

# Darwin Initiative – Final Report

(To be completed with reference to the Reporting Guidance Notes for Project Leaders  
(<http://darwin.defra.gov.uk/resources/reporting/>) -

it is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

## Darwin project information

Project Reference	15/002
Project Title	Integrating Crane Conservation with Sustainable Habitat Utilisation
Host country(ies)	Principally South Africa
UK Contract Holder Institution	Zoological Society of London
UK Partner Institution(s)	N/A
Host Country Partner Institution(s)	Endangered Wildlife Trust - Crane Conservation (SACWG, EWT). Other host country partners are as listed in original application & discussed below.
Darwin Grant Value	£ 239,577
Start/End dates of Project	1 July 2006 – 30 June 2009
Project Leader Name	Richard A PETTIFOR
Project Website	N/A
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## 1 Project Background

This project was jointly conceived by the PL and the South African Crane Working Group, alongside a dozen host-country partners at a “pre-proposal” Darwin Workshop held at EWT’s (Endangered Wildlife Trust) HQ in 2005. The primary objectives were to ensure the continued survival of South Africa’s three crane species, two listed as critically endangered and one as vulnerable, and enable the sustainable conservation of their associated habitats. To this end 1) we successfully entered all crane data collected in SA since the 1980’s into a relational database alongside geo-referenced spatial layers; 2) carried out key quantitative analyses of both population dynamics and factors influencing survival and fecundity of cranes (PVAs, QSAs, CMR, ENM & GLMMs plus GIS); 3) identified and ranked key Wattled Crane wetlands; 4) trained SACWG staff & others in technical & scientific skills; 5) increased networking and collaboration of EWT with its in-country partners; 6) supported Environmental Education by EWT; and 7) developed a Forward Strategy for 2009 – 2015.

## 2 Project support to the Convention on Biological Diversity (CBD)

The specific Articles addressed by this project are given in Annex 3, but were explicitly targeted at aiding in the conservation of two important and vulnerable habitats in southern Africa, namely wetlands and grasslands, using all three crane species as iconic flagships of these habitats. We worked in partnership with two programmes that fell within the South African CBD focal point, the Dept of Environment & Tourism, which explicitly created the South African National Biodiversity Institute (SANBI) for this purpose, namely the SANBI Grasslands Programme, and Working for Wetlands. Since the start of the project, there has been internal reorganisation within SANBI, but we still retain these specific links, with Kerryn Morrison (host country PL) now sits on advisory boards within SANBI. I have also had ongoing informal links with the SANBI Environmental Change group.

South Africa, as the third most bio-diverse country in the world, is also one of the most progressive in terms of its environmental legislation. Most important amongst various measures is the country's Biodiversity Act explicitly to enforce and leverage the Convention on Biodiversity (CBD) (National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) (NEMBA)). This addresses the need for species and ecosystems to be protected regardless of whether they occur on land belonging to private landowners or the State. This Act entrenches the importance of environmental conservation and raises the level of responsibility which conservationists, landowners and academics must accept for conserving their natural environment. At the most simple level, this Act (NEMBA) encourages the provincial and municipal conservation authorities (mainly the former) to identify "biodiversity hotspots" and develop various levels of "stewardship" with the relevant land-owners.

This above is part of DEAT's strategy to meet the 2010 CBD objective of lessening the rate of loss of biodiversity. We have found some of our partners extremely proactive in taking forward the opportunities under these Acts, especially SANBI, Ezemvelo KZN Wildlife (EKZNW) and Cape Nature (more formally the Western Cape Nature Conservation Board). Unfortunately, although > 50% of South Africa's endemic Blue Cranes are found in the Western Cape, they are heavily reliant on farming in this area. Wattled Crane breeding sites, however, are one of the prime targets for "Stewardship" in KZN, and EKZNW actively encourage and participate in Wattled Crane work.

EWT (and especially the crane group) already participates in the South African annual "Biodiversity Planning Forum", the "Grassland Society of South Africa Conference" and the "Wetlands Indaba" and other national and regional fora. EWT has also recently recognised the importance of conserving grasslands, and has an explicit "Threatened Grassland Species Programme" (TGSP), that focuses on several key grassland species, for e.g. Blue Swallow and Oribi. The TGSP will be an important partner to crane conservation project staff based in the eastern South African grasslands. Important too are EWT's civic partners, especially the Botanical Society of South Africa, and in particular the Enkangala Grassland Trust, and WWF-SA. (and because of other endemic birds, Birdlife South Africa too). Collaboration between these various partners is especially relevant when addressing certain drivers of change, such as mining.

Whilst I would not wish to quantify the impact this project has had in meeting the goals of the CBD, I am very clear that this Darwin Initiative project has been key in determining the drive, determination and enthusiasm of the Crane Conservation staff, alongside our insistence on "evidence-based conservation" and the creation of the relational crane data-base, has resulted in greater impetus both within & outside of EWT in terms of working towards the goals of the CBD (see Appendix 1). In addition to the CBD *per se*, Kerry's work and that of the crane group as a whole, impacts on CITES, CMS (AEWA) and Ramsar (see Appendix 2 – the Forward Strategy).

### **3 Project Partnerships**

The UK lead institution was the Zoological Society of London, whilst the lead partner in South Africa was the South African Crane Working Group (SACWG), part of the Endangered Wildlife Trust. Also within EWT we collaborated with (and gave funding to) the Conservation Leadership Group (which undertook EE), and worked with the Wildlife Energy Interaction Group (WEIG), especially regarding the mortality of cranes flying into powerlines. All provincial conservation authorities were partners, with Ezemvelo KZN Wildlife and Cape Nature prominent. Working for Wetlands, sitting within the South African National Biodiversity Institute (SANBI) was an important partner, and this project ground-truthed many of its RS wetlands, whilst they provided us with a wetland layer for GIS (which, for a number of reasons, we did not use). All of the above, plus some tertiary lecturers and their students and others (eg CSIR), were involved in the initial planning phase.

The demand for the project outputs was initially driven by a "Forward Strategy" undertaken by SACWG in 2004. However, during the "pre-proposal Darwin Workshop" a set of deliverables and priorities were drawn up by the wider host-country conservation community, as well as being partly directed (and constrained) by what we felt to be a realistic "Darwin funding target".

As has been detailed in the yearly and half-yearly reports, the host-country management of this project changed considerably over the years – it was initially led by L-J Theron for the initial eighteen-months, and then following Leon’s resignation, another manager was recruited. Finally, although officially from March 2009, but effectively for much longer, both SACWG and this project fell under Kerry Morrison, who was previously responsible for the ICF-EWT partnership “African Cranes, Wetlands and Communities”. “South African Crane Conservation” now sits within this partnership, but Crane Conservation in southern Africa now falls solely under the remit of EWT (rather than the ICF-EWT partnership).

This Darwin Project did not establish an MOU with EWT. Even with hindsight I am not sure that such a document could have prevented the issues which followed the start of this project, and in fact a *lack* of an MOU with EWT gave me greater flexibility. Furthermore, although Leon Theron’s departure ignited considerable debate between Yolán Friedmann (CEO) & myself, it is to her credit that we now have an amicable working relationship and she has fully supported me & Kerry Morrison over the past 18 months.

Where, however, MOU’s would have been useful is between EWT and our partner organisations. What we found, (and was flagged up by a referee), was that clear cut results were not necessarily resulting from our collaborations. Part of this was purely accidental (quite literally – the database manager for Working for Wetlands was involved in a serious car accident) through to our phasing/timing being out of synchrony with the partners’ planning cycle. To be honest, I do not think that any practical advancement has been lost: EKZMW have “learning stewardship on the hoof” with the consequence that we are able to feed our Wattled crane work into both the Stewardship planning process and the rehabilitation of wetlands under Working for Wetlands. Similarly, the SANBI Grassland project is probably only now in a position to make use of our Blue Crane data (which previously would not have been available because of lack of electronic entry of sightings etc). Therefore we invited key partners to attend a critical period of our “Strategy Workshop” in February this year which has proved invaluable: 1) in getting feedback on our proposed work over the next five years, and 2) in informing those bodies which form part of the DEAT legislature of South Africa (particularly NEMBA) of the types of data that a) are now electronically retrievable, and b) are being collected in a routine manner by the crane workers. We (EWT and in some instances, specifically Crane Conservation) are drawing up very clear MOU’s with each partner. Further, because we had a good working relationship with our partners, I believe that any earlier attempt at drafting MOU’s would have meant they would simply be rewritten now anyway given what we have discovered, learned and achieved in this project.

Personally, I learnt four important lessons: 1) unless people are continually using a particular piece of software, whatever is taught at a learning workshop is rapidly forgotten (even with extensive supporting documentation) – this resulted in us modifying our workshops so that we kept revisiting the “key” techniques. An example would be a five-day training lesson in Excel, with particular emphasis on graphics, the look-up function and pivot tables – we subsequently generally included these three tasks in whatever training sessions followed. 2) the budget was not adequate for the workshops – the cost of gathering field workers from around South Africa was considerable, let alone the cost of renting accommodation that had suitable “lecture space”. 3) Because of what I learnt in 1) above, I made no attempt to provide proper statistical training to the group. I still feel dissatisfied with this, but I was very clear that unless the field staff were to have continuing access to “their” data (which is now feasible through the Access database and training in its use), then any training time would be wasted, especially as I wanted to go down the road of “R”, where initial intensive support (and then ongoing usage) is needed. 4) My final regret is that I did not keep a closer eye (and devote more money to) the Environmental Education carried out by the CLG. Although the costings and outputs were drafted and agreed with senior CLG staff at the time of application, the figures were unrealistic, plus “agreed” SA government Lottery Funding to the CLG was suspended by the government when it cracked down on corruption within the Lottery organisation. There was also a high staff turn-over, and I had to ask the CEO to crack her whip, as collaboration and delivery was initially poor. At the end of the day though, our financial contribution to CLG probably allowed one additional EE field worker to be employed, and Lottery Funding has finally come through.

However, despite the problems discussed with Darwin during the reporting phases, and the discussion above, I believe this project considerably advanced crane conservation in South Africa and aided in the protection of key habitats. Our outputs may have been ambitious (previous comments from referee), but most were met and they fired the SACWG staff to the extent that they were prepared to continue workshops well into the evenings! I believe they now have much more awareness of “evidence-based conservation”, alongside a drive to give of their very best, despite a sometimes bumpy road ...

### **Describe the involvement with other UK or regional institutions, how have these institutions supported the project?**

There was peripheral “discussion” of our work and exploration of possible collaborative projects with the RSPB (particularly Paul Buckley), but nothing that led to anything concrete. Of more “value and use” were two MSc students from the universities of Leeds and King’s College (Katerina Wojtaszekova and Rachel Folkes respectively). Katerina spent 6 months in KZN, measuring characteristics of wetlands where Wattled Crane currently bred (“Active”) and where they had bred prior to 2003 (“Historic”), alongside some randomly selected wetland sites. On her return to the UK, Katerina then used the EKZWN 2005 Landcover map for KZN and quantified the spatial composition of “Active”, “Historic” and “Random” sites at 50m, 100m, 200m, 500, 1000m and 2000m radii from “nest sites” sites. Katerina achieved a First-Class Pass both for her thesis and coursework. We have since modified Katerina’s work to produce quantified ranking of the sites (QSA’s – see below). Rachel, on the other hand, needed a 6 week “thesis project” for her MSc, and she worked on the Co-ordinated Avifaunal Roadcount (CAR) data held by the Animal Demography Unit, University of Cape Town. Financial support was provided to the CAR project through our Darwin funding. Rachel effectively “cut” buffers from the 2000 NLC map for all the routes driven by the CAR volunteers, and statistically compared the counts per km per route against Land cover type – this project is included as an Appendix (3). A South African MSc student (Ernest Mmonoa ) also produced his thesis on Blue Cranes, this time using GIS and RS data to look at habitat requirements by the breeding birds. Unfortunately his sample size was low (not through any fault of his own) – I was an external examiner on this thesis (Breeding habitat of Blue crane (*Anthropoides paradiseus*) in Mpumalanga Province, South Africa), but the internal examiner has requested changes to the thesis. Consequently I am unable to forward a copy to you, but when his thesis is accepted by the University of Limpopo, I will make an electronic copy available for distribution through Darwin.

## **4 Project Achievements**

### **4.1 Impact: achievement of positive impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits**

The main achievements of this project, and that will have an ongoing impact on biodiversity in South Africa, are 1) the creation, curation, and on-going maintenance of a relational database that now houses all South African crane data back to the 1980’s; 2) the coupling of this database with the ongoing collection of specific data, both observational and remotely sensed, that can be used by the South African conservation community; 3) the creation and integration of a network of conservationists willing to share ideas and data: examples include SANBI researchers already asking to access the database in order to examine potential climate change using our database through to reciprocal exchange of information with Working for Wetlands, through to the housing of ringing data previously collected by individuals; 4) the use of extant and current data collected during this project to a) examine in details various population scenarios for the Blue Crane; b) identify critical wetlands for the 50 – 80 pairs of breeding Wattled Crane remaining in South Africa and integrating these data into models for both *in-* and *ex-situ* conservation (Wattled Crane Recovery Programme) as well as EKZWN using these data for the implementation of NEMBA (especially Stewardship), and c) using Ecological Niche Modelling to increase our understanding of the habitat requirements of each of the three species; 5) achieving a much higher profile for the integrity of natural grasslands (and associated endemics) through our own work on Blue Crane breeding requirements and

linkage with a range of partners, both internal to EWT and external; 6) acting as a template for other groups in EWT and demonstrating the power of “evidence-based conservation”; 7) the capacity building of staff in scientific and technological advances and 8) formally supporting the Conservation Leadership Group of EWT in Environmental Education, alongside Environmental Awareness in the private sector, especially agro-forestry and both small-scale (subsistence) and large-scale farming.

Each of these have had a positive impact on various articles of the CBD, with many of our final outputs and achievements impacting directly on DEAT and its designated substructures, particularly various groupings within SANBI and the roll-out of NEMBA at the provincial level (which has a 2013 deadline for completion). Thus even provincial conservation organisations that have previously had difficulties allowing staff to attend our workshops and annual crane meetings will be forced to approach us as the deadline gets closer.

## **4.2 Outcomes: achievement of the project purpose and outcomes**

The project purpose was to “To consolidate and build capacity for long term viability of cranes, associated endemics and threatened habitat in South Africa through development of sensitivity maps, population habitat viability analyses (PHVA) and training in line with government and institutional responsibilities relating to the CBD”. The objectives were to be achieved through “Improved information on the population dynamics and threats to the three crane species for effective management and implementation of crane conservation strategy; ii) Take up of recommendations by relevant SANBI programmes; and iii) Training courses completed in Environmental Awareness as well as BTEC & BSc Hons projects completed”

The outcomes themselves revolve around the trivial but critical design (protocol), collection and analysis of data necessary for scenario planning under PVAs (obtaining standardised measurements for each species of crane on fecundity and survival in different bioregions of South Africa) through to use of complex statistics (Burnham’s CMR Methodology with dead resightings through to running MAXENT in order to create Ecological Niche Maps). We developed a new method of quantifying site importance for cranes, allowing ranking of each individual site using Remote sensing and statistical transformations (Quantitative Site Assessments, QSAs). All of these outputs (sent through to DI with respective annual reports) are being used by the various government sectors to oversee the CBD, as well as at a practical level informing e.g. Working for Wetlands as to the important wetlands needing rehabilitation within a catchment, and what the quantitative features are that Wattled Crane require for breeding purposes, through to informing eg EKZNW as to potential sites for Stewardship. Even our set of scenario-planning exercises regarding environmental change in the western Cape (effectively changes in agricultural practice in response to climate or market forces) have shown both us and (in this instance, Cape Nature), how sensitive both the local sub-population and the total South African population of Blue Cranes are to slight changes in mortality. This information is also vital for WEIG (Wildlife Environment Interaction Group) within EWT to continue their currently very positive relationship with ESKOM, which in turn will now allow accurate powerline estimates to be obtained for cranes and other large terrestrial birds (eg bustards and korhaans). These meta-population PVA’s also allow poisoning incidents to be put in perspective.

Perhaps the most important achievement (and lasting legacy) has been the completion of a geo-referenced relational database on all crane data running back to the start of various “crane groups (see attached current Forward Strategy) as well as historical data held by individuals going back over many years (eg from W Tarboton, C Vernon & potentially WRJ Dean). Kerryn is currently negotiating with the Animal Demographic Unit to hold mirror CAR data, and verbal agreement has been reached with M Andersson (current Director of Birdlife South Africa) to hold his ringing and other crane data. Kevin Shaw (ornithologist, Cape Nature) has already made his ringing and other data available to us. EWT-Crane Conservation should thus become the natural centre of all crane work in South Africa, as well as Kerryn Morrison acting as ICF Co-ordinator for the whole of the African continent re cranes. Kerryn has already been instrumental in the upgrading of certain sub-populations on the IUCN/Birdlife Red List, and getting changes agreed within CITES. Our work also has a direct bearing on getting wetland

sites upgraded to Ramsar sites and for the AEWA (CMS) to be properly implemented in South Africa (at least regarding cranes), alongside investigating illegal trade in cranes.

Parallel to the scientific and technical training that EWT staff and others have received over this three-year project, the Crane Conservation staff themselves play an ongoing role working with farmers, farm-workers, and school children on an almost daily basis. Further, because of our links with Working for Wetlands (rehabilitation) and Working for Water (alien vegetation), the staff have been able to get direct governmental assistance to farmers – the latter are therefore far more receptive to crane conservation. Further, despite difficulties of funding and staff changes within CLG, their outreach Environmental programmes cannot be understated. The Rural Eco Warriors (REW's) are managed by Samson Phakathi, who has worked his way through the ranks as well as undertaking undergraduate distance learning himself. The large number of “citizen science” publications in newspapers, radio and TV all add to a community ethos of conservation. The value of this, although difficult to measure, can be seen in the opposition to open-cast mining – a major threat to grasslands and cranes. Despite supposed short-term gain in employment terms etc., many of the communities have come out strongly against this mining.

EWT- Crane Conservation staff are still involved with EIA's. but they have also become far more pro-active in working with e.g. Agro-forestry, to the extent of commenting directly on the Forward Strategies and Planning Decisions of international companies *prior* to publication (see a much earlier comment by referee re our first Annual Report). In the light of our “evidence-based approach” to conservation, these companies have also been willing to with-hold activities at certain times (eg no felling in those areas at times when cranes are breeding).

### **4.3 Outputs (and activities)**

Many of the outputs are described above and in Annex 1. Here I contrast our intended outputs and activities when the project was first conceived and what we have actually achieved.

Our first set of difficulties relate to the creation and population of the relational database. I have explained the difficulties from Report 1 through to 3, but effectively they can be grouped as 1) finding a suitable candidate who had both database design and GIS skills who was prepared to accept, what we later learned, to be a much lower salary than could be commanded in the private sector, and 2) the original data were far more “messy” than anticipated. Kirsten Oliver only started in Feb 2007 (instead of Jul 06), and by her own admission was much more experienced (and interested) in GIS as opposed to db design and implementation. The net result is that it has taken a good two years for the database to be up and running, although it remains to be fully cleaned (having said that, the EGI Great Tit data base, compiled by many students over the years and under the management of a staff member at Oxford, still has odd errors in it). However, the most efficient way of picking up errors is to actually use the data in analyses, although a first sweep of cleaning (checking for repeat observations, odd dates, GPS co-ordinates) has already been undertaken. The net result is that we have not made maximal analytic use of the data housed in the db, although as demonstrated in the “end cover” to our attached Forward Strategy, some very powerful work can now be undertaken. In fact, I doubt there is a comparable database in Africa in terms of length of observations coupled with coverage and detail of observation.

Our second unattained goal was in obtaining suitable South African post-graduates to undertake MSc work on cranes, despite us offering a sizeable bursary with each project proposal. The reasons for this paucity are not understood as we went about looking for students in the same manner as I would in the UK, as well as offering financial assistance. One difference may be that South Africa is lagging behind Europe in the take up of MSc's – twenty years ago students in the UK either undertook BSc Hons or PhD and MSc's were relatively rare. Further, in SA MSc's tend to be by research rather than “taught”, and thus many people find a job first before attempting to undertake an MSc. (Hence most of the FOs within EWT-CC either have MSc's or are actively pursuing them). However, whilst Darwin funding is not actually intended as a way of supporting UK MSc students, we were fortunate in the quality of work they undertook, especially Katerina Wojtaszekova's field and lab-based work on the Wattled Crane.

Our other major disappointment was that despite our initial research and discussion with the local manufacturers of satellite GPS tracking units, the use of these units in the field proved worthless, and has been discussed at length in Annual Reports 2 & 3. We set a lot of store on these units giving us valuable information, especially on daily movements of birds within and between seasons, to no avail. I wanted EWT to pursue this through legal means, but there are difficulties in that certain of the other EWT groups are also using the same manufacturer without any problems (they are working on carnivores).

However, given the changes in staff and restructuring that has occurred at both EWT and ZSL, these failures need to be set against what we have achieved, which is high-lighted both in sections above and below.

#### **4.4 Project standard measures and publications**

See Annex 4. All publications for each year have been included in relevant the annual reports and I have not repeated these data here.

Copies of important publications have been sent through to Darwin alongside these annual reports, as have copies of the two peer-reviewed PAOC scientific mss.

A number of papers stemming from this work are already plan – a couple are close to completion and initial analyses done for others. We expect 15 odd papers to be written over the next two years.

#### **4.5 Technical and Scientific achievements and co-operation**

##### **4.6 Capacity building**

I am taking 4.5 and 4.6 together. Technical and scientific co-operation within EWT and across partners with EWT-CC has been excellent in intent, but slightly hap-hazard in delivery. Hence the MOU's which either are already in place or soon will be between EWT-CC and other organisations. One organisation where we could have benefited from closer co-operation (especially as they were receiving Darwin money) was the ADU at the University of Cape Town, that undertakes the organisation and implementation of the CAR (Co-ordinated Avifaunal Roadcounts) counts. Early into our project I got agreement from Prof Les Underhill that we would have first pick of the cherry (and D Young was copied into these e-mails as well as being present, with her T&S paid for by Darwin) at the early workshops where she had a complete overview of our intended activities and analyses. However, analyses of the Blue Crane data have continued to be published by Donella. Naturally she has taken the cream – I am just surprised she made no attempt to collaborate with (or inform) SACWG at the time.

Individuals have been extremely free in sharing their own crane data, the exception being Mark Andersson who was using his data towards a PhD – hence the “Northern Cape” is largely ignored in our analyses. However, Kerryn Morrison is currently discussing data-sharing agreements, amongst other things, now that Mark has become Director of BirdLife SA. Many governmental organisations within SA, including our partners, were extremely helpful in providing us with spatial data layers *gratis* which otherwise would have made a considerable dent in our budget.

Certain provinces within SA have not taken their DEAT responsibilities seriously – with respect to cranes this is particularly noticeable in Mpumalanga, the Free State and Eastern Cape (much to the frustration of the respective ornithologists). On the other hand, the provincial conservation bodies in the Western Cape and KZN are at the forefront of innovative *and planned* conservation strategies, the Stewardship programme being an example (which incidentally is meant to be fully in place by 2013 – hopefully this looming deadline will force recalcitrant provinces into action).

Within EWT, with Kerryn now managing both the crane work north of the South African border and south, there is considerable interaction, especially by Osiman Mabhachi, whose work encompasses the whole continent. Another group we interact with strongly is the Wildlife Environment Interaction Group (WEIG) who deal extensively with Eskom and have good working relations with them. WEIG has a new manager who is taking a far more pro-active and scientific approach to the impact of power-lines on cranes. There is considerable interaction between both the FOs and WEIG, and also Kirsten Oliver and WEIG, and we hope to get some

accurate estimates of crane mortality per km of powerline per year for incorporation into our PVA models. The Conservation Leadership Group (CLG) is another internal partner where the relationship between Kerryn and their staff has greatly improved – interestingly, the manager of WEIG and one of the managers of a key section of the CLG have come through SACWG in their early years at EWT.

Finally, with respect to 4.5, I would argue strongly that the Darwin grant has greatly increased our credibility amongst our external partners. Similarly, internally, EWT-CC has shown the way for many of the other working groups within EWT since Kerryn took over – at the end of last year she and her group won the Working Group of the Year Award within EWT and Tanya Smith, one of our Field Officers, also received the Conservation Achiever of the Year Merit Award

Regarding capacity building, I have reported extensively on this in previous reports and included examples of our training material. EWT-CC is made up of people from a range of backgrounds and with disparate levels of scientific background. Training work therefore had to be both generic and yet allow for individuals to then progress at their own rates with direct input from the trainer. What was especially encouraging was the way these training workshops fostered a spirit of camaraderie, with more advanced learners helping out the “newcomers”. I think the “scientific” training, once they began to see how the results could be used for conservation, greatly enhanced their understanding for the need of “evidence-based conservation action”, and they realised why Raj and I (and others before us) had been so insistent on employing consistent protocols in the field.

As discussed elsewhere, both the host-country and UK-based institutions have undergone considerable changes since the Phase 2 project application was written. I believe the achievements in this project have largely been down to the enthusiasm and dedication of individuals supported by their immediate colleagues and line managers, rather than by the institutions *per se*. This particularly true of ZSL where cranes are not a conservation priority, and neither is South Africa at a regional level.

#### **4.7 Sustainability and Legacy**

I genuinely believe that this Darwin project has left a lasting legacy, both in terms of the training undertaken and with respect to certain outputs such as the relational database and the Forward Strategy. I know Kerryn will actually use the strategy document to inform her day-to-day and annual management of EWT-CC staff, and it will thus remain the dynamic document it is intended to be. The greatest threat to what we have achieved is financial stability into the future – a factor that even the major international conservation organisations are currently having to grapple with. Kerryn and I have discussed various ideas, including more pro-active partnerships (eg sharing a PhD student to look at the effect of Climate Change on Agriculture and Cranes in the Western Cape), but Kerryn also has access to the unique funding opportunities allowed by the International Crane Foundation. Also, the Forward Strategy sets out priorities in terms of the work that needs to be undertaken over the next 5 – 10 years. Most importantly is the spirit within EWT-CC – this is an unquantifiable asset of immense importance.

I will remain in contact with Kerryn and the members of EWT-CC – we have some 15 papers to write and I am heavily involved in these, and Kerryn has asked me to sit on the Advisory Board of EWT-CC alongside people who actually know something about cranes!

Thus whilst the financial situation is difficult, I remain optimistic about the legacy this Darwin project is leaving behind.



## 5. Lessons learned, dissemination and communication

I have discussed a number of “lessons learnt” both in this document and in previous reports. For me, the biggest obstacles were the ones I least expected, ranging from the difficulty of employing a db & GIS person at a rate we could afford through to the changing dynamics of both organisations in response to changes in institutional strategy and personnel changes. I found management of the project “at distance” to be difficult (or at least, very time-consuming via 1,000’s of e-mails), and was heavily reliant on the host country manager and other individuals to ensure relevant action was being taken. However, overall I believe we overcame the difficulties and attained most of what we set out to do.

Output from the project has already been disseminated in the scientific literature and conservation community, but as important is the constant flow of newspaper, newsletter, web blogs, radio and TV interviews that continue to stream forth from EWT-CC (see Publications under Annex 5 which simply relates to those undertaken this year)

### 5.1 Darwin identity

As listed in the original application, all newsletters, communications, crane “Custodian” boards and vehicles carried the Darwin logo, and full acknowledgement has been (and will be) given in papers and talks/presentations to both scientific and citizen groups. That said, outside of our stake-holders and partners, I suspect “an understanding of the Darwin Initiative” is extremely limited in South Africa, as I would envisage it is among the general UK population.

## 6 Monitoring and evaluation

SACWG, and now EWT Crane Conservation, hold an annual conference each year, which is attended by sponsors, stakeholders, conservationists and committed crane enthusiasts. For the past 3 years (2007, 08 and 09) we have presented the results of our Darwin work to date in one form or another, on this last occasion the full two days were almost entirely concerned with us summarising our Darwin work, to the extent I had 3 presentations to give. The point I am making is that this project has received wide and informed feedback from the beginning. Our partners and collaborators have been especially forthcoming with ideas, time and personal data – Kevin Shaw (Cape Nature) looks after 12000 odd Blue Cranes on his patch in the western Cape, and Kevin McCann has been involved with cranes and SACWG more or less since the beginning back in the 1980s. Although officially now working for EKZNW, his remit concerns the implementation of NEMBA, and hence his deep knowledge of all three crane species and their threatened habitats has been crucial to our work. Our results have also been presented to the Pan-African Ornithological Congress, and to invited guests at one of our workshops (in addition to the two Kevins, WWF-SA & W4W were present). We have also had international input from senior staff at the international Crane Foundation. Finally, of course, are the Darwin Initiative referee(s). We hope that we have taken on board as many of the comments and criticisms as we have been able, and I believe the current Forward Strategy marries both the input we have received, and as importantly, will motivate the bonding between evidence-based conservation and practical conservation on the ground.

### 6.1 Actions taken in response to annual report reviews

The referee is correct to query 1) how further complex statistical analyses will be undertaken, and 2) how we will ensure the GIS/db side of the crane work is maintained. Kerryn has set up an advisory board of crane experts and asked me to sit in and provide scientific advice. I am also happy to assist in analyses and writing the 15 or so papers we have identified as having arisen from this work. However, until my own position and work load is sorted out, I cannot commit to time-scales except for those where I have already committed myself or done most of the analyses. The CC group currently has 3 FO’s I would be confident in training in the use of “R” – possibly an intensive set of training workshops may be valid to apply for “post-project Darwin funding” to allow me to spend say 6 weeks training these CC staff in R over a 6 month period, during which time specific projects (and papers) will be undertaken by them. In addition. Kirsten has already demonstrated her statistical skills carrying out Ecological Niche Models, and has done some basic R command line statistics. With a bit of training she would have the skills necessary to take statistical work forward. Further, there are other South Africans in other Institutes (eg SANBI) who are skilled in statistics and have already indicated their interest in

collaborative work. This latter opportunity will be taken up once Kirsten & CC in general have properly explored the still novel database and its contents!

Regarding the ongoing maintenance of the relational db and GIS skills, Kirsten is currently still in post and both Kerryn Morrison and the other senior staff at EWT recognise the value of her post and the importance of its continuity. I cannot make predictions, but I am confident this post is secure. Further, there is a FO who has at least two years further funding and has good GIS skills. Further, Kirsten has set up the reading of the field forms to be automated, so this *may* be compatible with the field officer. However, FO is an excellent (& genuine) field worker who would probably not be keen to undertake this extra role, in addition to which she needs to concentrate on studying for her MSc – not easy when working full time! However, the CEO of EWT is aware of the value of the crane database, and we are optimistic regarding Kirsten’s future.

In this context, the referee is also correct to point out that we have not delivered on the financial plan that I envisaged being integrated with the Forward Strategy (EWT-CC obviously has a forward budget and is continually looking for new sources of funding, especially from South African companies). However, when I wrote this proposal and what I still have in mind is a document that horizon scans and makes links with international conservation organisations. Thus the problem of 60% of the Blue Crane population sitting in the western Cape, subject to rapid agricultural change either in response to climate or market forces, is an ideal multi-disciplinary project that could be eligible for funding from international organisations. Indeed, if relevant people had been on their toes and done the necessary networking, a considerable sum of money explicitly to look at climate change in the Cape could have been shared with us. However, owing to staff changes as detailed in previous reports, the only person capable of taking such a strategy forward is Kerryn – whether she has the time is another matter!

## 7 Finance and administration

### 7.1 Project Darwin expenditure 2006/07 – 2009/10

	Agreed total	Total Expenditure	Difference
Staff costs			
Rent, rates, heating, lighting and cleaning & OH			
Postage, telephone and stationery			
Travel and subsistence			
Printing			
Conferences, seminars etc			
Capital items			
Other			
<b>Total</b>			

The overspend of nearly £xxxx can be attributed to having to juggle other expenses to ensure the workshops went ahead.

### 7.2 Additional funds or in-kind contributions secured

£XXXX from EWT with respect to staff salaries and fuel. In addition a similar value could be attached to the 5 field vehicles used by both EWT Field Officers and students.

ZSL committed in excess of £xxxx to the project to part-cover my salary, pension, & NI: However, subsequent changes in circumstances at ZSL has meant that this was not all forthcoming, resulting in me having to work on a tighter budget than anticipated.

### **7.3 Value of DI funding**

The Darwin Initiative awarded this project the requested sum of £239,576. Roughly 65% of this amount was passed on to EWT in quarterly blocks. There is no doubt that the award of this total sum not only allowed the project leader to spend most of his time working on cranes, but as importantly, allowed EWT SACWG and then EWT CC the breathing space to actually consider its priorities and dispassionately look at data that had been piling up but often remaining unanalysed. The workshops were the key to the whole process, even the initial pre-proposal workshop where we got buy-in from people and organisations that proved to be critical partners. Apart from capacity building and training, the workshops were crucial in getting the group of disparate and widely geographically separated Field Officers to bond with each other, and also with the “office staff” back at Johannesburg HQ. To me, the way participants played their games of darts or scrabble in the evenings was just as interesting as their rapport during teaching sessions. I have talked about the lessons I have learnt above – what I am clear about is that each member of EWT-CC has vastly raised their game and learnt (and contributed) tremendously to the ongoing conservation of cranes and their habitats. Appendix 1 outlines the individual feelings of each CC member towards the opportunities this Darwin Initiative proposal has afforded.

## Annex 1 Report of progress and achievements against final project logframe for the life of the project

Project summary	Measurable Indicators	Progress and Achievements	Actions required/planned for next period
<p><b>Goal:</b> To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but constrained in resources to achieve</p> <ul style="list-style-type: none"> <li>• The conservation of biological diversity,</li> <li>• The sustainable use of its components, and</li> <li>• The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources</li> </ul>		(report on any contribution towards positive impact on biodiversity or positive changes in the conditions of human communities associated with biodiversity eg steps towards sustainable use or equitable sharing of costs or benefits)	(do not fill not applicable)
<p><b>Purpose</b></p> <ul style="list-style-type: none"> <li>• To consolidate and build capacity for long term viability of cranes, associated endemics and threatened habitat in South Africa through development of sensitivity maps, population habitat viability analyses (PHVA) and training in line with government and institutional responsibilities relating to the CBD</li> </ul>	<ul style="list-style-type: none"> <li>• Improved information on the population dynamics and threats to the three crane species for effective management and implementation of crane conservation strategy.</li> <li>• Take up of recommendations by relevant SANBI programmes.</li> <li>• Training courses completed in Environmental Awareness. BTEC &amp; BSc Hons projects completed</li> </ul>	My belief, based on both annual quantification of indicators, total counts below, and Sections 2 – 4 above, all indicate we achieved our overall purpose and made a positive impact on crane and associated habitats in South Africa. Certain outputs (below) were not achieved, additional ones were achieved, but given the circumstances of this specific project including staff change-over (from CEO downwards) at EWT as well as change in Directors at ZSL, I suggest we achieved over and above what we set out to attain.	RAP will keep in contact with Kerryn Morrison and the EWT-CC staff – we have one critical document to complete (now in draft) and a number of papers to be jointly written. Most of the analyses for the latter have been completed, but pulling these disparate results together into coherent papers for submission to scientific journals will take at least 1 – 2 years.
<p><b>Output 1.</b> Management recommendations from PHVA models &amp; sensitivity maps for all 3 crane species in South Africa</p>	<ul style="list-style-type: none"> <li>• Land cover &amp; wetland inventory maps consolidated by end Yr 1</li> <li>• Crane distribution, breeding and non-breeding sites, environmental</li> </ul>	I refer the referee back to the preceding 3 Annual Reports for the specifics (and this comment is relevant to all outputs and activities below); but effectively we were given to understand in 2005 that NLC and wetland inventory maps for the whole of South Africa would be available by end 2006. In fact, we had access to national LC maps from 2000; it was only	

	<p>variables and threats (e.g. powerlines) superimposed on maps by end Yr 2.</p> <ul style="list-style-type: none"> <li>• Crane demographic parameters extracted from statistical models Yr 2</li> <li>• PHVA models and sensitivity maps produced for each of the 3 crane species by the end of Yr 2</li> </ul>	<p>EKZNWildlife that delivered the 2005 KZN LC map. Owing to unfortunate circumstances at Working for Wetlands (see Section 3), the Wetland Inventory was only delivered at the end of 2008, and we found considerable lack of congruence between between this layer, a layer prepared explicitly for wetlands by EKZNW in 2008/09, and the KZN LC layer of 2005. Following discussions both internally and with the other stake-holders, we decided to stick with KZN LC 2005 for KZN, and NLC 2000 for the remainder of South Africa</p> <p>Baseline parameters extracted &amp; detailed CMR analyses undertaken on K Shaw's data (see ms submitted with Report 3)</p> <p>PVA metapopulation models run in both ULM and Vortex (see ms submitted). Quantitative Site Analyses (QSA's) run for all 3 species in 2007/08 – final models for Wattled Crane now run for WC KZN sites (&gt;95% of population) and for Blue Cranes in all regions excepting W Cape (where results had little meaning owing to habitat type).</p> <p>Ecological Niche modelling has been undertaken on WCs and Blue Cranes (see end page of attached Forward Strategy for example)</p>
<p>Activity 1.1 PHVA and sensitivity map reports</p>		<p>A PVA metapopulation paper is in press on the importance of the Western Cape population on the global (South African population) under varying scenarios.</p> <p>QSA's developed (basically transforming RS data within varying buffers into z-scores, &amp; then summing the z-scores for each LC type after first knowing whether its impact was negative or positive on WC breeding from field work (ms in press – submitted with report 3). Blue Crane QSA's have been run, and we are currently writing a report for EKZNW re the Wattled Crane sites for incorporation into Stewardship agreements.</p>
<p>Activity 1.2, Management reports</p>		<p>Full PVAs on Blue Crane, plus exploration of the possible impact of releasing 1<sup>st</sup> year Wattled Cranes into the wild have been modelled (the latter given to the Wattled Crane Recovery Programme). The QSA reports</p>

		on Blue & Wattled Cranes need pulling together & submitting to relevant DEAT/SANBI partners by end October – Crowned Cranes have been ignored (except in workshop explorations) as both PVAs and QSAs on this species will form part of an MSc study to be undertaken by Tanya Smith.
<b>Output 2.</b> Information for inclusion in bioregional plans and statutory processes around threatened and protected species and ecosystems	<p>Management recommendations stemming from PVA and sensitivity maps by end of Yr 3</p> <ul style="list-style-type: none"> <li>● Advocacy of conservation strategy to relevant lead agencies by end of Yr 3</li> <li>● Contribution to the design of SANBI National Grassland Biodiversity Programme by end Yr 3</li> </ul>	<p>To the best of my knowledge, conservation largely remains an intra-provincial affair in terms of implementation on the ground. Bio-regional planning tends to occur at National Workshops (the the annual Grasslands Meeting and Wetlands Indaba). However, Kirsten Oliver (GIS &amp; db Manager), Kerryn Morrison, and one or two of the field officers tend to be present at these meetings, so that EWT-CC input is provided.</p> <p>Further, to a large extent, the Outputs and Actions relevant to this are similar to Output 1.</p>
Activity 2.1. Presentation of recommendations		Various key stake-holders tend to be regular attendees of the Crane Conservation Annual Meeting where there are both formal presentations and informal talk about our work. Considerable feedback is received at these meetings. Further, both Kevin Shaw (Ornithologist, Cape Nature), and Kevin McCann, (ex-SACWG Manager, now Biodiversity Officer implementing the roll-out of NEMBA in KZN) are frequently included in e-mails and their advice specifically sought. Indeed, the February 2009 meeting, which saw the polishing of the Forward Strategy, was attended by both from the beginning of the planning sessions, alongside John Dini (SANBI's Freshwater Programme), Namhla Mbona (Working for Wetlands), Therese Brinkcate (WWF), Richard Beilfuss (ICF), Jeanne Marie Pitman (Wattled Crane Recovery Programme), Athol Marchant (Ezemvelo KZN Wildlife), Jon Smallie (EWT) and Tim Snow (EWT) who commented on our final presentations at this workshop..
Activity 2.2. Participation in workshops and stakeholder forums		Integral to Output 1 and ditto Activity 2.1.
<b>Output 3.</b> Forward Strategy for National Crane Conservation 2009 - 2015	Workshop undertaken, National Plan produced by end of Yr 3	After a number of iterations that started at a workshop in October 2008, the EWT South African Crane Conservation Forward Strategy 2009 – 2015 (attached) was completed in July 2009, being accepted by the attendees at the July Annual Meeting of EWT's Crane Conservation.

Activity 3.1. Documentation and Presentation	Final agreement of this document is key so long as it is <i>used</i> as flexible <i>Forward Strategy</i> – ie modified as circumstances dictate, but acting as a guide for the remainder
<b>Output 4.</b> Collaborative partnership with Working for Wetlands Programme	<p>Prioritisation of important crane wetlands to feed into planning processes of Working for Wetlands Programme from Yr 1</p> <p>Involvement in Working for Wetlands rehabilitation planning teams from Yr 1</p> <p>Ground truthing of relevant wetland inventory sites by end of Yr 1</p> <p>Initiation of Working for Wetlands projects at important crane sites including rehabilitation and poverty alleviation from Yr 1</p>
Activity 4.1. • List of key wetlands to be included in planning	For Wattled Crane and Blue Crane – see above. QSA's will be run by Tanya Smith on Grey Crowned Cranes as part of her Masters research.
Activity 4.2. Rehabilitation plans	To be acted on by W4W by catchment area within their rolling work plan.
Activity 4.3. Populated wetland inventory database	See comments above re “What is a wetland?” This is a serious question that engages wetland ecologists across the globe – in South Africa made all the more difficult by variable annual rainfall. Having seen 3 “wetland inventories” each covering the same area and from <i>roughly</i> the same time period, simply leaves me glad that I am not a wetland ecologist reliant on RS data and GIS!
Activity 4.4. Monthly project progress reports	Individual Field Officers (FO's) reported monthly on the wetlands they had ground-truthed – unfortunately, these data were not pulled together in a coherent package. Such details form part of a reciprocal MOU being

		negotiated with W4W
<b>Output 5.</b> Capacity in advocacy and lobbying techniques	7 SACWG field staff & 25 associated EWT WG staff trained by end Yr 1	Following the change of CEO at EWT, this was to become an EWT training scheme
Activity 5.1. Numbers of staff trained		N/A
<b>Output 6.</b> South African capacity in data analysis including statistical methods and spatial analysis, GIS database management	Fully operational National crane database and manual by yr 1 30 SACWG and other field staff & associated EWT WG staff trained by end of Yr 1	<p>The difficulties in recruiting a suitably qualified GIS &amp; db expert at the salary we were offering has already been explained (Annual report #1), whilst the difficulties encountered in the actual transfer of “old data” both electronic and hard-copy, was much more time consuming than envisaged. However, what I can say now that it is up and running is that it should remain a lasting legacy to this Darwin project, and various people in SANBI concerned with adaptation, range change and climate change have all expressed an interest in accessing the data.</p> <p>3 or 4 two-week workshops were run annually, with training given in the theory of population dynamics, what it means to conservation biologists, and how to run both Vortex and ULM (Unified Life Models). Training was also given in GIS (specifically Arc GIS), MS Access and MS Excel. All training received very positive feedback (except for perhaps me who was seen as too hard a task-master) – but e.g. comments from a non-EWT person re the GIS training included “The course itself was great - I really liked the practical conservation aspect of it as that made it more interesting and from my point of view I was able to see how valuable it can be as a tool.” (Dr T Taylor.). However, see also above re my “Lessons Learned” and why I did not progress on to training in statistics.</p>
Activity 6.1. Crane monitoring data in database		Should be stand-alone output!
Activity 6.2. Numbers of staff trained		Numbers varied between the core 8 SACWG staff to more than 30 attendees at training workshops. See my comments above re costs, and I would get the CEO’s permission to insist that far more staff from other groups attended – however, I know this creates its own logistical difficulties.
Activity 6.3 Number of status reports		Annual reports were undertaken by the SACWG manager(s) anyway – this measure/action is not relevant for these species and in this context.



<b>Output 7.</b> African regional capacity built in GIS and spatial analysis including basic statistical analysis	3-5 AWAC staff trained by yr 1	The original application stated this would be carried out if ICF/AWAC was able to financially support the T&S of the staff. The unfortunately was not possible, but Kerryn Morrison made the decision to move Osiman Mabhachi to EWT HQ from Zimbabwe towards the end of last year. He has participated fully in the workshops held this year including development of the Forward Strategy, and especially those projects relating to community development.
Activity 7.1. Number of staff trained		N/A (see above)
<b>Output 8.</b> Fully functional GIS unit for management of crane and associated endemics and habitat within EWT	GIS unit set up and operational; staff appointed and fully trained by end of Yr 1	It could be claimed that we have a fully functional GIS lab since the skills of Kirsten Oliver are primarily GIS (rather than db), and a number of other staff have reasonable GIS abilities. However, see my comments above re the wider EWT Strategy in 6.1.
Activity 8.1. Number and quality of sensitivity maps and status reports		Both the QSA's and the ENMs reflect the value of this resource, amongst many other analyses we wish to undertake (eg How far do juveniles travel?; Does one sex demonstrate natal philopatry?...)
<b>Output 9.</b> Three annual standardised status reports for the 3 crane species	Template produced by end Yr 1, workshops undertaken, status reports generated and being used for management decision making Yrs 1-3	Annual reports had already been introduced prior to the start of this project – alongside FO monthly reports, it seemed unnecessary to burden them with this additional task which could be (and was) given verbally at workshops.  Further, the numbers, distribution and conservation status of all 4 resident crane species across Africa will be reviewed within the next 5 years (country by country where possible)
Activity9.1. Number and content of reports		N/A
<b>Output 10.</b> Financial forward strategy for crane conservation	Strategy commissioned (Yr 2) and implemented within Yr 3	See Comments in 6.1 above
Activity 10.1. Report provided to SACWG		Unfortunately not completed (see above & previous reports)
<b>Output 11.</b> Expanded and enhanced community environment education programme	<ul style="list-style-type: none"> <li>Minimum of 800 school teachers and 300 community leaders trained and supported per year in accredited EE (<b>200 &amp; 100</b> respectively from DI funds)</li> </ul>	900+ school teachers & 300+community leaders trained over the 3 years, plus at least 6000 students reached THETA accredited training provided. Considerable EA work is done, on an almost daily basis, by the FOs talking with large and small-scale farmers and farm workers.

	<ul style="list-style-type: none"> <li>• 10 Environmental Awareness Officers trained per year</li> </ul>	Note two EAOs passed their Stage 5 accredited exams – a major achievement, whilst one of the REWs Bongzi Khoza won the International WWSF Prize for Women's Creativity in Rural Life	
Activity 11.1. Number of trained teachers & leaders		I am unable to provide accurate figures for the last three months of the project as Samson Phakathi, currently in charge of this work, currently has a virus preventing him accessing any files on his computer. However, as indicated above the figures will be in excess of 900+ school teachers & 300+community leaders, alongside over 6000 students being reached.	Measurable ZSL, which submission
Activity 11.2. Progress reports		Annual progress reports received (e.g. see attachment to Report 3)	
<b>Output 12.</b> Publications & Publicity,	3 scientific papers submitted by end Yr 3;	2 papers submitted & accepted (PAOC proceedings) & Wattled Crane QSA ms nearly completed. A total of 15 mss were identified & timetabled for being written up by individuals within CC by this time next year.	
Activity 12.1. Number of papers submitted;		2	
Activity 12.2. Supplementary material appended to Annual Reports		17 (& 1 CD)	

## Annex 2 Project's final logframe, including criteria and indicators

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p><b>Goal:</b></p> <p>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve</p> <ul style="list-style-type: none"> <li>• the conservation of biological diversity,</li> <li>• the sustainable use of its components, and</li> <li>• the fair and equitable sharing of benefits arising out of the utilisation of genetic resources</li> </ul>			
<p><b>Purpose</b></p> <ul style="list-style-type: none"> <li>• To consolidate and build capacity for long term viability of cranes, associated endemics and threatened habitat in South Africa through development of sensitivity maps, population habitat viability analyses (PHVA) and training in line with government and institutional responsibilities relating to the CBD</li> </ul>	<ul style="list-style-type: none"> <li>• Improved information on the population dynamics and threats to the three crane species for effective management and implementation of crane conservation strategy.</li> <li>• Take up of recommendations by relevant SANBI programmes.</li> <li>• Training courses completed in Environmental Awareness. BTEC &amp; BSc Hons projects completed</li> </ul>	<ul style="list-style-type: none"> <li>• Detailed crane sensitivity maps, PHVAs, status reports and recommendations for population and habitat management across 3 species and related populations</li> <li>• Annual review and feedback reports from SACWG participants and partners including provincial conservation authorities</li> <li>• Accredited certificates in EA course completion</li> <li>• Completion of post-graduate studies</li> </ul>	<ul style="list-style-type: none"> <li>• Long term sustainability of SACWG within the EWT and the OCG and KZN CF</li> <li>• Current support for crane conservation NGOs maintained within South Africa</li> <li>• Governmental spatial data delivered on schedule</li> <li>• South African government remains committed to the CBD and National Environmental Management: Biodiversity Act</li> <li>• Accreditation on time</li> <li>• Students complete studies on time</li> </ul>
<p><b>Outputs</b></p> <ul style="list-style-type: none"> <li>• Management recommendations from PHVA models &amp; sensitivity maps for all 3 crane species in South Africa</li> </ul>	<ul style="list-style-type: none"> <li>• Land cover &amp; wetland inventory maps consolidated by end Yr 1</li> <li>• Crane distribution, breeding and non-breeding sites, environmental variables and threats (e.g. powerlines) superimposed on maps by end Yr 2.</li> <li>• Crane demographic parameters extracted from statistical models Yr 2</li> <li>• PHVA models and sensitivity maps produced for each of the 3 crane species by the end of Yr 2</li> </ul>	<ul style="list-style-type: none"> <li>• PHVA and sensitivity map reports</li> <li>• Management reports</li> </ul>	<ul style="list-style-type: none"> <li>• Delivery of national georeferenced data on schedule</li> <li>• Relevant data available for PHVA analyses</li> </ul>
<ul style="list-style-type: none"> <li>• Information for inclusion in bioregional plans and statutory processes around threatened and</li> </ul>	<ul style="list-style-type: none"> <li>• Management recommendations stemming from PVA and sensitivity maps by end of Yr 3</li> <li>• Advocacy of</li> </ul>	<ul style="list-style-type: none"> <li>• Presentation of recommendations</li> <li>• Participation in workshops and stakeholder forums</li> </ul>	<ul style="list-style-type: none"> <li>• Recommendations taken into consideration in policy and legislation.</li> <li>• Processes will have started within</li> </ul>

protected species and ecosystems	conservation strategy to relevant lead agencies by end of Yr 3 <ul style="list-style-type: none"><li>• Contribution to the design of SANBI National Grassland Biodiversity Programme by end Yr 3</li></ul>		relevant time frame
<ul style="list-style-type: none"><li>• Forward Strategy for National Crane Conservation 2009 - 2013</li></ul>	<ul style="list-style-type: none"><li>• Workshop undertaken, National Plan produced by end of Yr 3</li></ul>	<ul style="list-style-type: none"><li>• Documentation and Presentation</li></ul>	<ul style="list-style-type: none"><li>• Participation and support of all relevant organisations</li></ul>
<ul style="list-style-type: none"><li>• Collaborative partnership with Working for Wetlands Programme</li></ul>	<ul style="list-style-type: none"><li>• Prioritisation of important crane wetlands to feed into planning processes of Working for Wetlands Programme from Yr 1</li><li>• Involvement in Working for Wetlands rehabilitation planning teams from Yr 1</li><li>• Ground truthing of relevant wetland inventory sites by end of Yr 1</li><li>• Initiation of Working for Wetlands projects at important crane sites including rehabilitation and poverty alleviation from Yr 1</li></ul>	<ul style="list-style-type: none"><li>• List of key wetlands to be included in planning</li><li>• Rehabilitation plans</li><li>• Populated wetland inventory database</li><li>• Monthly project progress reports</li></ul>	<ul style="list-style-type: none"><li>• Government funding for Working for Wetlands Programme continues</li></ul>
<ul style="list-style-type: none"><li>• Capacity in advocacy and lobbying techniques</li></ul>	<ul style="list-style-type: none"><li>• 7 SACWG field staff &amp; 25 associated EWT WG staff trained by end Yr 1</li></ul>	<ul style="list-style-type: none"><li>• Numbers of staff trained</li></ul>	<ul style="list-style-type: none"><li>• Staff retained in present or higher positions</li></ul>
<ul style="list-style-type: none"><li>• South African capacity in data analysis including statistical methods and spatial analysis, GIS database management</li></ul>	<ul style="list-style-type: none"><li>• Fully operational National crane database and manual by yr 1</li><li>• 30 SACWG and other field staff &amp; associated EWT WG staff trained by end of Yr 1</li></ul>	<ul style="list-style-type: none"><li>• Crane monitoring data in database</li><li>• Numbers of staff trained</li><li>• Number of status reports</li></ul>	<ul style="list-style-type: none"><li>• Staff retained in present or higher position</li></ul>
<ul style="list-style-type: none"><li>• African regional capacity built in GIS and spatial analysis including basic statistical analysis</li></ul>	<ul style="list-style-type: none"><li>• 3-5 AWAC staff trained by yr 1</li></ul>	<ul style="list-style-type: none"><li>• Number of staff trained</li></ul>	<ul style="list-style-type: none"><li>• Continued support from International Crane Foundation – Africa Region</li></ul>
<ul style="list-style-type: none"><li>• Fully functional GIS unit for management of crane and associated endemics and habitat within EWT</li></ul>	<ul style="list-style-type: none"><li>• GIS unit set up and operational; staff appointed and fully trained by end of Yr 1</li></ul>	<ul style="list-style-type: none"><li>• Number and quality of sensitivity maps and status reports</li></ul>	<ul style="list-style-type: none"><li>• Capacity for optimum use of unit and on-going EWT support</li></ul>
<ul style="list-style-type: none"><li>• Three annual standardised status reports for the 3 crane species</li></ul>	<ul style="list-style-type: none"><li>• Template produced by end Yr 1, workshops undertaken, status reports generated and being used for management decision making Yrs 1-3</li></ul>	<ul style="list-style-type: none"><li>• Number and content of reports</li></ul>	<ul style="list-style-type: none"><li>• Relevant information available</li></ul>

<ul style="list-style-type: none"> <li>• Financial forward strategy for crane conservation</li> </ul>	<ul style="list-style-type: none"> <li>• Strategy commissioned (Yr 2) and implemented within Yr 3</li> </ul>	<ul style="list-style-type: none"> <li>• Report provided to SACWC</li> </ul>	<ul style="list-style-type: none"> <li>• Suitable donors available</li> </ul>
<ul style="list-style-type: none"> <li>• Expanded and enhanced community environment education programme</li> </ul>	<ul style="list-style-type: none"> <li>• Minimum of 800 school teachers and 300 community leaders trained and supported per year in accredited EE</li> <li>• 10 Environmental Awareness Officers trained per year</li> <li>• Community education and land owner programme enhanced by yr 3</li> </ul>	<ul style="list-style-type: none"> <li>• Number of trained teachers &amp; leaders</li> <li>• Progress reports</li> </ul>	<ul style="list-style-type: none"> <li>• Teachers have continued interest in EE training</li> <li>• EE accreditation on time</li> </ul>
<ul style="list-style-type: none"> <li>• Publications &amp; Publicity</li> </ul>	<ul style="list-style-type: none"> <li>• 3 scientific papers submitted by end Yr 3; EE material produced and used in schools by end Yr 1, community education and land owner awareness material produced by end Yr 1</li> </ul>	<ul style="list-style-type: none"> <li>• Number of papers submitted; publicity material sent to Darwin Initiative</li> </ul>	<ul style="list-style-type: none"> <li>• EE material being taken up by target groups</li> </ul>

## Annex 3 Project contribution to Articles under the CBD

### Project Contribution to Articles under the Convention on Biological Diversity

Article No./Title	Project %	Article Description
6. General Measures for Conservation & Sustainable Use	10	Develop national strategies that integrate conservation and sustainable use.
7. Identification and Monitoring	10	Identify and monitor components of biological diversity, particularly those requiring urgent conservation; identify processes and activities that have adverse effects; maintain and organise relevant data.
8. In-situ Conservation	20	Establish systems of protected areas with guidelines for selection and management; regulate biological resources, promote protection of habitats; manage areas adjacent to protected areas; restore degraded ecosystems and recovery of threatened species; control risks associated with organisms modified by biotechnology; control spread of alien species; ensure compatibility between sustainable use of resources and their conservation; protect traditional lifestyles and knowledge on biological resources.
9. Ex-situ Conservation	5	Adopt ex-situ measures to conserve and research components of biological diversity, preferably in country of origin; facilitate recovery of threatened species; regulate and manage collection of biological resources.
10. Sustainable Use of Components of Biological Diversity		Integrate conservation and sustainable use in national decisions; protect sustainable customary uses; support local populations to implement remedial actions; encourage co-operation between governments and the private sector.
11. Incentive Measures	5	Establish economically and socially sound incentives to conserve and promote sustainable use of biological diversity.
12. Research and Training	30	Establish programmes for scientific and technical education in identification, conservation and sustainable use of biodiversity components; promote research contributing to the conservation and sustainable use of biological diversity, particularly in developing countries (in accordance with SBSTTA recommendations).
13. Public Education and Awareness	10	Promote understanding of the importance of measures to conserve biological diversity and propagate these measures through the media; cooperate with other states and organisations in developing awareness programmes.
14. Impact Assessment and Minimizing Adverse Impacts		Introduce EIAs of appropriate projects and allow public participation; take into account environmental consequences of policies; exchange information on impacts beyond State boundaries and work to reduce hazards; promote emergency responses to hazards; examine mechanisms for re-dress of international damage.
15. Access to Genetic Resources		Whilst governments control access to their genetic resources they should also facilitate access of environmentally sound uses on mutually agreed terms; scientific research based on a country's genetic resources should ensure sharing in a fair and equitable way of results and benefits.

<b>Article No./Title</b>	<b>Project %</b>	<b>Article Description</b>
16. Access to and Transfer of Technology		Countries shall ensure access to technologies relevant to conservation and sustainable use of biodiversity under fair and most favourable terms to the source countries (subject to patents and intellectual property rights) and ensure the private sector facilitates such assess and joint development of technologies.
17. Exchange of Information	10	Countries shall facilitate information exchange and repatriation including technical scientific and socio-economic research, information on training and surveying programmes and local knowledge
19. Bio-safety Protocol		Countries shall take legislative, administrative or policy measures to provide for the effective participation in biotechnological research activities and to ensure all practicable measures to promote and advance priority access on a fair and equitable basis, especially where they provide the genetic resources for such research.
Other Contribution		Smaller contributions (eg of 5%) or less should be summed and included here.
Total %	100%	Check % = total 100

## Annex 4 Standard Measures

Code	Description	Totals (plus additional detail as required)
<b>Training Measures</b>		
1a	Number of people to submit PhD thesis	N/A
1b	Number of PhD qualifications obtained	N/A
2	Number of Masters qualifications obtained	3 confirmed (2 UK, 1 SA) + 2 SA submitted
3	Number of other qualifications obtained	2 NQF Level 5 in EE  In excess of 900 teachers and 300 community leaders plus in excess of 6000 students receiving EE certified training
4a	Number of undergraduate students receiving training	8
4b	Number of training weeks provided to undergraduate students	18
4c	Number of postgraduate students receiving training (not 1-3 above)	2 UK, 3 SA
4d	Number of training weeks for postgraduate students	50+ weeks
5	Number of people receiving other forms of long-term (>1yr) training not leading to formal qualification( ie not categories 1-4 above)	N/A
6a	Number of people receiving other forms of short-term education/training (ie not categories 1-5 above)	1 SA
6b	Number of training weeks not leading to formal qualification	9 + regular e-mail
7	Number of types of training materials produced for use by host country(s)	New training material was produced at all 15 training workshops ranging from lectures in population dynamics, conservation, Vortex and ULM, GIS, relational db's and MS Excel – where justified, training material has been attached with annual reports
<b>Research Measures</b>		
8	Number of weeks spent by UK project staff on project work in host country(s)	30
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (s)	1 (Wattled Crane QSA draft for W4W & EKZNW – report by end October 2009)
10	Number of formal documents produced to assist work related to species identification, classification and recording.	N/A



<b>Code</b>	<b>Description</b>	<b>Totals (plus additional detail as required)</b>
11a	Number of papers published or accepted for publication in peer reviewed journals	2
11b	Number of papers published or accepted for publication elsewhere	N/A
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country	1 large database consisting of 5 or more relational tables (eg sightings, ring-readings, breeding attempts etc).  Large number of spatial data layers (in excess of 5 layers) ranging from Landsat through Spot 5 to company specific layers (eg ESKOM powerline distribution)
12b	Number of computer-based databases enhanced (containing species/genetic information) and handed over to host country	N/A
13a	Number of species reference collections established and handed over to host country(s)	N/A
13b	Number of species reference collections enhanced and handed over to host country(s)	N/A
<b>Dissemination Measures</b>		
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work	4
14b	Number of conferences/seminars/ workshops attended at which findings from Darwin project work will be presented/ disseminated.	ongoing
15a	Number of national press releases or publicity articles in host country(s)	8
15b	Number of local press releases or publicity articles in host country(s)	50+
15c	Number of national press releases or publicity articles in UK	0
15d	Number of local press releases or publicity articles in UK	0
16a	Number of issues of newsletters produced in the host country(s)	11 per yr (Grus) plus Cranelink (1 per yr) and Indwa (1 per year) (all reporting on Darwin activity/results)
16b	Estimated circulation of each newsletter in the host country(s)	300
16c	Estimated circulation of each newsletter in the UK	50+ (international)
17a	Number of dissemination networks established	1 (GIS web-based "chatroom" & help) plus "crane blog"
17b	Number of dissemination networks enhanced or extended	0

<b>Code</b>	<b>Description</b>	<b>Totals (plus additional detail as required)</b>
18a	Number of national TV programmes/features in host country(s)	3
18b	Number of national TV programme/features in the UK	0
18c	Number of local TV programme/features in host country	3
18d	Number of local TV programme features in the UK	0
19a	Number of national radio interviews/features in host country(s)	4
19b	Number of national radio interviews/features in the UK	0
19c	Number of local radio interviews/features in host country (s)	12
19d	Number of local radio interviews/features in the UK	0
<b>Physical Measures</b>		
20	Estimated value (£s) of physical assets handed over to host country(s)	20,000 (1 vehicle, computer & software & peripherals (external hard drives), binoculars)
21	Number of permanent educational/training/research facilities or organisation established	Protocols established for repeat censusing on fixed routes and some breeding sites to be visited repeatedly within and between years.
22	Number of permanent field plots established	20 possible routes and 100+ nests
23	Value of additional resources raised for project	
<b>Other Measures used by the project and not currently including in DI standard measures</b>		
<p>I have had problems fitting what I consider key outputs (e.g. number of nests found, number of chicks ringed, number of models explored – each of which are time-consuming) to the more restricted codes that the DI applies. I know there has been considerable debate about this, and I am just about getting the hang of the codes as the project ends! But seriously, I know of very little scientific work that ends with a given end date – papers from a NERC grant completed over 5 years ago is still resulting in the odd paper appearing. Thus whilst recognising that some assessment needs to be made at the end of a project, ongoing outcomes should be included, especially reports and papers – even today, research councils recognise that field based PhDs require 3 years field work plus a further year of writing up!</p>		

## Annex 5 Publications

Type *	Detail	Publishers	Available from
(eg journals, manual, CDs)	(title, author, year)	(name, city)	(eg contact address, website)
Presentation	Author Bradley Gibbons	Presented at the Northern Cape Biodiversity Symposium	
Presentation	Authors – Kirsten Oliver and Brenda Daly	SACWG and participants Presented at the National Wetlands Indaba	
National Magazine	Tainted Trade – Authors Gina Hartoog and Kerryn Morisson – Jan 2009	Animal Talk	
International TV	Wattle Crane release programme. In progress/in collaboration with JHB Zoo. Feb 2009	Discovery Channel	
Regional Magazine	Grey Crowned Cranes – Author Steve McCurrach and Ursula Franke March 09	Bataleurs Newsletter	Info@bataleurs.org
Regional Newspaper	Drought Affects the Karoo Cranes – Author Elmare Roussouw Feb 2009	East Cape Agri	
Regional Newspaper	Bloukraansvoel Begin in die Karoo Broei – Author Bradley Gibbons Feb 2009	The Advertiser	
All Media	National water Week – Author Kerryn Morrison March 2009	Press release	
Regional Newspaper	Bloukraansvoel Begin in die Karoo Broei – Author Bradley Gibbons Feb 2009	The Advertiser	
All Media	National water Week – Author Kerryn Morrison March 2009	Press release	
Regional Newspaper	Birds and Powerlines – Author Megan Diamond. April 09	Barkley east Reporter	
Regional Newspaper	Blue Cranes Killed By powerlines. John Smallie and Bradley Gibbons. April 09	Karoo news	

Regional Newspaper	Highveld Cranes around Dullstroom. Ursula Franke/Kierryn Goodwin. April 09	The Lowvelder	
EWT Quarterly Magazine	Cutting the Edge of Analysis. Kirsten Oliver April/May 09	Vision 13	
Tanzania Newsletter	Grey Crowned Cranes in Peril. Kerryn Morrison. May 09	Miombo	
IUCN e-Bulletin	Report on the 24 <sup>th</sup> CITES Animals Committee Meeting May 09	e-Bulletin	
E-Bulletin	Rare crane in first Uganda sighting. Gerald Tenywa. May 09	New Vision	
Blog	Wakkerstroom Crane Conservation Project Fundraising. Charlie Moore and Glenn Ramke, May 09	<a href="http://10000birds.com/wakkerstroom-crane-conservation-project.htm">http://10000birds.com/wakkerstroom-crane-conservation-project.htm</a>	
Website	Wakkerstroom Crane Conservation Project Fundraising. Glenn Ramke May 09	<a href="http://www.backabuddy.co.za/cranes">http://www.backabuddy.co.za/cranes</a>	
ICF Newsletter	Africa: A Continent of Diversity. Kerryn Morrison May 09	The ICF Bugle	
ICF Newsletter	Crane Wallpaper. Kirsten Oliver May 09	The ICF Bugle	
Bird Club Newsletter	Plea for help from Wakkerstroom. Lauraine. May 09	Witwatersrand Bird Club	
Newsletter	PG Bison – A proud new sponsor of the EWT's Eastern Cape Crane Conservation Project. Tanya Smith May 09	PG Bison Newsletter The Billboard	
Regional newsletter	Crane Conservation around Dullstroom. Ursula franke May 09	The Millstream Muddler	
Regional Newspaper	Environment, cranes, Bald Ibis. Glenn Ramke May 09	The Recorder, Volksrust	
Radio	Wakkerstroom Crane Conservation Project – BackaBuddy. Glenn Ramke May 09	Classic FM	Mike Mills
Regional	Powerlines threaten Blue Cranes. Bronwyn	Hermanus Times	Kerry Van Rensburg

Newspaper	Botha, Kerry Van Rensburg. June 09		
Library Book	Grasslands – Exploring our Biomes. Karoline Hanks June 09	Jacana Media	
Crane Journal	Crane Conservation – June 09	Indwa	
Web exposure	Climate Change threatens South Africa's Blue Crane stronghold. Kerry Morrison/Zhang Xu June 09	<a href="http://englis.cri.cn/6966/2009/06/05/2021s490829">http://englis.cri.cn/6966/2009/06/05/2021s490829</a>	
Namibia Newsletter	Why Cranes sometimes flee and don't fly. Bradley Gibbons June 09	Namibia Crane News No. 42	
Namibia Newsletter	New ICF/EWT partnership for African Cranes. Kerry Morrison June 09	Namibia Crane News No. 42	
Regional newspaper	Climate change threatens SA's national bird. Kerry Morrison June 09	The Weekender	
Regional Newspaper George	Klimaatsverandering in die Wes Kaap. Tisha Steyn/Bronwyn Botha June 09	Die Burger	Tisha Steyn
Regional Newspaper	Soek Kraanvoels in Omgewingsweek. Ursula Franke June 09	Die Hoesvelder	
National Newspaper	Climate Change threatens Blue Crane stronghold. Kerry Morrison June 09	The Mail and Guardian	
National Newspaper	Climate Change threatens Blue Crane stronghold. Kerry Morrison June 09	The Citizen	
Web Link	Blue Cranes. Katey Collins. June 09	<a href="http://www.wildcard.co.za">www.wildcard.co.za</a>	
National newspaper	Blue Cranes threatened by changes in farmlands. Deidre Crawford. June 09	The Cape Times	
Regional Newspaper	Climate Change and Cranes in the Western Cape. Bronwyn Botha June 09	The Greenpost-Mosselbay Advertiser	
Regional Newspaper	Wakkerstroom Cranes. Glenn Ramke June 09	The Nature Nook	

Regional newspaper	Cranes Ursula Franke and Leigh Potter	Explore Mpumalanga	
Radio	Wakkerstroom Crane Conservation Project – BackaBuddy. Glenn Ramke June 09	Classic FM	
Magazine	Illegal Pet Trade. Gina Haartoog July 09	Animal talk	
Radio	Crane Trade – Kerryn Morrison July 09	702 Talk	
Newsletter	Conserving Cranes in the Eastern Cape. Tanya Smith July 09	PG Bison Billboard	
Website	Cranes in Chrissiesmeer area. Ursula Franke July 09	Chrissiesmeer Website	

## Annex 6

## Darwin Contacts

<b>Ref No</b>	15-002
<b>Project Title</b>	Integrating crane conservation with sustainable habitat utilisation
<b>UK Leader Details</b>	
Name	Richard A PETTIFOR
Role within Darwin Project	Project Leader & Manager
Address	Please use: 23 Elmhurst Ave., East Finchley, London N2 0LT for postal communication.
Phone	
Fax	
Email	
<b>Other UK Contact (if relevant)</b>	
Name	Dr Richard KOCK
Role within Darwin Project	My line manager
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Phone	
Fax	N/A
Email	
<b>Partner 1</b>	
Name	Kerryn MORRISON
Organisation	EWT Crane Conservation
Role within Darwin Project	Host-country Project Leader
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Fax	
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