

AFRICAN GRASS OWL SENSITIVITY SURVEY FOR BLUE HILLS X74

1. Background

Pachnoda Consulting was appointed by EkolInfo CC on behalf of LEAP Landscape Architects and Environmental Assessment Practitioners to provide an opinion on the occurrence for African Grass-owls (*Tyto capensis*) on the proposed Blue Hills X74 development (herewith referred to as the "study site"), Blue Hills Agricultural Holdings, Midrand, Gauteng.

2. Terms of Reference

The terms of reference for this report are to:

- evaluate the study site in terms of its suitability to provide habitat for the African Grass-owl (*Tyto capensis*); and
- present a sensitivity analysis of the proposed development regarding the occurrence of Grass-owl habitat. The analysis is preferential for the conservation and long-term persistence of the "Vulnerable" African Grass-Owl (*Tyto capensis*) and its associated habitat.

3. Location

The study site is bordered by Summit Road (R 562) in the north, Willow Road in the west and Pitts Road (R 55) in the east, Midrand, Gauteng (Figure 1). The extent of the property is approximately 10.5 ha.

4. Land use and existing surface infrastructure

The study site is vacant and occupied by (degraded) secondary grassland and ornamental trees, including invader tree species (*Eucalyptus camaldulensis* and *Acacia melanoxylon*). The surrounding land use consists of agricultural holdings, equestrian estates and small-scale livestock farming practices. According to the land cover dataset of 2009, a large section of the study site is classified as "degraded" (Figure 2).

5. Surface hydrology

Surface watercourses and drainage lines were absent on the study site although two seasonal (often ill-defined) drainage lines occur 120 m west and 550 m south of the proposed study site. Both drainage lines form part of the upper catchment of the Jukskei River (as part of the Crocodile River catchment) (Figure 3).

6. Description of current habitat

The study site is primarily covered in tall secondary grassland dominated by the graminoids *Hyparrhenia hirta*, *Eragrostis curvula*, *Melinis repens* and *Pogonarthria squarrosa* (Figure 4). Some sections of the study site were formerly occupied by residential (build-up) structures which were subsequently removed and colonised by exotic weed and invader species such as *Bidens pilosa*, *Tagetes minuta* and *Pennisetum clandestinum*. One particular area corresponds to an old French drain system of a derelict homestead and showed a high prominence of facultative hydrophytic vegetation (e.g. *Typha capensis* and *Verbena bonariensis*).

In summary, the study site is characterised by a floristic structure and composition typical of secondary vegetation. It is evident that the study site is reminiscent of an area that suffered a long history of anthropogenic perturbation (disturbances).

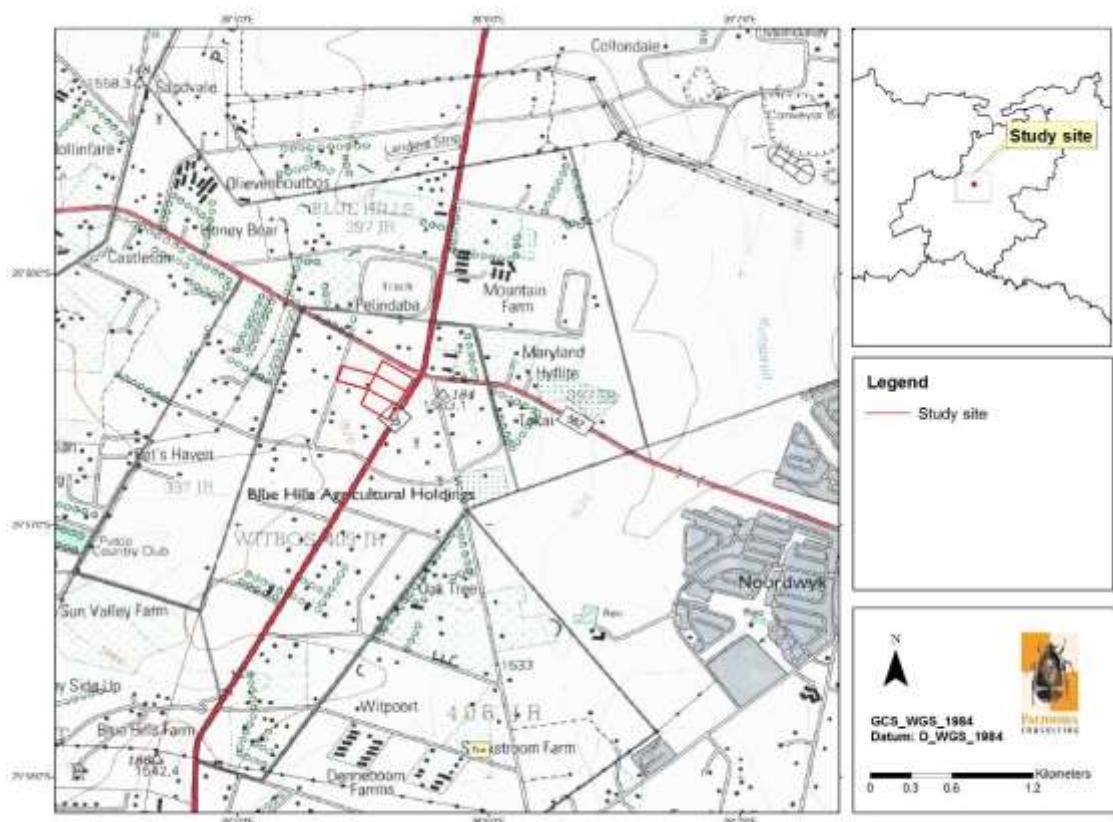


Figure 1: A topocadastral map illustrating the geographic position of the study site.

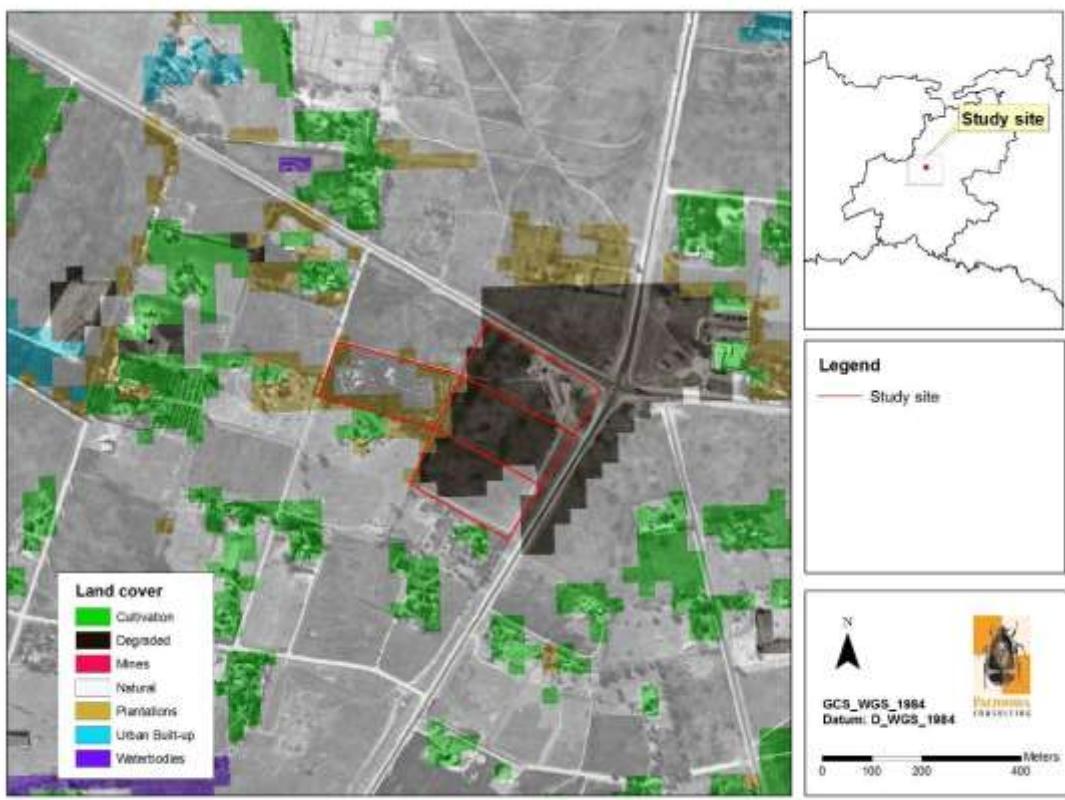


Figure 2: An orthophoto illustrating the land cover on the study site according to the 2009 land cover dataset.

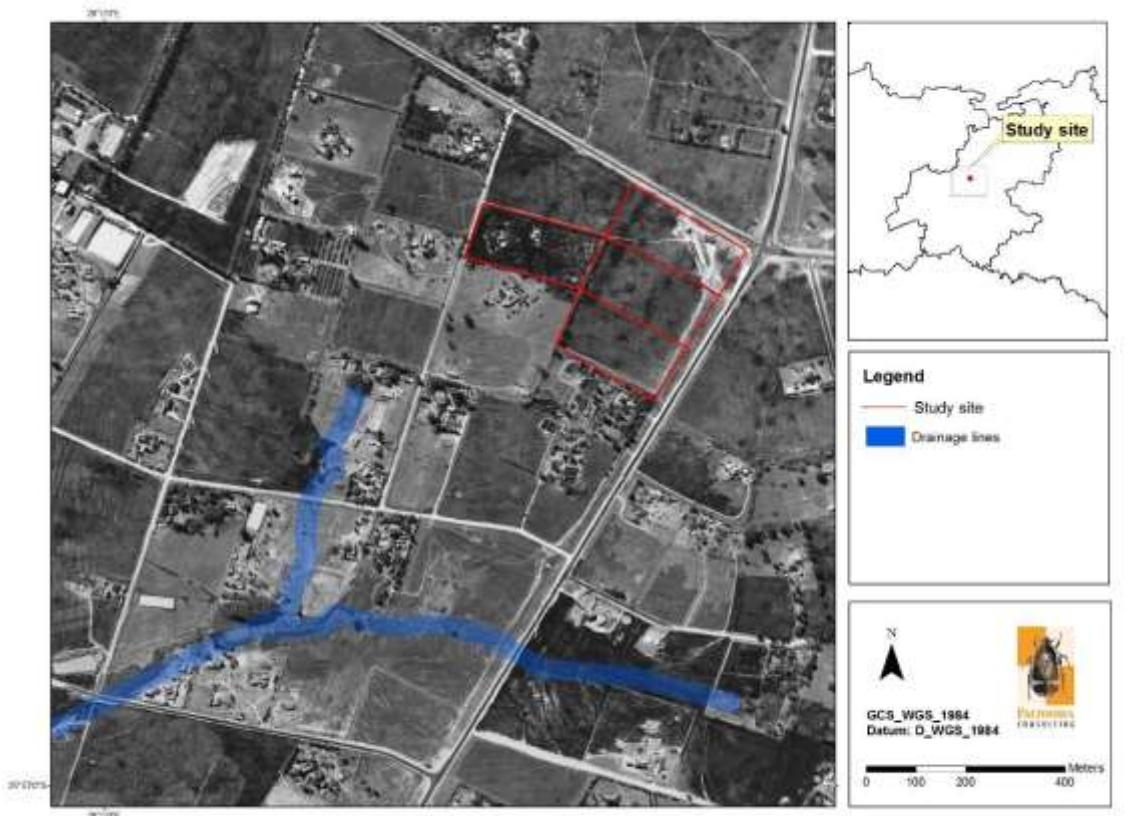
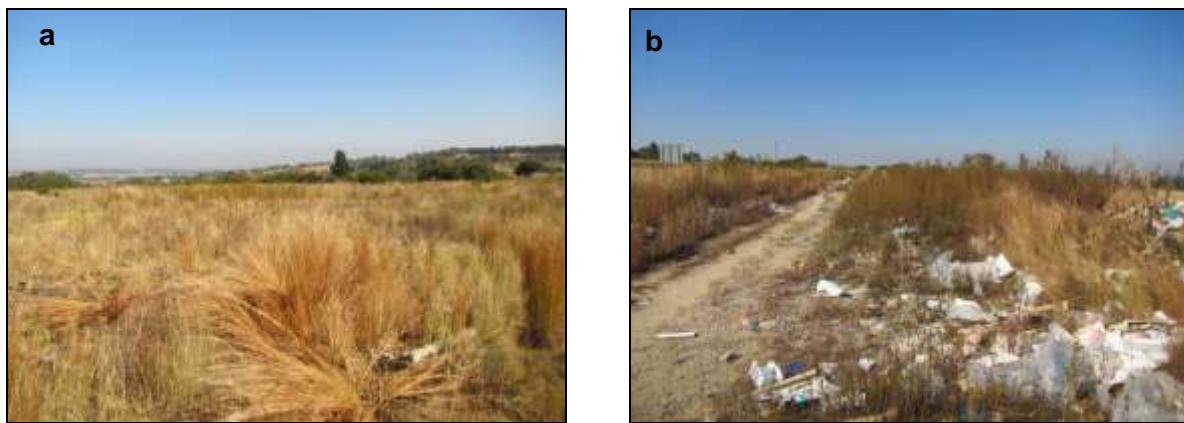


Figure 3: An orthophoto illustrating the surface hydrology in the vicinity of the study site.



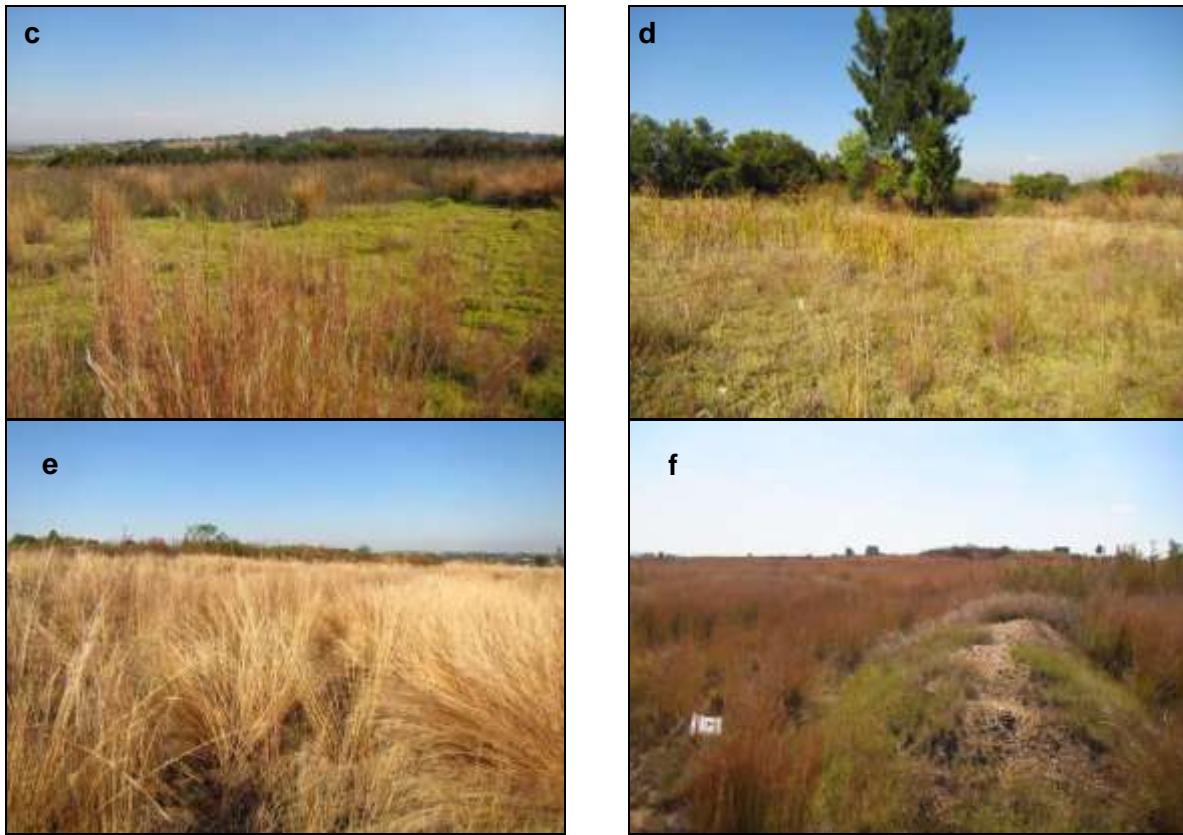


Figure 4: The dominant vegetation and its associated floristic structure observed on the study site.

7. The African Grass-owl (*Tyto capensis*)

The African Grass-owl is categorised as “Vulnerable” in the National Red Data book of Birds (Barnes, 2000) of which the southern African population is estimated to be less than 5 000 individuals. It is a secretive and strictly nocturnal species that is seldom seen unless flushed from its daytime roosting site or nest (Kemp, 2005).

It is often possible that the Marsh Owl (*Asio capensis*) could be mistaken for a Grass-owl since both species share the same type of habitat. Grass-owls are more often outnumbered (10:1) by Marsh Owls, and it is not unlikely that some observers could confuse the two species with each other (Tarboton *et al.*, 1987). In addition, both species have similarly structured roosting sites, thereby complicating identification. Grass-owls and Marsh Owls will often use the same habitat to breed, although the former always utilise dry or damp areas and not areas that are placed over water (Tarboton, 2001). In addition, Grass-owls nearly always construct a “tunnel system” within rank grass that differs from Marsh Owl nests (see Figure 5).

7.1 Typical habitat requirements

The occurrence of African Grass-owls depends on four important factors and includes the following:

- The graminoid layer should be dense enough for individuals to roost and breed while protecting them from potential predators. Grass-owls prefer the densest vegetation during breeding and roosting;
- The height (or structure) of the grassy layer should exceed 750 mm in length to facilitate the construction of their diagnostic system of tunnels (nests). If < 750 mm, the grassy layer should be densely intertwined by members of the Cyperaceae;
- Typical roosting and breeding habitat must not be regularly burned or grazed, and should preferably be left unburned or grazed for at least two years at a time to allow the grass to recover; and
- Suitable foraging habitat (e.g. open grassland and fallow land) should be accessible and preferably located in close proximity to roosting and foraging habitat.

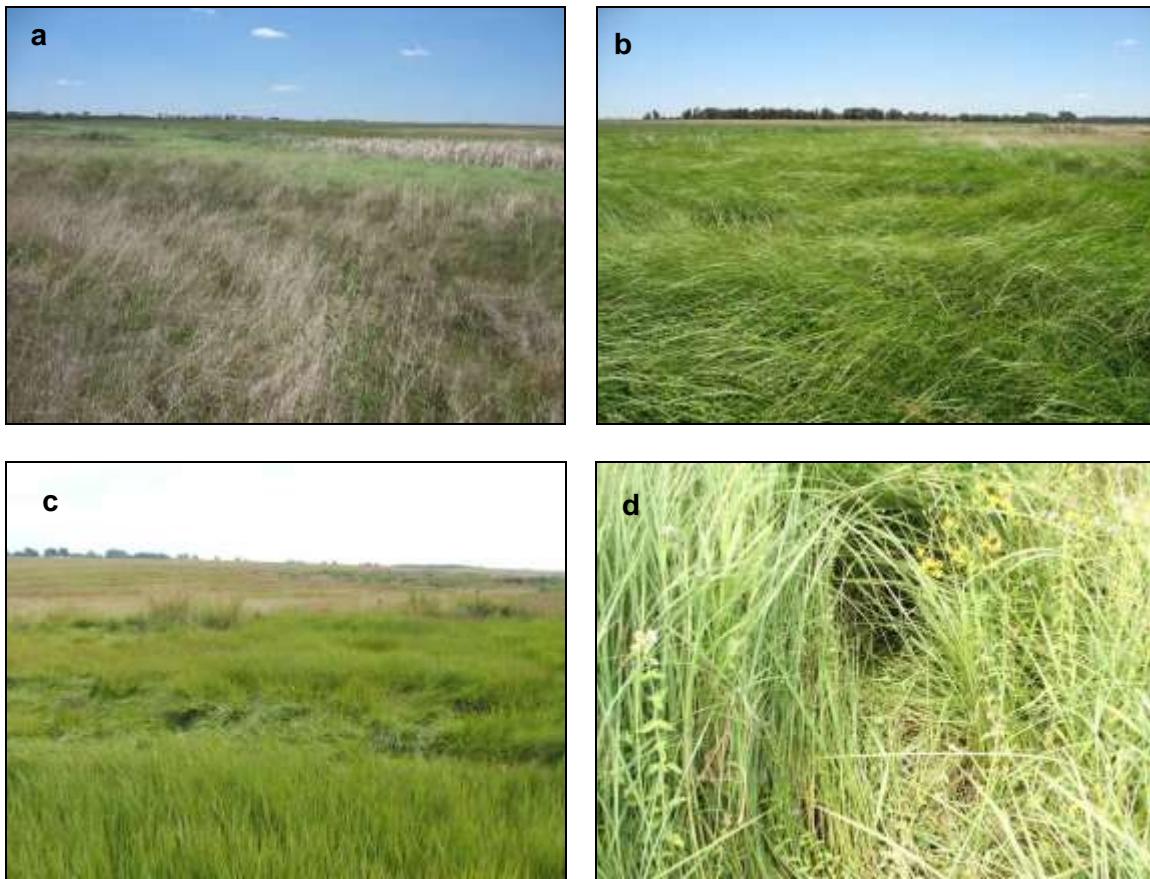


Figure 5: Typical breeding and roosting habitat of the African Grass-owl (*Tyto capensis*): (a) dense patches of *Arundinella nepalensis* and (b) tall, dense *Carex* sp. along the edge

of a highveld seep. (c) An example of tall *Imperata cylindrica* grassland after the rainy season, which is suitable for the construction of (d) nest sites (All photographs were taken elsewhere in Gauteng, and were included for information purposes only).

7.2 The occurrence of the African Grass-owl (*I. capensis*) on the study site

The study site does not provide suitable conditions for Grass-owls to breed or roost, although it provides ephemeral foraging habitat depending on the quality of the surrounding grassland (e.g. should suitable habitat adjacent to the study site be burned). However, the condition of the grassland sere on the study site is considered less suitable when compared to grassland sere in the region (see Figure 6), thereby rendering the occurrence of Grass-owls on the study site as irregular/uncommon (although their occurrence could not be interpreted as absent).

The irregular occurrence of Grass-owls on the study site is further explained by the absence of any recent observations in the area (according to SABAP2: 2555_2805) and by the low reporting rates (c. 2 %) during the previous atlas period for the quarter degree grid square that is sympatric to the study site (2528CC; Harrison *et al.*, 1997).

7.3 The occurrence of the African Grass-owl (*I. capensis*) in the study region

From a landscape perspective it is evident that suitable breeding, roosting and foraging habitat are present along the two drainage lines that are located to the west and south of the study site (Figure 6 and Figure 7). These areas are also at risk from ongoing regional development and subsequent fragmentation. Both systems encompass typical breeding habitat composed of dense *Imperata cylindrica* with the probability to sustain at least one breeding pair. However these specialised habitat types (referring to the patches of *Imperata cylindrica* grassland) are highly localised and fragmented in the region. One of these patches (see arrow in Figure 6) provides sub-optimal breeding habitat (due to fragmentation and structure) and is located in close proximity to the proposed study site. **Any planned development within the area should acknowledge the recommended buffer of 170 m which should be considered as sensitive.**

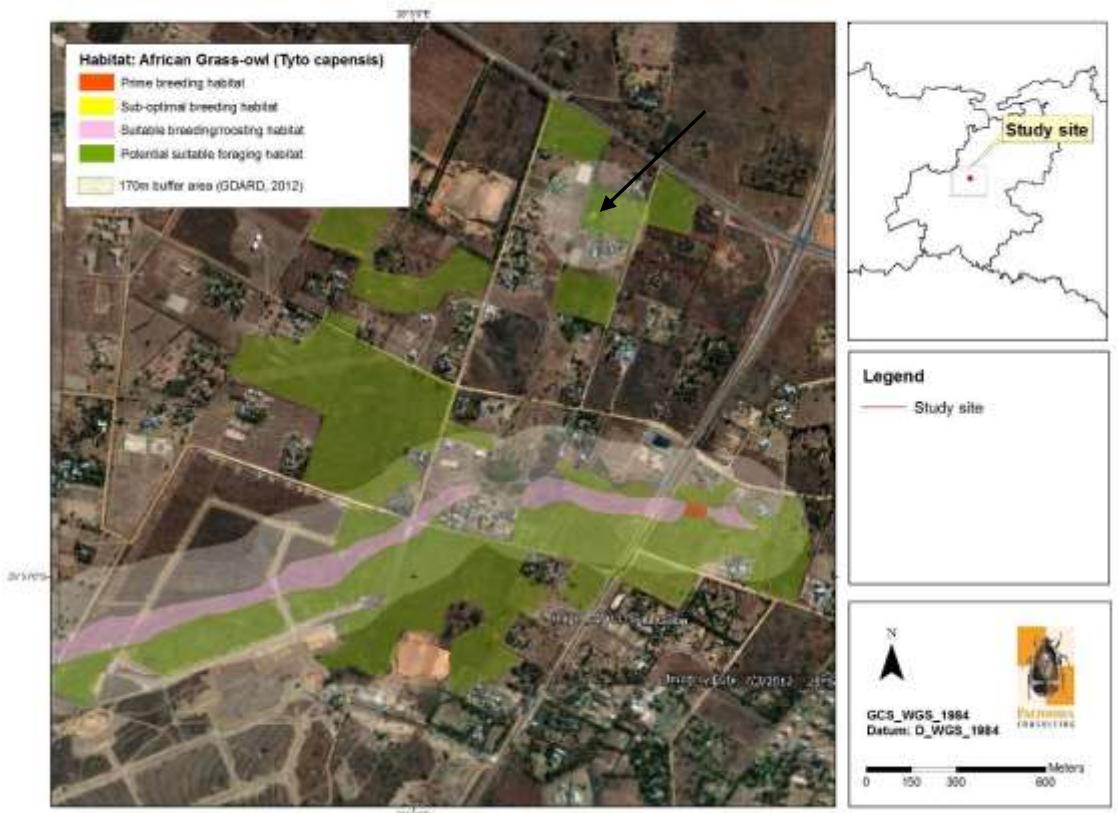
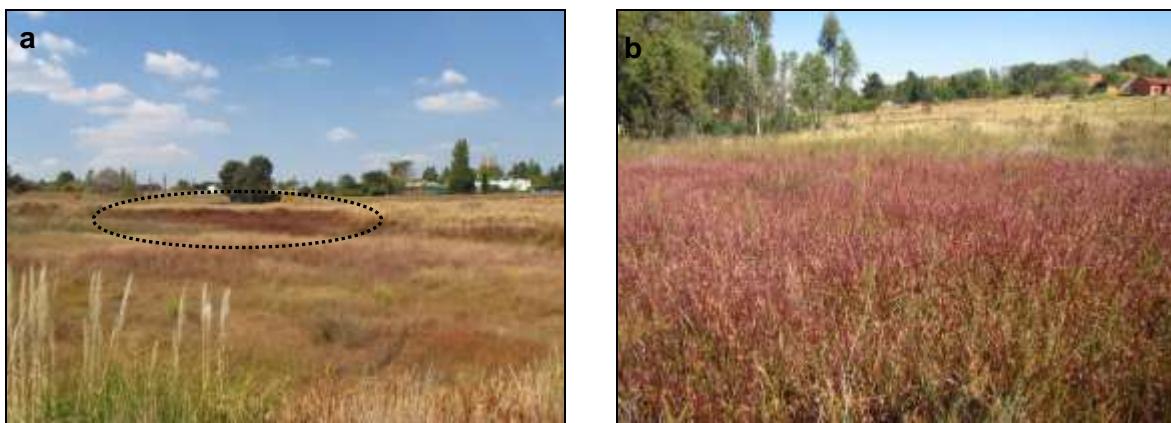


Figure 6: A regional map indicating the suitability of the study area for the occurrence of African Grass-owls (*Tyto capensis*) south of Summit Road (R 562) based on the GDARD minimum requirements (satellite image courtesy of GoogleEarth).



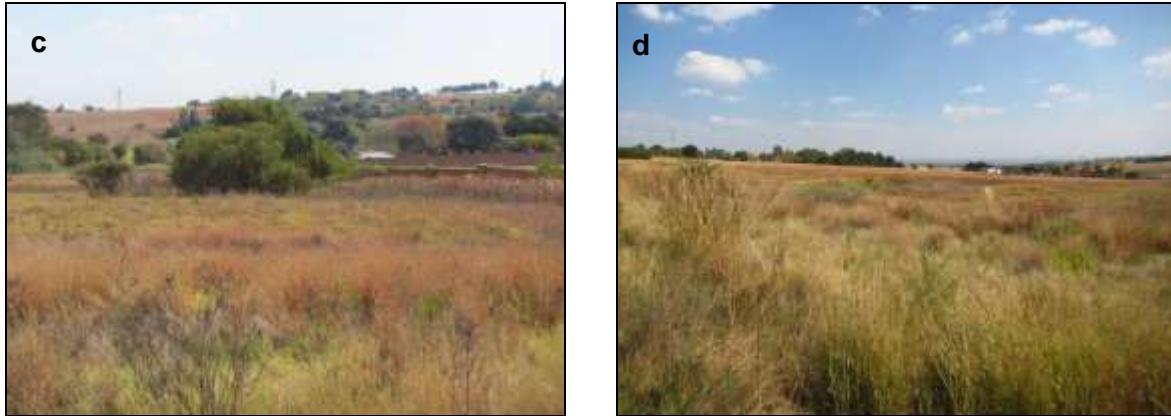


Figure 7: (a-b) *Imperata cylindrica* grassland - potential suitable breeding habitat on the study area for African Grass-owls (*T. capensis*) and (c-d) suitable foraging habitat along one of the drainage lines in the study area.

8. Preliminary Sensitivity Guidelines: Regional Approach

8.1 The Gauteng Minimum Requirements for Biodiversity Assessments

The following minimum requirements should be adhered to for any wetland system/drainage line in Gauteng that consists of suitable breeding and roosting habitat for the occurrence of the African Grass-Owl (GDARD, 2012):

- All suitable habitat (breeding and roosting habitat) should be buffered by 170 m from the edge of the wetland zone;
- All suitable habitat (breeding and roosting habitat) should be envisaged as sensitive and must be conserved;
- An additional 100 ha (or more) of suitable habitat should be demarcated adjacent to the breeding and roosting habitat. The specific surface area, being 100 ha or more is deemed necessary for the long-term persistence of any residing owl population.

The importance of a buffer zone is to minimise any edge effects that could potentially impact on the habitat quality of the Grass-Owl habitat. In general, habitat fragmentation results in an increase in the proportion of edge effects in relation to the total area. Edges are habitat areas that are often unsuitable for some species to utilise, which subsequently becomes confined to an even smaller interior or core area of unchanged habitat.

8.2 The Gauteng Minimum Requirements for Biodiversity Assessments

Figure 6 shows a preliminary sensitivity map demonstrating two drainage lines west and south of the study site. The former provides sub-optimal breeding habitat while the latter provides optimal breeding and roosting habitat for Grass-owls. Both areas were subsequently buffered by the prescribed 170 m (Figure 6) buffer zone. In addition, Figure 6 represents a cumulative habitat map of potential breeding, roosting and suitable foraging habitat of approximately 111.17 ha in total (see Table 1).

Table 1: The calculated surface areas of breeding, roosting and suitable foraging habitat for Grass-Owls in the study area as illustrated in Figure 6.

Habitat	Hectares (ha)
Optimal roosting & breeding habitat	0.32
Sub-optimal breeding habitat	0.04
Potential suitable breeding & roosting habitat	14.33
Suitable foraging habitat	96.48
Total	111.17

Any development coinciding with the two drainage lines will decidedly impact on Grass-owl individuals that could utilise these systems during foraging, breeding and roosting. It is therefore recommended that these areas be excluded from future development.

9. References

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