

TERMS OF REFERENCE

Environmental Impact Assessment

Wigton Wind Farm, Manchester

Submitted to:

National Environment and Planning Agency

10 Caledonia Avenue
Kingston 5

On Behalf Of.

Renewable Energy Systems Ltd.

C/O Petroleum Corporation

Trafalgar Road
Kingston

Prepared by.

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ENVIRONMENTALSOLUTIONS Ltd

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1.0 INTRODUCTION

The Petroleum Corporation of Jamaica (PCJ) and Renewable Energy Systems Limited (RES) have embarked upon the development of a 20 MW wind farm comprising 24 wind turbines with a substation and access roads on land at Wigton in Manchester. It is anticipated that the wind farm will produce approximately 63 million kWh, enough to meet the electrical energy requirements of about 25,000 homes.

Wind farms are a renewable and non-polluting source of electricity generation. Wind power has become one of the most effective and reliable energy generation technologies.

2.0 PERMITTING

Under the Natural Resources Conservation Authority. Act (1991), the Natural Resources Conservation Authority (NRCA) now the National Environment and Planning Agency (NEPA) is authorized to issue, suspend and revoke permits and licences. The Permit and Licence System was established in 1997 to ensure compliance with Sections 9 & 12 of the NRCA Act, which gives the NRCA the right to issue permits for new developments and request EIA studies where necessary. Prescribed categories of projects requiring a permit have been listed by the NEPA and these include Energy Generation Projects.

A Project Information Form (PIF) and a Permit Application (PA) must be completed and submitted to NRCA/NEPA with the requisite application fee of J\$1,000. NRCA/NEPA will then determine if an EIA is required and request submission of the Terms of Reference for conduction the EIA.

ESL has submitted the requisite permit application form and PIF to NEPA on behalf of the Client - Renewable Energy Systems. A site visit was conducted by NEPA through their Mr. Joseph McCarthy. Based on the findings of that site visit, NEPA has recommended the submission of Terms of Reference for conducting an Environmental Impact Assessment (EIA) for the proposed project. Reference letters dated June 10 and 28, 2002.

3.0 TERMS OF REFERENCE

The Terms of Reference for conducting the EIA for the Wigton Wind Farm are as follows:

1. Introduction - Identification of the project to be assessed and explanation of the executing arrangements for conducting the Environmental Impact Assessment.
2. Background Information - A description of the major components of the proposed project, the implementing agents, and a brief history of the project and its current status.
3. Study Area - Specification of the boundaries of the study area for assessment as well as any adjacent or remote areas, which should be considered with respect to the project.
4. Scope of Work - Standard environmental impact assessment techniques will be used including site reconnaissance, literature review, desktop research, field work, data analysis and interviews with appropriate personnel, in order to satisfy the Terms of Reference. The following tasks will be performed:

Task 1: Description of the Proposed Project: A full description of the project and its existing setting, using maps as appropriate. This is to include general layout, size, location, physical characteristics, biological environment and socio-cultural setting.

Task 2: Description of the Environment. Assemble, evaluate and present data on the relevant characteristics of the study area. Information will include the following:

Terrestrial Environment

- o Physical environment: geology, topography, soils
- o Natural drainage features: surface drainage, flood risk
- o Air quality: particulates and noise levels
- o Biological environment: forest/vegetation cover, existing wildlife (flora and fauna), rare or endangered species, sensitive habitats, species of commercial importance, migratory path of birds, nuisance species, pests and vectors
- o Socio-cultural environment: land use, traffic patterns, proposed developments, public health issues, demographic s, employment and solid waste management.

Task 3: Legislative and Regulatory Considerations. A description will be given of the pertinent regulations, standards and regulatory bodies governing environmental quality, health and safety, protection of endangered species, parks and protected areas, siting and land use control.

Task 4: Determination of Potential Impacts of the Proposed Project. Impacts will be determined as significant positive or negative, direct or indirect, short-term or long-term, unavoidable or irreversible.

Cumulative of the proposed development will also be highlighted. Special emphasis will be placed on:

- o Land use management
- o Terrestrial ecology
- o Visual Resource
- o Energy Transmission
- o Air quality o Noise

Task 5: Mitigation and Management of Negative Impacts. Recommendations will be made for feasible and cost-effective measures to prevent or reduce significant negative impacts to acceptable levels.

Task 6: Recommendations for the development of an Emergency Response Management Plan.

Recommendations will be made for the development of an Emergency Response Plan to ensure that procedures are in place to handle any emergency.

Task 7: Recommendations for the development of a Monitoring Plan. Recommendations will be made for the development of a Monitoring Plan to ensure implementation of the mitigation measures and long-term minimization of negative environmental impacts.

Task 8: Assist in Inter-Agency Coordination and Public Participation. As, and if required by the NEPA, ESL will assist in the public participation/review process through meetings

with relevant governmental agencies, in obtaining the views of civil society and participating in a public consultation if required.

5. Report - the Environmental Impact Assessment report will be concise and limited to the significant environmental issues. The main text will focus on findings, conclusions and recommended actions, supported by summaries of the data collected and citations for any references used in interpreting those data. The report will be organized according to, but not necessarily be limited by, the outline below:

- o Executive Summary
- o Description of the Proposed Project
- o Policy, Legal and Administrative Framework
- o Description of the Environment
- o Significant Environmental Impacts and Proposed Mitigation Measures o
Analysis of Alternative
- o Recommendations for Monitoring Plan
- o List of References
- o Photographs, Maps and Plans as appropriate

4.0 STUDY TEAM

A multidisciplinary team has been identified to conduct the study and will comprise the following:

MRS. ELEANOR JONES, MSC - SOCIAL ECOLOGIST, PLANNER AND TEAM LEADER

Mrs. Jones has over twenty-five experience in the areas of environmental management systems, environmental risk assessment, disaster prevention planning, environmental and social impact assessments, watershed management and community consultations and participatory planning. Mrs. Jones lectured in the Geography Department of the University of the West Indies for 13 years, and has been consulting for fifteen years as President of Caritech Associates Ltd. and Managing Director/Founding Partner of Environmental Solutions Ltd. Mrs. Jones has much experience in housing development projects and major infrastructural developments including the North Coast Highway and the Jamaica Bridges Development, and she was Team Leader for the Preliminary Strategic Environmental Statement of the Montego Bay South Development. Mrs. Jones will be responsible for the social assessments, community consultations, hazard management, and related

analysis of impacts and recommendation of mitigation measures.

DR. MARGARET JONES WILLIAMS, PHD - ECOLOGIST

Dr. Jones Williams is an Environmental Scientist with over thirteen years experience in terrestrial and marine ecology, coastal pollution studies, environmental impact assessments and natural resources inventory. Educated in Jamaica, Canada and the United Kingdom, she has worked at the Conservation Data Centre-Jamaica, a biodiversity unit, where she did extensive field work and mapping of Jamaica's endemic and endangered fauna as part of a Rapid Ecological Assessment of the island and to assist in the establishment of Jamaica's national parks. Dr. Jones Williams has been involved in several environmental impact assessments for development projects including subdivisions at Auchindown and Culloden, hotel developments, and infrastructural projects such as the Kingston Coast Road Upgrade and the Jamaica Bridges Development Program. Dr. Jones Williams will be responsible for the ecological assessments and identification of impacts and recommendation of mitigation measures.

MRS. SHARONMAE SHIRLEY, BSc,*MPiHIL- ENVIRONMENTAL CHEMIST

Mrs. Shirley is an Environmental Chemist and has over seven years experience in environmental chemistry, including water and solid waste studies, planning and execution of environmental monitoring programmes, occupational health and safety programmes and environmental audits. She has had years of practical experience in designing and implementing environmental monitoring programmes in Jamaica and Belize. Mrs. Shirley will be responsible for analysis of air and noise requirements, relevant aspects of identification of impacts and recommendation of mitigation measures, as well as preparation of the recommendations for the development of a monitoring plan.

Technical assistance will be provided as appropriate for field studies and analysis. Detailed CV's
of

all team members are available on request.