

Non-Technical Summary

**Topolog-Luminita-Mesteru windfarm
Romania**

Contents

1	Introduction	1
2	Project description.....	2
2.1	Site location and layout.....	2
2.2	Current land use and environmental sensitivity.....	4
2.3	Purpose and need for the project.....	4
2.4	Legislative Context and Permits.....	6
2.5	Public consultation undertaken to date.....	6
2.6	Land acquisition.....	7
3	Summary of impacts and mitigation measures	9
3.1	Overview of the baseline environmental conditions.....	9
3.2	Summary of the anticipated impacts during construction and operation	12
3.3	Mitigation of impacts for construction phase	21
3.4	Mitigation of impacts for operation phase	22
4	Environmental and social management and monitoring	24
5	Disclosure of documentation.....	25

1 Introduction

This Non-Technical Summary (NTS) provides an overview of the findings of an Environmental and Social Impact Assessment (ESIA) for the construction and operation of an 84MW wind farm development located near Topolog, Luminita and Mesteru villages, Tulcea County, in the north of the Dobrogea Region, Romania (the project). The project is being developed by LUKERG Renew (LUKERG-R or the Parent Company). The development of the project was originally initiated in 2006 by Land Power (Land Power or the Company) before LUKERG-R acquired the permitted development projects. Since December 2012, Land Power is a registered Romanian Company which is a 100% owned subsidiary of LUKERG-R.

This NTS provides a summary of the potential impacts that the project could have on people and the environment, and of the management and monitoring arrangements that will be implemented to avoid, reduce, or mitigate adverse impacts during construction and operation of the wind farm.

This NTS forms part of the overall ESIA package that has been disclosed for public review and comment. The ESIA package includes: the Environmental Impact Assessment (EIA) reports and the Appropriate Assessment Study prepared in 2010 in accordance with Romanian law, an Additional Study incorporating additional evaluations on environmental baseline data and birds/bats impacts; a Supplementary Report to address further issues identified to ensure compliance with the EU requirements; a Stakeholder Engagement Plan (SEP); and an Environmental and Social Action Plan (ESAP) (all 2013).

The ESIA package is being made available for public comment for a period of 60 days before consideration of the Project for funding by the European Bank for Reconstruction and Development (EBRD).

Copies of the ESIA package may be viewed at the Topolog and Dorobantu City Hall and obtained at Land Power's website (<http://www.landpower.ro>) or at EBRD's Regional Office in Bucharest and Head Quarters in London (www.ebrd.com). All comments relating to the ESIA disclosure package, requests for additional information, or lodging of grievances can be sent directly to Land Power via the following contact details:

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2 Project description

2.1 Site location and layout

The wind farm will be located in the Tulcea County, near Luminita, Topolog and Mesteru villages (it is noted that Luminita is a part of Topolog municipality and Mesteru is a part of Dorobantu municipality).

The wind farm site is accessed via the road DJ 411 (222B), which connects Dorobantu and Topolog, and other existing roads (De 602, 561, 606, 615 and 616) within the area.

The wind farm will have a total installed capacity of 84 MW and will comprise 42 wind turbines, each with a capacity of 2 MW. Each wind turbine will be a total height of 150 m (comprising 105 m tower and 45 m rotor blade above the tower height). The project is divided into 3 clusters, namely Mesteru (16 turbines – ME), Luminita (11 turbines – LU) and Topolog (15 turbines – TO). Due to recent optimizations, the development of the turbine T01 was abandoned and consequently the number of the turbines reduced from 42 to 41.

According the Land Power development plan, the process of the building permit for another turbine, in substitution of TO01 to be located outside the Natura 2000 sites, was already undertaken.

The wind farm includes the following electric infrastructures:

- a new 30/110 kV sub-station (Topolog sub-station), including three transformers;
- 36 km of underground electrical cables of medium voltage (30 kV) connecting the turbines to the Topolog substation; and
- a 110 kV underground power line connecting the wind farm to the existing 400/110 kV Rahman station. The 110 kV power line will be 15km in length and, with the exception of the first kilometer, will run adjacent to the national road DN 701 (22A).

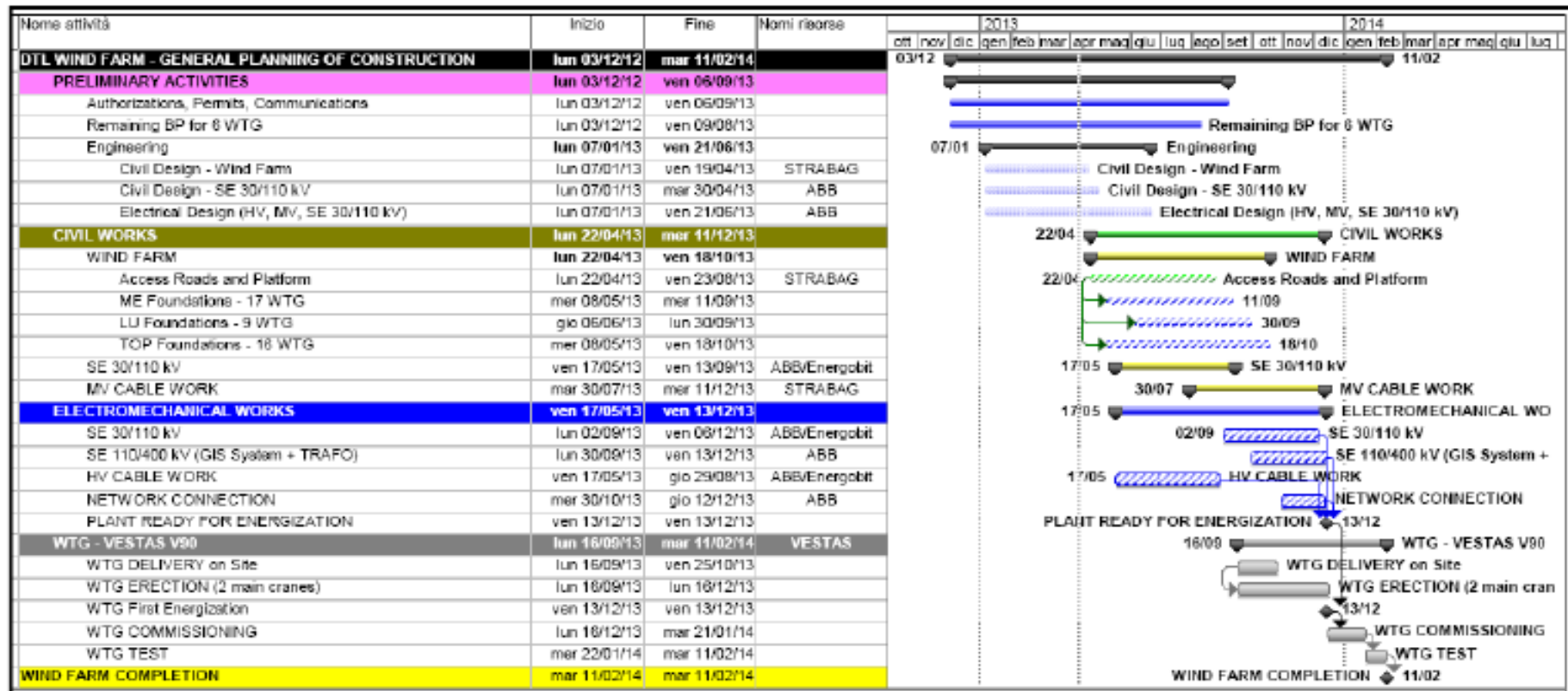
The project site covers an area of approximately 497 ha, although the physical footprint of the project infrastructure is only 15.1 ha, including new and existing access roads, the footprint of turbines and the 30/110 kV transformer station. Roads will either be upgraded (where existing) or newly constructed to connect each turbine to the new substation. A total of 22km of existing roads will be upgraded and 8km of new roads will be constructed.

Appendix 1 shows the general layout of the wind farm including all infrastructure such as turbines, new and existing access roads, underground cable ways, sub-stations and the existing 400/110 kV Rahman station. The figure in Appendix 1 also shows the location of the main villages (Mesteru, Topolog, Luminita and Dorobantu) and the turbines of another wind farm operator, TOTAL ELECTRIC (or ENEL), that already exists in the same area.

The site was considered a feasible location for the project based on the following attributes that were identified at an early stage in the project design: (i) on site wind data indicated that the site has good wind resources; (ii) there was a nearby connection to the national power (approximately 15 km from site); (iii) the site has good access via the existing public roads.

The **Figure 1** shows the construction programme.

Figure 1: Construction programme



2.2 Current land use and environmental sensitivity

Land cover and land use throughout the wind farm area are dominated by a mixture of arable and pastoral agricultural activities. Main crops include corn, cereals and sunflowers.

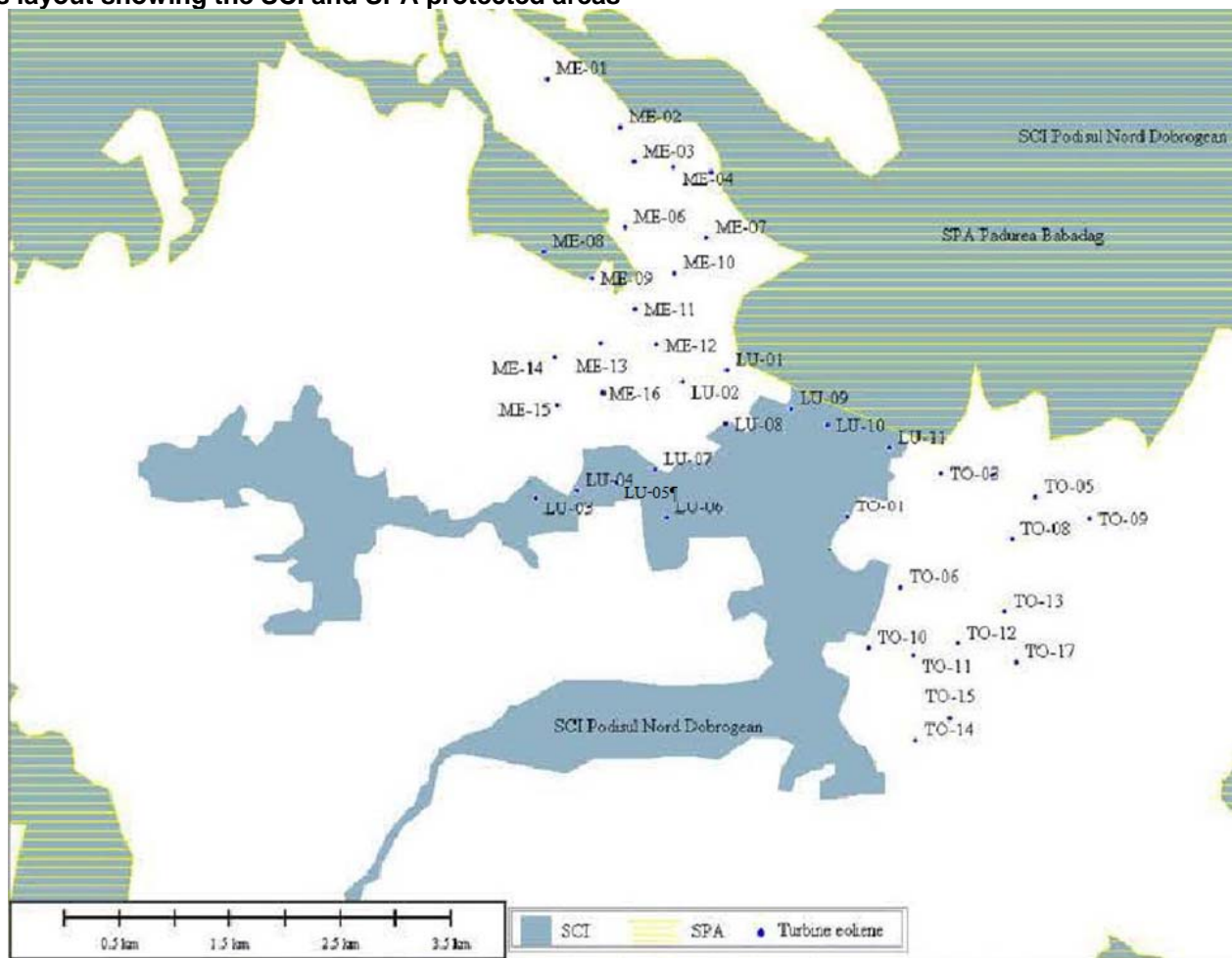
The wind farm partially overlaps two Natura 2000 sites; the Babadag Forest Special Protected Area (SPA) and North Dobrogea Plateau SCI (**Figure 2**). Ten of the project's 41 turbines (LU03 - LU011 and ME08) are located within the Podișul Nord Dobrogean Site of Community Importance (SCI). Turbine ME08 is also located within the SPA Padurea Babadag (where the Padurea Babadag SPA North Dobrogea Plateau SCI overlap).

2.3 Purpose and need for the project

There are a number of drivers for the project. The main reasons supporting the need for the project include:

- Increase of renewable energy: it is widely considered and recognised that the promotion of renewable energy sources in preference to fossil fuels will have positive benefits in terms of the wider climate issues. As such the project will contribute to Romania's goals for renewable energy development;
- CO₂ emission savings: based on 41 wind turbines in constant use with a positive annual generation of about 217 GWh, the project will provide CO₂ emissions savings of the order of about 120 kt CO₂-e/yr (when compared with the same amount of energy generated using fossil fuels) resulting in positive effects;
- Benefits for local people: new and existing roads that can be used by local people once construction works are completed;
- Socio-economic benefits for local people: the project is assessed in terms of its contribution to the local economic development. Indeed, land acquisition provided a relatively large amount of liquidity to the community and during construction workers coming from abroad will require accommodation and food. During the operational phase some maintenance activities can be undertaken by locally hired workers. .

Figure 2: Wind turbines layout showing the SCI and SPA protected areas



2.4 Legislative Context and Permits

The project is classified (from the point of view of both EU and Romanian legislations) as one which is required to undergo an Environmental Impact Assessment (EIA) process.

During the environmental permitting, two EIAs were undertaken due to the evolution of the Romanian environmental regulation:

1. the first EIA application (2008 EIA) was undertaken for the whole wind farm and submitted to the Competent Authorities (Environmental Protection Agency of Tulcea County – hereinafter EPA) which issued three Environmental agreements including two for both clusters of Luminita and Mesteru in November 2008 and one for Topolog cluster in February 2009;
2. the second EIA (2010 EIA) was undertaken on a voluntary basis by Land Power following the entry into force of a new National regulation (GD 445/2009 - *Governmental Decision no. 445/2009 on establishing the framework procedure for the environmental impact assessment for certain public and private projects*). The EPA closed the authorization process with the review of the three existing Environmental Agreements (issued for 2008 EIA process) for each cluster on December 9, 2010 and issued a single Environmental Agreement for the entire wind farm on November 12, 2011.

As indicated in Section 2.2, the some of the turbines fall within Natura 2000 sites. Consequently, in accordance with MO 19/2010 (*Approving the Methodology on the Appropriate Assessment of plans and projects with potential effects on natural protected areas of Community interest (Natura 2000 sites)*), in 2010 an Appropriate Assessment Study was submitted to the EPA (there are no Authorities/Organizations specifically responsible for the management of these Natura 2000 sites) to evaluate potential impacts on the two Natura 2000 sites. Although no single permit was issued for the Appropriate Assessment Study, it is noted that the 2010 EIA Study included the evaluations and the results of the Appropriate Assessment Study, so the final EIA permit issued by the EPA took account of the contents of the Appropriate Assessment Study.

Land Power has already acquired the building permits from the Municipalities of Topolog (for both clusters of Topolog and Luminita) and Dorobantu (for cluster of Mesteru) for all 41 turbines therefore the project is full authorized. At the time of disclosure the 41 turbines are all under construction.

2.5 Public consultation undertaken to date

In line with the Romanian EIA legal requirements, a number of actions have been undertaken to date in order to raise the awareness of the project with the local community, such as:

- written notices sent during the EIA process to residents of Topolog, Luminita and Mesteru villages potentially affected by the project (EIA of 2008: 11/10/2008 for clusters of Luminita and Dorobantu and 01/22/2009 for cluster of Topolog; EIA of 2010: 17/01/2011);
- public announcements in newspapers and at the City Halls, regarding the Environmental permits (during 2008 and 2010);

- direct relations and communications with land owners during the land acquisition process (from 2006 to 2010).
- uploading of the EIA reports on the National Environmental Agency website (2008 and 2010);
- local public debates were held in 2008 and 2010 at Dorobantu and Topolog, in order to provide information on the project and its potential environmental impacts. The public meeting in 2010 (December 23) was held in compliance with the most recent legislative requirements, hence involving a number of national and local regulatory bodies and organizations;
- meeting with an Environmental NGO association (EcoWatch) held in October 2012, which declared to see the renewable energy projects in a positive manner.

Recent meetings with the Mayors of Topolog and Dorobantu were held on the 14th of May 2013 to announce the start of construction works, inform affected communities (Dorobantu town, Mesteru village, Topolog town, Luminita village residents) about any preparatory, construction and transportation activities that may affect them.

The SEP details the future proposed consultation activities to be conducted throughout the project's lifetime and a list of main project Stakeholders to be engaged are reported in detail. Land Power commits to disclose this NTS in the local language (Romanian) on its website for 60 days and to make it available in hard copy format in appropriate places in the local communities. As part of the Company's commitment to future stakeholder engagement, Land Power will conduct meetings and discussions with the main stakeholders (e.g. SOR - Societatea Ornitologica Romana).

Furthermore, throughout the Project's lifetime, Land Power will inform affected communities (Dorobantu Commune, Mesteru village, Topolog Commune, Luminita village), including former landowners, about any activities that may affect them, updating affected communities on the progress of construction and on the project implementation when in the operational phase.

2.6 Land acquisition

Land within the Topolog and Mesteru clusters was purchased by Land Power from individual landowners. For the land rights within the Luminita cluster, in addition to some purchase contracts, a lease agreement between Topolog City Hall and Land Power was signed.

Face to face interactions with landowners occurred during the land acquisition process. It is noted that the land purchases involved the majority of local residents of the villages who were properly informed about project characteristics and the potential effects on the environment and local communities, as recorded by the minutes of meetings held on July, 17 2008 and December 27, 2010 and verified during public meetings held on October, 9 2012. The negotiations for the land purchases were held voluntarily through direct negotiated agreements with the landowners, without expropriation or other compulsory procedures. Furthermore, according to local regulation, all the land owners with properties located along the borders of the purchased land have been informed by the Company about the project and they had been allowed to provide their comments or express their concerns, through written notices sent to them and public announcements posted at the City Halls.

No residential properties were located on the areas to be occupied by the wind farm and therefore no resettlement was necessary. Furthermore, following the construction period all

land, with the exception of access roads and turbine footprint, will be returned to agricultural and grazing use. All the land transactions have already been concluded only land owned by Land Power will be used for construction works.

Regarding land use of the areas affected by the wind farm development, leased lands of Luminita cluster are currently used as common grazing and, after construction works, the areas outside the operational footprint of the turbines will be made available for common grazing. Regarding the Topolog and Mesteru clusters, the areas outside the operational footprint of the turbines and supporting infrastructure will be leased to local residents for continued agricultural and grazing use during the operation of the wind farm. See Sections 3.3 and 3.4 for mitigation/compensation measures regarding habitat loss.

To avoid fragmentation of land, existing roads (about 22 km) will be upgraded where necessary to provide access to the turbines. An additional 8km of new roads will be constructed within Land Power properties or along the borders of the existing properties to avoid further fragmentation of the land, thereby maintaining the value of the land.

3 Summary of impacts and mitigation measures

3.1 Overview of the baseline environmental conditions

The project site and the local area are characterized as follows:

- the project area is dominated mainly by a mixture of agriculture and grazing, while the site's north-eastern boundary is defined by forest land. In the transition zone between the pasture and the forest land, a mixture of woodlands and grazing areas is present;
- 10 turbines (LU03 - LU011 and ME08) are located within the SCI Podișul Nord Dobrogean and 1 of them (ME08) within the SPA Padurea Babadag (i.e. the turbine ME08 is located both in the SCI and in the SPA (**Figure 2**), since part of the Padurea Babadag SPA is also designated as a SCI). These two Natura 2000 sites (SCI Podișul Nord Dobrogean and SPA Padurea Babadag) are characterized by grassland, more natural lands like steppe and isolated areas of shrub vegetation present in the narrow valleys. The **Figure 3** shows the land use in the surroundings of the ME-08;

Figure 3: Land use at location of ME-08



- the villages of Topolog, Luminita, Mesteru and Dorobantu, typically comprising small houses having their own garden and a shelter area for animals, are present in the areas surrounding the project site. No isolated houses are present within the project area;
- there are no significant water courses or water bodies located in or near the wind farm site;
- the groundwater table was not encountered at the site in the geotechnical borings performed to a depth of 14.8 m below ground level (near the ME-06 turbine);
- due to the agricultural practices and pasture, the diversity of species on the site itself is relatively low. Among animals observed there were: European hare (*Lepus europaeus*), wood mouse (*Apodemus sylvaticus*), foxes (*Vulpes vulpes*), European pine marten

(*Martes martes*), ground squirrel (*Spermophilus citellus*), European mole (*Talpa Europeae*), green toad (*Bufo viridis*), submediterranean reptiles such as lizard Dobrogea (*Podarcis taurica*), European green lizard (*Lacerta viridis*), Greek tortoise (*Testudo graeca Ibero*), Caspian whipsnake (*Dolichopphis caspius*) and various species of insects (mainly of the Lepidoptera and Orthoptera orders).

3.1.1 Natura 2000 sites

As described above, the project falls partly within two Natura 2000 sites, i.e. Babadag Forest SPA and North Dobrogea Plateau SCI. In the following reasons (i.e. presence of sensitive and important species) for the designations of SPA and SCI to protected areas are explained.

The Babadag Forest SPA was designated as a Natura 2000 site because it provides habitat for several protected bird species: 38 species from Annex1 of the Wild Birds Directives¹, 61 species of the other migratory species listed in the Annexes of the Bonn Convention² and 6 globally threatened species.

More specifically, the SPA is important:

- for the breeding population of the following species: *Falco vespertinus* (Red-footed Falcon), *Falco cherrug* (Saker Falcon), *Coracias garrulous* (Roller), *Hieraaetus pennatus* (Booted Eagle), *Accipiter brevipes* (Levant Sparrowhawk), *Circaetus gallicus* (Short-toed Eagle), *Circus pygargus* (Montagu's Harrier), *Oenanthe pleschanka* (Pied Wheatear), *Picus canus* (Grey-headed Woodpecker), *Milvus migrans* (Black Kite), *Dendrocopos medius* (Middle Spotted Woodpecker);
- during the migration period for the following species: *Haliaeetus albicilla* (White-tailed Eagle), *Ficedula parva* (Red-breasted Flycatcher), *Ciconia ciconia* (White Stork);
- during the wintering period for the following species: *Circus macrourus* (Pallid Harrier), *Circus cyaneus* (Hen Harrier).

The biggest threats posed to birds in the SPA are presented by the expansion of agricultural land and residential house, the construction of new infrastructures (i.e. wind farms), intensive grazing and poaching.

The North Dobrogea Plateau SCI was designated as Natura 2000 site because it contains the most representative of the steppe habitats of European Community interest (e.g. *Ponto-Sarmatic* steppes) and also forest habitats of Community interest (i.e. *thermophilous* and supra-mediterranean oak woods habitat groups).

The biggest threats to the species and habitats of this SCI are presented, in a descending order by:

- hunting, more than half of the surface of the site is included in hunting funds;
- the decreased of forest biodiversity by derivation (due to competition between *Quercus* and mixed species);
- development of new infrastructures and wind farms;

¹ EU Directive 2009/147/CE of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds.

² Convention on the Conservation of Migratory Species of Wild Animals (also known as CMS or Bonn Convention).

- conversion of steppe to agricultural lands;
- expansion of the periphery of towns and cities.

Neither Natura 2000 area has a formal management structure (custodian) nor have they developed management plans. For this reason the EPA is in charge of these protected areas.

3.1.2 **Ecological baseline on birds and bats**

3.1.2.1. *Birds and bat monitoring activities*

The information on the ecological baseline for birds and bats was collected through monitoring activities performed as follows:

- Spring 2013 (March – June): monitoring was conducted based on a revised methodology and in accordance with international standards and best practices;
- January 2012 – February 2013: monitoring conducted in accordance with the Romanian environmental permit requirements, however data was supplemented in accordance with international standards;
- October 2006 – December 2011: monitoring was conducted in accordance with the Romanian environmental permit requirements.

Bird and bat monitoring activities will continue during the construction (in Autumn 2013) and at least the first 3 years of operation, using the same methodology used in Spring 2013.

Monitoring surveys were conducted through observations along transects and from vantage points within the studied project area.

3.1.2.2. *Baseline for bird species*

Given that agroecosystems are predominant, the area is populated mainly by characteristic species, featuring specific adaptations. Considering the full set of available data from monitoring (2006-2013), the following ecological categories of birds were detected (species in bold text are considered to be vulnerable to wind farm developments considered):

- Species which prefer arboreal vegetation (wooded areas and orchards) as a feeding, sheltering and breeding habitat, such as *Dendrocopus major* (Greater Spotted Woodpecker), *Accipiter brevipes* (**Levant Sparrowhawk**), *Accipiter gentilis* (**Northern Goshawk**), and *Dendrocopus medius* (Middle Spotted Woodpecker).
- Species nesting in forested areas, but frequenting agricultural land and pastures in search for food. Characteristic of this group are raptor species, diurnal and nocturnal, such as *Aquila pomarina* (**Lesser Spotted Eagle**), *Aquila heliaca* (**Imperial Eagle**), *Buteo lagopus* (**Rough-legged Buzzard**), *Buteo rufinus* (**Long-legged Buzzard**), *Circaetus gallicus* (**Short-toed Eagle**), *Circus Cyaneus* (**Hen Herrier**), *Emberiza hortulana* (**Ortolan Bunting**), *Hieraaetus pennatus* (**Booted Eagle**), *Falco tinnunculus* (**Kestrel**), *Falco vespertinus* (**Red-footed Falcon**) and *Haliaeetus albicilla* (**White-tailed Eagle**);
- Small insectivorous and granivorous species, having a preference for open fields, dominated by herbaceous vegetation, which are used as feeding and breeding habitats. Species include *Oenanthe oenanthe* (Wheatear), *Anthus campestris* (**Tawny**

Pipit), *Alauda arvensis* (Eurasian Skylark), *Calandrella brachydactyla* (**Short-toed Lark**), *Melanocorypha calandra* (**Calandra Lark**).

- Species which prefer shrubbery as shelter and breeding habitat, but open fields for feeding habitat, such as: *Lanius collurio* (Red-backed Shrike), *Lanius minor* (Lesser Grey Shrike), *Carduelis carduelis* (Goldfinch), *Miliaria calandra* (**Corn-Bunting**), *Emberiza citrinella* (Yellowhammer) and *Buteo buteo* (**Common buzzard**).
- Usually insectivorous species nesting along loess ravines: *Coracias garrulus* (Roller) and *Merops apiaster* (**Bee-eater**).
- Species characteristic of inhabited areas, typically exhibiting high levels of adaptability to the anthropic factor, such that the population size of these species is the largest one within the studied area. Among these, *Accipiter nisus* (**Sparrowhawk**), *Corvus frugilegus* (Rook), *Corvus cornix* (Hooded Crow), *Corvus monedula* (Western Jackdaw), *Hirundo rustica* (Barn Swallow), *Passer domesticus* (House Sparrow), *Passer montanus* (Eurasian Tree Sparrow), *Sturnus vulgaris* (Rose-coloured Starling), *Streptopelia decaocto* (Eurasian Collared Dove) are noteworthy.

More recent observations and elaborations of statistic data confirm that the wind farm is in a peripheral area of the Pontica fly route³ with a limited flux of non-raptors (such as *Ciconia ciconia* - **White Stork**- or *Pelecanus onocrotalus* - **White Pelican**). Furthermore, the area appears attractive for several species of raptors, both resident and migrant.

3.1.2.3. Baseline for bat species

During bat surveys between March-June 2013, the number of observations in the area were very low and bat populations were mostly concentrated in ecotonal areas (which are a narrow belt nearest the wooded area), where the micro-climate and habitat conditions were favorable to the bats. Otherwise within the wind farm area, the availability of foods for bats was lower, weather conditions were unfavorable and the distance towards day shelters was relatively high. These results are in line with monitoring data collected from October 2006 to January 2013.

3.2 Summary of the anticipated impacts during construction and operation

3.2.1 Ambient Air

There will be no significant impacts on air quality due to construction and operation of the wind farm.

During the construction phase, air emissions will consist of dust due to excavation works and of gaseous emissions due to the traffic. However such emissions do not represent a significant environmental issue for the project, particularly as the nearest sensitive receptors (residential

³ Pontica fly route is an important bird migration routes that crosses the Dobrogea plateau and is represent the western part of the Black Sea/Mediterranean migration route. In detail on the African-Eurasian continents there are five main bird migration routes including the East Atlantic, the Black Sea/Mediterranean, the West Asian/East African, the Central Asian and the East Asian/Australasian. The Black Sea/Mediterranean bird migration route (which is the closest route to the project area) uses the western and eastern Black Sea coastline (north to south) and continues along the eastern Mediterranean coast or incorporates a direct crossing of Eastern Anatolian plateau towards Jordan and Israel.

areas) are significant distances from work areas and residential houses (generally greater than 900-1,000m and not less than 530m in the worst case). It is noted that any impacts from dust generation during construction will be temporary and furthermore mitigation measures will be implemented to reduce them, as indicated in the Section 3.3.

During operation, the wind farm will not have any source of emissions, so no pollutants will be released into atmosphere. Operational traffic emissions associated with the wind farm will be insignificant due to the low numbers of vehicles accessing the site for maintenances.

The low emissions to air, particularly associated with operation of the wind farm, are consistent with the primary objective of the wind farm to provide a low emission renewable energy source. Every unit of electricity produced by wind power has the potential to replace a unit of electricity generated by other means, including fossil fuel powered power stations. As such, wind farm development reduces greenhouse gas emissions and other emissions, which can cause regional and local air pollution and contribute to global climate change.

3.2.2 Soil, surface and ground water resources

No surface water resources are present in or near the wind farm, therefore no impacts to surface water bodies were evaluated. However, during rainy periods, temporary surface rainwater runoff may occur in the valleys in the areas surrounding the project site.

Based on the field reconnaissance, the presence of landslides or soil movement in the project areas was not detected and the area appears stable. Elsewhere, away from the immediate project area evidence of erosion processes by rainwater runoff was observed, although the presence of a continuous steppe vegetation indicates that the erosion processes are largely stable.

During construction, impacts on land cover will result from turbine installation and the construction of new roads between turbines. However, these environmental impacts are temporary, the only loss of soil will be for the turbines installation and all other changes to the soil are reversible. All the foundations of the turbines and new roads will be sited on stable plateaus, unaffected by erosional processes. Furthermore, it is noted that no vegetation clearance/deforestation will be required, and existing drainage will not be affected by the project, concluding that no potential factors will be introduced to trigger erosion processes. However, a plan to control soil erosion will be developed and implemented as defined in the ESAP. In particular, it will also need to strip and store topsoil for later reinstatement. In detail, all pasture and non-agricultural ground disturbed by construction works will be restored with topsoil, regarded all arable lands, and re-vegetated with native species, preferable before winter period. As possible, restoration will be performed at the earliest opportunity following completion of construction works. In conclusion, no significant impacts are expected on soil during construction.

No direct interference on groundwater is predicted, since the turbines foundations will be installed into the underlying bedrock, at variable depths, without interfering with the ground water level.

The estimated permanent loss of land will be about 17 sqm for each of the 41 turbines, a total of 697 sqm (or 0.0697 ha). In addition, new roads will cover 4 ha. The operation of the wind farm will not require the use of water and not generate liquid emissions, thus significant environmental impacts on ground or surface water resources are not predicted to result from

the proposed wind farm during normal operations. Furthermore, no direct interference on groundwater is predicted, since the turbines foundations will be installed into the underlying bedrock, at variable depths, without interfering with the ground water level.

Accidental release of fuels, oils, chemicals, wastewater, etc., could occur during construction/operation, therefore best practices will be developed and implemented to manage this issue (see section 3.3). However due to the reduced permeability of the soil and subsoil and the depth of groundwater, the risk of pollution of groundwater resources is extremely low.

3.2.3 Landscape and visual impacts

No significant adverse impacts are predicted during construction, since works will be temporary and reversible.

During operation, the turbines will be visible from surrounding villages and in particular from Mesteru and Luminita, but are not expected to cause a significant negative impact. The landscape character is judged to be of low-moderate significance, due to the presence of detracting features (i.e. components of other wind farms, electrical lines, etc.), and sensitivity of the receptors low-moderate. There are already turbines visible (**Figure 4**), predominantly to the south and south-west and the existing turbines of Total Electric wind farm nearby the Project, therefore people are accustomed to the sight to the turbines (**Figure 5**).

Figure 4: Photo captured at the location of TO-06. In the mid-ground there is Luminita village and the existing turbines are visible on the distant horizon at the left of the Photo



Figure 5: Luminita village and the existing turbines of Total Electric on the distant horizon at the right of the Photo



The open character of the proposed wind farm and their general uniformity of colour and design enable the developments to relate well to the receiving open and expansive landscape character of the site. Therefore the introduction of wind turbines and its ancillary infrastructure will not adversely impact upon the local landscape character beyond the local context.

Figure 6: Photomontage from Mesteru village



3.2.4 Biodiversity

3.2.4.1. Birds and bats

The potential impact on birds and bats has been assessed in the ESIA. The main potential impacts evaluated for birds and bats were represented by:

- barrier effect, which leads to birds avoiding or detouring around the area where the turbines are located;

- loss of habitats, by building the actual infrastructure, and through the temporary or permanent dislocation of species from the area of the wind farm to other areas, with similar habitats to those found in the studied area—as noted, a total of about about 15.1ha will be used for turbine foundations and new and existing roads, including about 1,5ha in the two Natura areas;
- risk of collision with wind turbines.

More specifically, the ESIA concludes that 12 birds species are at high risk (all other species are less affected), 10 of which at high risk of habitat displacement (*Anthus campestris*- Tawny Pipit, *Aquila pomarina*-Lesser Spotted Eagle, *Asio Flammeus*-Short-eared Owl, *Calandrella brachydactyla*-Short-toed Lark, *Emberiza hortulana*-Ortolan Bunting, *Falco tinnunculus*-Kestrel, *Falco vespertinus*-Red-footed Falcon, *Hieratuus pennatus*-Booted Eagle, *Melanocorypha calandra*-Calandra Lark, *Milaria calandra*-Corn-Bunting). The remaining 2 are at risk of collision (*Ciconia ciconia*-White Stork- and *Ciconia nigra*-Black Stork).

Habitat loss will be more critical during construction, whilst collision risk is a typical impact of the wind farm operation.

During construction, indeed, the most important risk factor for birds and bats is the permanent or temporary loss of habitat due to the installation of the wind turbines and the construction of the access roads network. Some small species (most of them passeriformes) breed in the wind farm area, especially in the grazing zones, and potential impacts (in terms of habitat loss,) are possible. In addition, there could be some loss of small birds and mammals that are preyed upon by hawks and eagles, which could lead to reductions in raptor populations.

In detail, most species of Passeriformes, Coraciiformes, Falconidae may be affected only during the construction of the wind farm, as they re-populate the affected areas after the construction work ceases and human presence in the area will be reduced.

Mitigation/compensation measures will be implemented to prevent habitat loss as indicated in section 3.3.

In addition, based on the field reconnaissance two specific areas of major interest for the potential presence of protected or designated fauna species were identified in the grasslands within the project area. These were:

1. areas near the ME8-ME9-ME6 turbines - these areas are potentially humid and are a refuge for bird species. The following species were observed in these zones: *Hirundo rustica*, *Lanius minor*, *Lanius collurio*, *Merops apiaster*, *Upupa epops*, *Falco tinnunculus*, *Oenanthe oenanthe*. It is noted that these species are not included in the list of the Padurea Babadag SPA;
2. the area near the LU9-LU10-LU11 turbines – an area of interest to Passeriformes, and is thus a feeding area for birds of prey.

Notwithstanding the fact that the areas listed above will not be affected directly by the project, appropriate mitigation measures, as indicated in section 3.3, are to be implemented in order to minimize potential impacts due to the wind farm.

Regarding the collision risk during operation, the evaluation showed potentially high risks for White Stork and Black Stork. However based on the observation of White Stork species (as many as 40 individuals could be recorded in April 2013) the risk of collision with the turbines is insignificant due to the fact that the flocks pass at heights greater than 400m, and no solitary

individuals or groups were observed on the ground at the wind farm site. Furthermore, as evaluated in the Additional Study on birds and bats the impact on White Stork is quantifiable in a potential loss of one individual in ca. 6 years (collision risk: 0.166 event/year; <0.0040 events/MW/year considering 82 MW for a total of 41 turbines) and it is considered very limited (not relevant for the local or global population). Regarding Black Stork, this species was not recorded in the region during monitoring and therefore the actual probability of a collision is very low (non-calculable), therefore the overall impact on the population of Black Stork is therefore null or negligible.

Low collision risk were estimated for other birds species, especially other storks (other than black and white storks), eagles, buzzards and other large birds and to bats.

Mitigation/compensation measures to reduce habitat losses and collision risk will be implemented as indicated in detail in section 3.4.

In addition, in order to verify the effectiveness of the mitigations and re-design/refine these measures, if necessary, birds and bats monitoring campaigns, as already planned in line with environmental Romanian permits, EU requirements and the international standards, shall be carried out during construction and operation. In addition, during the operational phase monitoring activities will also include dedicated monitoring of bat and bird mortality at all turbines and at the wind mast.

In conclusion, taking into account the above proposed mitigation/compensation measures and given the wind farm layout and the location of the wind farm in a peripheral area of migration flyroute, the farm it is not expected to contribute towards a significant effect upon birds and bats and the integrity of two Natura 2000 sites.

3.2.4.2. Terrestrial fauna and flora species

Regarding non bird or bat species observed on site, only the following terrestrial fauna species are designated as protected species in the list of the Podișul Nord Dobrogean SCI: Greek tortoise and ground squirrel. In order to avoid death or injury to these species there be a pre-construction survey of each turbine site and road to determine if any of these are present and where identified they will be moved to areas not affected by the project.

Only one area of major interest for the potential presence of protected or designated fauna species was identified in the grasslands within the project area during the site walkover. This is the area to the south of the LU4 turbines, which is a humid zone supporting the presence of amphibians (such as *Bufo viridis*-green toad). Notwithstanding the fact that this area will not be affected directly by the project, appropriate mitigation measures, as indicated in section 3.3, are to be implemented in order to minimize potential impacts resulting from the wind farm.

Regarding flora, as reported in the data sheet of the SCI protected plant species by Habitat Directive are *Campanula romanica*, *Centaurea jankae*, *Ehium ruscicum*, *Himatoglossum caprinum*, *Iris aphylla ssp. Hungarica*, *Moehringia jankae* and *Potentilla emilii-popii*. However, Based on survey works undertaken as part of the ESIA, these species are not detected in the project areas within the SCI, whilst only steppe was identified as a protected habitat by the Directive 92/43/EEC. Potential impacts on habitat losses, including steppe, are evaluated in section 3.2.4.

No significant adverse impacts on terrestrial fauna and flora are predicted during operation.

3.2.5 Cultural Heritage

In the 1960's several archaeological remains (e.g. agricultural bronze hand tools, dishes, etc.) were found in the areas of the villages of Luminita and Topolog, therefore, in the EIA of 2010 3 limited areas were identified as potentially affected by archaeological remains, respectively 2 of which in Topolog and the other in Luminita. On the basis of the permitting requirements of the Romanian Ministry of the Culture and the National Heritage, archaeological surveillance contracts are requested to be in place during construction works on the site as a precaution. In the event that archaeological remains are found during excavations that are necessary for the foundations of the turbines and buried cabling, works will be stopped until the granting of the permit for continuing the work (with conditions, if necessary), from the competent authorities. To date, no remains were found in the 3 above mentioned areas, whilst some remains (e.g. human bones) were found in areas outside of the wind farm project area.

In conclusion, no adverse impacts will be expected during construction.

3.2.6 Noise

Due to the location of the proposed project, and the agricultural/grazing nature of the surrounding activities, ambient noise levels are considered to be low. There is limited road traffic and so little noise associated with traffic.

The nearest residential properties and sensitive receptors are located approximately 530m from the closest turbines (Turbine ME-08 in the Mesteru area).

During construction (construction works will be conducted only in daytime), noise emissions will be expected by vehicles and cranes. However these will be similar to emissions from existing agricultural machinery and consequently no significant noise impacts are expected. Notwithstanding the afore mentioned limited noise impacts, during construction noise and vibrations control measures will be implemented as identified in section 3.3.

During operation, rotating turbine blades generate noise of varying sound pressure levels depending on speed of rotation and proximity to the turbine (i.e. behind the rotor and with the wind direction is noisier than in front of the rotor and against the wind direction). However, noise levels decrease rapidly with distance until it is very low or undetectable at distances of more than 100-200m. Each of the turbines will be at least 500 m from the nearest residential property, in compliance with Romanian regulatory requirements, therefore no significant negative impacts are predicted during operation and noise levels are not expected to exceed the noise standards outlined below.

- **Romanian noise standards:** although not directly relevant, the Romanian Ministerial Order 152/2008 *for the approval of the Guideline regarding the adoption of limit values for indicators L_{day} and L_{night} in case of noise generated by road traffic* indicates the following maximum permissible limits for residential, commercial and industrial zones:

Zone	Permissible limits for noise levels L_{Aeq} (dB)		
	Day	Evening	Night
	7am-6pm	6pm-10pm	10pm-7am
Residential	55	-	50
Industrial	60	-	50

- IFC noise standards:** Guidance from the IFC⁴ suggests that noise impacts should not exceed the levels presented in the following Table, nor result in a maximum increase in background levels of 3 dB at the nearest receptor location:

Zone	Permissible limits for noise levels L_{Aeq} (dB)	
	Day 7am-10 pm	Night 10pm-7am
Residential, institutional and educational	55	45
Industrial and Commercial	70	70

Source: IFC General Environmental, Health & Safety Guidelines 2007

3.2.7 Shadow flicker

Shadow flicker is a flickering or strobing effect that moving shadows of the rotating blades can cause when perceived by humans. Shadow flicker impacts potentially extend up to 900 meters from turbines and only few turbines are located within 900 meters from houses. Moreover, the potentially critical turbines (located near Mesteru village) are positioned along a North-West to South-West line with respect to affected houses and therefore any potential effect could occur only few days per year and few hours per each affected day (when the sun is close to East and the turbines are between the sun and houses).

The impacts are therefore expected very limited; therefore it is unlikely that shadow flicker is a major issue for this project.

3.2.8 Electromagnetic interference and electric and magnetic fields

Wind turbines can be an electromagnetic radiation source and their blades may interfere with radar and telecommunication systems. However specific permits have been issued by ANCOM (National Authority for Communications) on the electromagnetic compatibility of each of the three wind clusters.

Electric and magnetic fields will not be an issue. There will be no power lines over 110 kV and the power lines will be situated underground. More specifically, the magnetic fields will be less than 0.5 microTesla (the limit values of exposure set forth in international standards, International Commission on Non-Ionizing Radiation Protection - ICNIRP) at distances from the lines greater than 5-6 meters. Lines are generally much more distant from houses; the closest residential houses are located approximately at 8-10 metres from the 30 kV buried cables which runs along the road DJ411 (222B) at Luminita village, whilst no residential properties are present nearby 30/110 kV transformer/substation or along route of 110 kV buried cable.

⁴ International Finance Corporation. Environmental, Health and Safety Guidelines: "Wind Energy". April 30, 2007

3.2.9 Traffic and transport

Due to the project's nature, potential impacts may be expected due to the increased volume of traffic, relative to baseline traffic movements, associated with the construction of the wind farm.

Generally, traffic related impacts generated during the construction phase will result from deliveries of goods and materials, staff movements and visitors to the wind farm development. There will also be and the temporary disruption on some roads due to the installation of underground electrical cables. Potential impacts in the form of increased of the traffic volume or disruption of local traffic flow by large and/or slow moving large loads may be generated especially along main public roads, such as DJ411 (222B) and DN701 (22A). Each turbine will be delivered through 9 special trucks, 1 for each component (4 towers, 3 blades, 1 nacelle and 1 hub). Every day approximately 10 trucks will arrive at the site.

To minimize traffic impacts during construction, appropriate traffic control measures will be implemented as indicated in section 3.4.

During the operational phase no significant adverse impacts are expected because of the very low numbers of vehicles accessing the site for maintenance purposes.

3.2.10 Socioeconomics

No vulnerable groups or individuals are identified in the project area and social impacts during construction and operation of the wind farm are assessed in terms of socio-economic benefits to the local economic development: land acquisition provided a relatively large amount of liquidity to the community; during construction, workers coming from abroad will require accommodation and food; during operation, the plant will need workers for maintenance operations to hire locally.

As verified during meetings with local residents, affected parties expect to receive benefits from the project, including: (i) the repairing and upgrading of all roads which will be used in the construction phase, (ii) the possibility of employment for the construction/operation wind farm (local residents could be hired as unskilled workers for the construction works or as security personnel once operational), (iii) the possibility to use the areas outside the operational footprint of the turbines for agricultural activities and, in addition, the use of new roads.

During construction, it is unlikely that the risks of disruption of local services (water, electricity, etc.) will generate impacts to local communities.

3.2.11 Cumulative impacts

Cumulative impacts were evaluated taking into consideration the existing nearby wind farm operated and owned by TOTAL ELECTRIC (or ENEL). The ENEL wind farm has a total capacity of 27 MW consists of 11 turbines (6 turbines of 2MW and 5 of 3MW). The turbines are located outside Topolog Village, Tulcea District (T43, P A276, T62, P391, T 63, P 394, T81, P479, T67, P 431), in an area consisting of arable land and pastures. See the **Appendix 1** where the location of ENEL turbines is shown.

The wind farm ensemble (Land Power + TOTAL ELECTRIC) thus consists of 53 wind turbines, erected on predominantly agricultural land. Of the 53 wind turbines which make up the wind

power ensemble, 34 (64.2%) fall outside all protected areas, including Natura 2000 sites, and the rest of 19 (35.8%) turbines are located on Natura 2000 sites.

As summarized in the following, cumulative effects were evaluated in particular for landscape and biodiversity.

With regard to potential cumulative impacts on landscape, the existing ENEL wind farm was included in the photomontage for the evaluation of the landscape visual impact concluding that the cumulative impacts are very limited or absent.

With regard to potential cumulative impacts on the biodiversity of two Natura 2000 sites, the built surface of the wind power ensemble constitute approximately 0.00006% of SPA Babadag Forest, and respectively approximately 0.003% of SCI North Dobrogea Plateau, which represent extremely small areas compared to the areas of the protected territories. In addition, uncultivated land within the studied area is visibly affected by overgrazing, with current adverse effects on both local flora and fauna; with the construction of the wind power ensemble and consequent reduction in grazing species abundance and diversity has the potential to improve..

With regard the potential cumulative impacts on birds/bats in terms of collision risk with the turbines, other than the current observation based on the existing turbines of the Total Electric wind farm, impacts evaluation conducted on the wind farm ensemble showed that the calculated collision risk is limited.

No other significant cumulative impacts were evaluated on flora and other fauna.

In conclusion, no significant cumulative impacts are expected to significantly affect birds, bats or the integrity of two Natura 2000 sites. However, birds/bats monitoring activities will nevertheless be implemented during construction and operation that will verify the findings of the cumulative assessment in the ESIA.

3.3 Mitigation of impacts for construction phase

On basis of the potential impacts predicted during the construction phase, the following mitigation measures will be developed and implemented:

- dust control measures will be used to reduce potential adverse impacts from project induced dust , e.g. water spraying roads, covering vehicles carrying dusty materials to prevent materials being blown from the vehicles, speed limits on unmade surfaces on site to limit dust, etc.;
- erosion control best practices, e.g. minimize disturbance on slopes, immediate repair of ruts and other features caused by work in wet weather; segregate topsoil from subsurface material and store both in secure areas for reuse, protect storage piles with covers, including vegetative cover (native grass species) as needed to prevent erosion and desiccation; use best practices to prevent or retard run-off;
- measures for chemicals and other hazardous materials management will be put in place to minimise the risk of ground water and soil pollution, e.g. appropriate storage and handling of hazardous materials, dedicated refuelling areas, procedures and equipment in place to rapidly clean up any spill, etc.;

- in line with the permits requirements, pre-construction surveys for archaeological artefacts will be conducted in collaboration with the Minister of Culture – Tulcea Department and a chance find procedure will be developed and implemented;
- controls measures for construction phase noise and vibration, e.g. apply construction speed limits, especially near residences, maintain equipment and vehicles, and where possible, limit work to daylight hours, minimize weekend work. In addition, upon request monitor noise at residences, taking actions to reduce or control noise from turbines and/or substation as needed to meet applicable standards and reduce nuisance levels.
- appropriate traffic control measures (such as establishment of speed limits and adequate road signs, scheduling of the segregated portions of the roads) in order to prevent and control potential impacts along main roads used by the project, for all traffic on and off the site.
- dedicate mitigation measures at three important areas for biodiversity identified in the ESIA (i.e. ME8-ME9-ME6, LU4, LU9-LU10-LU11):
 - minimisation of the areas affected by the construction of the ME8-ME9-ME6 turbines and limitations of noise generating activities between March and August, which is the reproductive period for a number of fauna species;
 - prohibit construction works for the LU4 turbine and limit traffic from June to September;
 - conducting the excavations in the area of the LU9-LU10-LU11 turbines (excavation for turbine erection and electric buried cables) outside the period March-August.
- after construction works, the reinstatement of disturbed areas with previously stripped and stored top soil will be immediately carried out to reduce the recovery period of these areas and thereby avoid habitat fragmentation and discourage the establishment of invasive species;
- after construction works, rehabilitation of all roads which are used in the construction phase;
- following completion of construction works, clearance of construction materials and initial reinstatement of disturbed areas, grazing will be prohibited in the turbine areas within the SCI North Dobrogea Plateau for at least 1 year (one vegetation season). This measure will be taken in order to allow the re-establishment of vegetation in those areas affected by construction works. This mitigation measure will also benefit local fauna.

3.4 Mitigation of impacts for operation phase

On basis of the potential impacts predicted during the operation phase, the following mitigation measures will be developed and implemented:

- measures for chemicals and materials using during maintenance activities to minimise the risk of ground and surface water pollution, e.g. appropriate storage and handling of

hazardous materials, dedicated refuelling areas, procedures and equipment in place to rapidly clean up any spill, etc.;

- in order to minimize landscape and visual impacts, turbines will be a colour which is unobtrusive, as a semi matt pale grey;
- in order to minimize habitat losses and to preserve biodiversity conservation and integrity of the Natura 2000 sites, the following measures are to be implemented:
 - areas outside the footprint of the turbines will be used for agricultural and grazing purposes;
 - land purchased by Land Power within the SPA/SCI that is not required for the installation of turbines (i.e. is between the turbines) will be converted from arable land to pasture for grazing to offset habitat loss resulting from the installation of the turbines. More specifically, the pasture land permanently affected by the wind farm amounts to 3ha. To compensate for the loss of the pasture habitat, arable land plots (Nc295, Nc345, Nc1196, Nc1275) are chosen, in the area of turbines ME-06, Me-10, ME-07 and Lu-01, with a total area of 7.5 ha are identified in the vicinity of existing pasture areas. These plots are chosen with the purpose of creating continuity with the existing habitat presently used by local species, in particular as feeding habitats for birds potentially affected by habitat losses (*Anthus campestris*- awny Pipit, *Aquila pomarina*-Lesser Spotted Eagle, *Asio Flammeus*-Short-eared Owl, *Calandrella brachydactyla*-Short-toed Lark, *Emberiza hortulana*-Ortolan Bunting, *Falco tinnunculus*-Kestrel, *Falco vespertinus*-Red-footed Falcon, *Hieratus pennatus*-Booted Eagle, *Melanocorypha calandra*-Calandra Lark, *Milaria calandra*-Corn-Bunting);
- in order to minimize potential collision risk, the following measures are to be implemented:
 - increase the visibility of the turbines. Diurnal visibility of the rotor blade will be improved by painting the blades in contrasting colors for at least 20% of the turbines in the wind farm (20% is a compromise since this could be opposing to the land visual impact mitigation). Nighttime visibility will be increased through the equipment of flashing light, with large time intervals between two consecutive flashes (these turbines are more easily recognized by migratory birds, when using alternative lighting, in detriment of using continuous light, in addition use of flashing light reduce the negative effects produced by turbine lighting regarding the attraction of insects which, in turn, attract bats);
 - apply the turbine shutdowns during foggy days, either daytime and nighttime, when the visibility is less than certain minimum distance because fog causes migrating and passing raptors to fly lower in daytime, which increases risk of collision with turbine blades. Fog at night can cause migrating passerines to be attracted to lights and thus collide with turbines and nacelles;
 - monitor birds during breeding and migration seasons for at least three years, and monitor for dead birds indefinitely. Each year, based on the findings of the monitoring work, qualified experts will determine if there should be additional mitigation, such as further shutdowns at certain times to reduce bird mortality. The monitoring program will be developed to meet the highest international

standards. If determined necessary, a shutdown system that includes a combination of human observers and radar systems will be evaluated so they can give early warning of approaching migrant flocks. If determined to be necessary, it is expected a radar system would include a horizontally-mounted surveillance radar to track bird flight paths and a vertically-mounted radar to measure flight heights;

- the turbines start operating at medium to high wind intensities during nighttime, since that bat mortality is generally recorded during nights when the wind velocity is low, as they are active in search of food;
- monitor noise at residences upon request, taking actions to reduce or control noise from turbines and/or substation as needed to meet applicable standards and reduce nuisance levels.

4 Environmental and social management and monitoring

The key mechanisms for environmental and social management and monitoring during the construction and operation stages of the Project are the permits issued by Romanian authorities and an Environmental and Social Action Plan (ESAP) elaborated in line with EBRD Performance Requirements and the best international practices.

The ESAP for Topolog-Luminita-Mesteru wind farm is part of the ESIA disclosure package and sets out the measures necessary to manage the environmental and social impacts of the project to comply with applicable Romanian and EU legislation.

In addition to the mitigation measures described in the previous section, the most relevant requirements of the ESAP to be implemented are summarized below:

- implement the occupational health and safety plan which covers all activities, including those developed by contractors;
- prepare an Environmental and Social Management Plan (ESMP) transposing identified mitigation measures into clearly defined actions to be implemented during all stages of the project;
- develop a decommissioning plan;
- appropriate best practices will be employed during construction regarding waste management, materials and waste storage and use, noise and vibration controls, reduction and controls of dust generation, traffic management, rehabilitation of all roads which are used in the construction phase;
- develop measures to minimize visual landscape impacts (e.g. avoidance of felling and/or severance of existing shelterbelts, selection of turbine matt colour);
- conduct pre-construction surveys for archaeological and develop and implement chance find procedures (Land Power and all contractors), in line with national requirements and best practices;
- maintain and further develop the Stakeholder Engagement Plan, including the stakeholder grievance mechanism.

The Company will provide reports to Romanian authorities as required in the permits and authorizations. The Company will also report to the EBRD the status of all ESAP requirements each six months during construction and every year during operation. In addition, highlights of important project activities will be disclosed to local residents and other stakeholders in accordance with the Stakeholder Engagement Plan (SEP).

5 Disclosure of documentation

This NTS together with the ESIA package (Environmental Impact Assessment (EIA) reports of 2008 and 2010, the Appropriate Assessment Study of 2010, the Additional Study, the Supplementary Report, the Stakeholder Engagement Plan and the Environmental and Social Action Plan) will be disclosed and remain available for 60 days on the Land Power website (<http://www.landpower.ro>) and at EBRD's website (www.ebrd.com). This will allow stakeholders with access to internet to view information about the planned development and to initiate their involvement in the public consultation process as described further in the SEP.

Free copies of all documents will also be made accessible for the general public at the following locations:

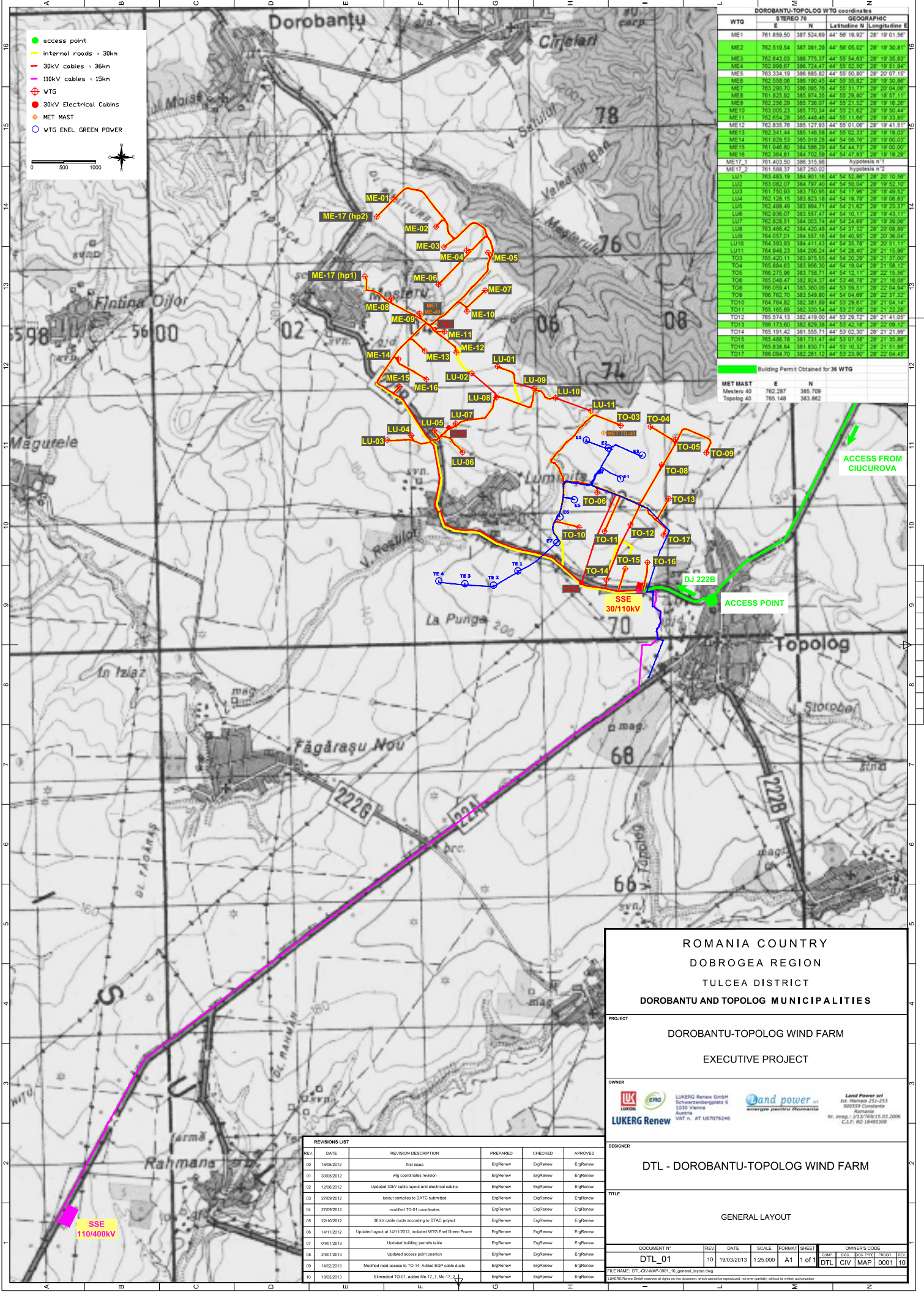
- the Company's headquarters:
 - Land Power: Mamaia Avenue 251-253, 4th floor, office 3, Constanta
- local municipal and district administration offices:
 - Topolog Mayor's Office: 67 1 Decembrie Street, Topolog Village, Tulcea County
 - Dorobantu Mayor's Office: 46 Primaverii Street, Dorobantu Village, Tulcea County
 - Tulcea County Council: 20 Pacii Street, Tulcea

The SEP will be updated periodically by Land Power and will remain publicly available on the Land Power website. In order to ensure that the Project is made aware of, and thereby able to manage or offset any unforeseen environmental and social impacts, Land Power has developed several methods for the public to lodge a grievance/request information:

- at the Company's headquarters (Address: 251-253 Mamaia Avenue, 4th floor, office 3, Constanta. Contact: Catalina Dragoi. Email address: catalina.dragoi@landpower.ro. Tel: +40 341432770);
- at the site (Romanian-speaking On-site contact person: Catalin Badiu. Tel: +40 0751299759);
- at EBRD's Regional Office in Bucharest (Address: Metropolis Center 56-60, Iancu de Hunedoara Bd., 3rd floor, West Wing Sector 1, Bucharest. Tel: +40 21 202 7100) and Head Quarters in London (Address: London EC2A 2JN, UK. Tel: +44 20 7338 6747. Requests to view EIA documents: environmentandsocial@ebrd.com).

A Public Grievance Leaflet (the SEP contains the form) with an accompanying grievance form can be completed and sent to Land Power office in Constanta via mail, post or fax or delivered by hand to On-site contact person. When any public grievances are received, requests for information/complaints will be acknowledged within one week and, where possible, the information will be provided within 10 to 15 working days depending on the complexity of information requested/complaints received.

Appendix 1: General layout



Legend:

- access point
- internal roads > 30km
- 30kV cables > 36km
- 110kV cables > 15km
- ⊕ WTG
- 30kV Electrical Cabinets
- MET MAST
- WTG ENEL GREEN POWER

Scale: 0 500 1000

WTG	STEREO TO		GEOGRAPHIC	
	E	N	Latitude N	Longitude E
ME1	781 859.50	387 524.89	44° 58' 19.92"	28° 19' 01.95"
ME2	762 519.54	387 091.29	44° 58' 05.02"	28° 19' 30.81"
ME3	762 643.03	386 775.37	44° 55' 54.63"	28° 19' 35.63"
ME4	762 998.67	386 724.47	44° 55' 52.99"	28° 19' 51.94"
ME5	762 334.19	388 685.62	44° 59' 50.80"	28° 20' 07.15"
ME6	762 558.06	386 190.45	44° 55' 35.82"	28° 19' 30.86"
ME7	763 200.70	386 095.76	44° 55' 31.77"	28° 20' 04.06"
ME8	761 825.92	385 974.35	44° 55' 29.80"	28° 18' 57.11"
ME9	762 256.29	385 738.07	44° 55' 21.52"	28° 19' 16.26"
ME10	763 005.23	385 770.34	44° 55' 21.62"	28° 19' 50.44"
ME11	762 654.28	385 448.46	44° 55' 11.86"	28° 19' 33.85"
ME12	762 835.76	385 127.93	44° 55' 01.06"	28° 19' 41.81"
ME13	762 341.84	388 168.88	44° 59' 50.80"	28° 20' 07.15"
ME14	761 929.53	385 019.28	44° 54' 58.76"	28° 19' 00.03"
ME15	761 946.80	384 586.29	44° 54' 44.73"	28° 19' 00.00"
ME16	762 364.81	384 702.59	44° 54' 47.93"	28° 19' 19.29"
ME17_1	761 403.50	388 315.68	hypothesis n°1	
ME17_2	761 588.37	387 250.02	hypothesis n°2	
LU1	763 483.19	384 901.16	44° 54' 52.86"	28° 20' 10.56"
LU2	763 082.07	384 797.40	44° 54' 50.04"	28° 19' 52.10"
LU3	761 750.93	383 756.95	44° 54' 17.96"	28° 19' 49.82"
LU4	762 126.15	383 823.18	44° 54' 19.79"	28° 19' 06.63"
LU5	762 488.49	383 894.71	44° 54' 21.62"	28° 19' 23.37"
LU6	762 936.07	383 557.47	44° 54' 10.11"	28° 19' 43.11"
LU7	762 828.51	383 003.74	44° 54' 04.69"	28° 19' 39.06"
LU8	763 496.42	384 420.48	44° 54' 37.32"	28° 20' 08.69"
LU9	764 057.01	384 587.16	44° 54' 40.95"	28° 20' 36.04"
LU10	764 393.93	384 411.43	44° 54' 35.79"	28° 20' 51.11"
LU11	764 848.23	384 206.24	44° 54' 28.87"	28° 21' 15.86"
LU12	765 420.11	383 975.55	44° 54' 20.29"	28° 21' 37.00"
LU13	765 884.63	383 956.30	44° 54' 19.04"	28° 21' 58.12"
LU14	766 275.96	383 758.71	44° 54' 12.11"	28° 22' 15.56"
LU15	765 828.51	383 003.74	44° 54' 04.69"	28° 21' 18.06"
LU16	766 055.41	383 300.09	44° 53' 59.51"	28° 22' 04.94"
LU17	766 762.70	383 549.80	44° 54' 04.69"	28° 22' 37.32"
TO1	764 764.82	382 381.89	44° 53' 29.61"	28° 21' 04.14"
TO2	765 148.29	382 302.54	44° 53' 27.88"	28° 21' 22.26"
TO10	765 574.13	382 419.00	44° 53' 29.72"	28° 21' 41.59"
TO11	766 173.60	382 829.38	44° 53' 42.18"	28° 22' 09.12"
TO14	765 191.42	381 555.71	44° 53' 02.30"	28° 21' 21.99"
TO15	765 488.47	383 003.74	44° 54' 04.69"	28° 21' 18.06"
TO16	765 838.84	381 830.71	44° 53' 10.32"	28° 21' 51.96"
TO17	766 094.70	382 281.12	44° 53' 23.90"	28° 22' 04.45"

Building Permit Obtained for 36 WTG

MET MAST	E	N
Mestru 40	762 287	385 709
Topolog 40	765 148	383 862

REV	DATE	REVISION DESCRIPTION	PREPARED	CHECKED	APPROVED
10	18/05/2012	first issue	EngRenew	EngRenew	EngRenew
01	30/05/2012	wtg coordinates revision	EngRenew	EngRenew	EngRenew
02	12/06/2012	Updated 30kV cables layout and electrical cabinets	EngRenew	EngRenew	EngRenew
03	27/09/2012	layout complies to DATC submitted	EngRenew	EngRenew	EngRenew
04	27/09/2012	modified TO-01 coordinates	EngRenew	EngRenew	EngRenew
05	22/10/2012	30 kV cable ducts according to DTAC project	EngRenew	EngRenew	EngRenew
06	14/11/2012	Updated layout at 14/11/2012, included WTG Enel Green Power	EngRenew	EngRenew	EngRenew
17	04/01/2013	Updated building permits table	EngRenew	EngRenew	EngRenew
08	24/01/2013	Updated access point position	EngRenew	EngRenew	EngRenew
09	14/02/2013	Modified road access to TO-14, Added EGP cable ducts	EngRenew	EngRenew	EngRenew
10	19/03/2013	Eliminated TO-01, added ME-17-1, ME-17-2	EngRenew	EngRenew	EngRenew

ROMANIA COUNTRY
DOBROGEA REGION
TULCEA DISTRICT
DOROBANTU AND TOPOLOG MUNICIPALITIES

PROJECT
DOROBANTU-TOPOLOG WIND FARM
EXECUTIVE PROJECT

OWNER

 LUKERG Renew GmbH, Schwarzenbergplatz 6, 10300 Vienna, Austria
 Land Power srl, Str. Mamaia 252-253, 900599 Constanta, Romania
 W. Inreg. : J12/769/15.03.2006, C.U.F. RO 189836204

DESIGNER
DTL - DOROBANTU-TOPOLOG WIND FARM

TITLE
GENERAL LAYOUT

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