**EDITED FROM FINAL MALL CEMP BY MAZIZI MSUTU FROM IMPACT CONSTULTING**

- Draft Operational Phase Environmental Specifications

The "Property Owners Association" (or designated governing body for the Bay West City), once construction is completed, will be required to manage the environmental impacts associated with the operational phase of the Bay West City project in terms of an IEMS. The general environmental specifications of this require the Property Owners Association to implement an Integrated Environmental Management System (IEMS) with clearly defined targets and objectives. Such an IEMS will have all processes, procedures and policies in place to ensure that environmental impacts are properly managed during the operational phase and it will also provide for continual improvement through regular audits and management review. The following are some recommended environmental aspects which should be provided for in the Property Owners Association's IEMS. An Operational Management Plan (OMALL CEMP) is to be compiled by a suitably qualified and experienced professional and submitted to the Department for approval / endorsement 6 months prior to the commissioning of Phase 1 of the development. The OEMP must be regarded as a working document to allow for information gained during the monitoring of activities on site to inform any changes necessary to the OEMP.

a) The OEMP provided for in Condition 5.3.1 must include environmental goals and objectives, management actions, monitoring requirements and criteria for monitoring and remedial actions where actions are ineffective. The Operational EMP must furthermore provide for amongst others:
b) The Property Owners' Association to be responsible for the implementation of the OEMP in general, inclusive of the management of the Private Open Space III Conservation areas, in conjunction with the NMBM in managing open spaces in accordance with the NM MOSS and the dedicated appointed conservation official;
c) Conditions relating to the operation of the project are valid for the lifetime of the project.

- Mitigation Measures for Operational Aspects

a) The Draft Operation EMP will be continually updated. The next revision of the OEMP should be made available by the Proponent at the end of Phase 1 construction.. Mitigation and rectification of operational impacts should be included as part of the IEMS and should include but not be limited to the following:

I. Fire control
II. Fencing
III. Emergency preparedness and response
IV. Environmental-awareness training
V. Solid-waste management:
    i. Recycling
    ii. Refuse removal
    iii. Litter
VI. Dust control
VII. Airborne noise control (i.e., the noise standards/noise impact criteria as well as the specific issues that were considered in the design of the system)
VIII. Stormwater controls
i. *Register:* A stormwater-monitoring register will be opened and updated regularly.
ii. *Wetland Systems/Seepage Zones:* A network of groundwater survey points for long-term monitoring of seepage rates, etc., placed at strategic positions along both the southern and northern wetland/seepage systems, needs to be established before start of construction. Regular monitoring of these survey points will provide crucial information on the effectiveness of the stormwater control plan and for future adjustments to the system, where and when needed. The results from such a system need to be reviewed and interpreted on a 6-monthly basis by a suitably qualified wetland specialist. Where necessary, mitigation actions will be recommended to ensure the ongoing functioning of the ecological zones.
iii. *Structure integrity:* All stormwater structures will be monitored on a 3-monthly basis to check on their integrity and on the potential effect that secondary impacts (like siltation) could have on their ongoing efficiency.
iv. *Structure maintenance:* Where needed, maintenance will be done as soon as possible (e.g., re-vegetation, repairs to gabion structures, etc.), while adjustments to design and layout will be made to enhance the functionality after discussion with the ECO and design engineers, where and when needed.
v. *Receiving environment:* The receiving environment, especially within the

sensitive ecological zones, will also be inspected for signs of potential impacts due to flooding (e.g., erosion, river-bank scouring, siltation, etc.). This information is needed to inform the maintenance programme on the effectiveness of the stormwater system and nature of modifications when and where needed.

vi. *Peak rainfall events:* In addition to the above, all stormwater structures and receiving environments will be inspected for potential damage after peak rainfall events and appropriate actions will be immediately taken to repair damage where necessary.

➢ Public Communication/Community Relations

a) As part of the IEMS a communication strategy will be developed and mechanisms established to facilitate communication of environmentally related issues to the general public as well as to particular focus groups (e.g., the Baakens River Community Trust, Wessa, etc.). The communication strategy will include (but not be restricted to) the following measures:

I. *Registers:* A Public Complaints Register and an Incident Register will be opened and kept up to date. Both registers will be available for review on-site. A protocol will be created to ensure proper follow-up of all complaints received from the public. All incidents will be handled according to the appropriate emergency-preparedness and response protocol as included in the IEMS. Where appropriate, specialist input will be acquired.

II. *Communication:* Communication mechanisms may include relevant input regarding environmental aspects of the Bay West City in a regularly printed newsletter, e-mail newsletter, internet blog site, Internet website, or a combination of the above.

➢ Specifications for Specific Geographical Areas and Key Issues

a) A set of permits and detailed management plans are currently being developed as part of the Final Mall CEMP to be approved by DEDEA.

b) This Final Mall CEMP will be legally binding to the Independent Contractor.

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**EDITED FROM ENVIRONMENTAL IMPACT REPORT BY MAZIZI MSUTU FROM IMPACT CONSTULTING**

**Operational Phase**

Construction of a shopping centre, retail and office park, motor village, filling station, light industrial zone and various residential areas is proposed for the area.

The shopping centre will most likely have food outlets, refrigeration and air-conditioning systems, car parks, delivery and service areas, or additional services such as dry cleaning facilities, which could result in emission to the atmosphere. Due to the current climate of load-shedding experienced in the country, it is also expected that a generator should be installed for electricity generation. In this regard, diesel-fuelled internal-combustion engines used to generate electricity produce significantly higher emissions of nitrogen oxides (NOx) for relatively small amounts of electricity, compared to larger utility power plants. NOx emissions are the major cause of ground-level ozone, a respiratory irritant more commonly referred to as smog. They also contribute to small particle formation (soot or dust), acid rain, and nitrogen deposition to surface waters (Environment New Hampshire, 2008).

The main impact resulting from the residential areas will be vehicle movements on-site or in the surroundings of each suburb. Vehicle emission can result in negative impacts on air quality due to gases emitted by vehicle tailpipes. To avoid negative health impacts, attention needs to be paid especially to areas where congestion may take place, and free-flow of traffic should be ensured as far as possible.

The retail and office park will be connected to the N2 via a dedicated access road. A car park will be situated at the site to accommodate patrons and staff. Thus the air-quality impacts associated with this operation would be linked to vehicle activity in the area.

The Motor Village will be used as a vehicle retail and service area. During the servicing of cars, waste will be generated in the form of oil, tyres and old car parts, and these will need to be appropriately disposed to avoid waste piles being formed, which may result in impact on air quality due to the evaporation of vapours to air, however this will also result in a significant impact on water quality due to the potential for resulting in contaminated runoff. Other aspects

related to vehicle servicing, which result in emissions to air, are briefly discussed below.

A major environmental issue for the service station concerns vapour emission from fuel tanks. This form of air pollution can be considerably reduced by recovering the petrol vapours emitted during fuel deliveries. Vapour emissions are wasteful in terms of product loss and they also add volatile organic compounds (VOCs) to the atmosphere, which contribute to the formation of photochemical smog (this is the haze that can be seen over cities on a warm summer's day). Petrol vapours are also a significant source of benzene, a known carcinogen for humans (Environment New South Wales, 2008d).

No details were available with respect to the types of light industry to be accommodated at the site. But it is assumed that this area may contain workshops and warehouses, although activities such as electroplating, welding and packaging may also take place. All these activities can result in the release of various gases to atmosphere.

An important issue regarding the development concerns the electricity supply to the site. A new electricity substation will be built, which will result in storage and distribution of energy generated by Eskom and supplied to the development. The substation is to be build to accommodate 132 kV. This will supplement the 22 kV to be provided to the area by the municipality. Emissions released due to power generation by Eskom include nitrogen dioxide, sulphur dioxide, particulate matter, carbon monoxide and carbon dioxide.

The following subsections detail possible measures to be implemented to reduce air-quality impacts during each of the activities identified during the operational phase.

**Dry cleaning**

- Air-filtering and odour-control equipment must be regularly serviced;
- Investigate the alternatives of less toxic chemicals to replace the chemicals proposed for use;
- Regularly check equipment for leaks and keep an inventory. It is best to check these components while the dry-cleaning equipment is in use, especially during the drying cycle. If the leak cannot be repaired quickly and is minor, tag the leaking component so it can be

repaired when the machine is shut down. There are hand-held devices available which can be used to measure vapour leaks. The following equipment components are more prone to leakage:

  - hose connections, unions, couplings and valves;
  - machine-door gaskets and seatings;
  - filter-head gaskets and seatings;
  - distillation and sludge-recovery units;
  - lint traps and filter canisters.
- Keep solvent containers sealed when not in use to limit evaporation and prevent excessive odours and loss of materials;
- Review proposed work practices to reduce emissions by:
  - closing the door when the machine is not operating;
  - closing the door after each cycle operation;
  - not removing clothes before the drying cycle is completed.
- Importantly, dry-cleaning areas must be correctly vented so that risks to the operator are reduced. However, when venting the premises, the neighbours should be considered by not exhausting into or close to their premises.
- When establishing a dry-cleaning operation the citing of boilers, extractor fans and condensers should be carefully considered, along with the appropriate noise and odour pollution controls that may be required, especially if the premises are located in a residential area.
- If a dry-cleaning operation is or will be located adjacent to a residential building, different or more effective ventilation strategies may need to be considered (Environment New South Wales, 2008c).

**Replacement of Refrigerants**

- Persons installing, servicing or decommissioning vehicle air conditioners or refrigerators that use ozone depleting or synthetic gas refrigerants must have the proper training.
- Substitute refrigerants, such as hydro chlorofluorocarbons (HCFCs), are less destructive to stratospheric ozone and have shorter lifetimes in the stratosphere (for example, 12 years for HCFC-22 rather than 100 years for CFC-12); these are used in newer refrigerators and air

conditioners (Environment New South Wales, 2008a).

### Cleaning Brakes

- Do all surface cleaning and preparation on a concrete-paved area that is covered and bunded. Prevent the escape of dust from this area. Use a wet cloth or sponge and a bucket to minimise dust released from this area.
- Place floor swept dust in a bag or cardboard box before putting it into an industrial waste bin; this stops the dust from becoming airborne when the bin is emptied.
- Use a wet and dry vacuum cleaner to reduce dust movement, improve cleaning efficiency, and reduce water use (Environment New South Wales, 2008a).

### Welding

- Minimise the use of oxyacetylene torches for cutting panels. Use cut-off saws instead.
- With all welding and cutting work make sure that there is adequate ventilation (Environment New South Wales, 2008a).

### The Use of Solvents

- Avoid unnecessary exposure to solvents by storing them in a covered container with a tap (to avoid the need to pour). Keep the storage area well ventilated.
- Ensure that containers are kept closed when not in use. This will limit evaporation and unnecessary loss of solvents.
- Consider installing a solvent recovery unit to save on the costs of dissolving spent solvents.
- Use water-based or biodegradable strippers, cleaners or degreasers wherever possible. These are less harmful to individuals and the environment.
- Install taps or pumps on containers of volatile liquids to minimise losses to the atmosphere.
- Use a dedicated parts-cleaner devise with a lid. Allow parts to drip-dry before removing them. Place the parts on a rack over the tank for best drainage.
- Avoid spraying solvent. Use only a steady stream or brush to gently agitate the parts being cleaned (Environment New South Wales, 2008a).

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**Electroplating**

Making changes in electroplating workshop practices can stop pollutants at the source and increase production efficiency. By evaluating and improving work practices, shops can decrease emissions, reduce production costs, and protect employee and public health. Examples of changes in work practices that help reduce air pollution include:

Substituting materials (U.S Environmental Protection Agency, 2008):

- Use cleaners with low toxic air pollutant and VOC content.
- For chromium electroplaters, switch from hexavalent chromium solutions, which can cause cancer, to trivalent chromium ones, which do not.
- Replace cyanide in plating solutions with less toxic compounds, such as zinc chloride and pyro-phosphate copper.
- Use cleaning procedures that reduce the amount of solvent needed.

Recycling materials (U.S Environmental Protection Agency, 2008):

- Use an on-site distillation unit to recycle solvents.
- Use old solvent for cleaning very dirty parts.
- Reuse plating bath solution and rinse water.

Changing processes (U.S Environmental Protection Agency, 2008):

- Use alternative metal-deposition technologies to reduce or eliminate toxic air-pollutant emissions.
- Reduce the chemical concentration of the plating bath without compromising quality.
- Use mechanical scraping instead of a chemical solution to remove build-up on the part.

**Filling Stations**

- Minimise vapour leaks: this reduces the likelihood of air pollution and reduces the possibility of fire and odours. Limiting vapour losses also reduces fuel loss.

- Make sure fuel pump nozzles cut off automatically when the back-pressure reaches a certain level, indicating the tank is full.
- Make sure underground tank seals are kept in good condition and caps are appropriately sealed.
- Ensure bowser service contractor regularly checks the flanges, caps and seals. Also check that these components are not leaking or damaged, because apart from losing petrol vapour, water contamination can occur.
- Petrol vapours may be detected off-site during tank refuelling. If this occurs, make sure that vent pipes are not blocked. Consider extending the vent pipe or moving it if odour complaints are occurring (Environment New South Wales, 2008d).

**EDITED FROM FAUNAL SURVEY DONE BY C.L. COOK**

- Tortoises are considered a food source by several rural people and are known as 'Karoo crayfish' or a "tortoise barbecue/braai". Leopard Tortoises and Angulate Tortoises are most commonly eaten. Large numbers of tortoises are illegally collected as pets. It is important that no tortoises are collected or destroyed during any stages of the project. Tortoises are a migratory species and are often killed on roads. Speeds must be restricted on the secondary or informal roads (30-40km p/hr) in order to prevent unnecessary road fatalities of migrating tortoises and terrapins (adjacent to wetlands).
- No rock material must be removed or soil excavations must be allowed after the construction phase of the project and no unnecessary termite mounds damaged or destroyed. This is especially pertinent to the proposed private open spaces and biological corridors which conserve the low-lying rocky outcrops the most suitable habitat for the remaining rupiculous reptile species on the site.

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**EDITED FROM SOCIAL IMPACT ASSESSMENT BY TONY BARBOUR**

Summary of social impacts during operational phase

| Impact | Significance No Mitigation | Significance With Mitigation |
|---|---|---|
| Creation of local employment and business opportunities | High (Positive impact) | Very High (Positive impact) |
| Provision of retail opportunities | Moderate (Positive impact) | Moderate (Positive impact) |
| Capacity of municipal services | Not assessed (assumed that NMBM will not approve development if needs cannot be met) | Not assessed (assumed that NMBM will not approve development if needs cannot be met) |
| Capacity of local schools to accommodate additional pupil | Moderate (Negative impact) | Moderate (Positive impact) |
| Capacity of emergency services | Moderate (Negative impact) | High (Positive impact) |
| Provision of entry level housing for first time homeowners | High (Positive impact) | High (Positive impact) |
| Provision of sports facilities | Moderate (Positive impact) | High (Positive impact) |
| Provision of improved road infrastructure | Moderate (Positive impact) | High (Positive impact) |
| Impact on property prices in adjacent suburbs | Moderate (Positive impact) | High (Positive impact) |
| Impact of increased traffic | Not assessed, refer to findings of the Traffic Impact Assessment | Not assessed, refer to findings of the Traffic Impact Assessment |
| Opportunity to promote the use of rail for public transport. | Status quo | High (Positive impact) |