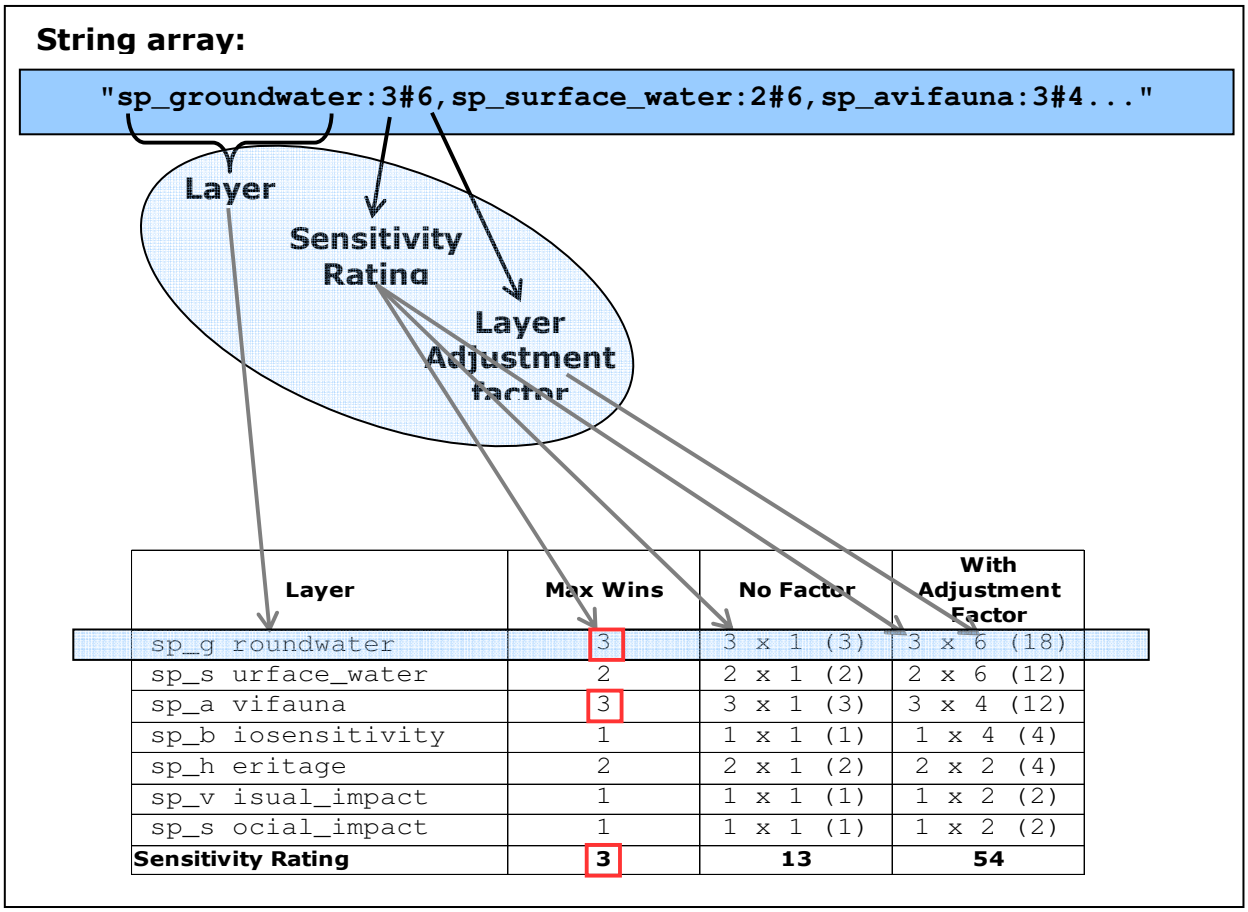

Layer	Max Wins	No Factor	With Adjustment Factor
sp_g roundwater	3	3 x 1 (3)	3 x 6 (18)
sp_s urface_water	2	2 x 1 (2)	2 x 6 (12)
sp_a vifauna	3	3 x 1 (3)	3 x 4 (12)
sp_b iosensitivity	1	1 x 1 (1)	1 x 4 (4)
sp_h eritage	2	2 x 1 (2)	2 x 2 (4)
sp_v isual_impact	1	1 x 1 (1)	1 x 2 (2)
sp_s ocial_impact	1	1 x 1 (1)	1 x 2 (2)
Sensitivity Rating	**3**	**13**	**54**

Figure 7.4: String array parts and resultant indice calculations: max wins; sensitivity rating as is and sensitivity with an applied factor.

- ***Adjustment Factor / weighting factor Methodology***

In order to give each component a weighting factor with which to adjust the layers, the following methodology was utilised.

In a weighted matrix each variable / component is given a different importance weighting. In order to ensure that consensus is obtained with regards to the weighting / adjustment factors input from the project team and all specialists was obtained. Each member of the Project team was asked to rank each variable according to their own understanding of its significance, utilising the following ratings:

- 1 - low significance
- 2 - medium significance
- 3 - high significance

Once all the input was received, the rating provided for each variable was added and then divided by the number of people that took part in the exercise in order to obtain an average rating. Three sets of ratings were collected, namely:

- Specialist and Lidwala Project Team ratings (**Table 7.2**)
- Client ratings (**Table 7.3**)
- Combined ratings (**Table 7.4**)

The final decision to utilise the combined rating as the final weighting factors for the sensitivity analysis was due to the fact that the client's ratings did not dilute the weighting factors, they actually made the weighting factors stricter.

Table 7.2: Specialist and Lidwala Project Team ratings

Aspect	Social	Visual 1	Visual 2	Fauna	Flora	Surface Water 1	Ground water 1	Ground water 2	Design	Air	Avifauna	Project Manager	PPP1	PPP2	EIA Team	GIS	Legal	Soil	Final Total	Number participants	Average Rating
Social (including visual and noise)	1	2	1	1	1	1	2	1	2	3	1	1	3	3	1	1	1	1	27	18	1.50
biodiversity (Fauna and flora)	2	3	2	2	2	3	2	2	1	2	2	3	2	2	1	2	3	2	38	18	2.11
surface water	2	3	3	2	2	3	2	2	2	2	2	3	3	3	2	2	2	2	42	18	2.33
groundwater	2	3	3	2	2	3	2	2	2	1	2	2	2	3	2	2	2	3	40	18	2.22
agricultural potential	1	2	2	2	2	1	2	2	1	2	1	2	2	1	1	2	2	3	31	18	1.72
air quality	2	2	3	1	1	2	2	2	3	3	2	1	3	1	2	3	3	3	39	18	2.17
Avifauna	2	2	1	2	2	3	2	2	2	2	2	3	2	2	2	2	2	2	37	18	2.06

Table 7.3: Client ratings

	Eskom Team															
Aspect	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	E13	Final Total	Number participants	Average Rating
Social (including visual and noise)	3	3	2	3	1	1	2	2	1	1	2	1	1	23	13	1.77
biodiversity (Fauna and flora)	3	3	3	3	2	1	1	2	2	3	2	2	3	30	13	2.31
surface water	3	3	2	2	2	1	1	3	2	3	3	2	2	29	13	2.23
groundwater	3	3	3	3	2	2	1	3	2	3	3	2	3	33	13	2.54
agricultural potential	1	3	3	3	1	2	2	2	1	2	1	1	1	23	13	1.77
air quality	3	3	3	3	1	1	3	3	2	3	3	1	2	31	13	2.38
Avifauna	3	1	3	3	1	1	1	2	2	3	2	1	2	25	13	1.92

Table 7.4: Combined ratings

	Specialists and Lidwala Project Team			Eskom Team			Final Combined Ratings		
Aspect	Final Total	Number participants	Average Rating	Final Total	Number participants	Average Rating	Final Total Combined	Number participants	Final Average Rating
Social (including visual and noise)	27	18	1.50	23	13	1.77	50	31	1.61
biodiversity (Fauna and flora)	38	18	2.11	30	13	2.31	68	31	2.19
surface water	42	18	2.33	29	13	2.23	71	31	2.29
groundwater	40	18	2.22	33	13	2.54	73	31	2.35
agricultural potential	31	18	1.72	23	13	1.77	54	31	1.74
air quality	39	18	2.17	31	13	2.38	70	31	2.26
Avifauna	37	18	2.06	25	13	1.92	62	31	2.00

The final weighting factors for each aspect are therefore as follows:

- Social = 1.61
- Fauna and Flora = 2.19
- Surface Water = 2.29
- Ground Water = 2.35
- Agricultural Potential = 1.74
- Air Quality = 2.26
- Avifauna = 2.00

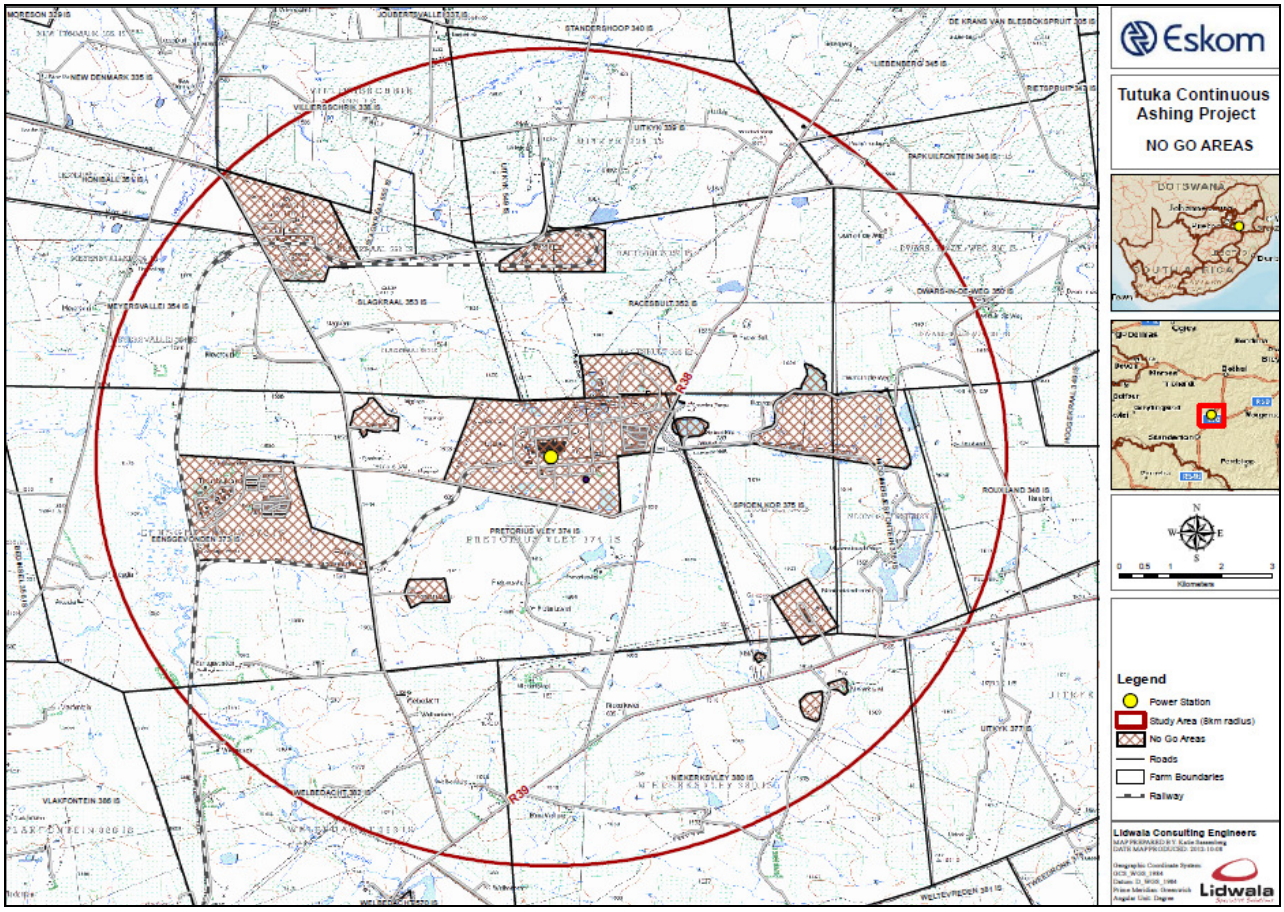

Figure 7.5: No-go Areas Layer

7.4.2 Specialist Study Screening Results

- ***Biodiversity (Fauna and flora)***

The ecological importance ascribed to existing protected areas and species are simple and self-explanatory. Outside of protected areas but within areas that are clearly of value for biodiversity, the evaluation of importance or sensitivity is more complex and vague. The absence of protected status should therefore never be interpreted as low biodiversity importance; many areas of international biodiversity importance lie outside of protected areas.

For this particular screening assessment, the degree of transformation was used as a primary decision tool in determining the level of sensitivity of a particular site. A secondary decision was made based on the level of conservation importance ascribed to the regional vegetation type. Lastly, historic sampling records of conservation important flora and fauna taxa within the region were also implemented to ascribe a high level of importance/ sensitivity to a particular site. The ecological sensitivity of areas characterised by natural habitat was assessed using the application of the following criteria:

	YES	NO
The presence of Threatened and/or Protected:		
• plant species		X
• animal species		X
• ecosystems	X	
The presence of Critical conservation areas, including:		
• areas of high biodiversity	X	
• centres of endemism		X
The presence of Important Ecological Processes, including:		
• Corridors		X
• Mega-conservancy networks		X
• Rivers and wetlands	X	
• Important topographical features		X

Estimated ecological sensitivity values are presented in **Figure 7.6** and are categorised as follows:

Low (1) No natural habitat remaining; this category is represented by developed/ transformed areas, nodal and linear infrastructure, areas of agriculture or cultivation, areas where exotic species dominate exclusively, mining land (particularly surface mining), etc. The possibility of these areas reverting to a natural state is impossible, even with the application of detailed and expensive rehabilitation activities. Similarly, the likelihood of plant species of conservation importance occurring in these areas is regarded negligent.

Medium (2) Indigenous natural habitat that comprehend habitat with a high diversity, but characterised by moderate to high levels of degradation, fragmentation and habitat isolation. This category also includes areas where flora species of conservation importance could potentially occur, but habitat is regarded marginal;

High (3) Indigenous natural vegetation that comprehend for a combination of the following attributes:

- The presence of plant species of conservation importance, particularly threatened categories (Critically Endangered, Endangered, Vulnerable);
- Areas where 'threatened' plants are known to occur, or habitat that is highly suitable for the presence of these species;
- Regional vegetation types that are included in the 'threatened' categories (Critically Endangered, Endangered, Vulnerable), particularly prime examples of these vegetation types;
- Habitat types are protected by national or provincial legislation (Lake Areas Act, National Forest Act, draft Ecosystem List of NEMBA, Mountain Catchment Areas Act, Ridges Development Guideline, Integrated Coastal Zone Management Act, etc.);

- Areas that have an intrinsic high floristic diversity (species richness, unique ecosystems), with particular reference to Centres of Endemism;

These areas are also characterised by low transformation and habitat isolation levels and contribute significantly on a local and regional scale in the ecological functionality of nearby and dependent ecosystems, with particular reference to catchment areas, pollination and migration corridors, genetic resources. A major reason for the high conservation status of these areas is the low ability to respond to disturbances (low plasticity and elasticity characteristics).

Not Assessed (6) Areas not included in the assessment due to unsuitability for the proposed project include Tutuka Power Station and associated infrastructure.

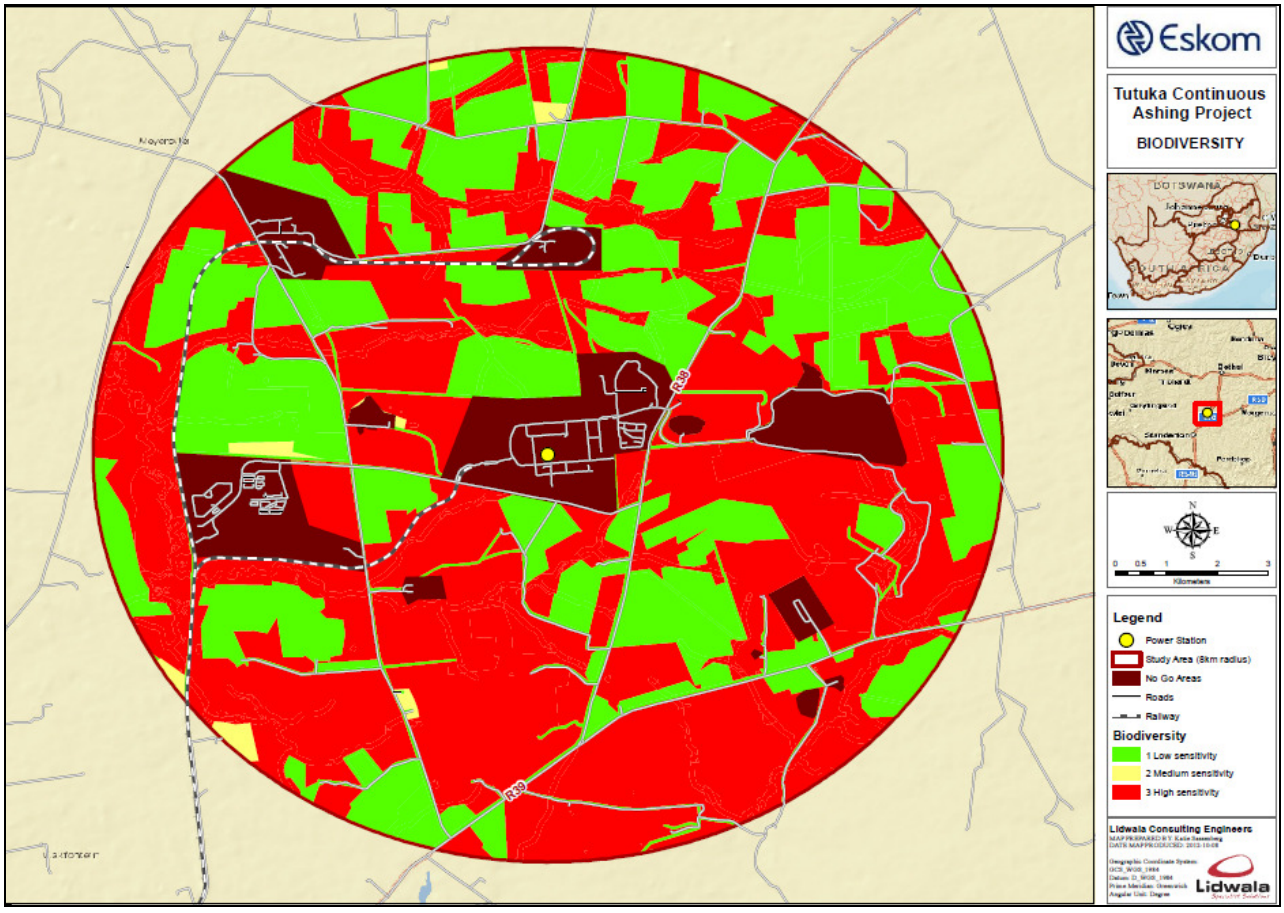

Figure 7.6: Biodiversity Sensitivity Map

Discussion & Recommendations

The sensitivity assessment indicates clearly the high sensitivity that is associated with remaining natural grassland within the study area. This is mainly the result of high land transformation and habitat fragmentation rates. It should however be noted that the high sensitivity of natural grassland is ascribed without taking cognisance of the current status of remaining portions. Visual evidence suggests that the status might not be as pristine as