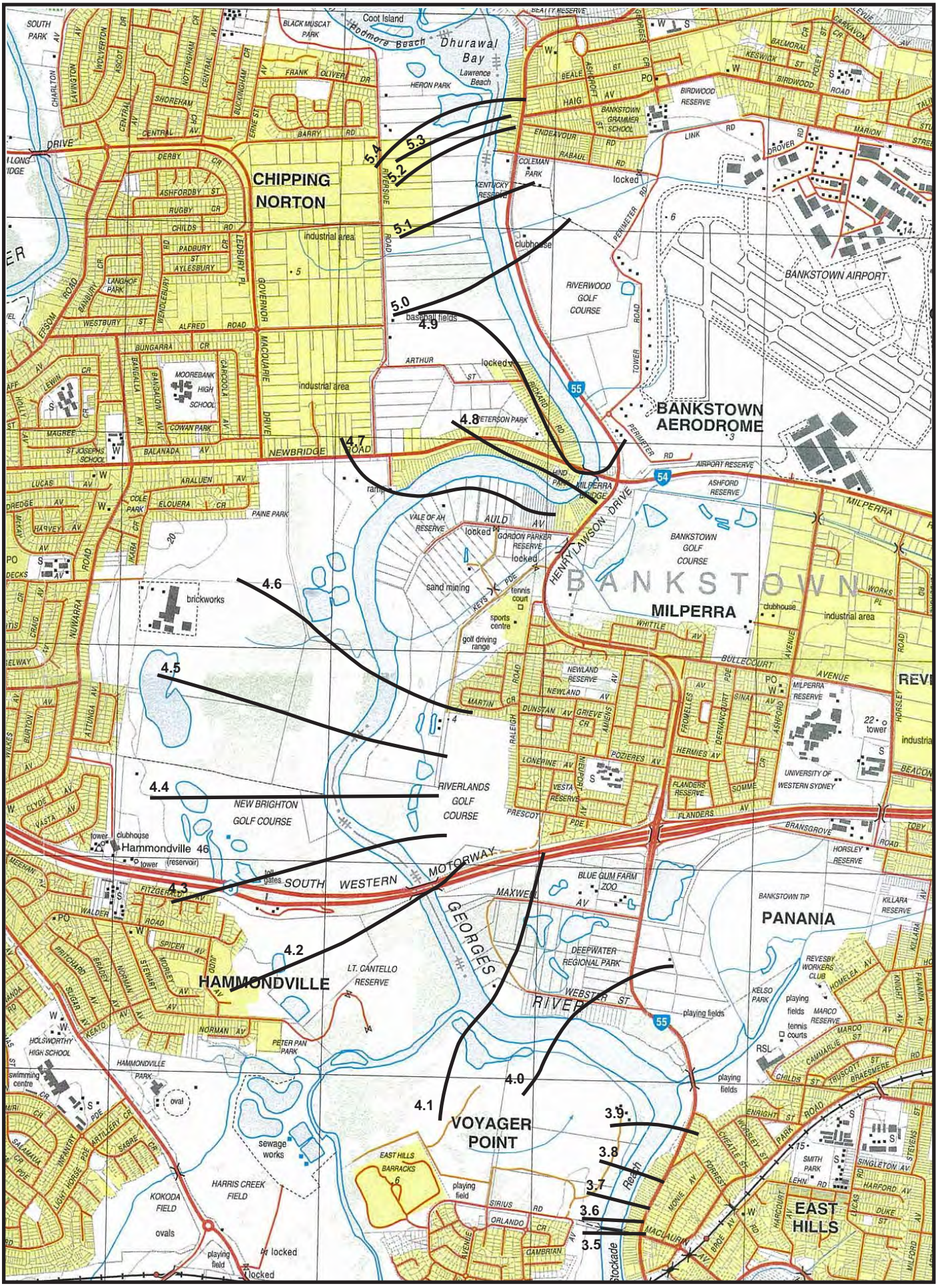
Employees will be trained in understanding this Plan and their roles in its implementation. Training will be conducted regularly, and new staff trained during their induction.

The SES *Don't Let Your Business Go Under* poster and SES *FloodSafe Georges River Business* brochure will be displayed in the staff lunch room.

This Plan will be maintained by keeping all details up-to-date and by ensuring that the flood emergency kit and other elements needed for flood preparation are in place.

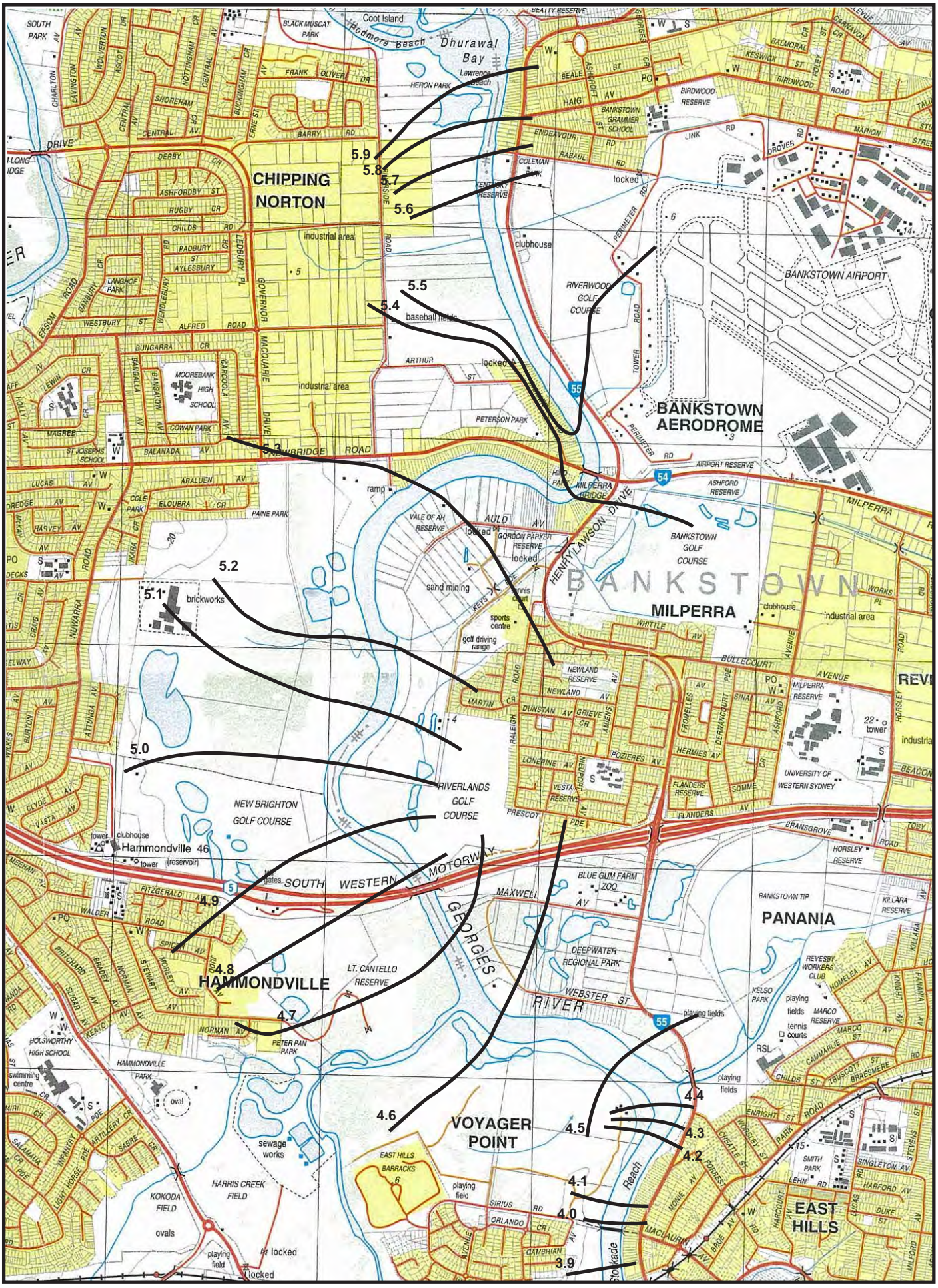
The Plan will be reviewed annually.

Annexure A
20, 50 and 100 Year ARI Flood Levels



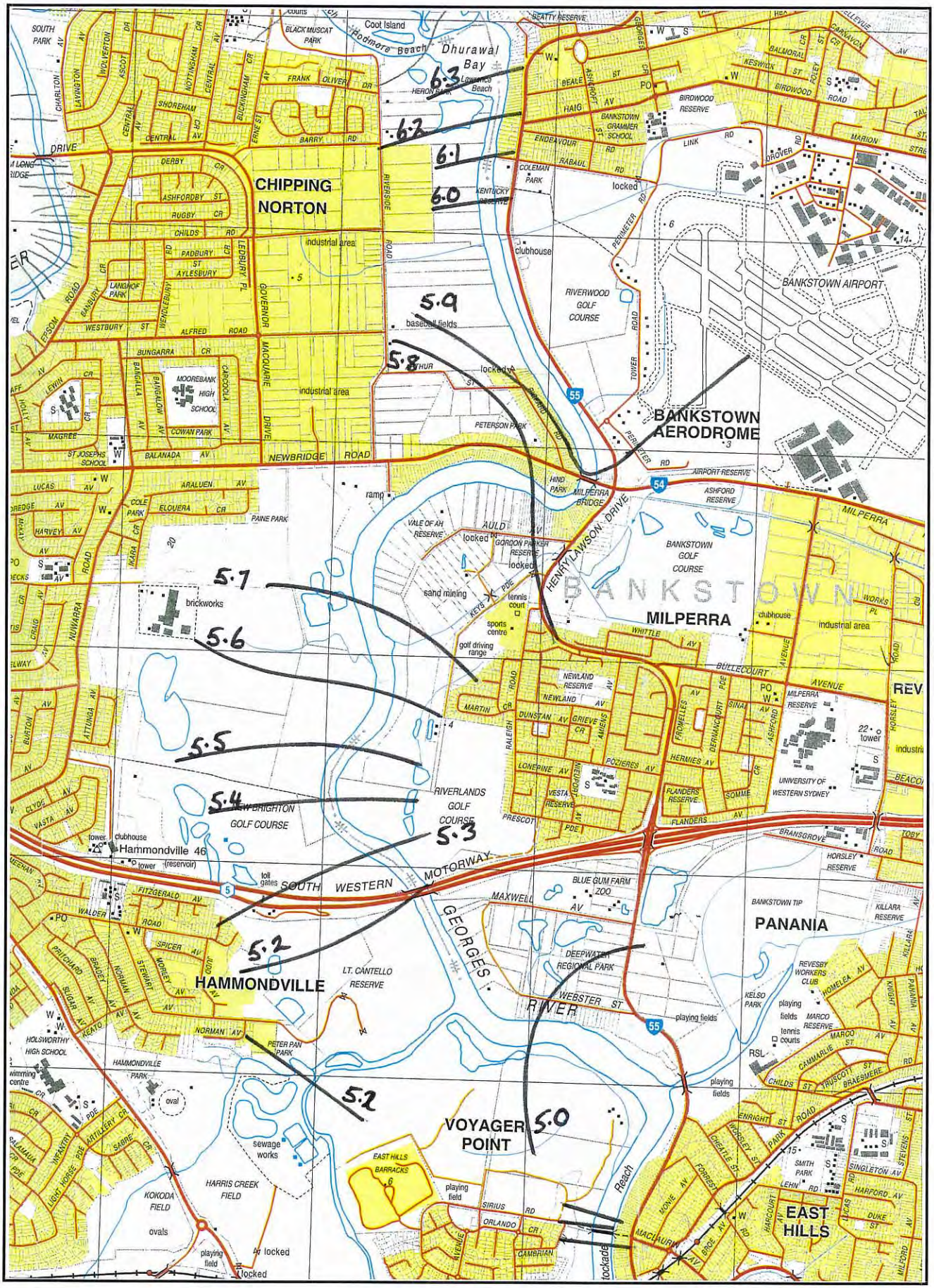
20 Year Flood Levels

(*Source Figures 28a and 28b, Georges River Flood Study, 1991*)



50 Year Flood Levels

(*Source Figures 28a and 28b, Georges River Flood Study, 1991*)



100 Year Flood Levels

(Source Figures 28a and 28b, Georges River Flood Study, 1991)

Attachment 17

Cumberland Ecology Report

5 August 2013

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ECOLOGICAL ASSESSMENT OF AMENDED PART 3A APPLICATION FOR ACCESS FOR THE MOOREBANK RECYCLYING FACILITY

Dear Neil,

As requested, we have prepared an assessment of the ecological impacts resulting from the construction of access ramps for the Moorebank Recycling Facility. The ramps are to be constructed on either side of an approved bridge crossing, within the easements in parts of Lot 9 and Lot 10 DP 1118048.

The Ecological Impact Assessment is provided in **Appendix A** of this letter.

Please do not hesitate to contact me at any time on the numbers provided if you require further information or have any queries.

Yours sincerely

Carl Corden
Ecologist/Project Manager
carl.corden@cumberlandecology.com.au

Appendix A

Ecological Assessment of amended part 3a application for access for the Moorebank Recycling Facility

A.1 Background and Purpose

The Environmental Assessment for the Part 3A Application for a Materials Recycling Facility is being amended to provide for access within an easement of Lots 309 and 310 DP 1118048. The "Easement Works" will allow for the construction of access ramps to the approved bridge over a drainage line within Lots 309 and 310 in DP 1118048 (“Lot 309 and Lot 310”). Lot 310 is zoned E2 for Environmental Protection under the Liverpool Local Environmental Plan. Lot 309 is zoned R3, for Medium-density Residential.

The purpose of this document is to provide an assessment of impacts on terrestrial ecology across Lot 309 and the northern portion of Lot 310 resulting from the construction of the ramps and road works within the easement. **Figure 1** shows the vegetation mapped within the easement. **Figure 2** shows the proposed design of the road works and easement.

The land that is the subject to the proposed development is referred to hereafter as the "subject site", whereas the wider area surrounding it is referred to as the study area. The entire study area was subject to ecological investigations in 2002 (ERM 2002). Dr Robertson, director of Cumberland Ecology, was then senior ecologist at ERM and directed the 2002 studies. He has also assisted with the preparation of this ecological assessment and so was able to comment upon the condition of the vegetation in 2002 versus its current condition in 2013.

A.2 Methods and Key Documents for preparation of this letter

The flora and fauna of the study area is well known and has been the subject of a series of reports including investigations for the original rezoning and more recently for a Land and Environment appeal. Information to assess the ecological impacts of the proposed development was therefore drawn from a suite of existing reports, including:

- Aquila Environmental Services (2010). Flora and Fauna Assessment. Proposed Materials Recycling Facility Lot 6 D.P. 1065574 Newbridge Road, Moorebank.
- Cumberland Ecology (2006). George's Fair, Moorebank Stage 2. Ecological Assessment for Urbex. Cumberland Ecology.
- Cumberland Ecology (2007). Moorebank Estate Vegetation Management Plan for Boral Pty Ltd. Cumberland Ecology.
- Cumberland Ecology (2009). George's Fair Vegetation Management Plan, for Moorebank Joint Venture. Cumberland Ecology.
- ERM (2002) Boral Moorebank Flora and Fauna Assessment Prepared for Boral Ltd. Environmental Resources Management Australia, Sydney.
- ERM (2004a) Boral Moorebank Master Plan Ecological Assessment Prepared for Urbex. Environmental Resources Management Australia, Sydney.

- Robertson D (2013) Expert's Joint Report – Ecology Issues (Proceedings No. 30141 of 2013).
- Robertson D & Ward S (2013); Expert's Joint Report – Ecology Issues (Proceedings No. 30141 of 2013).
- Ward, S (2013) Expert Opinion - Ecology. Eco Logical Australia Pty Ltd.

In addition to mapping provided in the above reports, further GIS mapping was conducted for this report to identify areas to be impacted by the Easement Works.

A.3 Terrestrial Ecology of the Subject Land

All vegetation communities of Lot 309 and the northern portion of Lot 310 are Endangered Ecological Communities (EECs) that are listed under either the *Threatened Species Conservation Act 1995* (TSC Act) and/or the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Vegetation integrity is variable, but in the northern extremity of Lot 310, it is in good condition. However, owing to the existence of a drain from existing suburban development to the west, parts of the low lying vegetation in the central part of Lot 310 (which include all land that will be directly impacted by the Easement Works) were reported to be degraded and to an extent weed infested (ERM 2002). This degraded vegetation was found to have improved in condition by 2013, as noted by Dr Robertson during a site inspection.

The Easement Works have the potential to impact on the EECs present on the site, as well as on threatened flora and fauna species and fauna habitat as described below.

A.3.1 Endangered Ecological Communities

The land within Lot 309 and the northern portion of Lot 310 supports the following EECs:

- River Flat Eucalypt Forest on Coastal Floodplains (RFEF); and
- Cooks River Castlereagh Ironbark Forest (CRCIF).

Refined mapping of vegetation undertaken by Dr Ward (April 2013) indicates that all of the vegetation to be directly impacted within Lot 310 by the Easement Works is RFEF (Robertson and Ward 2013). **Figure 1** shows the areas of vegetation to be impacted by the Easement Works. The total area of RFEF to be directly impacted by the Easement Works is 0.27ha.

i. River Flat Eucalypt Forest on Coastal Floodplains

This vegetation community occurs over Lot 309 and the central portion of Lot 310 and so the footprint of the Easement Works is comprised entirely of this community.

This community has been mapped by NPWS (2002) as Map unit 11 Alluvial Woodland. Detailed inspections by ERM (2002) found that this community structure and composition corresponds

with NPWS (2002) description of Map unit 12 Riparian Forest. This community is considered to be a form of RFEF and occurs on deep poorly drained clay soils.

a. Structure

The Projective Foliage Cover (PFC) of the canopy varies considerably from less than 5% to30%, while heights range from 8 to 15m. The canopy is dominated by Forest Red Gum (*Eucalyptus tereticornis*) and Ball Honeymyrtle (*Melaleuca nodosa*). Other canopy species include Swamp She-oak (*Casuarina glauca*), Cabbage Gum (*E. amplifolia*), Woollybutt (*E. longfolia*) and Blue Box (*E. bauerana*).

The shrub layer has a PFC of 5-20%, ranging from 1 to 4m in height and is dominated by Swamp She-oak, White Feather Honeymyrtle (*Melaleuca decora*) and Ball Honeymyrtle. In some places the shrub layer has a PFC of up to 50% and is dominated by the exotic Pampas Grass (*Cortaderia selloana*) or Lantana (*Lantana camara*).

The ground layer has a PFC of between 80% and 100%, and is less than 2m in height. On drier ground, it is similar in composition to the ground layer in White Feather Honeymyrtle/Swamp She-Oak Forest. In large low-lying wetland areas that are poorly drained the ground layer is dominated by *Phragmites australis* and Cumbungii (*Typha orientalis*).

RFEF within the footprint of the Easement Works is heavily impacted by the presence of an artificial drainage line. As a result the understorey is dominated by Phragmites and Cumbungii. Waterlogging has prevented the growth of many understorey species, and has resulted in some dieback of mature trees. **Photograph 1** below illustrates the degraded nature of the RFEF within Lot 310.

Photograph 1 RFEF within Lot 310

ii. Cooks River Castlereagh Ironbark Forest

This vegetation occurs in the northern end of Lot 310 and the Easement Works will not directly impact on this vegetation community.

CRCIF is an Endangered Ecological Community listed under the TSC Act and it has been mapped by NPWS (2002) as Map unit 3 Cooks River/Castlereagh Ironbark Forest. Detailed inspections by ERM (2002) indicated that the Broad-leaved Ironbark Woodland was less extensive than mapped by NPWS. Within the northern end of Lot 310, it occurs on deep, relatively poorly drained clay soils.

a. Structure

The canopy has a PFC of between 10% and 25%, ranging from 15 to 20m in height and is dominated by Broad-leaved Ironbark (*Eucalyptus fibrosa*) and Red Ironbark (*E. sideroxylon*). Other canopy species include Woolybutt, Forest Red Gum, Grey Gum (*E. punctata*), White Stringybark (*E. globoidea*) and Grey Box (*E. moluccana*).

The uppermost shrub layer with a PFC of between 5% and 30%, reaching 10m in height and is dominated by White Feather Honeymyrtle and juvenile eucalyptus. The lower shrub layer has a PFC of 50%, reaching to 4m in height and is dominated by Ball Honeymyrtle, Blackthorn

(*Bursaria spinosa*), Tick Bush (*Kunzea ambigua*), Bearded Heath (*Leucopogon juniperinus*), Everlasting (*Ozothamnus dismofolius*) and Rough Guinea Flower (*Hibbertia aspera*).

The ground layer has a PFC of 5% to a height of >1m and is dominated by Weeping Grass (*Microleana stipoides*), Mulga Fern (*Cheilanthes sieberi subsp. sieberi*) and *Lomandra multiflora subsp. multiflora*.

This community has been disturbed by tracks, past clearing and logging, rubbish dumping and possible frequent fires. Introduced species dominate the edges of this community where it adjoins tracks and cleared or disturbed land; common weeds associated with these areas include Pampas Grass, Paddy's Lucerne (*Sida rhombifolia*), Plantago (*Plantago lanceolata*) and Purple Top (*Verbena bonariensis*).

A.3.2 Threatened Flora

Acacia pubescens is listed as Vulnerable under the TSC Act. A small number of individuals of this species (less than 10) were found to occur in CRCIF at the northern end of Lot 310. No individuals of this species have been recorded within the footprint of the Easement Works. This shrub grows in dry conditions and cannot grow in swampy vegetation of the RFEF. This species is therefore unlikely to be impacted by the Easement Works.

No other threatened flora species have been recorded within Lot 309 or Lot 310.

A.3.3 Fauna Habitat

The vegetation within Lot 309 and the northern portion of Lot 310 provides fauna habitat resources such as sheltering sites, dispersal routes, foraging and roosting sites, and potential breeding sites. However the quality of these habitats has been reduced as a result of land clearing and weed invasion.

Trees throughout the vegetation of Lot 309 and the northern portion of Lot 310 are relatively young and lack hollows, which currently limits their utility for a number of threatened species (eg tree roosting bats and birds).

Moderately dense shrubs provide good ground cover for ground-dwelling fauna species and foraging habitat for birds, bats and arboreal mammals. Hollow logs, fallen timber and leaf litter provide habitat for invertebrates, amphibians, reptiles and small ground-dwelling mammals as well as foraging habitat for ground foraging birds.

A.3.4 Threatened Fauna

Four threatened fauna species have been recorded by ERM (2002) within the E2 bushland of Lot 310. These are:

- Cumberland Plain Land Snail (*Meridolum corneovirens*);
- Grey-headed Flying Fox (*Pteropus poliocephalus*);

- Eastern Freetail Bat (*Mormopterus norfolkensis*); and
- Yellow-bellied Sheathtail Bat (*Saccolaimus flaviventris*).

The Cumberland Plain Land Snail was not found in the northern E2 land and is not considered likely to occur within land impacted by the Easement Works as the land is too wet to support habitat for this species.

The vegetation within the footprint of the Easement Works may provide occasional forage habitat for the threatened bats recorded from Lot 310. However, larger areas of forage habitat will remain in the E2 vegetation and in the locality for these highly mobile species. The vegetation within the Easement Works footprint does not provide significant shelter or breeding habitat for these species.

In addition to fauna recorded during previous surveys, a suite of threatened species may potentially occur in the locality of Lot 309 and Lot 310, including the following species:

- Green and Golden Bell Frog (*Litoria aurea*);
- Regent Honeyeater (*Anthochaera phrygia*);
- Little Eagle (*Hieraaetus morphnoides*);
- Swift Parrot (*Lathamus discolor*);
- Square-tailed Kite (*Lophoictinia isura*);
- Flame Robin (*Petroica phoenicea*);
- Barking Owl (*Ninox connivens*);
- Powerful Owl (*Ninox strenua*);
- Eastern False Pippistrelle (*Falsistrellus tasmaniensis*);
- Eastern Bentwing Bat (*Miniopterus schreibersii oceanensis*); and
- Greater Broad-nosed Bat (*Scoteanax rueppellii*).

Of the above species, only the threatened bats are likely to utilise vegetation within the footprint of the Easement Works as forage habitat. Larger areas of suitable forage habitat for these species occurs in the remaining E2 vegetation and the surrounding area.

All other threatened fauna species are unlikely to occur or make significant use of habitat within the footprint of the Easement Works, given the small size, impacts of disturbance and fragmentation of habitat.

A.4 Ecological Impacts of Easement Works

The ecological impacts of the approved road bridge across Lot 309 have been described by Robertson (2013). Construction of the approved bridge will result in a narrow barrier to the corridor values of the E2 vegetation of Lot 310. This vegetation is currently in poor condition, and is surrounded by industrial and residential development. It is therefore unlikely that the approved Easement Works will result in any significant additional impacts to the ecological corridor values of E2 vegetation of Lot 310.

The Easement Works will require the removal of 0.27ha of RFEF. This vegetation community is in low condition within the footprint of the Easement Works. Despite this, offsets will be required to compensate for the ecological impacts of the removal of RFEF resulting from the Easement Works.

No threatened flora species have been recorded within the footprint of the Easement Works. It is unlikely that any of the threatened flora species known or predicted to occur in the locality would occur within the footprint of the Easement Works.

Four threatened fauna species are known from the locality of the Easement Works. The Cumberland Plain Land Snail is not predicted to occur within the footprint of the Easement Works. Threatened bat species may forage in habitats within Lot 309 and the northern portion of Lot 310, however larger areas of suitable forage habitat for these species occurs in the remaining E2 vegetation and the surrounding area. Accordingly, it is considered unlikely that removal of vegetation from the footprint of the Easement Works will result in a significant loss of potential habitat for any these species.

A.5 Mitigation measures and Offsets

A.5.1 Mitigation measures

The following mitigation measures are proposed:

- Any area for storage of construction vehicles, fuel and other materials should be located such that runoff, sediment, oils, nutrients or rubbish will not flow directly into either the drainage channel or any retained native vegetation. This should include consideration of the potential for flood events;
- Any fill, tracks and work surfaces should incorporate appropriate sediment controls so that sediment will not flow into either the drainage channel or any retained native vegetation. This should include consideration of the potential for flood events. Rehabilitation and/or stabilisation of bare soil should commence as soon as practicable to minimise the risks of erosion;
- If a temporary raised access track is required for construction of pylons in the section to be crossed by the bridge spans, culverts should be installed in track to allow water to flow;

- The boundary for all vegetation to be retained (i.e. clearing limits) should be fenced, signposted and protected in accordance with Australian Standard 4970 – 2009 Protection of Trees;
- Site specific environmental inductions should be conducted for all staff working on the project including (but not limited to);
  - sensitivity of surrounding vegetation (particularly EECs)
  - site environmental procedures (vegetation management, sediment and erosion control, protective fencing, weed control)
  - what to do in case of emergency (chemical spills, fire, injured fauna)
  - key contact in case of environmental emergency e.g. WIRES
- Careful consideration should be given to the final site levels and interaction with hydrological changes, including consultation with an ecologist to advise on how the changed hydrology may affect the native vegetation;
- If draining the site, a wetland dewatering relocation plan is required for any fauna including (but not limited to) amphibians, turtles, eels and fish; and
- Weed management should be undertaken on the site, and any landscaping should consider the potential for incorporating locally native species.

A.5.2 Offsets

Two alternatives are available for offsetting the ecological impacts of the proposal. Purchase of BioBanking credits or, the establishment of an onsite regeneration area as described below:

i. BioBanking

The Easement Works will require the removal of 0.27ha of RFEF. Offsetting for this loss of RFEF could be achieved by acquiring and retiring ecosystem credits under the Biobanking scheme. It has been calculated that the area to be impacted by the Easement Works would require the retirement of approximately 9 ecosystem credits for "Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin" (the biometric vegetation type equivalent to RFEF) (Ward 2013).

Biobanking credits obtained and retired should seek to match the requirements of the Biobanking assessment, which are:

- Minimum percent native vegetation cover class: 11-30%; and
- Minimum adjacent remnant area class: 25-100 ha.

Retirement of ecosystem credits from any of the following biometric vegetation types would be appropriate to offset the impacts of the Easement Works:

- Forest Red Gum – Rough-barked Apple grassy woodland on alluvial flats on the Cumberland Plain, Sydney Basin (ME018);
- Forest Red Gum – Rough-barked Apple grassy woodland on alluvial flats on the Cumberland Plain, Sydney Basin (HN526);
- Grey Box – Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin (ME020); and
- Grey Box – Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin (HN528).

Credits can be sourced from the following CMA subregions:

- Cumberland – Sydney Metro;
- Yengo – Hawkesbury/Nepean; and/or
- Cumberland – Hawkesbury/Nepean.

ii. On-site Vegetation Offset

An alternative to purchase and retirement of off-site credits that was discussed and agreed to in the Joint Statement was to restore vegetation on land already owned by Moorebank Recyclers. The equivalent of 9 ecosystem credits may be achieved by rehabilitating and conserving approximately 1.4ha of the southern portion of the Moorebank Recyclers land.

This land would need to be permanently protected by an appropriate mechanism that would ensure the management of these lands for environmental outcomes to perpetuity.

A.6 Conclusion

The proposed works will require the removal of 0.27ha of RFEF that is currently in low condition. It is heavily impacted by weeds and runoff from adjacent residential development.

The Easement Works will not impact on *Acacia pubescens* or any other threatened flora species, as no threatened flora species occur in the footprint of the proposed Easement Works.

The Easement Works will remove 0.27ha of low quality habitat for fauna species. Some threatened bat species may occasionally utilise this area as forage habitat, however the remaining E2 vegetation provides a larger area of suitable forage habitat for these highly mobile species. No other threatened fauna are likely to occur here given the small size, impacts of disturbance and fragmentation of this habitat. The Easement Works will not result in any significant impacts on threatened fauna species.

The approved bridge construction on Lot 309 will have a minor impact on corridor values along the drainage line within the E2 area. The Easement Works will not contribute significantly to these impacts.

Impacts on RFEF are proposed to be offset under the Biobanking scheme by purchasing and retiring 9 ecosystem credits of the appropriate type.

With the implementation of the proposed mitigation and offset measures, no significant impact is predicted to occur to any threatened flora or fauna species, or EECs listed under either the EPBC Act or the TSC Act. No Species Impact Statement (SIS) is required, and no Referral to the Commonwealth is necessary.

Coordinate System: MGA Zone 56 (GDA 94)

N
Grid North

Legend

Lot Boundary

Proposed Easement Boundary

Vegetation Communities

Cooks River Castlereagh Ironbark Forest

River-flat Eucalypt Forest

Image Source:
Image © 2013 Sinclair Knight Merz

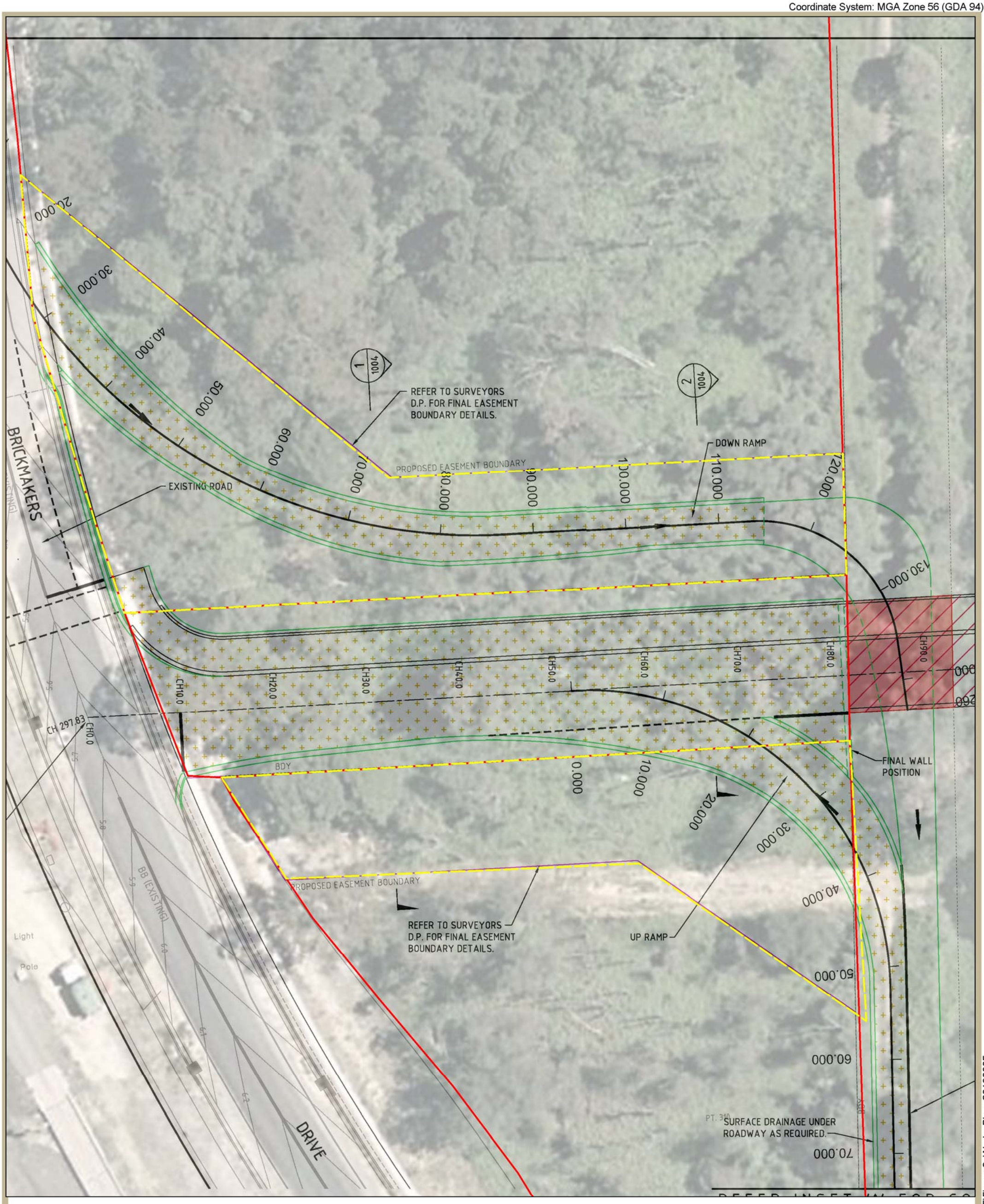
CUMBERLAND ECOLOGY

12.5 0 12.5 25 37.5 50 m

I:\...\130321\Figures\Letter 6_20130805\Figure 1. Vegetation Communities_Impact

Figure 1. Impacted Vegetation Communities

Coordinate System: MGA Zone 56 (GDA 94)



Legend

- Lot Boundary
- Proposed Easement Boundary

Image Source:
Image © 2013 Sinclair Knight Merz

Drawing Source:
Site Plan. Drawing Number SK1001(H), Cardno June 2013

CUMBERLAND ECOLOGY

I:\...\13032\Figures\Letter 6_20130805\Figure 2. Works Plan_20130805

Figure 2. Works Plan for Proposed Access Ramps

5 0 5 10 15 20 m

Attachment 18

Public consultation materials

Brent Lawson

From: Huon, Nathan [NHuon@investa.com.au]
Sent: Tuesday, 12 March 2013 5:45 PM
To: Brent Lawson
Subject: RE: Proposed Moorebank Recycling Depot

Thank you Brent for your email regarding your proposed development.

Investa has today published on its Georges Fair website an update for purchasers and residents regarding your proposal. Given that your development is presently on public exhibition on the Department of Planning website we have encouraged residents to consider the substance of the application as lodged with the department and to make a submission expressing their views by the closing date.

Any additional information regarding your proposal should be sent to the Department of Planning.

Regards

Nathan Huon
Project Director NSW

Investa Land
Deutsche Bank Place, Level 6, 126 Phillip Street, Sydney NSW 2000
T +61 2 8226 9435 **F** +61 2 9844 9435 **M** +61 438 239 773
E nhuon@investa.com.au | investa.com.au

Developing a sustainable future INVESTA

Please consider the environment before printing this e-mail. This email is confidential.
If received in error, please delete it from your system.

From: Brent Lawson [mailto:brent@concreterecyclers.com.au]
Sent: Tuesday, 12 March 2013 9:53 AM
To: Enq-GeorgesFair
Subject: Proposed Moorebank Recycling Depot

Dear Sir
I have attached a letter and summary about the proposed recycling depot. In it there are details regarding the exhibition of the Environmental Assessment of the development. Please include these documents on your Georges Fair website so that existing and future residents can learn about the proposed development.
Thank you for your help with this matter.
Brent Lawson

ABN: 64 067 281 083

Moorebank Recyclers Pty Ltd
PO Box 238
RYDALMERE NSW 1701

8th March 2013

Dear Sir/Madam

Proposed Moorebank Recyclers' Materials Recycling Facility Newbridge Road, Moorebank.

We are writing to the residents of Georges Fair to advise them that the Environmental Assessment for our proposed recycling facility is on exhibition on the NSW Department of Planning and Infrastructures website until 5 April 2013.

We have attached some details of the history of the development and a summary of the environmental impacts.

We encourage you to consider this information, to view the full Environmental Assessment and to provide your comments to the NSW Department of Planning and Infrastructure.

Our company has been working on this development in close consultation with Liverpool City Council since 1994. Please be assured that, should the development be approved, we will work with Council and all regulatory authorities to ensure the amenity of the local area are fully protected.

Yours Faithfully

Brent Lawson

Managing Director

Moorebank Recyclers, a building and construction materials recycling company, is proposing to establish a materials recycling facility on its land at Newbridge Road, Moorebank.

This attachment has been provided to:

* provide you with a summary of the proposed development, and

* provide details of how you can find out more about the proposed development and provide feedback to the Department of Planning and Infrastructure during its assessment of the application.

Site History

The main section of the Moorebank Recyclers' site is a disused landfill which occupies approximately 75% of the site.

On 24 July 1995, Liverpool City Council resolved to prepare a Draft Local Environmental Plan for the Moorebank Recyclers site to allow a concrete crushing and recycling facility as an additional permitted use.

On 25 February 2002, Liverpool City Council adopted a Structure Plan dealing with the Boral Moorebank Precinct which comprises the old Boral quarry site (now Georges Fair), the Moorebank Recyclers' site, the Benedict Sands and Gravel land, land owned by Flower Power, and the New Brighton Golf Club. The Structure Plan provides for preservation of both the foreshore area of the Georges River and the environmentally sensitive land central to the precinct, while also accommodating the need to have highway related retail and commercial activity, and allowing the Boral quarry site to be rehabilitated and converted into a significant residential precinct.

The Structure Plan also recognises the suitability of the Moorebank Recyclers' site and part of the Benedict Sands land for use as a combination of Waste Recycling and Open Space. The Council subsequently resolved to rezone the Moorebank Recyclers' site to permit a "materials recycling yard" on the site. The rezoning was gazetted on 23 September 2005.

On 2 May 2006, an application for a materials recycling facility was lodged in accordance with the former Part 3A of the Environmental Planning and Assessment Act 1979.

On 29 August 2008, Liverpool Local Environmental Plan 2008 was made. Notwithstanding the commencement of residential development on the Georges Fair site, and the pending rezoning of part of the Benedict land to residential, the Council, in the preparation of LEP 2008, considered that a Materials Recycling Facility remained a use suited to the site and retained that zoning.

The Proposed Development

It is proposed to establish a materials recycling facility on the site with intended capacity of 500,000 tonnes per annum. The proposed facility would receive concrete, brick, asphalt, sandstone and sand from the building and construction industry in the Sydney metropolitan area. No domestic loads would be received at the facility. No asbestos would be received at the facility.

The proposed hours of operation would be:

Monday to Saturday 7:00 am to 6:00 pm.

Operation of the crushers would be restricted to 7:00 am to 5:30 pm.

It is estimated that a maximum of 162 trucks would visit the site on a daily basis which would generate 324 movements per day. The vast majority of trucks visiting the site each day are owned by Moorebank

Recyclers and would turn left from Brickmakers Drive to enter the site and turn right from the site onto Brickmakers Drive when leaving the site.

Protecting the local environment

Air Quality Dust management on the site would involve:

- the use of water carts,
- the use of water fogging devices within the processing sheds,
- the use of water sprays on all stockpiles to generate a crust on the stockpiles to prevent dust lift-off,
- the imposition of site vehicle speed limits, and
- constraints on work under extreme unfavourable weather conditions, such as dry wind conditions.

The air quality assessment undertaken concludes that the cumulative impacts of the project would be below the relevant air quality criteria of the Environment Protection Authority.

Noise An acoustic impact assessment has been undertaken which measures existing ambient noise levels. Noise levels were dominated by distant and local traffic, and typical suburban noise.

The predicted noise levels from the operation of the proposed development meet the relevant Environment Protection Authority criteria.

Traffic volumes on Brickmakers Drive are currently approximately 6,500 vehicles per day and 1,000 at night time and 5-6% heavy vehicles. These are expected to increase in the future as a result of further residential development.

The proposed extra trucks from the proposed development would result in a 1dBA increase to existing noise levels. The predicted future noise levels comply with the Environment Protection Authority criterion. Negligible impact is therefore expected.

Visual A visual impact assessment has been prepared for the proposed development. The conclusions of that report are that there are no views into the site from the newly developing residential area on the former Boral site or the curved section of Brickmakers Drive which passes close to the existing access handle to the site. The view from this section of Brickmakers Drive is confined by dense vegetation along the western and northern boundaries of the site.

The proposed development on the site would not be visible from these areas.

Making comment on the proposed development

The Environmental Assessment which must accompany the application to the Department of Planning and Infrastructure is current on exhibition for public comment. The documents can be viewed on the Department website at the Major Projects Assessments section.

All residents are encouraged to consider the above information and the more detailed Environmental

Assessment currently on public exhibition and provide comments on the proposed development to the Department of Planning and Infrastructure during the public exhibition of the Environmental Assessment.

ABN: 64 067 281 083

Moorebank Recyclers Pty Ltd
PO Box 7108
SILVERWATER NSW 2128

Mayor Ned Mannoun
Liverpool City Council
33 Moore Street
Liverpool NSW 2170

Friday 15 March 2013.

Dear Mayor

Re: Briefing on Proposed Recycling Facility at Moorebank

We are writing to seek a meeting with you in relation to our proposed materials recycling facility at Moorebank.

As our new Mayor, we would appreciate the opportunity to update you on the project, from our company's perspective and outline how we remain committed to consulting and engaging with the State Government, Liverpool Council and local residents. It will also allow us to clarify a number untruths and misconceptions about our proposal.

We would like to outline the history of this proposed development and the steps we have taken since 1993 to work with Council for the appropriate use of this site. Our application for the establishment of the recycling plant is under consideration by the Department of Planning –with an Environmental Assessment currently on exhibition for public comment.

We continue to comply and co-operate with all regulatory requirements in relation to our proposal and if approved, we can assure Council that we will operate the recycling facility to best practice standards of workplace safety and community amenity.

We would like to work with Council to explore practical solutions to addressing residents' concerns about truck traffic and noise issues.

Our recycling operations are an essential and environmentally important component of the building and construction industry across the South West region of Sydney where there is a major shortage of alternate quarried products.

Importantly, our proposed facility will deliver a significant boost to the local economy with the direct creation of 50 full-time jobs which flows on to approximately 125 additional employments in the region.

Our external public affairs firm, The Premier Communications Group, will contact your office as a follow-up to this letter. Please note that The Premier Communications Groups is registered on the NSW Government's Register of Lobbyists.

We look forward to meeting with you at your earliest convenience.

Yours Sincerely,

Brent Lawson
Managing Director

ABN: 64 067 281 083

Moorebank Recyclers Pty Ltd
PO Box 7108
SILVERWATER NSW 2128

Melanie Gibbons MP
State Member for Menai
60 Walder Road
Hammondville NSW 2170

Friday 15 March 2013.

Dear Ms Gibbons

Re: Briefing on Proposed Recycling Facility at Moorebank

We are writing to seek a meeting with you in relation to our proposed waste recycling facility at Moorebank.

As our local MP, we would appreciate the opportunity to brief you on the current status of our proposal and outline how our company remains committed to consulting and engaging with the NSW Government, Liverpool Council and residents. It will also allow us to clarify a number of untruths and misconceptions about our proposal.

We would like to outline the history of this proposed development and the steps we have taken since 1993 to work with Council and the State Government for the appropriate use of this site.

Our application for the establishment of the recycling plant is under consideration by the Department of Planning –with an Environmental Assessment currently on exhibition for public comment.

We continue to comply and co-operate with our regulatory requirements in relation to our proposal and if approved, we have assured residents and other key stakeholders that we will operate the waste recycling facility to best practice standards of workplace safety and community amenity.

We would like to work with you, as our local MP, the Liverpool Council and local residents, to explore practical solutions to addressing residents' concerns.

Our recycling operations are an essential and environmentally important component of the building and construction industry across the Sydney region where there is a major shortage of alternative quarried products.

Importantly, our proposed waste recycling facility will deliver a significant boost to the local economy with the creation of 50 full-time jobs, with a flow on of approximately 125 additional employments in the region.

Our external public affairs firm, The Premier Communications Group, will contact your electorate office as a follow-up to this letter. Please note that The Premier Communications Groups is registered on the NSW Government's Register of Lobbyists.

We look forward to meeting with you at your earliest convenience.

Yours Sincerely,

Brent Lawson
Managing Director