

## Specialist Terms Of Reference N21 (R300)

### Entomology Terms of Reference

- Identify areas and habitats significant to the conservation of insect species of special interest (e.g. rare butterflies). (A comment was received that a rare butterfly occurs in the strandveld vegetation at the coast between Muizenberg and Mitchells Plain)
- Make recommendations towards avoiding or mitigation of potential impacts, whether related to route alignment, road design, construction or operation, including recommendations regarding post construction rehabilitation.
- Identify from the existing impact assessment reports any possible cumulative impacts that the construction of the Cape Flats Freeway Extension in conjunction with the R300 / N21, would have on insects of special interest.
- Assess the road design to ensure implementation of recommendations or concerns. This would be in the form of both desktop assessment and a workshop with the engineers and other specialists.
- Provide a detailed description of construction phase mitigation requirements/recommendations and rehabilitation requirements for inclusion into the construction phase management plan.

Please note that our client will not proceed to detail road design level, but that a successful Tenderer will be appointed for the detail design and construction stage. Recommendations towards mitigation and rehabilitation may therefore not be possible to the finest levels of detail.

### Freshwater Ecology

- Identify the rivers (including estuaries), streams and wetlands which will be affected by the proposal.
- Carry out field and desktop assessment of any impacts (including downstream impacts) that may be identified in addition to those emulating from the scoping report. Impacts should include construction and operation impacts (e.g. road spillage; littering)
- Identify and describe the cumulative impacts that the construction of the Cape Flats Freeway Extension in conjunction with the R300 / N21, would have the freshwater ecology of the combined area. The recommendations from the Scoping and EIA for the Cape Flats Freeway Extension must be considered in context to the overall impact of the construction of both roads.
- Make specific recommendations towards avoiding or mitigating identified impacts
- Assess the road design to ensure implementation of recommendations or concerns. This would be in the form of both desktop assessment and a workshop with the engineers and other specialists.
- Provide a detailed description of construction phase mitigation requirements/recommendations and rehabilitation requirements for inclusion into the construction phase management plan.

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### **Groundwater Terms of Reference**

- Identify the geohydrological aspects that will be affected by the N21(R300) road proposal.
- Make recommendations towards avoiding or mitigation of potential impacts, whether related to route alignment, road design, construction or operation, including recommendations regarding post construction rehabilitation.
- Field and desktop assessment of any impacts that may be identified, without and with proposed avoidance/mitigation measures, using the assessment method provided.
- Assess the road design to ensure implementation of recommendations or concerns. This would be in the form of both desktop assessment and a workshop with the engineers and other specialists.
- Provide a detailed description of construction phase mitigation requirements/recommendations and rehabilitation requirements for inclusion into the construction phase management plan.

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### **Herpetology Terms of Reference**

- Identify areas and habitats significant to the conservation of amphibian and reptile species of special interest as identified from the scoping report (e.g. leopard toad) as well as from additional evaluation of the proposed project.
- Make recommendations towards avoiding or mitigation of potential impacts, whether related to route alignment, road design, construction or operation, including recommendations regarding post construction rehabilitation.
- Field and desktop assessment of any impacts that may be identified, without and with proposed avoidance/mitigation measures, using the assessment method provided.
- Identify from the existing impact assessment reports any possible cumulative impacts that the construction of the Cape Flats Freeway Extension in conjunction with the R300 / N21, would have on amphibians or reptiles of special interest.
- Assess the road design to ensure implementation of recommendations or concerns. This would be in the form of both desktop assessment and a workshop with the engineers and other specialists.
- Provide a detailed description of construction phase mitigation requirements/recommendations and rehabilitation requirements for inclusion into the construction phase management plan.

Please note that our client will not proceed to detail road design level, but that a successful tenderer will be appointed for the detail design and construction stage. Recommendations towards mitigation and rehabilitation may therefore not be possible to the finest levels of detail.

### **Mammal Terms of Reference**

- Identify areas and habitats significant to the conservation of mammal species of special interest as identified from the scoping report as well as from additional evaluation of the proposed project.
- Make recommendations towards avoiding or mitigation of potential impacts, whether related to route alignment, road construction or operation, including recommendations regarding post construction rehabilitation.
- Field and desktop assessment of any impacts that may be identified, without and with proposed avoidance/mitigation measures, using the assessment method provided.
- Identify from the existing impact assessment reports any possible cumulative impacts that the construction of the Cape Flats Freeway Extension in conjunction with the R300 / N21, would have on mammals of special interest.
- Assess the road design to ensure implementation of recommendations or concerns. This would be in the form of both desktop assessment and a workshop with the engineers and other specialists.
- Provide a detailed description of construction phase mitigation requirements/recommendations and rehabilitation requirements for inclusion into the construction phase management plan.

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### **Avifauna Terms of Reference**

- Identify areas and habitats significant to the conservation of species and/or populations and/or breeding pairs of birds of special interest (i.e Red Data Book species, uncommon birds or birds rare to the area) as identified from the scoping report as well as from additional evaluation of the proposed project.
- Field and desktop assessment of any impacts that may be identified, without and with proposed avoidance/mitigation measures, using the assessment method provided. Make detailed inference to the long term impacts on birds through the secondary effects of increased traffic, increased noise, urban development around the new roads, increased litter etc.
- Make recommendations towards avoiding or mitigation of potential impacts, whether related to route alignment, road construction or operation, including recommendations regarding post construction rehabilitation and long term management. These recommendations are to include the following detail, as identified in the scoping report:
  - Descriptions of post-construction road reserve rehabilitation methods and landscaping that would improve and provide suitable habitats for birds
  - Describe the design criteria for viaducts that would accommodate the movement of water birds in Phase 3 of the project.

- Describe the relocation of Barn Owls from old buildings that will be affected by the construction activities (Phase 2).
- Describe habitat improvement for Greywing Francolin (Phase 3) so that game bird coveys are enlarged.
- Identify from the existing impact assessment reports any possible cumulative impacts that the construction of the Cape Flats Freeway Extension in conjunction with the R300 / N21, would have on birds of special interest.
- Assess the road design to ensure implementation of recommendations or concerns. This would be in the form of both desktop assessment and a workshop with the engineers and other specialists.
- Provide a detailed description of construction phase mitigation requirements/recommendations and rehabilitation requirements for inclusion into the construction phase management plan.

Please note that our client will not proceed to detail road design level, but that a successful tenderer will be appointed for the detail design and construction stage. Recommendations towards mitigation and rehabilitation may therefore not be possible to the finest levels of detail.

### **N21 (R300) Cape Town Ring Toll Road – Botanical Assessment**

1.

- Provide a description of the vegetation in a corridor along the proposed route including the Table View alternative of Phase 2. The width of the corridor will vary from 100m in Phase 1 to 400m in parts of Phase 2 where the exact alignment is not yet fixed.
- Provide an assessment of the conservation importance of the vegetation of the route, in local and regional terms;
- Provide an indication of the presence or likelihood of occurrence, of Red Data Book, Protected, or locally endemic species;
- Provide recommendations based on findings towards i.e. the rescue of plants or re-alignment of the route.

You are free to time the survey to your convenience and the most suitable flowering stage of the vegetation.

2.

- Re-assess the botanical studies for the N21 (R300) Cape Town Ring Toll Road and the R300 extension/Cape Flats Freeway using the latest information available in terms of CAPE, replaceability, etc., to determine significance of impacts and conservation importance.
- Assess the cumulative impact(s), if any, of including the Cape Flats Freeway in the R300 Toll Road project.
- Recommendations regarding the above two tasks.
- Assessment of the road design to ensure implementation of recommendations or concerns. This would be in the form of both desktop assessment and workshops (2) with the engineers and other specialists.

- Detailed description of construction phase mitigation requirements/recommendations for inclusion into the construction phase management plan

## **Archaeology**

Using the Final Scoping Report as a guide, identify areas of archaeological importance that will be affected by the proposal.

Assess the proposed road design in relation to any site of archaeological importance. This would also entail a workshop with the engineers to discuss mitigation (if any) that would be required.

Using the evaluation method prescribed, determine the significance of the identified impacts both before and after mitigation.

Make recommendations that would be relevant to the design, construction and operational phases.

## **Noise**

1. Perform noise modelling during construction and assess the impact during the operational phase. Present and projected traffic movements will be used, in order to assess the impact at different future time targets (years 4 to 30 in line with relevant regulations).
2. Evaluate the noise impacts on the communities along the road in terms of expected complaint frequencies according to SABS standards.
3. Produce noise contour maps for two future time scenarios during the operational phase.
4. Identify sensitive receptors along the routes and perform receptor-specific calculations for each time target scenario.
5. Perform individual noise calculations for each receptor within the zones that exceed noise guidelines at the specified time-targets.
6. Compare predicted noise levels during construction and operation to South African and international standards and guidelines.
7. Using the evaluation method prescribed, determine the significance of the identified impacts both before and after mitigation.
8. Make recommendations that would be relevant to the design, construction and operational phases.

## **Planning**

1. *Planning : Statutory and Legislative Context and Assessment*

An investigation into the relevant statutory/legislative components, at the varying levels, which would include, for example:

- National Policies (i.e. the National Roads Act, the Ribbon Development Act, etc.)
- Provincial Planning Legislation (Land Use Planning Ordinance, Planning and Development Act)
- Guide Plan
- Statutory Structure Plans
- Individual Zoning Schemes
- Possible restrictions to be identified on individual key effected properties, etc.

2. *Planning: Forward Planning Context and Assessment*

- National Policies (as set out in the DFA etc.)
- Provincial and sub-Regional Policies
- Metropolitan Planning Policies, such as the MSDF and MOSS
- Broader Scale Forward Planning Initiatives
- Local Area Spatial Development Frameworks and Policy Plans (Muni-SDF, Local Structure/Forward Plans/IDFs, etc.
- Specific area, and Issue Specific Plans (i.e. the Wetton-Landsdowne Corridor Urban Conservation Issues, etc.).
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3. *Planning: Land Usage Context*

- Assessment of contextual land usage issues and the associated implications, at a broader metropolitan scale.

4. *Planning: Political Context*

- Provincial Government Planning Context
- Local Government Planning context and the implications for the Uni-city
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- Jurisdictional issues
- Relevance of other planning /development initiatives which may be pertinent, or have an impact on this proposal (Public transportation initiatives, upgrading proposals, public spending prioritization, etc).

### **Social**

1. Use existing data and original data collected, on the demographic make-up of each area and the comments received through the public participation process, to interpret the potential impacts of the proposed road.
2. Using the evaluation method prescribed, determine the significance of the identified impacts both before and after mitigation.
3. Make recommendations that would be relevant to the design, construction and operational phases of the proposed road.
4. Should it be necessary to conduct any additional primary and/or secondary research please forward a proposal and costing for such an exercise.

### **Visual**

1. Establish existing context, policy frameworks, metropolitan scenic route priorities and other relevant studies.
2. Familiarisation with road proposals and issues identified in the Scoping Report.
3. Prepare a visual inventory through mapping, aerial photo interpretation and 'view from the road' photo studies.
4. Determine significant viewsheds, natural and urban units and components that give structure to what is seen.
5. Assimilate initial findings for discussion and review with the study team
6. Formulate project-specific objectives and criteria for visual assessment.
7. Identify impacts of future changes to the visible landscape and evaluate their significance.
8. Formulate guidelines and mitigation measures to *protect*, *enhance* or *minimise* visual impacts that may result from the future road developments.
9. Revise and submit final report for inclusion into the construction management plan.

## **Tourism**

1. To establish the existing tourism status in the areas along the length of the proposed road, with specific reference to ecotourism. Identify areas of specific tourism interest.
2. To assess the potential tourism value/opportunities of the area through which the proposed toll road traverses (without the road), with specific reference to ecotourism.
3. To assess impacts (positive and negative) of the proposed road on the existing and potential tourism opportunities/areas and evaluate these impacts/issues using the method provided (inclusive of wider area).
4. Make recommendations towards avoiding or mitigation of potential impacts, whether related to route design, alignment, construction or operation.

## **Pedestrian Desire Lines**

1. Obtain relevant background information regarding the proposed project, e.g. Scoping Report, Second Background Information Document, Draft Social Impact Assessment, Phillip Link Extension, etc.
2. View maps and aerial photos at engineer's offices.
3. Determine where bridges and crossings would be most effective (you may wish to use certain of the methods suggested by Dr Malan below).
4. Hold discussions with engineers with regards to the "feasibility" of recommended locations for bridges and crossings.
5. Provide Chand Ecosense with two hard copies and one electronic copy of your report by the agreed upon date. It should be in a format compatible with MS Office 2000.



Thursday, February 21, 2002

XXXXX  
XXXXX  
XXXXX  
XXXXX  
XXXXX

Dear XXXX

Chand Ecosense JV are co-ordinating the Impact Assessment phase of the proposed N21 (R300) Cape Town Ring Road Toll Project.

As part of this assessment, we require a further XXXXX study of the proposed route.

#### TASKS

As per above Terms of Reference.

#### EVALUATION METHODS FOR ENVIRONMENTAL IMPACTS

The evaluation method for determining significance of impacts is shown below.<sup>1</sup>

#### **Definitions of or criteria for environmental impact parameters**

The significance of environmental impacts is a function of the environmental aspects that are present and to be impacted on, the probability of an impact occurring and the consequence of such an impact occurring before and after implementation of proposed mitigation measures.

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<sup>1</sup> (Adapted from T Hacking, AATS – Envirolink, 1998: An innovative approach to structuring environmental impact assessment reports. In: IAIA SA 1998 Conference Papers and Notes

***i.Extent (spatial scale):***

**ii.Ranking criteria**

<b>L</b>	<b>M</b>	<b>H</b>
Impact is localized within site boundary	Widespread impact beyond site boundary; Local	Impact widespread far beyond site boundary; Regional/national

Take into consideration:

- Access to resources; amenity
- Threats to lifestyles, traditions and values
- Cumulative impacts, including possible changes to land uses at and around the site.

***iii.Duration:***

**iv.Ranking criteria**

<b>L</b>	<b>M</b>	<b>H</b>
Quickly reversible, less than project life, short term (0-5 years)	Reversible over time; medium term to life of project (5-15 years)	Long term; beyond closure; permanent; irreplaceable or irretrievable commitment of resources

Take into consideration:

- Cost – benefit economically and socially (e.g. long or short term costs/benefits)

***v.Intensity (severity):***

<b>Type of Criteria</b>	<b>Negative</b>			<b>Positive</b>		
	<b>H-</b>	<b>M-</b>	<b>L-</b>	<b>L+</b>	<b>M+</b>	<b>H+</b>
Qualitative	Substantial deterioration, death, illness or injury, loss of habitat/diversity or resource, severe alteration or disturbance of important processes.	Moderate deterioration, discomfort, Partial loss of habitat/biodiversity/resource or slight alteration	Minor deterioration, nuisance or irritation, minor change in species/habitat/diversity or resource, no or very little quality deterioration.	Minor improvement, restoration, improved management	Moderate improvement, restoration, improved management, substitution	Substantial improvement, substitution
Quantitative	Measurable deterioration Recommended level will often be violated (e.g. pollution)	Measurable deterioration Recommended level will occasionally be violated	No measurable change; Recommended level will never be violated	No measurable change; Within or better than recommended level.	Measurable improvement	Measurable improvement

Community response	Vigorous	Widespread complaints	Sporadic complaints	No observed reaction	Some support	Favourable publicity
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Take into consideration:

- Cost – benefit economically and socially (e.g. high nett cost = substantial deterioration)
- Impacts on human-induced climate change
- Impacts on future management (e.g. easy/practical to manage with change or recommendation)

**vi. Probability of occurrence:**

**Ranking criteria**

<b>L</b>	<b>M</b>	<b>H</b>
Unlikely; low likelihood; Seldom No known risk or vulnerability to natural or induced hazards.	Possible, distinct possibility, frequent Low to medium risk or vulnerability to natural or induced hazards.	Definite (regardless of prevention measures), highly likely, continuous High risk or vulnerability to natural or induced hazards.

The specialist study must attempt to quantify the magnitude of impacts and outline the rationale used. Where appropriate, international standards are to be used as a measure of the level of impact.

**vii. Status of the impact:**

Describe whether the impact is positive, negative or neutral for each parameter. The ranking criteria are described in negative terms. Where positive impacts are identified, use the opposite, positive descriptions for criteria.

Based on a synthesis of the information contained in (a) to (e) above, the specialist will be required to assess the significance of potential impacts in terms of the following criteria:

**viii. Consequence: (Duration X Extent X Intensity)**

<b>Intensity = L</b>			
<b>Duration</b>	<b>H</b>		
	<b>M</b>		Medium
	<b>L</b>	Low	
<b>Intensity = M</b>			
<b>Duration</b>	<b>H</b>		High
	<b>M</b>		Medium
	<b>L</b>	Low	
<b>Intensity = H</b>			

<b>Duration</b>	<b>H</b>			
	<b>M</b>			High
	<b>L</b>	Medium		
		L	M	H
<b>Extent</b>				

Positive impacts would be ranked in the same way as negative impacts, but result in high, medium or low positive consequence.

**ix. Significance:**

The significance of impacts shall be assessed both with prescribed mitigation actions. The significance of the identified impacts on components of the affected environment shall be determined as Probability X Consequence:

<b>Significance</b>				
<b>Probability</b>	<b>H</b>	Medium		High
	<b>M</b>			
	<b>L</b>	Low		Medium
		L	M	H
<b>Consequence</b>				

**x. Degree of confidence in predictions:**

State the degree of confidence in the predictions, based on the availability of information and specialist knowledge.

**xi. Legal requirements:**

Identify and list the specific legislation and permit requirements that are relevant to this project.

**xii. Guidelines for decision-making**

<b>Overall Significance</b>	<b>Nature of Impact</b>	<b>Degree of confidence</b>	<b>of</b>	<b>Decision Guideline</b>
<b>High -</b>	Unacceptable	High or low		Likely fatal flaw
<b>High +</b>	Desirable	High		Supports decision to allow project.
<b>Medium – or +</b>	Noticeable impact	High or low		Likely to be unavoidable impact, which will need to be accepted if the project is allowed to proceed.
<b>Low – or +</b>	Minor impacts	High or low		These impacts are not likely to affect the project decision.

Violations to legislation should be regarded as a fatal flaw.

LAYOUT

The layout of the report should be:

- Statement about the baseline environment per sector
- Issues identified and recommendations per sector
  - i. Issue
  - ii. Recommendation
- Statement on the affected environment over the whole road.
- Separate the mitigation measures/recommendations required according to those required in:
  - i. design
  - ii. construction
  - iii. operation

The mitigation measures /recommendations should be as detailed as the design allows for.

**FORMATTING:**

**(a) Text**

- Please ensure that the following is implemented:
- Tahoma 11
- Headings are bold
- Sub-headings are underlined
- Bullet points are dots
- Numbering is acceptable
- No indentations or other styling

**(b) Maps, photographs and other graphics**

These should be:

- Digital, if possible in jpeg or other Office 2000 compatible format
- Numbering of maps is acceptable within the stand-alone report, but a high quality unnumbered copy should be provided.