

Site (Development Footprint) Selection Matrix

Table 1: Document Control.

PHASE	AUTHOR	STATUS	REVISION	DISTRIBUTION	SIGNATURE
Author	J.A. Bowers	Draft	00	29 October 2021	
Review	J.A. Bowers	Draft	01	21 March 2022	
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Definition of impact magnitude and significance using systematic generic and judgemental criteria (DEAT, 2002)

Significance (significant impacts) can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of significance and acceptability). It is an anthropocentric concept, which makes use of value judgements and science-based criteria (i.e. biophysical, social and economic). Such judgement reflects the political reality of impact assessment in which significance is translated into public acceptability of impacts.

Low magnitude & significance: Impact is of a low order and therefore likely to have little real effect. In the case of adverse impacts, mitigation is either easily achieved or little will be required, or both. Social, cultural and economic activities of communities can continue unchanged.

Medium magnitude & significance: Impact is real, but not substantial in relation to other impacts that might take effect within the bounds of those that could occur. In the case of adverse impacts, mitigation is both feasible and fairly easily possible. Social, cultural and economic activities of communities are changed, but can be continued (albeit in a different form). Modification of the project design or alternative action may be required.

High/Very High magnitude & significance: Of the highest order possible within the bounds of impacts that could occur. In the case of adverse impacts, there is no possible mitigation that could offset the impact, or mitigation is difficult, expensive, time-consuming or some combination of these. Social, cultural and economic activities of communities are disrupted to such an extent that these come to a halt.

Scoring Index

1 = Low Impact	2 = Medium Impact	3 = High Impact	4 = Very High Impact
Ideal site for development, or <i>positive</i> impact	Acceptable (impact of moderate significance - <i>negative</i>)	Not preferred (impact of high significance - <i>negative</i>)	Not suitable for development (impact of very high significance - <i>negative</i>)

Criteria	Alternative Development Footprint Locations		
	Alternative 1	Alternative 2	Alternative 3
Topography			
Gradients & Slope (i.e. Flat or steep)	3	1	1
	The site is largely on 0-1% slope with a small section in the North-West with a 1-2% slope and a fragment of 2-3%. However, a deep depression exists in front of the Rand Water scour valve, which would require significant bulk earth works and cut-to-fill from adjacent areas, to create a uniform surface. Elevation ranges from 1624 – 1639 masl.	The site is very flat with a 0-1% slope. Elevation ranges from 1624 – 1635 masl.	The site is very flat with a 0-1% slope. Elevation ranges from 1624 – 1630 masl with the corner on south-eastern side at 1635 masl.
Soil Type	3	1	1
	One main soil form was identified throughout the area, namely the Glencoe soil form. A man-made wetland is also present within the footprint, which will create waterlogged conditions until the repair of	One main soil form was identified throughout the area, namely the Glencoe soil form. Natural soil structure has been affected through a historical ash midden.	One main soil form was identified throughout the area, namely the Glencoe soil form.

	the Rand Water pipeline is affected.		
Drainage	3	2	2
	Existing man-made stormwater drainage channels run through the footprint on the East, West & Northern side of the footprint.	Stormwater drainage channel runs along the Eastern side of the footprint.	Existing man-made stormwater drainage channels run through the footprint on its Eastern side.
<i>Sensitive Receptors</i>			
Wetlands, Water resources & Flood plains	2	1	1
	An artificial wetland occurs within the footprint (caused by seepage from stormwater channels and scour chamber of Rand Water), with a HGM seep & Bioregional Plan wetland on the other side of the railway line to the North.	A NFEPA wetland is purported to occur within the footprint, but ground-truthing dispelled its presence.	Outside of any wetlands.
Landscape character	2	3	4
	Landscape strongly associated with a large-scale industry that does influence the local sense of place. Removal of large established (albeit exotic) trees from the footprint would be required to install the solar panels.	Loss of historical resource in the form of an ash midden.	High levels of Visual Exposure to the St Dominic's Girls School and Kruger Street. Loss of Public Open Space that is likely not to be supported in local and regional planning. Close proximity to the residential areas, park and school are likely to increase receptor

			sensitivity to landscape change.
Zone of Visual Influence	2	3	4
	Viewshed analysis indicates a Medium immediate zone of visual influence. At a regional scale, the viewshed has the potential to be widespread, especially to the north and west. However, due to the built nature of the surrounds that do include a significant number of mature trees, the effective Zone of Visual Influence is likely to be much smaller.	Viewshed analysis indicates a High immediate zone of visual influence. At a regional scale, the viewshed has the potential to be widespread, especially to the north and west. However, due to the built nature of the surrounds that do include a significant number of mature trees, the effective Zone of Visual Influence is likely to be much smaller.	Viewshed analysis indicates a Very-High immediate zone of visual influence. At a regional scale, the viewshed has the potential to be widespread, especially to the north and west. However, due to the built nature of the surrounds that do include a significant number of mature trees, the effective Zone of Visual Influence is likely to be much smaller.
Visual Resource Management (VRM) Classes (The assigned class doesn't determine the rank of the impact, but rather if the proposed PV facility will be able to adhere to the objectives of that class or not)	2	3	4
	Assigned as a VRM Class III with the objective to partially retain the existing character of the landscape, where the level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer, and changes should repeat the	Assigned as a VRM Class III with the objective to partially retain the existing character of the landscape, where the level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer, and changes should repeat the	Assigned as a VRM Class II with the objective to retain the existing character of the landscape and the level of change to the characteristic landscape should be low. The proposed development may be seen but should not attract the attention of the casual observer, and should repeat the basic elements of form, line, colour and texture

	basic elements found in the predominant natural features of the characteristic landscape.	basic elements found in the predominant natural features of the characteristic landscape. Additionally, legislation restricts development in this area for the following reasons: <ul style="list-style-type: none"> Any heritage area identified as having a high significance. 	found in the predominant natural features of the characteristic landscape. The Visual Objective is to ensure that the sense of place of the western residents, school and Trichardt Park remains the same for these close proximity receptors.
Visual Contrast Rating - Key Observation Points	2	3	4
	All the landscape elements will be dissipated to some degree by the foreground trees effectively screening the PV landscape change. With mitigation, the Line, Colour and Texture elements can be further reduced including placing a 2.4m high concrete palisade fence along the northern and western boundary.	All the landscape elements will be dissipated to some degree by the foreground trees effectively screening the PV landscape change.	As seen from both Key Observation Points, the very close proximity of the site to the school, would afford second level views of the PV panels with High Exposure. As the loss of landscape character is likely to be significant with limited potential for mitigation, development of PV panels in close proximity to the school and the park area is not recommended.
Heritage features	1	3	1
	No sites identified.	19 th /20 th century historical site located within footprint.	No sites identified.

Terrestrial and Aquatic Sensitivities			
	1	1	2
Flora	<p>Soweto Highveld Grassland vegetation type classified as Endangered by Mucina & Rutherford (2006). However, no significant patches of intact natural vegetation remain and terrestrial botanical diversity is very low. This footprint 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. This footprint also contained an artificial wetland and drainage features. Species composition was similar for both wetland and the drainage features, also</p>	<p>Soweto Highveld Grassland vegetation type classified as Endangered by Mucina & Rutherford (2006). However, this footprint is also transformed and is dominated by pioneer weedy plant and alien invasive and weed species. Species composition was similar for both wetland and the drainage features, also extensively proliferated by AIP species.</p>	<p>Soweto Highveld Grassland vegetation type classified as Endangered by Mucina & Rutherford (2006). This Grassland comprises grassland in various states of degradation. The grasses cover approximately 70-80% of the area and the forbs 5-10% (mainly alien invasive species). This habitat unit supports a moderate to moderately high species diversity with a well-developed forb and herb layer as well as occasional woody thickenings. During the field survey, no threatened plant species were observed except for one species of conservation concern namely, <i>Hypoxis hemerocallidea</i> (Star flower/African potato). This species is protected in Gauteng.</p>

	extensively proliferated by AIP species.		
Fauna	1	1	2
	Tyto capensis (African Grass-Owl) occurs in the area but is unlikely that this species occurs on the footprint as there is no suitable habitat. There is potential presence of other sensitive species such as <i>Chrysospalax villosus</i> (Rough-haired Golden Mole) <i>Crocidura maquassiensis</i> (Maquassie Musk Shrew) (VU), <i>Hydricis maculicollis</i> (Spotted-necked Otter) (Near Threatened (NT)), <i>Aloeides dentatis dentatis</i> (Endangered (EN) (SABCA 2013)), <i>Lepidochrysops procera</i> (Least Concern (LC) (SABCA 2013)), and <i>Clonia uvarovi</i> . No animal species, except for yellow mongoose (<i>Cynictis penicillata</i>) 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 per Alternatives 1 & 2, but the higher degree of indigenous vegetation provides more suitable habitat for fauna and avifauna in the area.
Sensitive landscape features	2	3	4
	The footprint falls within the following sensitive landscapes: 1.C-Plan: ESA, 2. Ekurhuleni Bioregional Plan (2020): CBA1, 3. Vulnerable Ecosystem, 4. Within 5km of the Westdene Pan Nature Reserve.	The footprint falls within the following sensitive landscapes: 1.C-Plan: CBA & ESA, 2. Ekurhuleni Bioregional Plan (2020): CBA1, 3. Vulnerable Ecosystem, 4. Within 5km of the Westdene Pan Nature Reserve.	The footprint falls within the following sensitive landscapes: 1.C-Plan: ESA, 2. Ekurhuleni Bioregional Plan (2020): CBA1, 3. Vulnerable Ecosystem, 4. Within 5km of the Westdene Pan Nature Reserve.
Existing Infrastructure & servitudes			
Accessibility (Roads) & Traffic Management	2	1	3

	Access to site will be achieved from the Unilever factory entrance along the eastern boundary of erf 757 to the development site.	Access to site will be achieved from the Unilever factory to erf 757.	Access to site would be from Kruger or St. Dominics Street, following approval from the Department of Public Works.
Rand Water Servitude	2	2	2
	Rand water infrastructure present.	Rand water infrastructure present.	Rand water infrastructure present.
Eskom Servitude	2	2	1
	Eskom powerline servitude running through footprint	Eskom powerline servitude running through footprint	Eskom powerline servitude adjacent to footprint
Stormwater	3	2	2
	Stormwater channels running down both the eastern and western sides of the footprint.	Stormwater channel present on eastern side of footprint.	Stormwater channel present on eastern side of footprint.
<i>Socio-economic factors</i>			
Employment	1	1	1
	No significant difference between the 3 alternative footprints.	No significant difference between the 3 alternative footprints.	No significant difference between the 3 alternative footprints.
Sustainable Development	1	1	1
	No significant difference between the 3 alternative footprints.	No significant difference between the 3 alternative footprints.	No significant difference between the 3 alternative footprints.
<i>Land Use Compatibility</i>			
Land use	2	1	2
	Currently zoned Agriculture. The area is not associated	Currently zoned Agriculture. The area is not associated	Currently zoned Agriculture. The 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.	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. This footprint is already included in the town planning approvals.	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.
Land potential	2	2	2
	The "L5" land potential level is characterised by a restricted potential. Regular and/or severe to moderate limitations occur due to soil, slope, temperatures or rainfall.	The "L5" land potential level is characterised by a restricted potential. Regular and/or severe to moderate limitations occur due to soil, slope, temperatures or rainfall.	The "L5" land potential level is characterised by a restricted potential. Regular and/or severe to moderate limitations occur due to soil, slope, temperatures or rainfall.
Land capability	2	2	2
	Land Capability 6 to 8 (Low/Moderate to Moderate Sensitivity).	Land Capability 6 to 8 (Low/Moderate to Moderate Sensitivity).	Land Capability 6 to 8 (Low/Moderate to Moderate Sensitivity).
Existing services (Water availability & Electricity)	3	2	3
	Services would need to be provided from Unilever, which is located an impractical distance from the footprint.	Any services will be provided from Unilever.	Services would need to be provided from Unilever, which is located an impractical distance from the footprint.
TOTALS	44	41	49
Impact Scoring	Medium Impact	Medium-Low Impact	Medium-High Impact

<32 Low Impact, 33-55 Medium, 56-77 High Impact, 78+ Very-High Impact			
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