Appendix 12

Visual Impact Assessment

Materials Recycling Facility

Lot 6, DP 1065574 Newbridge Road, Moorebank

Visual Impact Assessment

Report prepared for Nexus Environmental Planning Pty Ltd

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Executive Summary

E1 The purpose of this report is to assess the potential visual impacts that would ensue as a result of the construction of the proposed materials recycling facility. The report addresses the Director General's Requirements in regard to visual impacts.

E2 The subject site is roughly rectangular, bounded by the Georges River to the east, New Brighton Golf Course to the south, the newly developing Georges Fair residential development on the former Boral quarry site to the west and Benedict Sand and Gravel quarry and recycling site to the north.

E3 There is extensive heavily vegetated reserve land along the western boundary and riparian vegetation along the Georges River boundary which block views into the subject site.

E4 Visibility from existing residential areas

There is no visibility of the interior of the subject site from the residential area to the west of Georges Fair, from Newbridge Road and from any reserves. Distant views in the direction of the subject site are available but views into the subject site are not available. The subject site is below the visual horizon of trees which are part of the extensive buffer area of reserve land on and between the Boral site and the subject site. The proposed development on the subject site will not be visible from these areas.

E5 Visibility from Georges Fair

There are no views into the subject site from the newly developing residential area on the former Boral site or the curved section of Brickmakers Drive that passes close to the existing access handle to the subject site. The view from this section of Brickmakers Drive is confined by dense vegetation along the western and northern boundaries of the subject site. The proposed development on the subject site will not be visible from these areas.

By comparison, in the main orientation of views eastward from parts of Georges Fair, for example from areas to the north of Hoy Street, the Benedict Sand and Gravel Quarry and recycling site is prominent in the views because of the presence of the upper parts of some of the stockpiles and machinery which can be seen above and beyond the dense vegetation.

The height of vegetation between the former Boral site (Newly developing Georges Fair) and the subject site that can screen visibility of the development proposed was surveyed in November 2003 and showed that relative to the adjacent vegetation, the recycling crusher sheds and stockpiles with a maximum height of 10m will be considerably below the screening vegetation canopy height.

Surveyed sections of 2003 (appended with the report) show the effect of the vegetation and height controls on two locations on the former Boral site that are still representative of the "worst case" effect on views when development is completed.

The subsequently constructed predominantly single and two storeys development in the Georges Fair has further blocked any significant viewing opportunity in the direction of the subject site and this effect will further increase as the construction of residences continues in this new locality.

The former Boral site (Georges Fair) also has some public domain areas on roads at approximately RL22. View lines from these will be similarly affected by the presence of intervening vegetation between the viewer and the subject site and also by the residences already constructed and to be constructed in the future in the foreground of the views.

It is reasonable to conclude in assessing visibility from existing external residential locations that none of the structures on the subject site, the stockpiles of materials proposed or the activity associated with use of the subject site would be likely to be visible.

E6 Visibility from Benedict Sand and Gravel quarry and recycling site

There is visibility predominantly of the foliage of the vegetation on the margins of the site from most parts of the Benedict Sand and Gravel Quarry and recycling site.

The Benedict site has been rezoned for potential residential development on part the site under Liverpool LEP 2008 and is subject to Liverpool Development Control Plan 2008, Part 2.10, Development in Moorebank East. Figure 2 Street Network of this part of the DCP shows that the residential development on the Benedict Site will be located in the northwest sector and will be separated from the subject site by a large area of private recreation space.

It appears that the Benedict site would be likely to be filled and levelled and could provide some views toward the subject site once the potential residential development is constructed in future.

There may be some views toward the direction of the car park, upper parts of some structures and stock piles from some residences, ie. those which will be located furthest south on this site depending on finished ground levels.

Views from residential streets and residences located in the majority of the Benedict site would be blocked by intervening residential development in the foreground within this site itself.

There will not be any significant visibility of parts of the proposed development including any structures or stock piles from the access road to the Benedict site because of the blocking effect of future development on this site and existing and likely future vegetation.

Further buffer planting appropriate to enhancing the existing screening effect along the northern boundary of the subject site will assist in reducing any unreasonable visibility from this future residential area.

E7 Visibility from Georges River

Thick riparian vegetation on the riverbank screens the subject site from the waterway. Views from the waterway are at an upward viewing angle, which lessens the possible visibility of any structures that may be glimpsed through the vegetation.

There may be glimpses toward the most northerly part of the subject site from part of the river to its north, across the existing dredge pond in the south eastern area of the Benedict Sand and Gravel quarry and recycling site. The DCP for this site shows the pond to be intended for future private recreation and it is likely that this use would be associated with further vegetation that would increase the existing screening effect.

E8 Visibility from public reserves, parks and golf courses

There are limited and heavily screened views into the south of the subject site from the New Brighton Golf course and no significant views from along the river's edge within Riverlands Golf course and adjacent land to the north, on the east side of Georges River.

Davy Robinson Reserve is located north-northeast of the subject site. There are no views into the site from the reserve. The proposed development will not be visible from here.

Informal access is possible from Davy Robinson Reserve to significantly degraded reserve land further to the south adjacent to the Benedict Sand and Gravel quarry and recycling site. There will be no view of the subject development from this reserve.

Vale of Ah Reserve on the eastern bank of the Georges River has no views into the subject site due to the screening effects of riparian vegetation. The proposed development will not be visible from here.

There is informal access to the river across the adjacent private land by tracks from the Vale of Ah Reserve. Despite providing the closest view in terms of distance across the river, there is no visibility of the subject site or future development because of riparian vegetation in this view line.

There is no formal public access to the river from the Riverlands Golf Club. There is substantial riparian vegetation which screens the subject site from any part of the golf course.

Malinya Park has limited views across the Georges Fair site towards the subject site. Any future views towards the subject site will be dominated by housing in the foreground. There will be no views of the proposed development.

Paine Park located on Elouera Crescent is screened from views towards the subject site by an earth mound on the Georges Fair site and mature trees in the park and on the Georges Fair site. Future residential development will screen or eliminate views in the direction of the subject site.

E9 The subject site is zoned E2 Environmental Conservation under Liverpool Council Local Environmental Plan 2008. The area subject of the application is a former landfill site that is flat and essentially featureless, has been capped by inert material and does not exhibit any significant vegetation or natural landscape features. A large section of the subject land along its entire eastern boundary and a narrow strip along the southern boundary is also designated as Environmentally Significant Land. This land is characterised by existing natural vegetation that is part of a network of wildlife corridors in the vicinity. There is no proposal to develop the land in either of these areas. There is no significant visibility of the land proposed to be development or likely visibility of future structures from these densely vegetated areas. The proposal is considered to satisfy the relevant requirements and objectives of the LEP as detailed in the main report.

E10 Residual impacts and mitigation measures

Providing that the overall heights of any structures are controlled as proposed, the activity of using the subject site as intended does not have significant visibility to the public domain.

No building, equipment or stockpile would be visible on the subject site from viewing locations in the existing public and private domain or presently under construction residential areas. At times however, an excavator is required to grade the stockpiles and there may be the potential that part of the excavator may be visible above the tree line.

The final matter of residual impact is traffic, specifically the visibility of and character of vehicles entering and leaving the subject site. The nature and character of the use will not be unique and the visibility of vehicles is not considered to be determinative.

Mitigation measures required consist only of controls on colours and materials of buildings and structures and buffer planting of vegetation on the northern boundary. Future vegetation screening with the effect of reducing or eliminating visibility of the development should be provided at the northern edge of the subject site in the proposed car parking area and between the car park and the northern boundary.

1.0 Introduction

1.1 Purpose of this report

This report was commissioned by Nexus Environmental Planning Pty Ltd, on behalf of Moorebank Recyclers, the applicant, to consider the potential visual impacts that would ensue as a result of development on part of the site, Lot 6, DP 1065574 Newbridge Road, Moorebank for the purposes of a materials recycling facility. This report is to be annexed to an Environmental Assessment pursuant to the requirements of the Director-General of the NSW Department of Planning.

The report is an assessment of the potential visual impacts of the proposed construction of a materials recycling facility and is based on fieldwork carried out on 7th November 2002, 23 September 2003, 10th October 2006, 6th June 2007 and 3 February 2010.

1.2 Documents consulted

The following documents have been consulted during the preparation of this report:

- Director-General's Requirements (DGRs) pursuant to s 75F of the Environmental Planning and Assessment Act 1979, dated 7 July 2008.
- Council Officer Peter Flynn; Liverpool City Council requirements for the Environmental Assessment of the proposal, email to Chris Ritchie Department of Planning dated 3rd March 2006.
- Drawing No. 5018-06, Sheet 01, Issue A, Existing Site Survey Plan, prepared by Lyle Marshall and Associates Pty Ltd, dated 9 February 2010.
- Drawing No. 5018-06, Sheet 03, Issue A, Proposed Site Controls, prepared by Lyle Marshall and Associates Pty Ltd, dated 9 February 2010.
- Drawing No. 5018-06, Sheet 05, Issue A, Proposed Overall Site Plan, prepared by Lyle Marshall and Associates Pty Ltd, dated 9 February 2010.
- Drawing No. 5018-06, Sheet 06, Issue A, Proposed Detailed Site Plan, prepared by Lyle Marshall and Associates Pty Ltd, dated 9 February 2010.
- Drawing No. 5018-06, Sheet 07, Issue A, Proposed Site Sections, prepared by Lyle Marshall and Associates Pty Ltd, dated 9 February 2010.
- Plan of proposed finished surface levels over Boral site at Moorebank, prepared by Mepstead & Associates Pty Ltd, dated 27 April 2004.
- Contour aerial photographs prepared by Liverpool City Council, titled Moorebank Concrete Recyclers Site & Adjacent Areas (original scale 1:6,000), & Moorebank Concrete Recyclers Site,(original scale 1:4,000).
- Liverpool Local Environmental Plan 2008 (LEP).
- Boral Moorebank Land Development Control Plan No. 50.
- Liverpool Development Control Plan 2008, Part 2.10, Development in Moorebank East.

1.3 Assessment methodology

The methodology used in the present assessment has been developed over several years and uses relevant aspects of methods accepted in landscape assessment. The assessment of visual impacts is a field that requires a degree of subjective judgment and cannot be made fully objective. It is necessary to limit the subjectivity of the work by adopting a systematic, explicit and comprehensive approach. This has the aim of separating aspects that can be more objective, for example the physical setting, visual character, visibility and visual qualities of a proposal, from more subjective elements, such as matters of personal taste and emotion.

The methodology for this assessment consists of the steps as described below.

1. Identification and description of the existing visual character of the land within which the proposal would be seen (Part 2.1 below).
2. Analysis and evaluation of the potential future visibility of and visual accessibility of the proposal (Part 2.2 below).
3. Assessment of the proposal with regard to the relevant planning documents (part 3.0 below).
4. Assessment of the residual visual impacts of the proposal if any and any necessary mitigation measures which are the subject of commitments to environmental management programs for which conditions of consent would be required (Part 4.0 below).
5. Conclusions.

2.0 Visual impact assessment

2.1 Existing visibility and visual character of subject site

The subject site is located on a broad low-lying flood plain of the Georges River. The history of the subject site and its existing landform is described in detail in the main Environmental Assessment Report. A roughly rectangular part of the existing subject site has been filled in the past and is of an open and predominantly grassy visual character. The northern, western and southern margins of the filled area approximately follow the site boundaries. An irregularly shaped edge exists between the filled portion of the subject site and the eastern boundary beyond which is the Georges River. The north eastern portion of the subject site is naturally vegetated. Between the eastern boundary and the river is also a naturally vegetated area. The subject site is effectively invisible from the river and the reserve land between it and the subject site as a result of the screening effect of riparian vegetation. Refer Photographic Plates 1 to 4, 26 and 27.

The land along the eastern boundary is covered with indigenous riparian vegetation consisting of mangrove forest, swamp forest with *Allocasuarina* and paperbark along the river bank and open woodland further away from the riverbank. The vegetation along the Georges River provides a dense screen such that the subject site and its future use are not visible from the waterway. At the northern end of the subject site the vegetation is thickest and covers a large area between the waterway and the part of the subject site where development is proposed.

To the south of the subject site is the New Brighton Golf Course, which also adjoins the former Boral Brickworks Site, now the newly developing Georges Fair residential development. The vegetation along the southern boundary of the subject site adjacent to the north eastern end of New Brighton Golf Club is relatively open consisting mainly of mature trees on the boundary between the two. Views from the golf course into the site are restricted to a greater extent by an embankment between one and a half to two and a half metres high inside the boundary on the subject site (Photographic Plate 28). However, there are some limited viewing opportunities into the interior of the southern part of the subject land, where natural and cultural vegetation on both the Golf Course and the site forms a more open screen. This area has been identified as environmentally significant land; a potential wildlife corridor linking the riparian vegetation on the river and the native woodland and forest reserves to the east of the site. Future growth of vegetation in the corridor will lead to greater and potentially total screening of the view into the site.

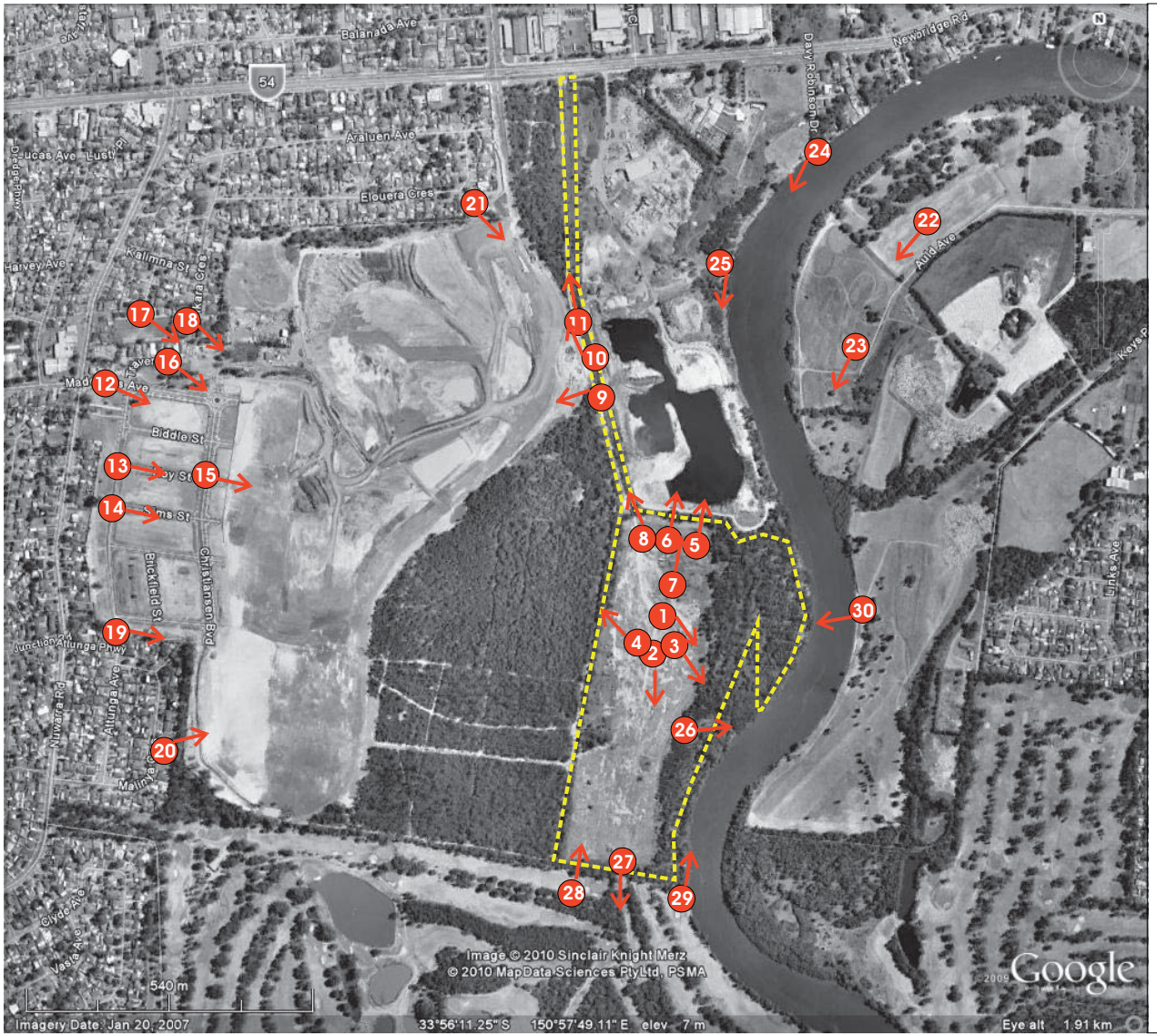
To the west of the subject site is an extensive area of naturally vegetated land, which appears to be re-growth intermixed with areas of more mature vegetation. It is criss-crossed by a series of tracks in a rectilinear pattern. The predominant character is of natural flood plain and lower slopes forest and woodland. The tracks do not detract from this quality. On the boundaries in particular, it is clear that this vegetation is re-establishing a more mature vegetation structure with open to dense areas of sapling and small tree regrowth of the dominant species. It appears likely that clearing and burning in the past have reduced both the density and height of the predominant vegetation form. However, there is also variation in the typical height of the predominant communities, with the flood plain type being of generally lower canopy height with some emergent taller trees and the lower slopes forest being generally taller, but more even in height.

The former Boral site has undergone transformation from a brick pit and industrial landscape to the partly constructed stage of residential development. The land slopes generally downward from west to east, with a cross fall from the north western corner. The highest part of the land is adjacent to Nuwarra Road. The land generally has an aspect to the east. The proposed amendments to the final landform indicate an RL of approximately 26m at Nuwarra Road falling in a south easterly direction to approximately RL 6 inside the embankment of the link road. The finished RL of the link road is not available to us at this time.

The land surface on which the proposed development would exist is not visible from any existing residential location outside the subject site because of the topographic relationships which exist between them and the site, the screening effects of vegetation both on the margins of the site and in reserve land between the sites and the effect of the link road embankment at the eastern edge of the developing Georges Fair residential development.

2.2 Potential future visibility

A viewpoint analysis was conducted to assess the visual impacts that may be experienced by viewers. This consisted of visiting the subject site and locality and assessing the likely impact on views from selected locations. The locations were selected to represent all of the kinds of viewers' experience of the development that would exist in the immediate area. The main kinds of viewing locations and areas were visited and photographed. The photographs taken with a digital 35mm format camera set to simulate a focal length of 55mm, to approximate the correct proportions of the elements of views as experienced by the human eye. At each viewing place a series of observations and assessments were made. A variety of locations were also visited to ascertain the extent of the visual catchment and the characteristics of the views. Refer to Map 1 for the viewing locations assessed. The Photographic Plates for each viewing location is appended to the Report at Appendix B.



Map 1: View point analysis
(Refer to Photographic Plates at Appendix B)

2.2.1 Topography, vegetation and proposed equipment and stockpile heights

There is minimal external visibility to the area of the subject site proposed to be used for the intended materials recycling facility as a result of the screening effects of vegetation. As such, the finished heights of buildings, machinery and stockpiles of material determine any potential future visibility. Any potential future visibility of the development or activity associated with it depends on this being able to be seen above the surrounding vegetation.

Visibility would depend not only on the height of screening vegetation but also the viewing angle. The newly developing Georges Fair residential development and the adjacent existing residential development to the west and northwest provide the only nearby viewing places elevated above the subject land, however the houses newly constructed in the foreground and dense vegetation between Georges Fair and the subject site significantly restrict any potential visibility of the proposed structures and stockpiles. This has been represented with the help of Photographic Plates 12 to 21.

As an aid to assessment of the likely future visibility of any of the structures or activities which would occur on the subject site, the heights of the major vegetation crowns existing between the subject site and the former Boral site were surveyed in November 2003 as part of the documentation to accompany the application which resulted in the re-zoning of the land. Refer to Figures 2 & 3 in Appendix A.

The finished ground levels proposed for the subject site are a maximum of RL 5.7, approximately 1 to 1.5m above the existing ground level on the subject site at present. The proposed finished ground levels on the Georges Fair site are between RL 6 and 7 at the eastern side of the development, dropping from a maximum elevation of approximately RL 24 in the west. The ground levels of the area of naturally vegetated land between the Georges Fair development and the western boundary of the subject site varies between RL 2 and 4. The vegetation on the margins of the former Boral site and between it and the subject site was surveyed in November 2003. The trees closest to the area proposed to be developed were surveyed as typically being between 17.3 and 17.6 m high at the crown with isolated trees up to 22.3m. It can be reasonably expected that the height of all trees, but particularly those in the lower height classes, has increased in almost six years which have now elapsed, given that there have been no fires or clearing in the meantime.

The depth of the vegetation between the subject site and the former Boral site also varies from a minimum of approximately 250m to a maximum or approximately 550m. This means that while the height of the vegetation on the margins of the subject site is of relevance in regard to future visibility of aspects of the development, the width of the band of intervening vegetation is also important in decreasing potential visibility, because many individual trees equal to or taller than those surveyed also exist within that band of vegetation. This will result in the further decrease of any predicted visibility of activity on the subject land. As a result of this effect, the boundary trees of the subject site are generally not visible.

Relative to the predominant height of adjacent vegetation, the machinery proposed for the recycling plant will be housed in sheds of a maximum height of 10m, considerably below the predominant vegetation canopy height. Stockpiles will be limited to 10m in height with the feeding conveyors a maximum of 1m above the maximum height of the stockpiles.

Sections generated by surveyors on the basis of the survey of 2003 show the tallest and shortest tree vegetation on the margin of the former Boral site and on the margin of the subject land respectively, on two lines surveyed between two representative high points on the northern part of the former

Boral site and two areas of the subject site. The approximate locations of the survey points relative to the new subdivision layout of the former Boral site are shown on Figure 1. The survey points inside the former Boral site were at two locations on land which has now been substantially modified. However, the RLs of both locations appear to be similar to the finished contours in the same locations which are shown on Figure 4. On the basis of the new residential development of the former Boral site, the two survey points are still representative of the higher viewing places which exist in the northern part of the newly developing Georges Fair.

The northern area on the subject land to which the sections were drawn is in the general vicinity of the two crusher shed buildings and near to the location of the proposed stockpiles of recycled materials. The sections are shown on Figures 2 and 3 of Appendix A.

The former Boral site (now Georges Fair residential development) generally falls from north to south, however it has a cross fall from west to east as well and has public domain areas on roads at approximately RL22. View lines from here, assuming no intervening items such as buildings and public domain or garden vegetation, will be similarly affected by the presence, depth and height of intervening vegetation between the viewer and the subject site. For example, a section drawn from Bradbury Street equivalent to the Section 1-2 on Figure 2 of Appendix A would show that the vegetation will prevent views of buildings and stockpiles on the subject site. Given the assumptions above and by observation of view lines drawn on the sections, it was reasonable to conclude in assessing visibility from external residential locations, even ignoring the future effects of intervening built form on the views, that none of the structures on the site or the stockpiles of materials proposed would be likely to be visible.

2.2.2 Existing residential areas

Distant views towards the subject site are available from elevated locations to the west and north west of the site and part of Newbridge Road and Governor Macquarie Drive. A number of viewpoints were visited which represented locations from which views may be possible from the public domain, in these existing residential areas. These included Malinya Crescent (Photographic Plate 20) and Attunga Avenue (Photographic Plate 19) to the west of the subject site adjacent to the Georges Fair residential development. Other locations assessed were part of Nuwarra Road, Kalimna Street, Ikara Crescent (Photographic Plates17 and 18), Araluen Avenue and Elouera Crescent (Photographic Plate 21) to the north west of the subject land, and Newbridge Road and Governor Macquarie Drive near the entrance to the existing site access road.

While views toward the subject site are possible from all of these locations, views into the subject site are not available as the site is below the visual horizon of trees which are part of the extensive buffer area of reserve land which was formerly on the former Boral site and the intervening newly constructed residential development in Georges Fair in the foreground and middle ground of the view.

2.2.3 Developing residential areas

The Georges Fair residential development on the former Boral quarry site was planned to be developed and released in three stages over a four year period. The construction of houses between Nuwarra Road and Christiansen Road is almost fully completed and extends from Travers Street in the north and Maninya Crescent in the south. The residences are predominantly one

to two storeys high and significantly block any views in the direction of the subject site from the residential streets.

The display homes are located on the north west corner, the highest part of the residential development, on the northern side of Travers Street. The display homes are two storeys in design and have a generally south south east view orientation. The display homes will eventually be occupied. The subject site is not visible from Travers Street and its general location can only be surmised from the visibility of the crowns of a small number of taller trees on the margins of the site.

The main orientation of the eastward view from parts of Georges Fair, mainly from the area to the north of Hoy Street is towards the Benedict Sand and Gravel Quarry and recycling site. Upper parts of the stockpiles and some of the machinery are prominent in this view and are seen above and beyond the dense vegetation.

The public open space on the south side of Travers Street contains some mature trees, avenue plantings of large trees on Travers Street and Maddecks Avenue, as well as embankments planted with less mature trees. The combined result of the public domain landscape and presence of newly constructed residences in the foreground and the middle ground of the view provide substantial screening of the views (Photographic Plate 16).

The existing alignment of Maddecks Avenue (the western part of the future road) is oriented generally towards the southern end of the Benedict Sand and Gravel site adjacent to the subject site. It then turns in a more north easterly orientation parallel with Travers Street in its future form. There are no views into the subject site from what is currently constructed of Maddecks Avenue (Photographic Plate 12). The middle distance views from the western end of Maddecks Avenue which presently can be toward the subject land will soon be occupied by housing and landscaping which will block the views. Further screening of views into the subject site occurs due to the thick vegetation between the residential development and the subject site.

The future Maddecks Avenue is at a low relative level compared to the subject land and in common with most of the Georges Fair development area, will have no view toward the subject site because of the effect of buildings, public domain landscape and ultimately screening by vegetation between the development area and subject site.

Future development on the western side of Bradbury Street will have their main view orientation towards the northern half of the subject site. However, there are currently no views into the subject site from this location due to the screening effect of vegetation between the residential development and the subject site. With the recent construction of residences on both sides of Bradbury Street as well as on other lots in Georges Fair, combined with avenue street tree plantings along Christiansen Boulevard and future streets, the likelihood of there being any present and future views into the site from these locations are minimal (Photographic Plates 13 and 14).

Views from the future development along the eastern side of Christiansen Boulevard, including views down future east-west streets, will be limited by the vegetation reserve to the east and will provide no views of a future development of the subject land. There are currently no views into the subject site from this part of Georges Fair and this will continue to be the case (Photographic Plate 15).

Biddle, Hoy, Sims and Schultern Streets are all secondary streets oriented in a generally east west direction with potential axial views towards the site (Photographic Plates 13 and 14). Biddle and Hoys Streets are oriented most directly towards the area of the subject site that will contain the

bulk of the structures, equipment and stockpiles. There are no views into the subject site from any of the above mentioned streets due to the screening effect of thick vegetation between the residential development and the subject site and due to the screening effect of the newly constructed residences and landscaping of lots and the public domain. Residences at the eastern ends of these streets whilst closer to the subject site will not experience views into the subject site due to the eastward and downward sloping nature of the Georges Fair site. When viewed from these locations the height of the reserve land vegetation has a greater screening effect than when it is viewed from the western ends of the streets.

There is the potential for views toward the northern end of the site from part of Brickmakers Drive, which is presently under construction off Newbridge Road (Photographic Plates 10 and 11). The roadway is raised and runs approximately parallel to the access handle of the subject site for a short distance and then curves westward, away from the access handle. There is no intervening screening vegetation between the roadway and the access handle over a short distance and it may be possible to view across the southern part of the Benedict Sand and Gravel Quarry and recycling site toward the general area proposed to be developed for materials recycling. However there is no view of the surface of the land proposed to be developed because of the effects of intervening vegetation in the Benedict Sand and Gravel Quarry and recycling site and the subject site. Given the distance between the road and the subject site and the relative levels that are evident, it is unlikely that any of the structures or activity on the subject site will be visible from this short section of the road.

2.2.4 Environmentally Significant Lands

A large area of the subject site along its eastern boundary, adjacent to Georges River and a narrow strip along the southern boundary is designated as Environmentally Significant Land under LEP 2008 and is subject to certain restrictions. These include restrictions on potential development. (Photographic Plates 26 and 27).

It is intended that re-vegetation of the area along the southern boundary will be undertaken to maintain and enhance a wildlife corridor between the large tract of bushland on the former Boral quarry site and the area adjacent to the Georges River. This will have the effect of further decreasing or eliminating views into the subject site from this private domain location.

2.2.5 Public reserves and parks

Davy Robinson Reserve is located north north east of the subject site, off Newbridge Road. The reserve is of little scenic value, but provides the public with a boat ramp for access to the Georges River. The south western corner of the reserve provides views down the river toward the north easternmost section of the subject site. There are no views into the site from Davy Robinson Reserve due to the screening effects of vegetation on subject site and on the Benedict Sand and Gravel Quarry and recycling site. (Photographic Plates 24 and 25)

Beveridge Park and Hind Park on Newbridge Road adjacent to the Georges River provide no views of the subject site due to the screening effects of vegetation on the eastern bank of the river as well as on site. There will be no potential visibility of any structures or stock piles from these locations.

Vale of Ah Reserve is located on the eastern bank of the Georges River on Auld Road. Locked gates limit vehicle entry however the reserve is easily accessible to the public on foot. The Reserve is a dedicated off leash area for dogs and home to the Bankstown Touch Football Association. There are no views into the subject site from the reserve due to the screening effects of riparian vegetation. It is possible to glimpse existing development on Nuwarra Road across the dredged part of the Benedict Sand and Gravel Quarry and recycling site. There will be no potential visibility of any proposed structures or stock piles from these locations. (Photographic Plate 22)

There is informal access to the river on the private land adjacent to the Vale of Ah Reserve to its south. A series of tracks provide access to a point on the river approximately opposite the southern end of the Benedict Sand and Gravel Quarry and recycling site. Aside from the New Brighton Golf Course and the river itself, this is the closest readily accessible public view point to the subject site. The riparian vegetation on this view line is through the thickest section of natural riparian vegetation bounding and partly on the subject site and there will be no views of any equipment, stockpiles or machinery visible despite it being the closest access in terms of distance. (Photographic Plate 23)

Milperra Sports Centre has a golf driving range and tennis courts located north east of the subject site. There is no public access to the river from the sports centre. There are no views into the subject site from this viewpoint.

There is no formal public access to the river from the Riverlands Golf Course. There is substantial riparian vegetation which screens the site from any part of the golf course or from land to the west of the golf course along the foreshore (Photographic Plate 30).

Malinya Park has limited views across the Georges Fair site towards the subject site. With development of Georges Fair any views towards the subject site will be dominated by housing in the foreground. (Photographic Plate 20)

Paine Park located on Elouera Crescent is screened from views towards the site by an earth mound on the Georges Fair site and mature trees in the park and on the Georges Fair site. Future development of housing on the Boral site will eliminate views toward the development site from this location. (Photographic Plate 21)

2.2.6 Georges River

The Georges River forms the eastern boundary of the subject site. As mentioned in section 2.2.1 above thick riparian vegetation on the subject site along the eastern boundary and beyond it screens the subject site from the waterway. In addition to the vegetation screening, views from the waterway are in an upward viewing angle, which lessens the visibility of any structures that may be glimpsed through the vegetation.

It is possible that glimpses may be available toward the most northerly part of the subject site from part of the river to its north, across the southern part of the Benedict Sand and Gravel Quarry and recycling site which is currently a water-filled dredge pond. However it is not expected that there will be significant views of the site or activity there due to the screening effect of the foreground vegetation on the riverbank, the existing vegetation on the subject site and by the growth of existing screening plantings on the southern boundary of the Benedict Sand site.

2.2.7 Other land uses

To the north of the subject site the existing Benedict Sand and Gravel Quarry and recycling site supports sand and gravel extraction and materials recycling uses which do not provide any public domain locations from which views could be affected.

However, the Benedict Sand and Gravel Quarry and recycling site has been rezoned as partly RE2 (Private Recreation), directly adjoining the subject site to the north, partly R3 (medium density residential) and partly B6 (enterprise corridor, adjacent to Newbridge Road) under LEP 2008. It also has a strip of land zoned RE1 (public recreation) adjacent to the river on the east side. It is subject to Liverpool Development Control Plan 2008, Part 2.10, Development in Moorebank East. Figure 2 Street Network shows that the medium density residential development on the Benedict Site will be located in the northwest sector and will be separated from the subject site by a large area of private recreation space occupying what is presently a series of dredge ponds and stockpiles of material.

It appears that the Benedict site would likely be filled and levelled and could provide some views toward the subject site once the potential residential development is constructed in future. The potential road network for the residential component of the site is such that most of the residential component would clearly not have any views in the direction of the subject site. Views from residential streets and residences located in the northern parts would be blocked by intervening residential development in the foreground views within this site itself.

There may be some visibility toward the southern part of the subject site (not proposed to be used) and the car park, upper parts of some structures and stock piles from some residences located on the southern margins of the residential component of the Benedict site, subject to the finished ground levels and building heights and the future use, character and vegetation in the private recreation land. There will not be any significant visibility of parts of the proposed development including any structures or stock piles from the access road to the Benedict site off the existing access handle. The visibility will be blocked by the south western part of the residential development on the site.

Further buffer planting appropriate to enhancing the existing screening effect along the northern boundary of the subject site will assist in reducing any unreasonable visibility from this future residential area.

3.0 Relevant Planning Documents

The proposal is assessed against planning documents with reference to the visual and scenic quality of the subject site and locality.

3.1 Liverpool Local Environmental Plan 2008

Part 2 Permitted or prohibited development

Land use table – Zone E2 Environmental Conservation

1 Objectives of zone

- *To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values*

Response: The proposed development will be located on land which although it is zoned environmental conservation does not have any significant vegetation or landscape features, being a former landfill site that has been capped by inert material. The site is not capable of supporting any significant vegetation because this would conflict with the integrity of the capping and management of water quality. There are parts of the wider site that are identified as Environmentally Significant Land which have significant natural vegetation and wildlife with associated scenic values but the use proposed will not be located on or have any impact on those features.

Part 7 Additional local provisions

Division 2 General provisions

7.6 Environmentally Significant Land

The objectives of this clause are as follows:

(a) to maintain bushland, wetlands and wildlife corridors of high conservation value,

(d) to ensure consideration of the significance of vegetation, the sensitivity of the land and the impact of development on the environment prior to the giving of any development consent.

Response: The scenic quality of the land subject to future use in this application itself is minimal, however the visual effects of what is proposed are also minimal on external views and the scenic quality of the views from the waterway and the locality generally will not be changed by the proposal.

The area of land that is deemed environmentally significant is not affected by the development and will not be changed in any visually apparent way. A mound is proposed to be constructed between the environmentally significant land and the area of the development containing the plant, equipment and stockpiles which will have the effect of containing the effects of the proposal to areas that have been previously used for other purposes.

The subject site including the equipment and stockpiles will not be visible from the waterway as previously discussed and as such will not affect the scenic quality of the environmentally significant land.

7.9 Foreshore Building Line

Response: The subject site is subject to a foreshore building line and a narrow strip of land within the subject site along its eastern boundary is below the foreshore building line. No development is proposed within this area and therefore, the provisions of Clause 7.9 do not apply to the proposed development.

4.0 Residual impacts and mitigation measures

The residual visual impacts of the proposal on the surrounding areas are limited. The general lack of visibility of the proposal from most viewpoints means that there are few issues requiring any mitigation measures. Providing that the overall heights of any structures are controlled as proposed and that other activities do not have high visibility to the public domain, there are no residual visual impacts of concern.

The only residual issues are those of visibility into the subject site from very limited view locations and directions, the potential visibility of equipment on the subject site on occasions which might add to the visibility of items otherwise subject to height controls and truck traffic.

4.1 Visibility of activities and equipment

The proposed ground levels for the site are maximum 5.7RL. The range of tree heights on the western boundary above that level had ranges of 12.2-16.9m and 12.9-20m in two representative sections surveyed in 2003. In the buffer area formed by vegetation in the reserve land between a potential viewer and the western boundary of the site, there were many other trees in the tallest class range, which were not surveyed. The ranges of heights above are therefore very conservative and the average canopy height would be likely to be greater. No building, equipment or stockpile would be visible on the subject site from viewing locations in the public domain or residential areas to the west or north west.

At times however, an excavator is required to grade the stockpiles and there may be the potential that part of the excavator may be visible above the tree line at times. This would be only when the stockpiles were graded to maximum height. Based on the assumptions above, it would still be unlikely that there would be any visibility of this activity. The tree line height is between 2.2 and 10m higher than the maximum stockpile height, the average being toward the high end of the range. At the worst, a part of a machine could be visible, seen in a gap between taller trees, for a short period, if the stockpile on which it was working was in a view line providing a view. This would also have to be a view line in which there were no other trees between the viewer and the margin of the subject site. On balance it is considered that there would be very little likelihood of visibility, but if there was it would be minimal and of short duration.

The final matter of residual impact, which has a visual impact component, is traffic, specifically the visibility of and character of vehicles entering and leaving the site. Vehicles travelling within the access road, will travel parallel to a section of Brickmakers Drive for a short distance and be visible from that road.

It is considered that vehicles on the access road travelling to or from the subject site would be indistinguishable from other traffic on Brickmakers Drive, other than during the act of entering or leaving the access road. While the latter is evidence of the activity for which the application is being made, the nature and character of the use will not be unique and the visibility of vehicles is not considered to be determinative.

4.2 View Locations for Mitigation Measures

Views into the subject site which could have any impact will be limited to two areas i.e., one in the vicinity of Brickmakers Drive and the future private recreation land on the Benedict Sand and Gravel Quarry and recycling site and the second from part of the Georges River north of the site. Both involve potential views into one part of the subject site, i.e., the very northernmost edge of the subject site in the vicinity of the proposed car parking and the northern series of stockpiles.

The area of the highest potential concern for the public domain is the view from a short section of Brickmakers Drive and only to viewers travelling southward. The view line however is oblique to the main orientation of the subject land (i.e., across the northern boundary of the subject site toward the south east) and is partly screened by existing vegetation in the Benedict site, in the existing road access handle and vegetation on or near the northern boundary of the subject land. The present exposure of the subject site is exacerbated by the presence of the dredge pond which exists in the southern part of the Benedict Sand and Gravel Quarry and recycling site. Subject to future plans for use of this land for recreational uses, it is unlikely that the visual access would increase and would be more likely to decrease.

The entry to the subject site would not be visible because of the oblique angle of the view, oblique angle of the internal access road relative to the view line and the blocking effect of vegetation in the view line. It is unlikely that any buildings would be visible for the same reasons: i.e. they are on a similar alignment to the view as the entry and north western corner of the subject site.

The second location of some concern is part of the river to the north of the subject site, approximately off the north eastern boundary of the Benedict Sand and Gravel Quarry and recycling site. From this location there is a window of opportunity, again across the existing dredge pond in the south of the Benedict Sand and Gravel Quarry and recycling site, toward part of the northern boundary of the subject site. There is the potential for views of buildings and stockpiles if there was no existing vegetation between the sites and no mitigation of views inward undertaken on that boundary. Existing vegetation which is not proposed to be affected by the proposal has a significant effect on reducing views in the existing situation as will growth of recently planted vegetation on the Benedict Sand and Gravel site.

There is a potential of highly filtered visibility of upper parts of stockpiles and some buildings from the margin of the likely future residential development on the approved residential rezoning of the Benedict Sand and Gravel Quarry and recycling site. The future form and scale of the development and finished ground levels are not known at this time. The existing vegetation along the northern boundary of the subject site will provide a high screening effect to these future views and can be augmented in a visual impacts mitigation program if necessary.

4.3 Mitigation measures

Buffer plantings of appropriate indigenous native trees of various sizes appropriate to the screening effect, selected from the riparian and forest vegetation adjacent to the subject site and planted along the northern boundary of the subject site adjacent to the constructed mound, would in the fullness of time reduce or eliminate the residual visibility of the development.

The proposed buffer planting along the northern boundary on the foot of the mound, in the carpark and between the proposed car park and the Benedict Sand and Gravel Quarry and recycling site

will help to mitigate any visual impact issues from the viewpoint on the river to the north east. This planting will also have the effect of reducing or eliminating any view of the proposal in views from Brickmakers Drive.

In regard to both of the above, a Landscape Concept Plan should be prepared as part of the Landscape Management Plan for the site.

5.0 Conclusion

This assessment has considered the range of potential visual impacts that could be ensued as a result of the construction of the proposal as well as the range of potential public and private domain locations from which it may potentially be visible.

It is concluded that the overall visibility of the structures and activities on the subject site would be minimal subject to the proposed height limits on buildings, other structures and stockpiles. The minimal impacts lead to few residual impacts which require mitigation measures. Mitigation of visibility is only required on the northern boundary of the subject site, where there is a potential for view from the public domain on a small part of Brickmakers Drive, on part of the Georges River to the north of the subject site and from future residential development on the Benedict Sand and Gravel site.

Subject to controls on the colours and materials to be employed in buildings on the subject site and a requirement for screen planting of appropriate species on the northern boundary and assuming a best practice dust management plan, the visual impacts of the development would be negligible and the application can be supported on visual grounds.

Appendix A: Survey sections prepared by Asher McNeill & Partners

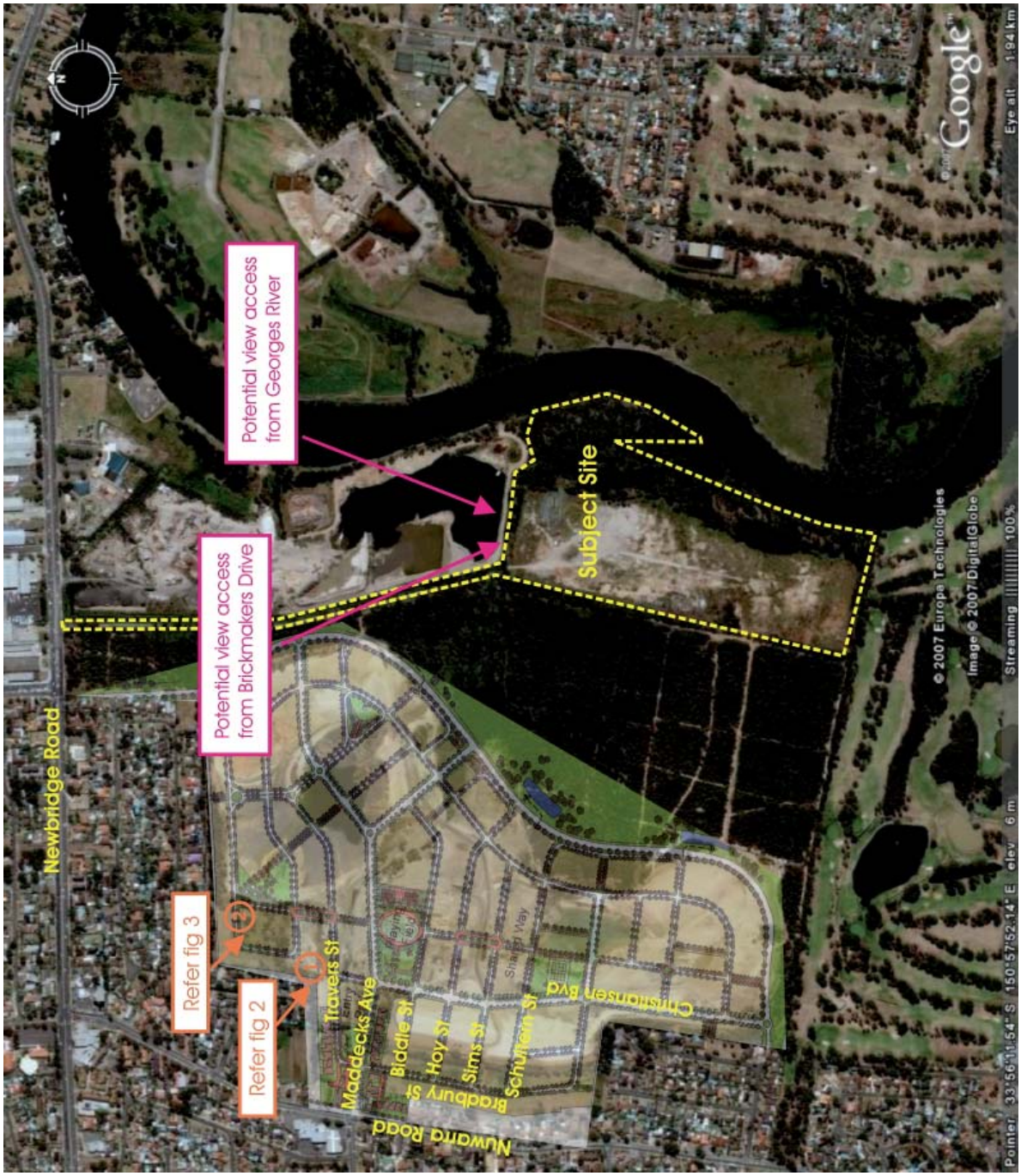


Figure 1: Potential view access and locations for which survey sections have been prepared.

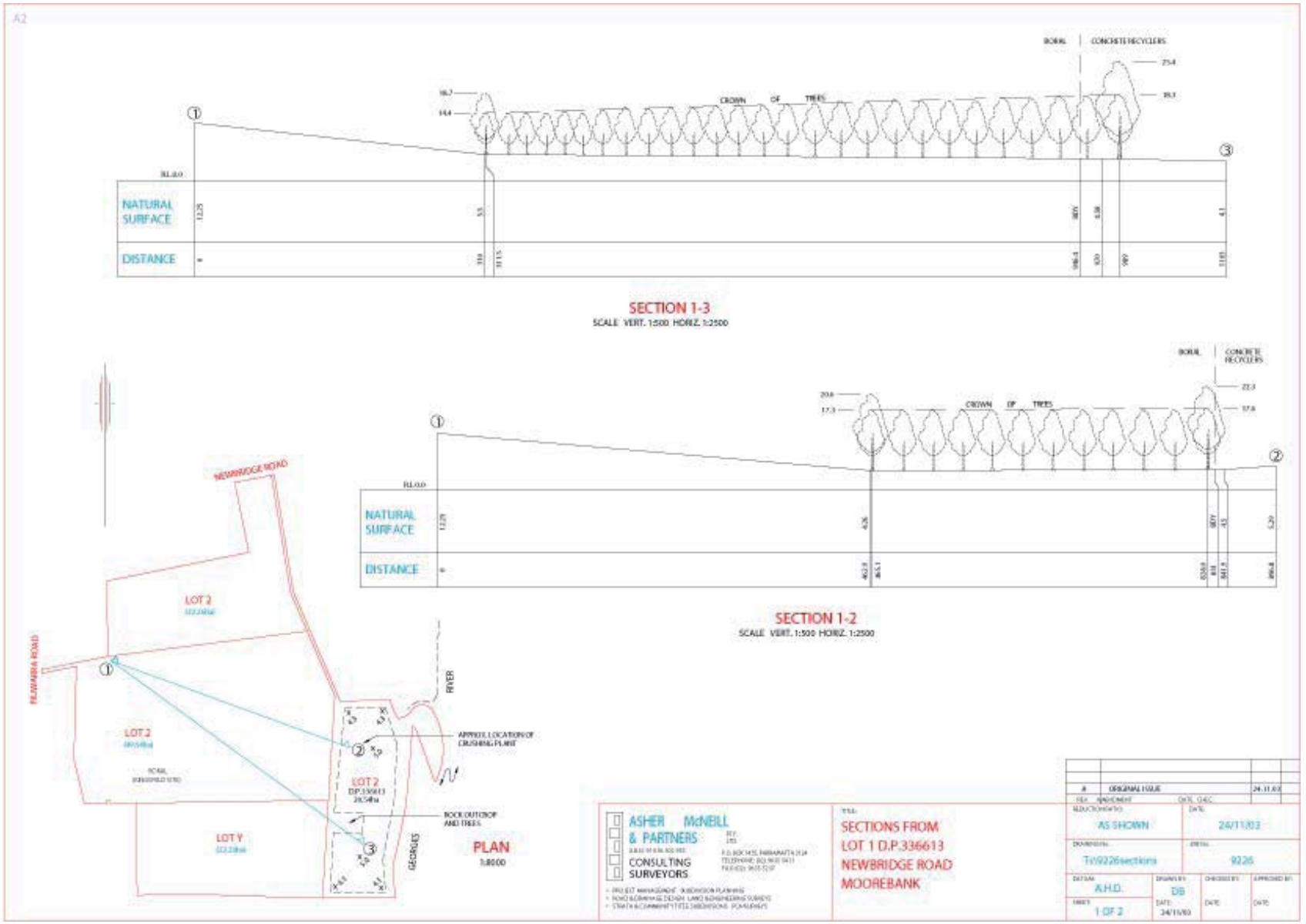


Figure 2: 2003 survey sections prepared by Asher McNeill & Partners. Viewing location indicated by Point 1 on Figure 1.

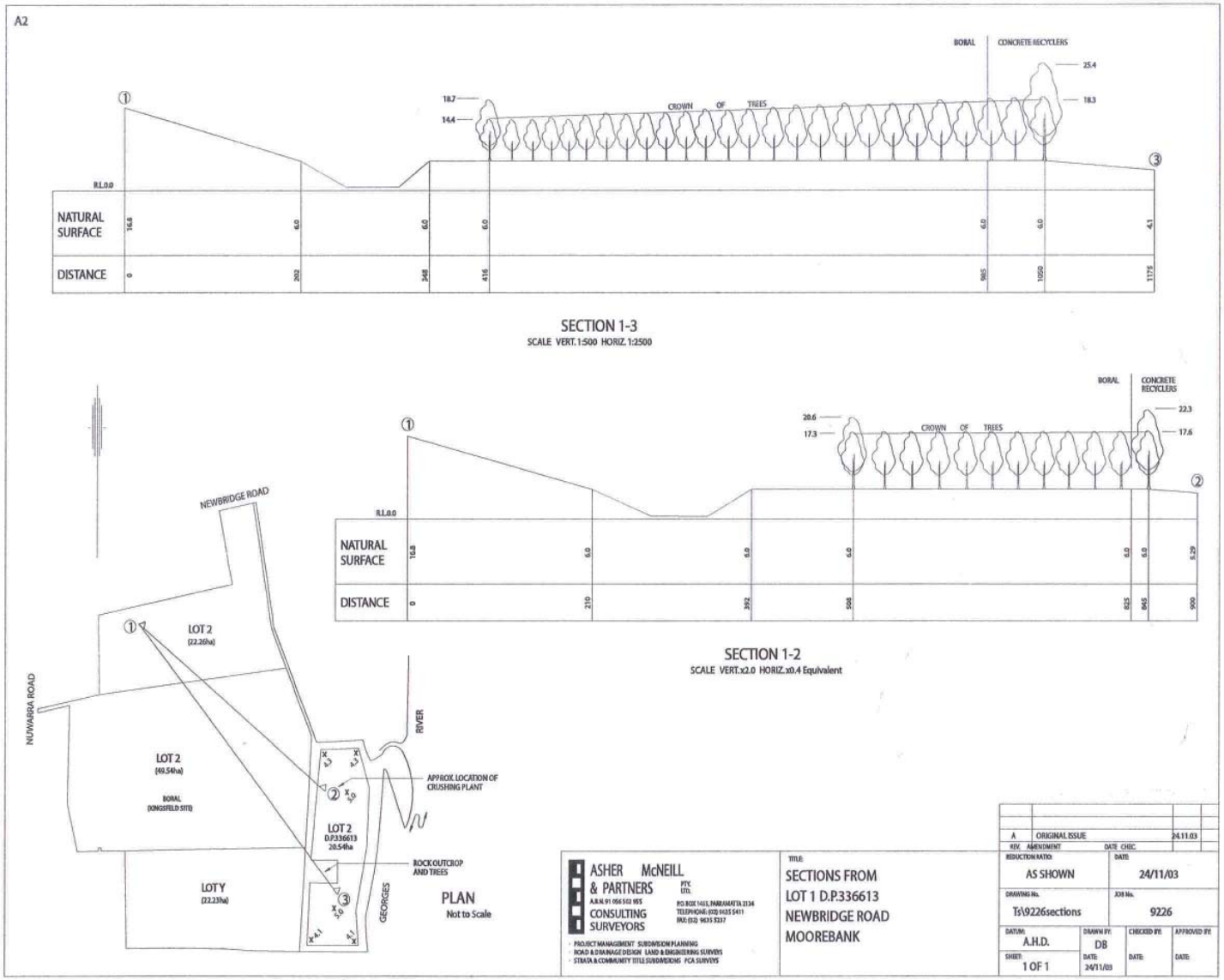


Figure 3: 2003 survey sections prepared by Asher McNeill & Partners. Viewing location indicated by Point 2 on Figure 1.

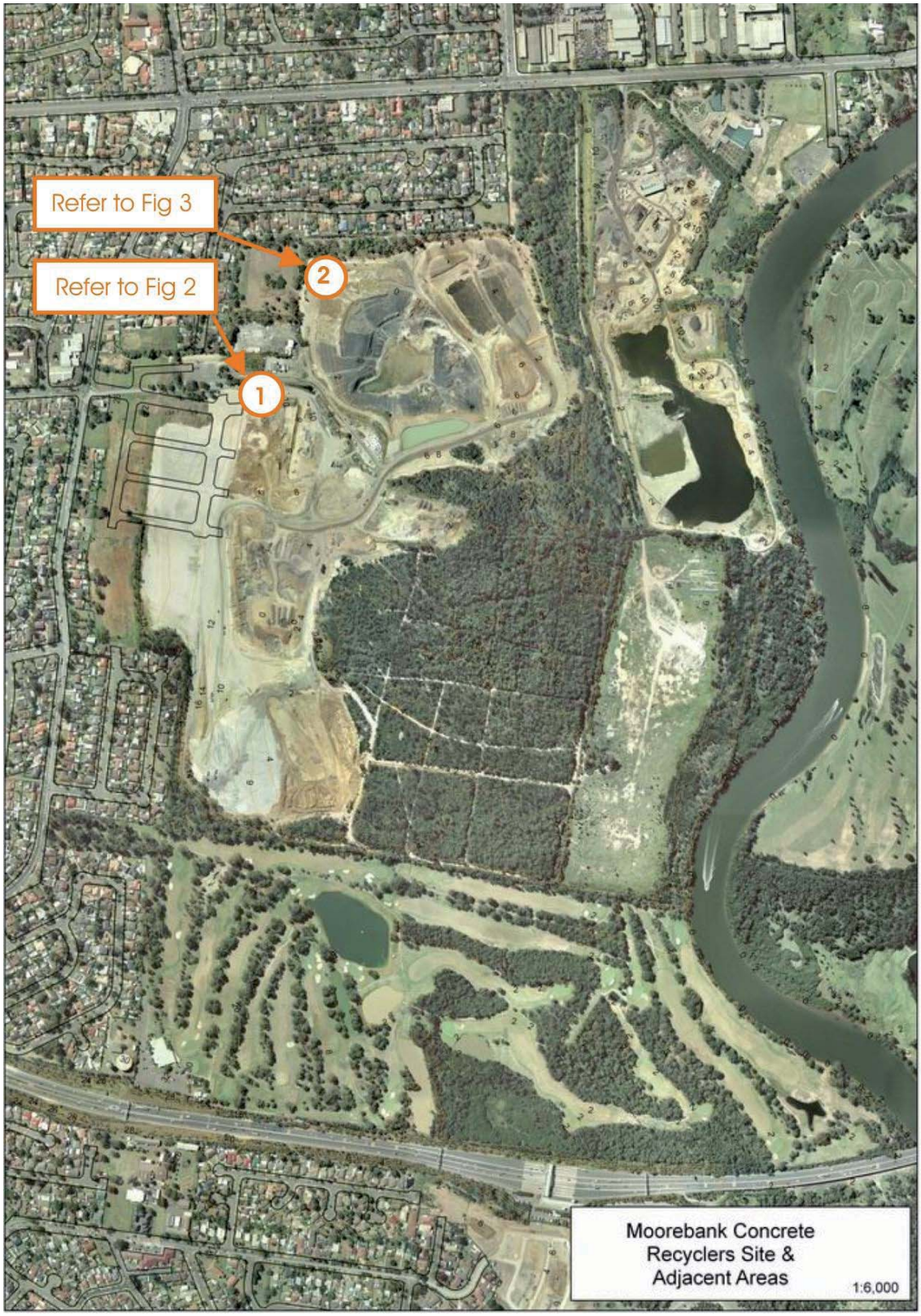


Figure 4: 2003 survey section locations based on Liverpool Council Aerial Map

Appendix B: Photographic Plates

Refer to Map 1 for viewing locations

Plate 1: Internal site character facing south-southeast towards the area proposed for crusher sheds and rubble stockpiles.

Plate 2: Internal site character facing south. The vegetation on the horizon is that in the Environmentally Significant Land adjacent to New Brighton Golf Course.

Plate 3: Internal site character looking east from the approximate location of the proposed crusher and rubble stockpiles. The background vegetation is in the area zoned Environmentally Significant Land, adjacent to the Georges River.

Plate 4: Internal site character looking west from the approximate location of crushers and rubble stockpile. The vegetation is on the boundary and beyond in the reserve land formerly part of the Boral site.

Plate 5: Looking towards the northern boundary of the subject site with partial view of stockpiles of material on the Benedict Sand & Gravel site.

Plate 6: Looking north-northwest into the Benedict Site from near the northern boundary of the subject site. The vegetation on the boundary and the new growing vegetation on Benedict site result in highly filtered views.

Plate 7: Looking north into the Benedict Site from near the approximate location of the proposed stockpiles. The vegetation on the boundary and the new growing vegetation on Benedict site result in highly filtered views, however, the upper parts of the stockpiles and the crusher sheds may be visible from the future residential development on the Benedict site depending of finished ground levels and use of the intervening recreation land.

Plate 8: Looking north on the alignment of the existing access handle and future road access into the subject site. Brickmaker's Drive and the newly developing Georges Fair residential development is not visible in this view.

Plate 9: Looking south west towards Brickmakers Drive from the access handle about 400m north of the entrance to the subject site.

Plate 10: Looking north-northwest towards the closest part of Brickmakers Drive from the access handle about 450m north of the entrance to the subject site.

Plate 11: Looking north from the access handle at the location where Brickmakers Drive is the closest to the access to the subject site and where access to the Benedict site is proposed in the approved rezoning for residential development.

Plate 12: Looking east from Maddeck Avenue in Georges Fair, near its intersection with Bradbury Street. The houses in Georges Fair block views in the direction of the subject site.

Plate 13: Looking east from the intersection of Bradbury Street and Hoy Street in Georges Fair. The houses on Hoy Street block views in the direction of the subject site.

Plate 14: Looking east from the intersection of Bradbury Street and Sims Street in Georges Fair. The houses on Sims Street block views in the direction of the subject site.

Plate 15: Looking east from the corner of Christiansen Boulevard and Hoy Street. The road pattern of Hoy Street is not oriented toward the subject site and the future residential development will further block the oblique views towards the subject site.

Plate 16: Travers Street and adjacent public domain. Vegetation in the public domain area and the intervening effect of houses will block any residual views towards the site.

Plate 17: Looking southeast from the western end of Ikara Crescent at the rear of the Georges Faor and the display homes on Travers Street. Views of the subject site are blocked by houses and vegetation.

Plate 18: Looking southeast from the eastern end of Ikara Crescent. Views towards the reserve land and the subject site will eventually be blocked by housing the Georges Fair residential development.

Plate 19: Looking northeast from the northern end of Attunga Avenue, immediate south of Bradbury Street in Georges Fair. The views on the direction of the subject site will be blocked by the construction of houses in Georges Fair.

Plate 20: Looking east from Malinya Crescent near Malinya Park. Future housing in Georges Fair will block any potential views towards the south end of the subject site.

Plate 21: Looking south-southeast from Elouera Crescent near Paine Park. The earth mound on the Georges Fair site and the existing vegetation block any views towards the subject site.

Plate 22: Looking southwest from the playing field in Vale of Ah Reserve. The subject site is not visible due to the screening effect of vegetation between the Reserve and Georges River, on the Benedict site and along the eastern edge of the subject site.

Plate 23: Looking southwest from private land adjacent to Vale of Ah Reserve which is accessible to the public. No view of the subject site is possible from here.

Plate 24: Looking southwest from near the boat ramp off Davy Robinson Drive. Trees in the southern part of the Benedict site and the northeast part of the subject site block any views of the interior of the site. The majority of the subject site is also not in the alignment of this view.

Plate 25: View south towards the subject site from Davy Robinson Reserve.

Plate 26: Typical vegetation within the land on the subject site designated as Environmentally Significant Land, parallel to the alignment of Georges River.

Plate 27: Typical vegetation within the land on the subject site designated as Environmentally Significant Land along the southern boundary.

Plate 28: View of the area proposed for wildlife corridor at the southwest boundary of New Brighton Golf Course and the southern boundary of the subject site.

Plate 29: View looking north towards the subject site from along the eastern edge of New Brighton Golf Course.

Plate 30: View looking west towards the subject site from along the western edge of the river, north of the Riverlands Golf Course.

Appendix C: Curriculum Vitae

Dr. Richard Lamb

Summary

I am a professional consultant specialising in visual impacts assessment and the principal of Richard Lamb and Associates (RLA). I am an honorary senior lecturer in Architecture and Heritage Conservation in the Faculty of Architecture, Design and Planning at the University of Sydney. I have taught and specialised in resource management, environmental impact assessment and visual perception studies for 30 years.

RLA is a firm that provides professional services, expert advice and landscape and aesthetic assessments in many different contexts. We carry out strategic planning studies to protect and enhance scenic quality and landscape heritage values, conduct scenic and aesthetic assessments in all contexts, from rural to urban, provide advice on view loss and view sharing and conduct landscape heritage studies. We act for various client groups on an independent basis, including local councils, government departments and private clients to whom we provide impartial advice. I provide expert advice, testimony and evidence to the Land and Environment Court of NSW in various classes of litigation. I have appeared in over 120 cases and made submissions to several Commissions of Inquiry. I have been the principal consultant for over 350 consultancies concerning the visual impacts and landscape heritage area of expertise during the last ten years.

At the University of Sydney I have the responsibility for teaching and research in my areas of expertise, which are visual perception and cognition, aesthetic assessment, landscape assessment, interpretation of heritage items and places and cultural transformations of environments. I teach both undergraduate and postgraduate students in these areas, giving specialised elective courses in visual and aesthetic assessment. I supervise postgraduate research students undertaking PhD and Masters degree academic research in the area of heritage conservation and Environment Behaviour Studies (EBS). I am a member of the EBS disciplinary group. The latter field is based around empirical research into human aspects of the built environment, in particular, in my area of expertise, aspects of visual perception, landscape preference and environmental cognition. I carry out empirical and scholarly research in these fields on a continuing basis.

I have a number of academic research publications in local and international journals that publish research in EBS and heritage conservation and I am the co-editor of the academic Journal of the Australian and New Zealand Association for Person-Environment Studies, called by the acronym PaPER (People and Physical Environment Research), which publishes papers in EBS, environmental psychology, cultural heritage management and in heritage conservation. The association has affiliations with a number of international EBS research organisations. I have had a number of research papers published in the last five years on landscape perception and preference, landscape aesthetics and heritage conservation.

I have developed my own methods for landscape assessment, based on my education, knowledge from research and practical experience. They are related to seminal research carried out in the 1970s, sometimes described at the Visual Management System approach, but are highly modified by myself in the light of contemporary knowledge of aesthetic preference and cognition and my experience in visual impacts assessment in urban environments. These methods have also been the subject of a number of professional seminars and of guest lecture courses I have conducted at the University of New South Wales.

Qualifications

Bachelor of Science - First Class Honours from the University of New England.

Doctor of Philosophy from the University of New England in 1975.

Honorary Senior lecturer in the Faculty of Architecture, Design and Planning and in Heritage Conservation, University of Sydney.

Visiting lecturer, University of New South Wales, School of The Built Environment

Principal of Richard Lamb and Associates and Director of Lambcon Associates Pty Ltd.

Since 1980 I have pursued research related to my teaching responsibilities and professional practice. My major research works are in:

Landscape heritage assessment

Visual perception

Landscape assessment and heritage impact assessment

Social and aesthetic values of the natural and built environment

Affiliations

Professional

Chartered Biologist, Institute of Biology (UK)

Editor, Journal of the Australian and New Zealand Journal for Person Environment Studies, titled "People and Physical Environment Research"

Community Organisations

Member National Trust of Australia

Chairman Landscape Conservation Committee (1995-2001)

Member Bush Management Advisory Committee (1989-2003)

Member Landscape Conservation Committee (1985-2008)

Chairman Landscape Assessment Committee (1985-1991)

Government Committees

Member, Cultural Heritage Research Advisory Committee, Department of Environment and Conservation NSW National Parks and Wildlife Service

Member, Australian Heritage Commission, NSW Natural Environment Evaluation Panel (1998-2000)

Member, South East Queensland Regional Organisation of Councils Scenic Amenity Study Program Advisory Committee (2003-2005)

International Journals for which Papers are refereed

Landscape & Urban Planning

Journal of Architectural & Planning Research

Architectural Science Review

People and Physical Environment Research (Journal of the Australian and New Zealand Association for Person Environment Studies)

Journal of Environmental Psychology

Australasian Journal of Environmental Management

Ecological Management & Restoration

Assessing Impacts of Extractive Industries

Assessment and Advice

Breen Holdings
Assessment, analysis and report to the Federal Minister for the Environment in response to Emergency Listing of Kurnell Peninsula under the Environment Protection and Biodiversity Conservation Act 1999.

Collex Waste Management Pty Ltd
Visual impact assessment, proposed recycling facility, Bunnerong Road, Matraville.

Concrete Recyclers, Moorebank
Visual impact assessment of proposed rezoning of land for a recycling facility, Moorebank.

Concrite Quarries Pty Ltd.
Staging and visual impacts mitigation strategy for crushing plant and associated facilities, Exeter Quarry, Southern Highlands.

R W Corkery and Company Pty Ltd
Visual impact assessment and advice, proposed design of product transport roads serving Exeter Quarry, Vine Lodge, Southern Highlands.

Land and Environment Court Proceedings

Coffs Harbour Shire Council ats CSR Readymix, proposed hard rock quarry, Boambee Road, Boambee.

Collex Waste Management Pty Ltd v Blacktown Council, proposed landfill and strategy and remediation of existing landfill site, Riverstone.

Concrete Recyclers v EPA, proposed variation to condition of consent, concrete recycling plant, Thackeray Street, Camellia.

Concrite Quarries Pty Ltd v Wingecarribee Council, proposed extension to Exeter Quarry, Rockleigh Road, Exeter, Southern Highlands.

Exeter Quarry, Commission of Inquiry into proposed quarry extension and Exeter Village bypass route, Exeter Quarry, Rockleigh and Exeter Roads, Exeter, Southern Highlands, 2000, Primary Submission.

Exeter Quarry, Primary Submission to Commission of Inquiry into proposed extension by Concrite Quarries Pty Ltd, Exeter Quarry, Southern Highlands, 1998.

L D Fowler Pty Ltd and anor v Lithgow City Council, proposed hard rock quarry, Rydal

P Sobey and anor. v Nambucca Shire Council, proposed quarry extensions and variations to conditions of consent, Valla Quarry, Valla.

Rocla Quarry Products v the Minister for Planning and Sutherland Shire Council, proposed sand extraction, Captain Cook Drive, Kurnell.

Tiocliff Pty Ltd v Yarrowlumla Council, proposed hard rock quarry, Sutton, Southern Tablelands.

Wingecarribee Council v Concrite Quarries Pty Ltd, Application for minor extension, Exeter Quarry, Rockleigh Road, Exeter, Southern Highlands, 2000.