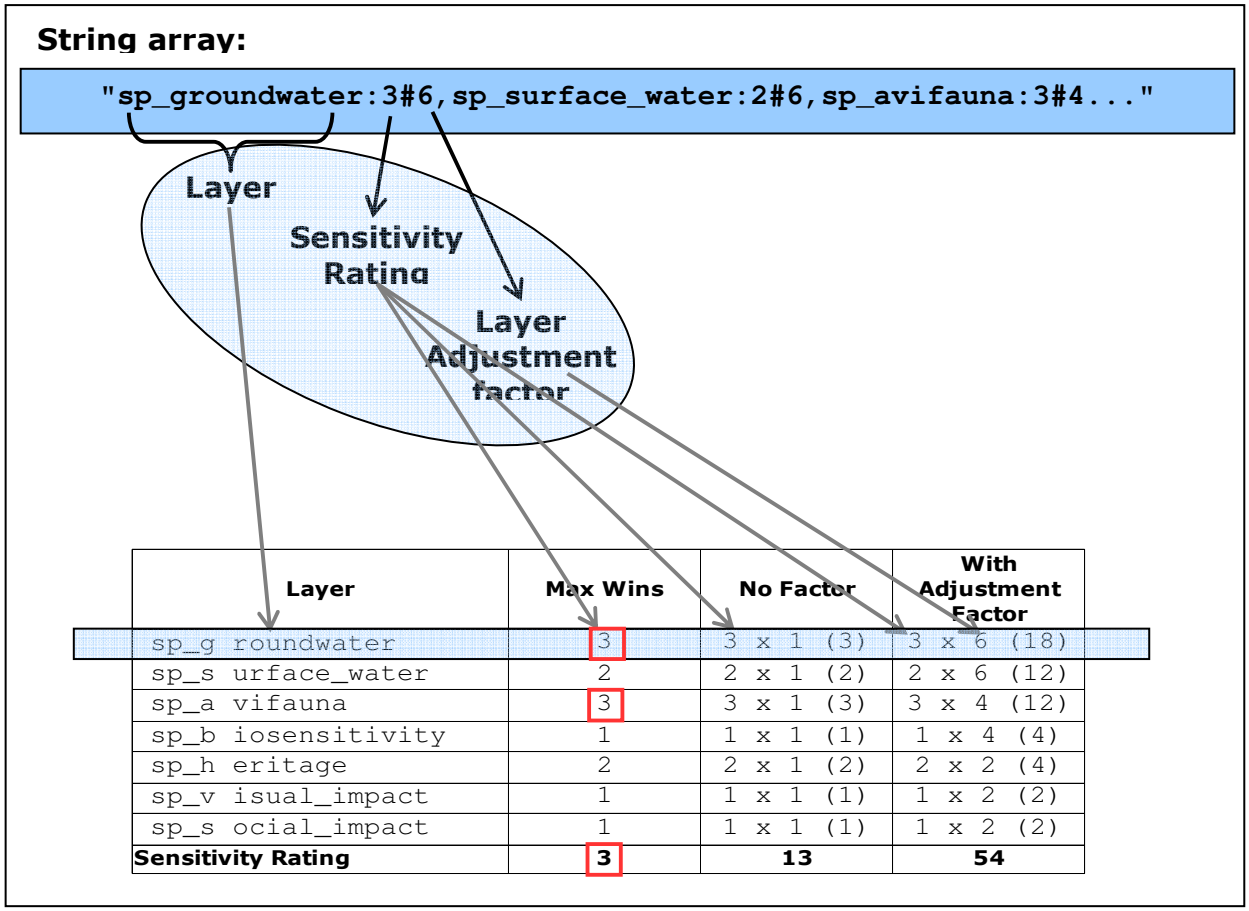

Layer	Max Wins	No Factor	With Adjustment Factor
sp_groundwater	3	3 x 1 (3)	3 x 6 (18)
sp_surface_water	2	2 x 1 (2)	2 x 6 (12)
sp_avifauna	3	3 x 1 (3)	3 x 4 (12)
sp_biosensitivity	1	1 x 1 (1)	1 x 4 (4)
sp_heritage	2	2 x 1 (2)	2 x 2 (4)
sp_visual_impact	1	1 x 1 (1)	1 x 2 (2)
sp_social_impact	1	1 x 1 (1)	1 x 2 (2)
Sensitivity Rating	**3**	**13**	**54**

Figure 4.3: 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 4.2**)
- Client ratings (**Table 4.3**)
- Combined ratings (**Table 4.4**)

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 4.2: Specialist and Lidwala Project Team ratings

	Specialists and Lidwala Project Team												
Aspect	Social	Fauna and Flora	Surface Water	Ground water	Design	Geotech	Avifauna	Project Manager	GIS	Soil	Final Total	Number participants	Average Rating
Social	3	1	2	3	2	2	1	2	1	1	18	10	1.80
Fauna and flora	2	3	2	2	1	1	3	2	2	2	20	10	2.00
surface water	2	3	3	3	2	2	2	3	3	2	25	10	2.50
groundwater	2	3	3	2	2	2	2	3	3	2	24	10	2.40
heritage	1	2	2	1	1	1	1	1	1	1	12	10	1.20
visual	2	2	1	1	3	3	1	2	1	1	17	10	1.70
technical and cost	1	1	1	3	3	3	1	3	2	1	19	10	1.90
Avifauna	2	3	2	2	2	2	3	2	3	1	22	10	2.20

Table 4.3: Client ratings

	Eskom Team					
Aspect	Env	Civil	Mech	Final Total	Number participants	Average Rating
Social	2.5	1	2	**5.5**	3	**1.83**
Fauna and flora	2	3	1.75	**6.75**	3	**2.25**
surface water	2.5	3	2.25	**7.75**	3	**2.58**
groundwater	2.5	3	2.25	**7.75**	3	**2.58**
heritage	1	2	1.5	**4.5**	3	**1.50**
visual	1.5	1	1.25	**3.75**	3	**1.25**
technical and cost	2	2	2.75	**6.75**	3	**2.25**
Avifauna	1.5	2	1.75	**5.25**	3	**1.75**

Table 4.4: 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	18	10	**1.80**	5.5	3	**1.83**	23.5	13	**1.81**
Fauna and flora	20	10	**2.00**	6.75	3	**2.25**	26.75	13	**2.06**
surface water	25	10	**2.50**	7.75	3	**2.58**	32.75	13	**2.52**
groundwater	24	10	**2.40**	7.75	3	**2.58**	31.75	13	**2.44**
heritage	12	10	**1.20**	4.5	3	**1.50**	16.5	13	**1.27**
visual	17	10	**1.70**	3.75	3	**1.25**	20.75	13	**1.60**
technical and cost	19	10	**1.90**	6.75	3	**2.25**	25.75	13	**1.98**
Avifauna	22	10	**2.20**	5.25	3	**1.75**	27.25	13	**2.10**

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

- Social = 1.81
- Fauna and Flora = 2.06
- Surface Water = 2.52
- Ground Water = 2.44
- Heritage = 1.27
- Visual = 1.60
- Avifauna = 2.10
- Technical and Cost = 1.98

4.4.2 Final Screening Results

- ***Consolidated Biophysical Sensitivity***

The individual biophysical maps were overlaid and integrated to form the following combined biophysical sensitivity maps utilising the methodologies indicated above.

It can be noted that in terms of biophysical criteria, the most sensitive areas are those surrounding surface water structures, it will therefore be critical to ensure that the areas are avoided in terms of the identification of alternative sites.

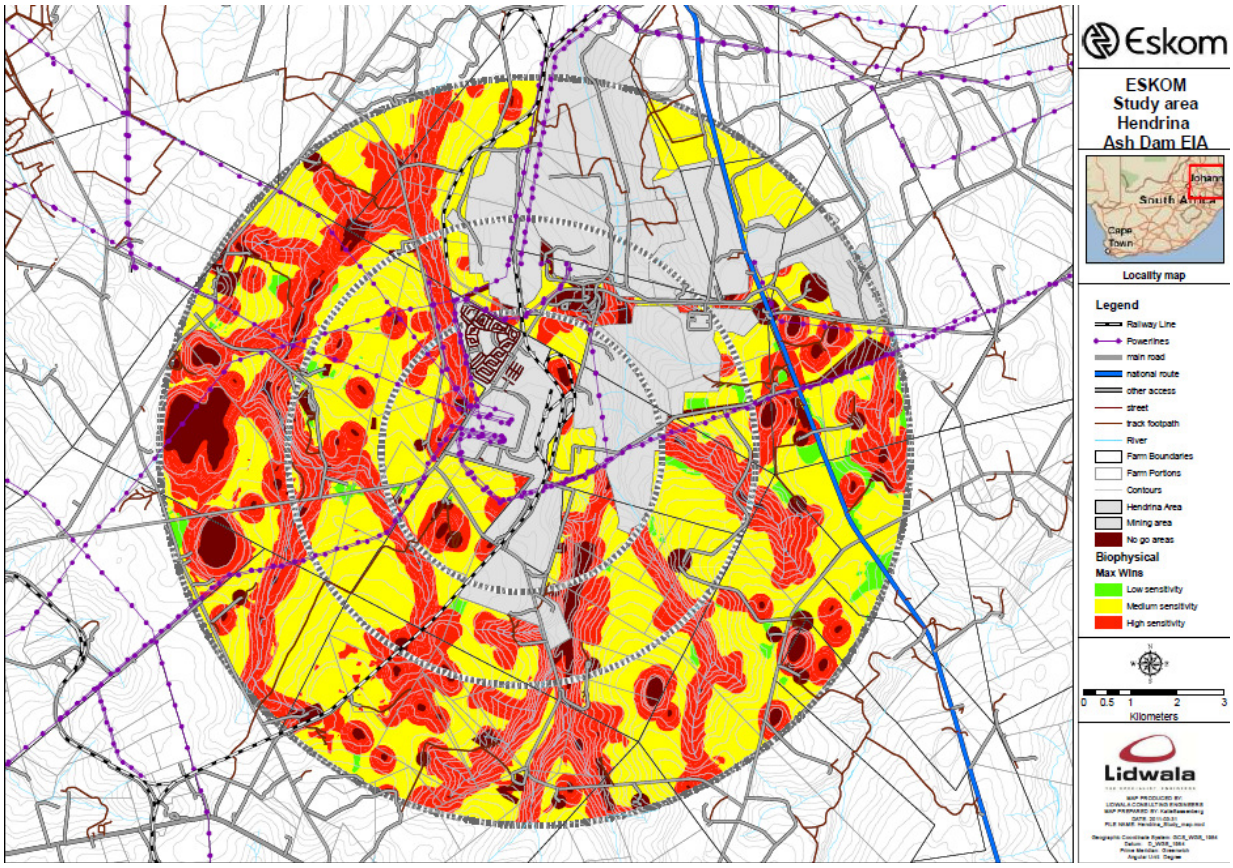

Figure 4.4: Combined Biophysical Sensitivity (Max Wins)

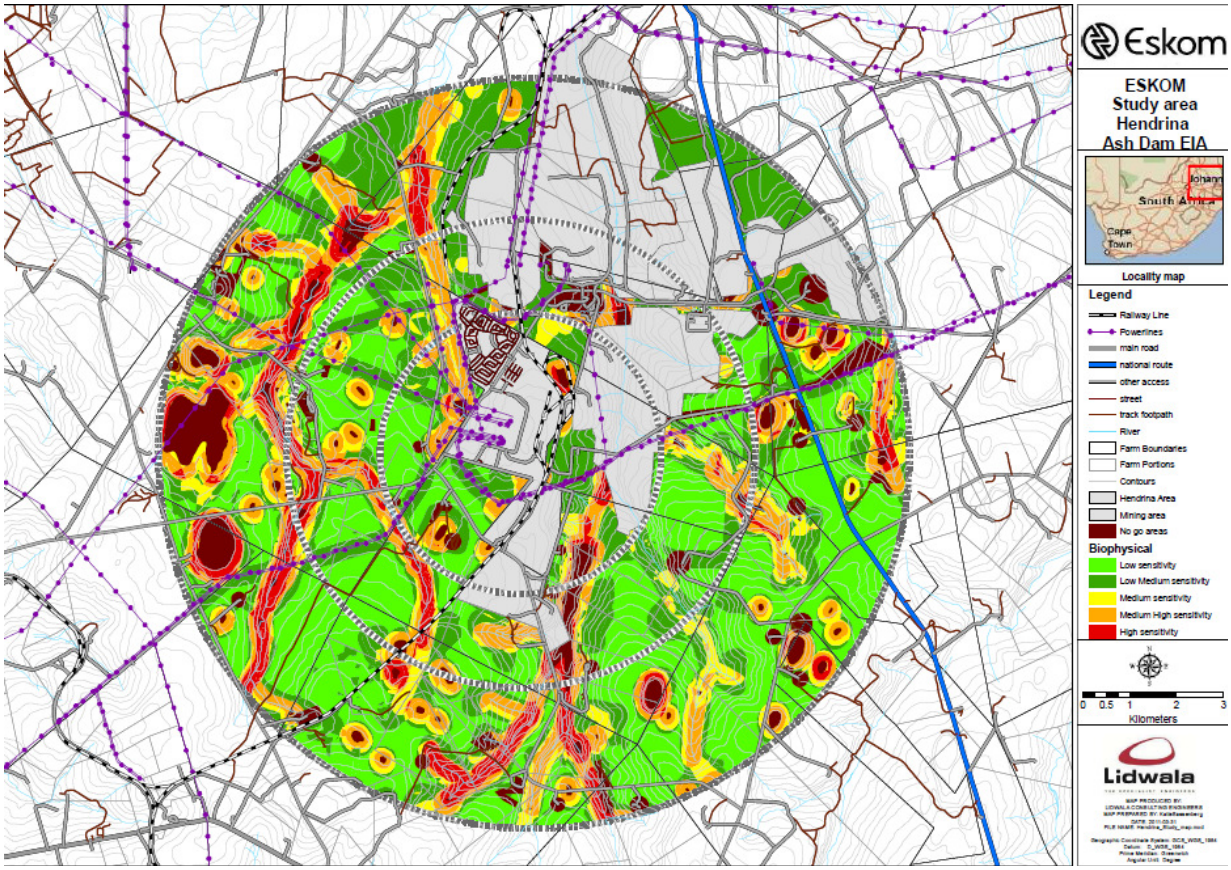

Figure 4.5: Combined Biophysical Sensitivity (no factor)

- ***Consolidated Social Sensitivity***

The individual social maps were overlaid and integrated to form the following combined social sensitivity maps utilising the methodologies indicated above.

It can be noted from the combined social sensitivity map that the closer the proposed new ash dam is to the power station, the better. It can clearly be seen that the sensitivities in terms of the social environment increase as one moves further from the power station.