

1.(k) where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report.

Table 1: Document Control.

PHASE	AUTHOR	STATUS	REVISION	DISTRIBUTION	SIGNATURE
Author	J.A. Bowers	Draft	00	29 October 2021	
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### **HERITAGE IMPACT ASSESSMENT (HIA)**

**No Stone Age sites or material were identified in the study & proposed development area during the field assessment.** The closest known Stone Age sites are those at Asvoelkop, Melvillekoppies, Linksfield and Primrose. If any Stone Age artifacts are to be found in the area then it would more than likely be single, out of context, stone tools.

**No Iron Age sites, features or material were identified in the area during the assessment.** No Early Iron Age (EIA) sites are known in the area. The closest known EIA sites are at Melvillekoppies and Bruma Lake.

**One (1) site of historical origin was identified and recorded in the study & development area during the October 2021 field assessment.** This site is fairly extensive and consists of a refuse midden/ash dump with late 19th to mid-20th century cultural material. It is located in the so-called Alternative 2 development footprint portion.

This site is fairly extensive and consists of burnt coal and slag dumped over a large area, containing metal, glass, porcelain and plastic artifacts, as well as bone (faunal remains) in between this material. The porcelain and glass pieces can be dated to between the late 19th to mid-20th centuries and these are similar to material found by the author of this report on similar sites in Gauteng (Pelser et.al 1998; 2011; 2013).

Although it is not known if this site and the material found here is in a primary context (in other words if this ash dump/refuse midden is associated with earlier historical activities such as mining on the site) or if the material was dumped here recently from another location, the site is still fairly significant in terms of its size and the fact that a fair amount of identifiable and dateable cultural material is present here. It is therefore, from an historical-archaeological perspective recommended that if the site can be avoided by the proposed

development that this should be considered. Alternatively, the site should be investigated through Phase 2 Archaeological mitigation that would include excavations to recover cultural material from the site.

No other sites, features or material of archaeological and/or historical origin or significance were found in the study area (Alternatives 1 & 3 footprints). Informal dumping of building rubble and other household residential refuse occurs throughout the area and many of the remains identified here were brought into the area from other locations. According to Mr. Louis de Kok of Unilever the illegal/informal dumping of material has occurred here for some time and that no other historical sites or structures are known to be present in the area. This includes graves (Personal Communication 2021-10-01).

It is finally recommended that based on this Basic Heritage Assessment that the development of the Unilever Solar PV facility on Unilever's Boksburg East property be allowed to continue. The location of a possible in situ historical ash/refuse dump on the Alternative 2 portion does however make this the least viable location for the development and if possible, Alternatives 1 & 3 should be considered from a Cultural Heritage (archaeological and/or historical) perspective.

### **Results of the February 2022 Historical Refuse Midden Assessment**

Considering that Alternative 2 was the preferred alternative when taking all other environmental considerations into account, a subsequent assessment of the historical refuse midden was undertaken in February 2022. APAC cc was contracted by Ecoleges Environmental Consultants cc to conduct a follow-up assessment of the historical midden to determine the extent of the site, its heritage significance and to provide recommendations on the way forward to mitigate the impacts of the proposed development on this heritage feature.

As a result of extensive rainfall since the initial Phase 1 HIA, vegetation growth in the area made visibility on the ground very difficult. Determining the exact extent of the site by walking across the area was therefore virtually impossible.

However, the approximate extent of the site was determined by taking GPS coordinates at points on the site where ash and cultural material could be seen and where vegetation growth (such as blackjacks – *Bidens pilosa*) indicates disturbances & unnatural features. Combined with earlier aerial imagery (Google Earth) of the area it was possible then to determine a fairly accurate extent of the site covering the Alternative 2 footprint area. Based on this it is clear that the historical refuse midden covers a relatively large portion of the proposed development footprint, and that the site will therefore be negatively impacted as a result.

It needs to be noted here that the exact extent of the site could not be 100% accurately determined as a result of the dense vegetation cover. However, what is clear is that midden is large and that the proposed development will not be able to avoid impacting on it. Mitigation measures will therefore have to be implemented before the development work commences.

Based on the October 2021 Phase 1 HIA, as well as the follow-up site assessment, it is clear that the historical refuse midden located on the Soventix Unilever Boksburg Solar PV Plant Alternative 2 Footprint covers an extensive area. Should the proposed development be unable to avoid the site, Phase 2 Archaeological mitigation measures will have to be implemented. The cultural material identified on the site in October 2021 dates to between the late 19th and mid-20th centuries and therefore the site could be more than 100 years

old and definitely older than 60 years of age. From this perspective it is protected by the National Heritage Resources Act (No. 25 of 1999) and the required mitigation measures will apply.

The following is therefore recommended:

1. Obtaining an archaeological excavation permit from SAHRA before the site is demolished by the intended development.
2. Once the required permit has been obtained conducting a number of archaeological excavations on the site in order to recover representative cultural material from the midden to assist with interpreting and dating the site.
3. Submitting a Final Excavation Report to the client & SAHRA for the obtaining of permission to demolish the site prior to developing commencing.

Finally, from a cultural heritage perspective there should be no reason that the proposed development should not be allowed to continue once the recommended mitigation measures have been successfully implemented.

### **PALAEONTOLOGY IMPACT ASSESSMENT (PIA)**

No outcrops or fossils were found. All three Alternatives have the same impact. All the land involved in the development was assessed and none of the property is unsuitable for development. The project locality is present on the Vryheid Formation. The Vryheid Formation consists essentially of sandstone, shale, and subordinate coal beds, and has a maximum total thickness of 500 m. Fossils in South Africa mainly occur in rocks of sedimentary nature and not in rocks from igneous or metamorphic nature. Therefore, as the site falls within the Karoo Supergroup strata the palaeontological sensitivity is VERY HIGH for the Vryheid Formation.

Fossils likely to be found are mostly plants such as 'Glossopteris flora' of the Vryheid Formation. The aquatic reptile Mesosaurus and fossil fish may also occur with marine invertebrates, arthropods and insects. Trace fossils can also be present. During storms a great variety of leaves, fructifications and twigs accumulated and because they were sandwiched between thin films of mud, they were preserved to bear record of the wealth and the density of the vegetation around the pools.

### **Specialist recommendations:**

1. Threats are earth moving equipment/machinery (for example haul trucks, front end loaders, excavators, graders, dozers) during construction, the sealing-in, disturbance, damage or destruction of the fossils by development, vehicle traffic, and human disturbance.
2. Special care must be taken during the digging, drilling, blasting and excavating of foundations, trenches, channels and footings and removal of overburden not to intrude fossiliferous layers.
3. Mitigation will be needed if fossils are found during the development.
4. The Environmental Control Officer must familiarise him- or herself with the formations present and its fossils and follow protocol.
5. The development may go ahead with caution.

6. The ECO must survey for fossils before and or after clearing, blasting, drilling or excavating.
7. The EMPr already covers the conservation of heritage and palaeontological material that may be exposed during construction activities. For a chance fossil find, the protocol is to immediately cease all construction activities, construct a 30 m no-go barrier, and contact SAHRA for further investigation.

#### **Additional recommendations/guidelines:**

- The developer needs to clearly stake or peg-out (survey) the areas affected by the construction/development operations and dig representative trenches and if possible, supply geological borehole data. When the preferred development footprint is confirmed, it is recommended that a specialist undertake a walkthrough of construction areas, including camps and access roads, prior to the start of any construction activities, this may be done in sections.
- When clearing vegetation, topsoil, subsoil or overburden and if hard rock (outcrop) is found, the contractor needs to stop all work.
  - A Palaeobotanist / palaeontologist must then inspect the affected areas and trenches for fossiliferous outcrops / layers. The contractor / developer may be asked to move structures and put the development on hold.
  - If the palaeontologist / palaeobotanist is satisfied that no fossils will be destroyed or have removed the fossils, development and removing of the topsoil can continue.
  - After this process the same palaeontologist / palaeobotanist will have to inspect and offer advice through the Phase 2 Mitigation Process. Bedrock excavations for footings may expose, damage or destroy previously buried fossil material and must be inspected.
  - When permission for the development is granted, the next layer can be removed, if this is part of a fossiliferous layer, then with the removal of each layer of sediment, the palaeontologist / palaeobotanist must do an investigation (a minimum of once every week).
  - At this stage the palaeontologist / palaeobotanist in consultation with the developer company must ensure that a further working protocol and schedule is in place. Onsite training should take place, followed by an annual visit by the palaeontologist / palaeobotanist.

Should further fossil material be discovered during the course of the development (e. g. during bedrock excavations), this must be safeguarded, where feasible *in situ*, and reported to a palaeontologist or to the Heritage Resources authority. In situations where the area is considered palaeontologically sensitive (e. g. Karoo Supergroup Formations, ancient marine deposits in the interior or along the coast) the palaeontologist might need to monitor all newly excavated bedrock. The developer needs to give the palaeontologist sufficient time to assess and document the finds and, if necessary, to rescue a representative sample.

#### **VISUAL IMPACT ASSESSMENT (VIA)**

It is recommended that the proposed Alternative 1 or 2 should be authorised with mitigation as the site scenic resources are Low and the surrounding screening trees effectively reduce the project Zone of Visual Influence. The following key reasons provide the motivation:

1. Degraded local landscape with limited scenic quality.

2. Partially visually screened by existing trees in the adjacent Public Open Space that assists in containing the project Zone of Visual Influence.
3. Suitable distance buffer that would allow the proposed PV landscape change to be viewed against the existing Unilever industrial context where there is a higher Visual Absorption Capacity.
4. Medium to Low receptor sensitivity to landscape change due to background and partial views of the industrial context.

Alternative 3 is not recommended due to the loss of strategic trees and Public Open Space buffering the industrial context and protecting the existing residential and recreational receptors to the west.

The following landscape value issues were flagged:

- *Landscape strongly associated with a large-scale industry that does influence the local sense of place.*
- *Loss of mature trees that were likely planted to assist in reducing the visual intrusion of the industrial landscape as seen from the western residential and recreational areas, including St Dominic's School.*
- *High levels of Visual Exposure to the St Dominic's Girls School (Alternative 3).*
- *High levels of Visual Exposure to the Kruger Street (Alternative 3).*
- *Loss of Public Open Space (Alternative 3) that is likely not to be supported in local and regional planning.*

Large trees assist in maintaining the residential/ St Dominic's School sense of place, these mature trees should be retained as much as possible. The trees exclude the *Eucalyptus* sp. located on Alternative 1 site.

The following visual impacts could take place during the construction phase of the proposed PV project:

- Loss of site landscape character due to the removal of vegetation and the construction of the PV structures and associated infrastructure.
- Wind-blown dust due to the removal of large areas of vegetation.
- Possible soil erosion from temporary roads crossing drainage lines.
- Wind-blown litter from the laydown and construction sites.

The following preliminary mitigations were proposed by the specialist for inclusion in the construction phase of the EMP:

- Following the removal of the vegetation, wind-blown dust during construction should be monitored by the ECO to ensure that it does not become a nuisance factor to the local receptors. Should excessive dust be generated from the movement of vehicles on the roads such that the dust becomes visible to the immediate surrounds, dust-retardant measures should be implemented under authorisation of the ECO.
- Topsoil from the footprints should be stockpiled and dealt with in accordance with the EMP for rehabilitation.
- All proposed buildings should be painted a grey-brown colour.
- Fencing needs to be the Truview type and black in colour. This offers some visual screening, as well as stopping wind-blown litter.

- Signage on the adjacent roads should be moderated.
- The height of the PV panels should not exceed 3.5m above ground level without further visual and landscape impact assessment.
- With permission from the local council, planting of suitable fast-growing trees along the St Dominic's and Kruger Road to further reduce visual screening and add to the sense of place.

### **AGRICULTURAL ASSESSMENT**

One soil form was identified within the assessment corridor, namely the Glencoe soil form. The “Moderate” land capability sensitivities (DAFF, 2017) correlates with the findings of the baseline assessment.

The regulated area is not associated with any arable soils, predominantly due to the climate, which in itself limits crop production significantly. It is the specialist's opinion that the proposed developments will have no impacts on the agricultural production ability of the land. Therefore, the proposed development may be favourably considered. It is worth noting that all three of the considered alternatives are equal in regard to agricultural sensitivity. Therefore, development may proceed on any of these sites.

### **AQUATIC BIODIVERSITY IMPACT ASSESSMENT**

The National Web based Environmental Screening Tool has characterised the aquatic sensitivity of the solar PV project area as “Low”. According to the NBA (2018) the threat status of the rivers associated with the proposed project are largely rated as Critically Endangered (CR) and not protected.

The *in-situ* water quality assessment indicated modification in terms of elevated dissolved solids and depressed dissolved oxygen levels within the artificial drainage systems. At the desktop level the Present Ecological Status (PES) of the larger catchment area watercourses were rated as critically modified with ecological sensitivity rated as moderate with low ecological importance.

Based on the site assessment, the project area was considered to have a low sensitivity due to the drainage systems being unnatural. The water channels observed on site were manmade drainage systems. In a total of seven (7) selected sites, only three (3) had limited surface water with no connectivity between the sites, resulting in no habitat to support aquatic life (macroinvertebrates and fish). Therefore, macroinvertebrate and fish assessments and the habitat integrity assessment were not feasible on the artificial drainage systems. Evaluation and interpretation of the state of the aquatic environment was limited to in situ water quality observed on sites.

Based on this, the risks to the water resources associated with the proposed solar PV plant for all three alternatives were considered to be low. However, these unnatural drainage systems still serve as water (stormwater) routes to the downstream watercourse and therefore need to be preserved to contribute to national biodiversity goals and support sustainable use of water resources.

Mitigation measures and recommendations were provided as follows:

Despite the PV project area being classed as low sensitivity, the area is likely prone to erosion should poor stormwater management be implemented. Therefore, a comprehensive stormwater management plan is required for the project. Increased runoff during high rainfall periods remains a high concern for the project area. A vegetated buffer of 30 m should be imposed to the drainage lines to minimize direct impacts to the water resources. Construction should be prioritised / scheduled for the dry season period.

The following is prescribed in support of the aquatic ecology assessment:

- A vegetation alien invasive management plan should be implemented. This plan must be implemented during the construction phase of the project and continue for the life of the project. This plan must be adapted based on changing site conditions;
- An adaptive rehabilitation plan needs to be implemented from the onset of the project. This must be compiled with input from independent ecological specialists;
- A competent Environmental Control Officer (ECO) must oversee the construction and rehabilitation phase of the project, with adjacent watercourse areas as a priority; and
- An infrastructure monitoring and service plan must be compiled and implemented during the operational phase. This will include the monitoring of all stormwater discharge points.

### **General Mitigation Measures**

The following general mitigation measures are provided:

- Appropriately contain any generator diesel storage tanks, machinery spills (e.g. accidental spills of hydrocarbons oils, diesel etc.) or construction materials on site (e.g. concrete) in such a way as to prevent them leaking and entering the environment;
- Mixing of concrete must under no circumstances take place within the drainage systems. Scrape the area where mixing and storage of sand and concrete occurred to clean once finished;
- The water resources outside of the specific project site area must be avoided;
- Laydown yards, camps and storage areas must be beyond the watercourse and associated buffer areas. Where possible, the construction of any watercourse crossings must take place from the existing areas of disturbance and not from within the drainage lines;
- The contractors used for the project should have spill kits available to ensure that any fuel or oil spills are clean-up and discarded correctly;
- Prevent uncontrolled access of vehicles through the watercourse that can cause a significant adverse impact on the hydrology and alluvial soil structure of these areas;
- All chemicals and toxicants to be used for the construction must be stored outside the watercourses and in a bunded area;
- All machinery and equipment should be inspected regularly for faults and possible leaks, these should be serviced off-site;
- All contractors and employees should undergo induction which is to include a component of environmental awareness. The induction is to include aspects such as the need to avoid littering, the reporting and cleaning of spills and leaks and general good “housekeeping”;
- Adequate sanitary facilities and ablutions on the servitude must be provided for all personnel throughout the project area. These should not be placed near any water course or in buffer zones. Use of these facilities

must be enforced (these facilities must be kept clean so that they are a desired alternative to the surrounding vegetation);

- Have action plans on site, and training for contractors and employees in the event of spills, leaks and other impacts to the drainage systems;
- All removed soil and material must not be stockpiled within the watercourses. Stockpiling should take place outside of drainage systems. All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds;
- Erosion and sedimentation into the drainage lines must be minimised through the effective stabilisation (gabions and Reno mattresses) and the re-vegetation of any disturbed areas;
- Any exposed earth should be rehabilitated promptly by planting suitable vegetation (vigorous indigenous grasses that are drought tolerant) to protect the exposed soil;
- No dumping of construction material on-site may take place;
- All waste generated on-site during construction must be adequately managed. Separation and recycling of different waste materials should be supported;
- Make sure all excess consumables and building materials / rubble are removed from site and deposited at an appropriate waste facility; and
- Landscape and re-vegetate all cleared areas as soon as possible to limit erosion potential associated with steep slopes and bare/exposed soils.

Provided prescribed mitigation measures and recommendations are implemented, it is the opinion of the specialist that there are no fatal flaws for the proposed activities on either of the three alternative footprints.

### **TERRESTRIAL BIODIVERSITY, PLANT & ANIMAL SPECIES IMPACT ASSESSMENTS**

The majority of the project area was transformed/disturbed due to human influence and presence and has been assigned a low sensitivity due to the disturbed areas, whereas the disturbed grassland was assigned a medium sensitivity due to it being untransformed, although slightly disturbed.

The site for the proposed solar PV facility is identified in the screening tool report as having a medium plant species sensitivity for all three alternatives. However, after the field assessment this was disputed except for alternative 3 which was found to be of medium sensitivity, due to it being untransformed, although slightly degraded and the numerous colonies of African Potato (*Hypoxis hemerocallidea*) (LC but protected in Gauteng according to Gauteng Department of Agriculture and Rural Development (GDARD)) that were found throughout the site. This species is provincially important and should be rescued and relocated to similar habitat within the study area if it is to be disturbed.

The vegetation and ecology within alternative 1 and alternative 2 proposed infrastructure areas have been heavily disturbed for a long time, both currently and historically. No significant patches of intact natural vegetation remain and terrestrial botanical diversity within both sites is very low.



Alternative one (1) is almost entirely made up of transformed habitat dominated by a stand of *Eucalyptus* (gum trees). All ecological processes on this site have been significantly impacted by, illegal dumping, clearing of vegetation, AIPs and weed invasion and habitat fragmentation due to excavations that are all over the site.

Alternative two (2) is also transformed and is dominated by pioneer weedy plant and alien invasive species invasive and weed species such as *Arundo donax*, *Erigeron bonariensis*, *Tagetes minuta*, *Verbena bonariensis*, *Verbena brasiliensis*, *Xanthium strumarium* and *Datura stramonium*.

The site for the proposed Solar PV facility for all three alternatives is identified in the screening tool report as having a medium-high animal species sensitivity. The high sensitivity according to the screening tool is that *Tyto capensis* (African Grass-Owl). occurs in the area. In the actual site it is unlikely that this species occurs as there is no suitable habitat. Typically, Grass-Owls require longer (knee-high plus), and denser areas of grass or sedges and long-term roosts or nests take the form of well-established tunnels that the birds create by bending over the tops of the grasses/sedges so that the tunnel is invisible from above, as such the study area is not considered to have suitable breeding habitat for Grass-Owls. It must be however noted that they may occur outside of the project area in areas that are in close proximity to the project area.

According to the screening tool report the proposed development site is a medium terrestrial biodiversity and medium-high sensitivity for animal species due to the presence of sensitive species such as *Chrysospalax villosus* (Rough-haired Golden Mole) *Crocidura maquassiensis* (Maquassie Musk Shrew) (VU), *Hydricis maculicollis* (Spotted-necked Otter) (Near Threatened (NT)), *Aloeides dentatis dentatis* (Endangered (EN) (SABCA 2013)), *Lepidochrysops procera* (Least Concern (LC) (SABCA 2013)), and *Clonia uvarovi*. No animal species, except for yellow mongoose (*Cynictis penicillata*) and free roaming domestic dogs were observed on site. The presence of the domestic dogs likely prohibits the habitation of other wildlife within the area. As a result of the above, the medium animal species sensitivity is disputed, and the site has been identified as having a low animal species sensitivity.

Although no sensitive avifaunal and faunal species were found in the project area it is still likely that such species could occur nearby or access/forage in the project area. It is thus important that the management outcomes be adhered to mitigate an impact that might stem from the development.

The area has been altered from its original state, however, it can still affect species in the surrounding area by means of erosion, dust, fire, alien vegetation introduction and proliferation, poor waste management resulting in increase in pest numbers, as well as chemical spills therefore generic management outcomes were suggested and should be included in the Environmental Management Programme (EMPr).

The high terrestrial / biodiversity theme species sensitivity is disputed. Although the development will impact on areas classified as ESAs, CBAs and a VU ecosystem, the value of the site is not considered exceptional and the location and context of the site, suggest that these impacts are likely to be acceptable and would not significantly restrict future conservation expansion in the Gauteng.

Although the Gauteng C-Plan indicates that alternative 2 and alternative 3 areas overlap with CBA: Important, the field assessment suggests that these areas are not likely to be of high significance for broad-scale ecological processes and as the site is relatively small and already almost surrounded by other approved developments, it is not likely to be viewed as a current priority for formal conservation expansion or any other form of conservation.

It is the opinion of the ecologist that alternative 2 or alternative 3 be considered for infrastructure placement. Although alternative 1 is the most transformed and degraded, from an avifaunal perspective it presents some issues regarding the (closest) proximity to the seepage wetland. Collisions are thought to arise when birds (particularly waterbirds) mistake the panels for waterbodies, known as the “lake effect” (Lovich & Ennen, 2011), or when migrating or dispersing birds become disorientated by the polarised light reflected by the panels. This “lake-effect” hypothesis has not been substantiated or refuted to date (Visser *et al.*, 2019).

### **SOCIAL IMPACT STATEMENT**

The project outcomes align with the national, local, and regional planning objectives in terms of economic development and sustainability. The project will use a natural, renewable resource and assist with decreasing the country’s reliance on coal as a source of energy. The project will not affect the environmental rights of any of the affected stakeholder groups and no-one’s livelihoods will be affected in a negative manner.

The project will not result in any unfair discrimination or affect the social and environmental rights of any of the stakeholder groups, should the mitigation measures be implemented as suggested. From a social perspective the positive impact that the project will have on the affected environment outweighs the negative impacts by far, and where there are negative impacts, it can be mitigated.

The receiving environment is located in an industrial area that borders a residential area. Sensitive receptors in the area are:

- The Boksburg SPCA
- The St Dominic’s Catholic School for Girls
- Old railway houses
- A suburban area

Due to the site’s location and the nature of the proposed development, very few impacts of a social nature are expected, the most notable being:

- Visual disturbances due to glare from the panels
- Community expectations
- Traffic impacts
- Safety and security

To address these issues, the following measures are recommended:

- Managing the visual nuisance impact (glare) through erecting visual barriers such as trees. This should be done in consultation with the potentially affected parties.
- Implement a grievance mechanism for the development.
- Compile a strategy for road safety that avoids construction traffic during peak traffic periods and emphasises safe and responsible road use.
- Compile a strategy for community safety during construction, especially taking into consideration the girls' school opposite the road.
- Implement security measures on site to protect construction material and limit access to property.

Given the positive impact the development will have in the sense that it will use renewable energy, avoiding manufacturing delays through the supply of electricity and the reduced dependency on coal, from a social perspective it is recommended that the project proceeds. From a social perspective there is not much differentiation between the sites, although Alternative 2 might be the best option from a visual nuisance and safety perspective. Any of the other sites will also be acceptable should they be indicated as more preferable based on the majority of specialist studies.

The following impacts that may result from the project should be addressed:

- Visual disturbances

The solar panels may cause a glare at certain times of the day which may be very disruptive for people in the area, such as the Boksburg SPCA and the St Dominic's School for Girls. Although the school has a wall around it, it may be an issue for facilities that are not on the ground floor. To mitigate this potential nuisance factor, tall trees can be planted to form a barrier or a screen between the receptors and the source of the nuisance. The trees should be planted a distance away from the panels as to not interfere with their working. Furthermore, the proponent should enter into consultation with the school and the SPCA to determine the nuisance potential and whether any other measures may be suitable. The houses in the immediate area may also be affected.

- Community expectations

The community may have certain expectation around the project, such as job creation or other economic opportunities. The proponent should manage these expectations and there should be a central place, such as the entrance of the Unilever factory, where people can submit their applications, or an e-mail address or WhatsApp number where people could submit their queries to. This could form part of a grievance mechanism where people could submit any issues regarding the development, especially in the construction phase.

- Traffic impacts

During the construction phase there may be an increase in construction vehicles to the area, which may cause congestion and an unsafe traffic environment around the school. The proponent should adopt a policy where deliveries of construction material take place outside peak traffic times, and times when the school start or closes for the day.

- **Safety and security**

Safety and security are a concern from two sources. The site is opposite a school for girls, with the girls ranging from toddlers to adolescents. Although unlikely, the proponent should be aware that this may create an opportunity for crime against women or children during the construction phase, which may be real or perceived (in the eyes of the parents). To enhance their social license to operate, the proponent should consult with the school to compile a safety strategy for the learners during the construction phase.

Crime statistics in the area show an increase in certain crime categories in the area. As such criminals may target the construction material during the construction phase and the solar panels during the construction and operational phases. To avoid losses, the proponent must ensure that the necessary security arrangements are in place to protect their property and avoid criminals getting access to the site.

### **NOISE IMPACT STATEMENT**

The proposed PV Plant project will be situated in an area where there are feeder roads, industrial area, and residential areas. The noise impact assessment revealed that the noise impact will be negative low during the construction and decommission phases and negative moderate to negative low during the operational phase. The recommended noise mitigatory measures will ensure that the proposed PV Plant project will be environmentally sustainable.

Domestic animals depend on acoustic signals for essential functions. The noise impact will be below 1.0dBA which is very low and therefore classified as insignificant which will not interfere with the acoustic signals for essential functions.

The following recommendations will be applicable for the activities during the different phases to comply with the noise standards:

- Equipment and/or machinery which will be used must comply with the manufacturer's specifications on acceptable noise levels.
- Construction activities to take place during daytime periods only.
- All equipment with noise levels exceeding 85.0dBA to be acoustically screened off by means of engineering control measures.
- The Inverter will have to be acoustically screened off (acoustic screen on the side facing the residential areas) when the sound from the Inverter is audible at the abutting residential areas.
- Measure the environmental noise levels when complaints are lodged during the construction, operational and decommissioning phases of the project to ensure compliance to the recommended and threshold noise levels. Environmental monitoring during the receipt of complaints will provide the data for reviewing, checking, and revising the EMPr.

There will be no noise intrusion into the abutting residential area to the west during the construction and/or operational phases.

The proposed PV plant project will comply with the relevant Noise Control Regulations provided that the noise mitigatory measures are in place and that the noise management plan be always adhered to.

### **TRAFFIC OPINION**

The project's construction phase may impact the traffic in the area but can be successfully mitigated. The site establishment period usually is relatively short and will not severely impact the traffic. Material delivery times should be restricted to allow delivery only during off-peak traffic periods and avoid delivery during the mid-day pupil collection period at St. Dominic's School. Commuting labour typically makes use of public transport. The number of labourers is considered limited and will have a negligible impact on the peak traffic flow.

According to TMH17 (traffic manual published by the department of roads and transport) the development falls under the Industrial Area (Park) land use which includes industries that do not generally provide services directly to the general public. Therefore, trip generation during the project's regular operation and maintenance phase will, in all likelihood, be limited to a maximum of 5 trips per day and expected to be during the off-peak time of day. No impact is expected.

In general, it can be stated that the traffic impact generated as a result of the development of the 3.6 MW solar energy installation for the Unilever Factory will be very limited given the expected activities and the proposed mitigation measures.

### **STORMWATER MANAGEMENT PLAN**

The Ekurhuleni Stormwater department (EM) requires on-site attenuation structures/ponds to be constructed for all new developments. These structures are to be designed to attenuate both the 1:5 and 1:25 year storms but the Engineering calculations show that the proposed attenuation pond will be able to accommodate the 1 in 50 year storm.

#### **Underlying assumptions:**

- A municipal stormwater culvert 800x800 is available and is situated on the Northern boundary of the of the property that has a maximum capacity of 2,4105m<sup>3</sup>/s to where areas 1-3 stormwater water is currently being discharged into.
  - The existing culvert has adequate capacity to take the stormwater discharge from the areas for a 1 in 5 year & 1 in 25 year storm event.
  - In the 1 in 50 year storm event the system can be seen to be under pressure by 0,191m<sup>3</sup>/s but this is only applicable to where the storm is at is most aggressive.
- The culvert mentioned in above statement currently services the proposed property stormwater runoff as- well as the property Area 3 "Ceoco" ERF 725, EXT 1, BOKSBURG EAST located above the proposed development which has an attenuation facility controlling the outflow of stormwater.
- Less than 24% or 4ha of the area will be covered by the solar panel arrays.

- The surface below the solar panels will be covered by planted & cut grass that will be maintained on a regular basis.
- The solar panels, channels and attenuation pond will be the only areas to receive works and the stormwater calculations will include the entire property.
- The remaining 76% of the property will remain as is with regards to the plant growth except for the areas where we propose the open grassed lined channels, and the attenuation pond are to be built.
- The area where the solar panels will be constructed will be dependent on the comments or approval of this report and the environmental report.
- The sections where paving blocks are to be inserted will be shaped with a minimum gradient of 1,5% to the centre of each row solar panel and be diverted in a northern direction.
- The stormwater that is directed by the sloped soil will then connect to an open earth channel which will be connected to the attenuation pond.
- The stormwater from the attenuation pond will then be connected to the existing 800mm x 800mm municipal storm culvert which runs below Transnet railway line and connects to the municipal stormwater system.
- Stormwater accumulated from property Area 2 ((Unilever & DHL (Re of portion 277) ) that is currently entering the proposed solar PV development is also connecting to the existing stormwater concrete culvert.
- The stormwater from Re of Portion 277 (Area 2) will not be controlled in the solar PV area development attenuation pond but merely be kept in its current state.

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