

Additional Issues (Agriculture, Defence, Civil Aviation and Heritage)

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ADDITIONAL IMPACTS: AGRICULTURE, DEFENCE & CIVIL AVIATION AND HERITAGE

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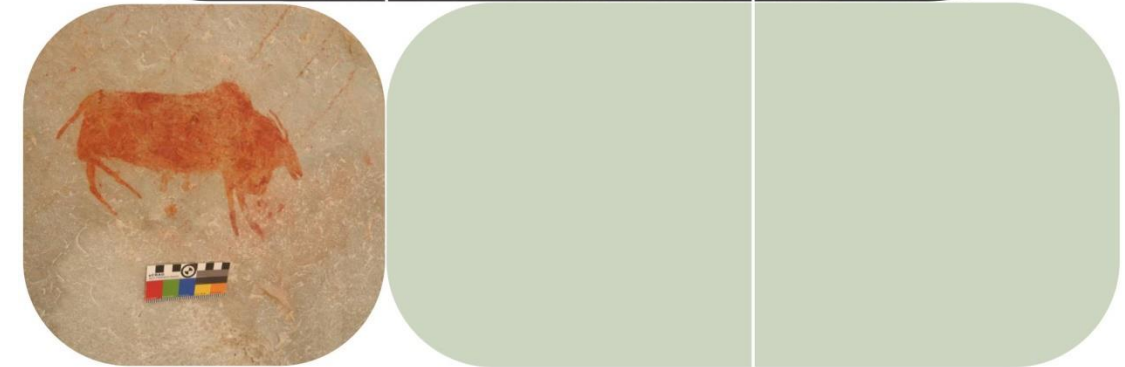
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ADDITIONAL IMPACTS: AGRICULTURE, DEFENCE & CIVIL AVIATION AND HERITAGE

2.1 Introduction

This chapter covers additional issues such as the potential impacts on agriculture, defence, civil aviation and heritage, associated with the development of Electricity Grid Infrastructure (EGI) within the proposed expanded Eastern and Western EGI corridors. Given that the current Strategic Environmental Assessment (SEA) assesses the expansion of the Power Corridors gazetted in February 2018, the approach to the sensitivity analysis and the assessment of impacts as part of this SEA is the same as that undertaken for the 2016 Assessments (DEA, 2016).

The subsequent sections are therefore predominantly based on the following scoping level assessments undertaken as part of the original 2016 EGI SEA:

- Agriculture Assessment (Appendix C.1 of the 2016 EGI SEA Report);
- Civil Aviation Assessment (Part 3, Chapter 6: Civil Aviation of the 2016 EGI SEA Report);
- Defence Assessment (Part 3, Chapter 7: Defence of the 2016 EGI SEA Report); and
- Heritage Assessment (Appendix C.4 of the 2016 EGI SEA Report).

The above assessments were desktop based and focused mainly on the interpretation of existing data.

2.2 Agriculture

2.2.1 Introduction and Scope

In addition to being based on the Agriculture assessment undertaken for the 2016 EGI SEA (Appendix C.1 of the 2016 EGI SEA Report), this section is also informed by discussions with relevant authorities (such as the Department of Agriculture, Forestry and Fisheries (DAFF) and the Agricultural Research Council (ARC)) and an Agricultural Specialist. It includes the identification of existing agricultural resources and agricultural potential within the proposed expansion corridors.

The data sources and the rationale used to identify agricultural features and assign a sensitivity to each of them are described in sections 2.2.3 and 2.2.5 respectively. The assumptions and limitations applicable to this study are listed in Table 1 below.

Table 1: Assumptions and limitations to the agricultural study

Limitation	Included in the scope of this study	Excluded from the scope of this study	Assumption
Resource availability	Only existing, published datasets used with limited desktop verification	Field verification of datasets and outcomes, and extensive local expert consultation	Reasonable accuracy of data layers used. Field verification will take place on a site by site basis linked to development proposals.
Distinguishing criteria for the potential traverse lengths of individual orchards and vineyards.	Measurement of surface area in individual orchards and vineyards.	Measurement of traverse lengths in individual orchards and vineyards.	All orchards and vineyards with an area > 16 hectares have been categorised as having a traverse length of > 400 metres. ¹
Data accuracy	Use of existing data sets only.	Confirmation of on the ground situation in cases where data sets overlap	Areas of overlap with field crop boundaries and plantations were categorised as the former because of the greater accuracy of those data sets compared to the forestry data set.

2.2.2 Relevant Legislation

The following legislation is considered relevant to the proposed EGI development:

- The Conservation of Agricultural Resources Act (Act 43 of 1983) (CARA):
 - The objective of this Act is the protection of natural agricultural resources including soils. The Act applies to all agricultural land (grazing and cultivated). It manages rehabilitation after disturbances to agricultural land. Any

¹ Orchards and vineyards with a potential electricity line traverse length of greater than 400 metres are distinguished, for the purposes of this report, from those with a traverse length of less than 400 metres. This is because 400 metres is the approximate maximum span distance (the actual maximum is dependent on site specific factors). Anything greater is likely to result in a pylon having to be erected within an orchard or vineyard, leading to greater agricultural impacts. The >400 m blocks were distinguished in the GIS processing, as land parcels having a surface area of greater than 16 hectares. The logic is that it is only surface areas of greater than 16 hectares (400 x 400 metres) that do not have an option of being traversed by a length of less than 400 metres. It is always possible to traverse any smaller surface area by less than 400 metres if the direction of traverse is not fixed. If the direction is fixed the length is influenced by the shape of the land parcel. Also the larger than 16 hectares land parcels may be able to be traversed at less than 400 metres, again depending on their shape. Some land parcels that can be traversed by less than 400 metres will therefore be included in those identified as > 400 metres

disturbance to soil conservation works such as contour banks requires permission in terms of this Act.

- Subdivision of Agricultural Land Act (Act 70 of 1970) (SALA):

- The objective of this Act is the preservation of agriculturally viable farm portions. Consent use or change of land use (re-zoning) for developments on agricultural land need to be approved in terms of this Act. This means that any servitude or use of an agriculturally zoned piece of land for non-agricultural purposes requires approval from the DAFF in terms of the SALA. Statutory bodies, such as Eskom, are currently exempt from such approval.

- DAFF Guidelines for the Evaluation and Review of Applications pertaining to Renewable Energy on Agricultural Land, dated September 2011:

- These guidelines were compiled with the main objective of the preservation of arable land through prohibition of the development of renewable energy facilities (wind and solar) on cultivated and high potential agricultural land. These guidelines were not produced to be applicable to linear infrastructure such as powerlines, but may have some relevance in terms of DAFF's general concerns about loss of agricultural land.

- Draft Preservation And Development Of Agricultural Land Framework Bill

- This Act, once promulgated, will repeal SALA and replace the DAFF Guidelines noted above. The Bill seeks to improve DAFF's fulfilment of its mandate to protect agricultural land for agricultural production. One of its aims is to ensure that development does not lead to an inappropriate loss of land that may be valuable for agricultural production. Any use of agricultural land for non-agricultural purposes will require authorisation in terms of this Act. If the Bill is enacted in its current form, one of the significant implications for EGI development will be that all Eskom servitudes for power lines will require agricultural consent. Eskom is currently exempt from agricultural authorisation for power line servitudes.

1 **2.2.3 Data Sources**

2 The list of updated data used in this current EGI Expansion SEA is
3 indicated in Table 2 below.

4

5 [Table 2: Agricultural Data used in the 2018 EGI Expansion SEA as part of the](#)
6 [Environmental Sensitivity Analysis](#)

Dataset	Source and Date of Publication	Data Description
Field Crop Boundaries	DAFF, 2017	Delineates the boundaries of all cultivated land, based on satellite and aerial imagery. Five different categories of cultivated land are distinguished. These are irrigated areas (pivot agriculture); horticulture; viticulture; shadenet; and other cultivated areas.
National Land Cover and Habitat Modification Layer (improved land cover)	DEA, 2013/2014 SANBI, 2017	Delineates natural areas, modified areas, and old fields (mapped from imagery)
Land Cover (Sugar Cane Farming) KwaZulu-Natal Land Cover Sugar Cane Farming and Emerging Farming Data	KZN Provincial land cover, Ezemvelo KZN Wildlife, 2011	Delineates all sugar cane fields, including emerging farms in Kwazulu-Natal.
Agricultural Land Capability	DAFF, 2016	Categorises all land nationally into 15 different classes of agricultural land capability. The classification is based on soil, terrain and climate parameters.
Demarcated High Value Agricultural	DAFF, outstanding	Preservation and Development of Agricultural Land Bill (PDALB) requires the demarcation of high value agricultural areas which is a combination of land capability; crop suitability, agricultural land uses etc. on a priority rating of A, B, C and D (not yet released).

7

8 **2.2.4 Corridor Descriptions**

9 Maps 1 and 2 respectively provide an indication of the Field Crop
10 Boundaries and Land Capabilities.

11

12 • Expanded Western EGI Corridor:

13 The agricultural potential of the entire Expanded Western EGI Corridor is
14 severely constrained by limited climatic moisture availability making it
15 unsuitable for most agriculture other than the extensive sheep farming
16 which is almost the only agricultural land use throughout the corridor.
17 Rainfall generally decreases northwards in the corridor from a high of

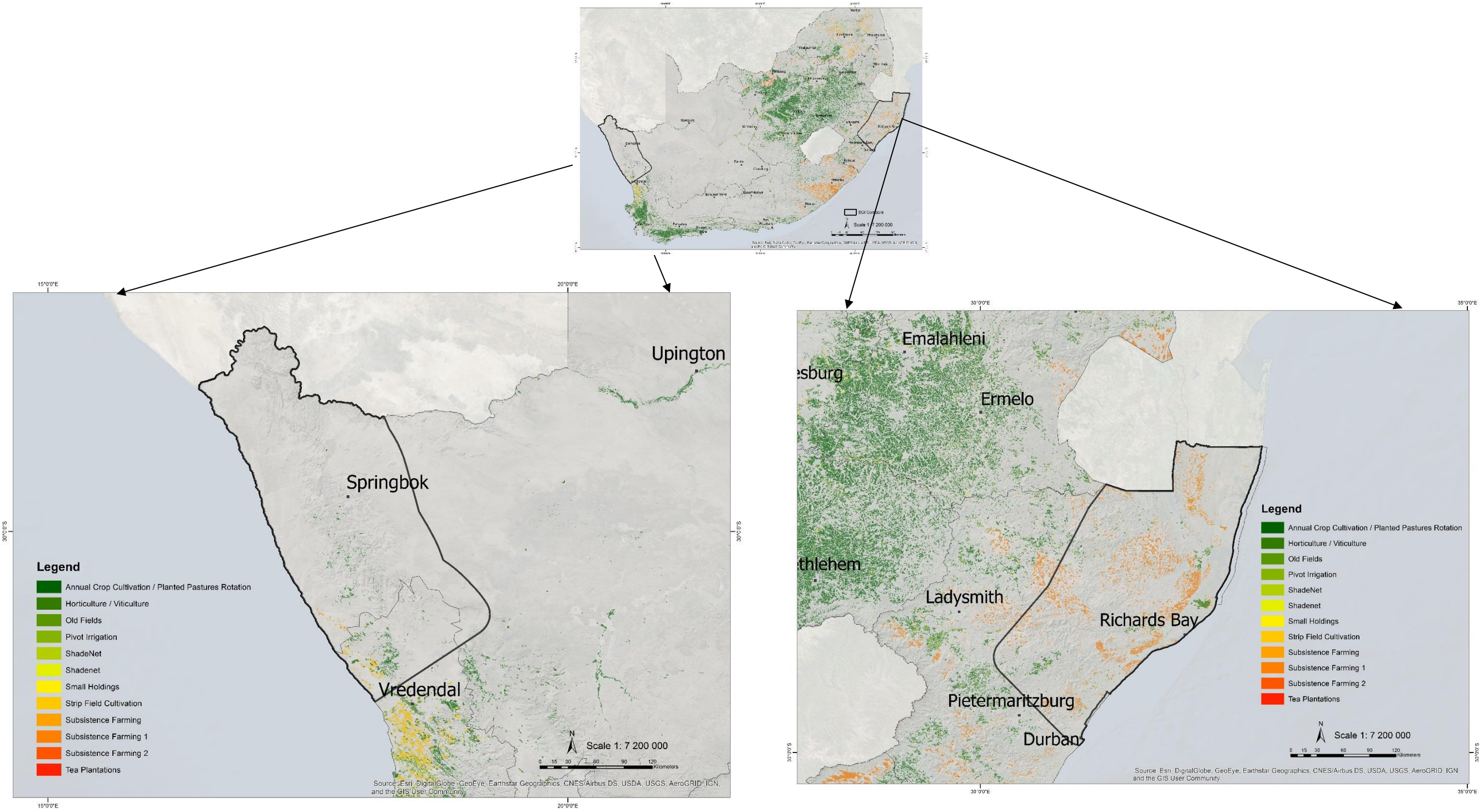
18 approximately 200 mm per annum to as low as 30 mm per annum in the
19 Richtersveld in the north. Grazing capacity varies from a high of 42
20 hectares per large stock unit in the south to 120 hectares per large stock
21 unit in the north. Land capability varies between 5 and 1. The only patch
22 of cultivation occurs where the corridor intersects, for a short distance,
23 with the Olifants River which has intensive cultivation, mainly of table
24 grapes, along its flood plain.

25

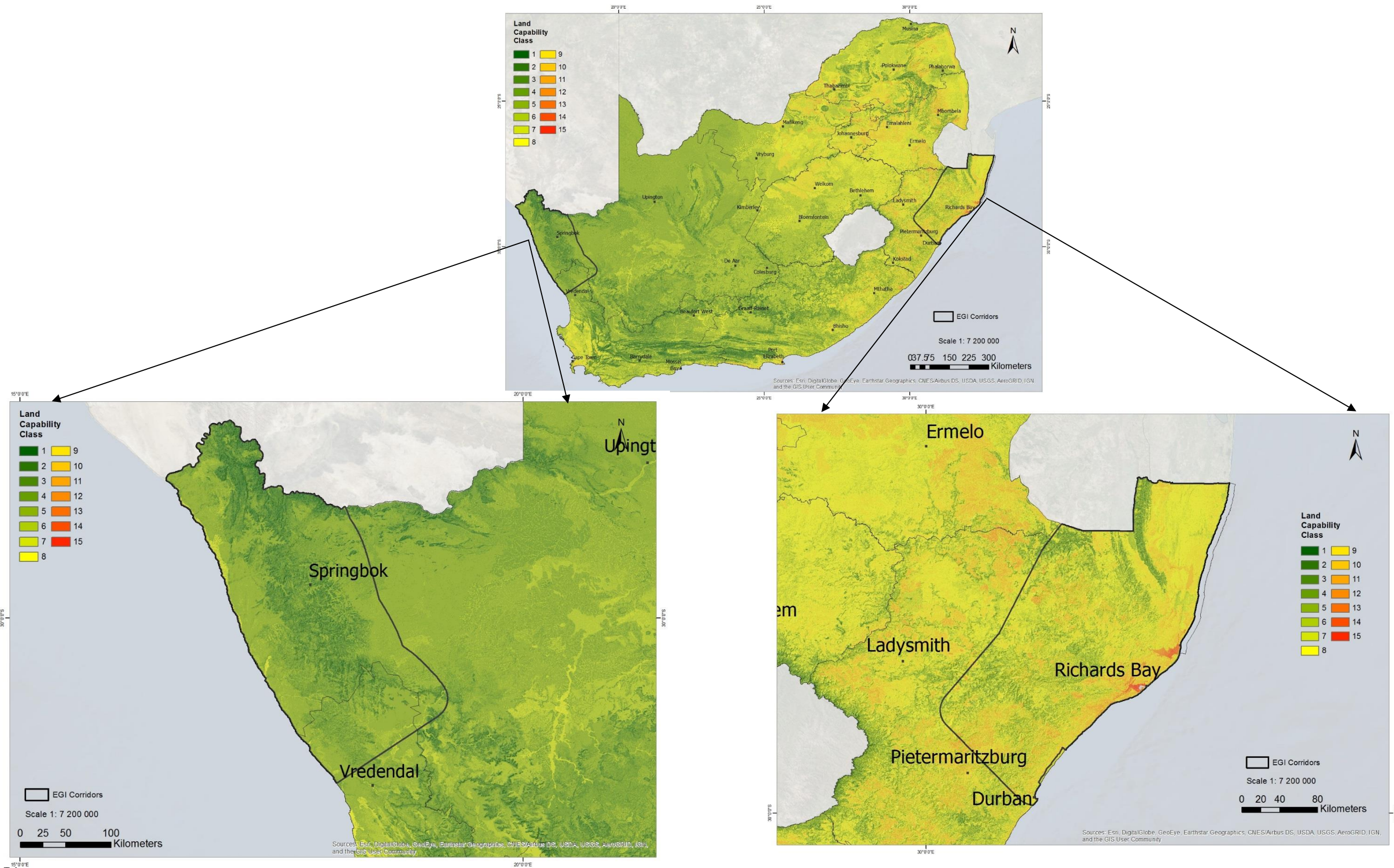
26 • Expanded Eastern EGI Corridor:

27

28 There is diverse and productive agriculture across the Expanded Eastern
29 EGI corridor. The most important agricultural enterprises are sugar,
30 subsistence farming, cattle and forestry. Mean annual rainfall varies
31 between approximately 600 and >1,500 mm. Grazing capacity is high
32 and varies between 3.5 and 20 hectares per large stock unit. Land
33 capability is mostly greater than 8 and goes as high as 15 in places,
34 although in the more mountainous terrain it drops as low as 2.



Map 1: Field Crop Boundaries Sensitivity Map for EGI Development



Map 2: Land Capability Sensitivity Map for EGI Development

1 2.2.5 Sensitivity Analysis

2 The agricultural features that would be impacted by EGI development are
3 indicated in Table 3. The following three factors were identified in the
4 2016 Agriculture Assessment Report (DEA, 2016) to determine the
5 sensitivity of the agricultural features as a result of EGI development:

- 6
- 7 • Factor 1: The first is the reduction of the potential agricultural
8 productivity (per unit area and unit time) of the affected land;
- 9 • Factor 2: The proportion of agricultural land that is affected; and
- 10 • Factor 3: The degree of disturbance that will occur. This axis
11 increases from zero disturbance through minor alterations to
12 agricultural activity and on to total prevention of agriculture equating
13 to a loss of agricultural production on a particular piece of land. It
14 also includes any alterations that a particular agricultural activity
15 would impose on the standard EGI.

16
17 The 2016 Agriculture Assessment Report (DEA, 2016) determined the
18 following sensitive agricultural features:

- 19
- 20 • Pivot irrigation, irrespective of its size, is incompatible with power
21 lines because of the danger of an electrical short between the lines
22 and the overhead water pipes. In terms of the three factors
23 discussed above pivot lands are high on all three axes: high
24 agricultural productivity; the entire pivot field is impacted; and the
25 disturbance is high, given the exclusion of the possibility of irrigation.
26 These areas are therefore classified as **Very High** environmental
27 sensitivity. From an engineering constraints perspective, pivot
28 agriculture is also rated as a Very High constraint and those with a
29 diameter of more than 500 m is planned to be avoided for the EGI
30 due to the irrigation infrastructure than moves during watering and
31 the distance between pylons.
- 32
- 33 • Horticulture and vineyards with a potential electricity line traverse
34 length of greater than 400 m are distinguished, in terms of their
35 sensitivity, from those with a traverse length of less than 400 m. This
36 is because a span of greater than 400 m will result in a pylon having
37 to be erected within an orchard or vineyard, leading to greater
38 agricultural impacts. For horticulture and vineyards, agricultural
39 productivity is high, but less surface area is impacted (only pylon
40 footprint if >400m) with less disturbance i.e. agricultural activity can
41 continue. There is disturbance in terms of restrictions on windbreak
42 heights underneath the power line. Lands that require windbreaks
43 would incur a greater impact than lands that do not require
44 windbreaks. The need for windbreaks is a function of the crop type
45 (some crops are more sensitive to wind than others) and of the
46 prevailing wind conditions of an area and particular site. In general
47 all fruit orchards require windbreaks with citrus being the most
48 sensitive and therefore requiring the most closely spaced
49 windbreaks. Vines do not generally require windbreaks. If windbreaks

50 are restricted around an orchard it will have the impact of lowering
51 yield and fruit quality. Areas of viticulture and horticulture, with a
52 potential electricity line traverse length of greater than 400 m, have
53 been classified as **Very High** environmental sensitivity features. On
54 the other hand, those viticulture and horticulture areas with a
55 potential electricity line traverse length of less than 400 m, are rated
56 as **High** environmental sensitivity features. From an engineering
57 constraints perspective, these areas (i.e. vineyards and orchards) are
58 also rated as a Very High constraint as the EGI would include
59 permanent above ground infrastructure.

60

- 61 • Shadenet areas are classified as **Very High** environmental sensitivity
62 due to the need to remove the nets should EGI be developed in these
63 areas, leading to a potential loss of agricultural areas and loss of
64 income.

- 65
- 66 • Other cultivated areas represented under Field crops boundaries are
67 also classified as **High** environmental sensitivity.

- 68
- 69 • Timber plantations are lower productivity enterprises in comparison
70 to horticultural areas and vineyards, but larger areas would be
71 impacted with a greater level of disturbance in that trees are
72 excluded from the entire servitude width below the power lines.

- 73
- 74 • Land Capability Classes 11 – 15 and 8² - 10 have been included in
75 the **Very High** and **High** environmental sensitivity categories
76 respectively given that within the context of South Africa's very
77 limited agricultural land resources, the entirety of these high
78 potential lands should be preserved for agricultural production as far
79 as possible, and these are also to be earmarked for agricultural
80 expansion.

- 81
- 82 • Areas demarcated as high value agricultural areas are earmarked for
83 agricultural expansion to support food security, as described further
84 below:

- 85 ○ Very high potential agricultural lands (priority rating of A and
86 B) have been classified as **Very High** sensitivity once this
87 data will become available.
- 88 ○ Areas with a priority rating of C and D have been classified as
89 **High** sensitivity once this data will become available.
- 90 ○ The DAFF also recommended that the demarcated high
91 value agricultural areas need to have an additional feature
92 with an E and F rating.

- 93
- 94 • The agricultural impact of EGI on all other land is very low. The actual
95 footprint of impact is very small and agriculture can continue largely

96 undisturbed beneath power lines. However there are some
97 differences between different agricultural features and for this
98 reason certain features have been identified as **Medium**
99 sensitivity, including land capability classes 6 - 7 that should also
100 be preserved for agricultural production where possible.

- 101
- 102 • Sugar cane fields have an impact on EGI in that increased cable
103 height is required for the burning of sugar cane crop residues, or
104 an alternative practice of crop residue management is required
105 on land crossed by power lines. This feature is therefore rated as
106 **Medium sensitivity**.

- 107
- 108 • In terms of land cover, natural areas, modified areas and old
109 fields have been rated with a **Low** sensitivity. Natural areas are
110 "Other natural areas", which are available for sustainable
111 development. Modified areas are not an environmental priority
112 and are preferred for development. Old fields are formerly
113 ploughed areas that are degraded, and are more favourable than
114 natural areas for development.

- 115
- 116 • In all other cultivated fields, the minimal disturbance and loss of
117 land on pylon bases, substations and supporting infrastructure is
118 still more significant than on uncultivated land. All agricultural
119 land not included in the categories above is therefore classified
120 as **Low** sensitivity (i.e. Land Capability Class 1 – 5).

- 121
- 122 • Soil erosion was not included in the categorisation of agricultural
123 sensitivity. Erosion risk was not considered to be a significant
124 independent factor that should influence power line routing
125 options. There are several reasons for this:

- 126 ○ The threat of EGI development on erosion risk is very
127 minimal and mitigation management at the time of
128 construction is simple to implement.
- 129 ○ Mitigation measures for erosion should be implemented
130 across all EGI developments, regardless of their status
131 according to large scale erosion risk data. Mitigation
132 strategies are largely generic for all developments but the
133 detailed level of required mitigation will vary from pylon to
134 pylon and therefore cannot be usefully informed by large
135 scale data.
- 136 ○ Erosion risk is primarily a function of slope steepness which
137 is already taken into account in terms of engineering
138 constraints but could also be a risk in areas that have or are
139 poorly managed and have lots of existing dongas/ rills/
140 gullies. The risk of erosion is higher in these areas as the
141 surfaces are already impacted.

² DAFF requested that Land Capability Class 8 be elevated to a high sensitivity class as most of the viable long-term farming takes place on Land Capability Class 8.

1 **2.2.6 Sensitivity Maps**

2 Sensitivity maps (Maps 1, 2 and 3) were produced for Eastern and Western Expanded EGI Corridors according to the criteria set out in Table 3 to classify agricultural sensitivity spatially into four tiers namely, Very High, High, Medium and
3 Low.

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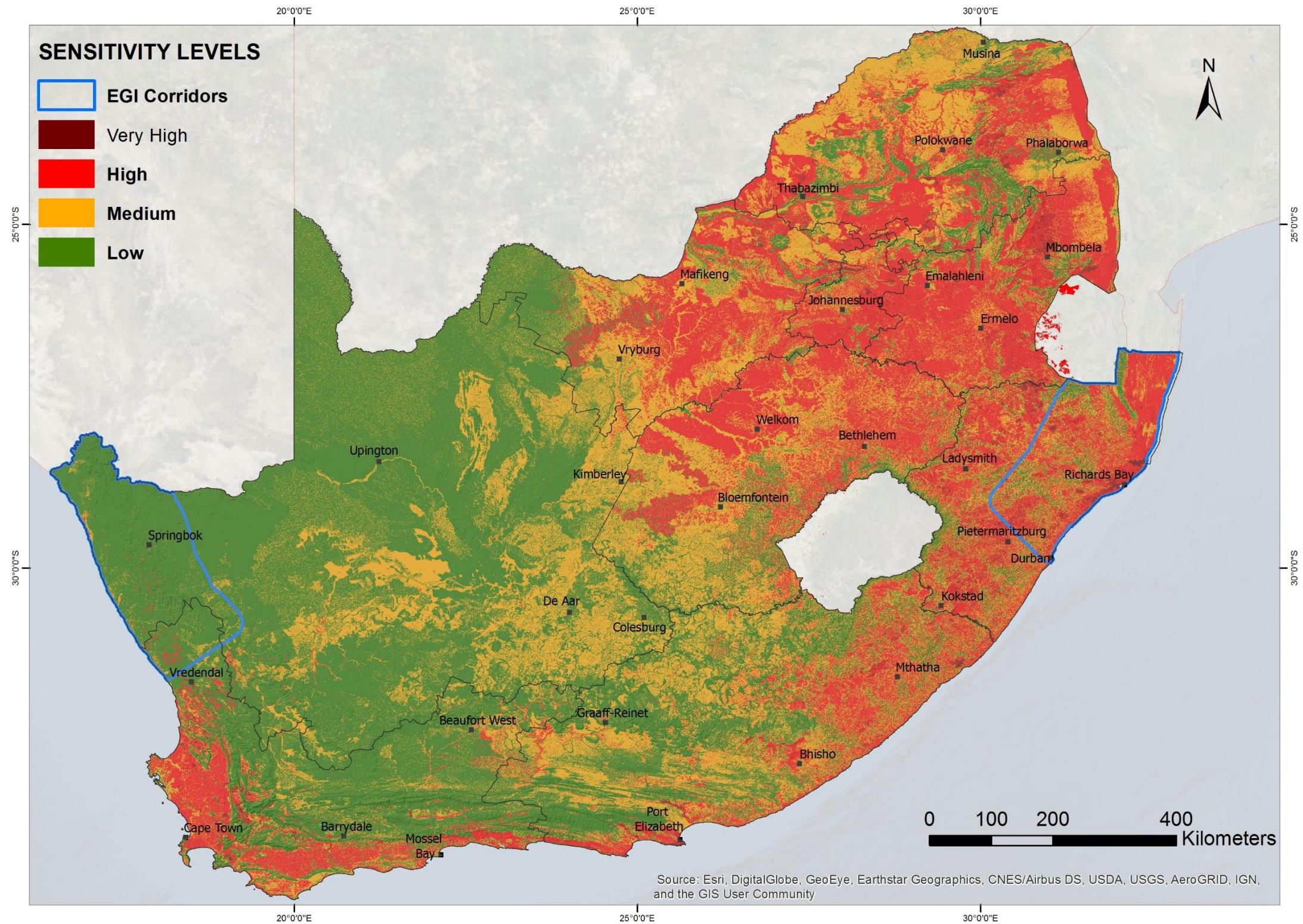
Table 3: Summary of Datasets used per Agricultural Feature in the 2018 EGI Expansion SEA as part of the Environmental Sensitivity Analysis

Sensitivity Feature	Data Source + Date of Publications	Data Preparation and Processing	Sensitivity
Pivots (Irrigated Areas)	Field crop Boundaries, DAFF, 2017	Extracted from field crop data.	Very High
Shadenet	Field Crop Boundaries, DAFF, 2017	Extracted from field crop data.	Very High
Horticulture >400 m (line traverse length)	Field Crop Boundaries, DAFF, 2017	Extracted surface area >16 hectares from field crop data.	Very High
Viticulture >400 m (line traverse length)	Field Crop Boundaries, DAFF, 2017 Land Cover (Viticulture), DEADP, 2014	Union process between field crop data and Land cover (viticulture) data. Surface area >16 hectares.	Very High
Land Capability Class 11 - 15	Land Capability, DAFF, 2016	Extracted from the Agricultural Land Capability data	Very High
Other cultivated fields/areas	Field Crop Boundaries, DAFF, 2017	Extracted from field crop data.	High
Horticulture <400 m (line traverse length)	Field Crop Boundaries, DAFF, 2017	Surface area <16 hectares.	High
Viticulture <400 m (line traverse length)	Field Crop Boundaries, DAFF, 2017 Land Cover (Viticulture), DEADP, 2014	Union process between filed crop data and Land cover (viticulture) data. Surface area < 16 hectares.	High
Land Capability Class 8 - 10	Land Capability, DAFF, 2016	Extracted from the Agricultural Land Capability data	High
Sugar Cane	KwaZulu-Natal Land Cover Sugar Cane Farming and Emerging Farming Data, 2011	Union process between Land Cover Sugar Cane Farming and Emerging Farming Data	Medium
Land Capability Class 6 - 7	Land Capability, DAFF, 2016	Extracted from the Agricultural Land Capability data	Medium
Land Capability Class 1 - 5	Land Capability, DAFF, 2016	Extracted from the Agricultural Land Capability data	Low
Natural Areas	National Land Cover, DEA, 2013/2014 Habitat Modification Layer (improved land cover), SANBI, 2017	Extracted from the land cover classes in the habitat modification layer representing natural features/ ecosystems	Low
Modified Areas	National Land Cover, DEA, 2013/2014 Habitat Modification Layer (improved land cover), SANBI, 2017	Extracted from the land cover classes in the habitat modification layer representing modified areas (e.g. urban areas, mining areas, industrial areas)	Low
Old Fields	Habitat Modification Layer (improved land cover), SANBI, 2017	Extracted from Habitat Modification Layer; old fields were mapped using aerial photographs to identify areas that were ploughed and left fallow before the 1990 land cover reference point.	Low

6

7 Note: These agricultural features are listed in their order of sensitivity.

8



Map 3: Combined Agriculture Sensitivity Map for EGI Development

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1 2.2.7 Impact Description and Mitigation

2 Agricultural impact is understood as “any impact that translates into
3 reduced agricultural production (including forestry). This may occur by
4 way of a degradation of the agricultural resource base or by way of a
5 direct disturbance to agricultural activities. The significance of
6 agricultural impacts increases as the agricultural productivity of the lands
7 (its agricultural sensitivity), the surface area of disturbed land and the
8 level of disturbance increases. In the case of EGI, even if the sensitivity is
9 high, impact is generally of low significance because both the surface
10 area of disturbed land and the level of disturbance is low. In most cases,
11 agriculture can continue largely undisturbed below power lines and the
12 actual footprint of impact is confined to only pylon bases and substations
13 and involves an extremely small proportion of the land surface”.

14
15 The potential negative impacts of EGI development on agriculture are
16 listed below, as per the 2016 Agriculture Assessment Report (DEA, 2016,
17 Section 9, Page 23-24):

- 18
19 • Loss of agricultural land use, caused by direct occupation of land by
20 the footprint of power line infrastructure, which removes the affected
21 land portions from agricultural production.
22 ○ Mitigation measure: Plan the fine-scale positioning of pylons,
23 access roads and construction camps to have minimal
24 disturbance on agricultural activities and agricultural land.
25 Pylons should be positioned on existing boundaries or edges
26 of agricultural units of land wherever possible, so as not to
27 interfere with agricultural activities within a unit.
28 • Loss of agricultural land use due to fragmentation of agricultural land
29 as a result of EGI, which can cause the division of fields and isolation
30 of land portions into non-viable small areas for cultivation. Such
31 fragmentation leads to an effective additional loss of agricultural
32 land over and above that lost to the direct footprint.
33 ○ Mitigation measure: As above.
34 • Limitation to the existence of plantation trees, wind break trees and
35 tall crop trees under power lines due to height restrictions. Exclusion
36 of wind breaks has the effect of reducing the environmental
37 suitability and therefore agricultural potential of affected land for
38 horticultural crops.
39 ○ Mitigation measure: Not possible.
40 • Disturbance to crop spraying by aircraft over land occupied by power
41 lines.
42 ○ Mitigation measure: Not possible.
43 • Soil erosion caused by alteration of run-off characteristics due to
44 vegetation removal and surface disturbance and compaction,
45 particularly on access roads and construction camps. The
46 disturbance of existing contour banks and drainage systems used for
47 erosion control, by construction activities on or near them, can also

48 cause erosion. Erosion causes loss and deterioration of soil
49 resources.

- 50 ○ Mitigation measure: Implement an effective system of run-off
51 control, where it is required, that collects and safely
52 disseminates run-off water from all hardened surfaces and
53 prevents potential down slope erosion. Soil surface
54 stabilising measures must be used if necessary on all areas
55 that are highly susceptible to erosion. Plan the fine-scale
56 positioning of pylons, access roads and construction camps
57 to avoid land that has contour banks. If any contour banks
58 are disturbed, fully restore their integrity and that of the run-
59 off system of which they are a part, after disturbance. The
60 effectiveness of the run-off control system and the
61 occurrence of any erosion on site or downstream must be
62 monitored. Corrective action must be implemented to the
63 run-off control system in the event of any erosion occurring;
64 • Degradation of vegetation beyond the direct footprint due to
65 construction disturbance, dust and vehicle trampling.
66 ○ Mitigation measure: Restrict all vehicle traffic within the
67 footprint of disturbance and control dust during construction.
68 • Loss of topsoil due to poor topsoil management (burial, erosion, etc.)
69 during construction related soil profile disturbance (levelling,
70 excavations, road surfacing etc.) and resultant decrease in the
71 capability of that soil to support plant growth.
72 ○ Mitigation measure: If an activity will mechanically disturb
73 below surface in any way, then any available topsoil should
74 first be stripped from the entire surface to be disturbed and
75 stockpiled separately for re-spreading during rehabilitation.
76 Topsoil stockpiles must be conserved against losses through
77 erosion by establishing vegetation cover on them. Dispose of
78 all subsurface spoils from excavations where they will not
79 impact on undisturbed land. During rehabilitation, the
80 stockpiled topsoil must be evenly spread over the entire
81 disturbed surface. Erosion must be controlled where
82 necessary on newly topsoiled areas, which are likely to be
83 susceptible to erosion.
84 • Disturbance to agricultural practices and management during
85 construction.
86 ○ Mitigation measure: Not possible.
87

88 2.2.8 EGI and Agricultural Consent

89 Eskom is currently exempt from agricultural consent for power line
90 servitudes. Developers do however have to apply for authorisation in
91 terms of the SALA for substations. As noted above, the new Draft
92 Preservation and Development of Agricultural Land Framework Bill, as it
93 is currently proposed, will change this and authorisation of all power line
94 servitudes will be required in terms of the Bill. Authorisation will require
95 ministerial approval and a comprehensive process if it involves any

96 cultivated land, and a slightly less rigorous process if it only involves
97 grazing land. The new Bill requires a fairly high minimum level of
98 assessment for all levels of risk to agricultural land. The registration
99 of the servitude needs to be done per farm portion. Long power lines
100 will more often than not traverse many portions, each of which would
101 need a separate agricultural authorisation. This is likely to complicate
102 and significantly lengthen the time required for power line servitude
103 approval.

104
105 With the foregoing in mind and due to the relatively low impact of EGI
106 development on agriculture, particularly within the Power corridors as
107 the proposed corridors are positioned to avoid agriculturally
108 important areas where there was a pinch point for very high
109 sensitivity, this section of the report recommends, for EGI
110 development, an alternative process for agricultural assessment to
111 that proposed in the Draft Preservation and Development of
112 Agricultural Land Framework Bill. Much of the Western corridor land
113 is in areas of extremely low agricultural potential, such as the Karoo
114 and Northern Cape, where there is negligible risk to agriculture from
115 EGI developments.

116
117 The Bill may therefore need to make provision for such a process for
118 EGI development. The current situation does recognise such a
119 difference for power line servitudes, for which Eskom, for example, is
120 exempt from agricultural authorisation in terms of the existing SALA.
121 It would be recommended to extend that exemption to other
122 developers too.

123
124 This report recommends that the process of agricultural authorisation
125 for EGI development inside the Power Corridors triggering either a
126 Basic Assessment or Environmental Impact Assessment process in
127 terms of National Environmental Management Act 107 of 1998 (as
128 amended) is done in terms of an exemption from the requirements
129 stipulated in the Bill, and that an Agricultural Compliance Statement
130 be prepared by a soil scientist/agricultural specialist registered with
131 the South African Council for Natural and Scientific Professions
132 (SACNASP), on the site being submitted as the preferred development
133 site. The compliance statement must indicate whether or not the
134 proposed development will have an unacceptable negative impact on
135 the agricultural production capability of the site. Such a statement
136 should also focus on and clearly highlight, only the essential aspects
137 that are important for the preservation of agriculturally productive
138 land within EGI developments rather than insist, as the Bill does, on a
139 detailed agro-ecosystem report, much of which might be irrelevant
140 under conditions of low agricultural productivity. These essential
141 aspects making up the recommended way forward are briefly
142 presented in Table 4 and will be included in the decision support
143 outputs currently under development as part of this SEA.
144

1 **2.2.9 Interpretation of Sensitivity Maps**

2 As discussed in section 2.2.7, the agricultural impacts of EGI, even where agricultural sensitivity may be high, are generally of low significance because of the low disturbance of EGI to agriculture. Table 4 provides information on the
 3 interpretation of the agricultural sensitivity and associated assessment requirements inside the EGI Expansion Corridors.

4
 5

Table 4: Interpretation of Agricultural Sensitivity and associated Assessment Requirements inside of the Power Corridors

Sensitivity Class	Interpretation of Sensitivity	Further assessment requirements for EGI developments
Very High Land capability evaluation values 11 – 15; all irrigated land; horticulture and viticulture; demarcated high value agricultural areas with a priority rating of A and/or B.	Potentially unsuited to development owing to: <ul style="list-style-type: none"> • high agricultural value and preservation importance; • high production capability; • high capital investment made; and • unique agricultural land attributes. 	It is recommended that an Agricultural Compliance Statement be prepared by a soil scientist/agricultural specialist registered with the SACNASP, on the site being submitted as the preferred development site and indicates whether or not the proposed EGI development (with self-supporting electricity pylons) will have an unacceptable negative impact on the agricultural production capability of the site. The Agricultural Compliance Statement must contain, as a minimum, the following information: <ol style="list-style-type: none"> 1. Details and relevant expertise as well as the SACNASP registration number of the soil scientist/agricultural specialist preparing the statement including a curriculum vitae; 2. A signed statement of independence by the specialist; 3. A map showing the proposed development footprint (including supporting infrastructure) with a 50 m buffered development envelope, overlaid on the agricultural sensitivity map generated by the national web based environmental screening tool; 4. Calculations of the total development footprint area for each land parcel as well as the total footprint area of the development (including supporting infrastructure); 5. Confirmation from the specialist that all reasonable measures have been taken through micro-siting to avoid or minimize fragmentation and disturbance A substantiated statement from the soil scientist/agricultural specialist on the acceptability of the development and a recommendation on the approval or not of the development (i.e. impacts to the agricultural resource are temporary and the land in the opinion of the soil scientist/agricultural specialist based on the mitigation and remedial measures, can be returned to the current land capability within two years of the completion of construction phase); 6. Any conditions to which the statement is subjected; 7. Where required, proposed impact management outcomes or any monitoring requirements for inclusion in the Environmental Management Programme (EMPr); and 8. A description of the assumptions made and any uncertainties or gaps in knowledge or data. If this statement is subject to any conditions these must also be clearly stated; and where required, proposed mitigation measures for inclusion in the EMPr.
High Land capability evaluation values 8 - 10 including all cultivated areas including sugar cane areas and demarcated high value agricultural areas with a priority rating of C and/or D.	Avoid where possible because it will lead to some disturbance and loss of existing or potential agricultural (or forestry) production. High sensitivity areas are still preservation worthy since they include land with an agricultural production potential and suitability for specific crops.	
Medium Land capability evaluation values 6 – 7. Likely to be very marginal arable land.	Re-route onto lower sensitivity agricultural land (where possible and where all other factors are equal) because it will lead to very minor disturbance and loss of existing or potential agricultural production.	
Low Land capability evaluation values 1 – 5.	Insignificant impact on agriculture. Likely to be non-arable land, and is therefore land onto which most development should be steered.	

6
 7

1 2.3 Defence and Civil Aviation

2 2.3.1 Introduction and Scope

3 The South African National Defence Force (SANDF) uses an extensive
4 system of military airspace and land assets in order to prepare and train
5 combat-ready forces. Furthermore, it also operates radar systems
6 designed to protect the sovereignty of the national borders and to detect
7 threats to national security. The SANDF falls under the Department of
8 Defence (DoD) and comprises four armed services, namely: Army, Air
9 Force, Navy and Military Health Service.

10

11 Civil aviation on the other hand is governed by the Civil Aviation Act (Act
12 13 of 2009) and the South African Civil Aviation Authority (SACAA) is
13 mandated with controlling, promoting, regulating, supporting, developing,
14 enforcing and continuously improving levels of safety and security
15 throughout the civil aviation industry. All proposed developments or
16 activities in South Africa that potentially could affect civil aviation must
17 thus be assessed by SACAA in terms of the South African Civil Aviation
18 Regulations (SACARs) and South African Civil Aviation Technical
19 Standards (SACATS) in order to ensure aviation safety. The Obstacle
20 Evaluation Committee (OEC) which consists of members from both the
21 SACAA and South African Air Force (SAAF) fulfils the role of streamlining
22 and coordinating the assessment and approval of proposed
23 developments or activities that have the potential to affect civil aviation,
24 military aviation, or military areas of interest. With both being national
25 and international priorities, the OEC is responsible for facilitating the
26

26 coexistence of aviation and EGI development, without compromising
27 aviation safety.

28

29 The sensitivity analysis of defence and civil aviation features towards the
30 development of EGI is primarily a desktop study based on the Defence
31 study and Civil Aviation study undertaken as part of the 2016 EGI SEA
32 (Part 3: Chapters 6 & 7 (DEA, 2016)). It has also been supplemented
33 with information gathered from discussions and meetings with the DoD,
34 ARMSCOR and the SANDF.

35

36 The various defence and civil aviation features to be taken into
37 consideration when locating EGI are listed in Table 5 below.

38

39 2.3.2 Sensitivity Analysis and Mapping

40 In accordance with discussions with the military, DoD, ARMSCOR and the
41 SANDF, areas of interest were mapped and appropriately buffered as
42 shown in Table 5. Sensitivity maps (Maps 4 and 5) were delineated
43 according to these criteria. Most of the sensitivity features noted in Table
44 5 below are military areas, where access is limited, and have been
45 highlighted as a result of the potential impact of EGI on these features.

46

47 2.3.3 Impact Description

48 Impacts of EGI on defence and civil aviation activities could result from
49 interference with surveillance radars and communication systems, or if

50 any structures associated with the EGI potentially create obstacles for
51 military aviation or ground activities. The size of power line infrastructure,
52 sometimes protruding greater than 60 m above ground level, poses a
53 physical obstacle risk for aviation, especially in the Air Force's low flying
54 areas. The size and nature of power line infrastructure may furthermore
55 lead to the blocking and cluttering of surveillance and communication
56 signals. Any interference with SANDF surveillance radar would
57 compromise the safeguarding of coastlines, national borders, military
58 airspace or other militarily sensitive areas.

59

60 In South Africa all structures taller than 15 metres above ground level
61 must be assessed and registered as potential obstacles to aviation in the
62 Electronic Terrain and Obstacle Database (eTOD). With power lines
63 reaching heights of beyond 60 m above ground level in some instances,
64 they present a real danger to aviation, especially if sited in close
65 proximity to aerodromes. It is for this reason that the safeguarding of the
66 areas around aerodromes is important and that specific safety
67 requirements (e.g. lighting and markings) are applicable to power lines
68 considered a danger to aviation.

69

70 The main potential impact of EGI would be the height and routing of
71 power lines in the vicinity of aerodromes, especially where these may
72 cross through the approach or departure paths.

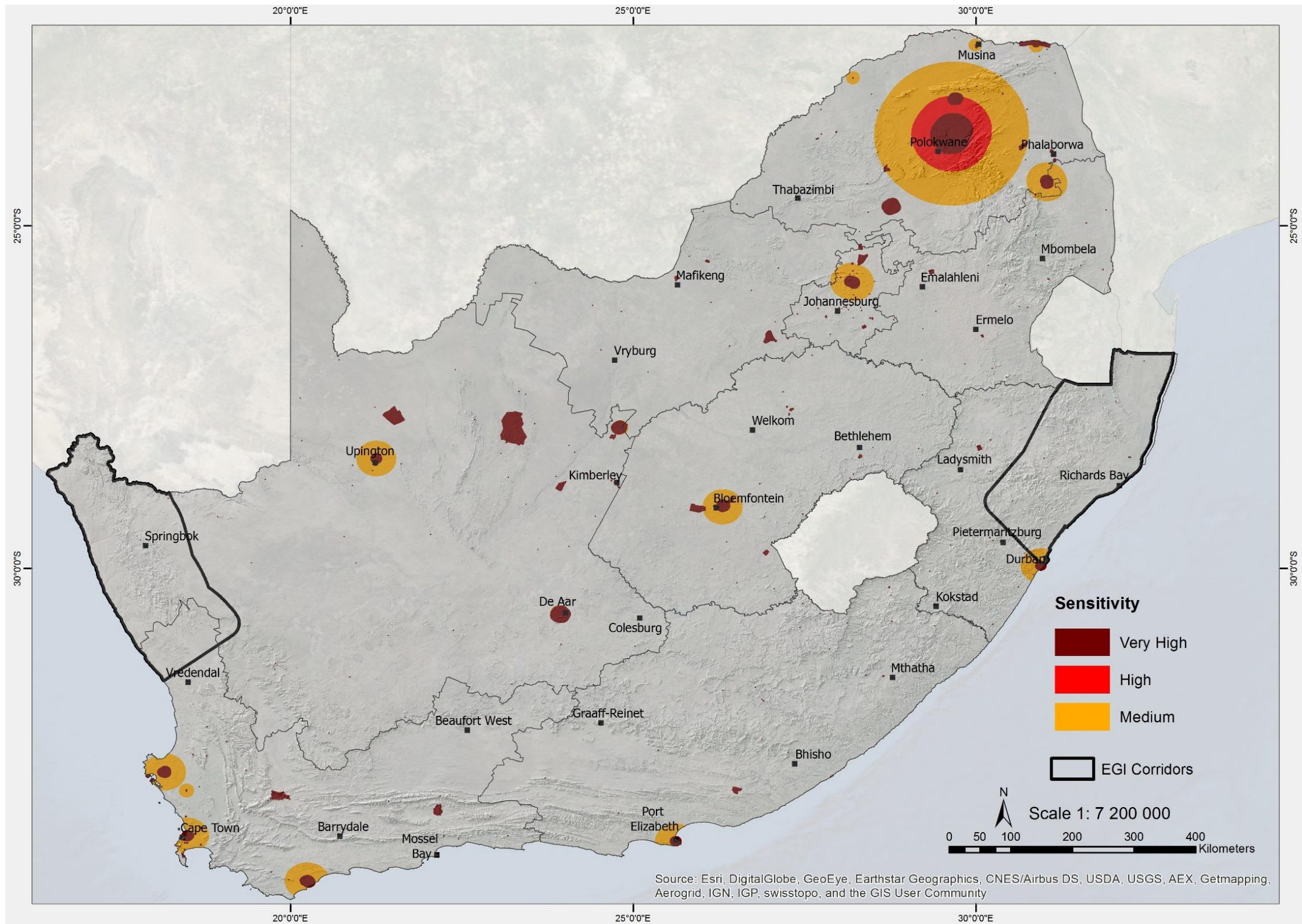
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74

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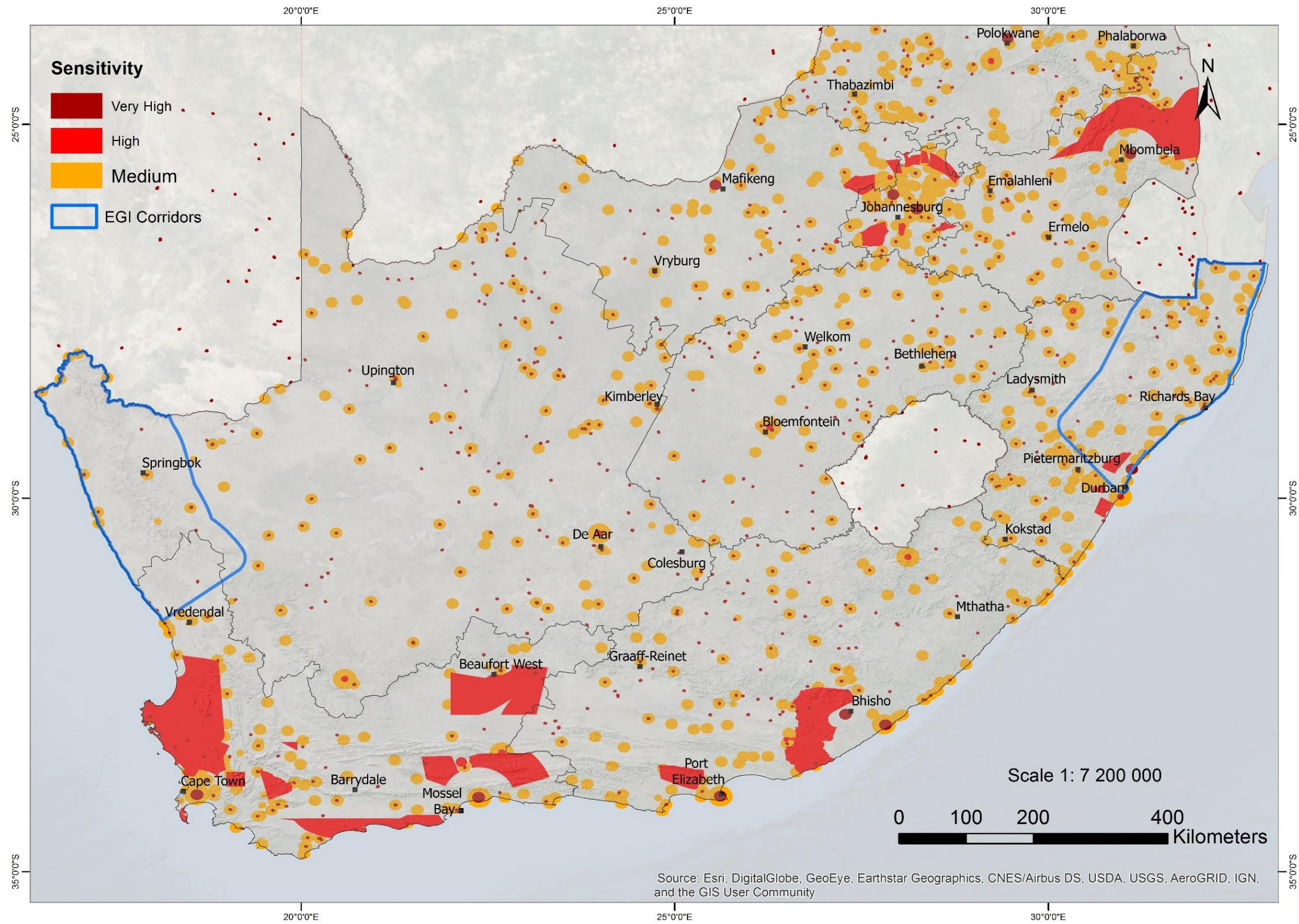
Table 5: Defence and Civil Aviation Sensitivity Criteria

Sensitivity Feature	Data Source	Sensitivity Mapping Application
Defence		
Forward Airfields	SANDF, 2017	Very High – 1 km buffer Medium – 10 km buffer
Air Force Bases -including air force training ranges	SANDF, 2017	Very High – 8 km buffer Medium – 28 km buffer
High Sites	SANDF, 2017	Very High – 1 km buffer
Operational Military Bases	SANDF, 2017	Very High – 1 km buffer
Military Training Areas	SANDF, 2017	Very High – 1 km buffer
Bombing Ranges	SANDF, 2017	Very High – 28 km buffer High – 28 – 56 km buffer Medium – 56 – 111 km buffer
Shooting Ranges	SANDF, 2017	Very High - 1 km buffer
Border Posts	SANDF, 2017	Very High – 1 km buffer
All Other DoD features (including Naval Bases, Housing, Offices, workshops etc.)	SANDF, 2017	Very High – 1 km buffer
Ammunition depots	SANDF, 2017	Very High – 10 km buffer
Civil Aviation		
Major Airports	SACAA	Very High – 8 km buffer Medium – 15 km buffer
Landing Strips	SACAA	Very High – 2 km buffer
Other Civil Aviation Aerodromes (Small Aerodromes)	SACAA	Medium – 8 km buffer
Civil Aviation Radars	SACAA	High – 4.6 km Medium – 15 km
Air Traffic Control and Navigation Sites	ATNS	Medium – 5 km
Danger and Restricted Airspace	SACAA	High - as demarcated



Map 4: Defence sensitivity map for EGI Development in the Expanded Western and Eastern EGI Corridors

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Map 5: Civil Aviation sensitivity map for EGI Development in the Expanded Western and Eastern EGI Corridors

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1 **2.3.4 Interpretation of Sensitivity Maps**

2 The OEC, under the chairmanship of the Senior Staff Officer Air Traffic Management of the Air Force, is responsible for streamlining and coordinating the approvals for the construction of potential aviation obstacles in the vicinity of
 3 military areas of interest. The OEC consists of members from both the Air Force and the SACAA, and is mandated to make final recommendations to the Deputy Chief of the Air Force regarding the approval of obstacles that might affect
 4 Air Force activities. Due to the complexity of impacts potentially posed by obstacles on aviation, surveillance, communication, and other military activities, all proposed EGI facilities must be evaluated by this committee. Even in instances
 5 where the distance from the nearest area of military interest may seem far enough for it not to have an impact, there is still potential for electromagnetic interference with communication, surveillance, or other military services.

6
 7 Therefore without being able to guarantee that any development will not be found to have an unacceptable impact on military features without confirmation by OEC, the sensitivity maps illustrated in this section (Maps 4 and 5) do not
 8 indicate where development can or cannot proceed. Instead, the main objective of this section is to identify high risk areas for development in the context of defence features. This way, developers are able to plan to avoid sensitive
 9 defence related features at the earliest stage of development planning, and in so doing, minimise the risk of a negative decision, project delays or increased project costs as a result of the potential interference of the proposed
 10 development with defence services.

11
 12 Therefore the initial assessment requirements for EGI projects located anywhere within the country are the same, as specified in Table 6 below, regardless of the sensitivity. However developers are encouraged to plan development in low
 13 sensitivity areas to reduce the risk of encountering a defence related issue when seeking approval from the OEC.

14 **Table 6: Interpretation of defence and civil aviation sensitivity maps**

Sensitivity Class	Interpretation	Recommendations at project level
Very High (dark red)	In Very High sensitivity areas there is a high likelihood for significant negative impacts on the defence installation or vice versa. In-depth assessment of the potential impacts and mitigation measures is likely to be required before development can be considered in these areas.	Proponents intending to develop EGI anywhere in South Africa that triggers the need for an environmental assessment process must ensure that the proposed development will not have an unacceptable negative impact on defence and civil aviation activities. In order to do so, the proponent must request a comment in writing from the OEC and/or from the SACAA, which may include inputs from the OEC confirming no unacceptable impact on military areas of interest.
High (red)	In High sensitivity areas there is potential for negative impacts on the defence installation that can potentially be mitigated. Further assessment may be required to investigate potential impacts and mitigation measures.	Inputs from the OEC/SACAA, if provided within prescribed timeframes in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, will be considered by the relevant competent authority for decision making. If no inputs are provided by the OEC within the prescribed timeframes, then the Environmental Assessment Practitioner (EAP) must provide evidence of engagement with the relevant officials at the OEC and timeous requests for inputs.
Medium (orange)	In Medium sensitivity areas there is a low potential for negative impacts on the defence installation, and if there are impacts there is a high likelihood of mitigation. Further assessment of the potential impacts may not be required.	
Low (green)	No significant impacts are expected in low sensitivity areas. It is unlikely for further assessment and mitigation measures to be required.	Proponents must receive authorisation for the proposed development from the OEC and/or SACAA.

16
 17
 18

1 **2.4 Heritage**

2 **2.4.1 Introduction and Scope**

3 As for the above two issues, the sensitivity analysis of heritage features
 4 was mainly founded on the Heritage Assessment Report (Appendix C.4 of
 5 the 2016 EGI SEA Report) (DEA, 2016). Information was mainly sourced
 6 from the latest heritage resources dataset (December 2018) provided by
 7 South African Heritage Resources Agency (SAHRA). Further consultations
 8 with relevant authorities such as the South African Heritage Resources
 9 Agency (SAHRA) was undertaken to confirm applicable buffers and
 10 sensitivities.

11 **2.4.2 Approach: Data Sources, Legislation, Assumptions and
 12 Limitations**

13 The main source of information is data on heritage sites provided by
 14 SAHRA in February 2019. This data includes national and provincial data,
 15 as well as local data up to December 2018. The list of updated data used
 16 in this current EGI Expansion SEA is indicated in Table 7 below.
 17 Assumptions and limitations applicable to this assessment are provided
 18 in Table 8.

19 **Table 7: Heritage Datasets**

Data title	Source and date of publication	Data Description
Mapped Heritage Features	SAHRA, 2018	Heritage sites and features curated by SAHRA
World Heritage Sites and related buffer zones	South African Protected Areas Database (SAPAD) - Q4, 2017	World Heritage sites
Geological Features and Substrates of Palaeontological Importance, Geology layer	Council for Geosciences, 2014	Specific geological types of potential heritage importance

21 **Table 8: Assumptions and limitations**

Limitation	Included in the scope of this study	Excluded from the scope of this study	Assumption
Data availability	Latest dataset provided by SAHRA was used (data up to December 2018) but a large amount of published and	Field verification of datasets and outcomes, and extensive local expert consultation -	Data provided by SAHRA comprise the majority of the data potentially available.

Limitation	Included in the scope of this study	Excluded from the scope of this study	Assumption
	unpublished data has not been uploaded.	study area widely scattered.	
Unavailability of the palaeosensitivity map to include in the sensitivity analysis	-	Further field assessment and/or desktop work to verify and correct the sensitivity levels described	The palaeosensitivity map contains the most updated information and currently needs to be accessed online.

23
 24 The relevant regulatory instruments are listed in Table 9 below.

25 **Table 9: Applicable Legislation for Heritage**

Instrument	Key objective	Feature
International Instrument		
Unesco Convention on the Protection of World Cultural and Natural Heritage, 1972 (applicable in all corridors)	Protection of natural and cultural heritage sites which demonstrate importance for all the people of the world	Declared World Heritage Sites: Cape Floral Region Protected Areas ³
National Instrument		
National Heritage Resources Act 25 of 1999 (applicable in all corridors)	Identification, management, protection, conservation and promotion of the national heritage resources within the country	All heritage sites except for World Heritage Sites
National Environmental Management: Protected Areas Act 57 of 2003	Protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascape	World Heritage Sites
Integrated Coastal Management Act 24 of 2008	Promotion, conservation and sustainable development of the coastal environment	Heritage sites within 1km of the coastline
National Environmental Management Act 107 of 2002	Environmental governance within the country	Heritage sites identified during the

³The Cape Floral Region Protected Areas is declared as a 'natural' heritage site by Unesco but it is not subjected to the same treatment as other heritage sites in South Africa by Heritage Western Cape and SAHRA.

Instrument	Key objective	Feature
1998, as amended (NEMA)		environmental process
Provincial Instrument		
KwaZulu-Natal Heritage Act 4 of 2008 (applicable in that part of the Expanded Eastern EGI Corridor falling within KZN)	Conservation, protection and administration of both the physical and the living or intangible heritage resources of the Province of KwaZulu-Natal	Heritage sites falling within the boundaries of KZN

27
 28 The National Heritage Resources Act (Act 25 of 1999) (NHRA) is
 29 considered most relevant, as it protects many heritage resources as
 30 follows:

- 31
- 32 • Section 34: structures older than 60 years;
 - 33 • Section 35: palaeontological, prehistoric and historical material
 34 (including ruins) more than 100 years old;
 - 35 • Section 36: graves and human remains older than 60 years and
 36 located outside of a formal cemetery administered by a local
 37 authority; and
 - 38 • Section 37: public monuments and memorials.

39
 40 Section 38 (1) of the NHRA states the following:

- 41
- 42 • Subject to the provisions of subsections (7), (8) and (9), any
 43 person who intends to undertake a development categorised as:
 44 ○ (a) the construction of a road, wall, **powerline**, pipeline,
 45 canal or other similar form of linear development or
 46 barrier exceeding 300m in length;
 - 47 ○ (b) the construction of a bridge or similar structure
 48 exceeding 50 m in length;
 - 49 ○ (c) any development or other activity which will change
 50 the character of a site – (i) exceeding 5 000 m² in extent;
 51 or (ii) involving three or more existing erven or
 52 subdivisions thereof; or (iii) involving three or more erven
 53 or divisions thereof which have been consolidated within
 54 the past five years; or (iv) the costs of which will exceed a
 55 sum set in terms of regulations by SAHRA or a provincial
 56 heritage resources authority;
 - 57 ○ (d) the re-zoning of a site exceeding 10 000 m² in extent;
 58 or
 - 59 ○ (e) any other category of development provided for in
 60 regulations by SAHRA or a provincial heritage resources
 61 authority;

62 must at the very earliest stages of initiating such a development,
 63 notify the responsible heritage resources authority and furnish it

1 with details regarding the location, nature and extent of the proposed
2 development.”

3
4 Section 38 (2a) states that if there is reason to believe that heritage
5 resources will be affected then an impact assessment report must be
6 submitted by the Applicant to the relevant Heritage Authority. This is
7 usually the case for EGI development. Therefore, since a specific HIA will
8 be required prior to development of EGI on a project specific basis, a
9 dedicated HIA was not undertaken at this SEA level. Instead, a review of
10 existing literature captured for the previous SEAs, as well as a general
11 sensitivity analysis has been undertaken for this current SEA.

12
13 Grading of sites is necessary for heritage management as it is a legal
14 requirement towards the formal protection of sites and informs the
15 requirements for the management of generally protected sites. Any
16 heritage site which is part of the national estate as defined in Section 3
17 of the NHRA should be graded according to its significance. In South
18 Africa, grading has three associated components, namely the
19 geographical range of a site's significance (international, national,
20 provincial/regional or local), the level of significance (High, Medium or
21 Low) and the heritage authority with the delegated powers to manage the
22 site. The grading of heritage sites which form part of the national estate
23 is specified in Section 7 of the NHRA as follows:

- 24
- 25 • (a) Grade I: Heritage resources with qualities so exceptional that they
26 are of special national significance;
 - 27 • (b) Grade II: Heritage resources which, although forming part of the
28 national estate, can be considered to have special qualities which
29 make them significant within the context of a province or a region;
30 and
 - 31 • (c) Grade III: Other heritage resources worthy of conservation.

32
33 SAHRA is the national authority and manages Grade I sites only;
34 Provincial Heritage Resources Authorities (PHRAs) manage Grade II and
35 Grade III sites. Only one municipality, the City of Cape Town Metropolitan
36 Municipality, has obtained limited powers to manage Grade III resources
37 from Heritage Western Cape. Grade III sites have three subcategories
38 according to their level of local significance. IIIa (high), IIIb (medium) and
39 IIIc (low). These sites are significant at the local level and the type of
40 mitigation allowed at these sites varies from destruction (IIIc) or
41 extensive mitigation (IIIb) to general avoidance and minimal modification
42 (IIIa). Grade IIIa sites are of such a high local significance that they
43 should be protected and retained. Grade IIIb sites are heritage resources
44 rated with medium local significance. They should preferably be retained
45 where possible, but, where developments cannot be realigned or moved,
46 mitigation is normally allowed. Grade IIIc sites are of low local
47 significance. These resources must be recorded satisfactorily before
48 destruction is allowed.

49

50 The majority of the Provincial Heritage Sites were declared as National
51 Monuments under the National Monuments Act of 1969. These sites are
52 mainly buildings located within the urban edge of various towns and
53 cities across the country.

54
55 There are two useful guides which explain the grading process in more
56 detail:

- 57 • the Heritage Western Cape Short Guide to and Policy Statement on
58 Grading issued in 2012⁴
- 59 • the SAHRA Minimum Standards for Archaeological and
60 Palaeontological Impact Assessments issued in 2007⁵.

61
62 Refer to Section 5 of the 2016 Heritage Assessment Report (DEA, 2016)
63 for a detailed description of the study methodology, assumptions and
64 limitations undertaken as part of the 2016 SEA. It must be noted that
65 detailed sensitivity analysis was not undertaken as part of this current
66 SEA given that, regardless of the sensitivity of the site, the developer will
67 be required to carry out, at least, a Phase 1 HIA.

68
69 The list of data used in this current EGI Expansion SEA is indicated in
70 Table 7.

71

72 2.4.3 Impact Description and Mitigation

73 The information presented in this section is based on the 2016 Heritage
74 Assessment Report (DEA, 2016).

75

76 The integrity and significance of heritage resources can be jeopardized in
77 two ways i.e. by natural forces such as erosion or anthropogenic forces
78 such as development activities. EGI developments have the potential to
79 impact on heritage resources through physical disturbance during
80 construction or by changing the wider landscape context.

81

82 Physical impacts to heritage resources in the context of EGI development
83 can take the form of excavations for pylons, substations or in some cases
84 new roads. The potential physical impacts are greatly dependent on the
85 micro-siting of the infrastructure. Although it is possible to identify and
86 protect known and above ground heritage resources (e.g. cultural sites
87 and historical structures), it is more challenging to assess the potential
88 impacts on unknown and underground heritage resources (e.g. the
89 potential presence of fossils or middens). Even at a project level it is
90 difficult to identify and confirm such heritage resources prior to
91 excavation.

92

⁴https://www.westerncape.gov.za/other/2012/9/grading_guide_&_policy_version_5_app_30_may_2012.pdf

⁵ <http://www.sahra.org.za/sahris/sites/default/files/website/articledocs/ASG2-2%20SAHRA%20A%26PIAs%20MIN%20STDS%20Ph1-2%2016May07.pdf>

93 2.4.4 Sensitivity Analysis and Mapping

94 Given the diverse nature of impacts presented by EGI to heritage
95 resources, heritage sensitivity inside the Expanded EGI Corridors was
96 delineated according to two heritage categories, namely: 1)
97 Palaeontological and 2) Non-Palaeontological (referring to
98 archaeology and other heritage resources e.g. graves). The heritage
99 features that would be impacted by EGI development and their
100 relative sensitivities are indicated in Tables 10 and 11. Landscapes
101 were considered separately in the Visual Impact Assessment study.

102

103 Palaeontological resource sensitivity was largely inferred through the
104 use of geological maps depicting formations likely to contain fossils.
105 Features taken into consideration to create the four-tier sensitivity
106 map are:

107

- 108 • Palaeontological sites with buffers as indicated below; and
- 109 • SAHRIS palaeosensitivity map consisting of a range of six
110 sensitivity levels and related recommendations.

111

112 The occurrence of Non-Palaeontological resources is much less
113 predictable and cannot be discounted through desktop assessment
114 alone, unless the area has already undergone a detailed HIA.
115 Features taken into consideration to create the four-tier sensitivity
116 map are:

117

- 118 • The heritage sites (excluding palaeontological sites) as provided
119 by SAHRA (February 2019).

120

121 Natural features such as rivers, wetlands and pans; as well as
122 Koppies, mountainous areas and coastlines are often foci of
123 prehistoric and historic settlement and may therefore contain
124 important heritage resources. These natural features, although
125 potentially important location for heritage resources, have not been
126 included in this sensitivity map given that the proposed sensitivity
127 zones (buffers) around those natural features were found to be of
128 similar magnitude (and often smaller) than those set as part of the
129 environmental sensitivity analysis.

130

131 On 9 May 2018, the SAHRA provided the following feedback with
132 regards to sensitivity zones for heritage sites to be used for the EGI
133 Expansion SEA mapping exercise. The feedback from SAHRA serves
134 as guidance for the delineation of the EGI Expansion project with
135 regards to sensitivity zones surrounding heritage resources, and does
136 not constitute a legal exclusion zone as per Sections 27, 28, 29, 31,
137 34, 35, 36 and 37 of the NHRA. In addition, the recommended buffer
138 zones noted below only apply to heritage resources under the
139 jurisdiction of SAHRA. SAHRA has recommended that guidance on
140 sensitivity buffer zones for heritage resources that fall under the
141 jurisdiction of the PHRAs must be sought from the relevant PHRAs.

1 The proposed sensitivity zones for heritage resources apply to:
2
3 • officially graded heritage resources as per Section 7 of the NHRA;
4 • officially declared sites as per Section 27 of the NHRA; and
5 • sites provided a field rating as per the 2007 SAHRA Minimum
6 Standards: Archaeological and Palaeontological components of
7 Impact Assessments.
8
9 The proposed sensitivity zones (buffers) around identified heritage
10 resources, as recommended by SAHRA, are as follows:
11
12 • Grade 1: 2 km from either the official point or official boundary of the
13 site;
14 • Grade 2: 1 km from either the official point or official boundary of the
15 site;
16 • Grade 3a: 150 m from the provided point;
17 • Grade 3b: 100 m from the provided point;

18 • Grade 3c: 50 m from the provided point; and
19 • Ungraded/no field rating provided: 100 m from the provided point.
20
21 According to SAHRA, the above sensitivity zones do not exclude
22 development occurring within those areas however, should development
23 be planned to occur in the area, more intensive mitigation measures may
24 be necessary. Depending on the sensitivity of the heritage resources, the
25 development in or near the proposed buffer zones will be subject to
26 footprint amendments based on the findings of a HIA.
27
28 SAHRA noted that the various heritage site taxonomy i.e. archaeological
29 sites, palaeontological sites, built environment sites, burial grounds and
30 monuments, underwater heritage sites, were not used to further
31 separate the categories of heritage, as the variable involved with the
32 sites are too large to employ at the current high-level mapping exercise..
33 The EGI Expansion Corridors were mapped separately for
34 Palaeontological sensitivity and Non-Palaeontological sensitivity. The two

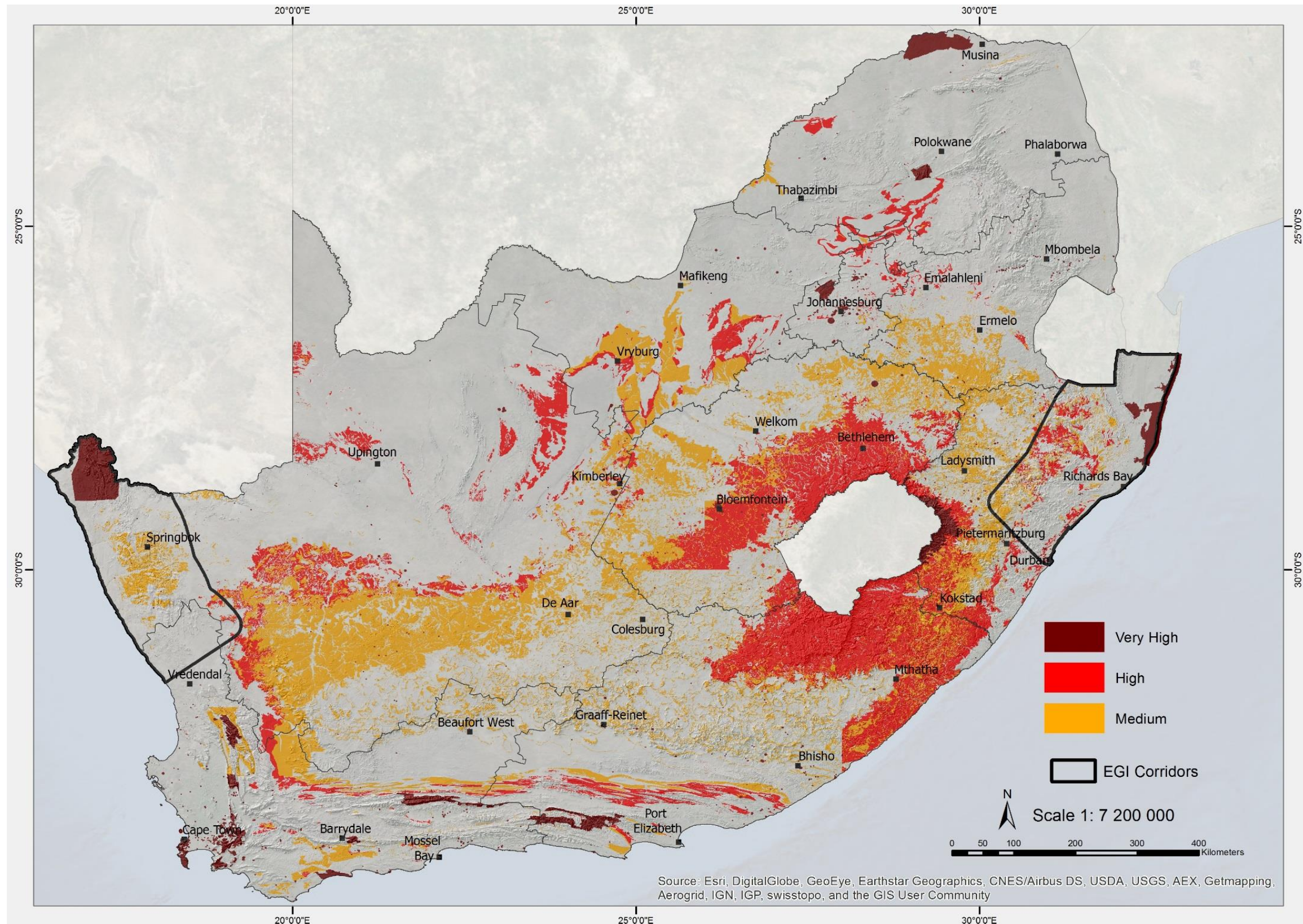
35 mapping outputs were then integrated into a combined mapping
36 output, by retaining the highest sensitivity rating between the two
37 sensitivity maps for all areas within the corridors. The combined
38 sensitivity map is symbolic of overall heritage sensitivity inside of
39 each EGI Expansion Corridor.
40
41 Sensitivity maps (Palaeontological resources and non-
42 palaeontological resources) were produced for the Eastern and
43 Western Expanded EGI Corridors according to the criteria set out in
44 Tables 10 and 11 to classify heritage sensitivity spatially into four
45 tiers namely, Very High, High, Medium and Low (Map 6).
46
47 From a heritage perspective, Grade 1, 2, and 3 sites have been
48 considered as sites that have a mapped heritage feature present,
49 and these areas will be avoided during EGI design, construction and
50 maintenance.
51

Table 10: Summary of sensitive heritage (including palaeontology) features, datasets and process of preparing data

Sensitivity Feature	Data Source and Date of Publications	Data Preparation and Processing	Sensitivity
World Heritage Sites and related buffer zones	South African Protected Areas Database (SAPAD) - Q4, 2017	Union between World heritage sites as part of SAHRA, 2018 layer and South African Protected Areas Database (SAPAD) - Q4, 2017 Buffer and core areas used as in data set	Very High - within defined buffer zone
Grade I sites	Mapped Heritage Features, SAHRA, 2018	As extracted from the SAHRA, 2018 layer	Very High – 2 km buffer
Grade II sites	Mapped Heritage Features, SAHRA, 2018		Very High – 1 km buffer
Grade IIIa sites	Mapped Heritage Features, SAHRA, 2018		High – 150 m buffer
Grade IIIb sites	Mapped Heritage Features, SAHRA, 2018		High – 100 m buffer
Grade IIIc sites	Mapped Heritage Features, SAHRA, 2018		High – 50 m buffer
Ungraded sites	Mapped Heritage Features, SAHRA, 2018		Very High – 100m buffer
Battlefields (Grade IIIb)	Mapped Heritage Features, SAHRA, 2018		Very high – 5 km buffer
SAHRIS PalaeoSensitivity map - Formations of very high sensitivity (red)	SAHRIS PalaeoSensitivity Map	These features will be included in the sensitivity map as soon as it is made available to the SEA Project team. Currently only available online (SAHRIS website)	Very High
SAHRIS PalaeoSensitivity map - Formations of high sensitivity (orange/yellow)			High
SAHRIS PalaeoSensitivity map - Formations of moderate and unknown sensitivity (green/white)			Medium
SAHRIS PalaeoSensitivity map - Formations of low and insignificant sensitivity (blue)			Low
Palaeontological Substrate and Heritage Resources: High Sensitivity Areas: <ul style="list-style-type: none"> • ADELAIDE • ASBESTOS HILLS • BOEGOEBERG DAM • BOTHAVILLE • BRULSAND • CAMPBELL RAND • CLARENS • DRAKENSBERG • DWYKA • ECCA • KOEGAS • KUIBIS • MATSAP • MOLTENO • PRINCE ALBERT • RIETGAT • ELLIOT • ENON • GHAAP • SCHMIDTDRIF • SCHWARZRAND • STALHOEK • SULTANAORD • TARKASTAD • VRYBURG • WHITEHILL • WITTEBERG • KAMEELDOORNS 	Geology – Known to potentially have Palaeontological features from previous assessments Council for Geosciences, 2014	As extracted from geology layer	High

Sensitivity Feature			Data Source and Date of Publications	Data Preparation and Processing	Sensitivity
Palaeontological Substrate and Heritage Resources: Medium Sensitivity Areas:			Geology – Known to potentially have Palaeontological features from previous assessments Council for Geosciences, 2014	As extracted from geology layer	Medium
<ul style="list-style-type: none"> • ACHAB • ALLANRIDGE • BIDOUW • BREDASDORP • CERES • CONCORDIA GRANITE • DWYKA • FORT BROWN • GESELSKAPBANK • GLADKOP • GRAHAMSTOWN • HARTEBEEEST PAN • GRANITE 	<ul style="list-style-type: none"> • KOOKFONTEIN • KORRIDOR • MESKLIP GNEISS • MODDERFONTEIN • GRANITE/GNEISS • NAAB • NABABEEP GNEISS • HOOGOOR • KALAHARI • KAMIESKROON GNEISS • KAROO DOLERITE • KHURISBERG • KONKYP GNEISS 	<ul style="list-style-type: none"> • NAKANAS • NARDOUW • NUWEFONTEIN • GRANITE • RIETBERG GRANITE • SKOORSTEENBERG • STINKFONTEIN • STYGER KRAAL • SYENITE • TABLE MOUNTAIN • TIERBERG • VOLKSRUST • WATERFORD 			

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2
3



Map 6: Heritage (including palaeontology) sensitivity map for EGI Development in the Expanded Western and Eastern EGI Corridor

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2
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1 **2.4.5 Interpretation of Sensitivity Maps**

2 The four-tier sensitivity map (Map 6) identified the presence of known heritage resources and the areas in which the likelihood of longer and more expensive HIAs involving mitigation of heritage resources is higher. It should be noted that
 3 a HIA is required when it is anticipated that there will be impacts on significant heritage resources for a particular development proposal. This differs from a heritage survey which identifies, records and grades heritage resources with no
 4 particular development proposal in mind. Given the large size of South Africa, most HIAs incorporate a heritage survey but the two activities are not necessarily synonymous. The four-tier sensitivity map does not account for areas already
 5 thoroughly surveyed (either through research or during HIAs). Depending on the development proposal, a HIA may or may not be required in these areas (DEA, 2016). Here below is a short summary of the explanation of the combined
 6 four-tier sensitivity map.

7
8

Table 11: Interpretation of Heritage Sensitivity Maps

Sensitivity Class	Interpretation	Implementation and additional assessments at project level (*)	Permit requirements (if any)
Very High	<p>This category includes</p> <ul style="list-style-type: none"> Grade I and II Heritage sites; World, National and Provincial Heritage Sites with their related buffer zones, i.e. a buffer zone of 2 km and 1 km implemented around these sites respectively. World Heritage Sites have their own defined buffer zones; The proposed site is located on areas of Very High sensitivity as indicated by the SAHRIS palaeontological sensitivity map (red areas). <p>These areas are formally protected areas under the NHRA and the World Heritage Convention Act (Act No. 49 of 1999) and should be avoided.</p>	<p>Areas of very high sensitivity are areas which are formally protected under the NHRA and the World Heritage Convention. An Archaeological/Palaeontological Impact Assessment must be undertaken within these areas and their prescribed buffer zones.</p> <p>Areas of very high palaeosensitivity require a PIA during the design phase, inclusive of a field assessment.</p>	<p>Permit required under Section 27 of NHRA from:</p> <ul style="list-style-type: none"> SAHRA for any possible impact on Grade I National Heritage Sites; and PHRAs for impact on Grade II Provincial Heritage Sites. <p>Additional permit from the Management Authority of the Fossil Hominid Sites of South Africa.</p> <p>Additional permit from SANParks, where required.</p>
High	<p>High sensitivity represents areas which are or have the potential to be highly sensitive in terms of heritage resources because either:</p> <ul style="list-style-type: none"> Previous assessment of the area has identified palaeontological/archaeological heritage resources which are classified as being of high significance; or The proposed site is located on areas of High sensitivity as indicated by the SAHRIS palaeontological sensitivity map (orange/yellow areas); or There is a high probability of encountering a significant heritage resource; or There is the potential to include cultural heritage resources which will require conservation or lengthy mitigation. <p>Sites of high significance: IIIa sites with 150m buffer zone.</p>	<p>A general avoidance strategy should be taken but mitigation might be allowed under certain circumstances if avoidance is not possible.</p> <p>It is expected that HIAs or PIAs will then be required for proposed developments in these areas and that some sites may be identified which will require mitigation, thereby increasing costs and lengthening the timeframes of the applications.</p> <p>PIA: Desktop study during design phase and walk through sensitive areas of selected route and report before excavation activities (by respective specialist)</p>	<p>Note no permits are required for surveys.</p> <p>For sites of significance identified during future surveys, permits under Section 35 of the NHRA will normally be required from the relevant heritage authority if impacts are envisaged⁶.</p> <p>For significant sites already recorded or identified during future surveys, permits will normally be required from the relevant heritage authority if impacts are envisaged.</p>

⁶See previous footnote about HWC's process for handling the permitting process under Section 38 of the NHRA. Note that Heritage Western Cape currently does not require 'permits' for generally protected heritage resources under the NHRA when developments trigger Section 38 of the NHRA. Instead, a work plan is required which is very similar to a permitting process.

Sensitivity Class	Interpretation	Implementation and additional assessments at project level (*)	Permit requirements (if any)
Medium	<p>Medium sensitivity represents areas which are, or have the potential to be, sensitive to development in terms of heritage resources because either:</p> <ul style="list-style-type: none"> • Previous assessment of the area has identified heritage resources which are considered to be of medium significance; or • The proposed site is located on areas of moderate and unknown sensitivity in the SAHRIS palaeontological sensitivity map (green/white areas); or • There is a moderate probability of encountering significant heritage resources. 	<p>It is expected that HIA/PIA will be required for proposed developments in these areas and that some sites may be identified which will require mitigation, thereby increasing costs and lengthening the timeframes of the applications. However, such sites are expected to be less sensitive or extensive than in high sensitivity areas.</p> <p>Areas of moderate and unknown palaeontological sensitivity will require desktop studies during the design phase.</p>	<p>Note no permits are required for surveys.</p> <p>For sites of significance identified during future surveys, permits under Section 35 of the NHRA will normally be required from the relevant heritage authority if impacts are envisaged.</p>
	<p>Sites of medium significance: IIIb sites with 100m buffer zone.</p>		<p>For significant sites already recorded or identified during future surveys, permits will normally be required from the relevant heritage authority if impacts are envisaged.</p>
Low	<p>Low sensitivity represents areas which are not likely to be sensitive to development in terms of heritage resources because either:</p> <ul style="list-style-type: none"> • Previous assessment has revealed the area to contain no resources or resources of low significance; or • The proposed site is located on formations of low sensitivity in the SAHRIS palaeontological sensitivity map (blue areas); or • There is a low probability of encountering significant heritage resources. 	<p>For sites known to contain no resources, no further assessment is necessary for the proposed development in these areas.</p> <p>In areas where there is a low chance of finding heritage material of significance (the majority of the lowlands and areas already fully assessed), a HIA is required but it is expected that no material of significance requiring extensive mitigation will be identified.</p> <p>In areas of low palaeontological sensitivity, a palaeontological chance find procedure should be requested to be included in the EMPr and reviewed by a specialist.</p> <p>Where Grade IIIc sites occur the sites have generally been recorded sufficiently and are of low significance – no further mitigation is normally required for these sites.</p>	<p>For sites of significance identified during future surveys, permits will normally be required from the relevant heritage authority if impacts are envisaged.</p>
	<p>Sites of low significance: IIIc sites with 50 m buffer zone.</p>		<p>No permit is required for development to proceed in these areas.</p>

1
2 **(*) NOTE: Motivating for exemption from a PIA/HIA** - A PIA/HIA may not be required if such motivation is included in the initial notification prepared by a competent heritage specialist. In order to motivate for a PIA/HIA not to be required the inputs
3 from a heritage specialist is required as part of the notification. Site visits to inform the notification may also be necessary to motivate for a PIA/HIA not to be required, and are up to the discretion of the specialist providing input to the notification. In
4 most cases, it will be sufficient for only the heritage specialist preparing the notification to visit the site before an exemption from further assessment can be motivated. If exemption from further assessment is motivated, the notification must
5 contain proposed mitigation measures for inclusion in the EMPr.
6

1 **2.4.6 Conclusions and General Recommendations**

2 The following general recommendations for the management of heritage
3 resources have been identified, and additional detail will be provided in
4 the EMPr:

5
6 • In general, important heritage sites that are small in spatial extent
7 need to be protected through implementation of buffers, as noted
8 above.

9
10 • Where significant subsurface heritage resources occur,
11 Environmental Control Officers (ECOs) will need to be appointed and
12 need to be made aware of and become familiar with identifying such
13 heritage, in order to prevent loss of highly significant
14 palaeontological, archaeological and palaeoanthropological
15 resources).

16
17 • Carry out general monitoring of excavations for potential fossils,
18 artefacts and material of heritage importance. Monitoring of
19 excavations, especially in highly sensitive fossil areas, will prevent
20 loss of data and greatly contribute to the scientific understanding of
21 these heritage resources.

22
23 • In general, following the routes of existing power lines will reduce
24 cultural landscape impacts to a degree (however the findings of all
25 relevant specialist studies need to be taken into consideration in
26 order to determine if potential cumulative impacts are acceptable).

27
28 • Shell middens and artefact scatters are not visually sensitive but
29 have scientific value and should be avoided during pylon and road
30 construction. Contrastingly rock art sites, historic farmhouse
31 complexes, and built environment and historic sites are much more
32 visually sensitive and should be buffered. Such buffering will ensure
33 protection of the sites and their contexts.

34
35 • Farmsteads and other structures older than 60 years may be located
36 in rural areas. These will also require assessment and possibly
37 buffering.

38
39 • Identify, demarcate and prevent impact to all known sensitive
40 heritage features on site.

41
42 • All work must cease immediately, if any human remains and/or other
43 archaeological, palaeontological and historical material are
44 uncovered. Such material, if exposed, must be reported to the
45 nearest museum, archaeologist/ palaeontologist (or the South
46 African Police Services), so that a systematic and professional
47 investigation can be undertaken. Sufficient time should be allowed to
48 remove/collect such material before development recommences.

49 • During the construction phase, consultation with affected and
50 surrounding communities will be important in terms of grave finds
51 and management of heritage sites. It is also important to consult
52 with affected communities during the planning stage to identify the
53 location of any informal burial grounds.

54