Environmental Protection Statement
Consolidated Document
Bibra Lake Industrial Estate

Introduction

LandCorp’s proposed subdivision of the Bibra Lake site was referred to the Environmental Protection Authority (EPA) in early 2000 by the Western Australian Planning Commission (WAPC).

This consolidated document briefly describes the proposal, the management of environmental issues and provides a consolidated table of LandCorp commitments for consideration.

The Proposal

LandCorp has acquired approximately 89 Ha of land at Bibra Lake bounded by Phoenix Road to the north, North Lake Road and South Lake to the east, Sudlow Road to the west and a disused rail reserve to the south.

The land was previously owned by Amcor Fibre Packaging and Amcor has operated a paper mill and box plant adjacent to the subject site for approximately 30 years. Although the mill and box plant are not included in the subject land under this proposal the site comprises:

- liquid waste spray irrigation area;
- liquid waste/effluent disposal ponds and
- unlined pits for solid waste disposal

associated with Amcor’s operation. These areas are currently being utilised for waste disposal, however, over time and with development these uses will discontinue and the irrigation and effluent ponds will be developed for industrial use and the landfill area converted into public open space (POS). Apart from the uses described above the remainder of the site is bushland.

The land is zoned Industrial under the Metropolitan Region Scheme and General Industry under City of Cockburn’s Town Planning Scheme No. 2.

It is LandCorp’s objective to develop the site, in accordance with its approved zoning, for general industrial use to meet the social and economic needs of the State. The project outcome will be a high quality industrial estate incorporating best practice in land planning and development, which will ensure the project, is both environmentally and economically sustainable.

The Bibra Lake Industrial Estate will assist in replacing the diminished short term supply of industrial land. It will provide many benefits to the Western Australian community including benefits to the economy through the provision of land for the establishment and growth of industries and the creation of employment opportunities.
KEY ENVIRONMENTAL ISSUES AND THEIR MANAGEMENT

Introduction

The key environmental issues relating to the proposal and their management are discussed below.

Buffer to South Lake

The agreed setback buffer to South Lake is clearly delineated on the attached plan and is the result of extensive discussions with officers of the DEP, Professor Philip Jennings of the Wetland Conservation Council and Elders of the Noongar Community.

Although the original development setback from South Lake proposed was 50 metres, LandCorp has agreed a 150 metre buffer will be provided adjacent to the western boundary of the lake. The buffer will:

1. Protect South Lake from the impacts of development and allow for the rehabilitation of the buffer to provide a habitat adjacent to the wetland.
2. Preserve both wetland dependent vegetation and upland woodland vegetation particularly in the northernmost area of the buffer.
3. Maintain a vegetated visual buffer adjacent to North Lake Road.
4. Provide a habitat for fauna.

Consequently determination of the buffer is based on vegetation protection, wetland preservation and visual amenity.

Appendix 1A illustrates in photographic form the extent of subdivision development relative to South Lake, vegetation and sympathetic levels. Appendix 1B demonstrates the relative levels of the proposed finished site works, road works and existing and proposed vegetation cover.

To ensure the ongoing coordination, management and protection of the South Lake Reserve it is proposed the newly created buffer will be vested with a suitable management body as an extension to the Beeliar Regional Park.
Rehabilitation of Buffer

LandCorp will rehabilitate the wetland habitat to the west of South Lake and provide a habitat for species impacted upon by the development of the balance of the land. The denuded areas of buffer within the proponents current land holdings will be rehabilitated utilising endemic species and topsoils in accordance with advice received from the DEP and Elders of the Noongar Community.

The buffer works will occur as part of the initial site works. All proposed works will be undertaken in one stage at this point in order to best establish the buffer prior to building construction works within the estate.

Earthworks will be undertaken at the boundary of the buffer in the denuded area. Such works will take the form of earth bunding to act as an aesthetic, sightline, noise and environmental control device. Use of site soil is recommended for bunding as it incorporates an existing seedbank. Final locations of earthworks will be agreed between the DEP and the proponent.

Rehabilitation of the buffer will incorporate transfer of topsoil, transplanting vegetation and revegetation and will provide a screen of the industrial estate as viewed from South Lake.

A significant aboriginal heritage site will be retained within the buffer.

Site Contamination

Bowman Bishaw Gorham prepared a Site Contamination Assessment Report detailing soil and waste sample description reports for the site. The report and commitments from the proponent can be summarised as follows:

A sampling and analysis program was undertaken to assess potential contamination resulting from current and historical disposal of liquid and solid wastes at the site. Waste disposal practices include:

- Irrigation of clarified process effluent to land surfaces.
- Infiltration of clarified process effluent in soak ponds.
- Disposal of waste pulp (sludge) in the unfilled landfill.
- Disposal of other waste material including wire, shredded plastic and glass in the unlined landfill.

1) Soil sampling of the spray/irrigation area is below ANZEC B Criteria and will be suitable for the proposed land use.
2) The site contamination assessment report prepared by Bowman Bishaw Gorham indicated that some samples located in the landfill area have elevated copper levels.

   The planned land use for the landfill area is public open space (POS). It is intended that solid waste will remain in situ, be covered with soil and used for POS. The contaminant concentrations are below guideline levels for this land use. The land will be retained in LandCorp ownership pending the acceptance of other appropriate custodians.

3) Underground water monitoring indicates that the clarifier wastewater is highly variable and contains elevated concentrations of total dissolved salts (TDS), chemical oxygen demand (COD), organic nitrogen, phosphorous, sulphate and petroleum hydrocarbons. Soak pond water analysis results are similar albeit contaminant concentrations are generally not as elevated.

   There is currently an ongoing water monitoring programme in place over the next 2 years. The consultancy firm Aquaterra is carrying out sampling and analysis every three months. There are 9 monitoring bores, 5 are located around the perimeter and four are located downgradient of the ponds. The ongoing groundwater monitoring programme will provide additional information on the underground water quality identified in the site contamination assessment.

   The discontinuance of use of the wastewater ponds over the next 5 years should see the quality of the underground water and the oxygen deficient plume self remediate over time.

4) Extraction of waste from the old landfill site to the north of the current effluent ponds will preclude any need for remediation. The waste in this area (estimated to be in the vicinity of 20,000 cubic metres) will be extracted, replaced with clean fill and compacted. Validation sampling will be undertaken to verify that all waste has been removed and no contamination from possible leachate remains prior to filling and compacting the site.

Even in light of the above findings LandCorp will prepare a site contamination management plan to the satisfaction of the DEP prior to commencement of subdivision or development works in areas detailed above.
Management of Fauna

M.J. & A.R. Bamford, Consulting Ecologists prepared a report on the Vertebrate Fauna of the Amcor Bushland, Cockburn in July 2000. No rare fauna was detected and the report provided recommendations to mitigate any negative impact on existing fauna including techniques for the upfront rehabilitation and revegetation of the wetland buffer.

Re-establishment of wildlife habitat is planned for the buffer area via earthworks and planting programmes. In addition to this the retention of upland vegetation in the buffer area will provide habitat diversity and minimise the negative impacts of the proposal on fauna. Earth bunding and revegetation will be undertaken to restrict access, noise and sightlines to wildlife habitat areas. For example, the bunding layout is planned to control and allow Long Neck Tortoise movements from South Lake. The use of logs and tree trunks for Bandicoot nesting from the clearing programme is also planned. The preservation where possible and planting of recognised seed and food trees for local and migrating bird life is also envisaged.

In summary the proponent will minimise adverse impacts on resident fauna through the subdivision process. Retain where possible natural vegetation and provide revegetated habitats on the western boundary of South Lake throughout the life of the subdivisional program.

Vegetation

Dr Arthur Weston – Consulting Botanist undertook a rare flora search and provided a report in June 1999 which indicated no rare flora had been detected on the site.

At the request of CALM and the DEP Dr Arthur Weston conducted a further rare flora search in September 2000 to assess if rare flora, visible only in Spring, was present on site. Dr Weston undertook a thorough investigation of the site and stated categorically that no rare or priority flora species had been detected. Furthermore he thought it unlikely that any declared rare flora or priority flora species would be found on site no matter when or how intensively a rare flora search be carried out.

While subdivision works will require extensive clearing of the site, the proponent will however maintain and enhance a vegetated visual corridor adjacent to North Lake Road through works to the estate's North Lake Road boundary. The retention of existing bushland will be maximised within the North Lake Road Reserve. There will also be minimal impact on existing vegetation as much as possible in the provision of an entry statement off North Lake Road. Where possible future land owners will be encouraged to incorporate native vegetation into their developments and native street trees will be used wherever practical to supplement the adjacent South Lake bushland character.

To this end the proponent will delineate landscape protection areas in the northeastern corner of the development area in subdivision plans prior to formal approval from the WAPC. A visual buffer to South Lake will be provided through the retention of existing bush in the northeastern corner of the development area prior to subdivision approval.
Landscape Amenity

The proponent has given careful consideration to retaining vegetation cover and a treescape view in visually significant locations to enhance landscape amenity. The six photographs attached as Appendices 2A, 2B, 2C, 2D, 2E and 2F represent before and after views. Each computer generated photo is described hereunder:

2A – Before view over South Lake to the subject site.
2B – After view over South Lake to subject site.
2C – Before view at North Lake Road / Phoenix Road Intersection.
2D – After view at North Lake Road / Phoenix Road Intersection.
2E – Before view at main entry road location at North Lake Road.
2F – After view at main entry road location at North Lake Road.

The first two views are very well protected. The main entry road will be treated as a landscaped entry statement. The buildings superimposed onto the landscape are full height and full size general industrial and showroom type buildings.

The analysis and computer modeling demonstrates the landscaping and visual amenity provided through the screening of the Industrial Estate as viewed from South Lake. In addition the treatment of the North Lake Road Frontage and entry statement, streetscape works, buffer rehabilitation and revegetation and retention of upland vegetation in the buffer will all contribute in a positive way to the landscape amenity.

These treatments will provide landscape amenity to the Beeliar Regional Park and provide a green belt entry statement to the Beeliar Regional Park from North Lake Road.

Drainage and Protection of South Lake

The site lies within the Jandakot Groundwater Mound. The water table beneath the site ranges from approximately 14m AHD in the eastern section to approximately 5m AHD at the western boundary. The regional groundwater flow direction is westerly (flows away from South Lake).

Sinclair Knight Merz has prepared a report on stormwater management and the hydrology of the site. The report concludes there will be no adverse impact on South Lake.

To ensure water quality in South Lake is not impacted on by uncontrolled drainage from the industrial area and road systems the subdivision design and final contours will ensure all drainage for the development area drains into drainage systems away from South Lake and the designated buffer areas.
Consultation with Key Stakeholders

The proponent has consulted with the following key stakeholders:

- DEP
- City of Cockburn
- Professor Philip Jennings – Wetland Conservation Council
- Dr Arthur Weston
- Dr Mike Bamford
- Chamber of Commerce and Industry
- Department of Minerals and Energy
- Noongar Community
- Industry

Summary

The following summary provides a list of environmental studies that have been undertaken to provide technical support in addressing key environmental issues relating to the proposal and their management.

- **Site Contamination Assessment** - Environmental Due Diligence Study including soil and waste sample description report prepared by Bowman Bishaw Gorham.

- **Underground Water Monitoring** – Aquaterra has been commissioned to carry out an ongoing water monitoring programme over the next 2 years. Water quality is within acceptable levels for irrigation purposes and the oxygen deficient plume detected will be monitored but will be self remediating over time with discontinuance and remediation of the effluent ponds and conversion of the landfill site to POS.

- **Rare Flora Search** – Undertaken by Dr Arthur Weston – Consulting Botanist and report prepared in June 1999. No rare flora detected.

- **Spring Rare Flora Search** - Dr Arthur Weston conducted a further rare flora search in September 2000 to assess if rare flora, visible only in Spring, was present on site. No rare flora was detected.

- **Dust Management Plan** – Prepared by Bowman Bishaw Gorham, June 2000. Demonstrates dust from the development site can be adequately managed.

- **Acoustic Assessment** – Prepared by Herring Storer Acoustics, May 2000. Demonstrates noise from the development site can be managed.

- **Fauna** – The Vertebrate Fauna of the Amcor Bushland, Cockburn prepared by M.J. & A.R. Bamford, Consulting Ecologists, July 2000. No rare fauna detected and recommendations provided to mitigate any negative impact on existing fauna including techniques for the upfront rehabilitation and revegetation of the wetland buffer.

- **Visual Impact / Aesthetics** – View Shed computer modelling undertaken.

- **Drainage / Hydrology** - Report prepared by SKM, September 2000. on stormwater management and hydrology of the site indicates no impact on South Lake.

- **Aboriginal Heritage** – Has been addressed in consultation with the Noongar Community Elders and accepted by the Aboriginal Affairs Department.

- **Wetland Buffer Protection / Setback from South Lake** – The original setback from the lake was 50 metres. LandCorp has subsequently agreed to 150 metre buffer as per agreed plan.

- **Lake Buffer Enhancement/Management** – LandCorp has committed to revegetation and rehabilitation of the degraded areas in the buffer with endemic vegetation communities. The revegetation and rehabilitation will be undertaken as soon as practical to allow for optimum re-establishment at an early stage and provide a habitat for fauna.

- **Zoning** – The site is zoned “Industrial” under the MRS and “General Industrial” under the local TPS and has been since the 1960’s. The site is surrounded by either existing industrial use or recreation use (Adventure World).
Commitments

LandCorp as the proponent undertakes to fulfil the following commitments to manage environmental impacts associated with the proposal as per the table below:

<table>
<thead>
<tr>
<th>BIBRA LAKE SUBDIVISION PROPOSED COMMITMENTS</th>
<th>Action (What/How/Where)</th>
<th>Objectives (Why)</th>
<th>Timing</th>
<th>Advice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Buffer To South Lake</td>
<td>Provide a buffer of at least 150 metres from the western boundary of South Lake within the subdivision plan. The extent of the buffer is indicated on the attached plan.</td>
<td>To achieve protection of South Lake from the impacts of development and to allow for the rehabilitation of the buffer to provide a habitat adjacent to the wetland</td>
<td>At time of subdivision approval.</td>
<td>DEP</td>
</tr>
<tr>
<td>2. Buffer To South Lake</td>
<td>Management of works to protect vegetation within the buffer including vegetation close to the road edge.</td>
<td>To achieve protection of South Lake from the impacts of development and to allow for the protection of the buffer to provide a habitat adjacent to the wetland</td>
<td>During subdivision works/ground disturbing activity.</td>
<td>DEP</td>
</tr>
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<td>3. Buffer To South Lake</td>
<td>The buffer is to be vested with a suitable management body to the satisfaction of the EPA as an extension to existing South Lake Reserve.</td>
<td>To ensure the ongoing coordination, management and protection of the South Lake Reserve including the newly created buffer to South Lake.</td>
<td>Initiate vesting upon the creation of separate titles for the subdivided land.</td>
<td>DEP</td>
</tr>
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<td>4. Rehabilitation Of Buffer</td>
<td>Areas of the buffer to be rehabilitated utilising endemic species and topsoils in accordance with rehabilitation / revegetation plan agreed to by DEP prior to commencement of subdivision works.</td>
<td>To rejuvenate the wetland habitat to the west of South Lake and provide a habitat for species impacted upon by the development of the balance of the land</td>
<td>Plan prepared prior to commencement of ground disturbing works. Rehabilitation works to commence with the first stage of subdivision.</td>
<td>DEP/CALM</td>
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<td>5. Site Contamination</td>
<td>Prepare and implement a site contamination management plan to the DEP's satisfaction prior to commencement of subdivision or development works in areas subject to contamination specifically the two identified landfill areas and waste water ponding areas.</td>
<td>To ensure site contamination levels do not exceed levels acceptable for industrial development or lead to ongoing groundwater pollution.</td>
<td>As part of staged subdivision works and prior to the creation of separate titles for the land contaminated.</td>
<td>DEP</td>
</tr>
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<td>6. Management of Fauna</td>
<td>Prepare and implement a management plan to minimise adverse impacts on resident fauna through the subdivision process.</td>
<td>Protect fauna in areas to be cleared</td>
<td>Plan to be prepared prior to ground disturbing activities and implemented throughout the life of the subdivision program.</td>
<td>DEP/CALM</td>
</tr>
<tr>
<td>No.</td>
<td>Action Category</td>
<td>Description</td>
<td>Timeline</td>
<td>Responsible Party</td>
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<td>7.</td>
<td>Landscape Protection</td>
<td>Prepare and implement a landscape protection and management plan to ensure that the landscape value of Beeliar Regional Park and South Lake are protected.</td>
<td>To protect the landscape amenity of the Beeliar Regional Park and provide a visual buffer to South Lake through the management of development and building levels. Provision of screening and landscaping to the eastern portion of the site.</td>
<td>DEP/CALM</td>
</tr>
<tr>
<td>8.</td>
<td>Drainage and Protection of South Lake</td>
<td>Design subdivision final contours to ensure all drainage for the development area drains into drainage systems away from South Lake and the designated buffer areas.</td>
<td>To ensure water quality in South lake is not impacted on by uncontrolled drainage from the industrial area and road systems.</td>
<td>WRC</td>
</tr>
</tbody>
</table>
APPENDIX 1A

(i) AERIAL PHOTOGRAPH OF BUFFER AROUND SOUTH LAKE AND THE EXTENT OF THE SUBDIVISION.

(ii) WESTERN BOUNDARY OF SOUTH LAKE INDICATING ADDITIONAL OPEN SPACE RESERVE FOR VISUAL APPRECIATION AND FAUNA HABITAT TO BE INCLUDED IN THE BUFFER.
ADDITIONAL OPEN SPACE RESERVE FOR VISUAL APPRECIATION AND FAUNA HABITAT. 7190 m² approx.

BEELIAR REGIONAL PARK
(SOUTH LAKE)

UTILISATION OF DENUDED AREA FOR ROAD RESERVE (Improved Alignment) 6000 m² approx.
APPENDIX 1B

BUFFER TO SOUTH LAKE SHOWING FINISHED LEVELS AT LAKE FRONTAGE
APPENDIX 2A

BEFORE VIEW OVER SOUTH LAKE TO SUBJECT SITE
APPENDIX 2A
“Before” view over South Lake to subject site
APPENDIX 2B

AFTER VIEW OVER SOUTH LAKE TO SUBJECT SITE
APPENDIX 2C

BEFORE VIEW AT NORTH LAKE ROAD / PHOENIX ROAD INTERSECTION
APPENDIX 2C
“Before” view at North Lake Road / Phoenix Road intersection
APPENDIX 2E

BEFORE VIEW AT MAIN ENTRY ROAD LOCATION ON NORTH LAKE ROAD
APPENDIX 2E
“Before” view at main entry road location at North Lake Road
APPENDIX 2F

AFTER VIEW AT MAIN ENTRY ROAD LOCATION ON NORTH LAKE ROAD
APPENDIX 2F

"After" view at main entry road location at North Lake Road