

ECOLOGICAL SURVEY FOR THE PROPOSED UPGRADING OF PORTION OF THE R72 BETWEEN PORT ALFRED AND THE GREAT FISH RIVER.

Draft



Albany Dune Strandveld in close proximity to R72

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1 INTRODUCTION

1.1 BACKGROUND

The proposal to upgrade a proportion of the R72 (between Port Alfred and the Fish River) has prompted an ecological survey in accordance with the National Environmental Management Act (No. 107 of 1998) (NEMA) for the length of the proposed upgrading (Trunk road 045 Section 3 KM 0 to KM 27.5). This project (P.002-056-2011/1) starts at the western edge of Port Alfred and ends on the eastern side of the Fish River and is scheduled for reconstruction. Assessment is to include an area of 100m in distance on both sides beyond the existing SANRAL road reserve fence. The presence of wetlands or riparian zones within this 100m distance would generate the need for a Water Use Licence in terms of the National Water Act 36 of 1998, dependant on triggering of Section 21 Water Use.

1.2 OBJECTIVES OF THE STUDY

The specific objectives of the ecological study were to:

- Provide an overview of the landscape including vegetation and faunal characteristics, sensitive or protected habitats and species, no-go areas or areas with specific legislation that will require more in-depth assessments (e.g. wetlands, riparian zones, pockets of forest, coastal dune vegetation).
- Describe and assess the ecological status and sensitivity together with an outline of areas or species of interest, pointing out protected or threatened species / ecosystems if they exist.
- Provide an outline of potential general impacts of the proposed upgrade.
- Identify areas where additional specialist studies may be required.

1.3 SPECIALIST DETAILS

Specialist	Affiliation	Relevant expertise
James MacKenzie	M.E.D.S. (MacKenzie Ecological & Development Services CC)	Riparian & terrestrial vegetation assessments: Determination of Environmental Flow Requirements (EFR); EcoClassification (VEGRAI); Riparian and wetland delineation; Ecological Importance and Sensitivity; Index of Habitat Integrity determination;

1.4 DATA AVAILABILITY

Data utilised for the assessment are shown in Table 1.1:

Table 1.1 Data utilised for site assessments.

Component	Data
Vegetation, including wetland	Satellite images (Google earth) of the area (25 April 2012). Biomes and vegetation types of South Africa: (Rutherford, 1997; van Wyk & van Wyk, 1997;

and riparian vegetation	Mucina & Rutherford, 2006) SANBI Plant of Southern Africa online database (based on several herbaria collections). Data collected during field visit (January 2013).
Herpetofauna	Data collected during field visit (January 2013). Frog distribution maps. Du Preez & Carruthers (2009).
Avifauna, especially associated with wet environments	Data collected during field visit (January 2013). Bird distribution maps.

2 LANDSCAPE OVERVIEW

2.1 SITE DESCRIPTION

The study area (R72 between Port Alfred and the Fish River) occurs in the Eastern Cape within the P40D quaternary catchment and the Fish to Tsitsikamma DWA water management area. The assessment area lies within the South Eastern Coastal Belt Level 2 Ecoregion (20.01) described by Kleynhans et al. (2005, 2007), the KwaZulu-Cape coastal forest mosaic WWF Terrestrial Ecosystems (Olson et al., 2004), and lies within the Valley Bushveld and Alexandria Forest Acocks veld types (Acocks 1988). Mean annual precipitation is approximately 857mm with peaks in late summer, usually February or March (DIVA GIS data, Fig 2.1, Mucina & Rutherford, 2006). The area supports both Zonal (Albany Thicket Biome) and Azonal (Albany Dune Strandveld and Estuarine Vegetation) vegetation (Table 2.1). Soils are generally well drained, sandy and of coastal dune origin (Mucina & Rutherford, 2006).

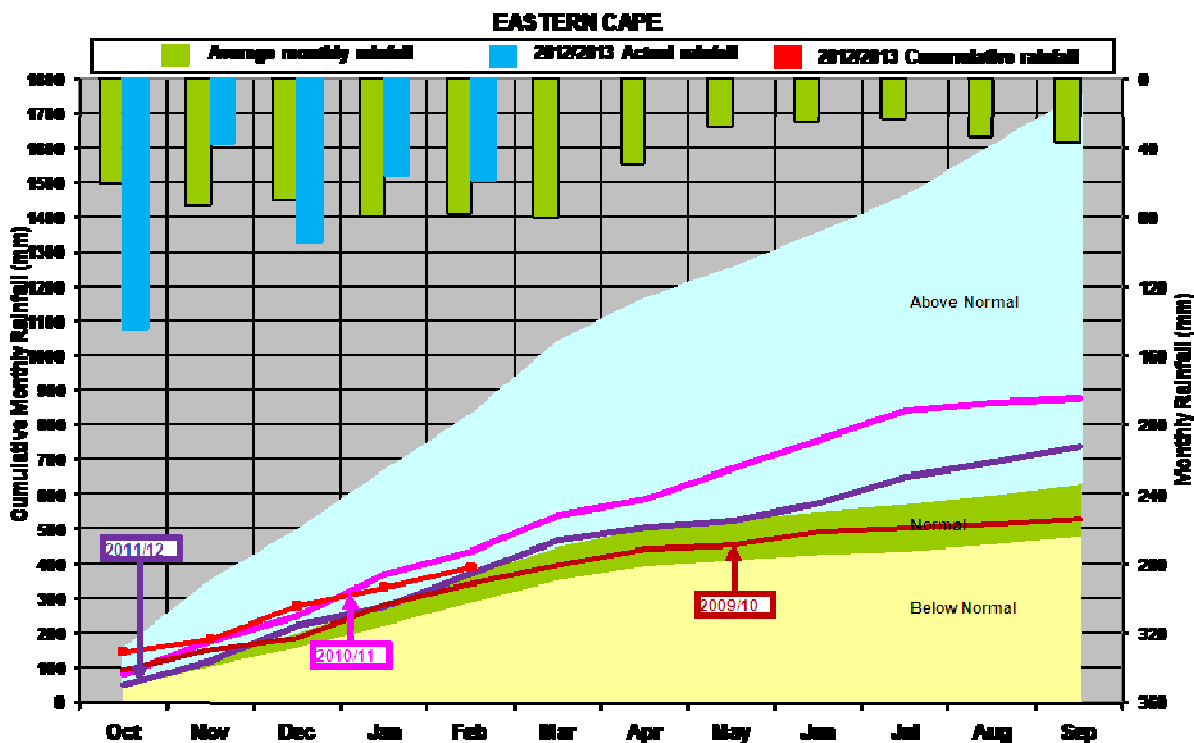


Figure 2.1 Rainfall summary and characteristics of the Eastern Cape in general (Department of Water Affairs displayed data)

2.2 VEGETATION

The assessed area traverses several vegetation types (Figure 2.2; Table 2.1): Albany Coastal Belt (predominantly), Albany Dune Strandveld and Cape Estuarine Salt Marshes (associated with Cape Coastal Lagoons) (Mucina & Rutherford, 2006).

Albany Coastal Belt and Albany Dune Strandveld occur in the Eastern Cape Province from the Kei to the Sundays Rivers (see Table 2.2 for important species). Albany Coastal Belt is dominated by short grasslands punctuated by scattered bush clumps (mainly *Acacia natalitia*) and interrupted by many valleys (Mucina & Rutherford, 2006). Grasslands are however mostly secondary and a result

of bush clearing for grazing by livestock. Albany Dune Strandveld is characterised by dense shrub thickets, mainly sclerophyllous shrubs and the occurrence of bulbous geophytes (such as *Heamanthus albiflos* and *Veltheimia bracteata*) and succulent herbs is an important feature (Mucina & Rutherford, 2006). Cape Estuarine Salt Marshes are associated with the Kowie River at Port Alfred (before the area of assessment begins) and the Great Fish River where the area of assessment ends (point 21 in Figure 2.2).

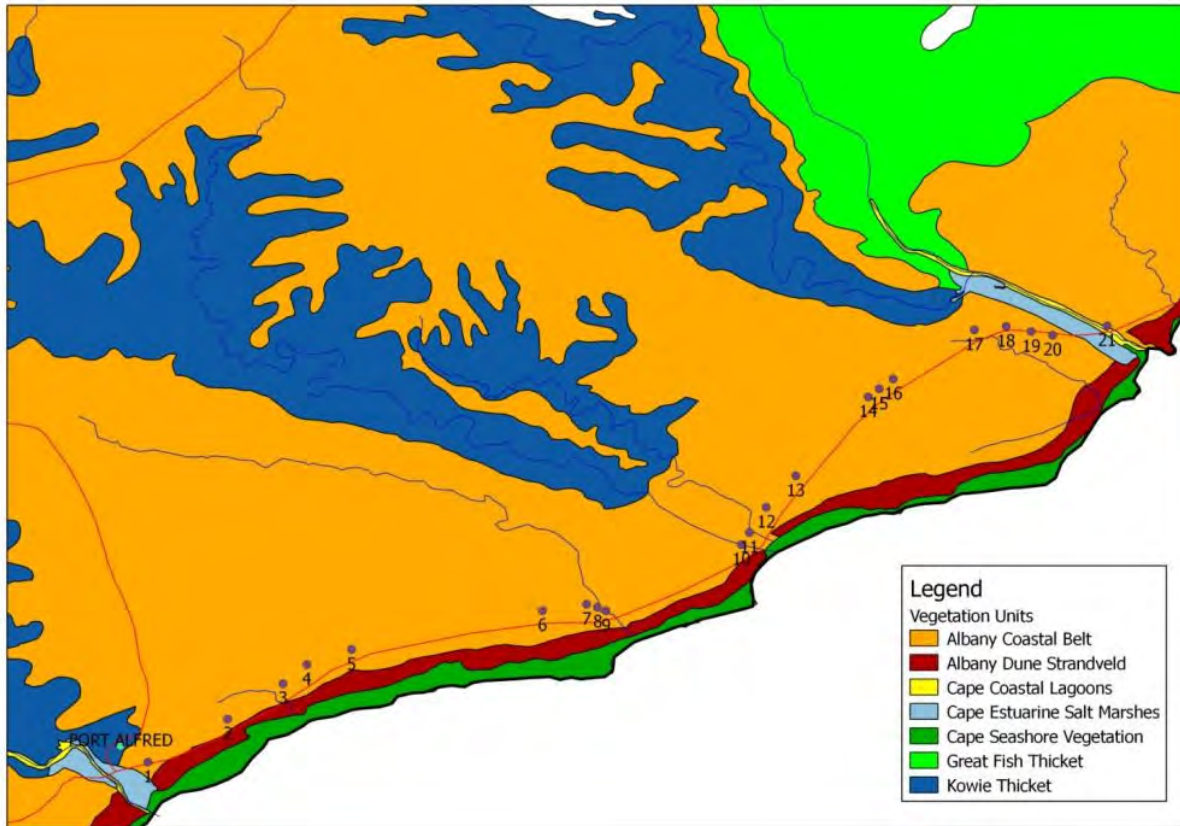


Figure 2.2. Area of assessment showing the R72 from Port Alfred to the Great Fish River (at point 21) which traverses several vegetation units. Points marked 1 through 21 are areas of interest with detail shown in Table 2.2.

2.3 FRESHWATER PRIORITY AREAS

River Freshwater Ecosystem Priority Areas (FEPAs) and Fish Support Areas are shown in Figure 2.3. River FEPAs are defined because they are meant to achieve biodiversity targets for river ecosystems and fish species, and are identified in rivers that are currently in a good condition (A or B ecological category). FEPAs are rivers, wetlands and estuaries that need to stay in a good condition in order to conserve freshwater ecosystems and protect water resources for human use. Their FEPA status indicates that they should remain in a good condition in order to contribute to national biodiversity goals and support sustainable use of water resources (Nel *et al.*, 2011).

Table 2.1 Floristic characteristics of the area surrounding the R72 from Port Alfred to the Great Fish River. (Data are from Mucina & Rutherford, 2006).

Predominant occurrence:	Occurs close to road at points 2 and 10 (Fig. 2.2, Table 2.2).	Main vegetation unit along the R72	Applicable to Great Fish River
Vegetation Type:	Albany Dune Strandveld	Albany Coastal Belt	Cape Estuarine Salt Marshes
Biome:	Azonal vegetation	Albany Thicket Biome	Azonal Vegetation
Bioregion:	Eastern Strandveld	Albany Thicket	Estuarine Vegetation
Conservation Status:	Least threatened	Least threatened	Least threatened
Proportion Remaining:	92%	80.90%	86.5%
Proportion under protection:	25% (+2.1%)	1% (+4.9%)	22.8% (+3%)
Conservation Target:	20%	19%	24%
Protection Status:	Well protected	Poorly protected	Poorly protected

Table 2.2. Important and dominant plant species in each vegetation unit along the R72 (Mucina & Rutherford, 2006).

Albany Dune Strandveld	Albany Coastal Belt	Cape Estuarine Salt Marshes
<i>Aloe africana</i>	<i>Acacia natalitia</i> (d)	<i>Disphyma crassifolium</i> (d)
<i>Brachylaena discolor</i> (d)	<i>Bergeranthus concavus</i> (E)	<i>Poecilolepis ficoidea</i> (E)
<i>Chrysanthemoides monilifera</i> (d)	<i>Bobartia gracillis</i> (E)	<i>Ruppia cirrhosa</i> (d)
<i>Euclea undulata</i> (d)	<i>Brachiaria serrata</i> (d)	<i>Ruppia maritima</i> (d)
<i>Haemanthus albiflos</i> (d)	<i>Brachystelma franksiae</i> var. <i>grandiflorum</i> (E)	<i>Sarcocornia capensis</i> (d)
<i>Metalasia muricata</i> (d)	<i>Bulbine frutescens</i> (E)	<i>Sarcocornia pillansii</i> (d)
<i>Panicum duestum</i>	<i>Erythrina caffra</i>	<i>Stenotaphrum secundatum</i> (d)
<i>Passerina rigida</i> (d)	<i>Euphorbia triangularis</i>	<i>Zostera capensis</i> (d)
<i>Phoenix reclinata</i>	<i>Rhyncosia ciliata</i> (d)	
<i>Pterocelastrus tricuspidatus</i> (d)	<i>Sideroxylon inerme</i>	
<i>Sideroxylon inerme</i> (d)		
<i>Stenotaphrum secundatum</i> (d)		
<i>Veltheimia bracteata</i> (d)		

Where:

(d) = dominant in vegetation unit

(E) = Endemic to region

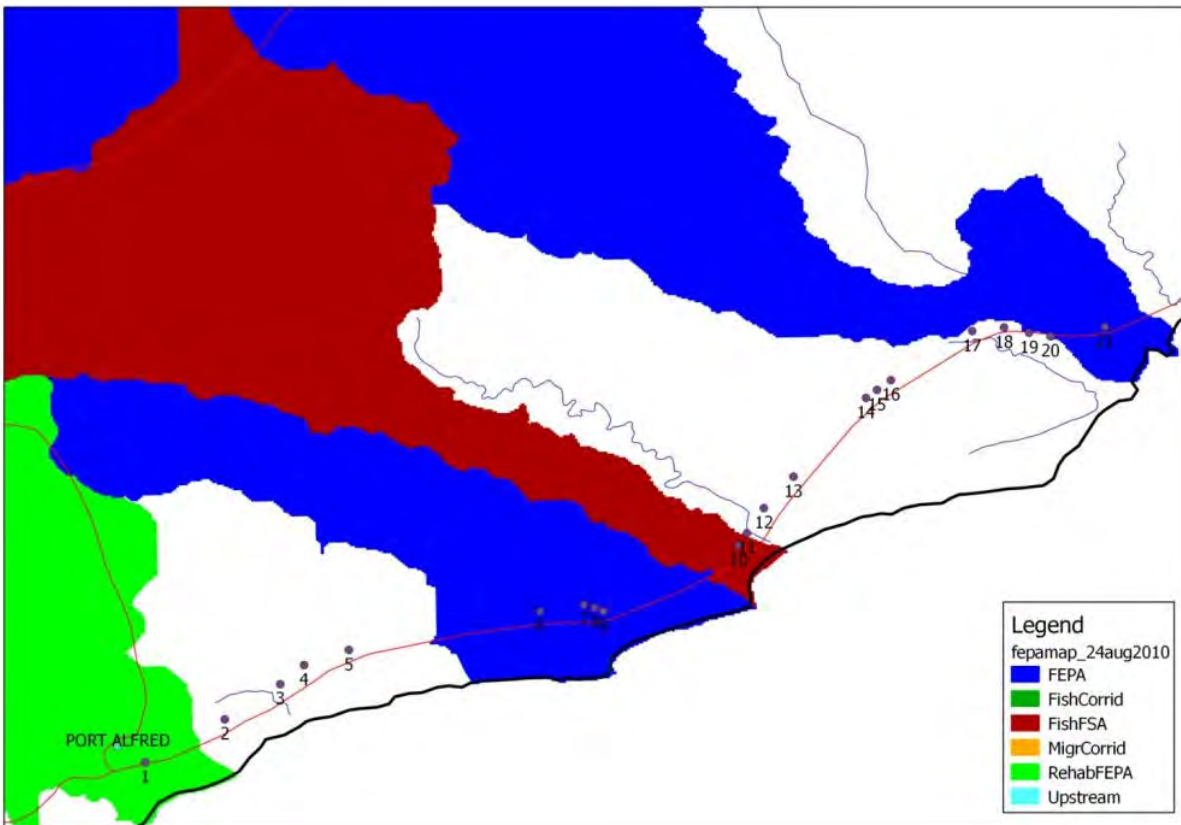


Figure 2.3. Sub-quaternaries that are FEPAs (Nel *et al.*, 2011) and within the study area.

The sub-quaternary associated with the Kowie River is defined as a RehabFEPA (green area in Fig. 2.3). These are sub-quaternaries identified for rehabilitation for threatened fish species. The West Kleinemonde River is designated as a FishFSA (brown area in Fig. 2.3), which are fish sanctuaries, translocation, or relocation zones that are currently in an A or B category. These were identified primarily for the potential occurrence of threatened freshwater fish species. Sub-quaternaries associated with the Riet and Great Fish Rivers are river FEPAs (blue in Fig. 2.3), also important as fish sanctuaries. All FEPA sub-quaternaries will need formal delineation and assessment where they traverse the R72.

2.4 WETLANDS AND ESTUARIES

The wetlands that occur in the area along the R72 between Port Alfred and the Great Fish River are shown in Figure 2.4. The classification system and delineation data used are according to NFEPA (Nel *et al.*, 2011). Other than floodplain wetlands associated with the Kowie and Great Fish Rivers, the main wetland types associated with the R72 are depressions (such as pans) and unchannelled valley-bottom wetlands. Of these wetlands, those that have been classified as priority wetlands (reviewed at NFEPA National Stakeholder Review Workshop, July 2010) are shown in Figure 2.5. Recognised wetland clusters are shown in Figure 2.6. Wetland clusters are groups of wetlands within 1 km of each other and embedded in a relatively natural landscape. This allows for important ecological processes such as migration of frogs and insects between them. All wetlands, riparian zones and estuaries within the proposed upgrade area will require assessment and delineation by a recognised expert.

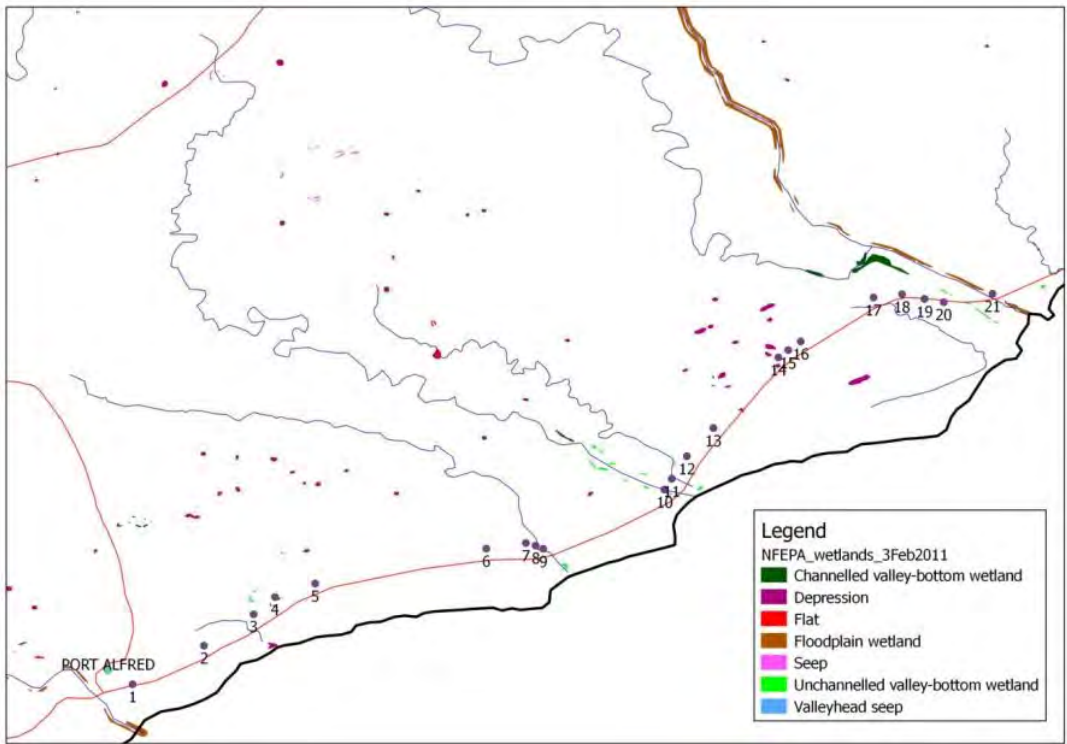


Figure 2.4. Wetlands types that occur in the area along the portion of R72 under assessment. Classification and data are according to Nel *et al.*, 2011.

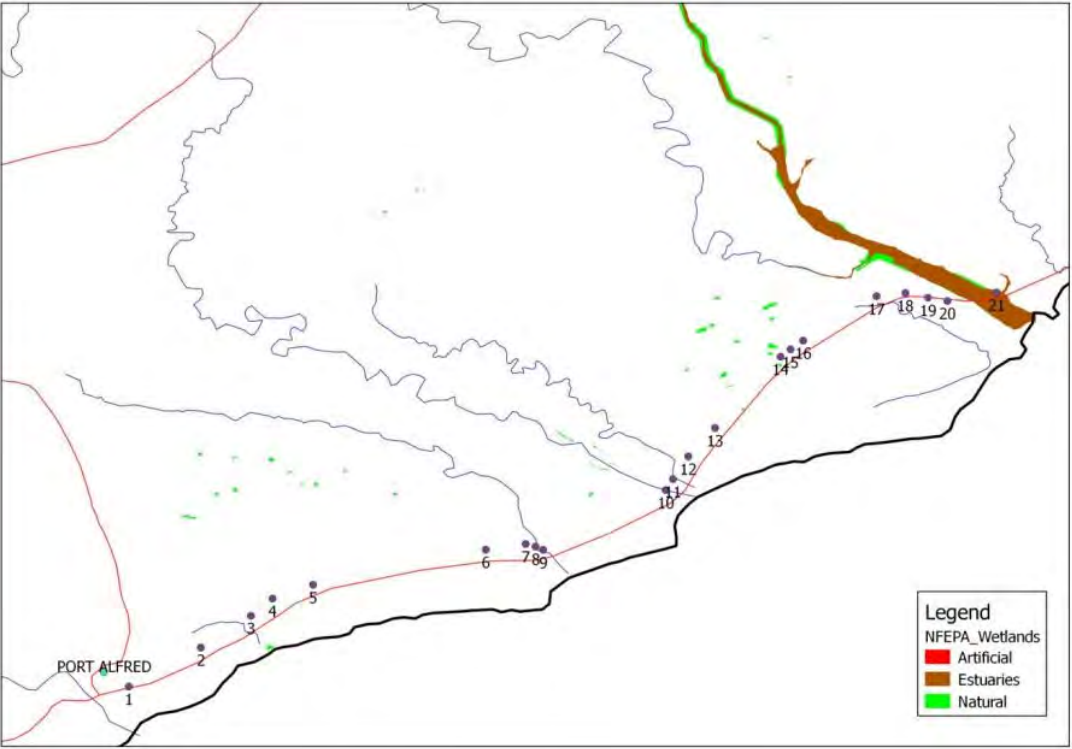


Figure 2.5. National priority wetlands, including estuaries. Classification and data are according to Nel *et al.*, 2011.

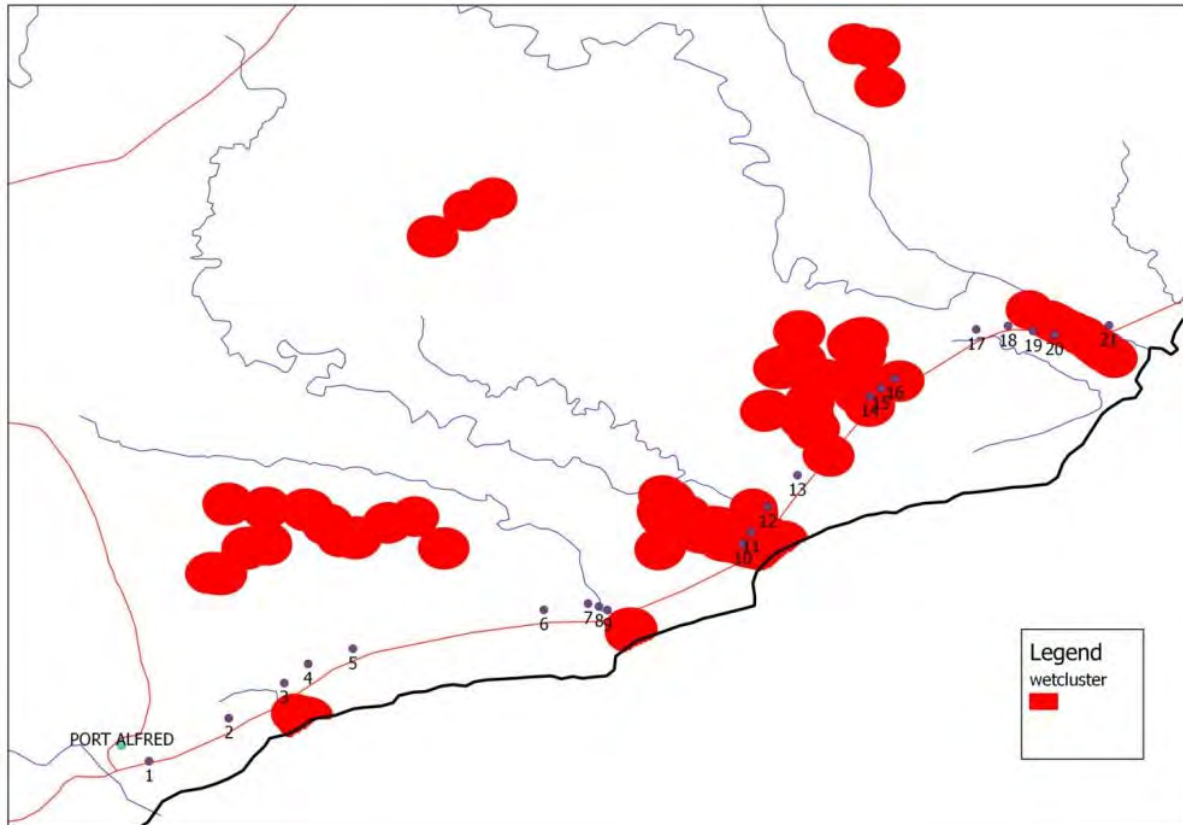







Figure 2.6. Recognised wetland clusters. Classification and data are according to Nel *et al.*, 2011.



2.5 SENSITIVE / NOTEWORTHY AREAS

The R72 from Port Alfred to the Great Fish River was assessed for sensitive habitats or ecosystems. Twenty-one areas were highlighted (marked 1 through 21 in Figures 2.2 to 2.6) and are described in more detail below (Table 2.3).

Table 2.3. Sensitive areas along the R72 from port Alfred to the Great Fish River.

Area Ref (points shown in Figs. 2.2 to 2.6)	Photo	Description
1		<p>Port Alfred residential area with mixed indigenous vegetation. Not an ecologically sensitive area but has drainage and a culvert, the functionality of which needs to be maintained. (S33.59074 E26.89977)</p>

2		<p>Marks the centre of an area approximately 2km along the R72 from Port Alfred residential area to the Rufane River on the south side of the road. This is part of the Albany Dune Strandveld and should be avoided. To the north side of the R72 is secondary grassland of low importance which has been cleared for agriculture and grazing. (S33.58058 E26.91855)</p>
3		<p>The Rufane River crossing with indigenous dune and valley vegetation dominated by <i>Phoenix reclinata</i> and <i>Euphorbia triangularis</i>. From the marked point the river runs parallel to the road for about 600m and within the proposed 100m area of potential impact. The main river and its tributaries require delineation and assessment and are sensitive habitats. The layout is indicated in Figure 2.7. Wetlands on this system are classified as an NFEPA wet cluster (fig. 2.6) (S33.57229 E26.93161)</p>
4		<p>Dam on the Rufane River or its tributary. The habitat is artificial since it's a result of the farm dam but the dam occurs on what would have been a riparian zone. Some wetland components are also associated with the backup zone of the dam. Aquatic fauna (Table 2.4) and flora will be dependent on this habitat and it should be avoided. Specialist delineation and assessment will be required. Refer to Fig. 2.7 for layout. These wetlands support endemic and threatened plant species (see Table 2.5) (S33.56779 E26.93723)</p>
5		<p>Rufane River crossing. Riparian zones and wetlands have been severely modified and some wetland habitats are artificial and associated with dam backup areas. Will nevertheless support aquatic and amphibian fauna (Table 2.4). Refer to Fig. 2.7 for layout of the Rufane. These wetlands support endemic and threatened plant species (see Table 2.5) (S33.56422 E26.94779)</p>

6		<p>Not a sensitive area <i>per se</i>, but gives an example of Albany Coastal Belt vegetation. (S33.55505 E26.99279)</p>
7		<p>Densely wooded drainage line running parallel to the R72 and flows to the Riet River. (S33.55356 E27.00318)</p>
8		<p>Riet River crossing with distinct riparian zone and estuarine influence. Forms part of an NFEPA wet cluster (Fig. 2.6) likely associated with the estuary. (S33.55425 E27.00575)</p>
9		<p>Wetland associated with the Riet River and on the north side of the R72 (S33.55508 E27.00774). Falls within 100m of the road and will require assessment and delineation with a buffer.</p>

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