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ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT GAP ANALYSIS REVIEW

AKFEN ENERGY DIVERSIFIED POWER PORTFOLIO PROJECT TURKEY

CONFIDENTIAL

JUNE 2015

European Bank
for Reconstruction and Development

IFC International Finance Corporation WORLD BANK GROUP

WSP | PARSONS BRINCKERHOFF

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AKFEN ENERGY DIVERSIFIED POWER PORTFOLIO PROJECT, TURKEY

EBRD and IFC

Draft Version 1
Confidential

Project no: 70012805-001
Date: June 2015

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APPENDIX B-1 ESAP

ABBREVIATIONS

ADB	Asian Development Bank
CCGT	Combined-cycle gas turbine
EBRD	European Bank for Reconstruction and Development
EHS	Environmental Health and Safety
EHSS	Environment, Health, Safety and Social
EIA	Environmental Impact Assessment
EMMP	Environmental Management and Monitoring Plan
EMS	Environmental Management Plan
ESAP	Environmental and Social Action Plan
ESDD	Environmental and Social Due Diligence
ESIA	Environmental and Social Impact Assessment
EU	European Union
FI	Financial Intermediaries
H&S	Health and Safety
HEPP	Hydroelectric power plant
IBRD	International Bank for Reconstruction and Development
IFC	International Finance Corporation
IFIs	International Financial Institutions
ILO	International Labour Organisation
IMA	Independent Monitoring Agency
LRP	Livelihood Restoration Plan
MPC	Maximum Permitted concentrations
NO_2	Nitrogen Dioxide
NTS	Non-Technical Summary
PWC	Project Management Consultant
PR	Performance Requirement
RAP	Resettlement Action Plan
SEP	Stakeholder Engagement Plan
PIU	Project Implementation Unit
PPE	Personal Protective Equipment
SPP	Solar Power Plants
TPP	Thermal Power Plant
USD	US Dollars
WB	World Bank
WSP | PB	WSP | PB UK Limited
WPP	Wind Power Plants

1 EXECUTIVE SUMMARY

1.1 BACKGROUND

The European Bank for Reconstruction and Development (EBRD) and the International Finance Corporation (IFC) together with potentially other investors are considering providing equity investment to develop Akfen energy assets. The investment will be used to develop new projects that would expand Akfen's generation capacity and diversify its generation portfolio.

WSP | PB UK Limited (WSP | PB) has been commissioned by the European Bank for Reconstruction and Development (EBRD) to undertake an Environmental and Social Due Diligence (ESDD) review of the Akfen Group operations in Turkey. This review is undertaken in advance of the potential investment in the business by the EBRD and IFC.

1.2 PROPOSED POWER INVESTMENT

EBRD and IFC are evaluating a transaction pursuant to which both institutions and potentially others would invest in Akfen's energy assets. The proceeds of EBRD and IFC's investment will be used to develop new projects that would expand Akfen's energy generation capacity, diversify its energy generation portfolio and make it an integrated energy player in Turkey.

Akfen has committed to obtaining a letter from TEIAS confirming that the 154 kV line east-west across Mersin town is disaggregated and not included in the power investment portfolio.

1.3 GAP ANALYSIS AND AUDIT REVIEW

An EHSS audit has been carried out of the provided project documentation along with a gap analysis of current EIAs, including specifically for the Mersin CCGT and the 380 kV overhead power line (OHL). An inspection was carried out at a number of Hydro Electric Power Plant (HEPP) sites, a Solar Power Plant (SPP) site along with Mersin Combined Cycle Gas Turbine (CCGT) site. In addition there has been consultation and interviews with key stakeholders at specifically identified sites.

A number of new projects in the overall portfolio will be classed as Category A. This will include the CCGT and 380 kV OHL and potentially the Catak HEPP (dependent on current legal progressions regarding national park status). **Categorisation of the HEPPs to be agreed with the Banks.**

A gap analysis was undertaken of the CCGT and OHL EIAs against EU standards and it is considered that there are a number of recommendations proposed which are included in an Environmental and Social Action Plan (ESAP) to ensure that the project is fully aligned with EU EIA requirements, the EU IED, BREF and the IFC EHS Guidelines on Thermal Power Plants, EBRD Performance Requirements and IFC Performance standards and other relevant EU standards.

A summary of the key actions areas are provided in the table below.

Table 1-1 Review Areas

REVIEW AREAS	ACTION AREAS
Institutional EHS Capacity and	■ Specific policies tailored for Akfen Energy and more clearly defined EHS structure to define reporting structures and responsibilities to Akfen Holding and project sites

REVIEW AREAS	ACTION AREAS
Management	■ Report on ESAP implementation and stakeholder engagement activities and resolution of grievances
Planning and Permits	■ Ensure where EIAs are required for upcoming projects or this currently underway that they are undertaken in accordance with national and international requirements. General key points include provision of: • Assessment of impacts of the alternatives • Population of nearby settlements (including isolated properties) • Ecological flow assessment for HEPPs • Greenhouse gas emissions and microclimate impacts • whether an impact is direct or indirect; short, medium or long term; or permanent or temporary • methodology used for impact assessment • non-technical summary • any difficulties encountered in compiling the required information ■ Ensure that the shortcomings identified in the EIA gap analysis for the overhead transmission line and Mersin CCGT are assessed. Key areas include: • Inclusion of new sensitive receptor within air quality and noise modelling related to the CCGT • Undertake a contamianted land site investigation to identify necessary remedial prior to construction for the CCGT • Post-construction monitring programme along sections of diverter marked transmission lines to assess effectievness
Environmental Performance	■ Develop and implement an Environmental Management System (EMS) aligned to ISO14001. ■ Review and improve controls to the management of liquids with the potential to cause environmental harm. This should include waste oils, septic waste and appropriate storage and bunding. ■ Procedures should be put in place for the management and control of SF6 especially with regards to leak detection and top up volumes. ■ Oil spill kits should be maintained at all operational and construction sites. ■ Systems should be implemented at construction sites for the segregation and collection of wastes in a similar fashion as to that from operational sites. ■ Develop a chance find procedure to be used during construction to aid in managing archaeological finds.
Health and Safety Performance	■ Develop and implement a Health and Safety Management System aligned to OHSAS 18001. ■ Health and safety arrangements should be reviewed at all operational and construction sites to include: • Personal Protective Equipment provided should be appropriate for the task and worn by all staff and contractors *especially at construction sites* (e.g. footwear, gloves, dust masks and eye protection); • All pedestrian walkways and vehicle access areas should be clearly marked; • All portable electrical equipment should be assessed for condition and signs of wear and damage and suitability for use to include welding units, temporary lighting, extension leads; • The location and number of first aid kits required at construction sites; • Sun protection and drinking water for workers. ■ Implementation of safe practices during construction to minimise potential impacts to local communities during construction from traffic ■ Inspections for safety and suitability of all equipment used for worker protection or use (slings, harnesses, ladders etc) need to be formalised and recorded

REVIEW AREAS	ACTION AREAS
	■ All equipment used for bridging gaps and working at height at construction sites should be fit for purpose ■ Ensure construction workers have access to adequate welfare facilities prior to the construction of the semi-permanent construction welfare facilities ■ A review of earthing should be undertaken at all sites to ensure effective. ■ A review of cable tray locations should be undertaken at all sites to prevent the potential for trip hazards ■ Develop Construction Environmental Management Plans (inclusive of Traffic Management Plans) ■ Ensure a chemical dosing regime is established for legionella control of cooling tower (CCGT project) ■ Undertake detailed calculations to determine the levels of suspected EMF (in areas the line passes occupied buildings) and build the results into the tower design
Social and Employment	■ Ensure financial compensation is fairly agreed for the purchase of the shelters as part of the Mersin CCGT project ■ Finalisation of financial compensation with all parties needs completing at Doruk ■ Develop a formal grievance mechanism for staff and contractors and disseminate information about its use to all parties ■ Develop a land acquisition and compensation framework for the purchase of land for new projects. ■ Develop and implement a Stake Stakeholder Engagement Plan (SEP) including a Grievance Mechanism with a suitable appointment to manage the implementation of the SEP ■ Develop a Non-Technical Summary (NTS) of the project for disclosure in the public domain (with other key documents as specified with the SEP)
Hydro Electric Power Plant (HEPP) design	■ Aquatic grid on the inlet at Otluca HEPP insufficient and needs correcting ■ Debris accumulated in fish passages needs to be removed ■ The water seepage noted in the concrete of the turbine hall at Demerciler needs to be assessed for whether this requires remedial action. ■ It is recommended that an environmental monitoring programme is undertaken to assess whether the ecological flow calculations are sufficient to maintain water quality, support fish populations and has the capacity to support spawning, rearing and fish passage.

These action areas have been provided as implementable ESAP actions that include the resources / estimated costs required a timetable for implementation and completion of the action and the criteria for successful implementation. In some cases, the costs of these actions are based on the initial review actions and not the follow on implementation costs. The ESAP should be adopted and is provided in Appendix B.

2 INTRODUCTION AND PROJECT APPROACH

2.1 PROJECT BACKGROUND

The European Bank for Reconstruction and Development (EBRD) and the International Finance Corporation (IFC) together with potentially other investors are considering providing equity investment to develop Akfen energy assets. The investment will be used to develop new projects that would expand Akfen's generation capacity and diversify its generation portfolio.

WSP | Parsons Brinckerhoff (hereafter termed WSP | PB) has been commissioned by the European Bank for Reconstruction and Development (EBRD) to undertake a top-level Environmental and Social Due Diligence (ESDD) review of the Akfen Group operations in Turkey. This review is undertaken in advance of the potential investment in the business by the EBRD and IFC.

2.2 SCOPE OF WORK

The scope of work is as follows:

- Conduct a corporate EHSS management review across the business.
- Assess the EIA status for all projects within the Akfen Group.
- Conduct a review of Health and Safety and labour conditions.
- Review the site identification process for its projects.
- Assess past, ongoing and potential future stakeholder interactions.
- Review of project site proximity to areas of ecological or ornithological importance.
- Review of current carbon equivalent emissions from each project.
- Assess the environmental and social risks, impacts and benefits associated with the projects.
- Develop an Environmental and Social Action Plan (ESAP).
- Develop a Non-Technical Summary (NTS).
- Develop a Stakeholder Engagement Plan (SEP).

This report covers the EHSS corporate and site audit reviews with the ESAP provided in Appendix B.

A separate SEP report has been prepared entitled: 'Stakeholder Engagement Plan Report', July 2015, and a separate Non-Technical Summary (NTS) has been prepared entitled: 'Non-Technical Summary', June 2015.

2.3 OBJECTIVES

The objectives of this review were to conduct a top level EHSS corporate audit of Akfen Group operations in Turkey with the results of the audit incorporated into a corporate level ESAP to ensure compliance with relevant corporate, National, EU standards, EBRD Performance Requirements and IFC Performance Standards and EHS Guidelines. The review will focus on the investments financed by EBRD and IFC to assess impacts and benefits, the findings of which are presented throughout this report including the ESAP. Key to the review is an assessment of

performance against EBRD Performance Requirements and IFC Performance Standards, presented as follows:

EBRD Performance Requirements	IFC Performance Standards
→ PR 1: Environmental and social appraisal and management → PR 2: Labour and working conditions → PR 3: Pollution prevention and abatement → PR 4: Community health, safety and security → PR 5: Land acquisition, involuntary resettlement and economic displacement → PR 6: Biodiversity conservation and sustainable management of living natural resources → PR 7: Indigenous people → PR 8: Cultural heritage → PR 9: Financial intermediaries → PR 10: Information disclosure and stakeholder engagement	→ PS1: Assessment and Management of Environmental and Social Risks and Impacts → PS2: Labor and Working Conditions → PS3: Resource Efficiency and Pollution Control → PS4: Community Health, Safety, and Security → PS5: Land acquisition and Involuntary Resettlement → PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources → PS7: Indigenous Peoples → PS8: Cultural Heritage

The other deliverables for this project are the NTS, SEP and ESAP. The ESAP is included in this report (Appendix B) but will also be available as a standalone document.

The NTS provides a brief summary of this project, the company activities, including the investment project and the overall findings from the EHSS audit and a summary of the ESAP, which provides mitigation measures that will be adopted. The NTS also provides a summary of the SEP and grievance mechanism.

The SEP provides a framework for consultation activities and project disclosure including the identification of potential stakeholders, methods used for consultation activities and the records to be kept. The SEP will enable Akfen Group to inform relevant stakeholders of potential impacts of the project and address concerns that may be raised using a grievance mechanism. The SEP has been drafted in accordance with EBRD's Performance Requirements of the Environmental and Social Policy and EBRD's Public Information Policy and IFC Performance Standards. The social engagement activities carried out to date are summarised in the SEP, although aspects of social due diligence are also covered in this report.

2.4 AUDIT TEAM AND AUDITEE INVOLVEMENT

The WSP | PB team, including associates, involved in the audit are listed in Table 2-1 below.

Table 2-1 WSP | PB | PB Staff

NAME	ROLE
Neal Barker	Project Director, Lead Auditor and Technical Reviewer
Sejal Dixon	Project Manager and Lead Auditor
Stuart Clayton	Lead Auditor
Elizabeth watts	Lead Auditor
Gökçen Körez	Local Environmental Engineer
Kadam Yasar	Local Power Engineer

The key representatives from Akfen involved in the audit were:

Table 2-2 Akfen Group Representatives

NAME	ROLE (SITE)
Metin Yıldıran	General Manager, Akfen Thermal
Mustafa Kemal Güngör	General Manager at Akfen HEPP Investments and Energy Generation Co. Inc.
Hakan Bozkurt	Assistant General Manager at Akfen HEPP Investments and Energy Generation
Ümit Aydın	Operations Manager at Doruk HEPP
Osman Ayar	Operations Manager at Yağmur HEPP
Halil Ibrahim Tuncel	Operations Manager at Sekiyaka HEPP
Mustafa Puhurcuoğlu	Deputy Operations Manager at Sekiyaka HEPP
Sezai Gürhan	Assistant General Manager at Akfen Construction
Ilyas Demirci	H&S Expert at Akfen HEPP Investments and Energy Generation Co. Inc.
Ömer Özgür Atay	Workplace Doctor
Nafiz Turgut	H&R Manager at Akfen Holding
Kürşat Tezkan	General Manager at Akfen Solar Investments and Energy Generation Co. Inc.
İlhami ökkoca	Operations Manager at Otluca HEPP
Emrah Harmanbaşı	Operations Manager at Çamlıca HEPP
Cemalettin Uygun	Operations Manager at Doğançay HEPP

2.5 SITES VISITED AND STAKEHOLDER MEETINGS

The details of the sites visited and meetings held as part of the audit are presented in Table 2-3 below.

Table 2-3 Meetings and Sites Visited

SITE/ MEETINGS	SPECIFIC AREAS VISITED / MEETINGS HELD	DATE VISITED
Start-up Meeting	Ankara Energy Headquarters	14-15 May 2015
Otluca HEPP	Full tour by WSP | PB | PB Team 1	26 May 2015
Doruk HEPP	Full tour by WSP | PB | PB Team 2	26 May 2015
Mersin CCGT	Full tour by WSP | PB | PB Team 1	27 May 2015
Camlica-3 HEPP	Full tour by WSP | PB | PB Team 1	27 May 2015
Cecekli HEPP	Tour of access road and construction area by WSP | PB PB Team 2	27 May 2015
Yagmur HEPP	Full tour by WSP | PB | PB Team 2	27 May 2015
Dogancay HEPP	Full tour by WSP | PB | PB Team 1	28 May 2015
Sekiyaka HEPP	Full tour by WSP | PB | PB Team 2	28 May 2015
Demirciler HEPP	Full tour by WSP | PB | PB Team 2	29 May 2015
Denizli SPP	Full tour by WSP | PB | PB Team 2	29 May 2015

Following the above site visits, meetings were held with key representatives of various stakeholders involved with the project as listed in Table 2-4 below.

Table 2-4 Meetings with Key Representatives of Various Stakeholders

NAME	COMMUNITY/ORGANISATION	TITLE
Sadi Işık	Sogutludere neigbourhood	Mukhtar
Mustafa Akabalı	Yukarı Akçay Irrigation Union	Chairman
Musa Eksik	Sogutludere Neigbourhood	Alderman
Aydın Deveci	Sogutludere Neigbourhood	Alderman
Necati Koparal	Sogutludere Neigbourhood	Inhabtant
Mustafa Akçay		
	Sogutludere Neigbourhood	Inhabtant
Fatih Işık	Sogutludere Neigbourhood	Inhabtant
Yakup Bulut	Sogutludere Neigbourhood	Inhabtant
Erdoğan Yücel	Sogutludere Neigbourhood	Inhabtant
Osman Nurettin Ömeroğlu	Petek Neigbourhood (Çiçekli)	Inhabtant
Şevket Baytan	Nature Conservation Union of Murgul	Chairman

NAME	COMMUNITY/ORGANISATION	TITLE
Hasan Yılmaz	Petek Neigbourhood (Çiçekli)	Alderman
Yılmaz Orhan	Petek Neigbourhood (Çiçekli)	Inhabtant
Hikmet Efendioğlu	Petek Neigbourhood (Çiçekli)	Alderman
Erdal Eralp	Petek Neigbourhood (Çiçekli)	Inhabtant
Muhammed Hakkıoğlu	Petek Neigbourhood (Çiçekli)	Inhabtant
Erkan Şeyhsuvaroğlu	Petek Neigbourhood (Çiçekli)	Inhabtant

2.6 LIMITATIONS

The audit visits and interviews were conducted between the 26th and 29th May 2015 and social assessment between 23rd and 25th June 2015 at the facilities detailed in Table 2-3 above. The work undertaken provides a good overview of the Akfen Group's operations but is necessarily limited by the amount of time allocated to the site visit and the staff available during this time.

WSP | PB | PB has based its conclusions and recommendations on the information available, visual observations and the auditee responses. WSP | PB | PB does not and cannot guarantee that the Akfen Energy Power Portfolio audited has no environmental or health and safety or social issues or liabilities beyond those observed during the audit. It may be necessary to modify the findings or conclusions presented in this report if additional information becomes available to WSP | PB | PB at a later date. WSP | PB | PB has reviewed reports and considered written records as part of this audit. However, WSP | PB | PB has not verified the content or accuracy of this information.

This report was compiled for the benefit of the EBRD and IFC only. This report is not intended to be relied upon by third parties without prior written authorisation by WSP | PB | PB.

2.7 REPORTS AND OTHER INFORMATION CONSULTED

The documentation that was provided for information on the project that was consulted as part of this project is provided in Appendix B.

3 PROPOSED INVESTMENT AND REGULATORY REQUIREMENTS

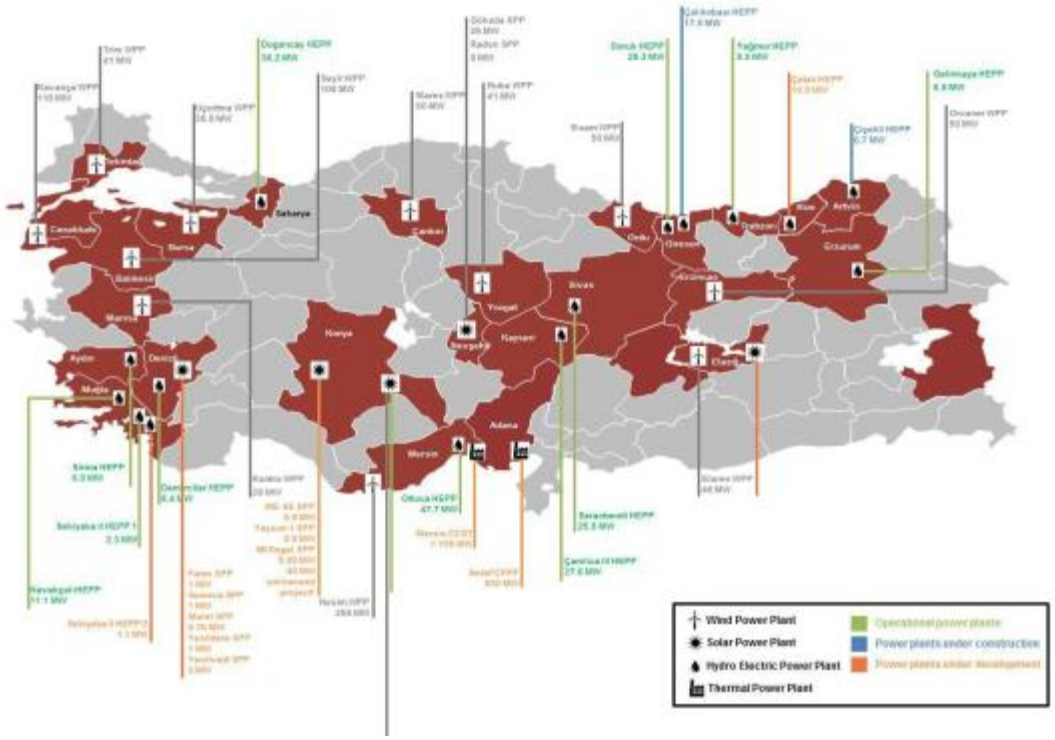
3.1 OVERVIEW OF AKFEN

Akfen Holding is made up of a portfolio of investments which have a share in a number of companies within Turkey as shown below along with their holding in that company:

- Mersin International Port (50%)
- TAV Airports (8.12%)
- TAV Investment (21.68%)
- Istanbul Fast Ferries (30%)
- Akfen Energy (HEPP 100%, Energy 69.75%, RES 99.7%)
- Akfen Construction 100%
- Akfen REIT 56.88%
- Akfen Water 50%

Map 3-1 shows the location of the energy assets, a number of which were visited in order to undertake this ESDD assessment.

Map 3-1 Map of Asset locations



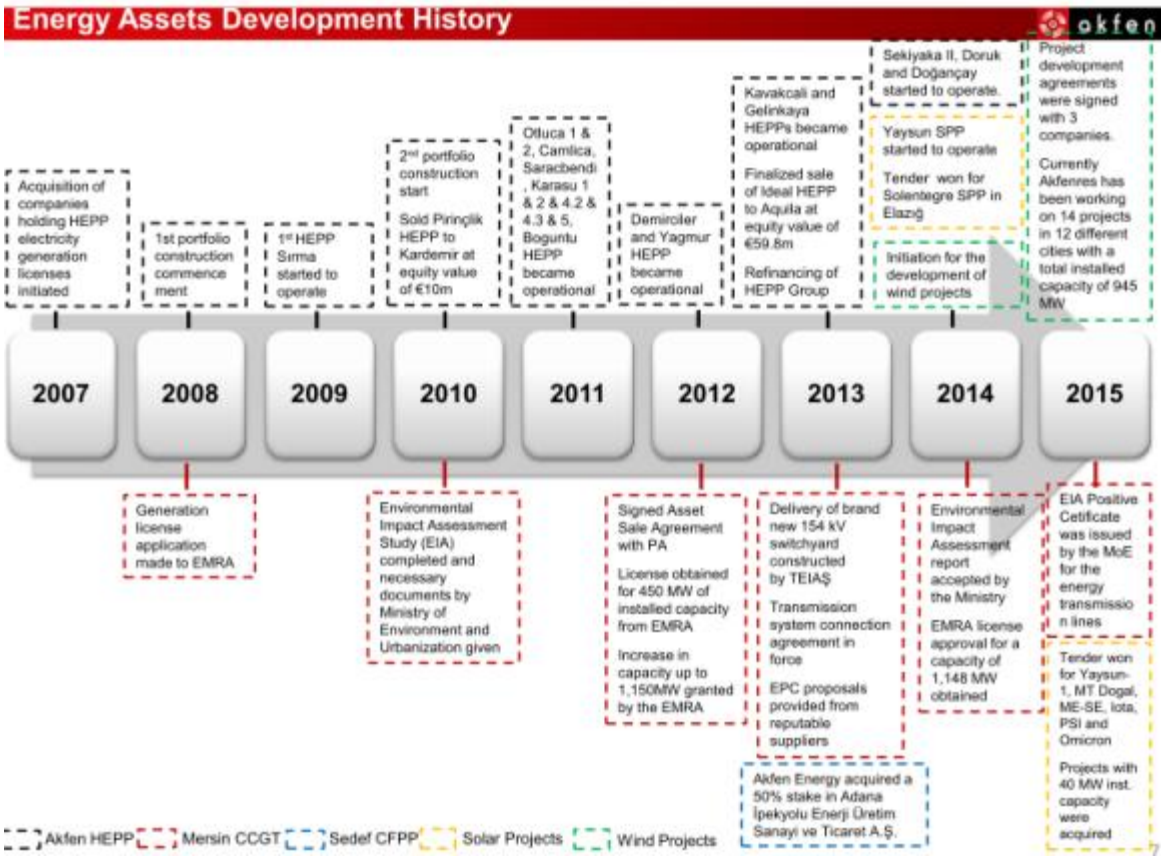
EBRD and IFC are evaluating a transaction pursuant to which both institutions together with potentially others would invest in Akfen's energy assets. The proceeds of EBRD and IFC's

investment will be used to develop new projects that would expand Akfen's generation capacity, diversify its generation portfolio and make it an integrated energy player in Turkey.

The Turkish electricity market is the 7th largest in Europe and demand is expected to grow between 4.5%-6.8% annually until 2023. A per capita demand of 3,332kWh means that Turkey utilises around one third of the EU average 8,517kWh (2013 figures).

Figure 3-1 below shows the development timeline for Akfen Energy which shows significant growth from its acquisition in 2007 of the HEPP generation licences. This shows that the first HEPP became operational in 2009 with significant additions to the HEPP portfolio in 2011 and 2014 when multiple sites became operational in those years.

Figure 3-2 Akfen Energy Development Timeline



3.2 AKFEN OPERATIONS

An overview of Akfen Energy Operations comprising thermal power portfolio (TPPs), hydroelectric power plants (HEPPs), wind power portfolio (WPPs) and solar power projects (SPPs) is presented in Table 3-2 below.

Table 3-1 Akfen Thermal Power (TPPs)

Number of Sites / Companies	2
Products	Electricity
Current Production Operations	None
Future Production Operations	Mersin Combined Cycle Gas Turbine (CCGT) Sedef Coal Fired Power Plant (CFPP)

It should be noted that Sedef CFPP is excluded from the proposed EBRD and IFC investment and as such is not included in the scope of this due diligence assignment.

Table 3-2 Akfen Hydro Electric Power Plants (HEPPs)

Number of Sites / Companies	14 (operational or under construction)
Employees	169 (31/12/2014)
Products	Renewable Electricity
Current Production Operations	Dogancay Doruk Yagmur Gelinkaya Saracbendi Camlica III Otluca Demirciler Sirma Sekiyaka II HEPP 1 Kavakcali
Future Production Operations	*Under construction*: Sekiyaka II HEPP 2 Cicekli Calikobasi *In development*: Catak

Table 3-3 Akfen Wind Power Projects (WPPs)

Number of Sites / Companies	14 projects
Products	Renewable Electricity
Current Production Operations	1 year monitoring for licence application only
Future Production Operations	Ucurtma Kontra Ruba Trim EMD (Kubas WPP) EMD (Kinalar WPP) EMD (Gokcebel WPP) Nesim Kavanca Seyir Mares Sisam Elares Orcaner

Table 3-4 Akfen Solar Power Projects (SPPs)

Number of Sites / Companies	6 operational or under construction & 55 under development (45 unlicensed)
Products	Renewable Electricity
Current Production Operations	Yaysun
Future Production Operations	*Under construction*: Farez Gunova Murel Yesildere Yesilvadi *In development*:

	ME-SE Yaysun-1 Mt Dogal Iota Solentergre (2 locations) Karine PSI Omicron (2 locations) 45 x 1MW unlicensed projects

3.3 ENERGY PLANT DETAILS

The facilities are described in greater detail in the following sections.

FACILITY OPERATIONS

AKFEN THERMAL PORTFOLIO

MERSIN COMBINED CYCLE GAS TURBINE (CCGT)

The proposed Mersin CCGT is 5 km away from Turkey's second largest port, Mersin International Port and the region is the second largest trade hub after the Marmara region.

The gas-fired CCGT is currently under development and will be located near to the coast in Mersin town. The project is subject to a turnkey Engineering Procurement and Construction (EPC) contract and two tenders have been shortlisted but the final decision has not been made. There may be an additional phase of bidding in order to take into account technological developments since the tender was first issued.

The CCGT will operate on natural gas from the existing Gaziantep-Mersin pipeline some 1100m North-West of the site. No back up fuel is proposed. There is no additional heat demand and heat recovery, other than for the steam cycle, is not proposed initially. However, there is some potential for switching mode to reduce electricity generation and increase recovered heat for future uses, e.g. into greenhouses. Mersin is home to 36% of Turkey's greenhouses and is the largest agricultural zone in the country.

The CCGT will have a net rated thermal input of 1,983MW and overall net electrical output expected to be 1,222 MW giving an overall expected conversion efficiency of 61.62%, based on current tendering commitments.

The plant is reported to be designed in line with the EU Large Combustion Plant Directive and a Best Available Techniques (BAT) assessment has been carried out in Section 6 to assess the proposed design against the requirements of Large Combustion Plant BREF notes (adopted and draft) and the Industrial Emissions Directive (IED).

Continuous Emissions Monitoring Systems (CEMS) will be installed on each turbine line and will be interlocked to the PLC system for the plant.

The steam cycle will be operated on sea water. Currently it is intended to have a 'once through' system. Options for cooling towers or forced air condensers have been reviewed as part of the design process but were rejected due to concerns over the space requirement on a land constrained site footprint, other concerns included visible plumes and also saltwater misting impacts on the CCGT plant and local agricultural land.

The seawater intake and return outfall has been subject to engineering design and thermal and salinity modelling has been undertaken and been submitted for regulatory review. The outfall will be 2,200 – 2,400m from the shore. The modelling has also taken into account the cumulative impact and thermal effects (actually beneficial cooling) from the city WWTW discharge point near to the seawater outfall.

Further risk assessment studies that have been undertaken include a Seismic review and a Tsunami Risk Review.

Transmission Lines

It is proposed that the first gas turbine will be connected to the 154kV Mersin Thermal substation, already under operation adjacent to the power plant, via a 154kV transmission line. The second gas turbine and steam turbine will be connected to the Mersin 380kV substation, approximately 12km away, via a 380kV line and then continue onto the existing Eregli substation in the Konya Province. Both transmission lines will be financed and operated by the Turkish Electricity Transmission Company (TEIAS).

The existing 154kV, double line distribution transmission line, east-west across Mersin town was built in 1967 and at that time there were no settlements on the line routing. However, since then settlements have developed and the route was never 'zoned' as a power line route. TEIAS who own the line intend to upgrade the conductors, maintaining the same route, tower locations but increase the line height.

Akfen refute any association between the proposed CCGT and the east-west line refurbishment. It has been agreed to clarify this position by obtaining an official letter from TEIAS stipulating that the east-west line upgrade is not in any way associated with the construction of the power plant and that the CCGT development can fully operate irrespective of the upgrade of the East West transmission line which is to be upgraded by the 3rd party. Akfen do not want to have any involvement even in ensuring design standards are adequate, as this could be perceived as an association with the development.

SEDEF CFPP

This Coal fired Power Plant is excluded from this investment programme.

AKFEN RENEWABLE PORTFOLIO

AKFEN HYDROPOWER PLANTS (HEPPS)

Akfen Energy currently operates eleven HEPPs with a further three under construction and one in development. The total installed capacity of the HEPPs is 238 MW with an annual generation capacity of 964 GWh. Table 3-5 shows the HEPP details with regards to installed and generation capacities.

Table 3-5 HEPPs

SITE	DATE OPERATIONAL	INSTALLED CAPACITY (MW)	GENERATION CAPACITY (GWH/YEAR)
Dogancay	29.08.2014	30	172
Doruk	12.09.2014	28	76
Yagmur	27.11.2012	9	32
Gelinkaya	14.06.2013	7	26
Saracbendi	06.05.2011	26	100
Camlica III	01.04.2011	28	104
Otluca	07.04.2011	48	224
Demirciler	03.08.2012	8	35

Sirma	23.05.2009	6	23
Sekiyaka II HEPP 1	17.01.2014	2	12
Kavakcali	28.03.2013	11	44
Sekiyaka II HEPP 2	2016	1	5
Cicekli	2017	7	22
Calikobasi	2017	17	46
Catak	2019	10	43

All HEPPs sold their entire generation capacity to the grid in 2014 and there is a further agreement to use feed-in tariff for the generation from four of the HEPPs with an installed capacity of 111 MW in 2015.

Catak is reported to be located in a National Protected Area although it is not currently known the reason for this designation. There is currently a situation whereby a Non-Governmental Organisation (NGO) states that it is a protected area, whereas Akfen Energy does not agree and the process around how the area was designated is currently under going legal progression.

AKFEN WIND POWER PLANTS (WPPS)

There are 14 WPPs in 12 different municipal areas with an installed capacity of 983 MW currently going through pre-licensing applications with the National Energy Regulator (See Table 3-6).

Each of the sites to be used for the WPPs have had wind equipment installed to collect data for use within the licensing agreements and should these be successfully concluded then EIAs will be undertaken in order to progress these sites.

Table 3-6 WPPs

COMPANY/LOCATION	INSTALLED CAPACITY (MW)	TEIAS CAPACITY (MW)
Ucurtma (Bursa)	42	110
Kontra (Manisa)	30	30
Ruba (Yozgat)	40	50
Trim (Tekirdag)	40	60
EMD Kubas WPP (Balikesir)	42	160
EMD Kinalar WPP (Canakkale)	36	260
EMD Gokcebel WPP (Sivas)	40	80
Nesim (Mersin)	250	250
Kavanca (Canakkale)	186	260
Seyir (Balikesir)	105.4	160
Mares (Cankiri)	17	50
Sisam (Ordu)	60	60
Elares (Elazig)	40	40
Orcaner (Erzincan)	50	50

The Mersin Wind Project (near the CCGT) at 250MW is the largest and it is likely Akfen Energy will use 2 or 3 MW turbines at this location. This has not yet been decided.

These projects are in development and none are currently under construction. As a pre-requisite of the licensing application one years' worth of wind data must be collected to support the application. Therefore, all of these sites currently have wind measurement masts in place in order to collect the required data for the licence application.

One year of wind measurements have been completed for all project locations as required prior to application. The pre-licence application was due to be filed by the end of April 2015 and the tenders for those projects are expected by the end of 2015 at the earliest. Construction of the WPPs will take place once the applications have been approved.

There have been no Environmental Impact Assessments (EIAs) undertaken for any of these WPP project sites as this will come later after the pre-licensing application from the energy regulator. There have been studies undertaken with regards to initial site constraints and grid connection studies and these have been completed. It was reported that initial constraint studies did not identify any environmental or social issues. This is covered further in Section 4.

AKFEN SOLAR POWER PLANTS

Currently there is only one small 0.5MW solar project (SPP) operational at Konya. However, there are a further 78 MW of 'licenced' solar projects and an additional 45 MW of 'unlicensed' solar projects under development. See Table 3-7 below. 'Licenced' sites means the type of power supply agreement and in generally its status in terms of its grid connection.

Table 3-7 SPPs

COMPANY/LOCATION	INSTALLED CAPACITY (MW)	TEIAS CAPACITY (MW)
Yaysun	0.5	-
Farez	1	-
Gunova	1	-
Murel	0.76	-
Yesildere	1	-
Yesilvadi A,B & C	3x1	-
ME-SE	10	46
Yaysun-1	10	46
Mt Dogal	10	-
Iota	10	22
Solentergre (2 locations)	8+ 0.5	8 (1 site only)
Karine	0.5	-
PSI	10	-
Omicron (2 locations)	2x10	77
45 x 1MW unlicensed projects	45	-

All solar photo voltaics based projects do not have a cooling water requirement. The key issue identified for the test sites has been security (i.e. risk of theft, vandalism of panels etc.).

For the unlicensed projects, if less than 1MW, then there is no requirement for an EIA and Akfen Energy have official letters in place from the Environmental Regulator prior to developing these sites in order to confirm they do not require an EIA.

If the project is over 10MW, then an EIA is required and between 1 and 10 MW a request has to be submitted to the regulator requesting an opinion on whether an EIA is needed.

3.4 DETAILED INVESTMENT PROGRAMME OVERVIEW

OVERVIEW

SITE IDENTIFICATION PROCESSES

There has been one site, Yuvarlakca HEPP, where the permits were obtained, and the project development started, but there were some local protests so that it was decided to stop this project (local restaurant owners).

For wind projects Akfen Energy use third party consultants to help shortlist sites. These studies look at wind yield, but also general environmental constraints. Example coverage includes birds, general biodiversity issues, land status (eg agricultural land designation), minerals planning for the land, grid connection components and cultural heritage risks. This also includes discussions

with relevant regional local authorities to get an initial opinion on the project. Following the site screening, they will make specific decisions on the sites selected.

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

Table 3-8 details whether an EIA or Project Presentation File (PPF) needs to be completed to scope whether an EIA is required. The table also details whether this has been undertaken and the outcome of the assessment.

Table 3-8 EIA Requirements and Status

SITE	EIA REQUIRED	SCOPING (PROJECT INFORMATION FILE) REQUIRED	EIA/SCOPING UNDERTAKEN	OUTCOME
Thermal Power Plants				
Mersin CCGT	Yes	-	Yes	"EIA is Positive" decision letter dated 11.12.2013
380kV Konya Ereğli TS Electricity Transmission Line	Yes	-	Yes	"EIA is Positive" decision letter dated 17.02.2015
Sedef CFPP	Out of scope of this due diligence assessment			
Hydro Power Plants				
Dogancay	No*	-	PPF undertaken	EIA not required decision letter dated 24.06.2008
Doruk	No*	-	PPF undertaken	EIA not required decision letter dated 04.01.2008
Yagmur	No	Yes	PPF undertaken	EIA not required decision letter
Gelinkaya	No	Yes	PPF undertaken	EIA not required decision letter
Saracbendi	Yes	-	PPF undertaken	EIA not required decision letter
Camlica III	Yes	-	PPF undertaken	EIA not required decision letter dated 16.06.2010
Otluca	No*	-	PPF undertaken	EIA not required decision letter dated 26.12.2006
Demirciler	No	Yes	No	Exempted under EIA regulations prior to 2011
Sirma	No	Yes	No	Official letter exempting from EIA procedure
Sekiyaka II HEPP 1	No	Yes	PPF undertaken	EIA not required decision letter
Kavakcali	No	Yes	EIA Required	EIA completed
Sekiyaka II HEPP 2	No	Yes	PPF undertaken	EIA not required decision letter
Cicekli	No	Yes	EIA Required	EIA completed
Calikobasi	Yes	-	EIA Required	Not yet available
Catak	No	Yes	Not available	Not available
Wind Power Plants				
Ucurtma (Bursa)	Yes	-	No	No
Kontra (Manisa)	Yes	-	No	No
Ruba (Yozgat)	Yes	-	No	No

SITE	EIA REQUIRED	SCOPING (PROJECT INFORMATION FILE) REQUIRED	EIA/SCOPING UNDERTAKEN	OUTCOME
Trim (Tekirdag)	Yes	-	No	No
EMD Kubas WPP (Balikesir)	Yes	-	No	No
EMD Kinalar WPP (Canakkale)	Yes	-	No	No
EMD Gokcebel WPP (Sivas)	Yes	-	No	No
Nesim (Mersin)	Yes	-	No	No
Kavanca (Canakkale)	Yes	-	No	No
Seyir (Balikesir)	Yes	-	No	No
Mares (Cankiri)	Yes	-	No	No
Sisam (Ordu)	Yes	-	No	No
Elares (Elazig)	Yes	-	No	No
Orcaner (Erzincan)	Yes	-	No	No
Solar Power Plants				
Yaysun	No	No	-	-
Farez	No	No	-	-
Gunova	No	No	-	-
Murel	No	No	-	-
Yesildere	No	No	-	-
Yesilvadi A,B & C	No	No	-	-
ME-SE	No	No	-	-
Yaysun-1	No	Yes	No	Official letter exempting from the EIA procedure
Mt Dogal	No	Yes	EIA required	Not yet available
Iota	No	Yes	EIA required	Not yet available
Solentergre (2 locations)	No	No	-	-
Karine	No	No	-	-
PSI	No	Yes	EIA required	Not yet available
Omicron (2 locations)	No	Yes	EIA required	Not yet available
45 x 1MW unlicensed projects	No	No	-	-

For the Mersin CCGT, the initial EIA for the installed capacity of 450MWe was accepted by the regulator on the 12.01.2010. In order to increase capacity to 570MWe, a PPF was prepared which received an 'EIA Not Required' decision. The installed capacity was then proposed to be increased again and the revised EIA for the 1148.4MWe was accepted with the "EIA is Positive" decision being received on 11.12.2013.

The EIA process of 380 kV Mersin CCGT – Konya Ereğli TS Electricity Transmission Line (owned by TEIAS) concluded with an "EIA is Positive" decision dated 17.02.2015.

For the HEPPs Cicekli, Kavakcali, Calikobasi all require EIAs of which the first two sites have been completed. There has been no decision on Catak as of yet whilst the status of the protected area designation is discussed.

There are four sites (Dogancay, Doruk, Otluca and Camlica III), which if considered under the current EIA regulations Dated 25.11.2014 Numbered 29186), would have been required to have submit an EIA. However, they undertook the PPF process instead as the application process pre-dated the enactment of the new regulations. The first three sites have a decision letter prior to the implementation of the 2008 regulations under which they would have only been obligated to submit a PPF and have a decision made on that submission. This has duly been completed. However, for Camlica III a PPF was undertaken even though the 2008 regulations would have

required an EIA for a HEPP of that size. The PPF was dated October 2007 so was submitted prior to the change in the regulations and therefore was assessed under the requirements of the older regulations. Under the previous 2003 regulations, the site would have been required to submit a PPF in line with the process they undertook.

From the above we can see that all of the WPPs require an EIA to be completed and these EIAs are yet to be prepared.

Four of the SPP projects require an EIA to be undertaken which is not yet available, whilst Yaysun-1 has an official letter exempting it from the EIA process.

PERMITS AND LICENCES

Permits to operate are generally required for thermal power plants and industrial facilities or other sites if there are wastewater discharges, noise, air emission and hazardous waste storage in large amounts.

The figure below shows the permits and /or licenses required to construct and operate the Mersin CCGT. The column titled 'timeline' provides the dates for those already granted. The Construction Permit will need to be in place before breaking ground.

Permit and/or License	*Timeline*
Electricity Generation License	Valid from 08.03.2012 for 49 years
EIA is Positive decision for CCGT	Dated 11.12.2013
EIA is Positive decision for ETL	Dated 17.02.2015
Grid Connection Agreement	Dated 29.01.2013
Natural Gas Connection Agreement	Dated 04.12.2014
Land Certificate	Dated 19.01.2012
Construction Permit	NA (before construction)
Grid System Usage Agreement	NA (before COD)
Project Approval	NA (during construction)
Environment Permit & License	NA (during construction & operation)

For Akfen Energy the HEPPs, SPPs, WPPs are not required to have a permit to operate unless they have a wastewater discharge from the septic tank. None of these sites require permits.

AREA OF INFLUENCE

The area of influence for the Mersin CCGT will be the site and surrounding area dependent on the effective dispersion of emissions to air as well as for the area adjacent to the overhead line routing.

For most of the sites for the solar and wind portfolio the area of influence is the site and the immediate surroundings. However, for the HEPPs the area of influence also includes the downstream portions of the rivers, especially where they are used for irrigation purposes or hold an ecological designation. For those Akfen Energy HEPPs where there are multiple HEPPs downstream on a river, the area of influence ends at the next HEPP downstream of the Akfen Energy HEPP asset.

3.5 INVESTMENT PLANS

INVESTMENT PLANS

EBRD and IFC are evaluating a transaction pursuant to which both institutions and potentially others would invest in Akfen's energy assets. The proceeds of EBRD and IFC's investment will be used to develop new projects that would expand Akfen's energy generation capacity, diversify its energy generation portfolio and make it an integrated energy player in Turkey.

3.6 REGULATORY REQUIREMENTS FOR INVESTMENT AND EXPANSION

NATIONAL PLANNING REGULATIONS

The Environmental Law (No. 2872), which was published in Turkish Official Gazette No. 18132 dated August 11, 1983 and having the latest revision in Official Gazette No. 26167 dated May 13, 2006, provides the legislative framework for the regulation of industries and their potential impact on the environment. This law stipulates the measures to be taken into account and the improvements to be made to keep the targets of economic and social development in harmony with the environment. In order to achieve all these targets, this law guides the parties to some regulations. Those regulations in relation with the power plants are listed but not limited to the following:

- Environmental Impact Assessment Regulation
- Environmental Permit and Licenses Regulation
- Environmental Audit Regulation
- Water Pollution Control Regulation
- Large Combustion Plants Regulation
- Regulation on Control of Air Pollution Originated from Industrial Establishments
- Regulation on Assessment and Management of Air Quality
- Solid Waste Control Regulation
- Regulation on Assessment and Management of Environmental Noise
- Hazardous Wastes Control Regulation
- Regulation on Control of Excavation, Construction and Demolition Wastes

The Environmental Impact Assessment process in Turkey is defined as a legal process and together with the EIA Regulation sets out the principles related to the EIA process in Turkey. The aim of the regulation is to stipulate the administrative and technical requirements and procedures for the process of environmental impact assessment. The regulation became effective on February 7, 1993. The EIA Regulation was revised many times for harmonization with European Union (EU) EIA Directive (85/337/EEC and 97/11/EC). The latest version of the EIA Regulation is published in the Official Gazette dated November 25, 2014 and numbered 29186.

Consideration of Environmental Impact Assessment requirements is a prerequisite for all investment projects. As Article 6 in the EIA Regulation states:

"No incentive, approval, permission, construction and usage license can be given, no investment can be initiated, nor any tender be awarded for projects subject to this Bylaw unless "Environmental Impact Assessment is Positive" decision or "No Environmental Impact Assessment is Required" decision is made."

Project categories defined in the EIA Regulation through Annex I and Annex II serve as a tool for making the decision of "EIA is required" or "No EIA is required". For the Annex II projects, the Project Presentation File (PPF) is submitted to the Provincial Department of Environment and Forestry for determination as to whether an EIA is required. EIA Reports are required to be submitted for the projects of Annex II which are found essential and for Annex I projects. After the evaluation of the reports, authority gives the verdict of "Environmental Impact Assessment is Positive" or "Environmental Impact Assessment is Negative". The procedure should be followed again until overcoming any non-conformities.

Table 3-9 Summary of Turkish EIA requirements

	Old EIA Regulation (2003)	**EIA Regulation (2008)**	**EIA Regulation (2008) Amended and came into effect on 30.06 2011**	**EIA Regulation Dated 03.10.2013 Numbered 28784**	**EIA Regulation Dated 25.11.2014 Numbered 29186**
Hydro Power Plants with an installed capacity					
Exempted	< 10 MW	< 0.5 MW	-	**< 1 MW**	**< 1 MW**
Subject to PPF	10 MW – 50 MW	0.5 MW – 25 MW	0 MW – 25 MW_m	**1 - 25 MWm**	**1-10 MWm**
Subject to EIA	>50 MW	> 25 MW	> 25 MW_m	**> 25 MWm**	**> 10 MWm**
Wind Power Plants with an installed capacity					
Exempted	-	< 10 MW	< 10 MW_e	**< 5 turbines**	**< 10 MWm**
Subject to PPF	all	> 10 MW	10 MW_e - 75 MW_e	**5 - 20 turbines**	**10-50 MWm**
Subject to EIA	-	-	> 75 MW_e	**20 or more turbines**	**> 50 MWm**
Solar Power Plants with an installed capacity					
Exempted	-	-	< 10 MW_e	**< 2 hectares**	**< 1 MW**
Subject to PPF	-	-	10 MW_e - 75 MW_e	**2 - 20 hectares**	**1-10 MWe**
Subject to EIA	-	-	> 75 MW_e	**> 20 hectares**	**>10 MWe**
Thermal Power plants					
Exempted	-	< 10 MW_t	< 10 MW_t	**< 20 MW_t**	**< 20 MWt**
Subject to PPF	< 200 MW_t	10 MW_t - 300 MW_t	10 MW_t - 300 MW_t	**20 MW_t – 300 MW_t**	**20 MWt – 300 MWt**
Subject to EIA	> 200 MW_t	> 300 MW_t	> 300 MW_t	**> 300 MW_t**	**> 300 MWt**
Transmission Facilities					
Exempted	-	>154kV , <5 km	>154kV , <5 km	**>154kV , <5 km**	**>154kV , <5 km**
Subject to PPF	>154kV , <15 km	>154kV , 5-15 km	>154kV , 5-15 km	**>154kV , 5-15 km**	**>154kV , 5-15 km**
Subject to EIA	>154kV , >15 km	>154kV , >15 km	>154kV , >15 km	**>154kV , >15 km**	**>154kV , >15 km**

EU EIA DIRECTIVE AND INVESTMENT PROJECTS

The sites are not within an EU Member State and therefore the EIA and Habitats (Natura 2000) Directives are not applicable. However EBRD requires that there is a review against EU requirements regarding expansion projects by assessing whether they are listed in Annex I or II of the EIA Directive (in line with EBRD policy for assessing EIAs against EU standards). EU EIA

Annex I projects require a full EIA. For Annex II projects, the EIA is not compulsory but requires assessment on a project by project basis, using national law to undergo a "screening process".

Those aspects of the projects requiring an EIA under Annex I are for the "Thermal power stations and other combustion installations with a heat output of 300 megawatts or more"; and "Construction of overhead electrical power lines with a voltage of 220 kV or more and a length of more than 15 km". The overhead electrical power line to be constructed is a 380kV line of 115km in length which requires an EIA.

There is an Annex I categorisation for "15. Dams and other installations designed for the holding back or permanent storage of water, where a new or additional amount of water held back or stored exceeds 10 million cubic metres". Most of the HEPPs were relatively small scale with only Camlica reservoir holding significant amount of water in a reservoir. It is not known what the total volume of this reservoir is and whether it exceeds the 10 million cubic metres criteria to make sure it requires an EIA.

Under Annex II the activities included are:

1. Agriculture, Silviculture And Aquaculture

→ (d) Initial afforestation and deforestation for the purposes of conversion to another type of land use;

3. Energy Industry

→ (h) Installations for hydroelectric energy production; and

→ (i) Installations for the harnessing of wind power for energy production (wind farms).

Therefore, it is up to Turkey as defined by the scoping arrangements detailed in Table 3-9 as to whether these projects require an EIA.

3.7 ESPOO CONVENTION

The Espoo Convention and the Rio Declaration on Environment and Development (1992) state:

→ Principle 17: Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.

→ Principle 19: States shall provide prior and timely notification and relevant information to potentially affected States on activities that may have a significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith.

Article 3 of the Convention on Environmental Impact Assessment in a Transboundary Context states that:

"For a proposed activity listed in Appendix I that is likely to cause a significant adverse transboundary impact, the Party of origin shall, for the purposes of ensuring adequate and effective consultations under Article 5, notify any Party which it considers may be an affected Party as early as possible and no later than when informing its own public about that proposed activity".

From the list of Appendix I activities to be performed at Cicekli the following activities could potentially apply:

- 11. Large dams and reservoirs
- 17. Deforestation of large areas

Section 3.6 above details what constitutes a large dam and reservoir and the weirs built as part of the Cicekli project will not meet this criteria. Also, the deforestation activities taking place at the Cicekli site are very limited to the construction of the tunnel and penstock for the HEPP and would not be classes as large scale deforestation. Indeed, there will be post construction restoration of these areas.

Whilst Turkey is not a signatory to the ESPOO convention, an EIA has been undertaken for the Cicekli project which found that there are no significant impacts which could have transboundary implications and therefore there was no requirement to conduct consultations with Georgia regarding this scheme as prescribed by this convention.

3.8 EBRD AND IFC CATEGORISATION

The EBRD and IFC are considering providing finance as detailed above. Their categorisation requirements are considered separately below.

EBRD

Under the new EBRD Environmental and Social Policy[1], this applies to projects that have been initiated after the 7th November 2014, projects are categorised as A, B, C or FI to determine the nature and level of environmental and social investigations, information disclosure and stakeholder engagement required. This will be commensurate with the nature, location, sensitivity and scale of the project, and the significance of its potential adverse future environmental and social impacts. Past and present environmental and social issues and risks associated with project-related existing facilities will be subject to environmental and social appraisal regardless of the categorisation.

Appendix 2 of the Environmental and Social Policy provides an indicative list of types of projects which would be categorised as Category A. This list applies to “greenfield” or major extension or transformation-conversion projects in the categories listed which are examples of projects that could result in potentially significant adverse future environmental and/or social impacts and therefore require an Environmental and Social Impact Assessment. The categorisation of each project will depend on the nature and significance of any actual or potential adverse future environmental or social impacts, as determined by the specifics of nature, location, sensitivity and scale of the project.

Contained within the list of Category A projects in Appendix 2 of the Environmental and Social Policy the projects that could be potentially relevant to the investment portfolio, are:

2. Thermal power stations and other combustion installations with a heat output of 300 megawatts or more and nuclear power stations and other nuclear reactors, including the dismantling or decommissioning of such power stations or reactors (except research installations for the production and conversion of fissionable and fertile materials, whose maximum power does not exceed 1 kilowatt continuous thermal load). Equivalent to a gross electrical output of 140 MW for steam and single cycle gas turbine power stations.

11. Large dams and other impoundments designed for the holding back or permanent storage of water.

[1] Environmental and Social Policy, European Bank for Reconstruction and Development, May 2014

21. Construction of high voltage overhead electrical power lines.

22. Large scale wind power installations for energy production (wind farms).

27. There is also a potential Category A designation where a project would be conducted within sensitive environments or locations, eg a designated or specifically protected area.

Note: The International Commission on Large Dams (ICOLD) defines a large dam as a dam with a height of 15 metres or more from the foundation. Dams that are between 5 and 15 metres high and have a reservoir volume of more than 3 million cubic metres are also classified as large dams. The dam at Camlica is 30m from foundation and would qualify as a large dam.

IFC

IFC Procedure for Environmental and Social Review of Projects states that although decisions on categorization are made on a case-by-case basis, examples of Category A projects are:

- Large dams and reservoirs
- Large thermal and hydropower development

Examples of Category B projects are:

- Agro-industries (small scale)
- Electrical transmission
- Renewable energy (except large hydro-electric power projects)

In respect of IFCs categorisation of projects, the elements that would qualify as Category A would be the Mersin CCGT and the Camlica HEPP due to the size of dam. There are no definitions associated with the categorisation which would define what constitutes large scale hydro electric power.

CATEGORISATION

Table 3-10 takes into account the slight differences in categorisations between IFC and EBRD in considering whether the proposed activities are considered to be Category A activities.

Table 3-10 Category A Activities

SITE	EBRD CATEGORY A	IFC CATEGORY A
Mersin CCGT	Yes	Yes
380 kV Over Head Line	Yes	No – but included as directly associated
New HEPPs	No	No
WPPs	Yes	No
SPPs	No	No
Other specific location determinations:		
Catak HEPP	Potentially – dependent on legal progressions and national park status.	If
Camlica HEPP (due to the Dam)	Yes- as it meets the ICOLD criteria for being a large dam	Yes- as it meets the ICOLD criteria for being a large dam

The categorisation for projects applies to “greenfield” or major extension or transformation-conversion projects rather than to pre-existing facilities. The categorisation can be summarised below:

The currently existing operational facilities (HEPPS and the Denizli Solar Project) do not require categorisation as Category A as these are not greenfield new development projects.

- **Not Category A:** For both EBRD and IFC it can be considered that the existing HEPPs and the SPP are not considered Category A as they are pre-existing sites and not new greenfield developments.
- **Not Category A:** For both EBRD and IFC, the new HEPPs and Solar Plants are generally not category A as they are not classified as 'Large Scale'. NOTE: TO BE AGREED WITH EBRD AND IFC AGAINST THEIR CRITERIA, IN PARTICULAR THE IFC 'EXAMPLE CRITERIA'.
- **Potentially Category A:** Catak HEPP, dependent on legal progressions and final designation as a national park area, if considered to be a 'sensitive location' following the legal review.
- **Category A for EBRD**: Mersin CCGT, 380 kV overhead power line and WPPs.
- **Category A for IFC**: Mersin CCGT and associated 380 kV overhead power line

4 SETTING AND KEY FEATURES OF PROJECT PORTFOLIO

4.1 SITE LOCATIONS

Map 3-1 in Section 3.1 above shows the site locations for all power plants which are widespread throughout Turkey. Maps for each of the sites visited are presented in Appendix A.

4.2 LAND OWNERSHIP

OWNERSHIP

Akfen Energy have acquired or will acquire the land for each of their operational sites through an agreed acquisition process either with individual stakeholders, treasury or from the appropriate public department, usually the Ministry of Forestry and Water.

LAND ACQUISITION AND ASSOCIATED RESETTLEMENT

Land purchase is undertaken by Akfen Energy through a structured process as detailed below:

1. Identification of land owners potentially affected.
2. Initial meetings to inform land owners about the project and the intentions of Akfen Energy. Land zoning plans are produced and stakeholder engagement is undertaken.
3. Akfen Energy liaise with the Local Authorities to obtained the relevant list land values (eg Cadastre values) but they also seek to understand the actual land market value, to assess the difference.
4. Priority is to make an agreement with the land owners. If an agreement cannot be made, then the National Energy Markets Regulator, EMRA, will assist to make a decision as to whether the project is of overriding public interest. Based on this decision a compulsory purchase order may be undertaken by the State (Akfen Energy make the payment). If this route is taken the land will be owned by the State but lans usage rights would sit with Akfen Energy.
5. Sometimes land owners have the land held as security as a debt and therefore there are issues then with ability to undertake the agreed land purchase. The expropriation route will then be used.
6. Land valuing takes into account the current use of the land and this is reflected in the valuing – eg if it is productive agricultural land etc. There is not currently a prescribed and systematic method to incorporate economic displacement and livelihood restoration risks as part of this process. Projects have involved physical and economic resettlement, and new houses etc have been developed, but on a case by basis rather than through a published and systematic approach.
7. Physical displacement has been a feature of only one project, the Calikovasi HPP. Some other projects have included other economic settlement features, such as funding of local amenities etc.
8. If the land is owned already by the state then Akfen Energy will usually go down the route of a rental agreement for the land use.
9. If land is classed as Forestry, there is an additional step to obtain permission for use (and a fee agreement) for the development on Designated Forestry land.
10. There has been tree planting schemes, as part of a social responsibility agreement, or as part of HEPP rehabilitation programmes.

11. For a number of the locations, there is a plan for landscape maintenance with an emphasis on enhancement.

Of the sites discussed during te visit program it was identified that there was still an ongoing issue with regards to the land acquisition process at Doruk.

At Doruk the land was owned 62% by individuals, 7% by the treasury and 31% by the Ministry of Forestry. There are 160 parcels of land beneath the associated pylons. Expropriation for the land started in 2010 and there are still 17 cases outstanding awaiting the final decision of the court. The expropriation was undertaken in accordance with Electricity Market Law no: 6446 and Expropriation Law no: 2942. It was considered that the expropriation procedure was in accordance with that required by Turkish Law.

Information obtained about the 17 expropriation cases can be summarised as follows:
Those outstanding cases have emerged from the following reasons:

1. Notifications have not reached due to the address change
2. Some successors are deceased

The inheritance suits regarding the deceased successors in the expropriated lands were filed by the attorney of EMRA as the authorised person. Some problems were encountered to reach the proprietors of these files. In order to initiate a legal procedure, the Urgent Confiscation Decision was taken for these lands and the court appointed a group of experts to assess the parcel prices. The total amount was deposited by the company and the bank tied up the money to be paid. The court released the payments to the ones who were informed and available. Due to the ones who are neither accessible nor deceased, 17 court files have not been closed yet.

The rates paid were 9-15 Turkish Lira per m^2 dependent on the quality of the land. This is 3 times the normal market price for the land, and no objections were reported to have been raised in relation to the compensation amount.

4.3 SITE GROUND CONDITIONS AND HYDROLOGY

HISTORICAL LAND USE

The land for all the HEPP and SPP sites visited by the teams were greenfield predominantly comprising forestry prior to construction and would have no ground contamination related to the activities undertaken. In Section 10 gives details of a number of environmental penalties imposed due to some of the construction activities at the sites.

The proposed CCGT plant is being constructed on a site previously occupied by the Mersin Thermal Power Plant. A 100MW process fired with fuel oil from the Atas refinery. A report detailing the geological and geotechnical profile of the project site is available. However, no information on ground contamination is available.

HYDROLOGY (HEPPS)

Table 4-1 below provides details of the watercourses that the HEPPs are located on.

Table 4-1 HEPP River Locations

HEPP	WATERCOURSE
Doğançay	Sakarya River
Sırma	Akçay River
Demirciler	Akçay River
Kavakçalı	Namnan Stream
Sekiyaka	Akçay River

Otluca	Anamur Brook
Camlıca	Zamantı Brook
Saraçbendi	Kızılırmak River
Doruk	Aksu, kayabaşı, Deli Streams
Çalıkobası	Not available
Yağmur	Manahoz Brook
Çatak	Çataksuyu River
Çiçekli	Muruvan, İnekli, Mağara Streams
Gelinkaya	Serçeme Brook

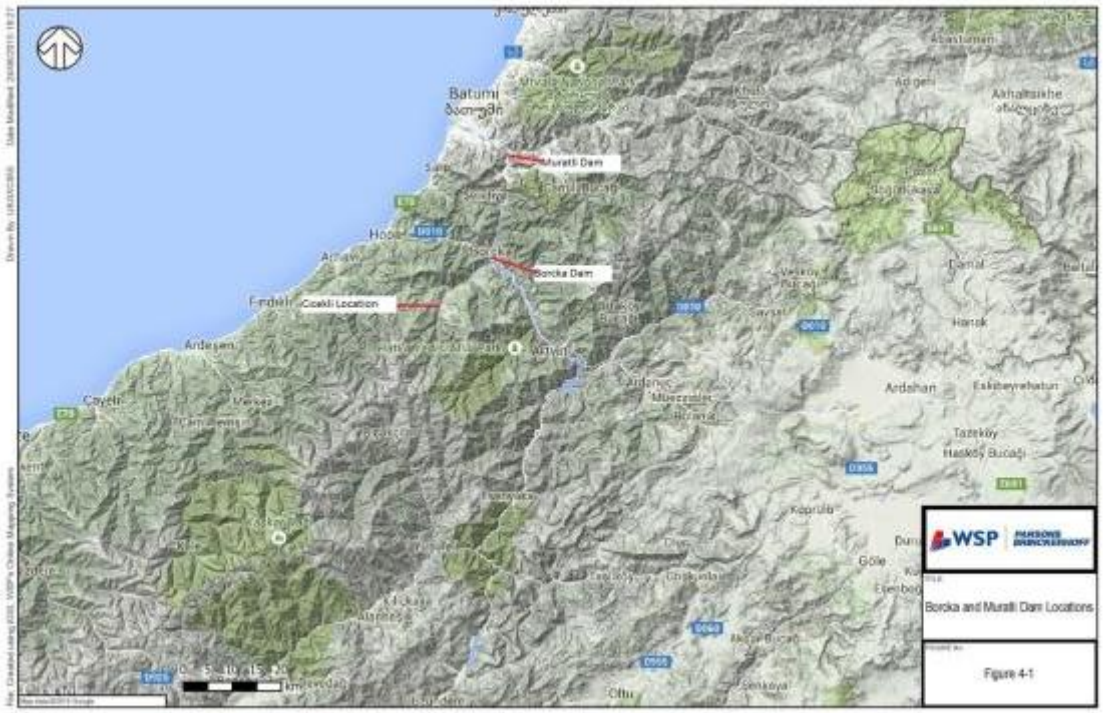
TRANSBOUNDARY WATERCOURSES - HEPPS

There is one transboundary watercourse associated with the project sites. The streams which are to be used for the Çiçekli HEPP are a branch of the Murgul Stream. This in turn is a branch of the Çoruh River which rises in Turkey but discharges to Georgia. The water discharge to Georgia is managed by Turkey by the Borcka and Muratli dams close to the border. Turkey voted not to adopt the "UN Convention on the Law of the Non-navigational Uses of International Watercourses" and as such this convention is not binding on Turkey. Turkey is in cooperation with Georgia about its uses of the Coruh River.

The streams to be used at Çiçekli form tributaries to the Murgul stream which is itself a tributary of the larger Coruh River which includes much larger HEPP schemes Borcka and Muratli closer to the border with Georgia. Indeed, the required ecological flow from Çiçekli through the two weirs is 0.16m^3/s whereas the flow through the turbines at Borcka is 237m^3/s. This shows that the scale of the proposed operation at Çiçekli can be considered insignificant in the overall flow management from these streams and the wider catchment area and overall water management of the transboundary River.

The EIA for Çiçekli does state that the streams are a tributary of the Coruh River but does not place any flow or other management requirements on it over and above the ecological flow requirements.

Figure 4-2 Borcka and Muratli Dam Locations



HYDROLOGY (CCGT)

For the Mersin CCGT, 76,634m3/h of water will be taken from the sea via cooling water intake structures located 750m offshore, reportedly with fish screens and filters. The majority of this will be stored in the cooling water tank for use in the condenser stage of the Heat Recovery Steam Generator (HRSG). In terms of water discharges, there will be:

- Cooling water discharge (the exact cooling water method is still to be finalised but the preferred method is a once-through cooling system);
- Discharge from the desalination unit; and
- Discharge from the demineralisation unit.

The cooling water discharge will comprise a 2000m submerged pipeline and diffuser system. Thermal modelling undertaken in 2013 (using HYDROTAM-3D) concluded that the ambient sea water temperature rise is expected to be less than +0.1^{o}C 800m away from the diffuser which will comply with national regulations.

More details are provided in section 6.

4.4 SENSITIVE RECEPTORS

NATURAL ENVIRONMENT

Figure 4-1 shows the national parks and other legally protected areas within Turkey.

Figure 4-1 Sensitive Receptor Locations

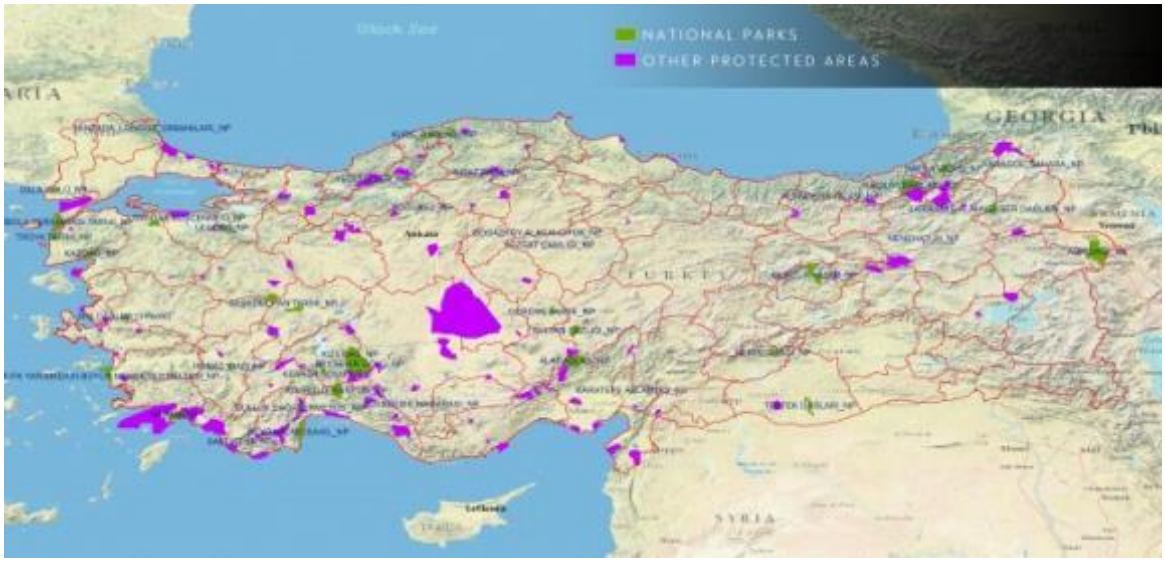


Table 4-2 shows the location of the nearest protected or sensitive areas to the project sites for the HEPPs.

Table 4-3 HEPPs nearby sensitive habitats

HEPP	HABITATS
Doğançay	The PPF states there are no nature conservation areas which are influenced or close by the project area.
Sırma	Not in or close to any protected area.
Demirciler	Direct line distance of 10 km to Yılanlı Çakmaklı wildlife growth area.
Kavakçalı	The EIA Report states that there is no nature conservation area which is influenced or close by to the project area. The closest protection areas are Kartal Lake natural reserve which is 8.4 km away and Koycegiz-Dalyan Special Environmental Protection Area which is 10 km away.
Sekiyaka	The PPF states there are no nature conservation areas which are influenced or close by the project area.
Otluca	Not in or close to any protected area.
Camlıca	The PPF states there are no nature conservation areas which are influenced or close by the project area. Aladaglar National Park is located 8 km east of the project. There is no impact of the project on this national park.
Saraçbendi	The PPF states there are no nature conservation areas which are influenced or close by the project area.
Doruk	The PPF states there are no nature conservation areas which are influenced or close by the project area.
Çalıkobası	Direct line distance of 15 km to Ağaçbaşı Natural Park.
Yağmur	The PPF states there are no nature conservation areas which are influenced or close by the project area.
Çatak	Location not shown in project map. There is a dispute over the designation of the area for the HEPP as a protected area.
Çiçekli	The EIA Report states that there is no nature conservation area which is influenced or close by to the project area. The closest protection areas are seed orchard which is 4.4 km away and Hatila Valley National Park which is 8.7 km away.
Gelinkaya	The PPF states there are no nature conservation areas which are influenced or close by the project area.

The proposed Mersin CCGT is not in or close to any protected areas.

BUILT ENVIRONMENT

The HEPPs sites visited by both teams were mainly in rural locations with very little immediate housing near to the sites with the exception of Yagmur which had isolated housing across the river from the main building and the Dogancay run of river HEPP that was located adjacent to a main road with commercial properties within close vicinity.

The SPP near to Denizli was constructed within approximately 300m to the local village.

4.5 ECOLOGICAL FLOWS OF HEPP ASSETS

Ecological flows are calculated on a project specific basis. There is a general concept in Turkish law that 10% of flow must be retained, but the site specific assessment route is used instead. The regulation of flow must also take into account the required abstraction volume for any irrigation use in the protected or impacted area.

The required ecological flows for each of the HEPPs can be seen in Table 4-3 below:

For three of the HEPPs (Sekikaya, Sirma and Gelinkaya) the water reservoir is regulated / controlled by a third party (local authorities), and the company use the water that is provided. For these sites Akfen Energy do not manage the ecological flows and therefore there are no calculations held by Akfen for these plants.

Table 4-4 Ecological Flows (m^3/s)

HEPP	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Otluca I	1.73	2.286	1.8	1.68	2.507	3.801	2.66	1.467	1.467	1.467	1.467
Otluca II	2.01	2.731	2.368	2.178	2.852	3.363	2.51	1.843	1.843	1.843	1.843
Sekiyaka I	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Sekiyaka II	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Yagmur	0.436	0.436	0.436	0.436	0.436	0.542	0.542	0.542	0.542	0.542	0.542
Demirciler	0.893	3.339	3.9	3.197	2.585	1.732	0.899	0.893	0.893	0.893	0.893
Camlica-3	2.46	2.46	2.46	2.46	4.05	7.03	6.35	3.47	2.46	2.46	2.46
Çiçekli I	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Çiçekli II	0.08	0.08	0.08	0.08	0.08	0.16	0.16	0.16	0.16	0.08	0.08
Doruk AKSU	0.078	0.078	0.078	0.078	0.078	0.108	0.108	0.108	0.108	0.108	0.078
Doruk KAYABASI	0.078	0.078	0.078	0.078	0.078	0.106	0.106	0.106	0.106	0.106	0.078
Doruk BAYBAHAN	0.077	0.077	0.077	0.077	0.077	0.1	0.1	0.1	0.1	0.1	0.077
Doğançay	Not available										
Irrigation Release											
Sekiyaka I	0.01						0.01	0.55	1	1.05	0.61

Doruk has 3 weirs each of which supplies the HEPP. Sekiyaka I has an irrigation release requirement. Doğançay is a within River weir system.

Akfen Energy are starting to record the measured ecological flow data but this programme is in its infancy.

Table 4-4 details the fish species present at the watercourses for the HEPP sites where the information is available.

Table 4-5 Fish Species

SPECIES	FAMILY	SITES WHERE PRESENT	BERN	RED LIST
Barbatula sp.	Balitoridae	Çiçekli		
Alburnoides bipunctatus	Cyprinidae	Çiçekli Yagmur Sekiyaka Doruk	App.III App.III App.III	LC LC LC
Luciobarbus escherichii	Cyprinidae	Çiçekli		
Capoeta sieboldi	Cyprinidae	Çiçekli		
Capoeta tinca	Cyprinidae	Çiçekli Yagmur Dogancay Doruk		
Alburnus chalcoides	Cyprinidae	Çiçekli Yagmur	App.III	LC LC
Chondrostoma colchium	Cyprinidae	Çiçekli		
Squailus cephalus	Cyprinidae	Çiçekli Camlica Dekiyaka Otluca		LC LC LC LC
Squalius lepisdus	Cyprinidae	Camlica		NE
Oncorhynchus mykiss	Salmonidae	Çiçekli Sekiyaka Otluca		 NE
Salmo labrax	Salmonidae	Çiçekli		LC
Neogobius fluviatilis	Gobidae	Yagmur Doruk		LC LC
Leuciscus cephalus	Cyprinidae	Yagmur		LC
Samo trulla fario	Salmonidae	Yagmur		
Abramis brama	Cyprinidae	Dogancay		
Albumoides bipunctatus	Cyprinidae	Dogancay	App.III	
Albumus orontis	Cyprinidae	Dogancay Sekiyaka		
Aspius aspius	Cyprinidae	Dogancay	App.III	DD
Barbus plebejus escherichi	Cyprinidae	Dogancay Sekiyaka Doruk	App.III	 LC
Barbus plebejus lacerta	Cyprinidae	Dogancay		
Capoeta capoeta sieboldi	Cyprinidae	Dogancay		
Chalchalburnus chalcoides	Cyprinidae	Dogancay Doruk	App.III	DD
Chalchalburnus nasus	Cyprinidae	Dogancay		
Cyprinus carpio	Cyprinidae	Dogancay		DD
Leuciscus cephalus	Cyprinidae	Dogancay Doruk		 LC
Phoxinus Phoxinus	Cyprinidae	Dogancay		
Pseudorasbora Parva	Cyprinidae	Dogancay		
Cobitis simpliscispina	Cobitdae	Dogancay Sekiyaka		
Orthrias angorae	Cobitdae	Dogancay		
Gobius batrachocephalus	Gobidae	Dogancay		DD

SPECIES	FAMILY	SITES WHERE PRESENT	BERN	RED LIST
Capoeta barroisi	Cyprinidae	Camlica		NE
Capoeta damascina	Cyprinidae	Camlica		NE
Luciobarbus pectoralis	Cyprinidae	Camlica Otluca		NE NE
Alburnus orontis	Cyprinidae	Camlica		EN
Chondostroma regium	Cyprinidae	Camlica Otluca		NE NE
Garra rufa	Cyprinidae	Camlica		NE
Acanthobrama marmid	Cyprinidae	Camlica		NE
Oxynoemacheilus tigris	Nemacheilidae	Camlica		NE
Oxynoemacheilus seyhanensis	Nemacheilidae	Camlica		EN
Schistura sp.	Nemacheilidae	Camlica		
Barbus capito pectoralis	Cyprindae	Sekiyaka		
Capoeta angorae	Cyprindae	Sekiyaka Otluca		 DD
Petroleuciscus smyrnaeus	Cyprindae	Sekiyaka		DD
Cobitis taenia	Cobitdae	Sekiyaka		LC
Nemacheilus angorae	Cobitdae	Sekiyaka		DD
Salmo trutta macrostigma	Salmonidae	Sekiyaka Otluca		LC DD
Salmo trulla fario	Salmonidae	Doruk		
Neogobius cephalargoides	Gobidae	Doruk		
Gobio gobio	Cyprindae	Otluca		NE

Red list categorisations: DD data deficient, NE not evaluated, LC least concern, EN endangered

From the above where data is available there are a wide range of species present across the project portfolios with some species being present at a number of locations. Of all the species identified during the EIA process Alburnus orontis and Oxynoemacheilus seyhanensis are the only ones identified as being endangered, relevant to the Camlica HEPP site. The aquatic grids on the water inlet at Camlica were reported to be made of a 3x4cm mesh, located 5m below water and over an area of $10m^2$. It is not possible to confirm whether a grid mesh of this size is fully appropriate as it is dependent on the location specific features and species, e.g. species types and presence of breeding grounds etc. Therefore the recommended updted ecological flow set out below should also seek to confirm the appropriateness of fish protection grids for this site, and all HEPPs in general.

The measures in place at Otluca that were reported to protect fish looked more like a barrier to catch debris entering the plant and the site could not confirm the associated dimensions.

At Camlica there was significant debris had accumulated in the fish ladder and it is recommended that a regular regime of clearing this is maintained.

In addition across the project sites where studies are available there are a number of amphibian, bird and mammal species present but none of these are classed greater than vulnerable.

Ecological Flow Review

A review of ecological flow calculations was undertaken for the sites where the data was made available. This was for the following HEPPs : Otluca-1, Otluca-2, Cilekli-1, Cilekli-2, Doruk (Aksu, Kayabasi and Baybahan regulators), Camlica-3, Demirciler and Yagmar.

Calculations were made using well identified methods with care to observe Turkish regulations (minimum 10% of the long term average flow and taking into account the seasonal variability of flows). This methodology for the ecological flow determination for the different HEPPs is valid.

Four different methods were used to determine the ecological flows:

1. the minimum flow method (base flow):
2. the flow duration indicator;
3. the Tennant method; and
4. the wetted perimeter method.

The Tennant method, wetted perimeter and the flow duration indicator are well known and widely used.

The minimum flow method, the flow duration indicator, the base flow method and the Tennant method are considered as hydrological methods. This type of methods relies solely on historic flow measures recorded from hydrometric stations.

In all evaluated HEPPs, available hydrological data cover at least a 24 year period, which is very good. Hydrological methods require little or no fieldwork, so their cost is considerably low, and they are considered the simplest and quickest assessment technique. They are also often referred to as the 'office' methods. One of the downside of these methods is the fact that aquatic biota is not taken into account when calculating instream flow values.

The wetted perimeter is widely used to determine instream flows. It is a bit more sophisticated than the three other methods used by Afken. It falls into the category of hydraulic methods which are based on physical variables such as depth, width, velocity and, obviously, wetted perimeter. This information is taken from cross sections of river. The method then relates these variables to the flow of the river. Even if it is a bit more sophisticated than the hydrological methods, the wetted perimeter method takes no more account of aquatic biota.

There are several other methods that take into account the aquatic biota, but they are more sophisticated, more expensive and more time consuming. They also require a lot of physical and biological surveys.

The calculated ecological flows represent in all cases at least 10% of the mean annual flow and are variable monthly. This monthly variability of ecological flows is particularly relevant in the hydrological and biological points of view. To some extent, it mimics the seasonality of natural flow in the rivers, which is important for aquatic fauna and flora.

There is a lack of consistency in the choice of methods from one HEPP to the other. For example, in the case of Demirciler HEPP, the ecoflow is based on the result of the wet environmental method. For Yagmur, the ecoflow is the average of Tennant and wet environment methods. For Cicekli, it is the flow duration indicator.

It is recommended that an environmental monitoring assessment is undertaken to verify the biological effectiveness of the ecoflows. This should consider factors such as:

1. are ecoflows able to maintain water quality (temperature, dissolved oxygen, etc.);
2. can ecoflows support the maintenance of fish populations, particularly the more vulnerable species; and
3. do ecoflows give the streams the capacity to support spawning, incubation, rearing, and passage of fish?

This monitoring is considered justified given that ecoflows were established with hydrological methods, which do not take into account the aquatic biota as it is based solely on historic flow data.

4.6 ECOLOGY/ORNITHOLOGY SCREENING OF WPP ASSETS

BACKGROUND

This section outlines the methods and results of an ecology/ornithology screening exercise completed in order to inform an ESIA Gap Analysis of 14 potential wind farm sites across Turkey that forms part of this due diligence assignment. Specifically, this section comprises a review of project site proximity to areas of ecological or ornithological importance.

METHODS

This screening exercise comprised a desk-based review of existing information in order to identify high-level constraints to the proposed wind farm developments (hereafter the 'proposed development/s'). The main focus was the proximity of the proposed developments to areas designated for their nature conservation interest; important bird migration routes; and important broad habitat types. Particular attention was paid to those species/habitats of requisite nature conservation interest, together with those of greatest perceived risk to wind farm developments. Specifically, the following parameters were reviewed:

BIRDS

- Important Bird Areas (IBAs - as designated by BirdLife)
- Key migration routes
- Key known bird hotspots (i.e. northern bald ibis breeding programme)

GENERAL BIODIVERSITY

- World Heritage Sites (relevant to this exercise)
- Ramsar sites
- National Parks
- Specially Protected Areas/Special Environment Protected Areas (SPA/SEPA) (designated under Turkish legislation)
- Special Protected Areas and Special Areas for Conservation (Natura 2000 sites designated under EU legislation)
- Primary Forest
- Peatlands
- Emerald Network Sites

DATA REVIEW

The above information was collected through a review of online data sources and then transposed on to Google Earth in order to identify proximity to the proposed developments. In some cases, data was readily available in Google Earth (.kmz) format, although in most cases, data was imported via standard data tables (.csv files), or manually produced to provide a more indicative resource in this respect (especially relevant to the lower-level designations such as Turkish SPAs/SEPAs for which very little accessible data exists).

Given the high-level nature of this study, a precautionary approach has been adopted; a far greater level of study will be required in order to fully qualify any of the constraints identified here

and to inform any subsequent assessment into potential impacts to biodiversity as a result of the proposed development/s.

CONSTRAINTS ANALYSIS

In order that this screening exercise can inform the decision-making process with regards prioritising ongoing assessment at these proposed developments, a broad scoring system has been adopted as follows:

- Major Constraint – the likely presence of a potentially significant ecological/ornithological constraint to the development of a wind farm at this general location.
- Moderate Constraint – the moderate possibility of a potentially significant ecological/ornithological constraint, which may prevent the development of a wind farm at this general location.
- Minor Constraint – the limited possibility of a potentially significant ecological/ornithological constraint, which may prevent the development of a wind farm at this location.
- No Known Constraint – no/negligible possibility of a potentially significant ecological/ornithological constraint identified at this stage.

The above classifications are assigned on the basis of the information collated during this study only and do not preclude the requirement for detailed study of each proposed development going forward.

LIMITATIONS AND ASSUMPTIONS

The main limitation of this screening exercise exists with regards the extent of data used to inform the constraint classifications detailed above; i.e. desk-based data only. Detailed survey work is therefore critical to inform subsequent assessments into the validity of the development of wind farms in the proposed development locations.

In order to provide useful commentary with regards potential key ecological/ornithological constraints, a level of connectivity has been assumed with regards the aforementioned parameters, based on the information available for each site; e.g. a National Park designated for its forest will not be considered in relation to a proposed development outwith its boundary, whereas an IBA which has been designated for its importance to raptors is considered for proposed developments within ca. 20km, especially when situated close to a potential migratory route.

The constraints analysis detailed above is for the purpose of this exercise only, and does not infer association with any other scoring system which may be employed during the assessment of the potential effects of wind farm development during this, or subsequent, stages.

This screening exercise has adopted a precautionary approach which has relied upon assumptions with regards general bird movements, especially in relation to migrating birds. Furthermore, it is not possible for a high-level exercise such as this to consider local assemblages of protected species (of both flora and fauna).

RESULTS

This section provides a summary table of the 14 sites (Table 4-6), and the associated high-level constraints. Following this, a brief summary of these constraints is provided for each proposed development.

Table 4-6 High Level Constraints of 14 WPP Sites

SITE	POTENTIAL CONSTRAINT PARAMETER								
	SEPA[2]	SPA[3]	SAC	IBA	RAMSAR	NATIONAL PARKS	BIRD MIGRATION	PEATLAND	PRIMARY FOREST
Ucurtma (Bursa)	-	-	-	✓	✓	✓	✓	-	-
Kontra (Manisa)	-	-	-	-	-	-	✓	-	-
Ruba (Yozgat)	-	-	-	-	-	-	-	-	-
Trim (Tekirdag)	-	-	-	✓	-	-	✓	-	-
EMD Kubas WPP (Balikesir)	-	-	-	✓	✓	✓	✓	-	-
EMD Kinalar WPP (Canakkale)	-	-	-	-	-	-	✓	-	-
EMD Gokcebel WPP (Sivas)	-	-	-	-	-	-	-	-	-
Nesim (Mersin)	-	-	-	✓	-	-	-	✓	-
Kavanca (Canakkale)	-	✓	-	-	-	-	✓	-	-
Seyir (Balikesir)	-	-	-	✓	-	-	-	-	-
Mares (Cankiri)	-	-	-	-	-	-	-	-	-
Sisam (Ordu)	-	-	-	-	-	-	-	-	-
Elares (Elazig)	-	-	-	✓	-	-	✓	-	-
Orcaner (Erzincan)	-	-	-	-	-	-	-	-	-

UCURTMA (BURSA)

This proposed development is situated to the immediate south of the Sea of Marmara and is potentially heavily constrained by bird interests in the area, most notably its proximity to/within a key migratory route within the Mediterranean/Black Sea flyway (the key stork migration route). The proposed development is also situated in close proximity to the Kocacay Delta IBA (ca. 3km). Potential impacts to birds are therefore considered to represent a **Major Constraint** to the proposed development at this stage.

KONTRA (MANISA)

This proposed development is not situated in close proximity to any designated sites or obvious areas of significant biodiversity value. It is considered likely that key migration routes will pass to the north of the proposed development however as a precautionary measure, it should be considered at this stage that migratory birds represent a potential **Minor Constraint** to the proposed development at this stage.

RUBA (YOZGAT)

No Known Constraints to the proposed development at this stage.

TRIM (TEKIRDAG)

This proposed development is situated to the immediate east of the Saros Bay IBA (designated for geese species (a potentially high-risk species) amongst others) and is likely to be moderately

[2] Turkish Designation
[3] EU designation, i.e. specifically relevant to proposed developments in proximity to Greece

constrained by bird issues. Aside from the IBA, the proposed development is situated within the Mediterranean/Black Sea flyway, albeit to the west of the key likely routes in this regard. Potential impacts to birds are therefore considered to represent a **Moderate Constraint** to the proposed development at this stage.

EMD KUBAS WPP (BALIKESIR)

This proposed development is situated south of the Sea of Marmara and is potentially heavily constrained by bird interests in the area, most notably its proximity to a key migratory route within the Mediterranean/Black Sea flyway and the associated National Park, IBA and Ramsar site at Lake Kus (ca. 7km to the north), which are all designated due to migratory bird interests (amongst other assemblages). Potential impacts to birds are therefore considered to represent a **Major Constraint** to the proposed development at this stage.

EMD KINALAR (CANAKKALE)

This proposed development is situated to the immediate south of the Sea of Marmara and although not in close proximity to any designated sites or obvious areas of biodiversity value does potentially sit close to/within a key migration route within the Mediterranean/Black Sea flyway. Potential impacts to birds are therefore considered to represent a **Minor Constraint** to the proposed development at this stage.

EMD GOKCEBEL WPP (SIVAS)

No Known Constraints to the proposed development at this stage.

NESIM (MERSIN)

This proposed development is situated to the immediate west of the Bolkar Mountains IBA and is likely to be moderately constrained by bird issues. This IBA is important for a number of raptor species which are an accepted 'high risk' bird group when considering the ornithological impacts of a wind farm. Furthermore, the area may contain peatland areas (the IBA has peatland habitats listed within its designation), which represent an additional potential constraint. Potential impacts to birds and ecology are therefore considered to represent a **Moderate Constraint** to the proposed development at this stage.

KAVANCA (CANAKKALE)

This proposed development is situated to the immediate east of the Aegean Sea and lies within 17km of the Voreia Lesvos SPA on the Greek island of Lesvos (there are a total of nine SPAs on the island). The proposed development lies north of this SPA and potentially within an important flyway for SPA birds (e.g. honey buzzard) migrating north/south via the River Bospohorus. There is also the potential for this site to lie within a key migration route for non-SPA birds (i.e. storks) within the Mediterranean/Black Sea flyway. Potential impacts to birds are therefore considered to represent a **Moderate Constraint** to the proposed development at this stage.

SEYIR (BALIKESIR)

This proposed development is situated within the Kaz Mountains IBA which has been designated for its importance to honey buzzard. Aside from the IBA, the proposed development is situated within the Mediterranean/Black Sea flyway, albeit seemingly outwith the key likely routes in this regard. Potential impacts to birds are therefore considered to represent a **Moderate Constraint** to the proposed development at this stage, mainly by virtue of its location within an IBA

MARES (CANKIRI)

No Known Constraints to the proposed development at this stage.

SISAM (ORDU)

No Known Constraints to the proposed development at this stage.

ELARES (ELAZIG)

This proposed development is situated within the centre of an area flanked by three separate wetland/waterbody IBAs (Karakaya Reservoir, South Keban Dam and Keban Islands. It is possible that the IBA birds provide connectivity between the three sites and therefore the proposed development has the potential to be sit within a regular flyway for such birds. Furthermore, the proposed development sits relatively close to two key migration routes: the main raptor migration route which enters Turkey at Hope in north-east Turkey, sweeping south-east through the country towards north-east Syria; and the key stork migration route from the Bosphorus at Instanbul which leaves the country to the south of the proposed development at the Goksu Delta. Potential impacts to birds are therefore considered to represent a **Moderate Constraint** to the proposed development at this stage.

ORCANER (ERZINCAN)

No Known Constraints to the proposed development at this stage.

Summary

Ecological surveys will need to be completed across the relevant Zone of Influence (ZoI), which will vary depending on the nature and extent of the potential impacts, together with the sensitivity of the receptor; for example, surveys across aquatic receptors will need to be completed across watercourses on the site and downstream of the site for a distance considered appropriate, whereas surveys for resident mammals will likely only be required across the site boundary. Local experts should be consulted in order to identify receptors and advise on the appropriate survey methods and timing in order that a sufficiently robust and representative dataset can be obtained.

Ornithological surveys will follow the same process as above but will need to extend across a number of seasons in order to sufficiently assess impacts to birds at different times of the year (a critical consideration given the potential impacts upon migrating birds at these sites). Local experts should be consulted in order to understand potential resident bird assemblages and their relative conservation status. As a minimum, flight activity surveys (from vantage points) should be completed during the breeding and non-breeding seasons (and during the migration seasons for those sites where migrating birds are considered to be a potential constraint), with breeding and wintering bird surveys likely to also be required. Guidance as published by Scottish Natural Heritage (SNH 2014[1]) should be followed, and adapted according to the likely species presence where appropriate. Following data collection, it will be necessary to quantify any potential collision risk associated with the sites through Collision Risk Modelling (CRM).

The assessment of impacts upon ecological and ornithological receptors will need to consider nature conservation value and magnitude of impact in order to assess significance upon these receptors. It may be necessary for mitigation proposals to be implemented in order to reduce potential impacts to an acceptable level. A suitably qualified and experienced ecologist should be commissioned to complete this work

[1] SNH. 2014. Recommended bird survey methods to inform impact assessment of onshore wind farms.

5 ENVIRONMENTAL, HEALTH, SAFETY AND SOCIAL MANAGEMENT ARRANGEMENTS

5.1 PROJECT MANAGEMENT AND IMPLEMENTATION

Akfen Energy currently incorporate management approaches either from a number of different parts of the overall Akfen organisation. Some of the arrangements, such as Policy Statements, are Akfen Group level documents, others are developed at the Akfen Energy level or even at a sub divisional level, such as the hydro-power or thermal power operational divisions.

Akfen Energy directly lead on the early stages of development of a new project. Other parts of the Akfen Group may also be involved, specifically Akfen Construction, who would usually lead on the construction of the new projects being developed.

Management systems and general arrangements are outlined below, with specific issues being described later in this report.

5.2 EHS RESPONSIBILITIES

There are the following management responsibilities in place:

- There is a designated member of the Akfen Energy / Holdings Board who has the designated responsibility for EHSS.
- Environmental Engineer – working across the operations of Akfen Energy. There is also a central Environmental Assistant who provides technical assistance.
- Each of the technology areas (e.g. hydro / solar / thermal etc.) has a dedicated head with overall responsibility for all permits, licenses and overall for environmental, safety and social management.

5.3 EHS POLICIES AND MANAGEMENT SYSTEMS

CORPORATE EHS POLICIES

There is currently a formally published Environmental Policy for Akfen Holding Company. Akfen Energy use this policy, but it is not tailored to the operations of the Akfen Energy Company.

There is a formal health and safety policy in place currently specifically for Akfen Hydro Power (as there is not one umbrella company for Akfen Energy). However, there is currently consideration being given to broadening this to cover the whole Akfen Energy level Policy Statement. This was published when the new Turkish legislation was introduced in 2012.

Internal audits are undertaken for Quality. Each construction project location is audited a minimum of annually for quality purposes.

EHS MANAGEMENT SYSTEMS OVERVIEW

Akfen Construction has the following certifications:

- Akfen Construction (part of Akfen Holdings) has ISO9001, ISO14001 and OHSAS18001. 'TUV Rhineland' is the certifier.
- Akfen Energy has not previously had a programme to implement these management systems.

There are currently no management systems certifications specifically covering the Akfen Energy business.

EHS INSPECTION AND AUDIT PROGRAMME

There is a system in place to undertake monthly inspections at each project location. This is aligned with the Turkish Legal Requirements.

There are formal internal audits conducted by Akfen Holding Company. These audits cover technical, environmental and health and safety. There is a published audit schedule and spot audits area undertaken at the Holding Company level. The Holding Company audits involve third party external EHS experts. Akfen Energy management receive the audit reports where necessary and there is a formal process of formally reviewing, responding and closing the audit findings through a corrective action system.

CENTRALISED SAFETY MANAGEMENT SYSTEMS

The management approaches are based on risk assessment and inspection processes, which then inform the specific safety controls that need to be implemented on site. However, in relation to some risk areas, there are additional competence based management controls in place. For instance, only electricians who are certified by the State Authorities are permitted to work on live electrical equipment. These competence areas are defined in a centralised 'job roles' and competences document.

There are a number of centralised procedures or 'standards' for the consistent management of a number of key safety risk areas. These are a blend of standards which are specific across all plants, or some are specific to risk in just a number of key locations.

For direct work on 154 kV or other connections, this is reported to be strictly undertaken by the national network operator (TEIAS) only.

5.4 STAKEHOLDER DIALOGUE

The company undertakes a programme of stakeholder engagement in each project location. This is often aligned with regulatory systems (e.g. for EIA developments), but Stakeholder public meetings are conducted for each project. These are advertised both locally and nationally. Attendance records are maintained, as well as record of all comments and questions raised.

There is currently no centrally controlled grievance management process or published Grievance Mechanism.

Akfen Energy has five projects developed under the CDM carbon credits system that have applied for 'Gold Standard' level, through Bureau Veritas. This has involved the requirement to align to a set of environmental and social standards, which includes stakeholder engagement. In this case, a specific form was used during Stakeholder engagement, to proactively collect views on the project and to check there were no overriding concerns.

5.5 SUPPLIER MANAGEMENT

Akfen use key supplier that have the potential to influence EHSS performance for a number of tasks:

- Construction activity, the main category;
- Provision of energy production process and ancillary equipment;
- Use of contractors for maintenance activities.

Support to the construction activities are often conducted by another part fo the Akfen Group; Akfen Construction. Akfen Construction apply their own management systems, but do work to a project specification prepared by Akfen Energy.

Key suppliers and contractors can also be used for the delivery of major projects for Akfen, either using a turnkey, EPC model or separate engineering and procurement contracting with further construction contracts. It is likely that the new Mercin CCGT will be developed using an EPC contract model.

In regards to the 380 kV Overhead Transmission Line development in the Mercin region, the project will be undertaken by the Turkish National Grid developer, TEIAS.

Therefore it is important that the relevant ESAP requirements,as well as other documentation is cascaded down to these major suppliers / contractors as relevant. This is a critical area in ensuring that the requirements of EBRD and IFC are implemented on the projects.

6 SITE ENVIRONMENTAL PERFORMANCE

6.1 PERMIT COMPLIANCE OVERVIEW

Permits to operate are generally required for thermal power plants and industrial facilities or other sites where there are wastewater discharges, noise, air emission and hazardous waste storage in large amounts. For Akfen Energy the HEPPs, SPPs, WPPs are not required to have a permit to operate unless they have a wastewater discharge to water e.g. from a septic tank, which none do.

The figure below shows the permits and /or licenses required to construct and operate the Mersin CCGT. The column titled 'timeline' provides the dates for those permits already granted. The Construction Permit will need to be in place before breaking ground.

Figure 6-1 CCGT Licenses & Permits

Permit and/or License	*Timeline*
Electricity Generation License	Valid from 08.03.2012 for 49 years
EIA is Positive decision for CCGT	Dated 11.12.2013
EIA is Positive decision for ETL	Dated 17.02.2015
Grid Connection Agreement	Dated 29.01.2013
Natural Gas Connection Agreement	Dated 04.12.2014
Land Certificate	Dated 19.01.2012
Construction Permit	NA (before construction)
Grid System Usage Agreement	NA (before COD)
Project Approval	NA (during construction)
Environment Permit & License	NA (during construction & operation)

6.2 APPLICABLE EU REQUIREMENTS

MERSIN CCGT

ESPOO CONVENTION

The Espoo (EIA) Convention sets out the obligations of those parties that have signed up to the convention to assess the environmental impact of certain activities at an early stage of planning. It also lays down the general obligation of States to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact across boundaries.

For the project to require full consideration and consultation on transboundary impacts, the project needs to meet a capacity threshold specified in Appendix 1 of the Convention and also have the potential for significant transboundary impact, worthy of further consideration. It is the responsibility of the specific agencies to determine the requirements under Espoo.

The proposed development may fall under Appendix 1 of the Espoo (EIA) Convention, specifically paragraph 2 which relates to 'thermal power stations and other combustion installations with a heat input (fuel) rating of 300MW'. However, for the requirements of the convention to be relevant, there also needs to be 'significant transboundary impact' considerations.

The convention states that 'each Party shall take the necessary legal, administrative or other measures to implement the provisions of this Convention, including, with respect to proposed activities listed in Appendix I that are likely to cause significant adverse trans-boundary impact, the establishment of an environmental impact assessment procedure that permits public participation and preparation of the environmental impact assessment'. In addition, the convention also states that 'the Party of Origin shall, consistent with the provisions of this Convention, ensure that affected Parties are notified of a proposed activity listed in Appendix I that is likely to cause a significant adverse trans-boundary impact'.

It is considered that the only realistic potential trans-boundary effect relates to effects on air quality. However, a quantitative assessment of the potential impact emissions from the proposed CCGT on local air quality across the specified work area (3.5km south, 16.5km North, 14km East and 16km West) during the operation of the plant (refer to Air Quality Modelling Study Report, July 2013 by Dokay) showed that the emissions from the proposed plant would not give rise to any exceedances of the relevant Air Quality Standards (AQS) for the pollutants considered. On the basis that no exceedances of the AQS are predicted at a local level, it is considered fair to conclude that trans-boundary effects associated with the proposed development would not represent a potential issue.

SEVESO III MAJOR ACCIDENT HAZARD CONTROL

The Seveso Directives are the main EU legislation dealing specifically with the control of on-shore major accident hazards involving dangerous substances. The Seveso III Directive came into force on 1 June 2015, replacing the Seveso II Directive.

Management of the sites in an EU context as a major accident hazard facility is not required as there is no bulk storage of relevant chemicals as categorised under this regulation.

INDUSTRIAL EMISSIONS DIRECTIVE

The European Council Directive on Industrial Emissions (Integrated Pollution Prevention and Control) (Directive 2010/75/EU of November 24, 2010) aims at an integrated approach to pollution prevention and control arising from industrial activities listed in its Annex I. The Directive recasts seven existing Directives (the IPPC Directive and six sectorial Directives (Large Combustion Plants, Waste Incineration, Solvents Emissions and three on Titanium Dioxide) into a single legislative instrument. It requires best available techniques (BAT) to be applied to meet emissions limits for pollutants including nitrogen, sulphur oxides and particulates. Minimum provisions cover the inspection of industrial installations, permits reviews and reporting on compliance and soil protection.

The Large Combustion Plant BREF notes (adopted and draft 2013) have been consulted to identify the main criteria to be considered in the case of BAT for Large Combustion Plant (LCP) / power generation sector and in particular with regard to the installation of gas turbine technology. This BAT criterion has been compared against the proposals for the CCGT plant (taken in the main from Akfen's Technical Specification) in table 6-2.

A preliminary assessment has been undertaken to ascertain if techniques have been considered in the determination of BAT in order to limit environmental impacts and evaluate compliance with EBRD PR3. It should be noted that within the BREF note, BAT techniques are extensive and complex and only a high level review has been conducted for key areas of operation that are considered relevant. It should also be noted that the Large Combustion Plant BREF note is in draft form. Changes of BAT could occur prior to the implementation of this document and therefore this should be reviewed and consulted for any future work that is carried out in this regard. That said, one of the main BAT criteria relates to air emissions from the plant and these are set at a Directive level for this type of plant. These will not change as the BREF is updated.

Table 6-2 BAT Assessment for Proposed Mersin CCGT Plant

IED BAT REQUIREMENT	PROPOSED DESIGN COMPARISON	BAT
EMS: A formal system to demonstrate compliance with environmental objectives	Akfen Energy does not currently operate a formalised management system.	**ESAP Action**
Techniques to increase energy efficiency		
Use of expansion turbines to recover the energy from the delivered pressurised natural gas. (a turbo expander is installed on the natural gas supply line instead of a classic throttling valve)	The detailed design for the CCGT is currently being finalised and suitability of expansion turbines in the gas supply line is unknown.	**ESAP Action: Assess feasibility of using expansion turbines once EPC contractor has been selected.**
Advanced computerised control of the gas turbines and subsequent boiler recovery	A complete microprocessor based Distributed Control Systems shall be installed for automatic and safe control of the plant.	BAT
Advanced gas turbine material use, efficient cooling technologies and thermal barriers	Gas turbine cooling is included within the technical specification as an option. However, it is unknown whether the final design will include it. The overall efficiency of the plant without this option is already very high: Gross efficiency 62.5% / Net efficiency 60.5%.	BAT
Preheating of fuel gas using waste heat from the gas turbine flue.	All exhaust heat from the gas turbine is fed to the steam turbine and in this way thermal efficiencies of the overall process are optimised.	BAT
Draft LCP BREF: CHP Readiness: flexibility in combustion plant design to allow easy modifications e.g. implementing heat generation	Although initially all waste heat from the gas turbine will be transferred to the steam cycle. The configuration of the CCGT will be designed to allow a future modification to reduce electricity generation and increase recovered heat (e.g. for greenhouses). Mersin is home to 36% of Turkey‘s greenhouses and is the largest agricultural zone in the country.	BAT
Use of Dry Low NOx burners for NOx control. (Confirmed in the draft LCP BREF)	Dry Low NOx burners will be installed within the CCGT plant.	BAT
Ensuring CO concentration in the final emissions is as low as feasible to ensure good combustion and maintain overall efficiency.	The DCS system will ensure good combustion control. CO emissions will be below 100mg/Nm^3.	BAT
Preheating of air using waste heat from the turbine flue to increase overall energy efficiency.	All exhaust heat from the gas turbine is fed to the steam turbine and in this way thermal efficiencies of the overall process are optimised.	BAT
NOx emissions in the range 20 – 50 mg/Nm^3 (LCP BREF) 50 mg/Nm^3 (IED Part 2 Annex V)	NOx emissions are committed to be <30mg/Nm^3 @ 15% O2 (273K & 101kPa)	BAT
CO emissions 30 - 100mg/Nm^3 (LCP BREF) 100 mg/Nm^3 (IED Part 2 Annex V)	CO emissions are committed to be <30mg/Nm3 @ 15% O2 (273K & 101kPa)	BAT
Overall electrical efficiency in the range 54 – 58% is considered BAT. The latest turbine developments are	The electrical efficiency of the plant is forecast to be gross 62.5% / net 60.5%.	BAT

IED BAT REQUIREMENT	PROPOSED DESIGN COMPARISON	BAT
reported to achieve a CCGT overall efficiency approaching 60%. The net electrical efficiencies under ISO conditions reported in the draft LCP BREF is 46-60%		
Additional fuel can be fired in the turbine exhaust. Overall thermal efficiencies of up to about 85% are possible, giving low emissions per unit of useful energy produced.	The use of additional fuel firing is unlikely to be part of the final design (based on the Akfen technical specification). That said efficiencies have already been optimised using the techniques mentioned above.	BAT
Heat increase in the condensing cooling water (temperature increase BAT and energy efficiency BAT) of 7^0C to 14 ^{0}C is considered BAT.	The preferred 'once through' cooling system (to be finalised once the EPC contractor has been instructed) has been modelled and this confirms that the discharged water temperature increase, will be 7 degrees Celsius (within the limits of BAT).	BAT
Continuous NOx and CO monitoring should be conducted for turbines.	Continuous emissions monitoring (CEMS) will be undertaken for releases from both stacks after the Heat Recovery Steam Generator (HRSG) units (gas turbine exhaust is fed to the HRSG). The CEMS units will be interlocked to the DCS.	BAT
Waste heat should be utilised through the use of secondary steam generation in a combined cycle unit, or through the use of CHP.	Waste gas exiting the gas turbine is fed to the HRSG to generate steam to drive a steam turbine.	BAT
An automated combustion control unit should be in place to manage combustion efficiency and reduce CO formation and to optimise excess air and so reduce NOx and formation.	A distributed control system (DCS) via PLC will be installed for the CCGT plant. No other abatement systems will be required for the plant.	BAT
Control of key air pollutants		
Stack height should be optimised for emissions impact minimisation.	A stack optimisation study has been conducted as part of the detailed air quality modelling assessment. The stack has been determined at 30m. A new sensitive receptor (housing adjacent to the west site boundary) has been identified.	**ESAP Action: Update the air quality impact and stack optimisation studies to consider impacts on the new sensitive receptor.**
Continuous emissions monitoring systems (CEMS) on all LCPD units.	Continuous emissions monitoring (CEMS) will be undertaken for releases from both stacks after the HRSG units (gas turbine exhaust is fed to the HRSG). The CEMS units will be interlocked to the DCS.	BAT
FGD is BAT for higher sulphur fuels, and therefore particulate abatement	The fuel for the CCGT plant will be natural gas therefore it will have negligible sulphur content and will not require flue gas desulphurisation	BAT

IED BAT REQUIREMENT	PROPOSED DESIGN COMPARISON	BAT
of FGD + EP is considered BAT.	(FGD).	
The largest proportion of metals and compounds released to air are included in the composition of particulates released to air. Their release to air is therefore best controlled by minimising particulate release levels and by selecting residual fuel oils with a low ash.	This BAT requirement is relevant to oil or solid fuel firing. The fuel for the CCGT plant will be natural gas.	BAT
For oil and oil emulsion fuels, releases of nickel and vanadium may be highly significant, whilst a number of other metals and compounds may also be released. Metal emissions are mainly in the particulate form for oil fuels.	The fuel for the CCGT plant will be natural gas with non-interruptible supply.	BAT
Hydrogen chloride and fluoride emissions – FGD plant is effective for emissions reduction.	The fuel for the CCGT plant will be natural gas with non-interruptible supply.	BAT
Total PAH (unspecified) emissions for large coal and oil fired combustion plant are of the order of 10-100 ng.m-3 in the flue gas. Some PAH is associated with particles and thus particulate removal equipment will reduce emissions to air, although the ash and dust may be contaminated.	The fuel for the CCGT plant will be natural gas with non-interruptible supply.	BAT
Bulk storage tanks and areas where spillages are most likely, such as sampling points, should be bunded. Bunds should: o be impermeable; o have no outlet and drain to a sump; o contain all parts of the tank; o be hydraulically tested on a regular basis; o a capacity capable of containing 75 % of the maximum capacity of all tanks within the bund, or at least the maximum volume of the largest tank (EU LCP BREF). Best practice is considered to a minimum of 110% of the largest tank in a bund along with the maximum capacity requirement. o where not frequently inspected, be fitted with a high level probe and an alarm as appropriate; o have the fill points within the bund where possible.	The fuel for the CCGT plant will be natural gas with non-interruptible supply. It is understood that no alternative back-up fuel sources will be required. Therefore no bulk fuel storage tanks apart from that for diesel to operate the back-up generator and fire-fighting pumps will be installed. Limited chemical tanks for the demineralisation plant shall also be available. All bulk tanks will be fully contained.	BAT
For sub surface structures: o Engineer systems to minimise leakages from pipes and ensure swift detection if they do occur,	No liquid fuels will be stored as part of the CCGT. Therefore this is not applicable.	BAT

IED BAT REQUIREMENT	PROPOSED DESIGN COMPARISON	BAT
particularly where hazardous (i.e. Groundwater-hazardous) substances are involved; o Provide secondary containment and/or leakage detection for sub-surface pipework, sumps and storage vessels; For non-accessible pipes, double walled type pipes with automatic control of the spacing can be applied (liquid and gaseous fuels). o Establish an inspection and maintenance programme for all subsurface structures, e.g. Pressure tests, leak tests, material thickness checks or CCTV		
All screening, crushing, milling, briquetting and other plant for the pre-treatment and storage of raw materials prior to use in the process should be totally enclosed with extraction and arrestment plant, as appropriate, to prevent emissions to atmosphere.	There will be no screening, crushing, milling, or briquetting operations at the proposed CCGT plant.	BAT
Water Discharges		
The use of once-through systems is BAT, in particular for processes requiring large cooling capacities (e.g. > 10 MWth).	The cooling system will be confirmed once the EPC contractor is instructed and detailed design conducted. At this stage a once-through cooling system is preferred (ref: supplementary doc to the ESIA).	BAT
To prevent oil contaminating the water, oil separation wells are considered BAT.	An oil separator is proposed.	BAT
Combustion Residues		
BAT is to divert from landfill and re-use combustion residues	The detailed design will be carried out once the EPC contractor has been appointed. Currently the final destination of the combustion residues is unknown.	**ESAP Action: Consider reuse/recycling avenues for the combustion residues.**

6.3 ENVIRONMENTAL ISSUES

Relevant environmental issues relating to the construction and operation of the electricity transmission line are covered in later sections.

RAW MATERIALS

CCGT

There is no major use of raw materials at the Mersin CCGT site.

The principal chemical usage at the site, with the exception of general area cleaning activities is the chemicals used in the demineralisation unit which will include a bulk storage tank of Hypochlorite and other limited chemical tanks. There will be no back up fuel, just diesel for the

emergency generator and fire-fighting pumps. It was reported that all tanks would be fully bunded.

HEPPS

The main raw materials and consumables used at each of the HEPP sites are oils for use within the transformers and generators. These are delivered in 205 litre drums and stored in secure storage areas. The HEPP sites do use SF_6 in the switchgear.

At the Camlica HEPP site it is recommended that a containment kerb be added to the front of the waste oil store and at Dogancay the new oil drums stored close to the River should have secondary containment.

All HEPP site are recommended to keep a spill containment kit adjacent to the drum storage areas.

UTILITIES

The Mersin CCGT will consume 204,000Sm3/h of natural gas, piped from the existing Gaziantep-Mersin pipeline (1100m North-West of the project site). Additional fuel shall not be used.

GREENHOUSE GAS EMISSIONS

Natural gas consumption = 204,000m^3/hr

8,000 operational hours (assumed)

204,000 x 8,000= 1,632,000,000m^3
Defra guidance on ghg conversion states that density of natural gas is 0.7kg/m^3

1,632,000,000 x 0.7= 1,142,400,000kg or 1,142,400tonnes

Therefore using the EBRD GHG Assessment Methodology of fuel mass tonnes x carbon content x carbon fraction oxidised x 3.664 (ratio of molecular weights of CO_2 to C):

1,142,400 x 0.8 x 0.995 x 3.664 = 3,351,859tonnes CO_2 equivalent per year

For comparison using the IFC tool:

1,142,400 x 2.838 (IFC conversion factor for natural gas) = 3,254,293tonnes CO_2 equivalent per year

The generator circuit breakers will contain SF6 based on Akfen's Technical Specification. However, the volume is unknown therefore we are unable to quantify the potential release.

The Mersin CCGT is part of a much wider energy portfolio consisting of electricity generation from renewable resources, some 15 HEPPs, 14 WPPs and 78MW of licenced SPPs and a further 45MW of SPPs under development. The CO2 figure above for the CCGT should be offset by the renewable proportion of the energy portfolio.

WATER USE AND WASTEWATER

CCGT

76,634m^3/h of water will be taken from the sea via cooling water intake structures located 750m offshore, reportedly with fish screens and filters. The majority of this will be stored in the cooling

water tank for use in the condenser stage of the HRSG. However, 45m3/h will be sent to the desalination unit to generate 11m^3/h (and 1.5m^3/h of service water) of desalinated water for further treatment within the demineralisation unit.

In terms of water discharges, there will be:

- Cooling water discharge (the exact cooling water method is still to be finalised but the preferred method is a once-through cooling system);
- Discharge from the desalination unit; and
- Discharge from the demineralisation unit.

The cooling water discharge will comprise a 2000m submerged pipeline and diffuser system. Thermal modelling undertaken in 2013 (using HYDROTAM-3D) concluded that the ambient sea water temperature rise is expected to be less than +0.1^{o}C 800m away from the diffuser which will comply with national regulations. The engineering design is not available. However, the technical specification developed by Akfen to invite EPC contractor tenders does include liquid effluent limits in line with the Water Pollution Control Regulation (WPCR) for Turkey and World Bank EHS Guidelines for Thermal Power Plants.

The wastewater from the desalination unit comprising of brine water will be discharged into the cooling water return to sea. Residual chlorine and other chemical residues in the wastewater will be monitored continuously to ensure it meets the limit values under the Water Pollution Control Regulation (WPCR) and World Bank EHS Guidelines for Thermal Power Plants.

Basic and acidic water from the demineralisation unit will be collected in the neutralisation tank to balance out the pH to 6-9. This is proposed to be discharged to the Mersin Water and Sewerage Administration (MESKI) sewerage system. Again, the system is yet to be designed in detail. However, Akfen's specification includes limits to comply with WPCR.

ESAP Action: Ensure the chosen design meets the environmental limits stipulated in Akfen's technical specification.

HEPPS

The only emissions to water from the HEPPs are the water used to drive the turbine which has to be released to maintain the ecological flow.

There was no water release from the SPP.

Wastewater at the HEPPs and SPP sites is collected for tankering off-site for appropriate disposal.

AIR EMISSIONS

STACK EMISSIONS

CCGT

Detailed design for the Mersin CCGT is not available as the EPC Contractor is yet to be instructed. The tender specification developed by Akfen details the air emissions to be achieved by the selected design as follows:

Table 6-3 Air Emission Limits Provided in the Technical Specification

PARAMETER	SPEC LIMITS	IED PART 2 ANNEX V	WORLD BANK GUIDELINES
NOx (NO & NO2)	<30	50	51
CO	< 30	100	-
SO2	<11.7	-	-
Dust	<5	-	-

Instantaneous measure expressed in mg/Nm3 @ 15% O2, Volume dry (273.1°C and 101.3kPa)

Quantitative air quality modelling was undertaken in July 2013 using an ISC (Industrial Source Complex) licensed distribution model (ISCST3). This modelling tool is internationally recognised.

SO_2 and particulate emissions were not modelled as levels of these components within natural gas fuel are negligible.

Emissions of 50mg/Nm^3 of NOx and 100mg/Nm^3 of CO have been modelled, equivalent to the emission limits provided in the IED Part 2 Annex V (World Bank Guidelines for Thermal Plants: 51mg/Nm^3 NOx) and the resultant ground level concentrations have been assessed against National Limit Values (RAMAQ) that are aligned to EU Air Quality Standards (AQS). The table below show the results for NOx and CO.

Table 6-4 Air Quality Modelling Results

PARAMETER	PERIOD	GROUND LEVEL CONCENTRATION (GLC) (µg/m^3)	NATIONAL LIMIT VALUES (ALIGNED WITH EU AQS) (µg/m^3)
NOx	Hourly (99.78%)	30.96	200
	Daily (max)	7.5	-
	Annual	1.07	40
CO	Daily average of 8 hours (max.)	51.91	10,000

The ground level concentration at a number of sensitive receptors was assessed in the study and these included nearby settlements. The study showed that at these settlements the predicted emission impacts for the Mersin CCGT were within the limit values and the air quality report concludes that the effect of the proposed plant on ambient air quality in all receiving environment is not expected to be significant.

Since the modelling was undertaken, new housing has been built on the western boundary of the proposed site. **An ESAP action has been included to check air quality impacts at this new sensitive receptor.**

Part of the study included a stack optimisation stage calculated using a PK 3781 programme, developed in accordance with German Air Regulations (TA LUFT) and VDI 3781 Standard.

The stack height has been determined at 30m. **This assessment should also be reviewed in light of the additional sensitive receptor at the site boundary.**

380kV Transmission Line

The EIA includes an initial screening for dust impacts (from excavating transmission tower feet) concluding that no detailed modelling is required.

Air impacts from construction vehicles are estimated using emission factors from the EPA. The results are found to be below the thresholds defined in the IAPCR's Calculation of the Air

Pollution Contribution Value of Construction Works enacted in the Official Gazette no. 27277 (08.08.2009).

REFRIGERANTS AND COOLING TOWERS

CCGT

The site is under development. Cooling water is needed to return the condensate to the HRSG and an option being considered is wet cooling using a natural or mechanical draft cooling tower.

An ESAP action has been included to ensure a chemical dosing regime is established to manage general fouling and to control legionella, should the option of the Cooling Water Tower is selected.

HEPPS

The HEPPs utilise water cooling and no cooling towers were present. During the visit to Yagmur it was stated that the refrigerant used in the air conditioning system was R410 and a maintenance contractor was employed to check air conditioning systems.

WASTE GENERATION AND DISPOSAL

CCGT

The following types of solid waste is predicted to be generated during the construction phase of the CCGT (ref: Supplementary Document for International ESIA study):

- Recyclable waste (glass, paper, plastic etc.): disposed of in accordance with the provisions of 'Regulation on Control of Package Waste';
- Non-recyclable waste: disposed of in accordance with the provisions of 'Regulation on Control of Solid Waste';
- Unused excavation soils: disposed of in accordance with the provisions of 'Regulation on Control of Excavation Soil, Construction and Debris Waste'; and
- Hazardous waste: disposed of in accordance with the provisions of 'Regulation on Control of Hazardous Waste'.

During the operational phase:

28.5 kg/day domestic waste: delivered to Akdeniz Municipality for disposal;

- Medical waste (from on-site infirmary): disposed of in accordance with the provisions of 'Regulation on Control of Medical Waste'; and
- Packaging waste: disposed of in accordance with the provisions of 'Regulation on Control of Package Waste'.

HEPPS

The main wastes generated at the HEPPs are domestic effluent which is stored within underground storage tanks for periodic collection and waste oil from use in the equipment. The waste oil is removed by two methods. One is during maintenance operations when it is withdrawn from the equipment and replaced. The second is from leaks from the transformers which would drain to an underground oil tank which would then be emptied by tanker and extendable hose.

The volumes generated of each of these waste streams at each of the HEPPs would not be significant. There are a number of issues with regards to the management of these wastes during

transfer. At a number of the sites the underground oil tank is outside the fenced perimeter and any hose failures during transfer would result in any spilt oil going to ground.

At Doruk, the septic waste tank is right next to a drainage gulley which is 0.5m wide with a grid walkway on top. Any release during transfer would go direct to this water drainage gulley and to the River.

A condition has been included within the ESAP with regards to control of these wastes especially during transfer.

ENVIRONMENTAL NOISE EMISSIONS AND CONTROL

CCGT

Acoustic modelling was undertaken in 2013 to predict the noise impacts of both the construction and operational phases of the Mersin CCGT plant on surrounding receptors. The modelling uses the IMMI noise mapping model which is recognised internationally.

Construction Phase Noise Impacts

During the construction phase, the noise from construction activities is predicted to be 66.2dB LAeq at the nearest known receptor (located 170m from the site boundary in the Karaduvar Quarter). This noise level is below the national requirement of 70dB(A) stipulated by the Regulation on Assessment and Management of Environmental Noise (RAMEN). However, during the audit it was noticed that since the 2013 noise assessment, new housing has been built adjacent to the western boundary of the project site. This housing is reported to be domestic abuse shelters and not shown on any local development plan.

The current noise assessment and modelling shows construction noise at receptors over 110m away from the site to be within the 70dB(A) limit. The new housing is located within 110m of the site and therefore the predicted noise level at this location is above 70dB(A). The 2013 assessment did however adopt a very much worst case scenario whereby all construction activities were assumed to be operational at the same time on the site boundary. Prior to possible mitigation measures being considered it is suggested that the assessment is revised so as to predict the construction phase noise level at the new receptors assuming a more realistic scenario.

Operational Phase Noise Impacts

The impacts at the nearest sensitive receptor is predicted to be 32.9dBA (day & night) which is below both the local limits (RAMEN) and World Bank guidelines (55dBA day / 45dBA evening).

ESAP Action: As mentioned above this study must be reviewed taking into account the new sensitive receptor close to the west boundary of the site.

380kV Transmission Line

The EIA reports that there could be potential for construction noise and vibration impacts on nearby sensitive receptors, such as settlements along the OHL corridor. The nearest settlement to the project route is Ciftilik Quarter in Konya Province (some 114m from the project site).

These impacts have been calculated as being within national regulatory limits.

DELETERIOUS MATERIALS MANAGEMENT

ASBESTOS-CONTAINING MATERIALS (ACMS)

CCGT

It was reported that an asbestos survey had been undertaken prior to the current demolition process. However, this cannot be confirmed. It was reported that asbestos containing materials were not employed within the construction materials.

HEPPS

All the HEPPs are relatively newly constructed and no asbestos was observed during the site visits.

POLYCHLORINATED BIPHENYLS (PCBS)

CCGT

Not applicable. The site is under development. It was reported that any transformers installed as part of the CCGT plant will be modern, non-PCB containing units.

HEPPS

All of the HEPP sites have been constructed since 2009 and none of the transformers would contain oils which have PCBs present.

RADIOACTIVE SUBSTANCES

CCGT

Not applicable. The site is under development. It was reported that no radioactive substances shall be stored or used by the Mersin CCGT process.

HEPPS

No radiation sources identified or reported to be present at the HEPP sites.

SOILS, SURFACE AND GROUNDWATER CONTAMINATION

CCGT

The ESIA states that a site investigation was undertaken at the project site, involving 15 boreholes. The local geology was found to consist of quaternary aged alluvium. The stratigraphic profile of the site is as follows:

Table 6-5 Local Geology

DISTANCE FROM SURFACE (m)	DESCRIPTION
0.00-0.50	Vegetative soil
0.50-5.00	Light brown medium tight dense, silty-clay fine coarse grained gravels
5.00-10.00	Grey colour, medium tight dense, less silty-clay, sand and coarse grained gravels
10.00-15.00	Light yellow, tight-too tight dense, silty-clay, sandy, fine coarse grained gravels

The majority of the groundwater resources bear carstic features due to the formation of the rocks in the region. Groundwater was found at depths of 5-15m. The Delicay surface water body is located 800m east of the proposed site and is used for agricultural irrigation in Parmakkurdu, Pugkaracadag, and Hebilli villages in the North of Mersin.

As the overlying geological structures above the groundwater are sands and gravel, these would be considered a high percolating risk and afford limited protection to groundwater, therefore increasing the risk profile of the site.

Annex M of the ESIA provides the report detailing the geological and geotechnical profile of the project site. However, no information on ground contamination is available. In Turkey, there are additional requirements for activities of potentially polluted sites as discussed below.

The Regulation for Soil Pollution Control and Point Source Polluted sites, published in the official gazette dated 08.06.2010, effective from 14.06.2013 requires activities listed in Annex 2 Table 2 to fill the 'Preliminary Information Form' within the Polluted Site Information System. These sites are listed as 'potentially polluted sites'.

If after reviewing the Preliminary Information Form, the Authority concludes that the site is "suspicious polluted site" a Site Status and Risk Assessment Report must be prepared. If remediation is required, a Cleaning Planning and Assessment Report and Cleaning Application, Monitoring and Termination Report should be prepared and the site must be remediated and monitored accordingly.

In the case of the CCGT project site, since the previous use was for the purpose of " 40.1 the electricity generation, transmission and distribution" (which is listed in Annex 2 Table 2) the pollution indicator parameters are TOX, TPH, As , B, Ba, Cd, Cr, Cu, Hg, Mo, Pb, Sb, Se, Zn and the Regulation state that should the land change owners, the new owner is responsible for undertaking the above mentioned requirements.

ESAP Action: to undertake a site investigation to determine the soil and groundwater contamination and undertake any remedial work in accordance with the Regulation above.

HEPPS

All the HEPP sites visited were recently constructed and there were no visible signs of ground contamination.

Akfen Energy has been subject to a number of environmental penalties with regards to unauthorised dumping of construction wastes or wastewater discharge (See Section 8). These have led to fines being imposed upon them. At Yagmur the fine was with regards allowing a wastewater discharge to the receiving water. The concrete plinth below the surface water discharge point to the rear of the oil store does show evidence of oil staining but at the time of the visits there was no evidence of any current or recent emissions within the surface water drain or at the discharge point.

The other two penalties were at Doruk and Gelinkaya and were dues to excavation material spilled to the river bed. These were removed and the river bed was reported to have been rehabilitated, and no ongoing concerns were reported.

7 380KV ELECTRICAL TRANSMISSION LINE

7.1 INTRODUCTION

This section provides an overview of the key environmental impacts of the 380kV electrical transmission line. Following this section is a gap analysis for both CCGT and transmission line EIAs.

The CCGT's first gas turbine will be connected to the 154kV Mersin Thermal substation via a 154kV transmission line which is already in operation and located adjacent to the power plant. This line is outside the scope of this due diligence assessment and an ESAP action has been added to ensure that Akfen clarify this position by obtaining an official letter from the Turkish Electricity Transmission Compant (TEIAS) stipulating that the east-west line upgrade is not in any way associated with the construction of the power plant and that the CCGT development can fully operate irrespective of the upgrade of the East West transmission line.

The second gas turbine and steam turbine will be connected to the Mersin 380kV substation via a 380kV transmission line, approximately 12km from the power plant, before continuing onwards to the existing Eregli substation in the Konya Province. The complete length of the 380kV transmission line is 115km.

Both the 154kV and 380kV transmission lines are to be financed and operated by TEIAS and the project will be subject to TEIAS's policies and procedures. However, since the 380kV is considered directly associated to the operation of the CCGT, it has been considered as part of this due diligence assessment.

ESAP actions: Akfen to obtain written confirmation from TEIAS that the 154kV OHL being constructed is not directly associated to the CCGT project or the 380kV transmission line.

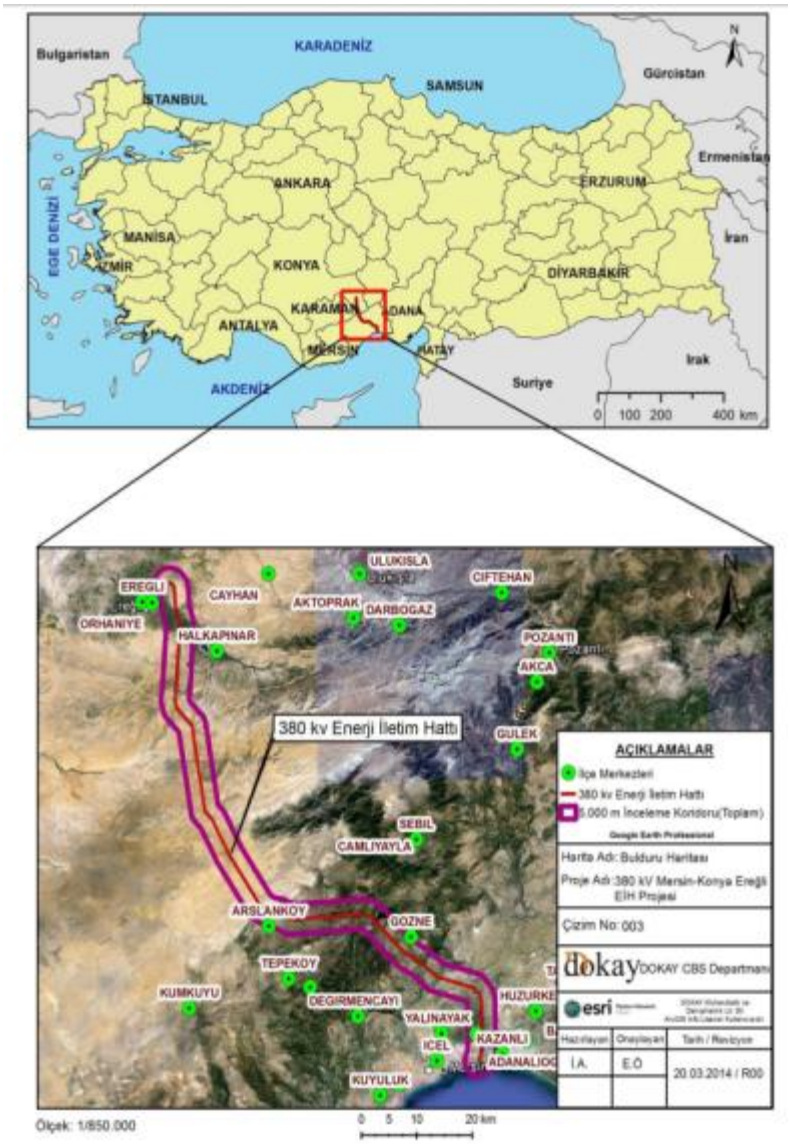
PROJECT STATUS

The EIA confirms that the proposed OHL route and location of transmission towers was approved by the TEIAS Transmissions Line Department on 7th March 2014. Maps and satalite images are provided. The EIA also mentions that a contruction working area extending 50m east and west of the line route for the subassembly of the transmission towers has been specified and it is this project area of influence that EIA has used as its study area.

SETTLEMENTS

The 115km electricity transmission line (OHL) to be constructed and operated by TEIAS, starts from the Akdeniz district located within the Mersin Province and continues through the districts of Toroslar and Erdemili, over the Ayranci district in the Karaman Province to Eregli, a district in the Konya Province (as shown in Figure 7-1).

Figure 7-1 Route of the 380kV Transmisson Line



An Environmental Master Plan is included within the EIA that shows the OHL route on maps with different layers (topographic, satellite view, cadastral, vegetation, use case etc.). The EIA reports that the closest settlement to the line is 114m in the Ciftlik Quarter of the Konya Province.

The following is a key for the maps below extracted from the EIA:

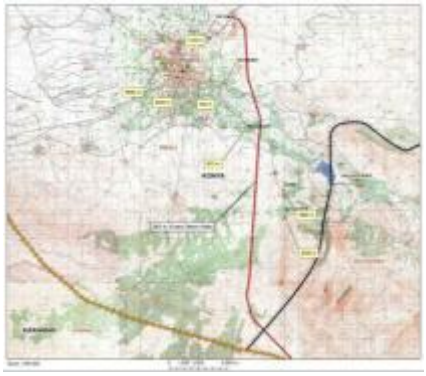
- OHL represented by a dashed blue line in Figures 2 and 3 and red line in Figures 4 and 5;
- Boxes in Figure 2 show the distance between the settlements and the OHL;
- Village centres are represented by yellow dots;
- Town centres are represented by green dots; and
- Dashed red line in Figures 2 and 3 represent the district boundary.

Figure 7-2 Settlements close to the project route in Mersin Province in Akdeniz District

Figure 7-3 Settlements close to the project route in Mersin Province in Erdemil District

Figure 7-4 Settlements close to the project route in Karaman Province Ayranci District

Figure 7-5 Settlements close to the Ayranci district of the Karaman Province



The proposed route for the 380kV OHL (partly renewed) from the Mersin CCGT to the Mersin 380kV substation was observed during the recent site visit using existing municipal roadways. It was not possible to follow the exact route. However, during this 12km section a number of commercial properties were observed.

EXPROPRIATION ACTIVITIES

The EIA explains that the expropriation of areas along the 115km OHL will be carried out through the conciliation committee established by TEIAS in line with Turkey's Expropriation Law No. 2942. The Supplementary Document to the EIA further mentions that TEIAS have prepared an 'Operational Procedures Document for Land Acquisition and Expropriation' in line with Turkish Legislation and the World Bank Operational Policy OP/BP 4.12 (Involuntary Resettlement).

274 transmission towers (132 carrier towers and 142 tension towers) are proposed along the route of the line. A construction working area of 50m either side of the line has been specified and based on this corridor the area to be expropriated for easement is ~5.681 million m2. The estimated area to be expropriated for transmission towers is 69,000m2.

Areas outside the transmission lines and remaining under the wire may continue to be used by the rightful owners in accordance with the horizontal and vertical distance thresholds defined in the Electrical Power Carrying Facilities Regulations.

The exact area to the expropriated will only be known once expropriation plans have been fully developed by TEIAS.

ESAP action: TEIAS to favour state-owned land over privately owned land for roads, tower locations, and corridor right-of-way. This should be integrated into expropriation plan development.

ESAP action: Develop a Land Acquisition and Compensation Framework to ensure that the IFC and EBRD requirements related to land acquisition and ecobnomic displacement are ntegrated into the project's processes for land expropriation.

EXPOSURE TO ELECTRIC AND MAGNETIC FIELDS

In Turkey the Regulation of Electric Power Installations No. 24246 (30.11.2000) stipulates minimum horizontal and vertical distances between buildings and the maximum deflection of the overhead conduction lines. For a 380kV transmission line, this is defined as 5m horizontal and values between 5m – 14m vertically (see table 4-5 below). The distance to a flat roofed construction accessible by anyone should be a minimum of 8.7m.

Table 7-6 Minimum Vertical Distances for Lines of a Specific Voltage

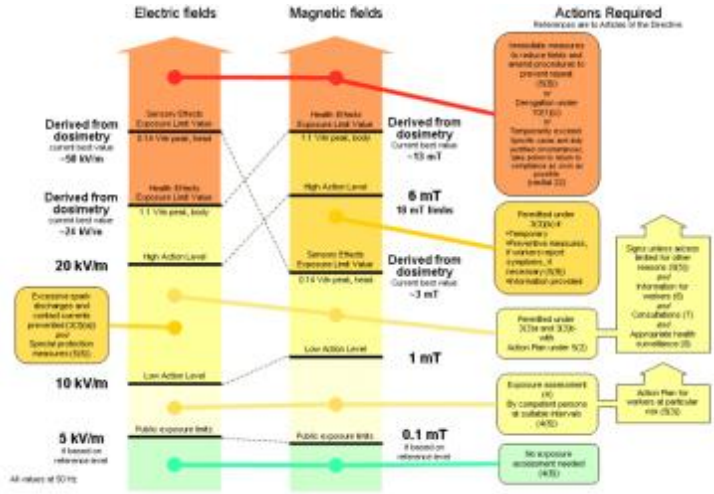
	VOLTAGE LEVEL (KV) MINIMUM VERTICAL DISTANCE (M)					
Location of lines	0-1 (1 incl.)	1-17.5	36	72.5	170	420
Streams without traffic (highest water level)	4.5	5	5	5	6	8.5
Meadows, fields, Pastures etc. which are eligible for vehicle passage	5	6	6	6	7	9.5
Village and City roads which are eligible for vehicle pass	5.5	7	7	7	8	12
Intercity highways	7	7	7	7	9	12
Trees	1.5	2.5	2.5	3	3	5
Flat-roofed constructions accessible by anyone	2.5	3.5	3.5	4	5	8.7
Inclined-roofed constructions not accessible by anyone	2	3	3	3.5	5	8.7
Power lines	2	2	2	2	2,5	4.5
Oil and natural gas pipelines	9	9	9	9	9	9
Streams and canals with traffic (highest water levels and highest point of transportation vehicles)	4,5	4,5	5	5	6	9
Communication lines	1	2,5	2,5	2,5	3,5	4,5
Non electric railways (to be measured from the track)	7	7	7	7	8	10,5
Motorways	14	14	14	14	14	14

The EIA confirms that the OHL will be erected in compliance with these distances. It continues to say that the electric and magnetic fields expected to be generated by the 380kV line would fall below the Public Exposure Limits set in a recent EU Directive on occupational exposure to EMFs (5kV/m and 0.1mT or 1000mG) (see Figure 7-7 below).

The proposed route for the 380kV OHL (partly renewed) from the Mersin CCGT to the Mersin 380kV substation was observed (as well as general coverage of the rural areas to the north) during the recent site visit using existing municipal roadways. It was not possible to follow the exact route. However, during this 12km section a small number of commercial properties were observed (See Photos 10 - 12)

ESAP Action: Ensure that the relevant horizontal / vertical distances as stipulated in the Regulation of Electric Power Installations No. 24246 (30.11.2000) are adhered to and within built up areas of Mersin, where the proposed refurbished line passes over commercial properties, undertake detailed calculations to determine the levels of expected EMF and build the results into the tower design. For these occupied buildings, the EMF should be measured post-operation to confirm the accuracy of the EMF calculations and confirm acceptability of impact levels. For any relevant occupied building along the route specific stakeholder engagement will be required prior to construction commencement.

Figure 7-7 Exposure Limit Values and Action Levels



ECOLOGY

FLORA

The EIA details the findings of an extensive field and literature study on flora and fauna along the project route which is reported to consist of farmland and orchards with surrounding ruderal vegetation, continuous riparian vegetation along the river banks, xerophytic shrubs, steppe, maquis shrubs, rocks, coniferous forest and degraded forest vegetation types.

No endemic plant species identified along the project route are listed in the IUCN (2014.3) red list. However, six species identified (see table below) are listed within the Red Data Book of Turkish Plants which was written in line with the IUCN red list criteria.

Table 7-8 Endemic, Rare and Endangered Plant Species

Table IV-19 Endemic, Rare and Endangered Plant Species

FAMILY	GENUS	SPECIES	TURKISH NAME	HABITAT	END.	PHYTOGEOGRAPHIC AREA	IUCN 2014.2	CITES	BERN
APIACEAE	*Eryngium*	*Eryngium polycephalum*	Boğadikeni	Steppes	End.	Iran-Turan	LR (lc)	-	-
BORAGINACEAE	*Onosma*	*Onosma isauricum*	Ernzik otu	Rocky Slopes, Moving Rocks, Pinus And Quercus Woodland, Prairie, and similar	End.	Iran-Turan	LR (lc)	-	-
CAMPANULACEAE	*Michauxia* LÂ HE RIT.	*Michauxia thyrsoidea*		Cliffs, Rocky Slopes	End.	E. Mediterranean	LR (cd)	-	-
PAPAVERACEAE	*Papaver*	*Papaver pilosum* supsp. *glabriseplalum*	Gelincik	Between Rocks	End.	E. Mediterranean (Mountain)	VU	-	-
POLYGONACEAE	*Polygala*	*Polygala inexpectata*		Steppes	End.	Iran-Turan	EN	-	-
RHAMNACEAE	*Rhamnus*	*Rhamnus petiolaris*	Cehri	Dry Slopes, Rocks	End.	Unknown	LR (lc)	-	-

Source: http://turkherb.ibu.edu.tr;
Baytop, T., Türkçe Bitki Adları Sözlüğü 1997,
Tuzlacı, E., Türkiye Bitkileri Sözlüğü 2006,
P. H. Davis Flora of Turkey and the East Aegean Islands, Vol. 1-10, 1965-1988

LR(lc): Low Risk/Least Concern – 'Taxa do neither depend on protection, nor are they likely to be under risk in the future'

VU: Vulnerable – 'Taxa are not yet under serious threat, but are likely to become endangered in the medium term

EN: Endangered –'Taxa are not yet under serious treat, but may become critically endangered in the future.

The EIA reports that the following mitigation measures will be implemented to safeguard protected flora species:

- Flora in these areas has to be removed, stored under suitable conditions and used again once construction is completed;
- Excavations must comply with the Construction and Demolition Waste Control Regulation and Wetland Conservation Regulations; and
- Turkish Ministry of Environment and Urbanisation must be consulted during site preparation.

Further ESAP actions have been included around flora protection (see gap analysis) in Section 8.

FAUNA

The EIA acknowledges that the OHL is routed within the vicinity of significant natural sites such as the Bolkar Mountains, Mersin Hills as well as wildlife conservation areas and extensive field and literature studies have identified amphibians, reptiles, birds and mammals. Their endemism status, hazard categories and conservation status has been determined in accordance with the Criteria for International Conventions such as CITES, the IUCN Red List and the Bern Convention. The findings are summarised below.

Table 7-9 Endemic, Rare and Endangered Species

FAUNA SPECIES	DD (DATA DEFICIENT)	LC (LEAST CONCERN)	NT (NEAR THREATENED)	VU (VULNERABLE)	CR (CRITICALLY ENDANGERED)	EN (ENDANGERED)
Mammalian	1	25	5	1	-	-
Amphibian	-	8	1	-	1	-
Reptilian	-	36	1	-	-	-
Bird	-	274	7	3	-	1

Fauna listed within the Bern Convention Appendix II and III have also been identified along the project route.

The EIA reports that the following mitigation measures will be implemented to safeguard protected fauna species:

- Conduct construction activities outside of breeding seasons;
- Restore habitat to original state (as far as practicable) post construction;
- Install bird diverters on transmission towers and warning spheres along the lines;
- Compliance with the protective measures of article 6 and 7 of the Bern Convention;
- Training of construction staff in how to prevent habitat damage; and
- Use of noise barriers and select low noise equipment.

BIRDS

Turkey lies within important bird migration routes. The shortest distance between Eastern Europe and Africa is over Turkey. Soaring birds in particular pass over the Bosphorus, the Dardanelles, Arhavi and Borcka/Atvin as well as Belen/Hatay.

The project route is located along the Hatay migration route and the EIA reports that bird diverters and warning spheres will be installed as part of the construction phase.

ESAP Action: Design and install conductors and isolators to avoid any electrocution hazard by following best engineering practice and technical recommendations given in the i) Recommendations of the Bern Convention no. 110/2004 ii) Resolution no. 7.4 of the (Bonn) Convention on the protection of migratory species iii) Recommendations of the working group Birdlife International for birds and transmission lines.

Sections of the OHL associated with a potential risk of bird collision should be marked with bird diverters. In addition, in these areas, the phase conductors should be fitted with fluorescent tubes (bird lights) to reduce the risk of nocturnal collisions.

A post construction monitoring programme along particular sections of diverter-marked and unmarked transmission line should take place to assess the effectiveness of the mitigation measures. The monitoring should be carried out during the first three years of operation and be more intensive during the breeding/fledging period and during the migration period.

Reduce the risk of bird collision with the operational transmission line by selecting tower locations in relation to existing topography, vegetation or woodlands e.g. transmission towers below the height of nearby trees.

PROTECTED AREAS

As part of the audit the project route was reviewed to see if it fell within any of the following designated protected areas:

- Turkish Special Environmental Protection zones;
- RAMSAR sites;
- Important Bird Areas (IBA); and
- Emerald Network Sites.

TURKISH SPECIAL ENVIRONMENTAL PROTECTION ZONES

The route is not located in Special Environmental Protection zones as shown in the map below.

RAMSAR SITES

The EIA reports that no area in compliance with the specified areas of the Wetlands Conservation Regulation enacted by being published in the Official Gazette No. 25818 (17.05.2005) as well as the Convention on Wetlands of International Importance, especially as Waterfowl Habitat (RAMSAR Convention) enacted by being published in the Official Gazette No.21937 (17.05.1994) is located along the project route. This can be confirmed by our review of the area below.

IMPORTANT BIRD AREAS (IBA)

The project route crosses an Important Bird Area (IBA) in the Bolkar Mountains. Details of the site are captured within the EIA as a Key Biodiversity Area (KBA) which describes it as a mountain belt located between the eastern Mediterranean Sea and Central Anatolian Plateau. Along with the endangered Taurus Frog and 300 plant species that are endemic to Turkey, they are home to protected birds, including Lanner Falcon, Bearded Vulture, White Scavenger Vulture, Black Kite and Caspian Snowcock.

In addition to the bearded vulture listed in the EIA another IBA trigger species that has the IUCN category of Near Threatened is the Krueper's Nuthatch (Sitta Krueperi).

A protected area for birds designated as an IBA is located in the Eregli Plain. However, from the maps available, the transmission line ends just before this area.

Site description: A complex of shallow marshes, reedbeds (Phragmites), freshwater lakes and salt-steppe situated in the Ereðli plain and bordered by mountains to the north and south. The lakes cover 6,400 ha at their maximum extent and are fed by drainage channels. The area also includes surrounding agricultural land, parts of which flood during winter. Human activities include crop production, sheep-grazing and reed-cutting (`Other' land-use).

Key Biodiversity: The IBA is very important for a range of breeding waterbirds, although numbers have fallen in recent years due to low water-levels. Winter counts that have produced up to 30,000 waterbirds in the past have also shown a large decline, again due to low water-levels and the effects of severe winters.

EMERALD NETWORK SITES

Turkey has a limited profile in the Emerald Network. The OHL project route does not fall into any designated Emerald Network sites or candidate sites.

8 EIA GAP ANALYSIS

This section contains a gap analysis for both the CCGT and 380kV electricity transmission line.

8.1 380KV ELECTRICITY TRANSMISSION LINE

A gap analysis has been conducted against the EU EIA Directive, specific EBRD requirements and best practice. The key summary findings are presented in table 8-1 below.

Table 8-1 Environmental and Social Impacts and Mitigation Identified in ESIA

Environmental Resource	Impacts identified in the EIA	Mitigation measures identified in the EIA	Recommendation's
Construction Period			
Climate and Air Quality	The EIA includes an initial screening for dust impacts (from excavating transmission tower feet) concluding that no detailed modelling is required. Air impacts from construction vehicles are estimated using emission factors from the EPA. The results are found to be below the thresholds defined in the IAPCR's Calculation of the Air Pollution Contribution Value of Construction Works enacted in the Official Gazette no. 27277 (08.08.2009).	➢ To reduce the level of dust emissions during the construction phase to a minimum, all work will be conducted under controlled conditions, taking seasonal conditions into account. Transportation roads and working sites will be watered. During excavation works, efforts will be made not to stir up dust. ➢ Exhaust emissions from vehicles used during construction will be monitored.	➢ Visual dust monitoring should be undertaken daily during construction, and dust dampening measures taken if required. ➢ A complaints hotline should be established for the duration of the works and the number should be displayed at appropriate locations near the scheme.
Noise and Vibration	The EIA reports that there is potential for construction noise and vibration impacts on nearby sensitive receptors, such as settlements along the OHL corridor. The nearest settlement to the project route is Ciftilik Quarter in Konya Province (some 114m from the project site).	Construction should not take place at night.	➢ Restriction of periods of operation should extend to include weekends unless specifically pre-agreed with local authorities and local residents. ➢ Notification and engagement with all residents within 200 metres of any construction location. ➢ Hearing protection should be provided to construction works exposed to 85 dBA and above. No workers should be exposed to noise levels over 87dBA.

Environmental Resource	Impacts identified in the EIA	Mitigation measures identified in the EIA	Recommendation's
	These impacts have been calculated as being within national regulatory limits.		
Water Supply	The EIA reports that water use will be a combination of drinking water (carboys) and dust suppression (tanked to site). An estimation of quantities has been provided. No impacts identified.	None specified.	N/A
Surface Water	The EIA identifies the surface water bodies in the Mersin, Karaman and Konya Provinces, together with an indication of their use (for drinking water, irrigation etc.). It also details the findings of a consultation undertaken with the DSi General Directorate of State Hydraulic Works to identify which existing and developing irrigation projects, dams etc. are located along the transmission line route. The DSI have 27 regional directorates in Turkey and the OHL route is located in the 4th and 6th regional directorates.	➢ Defined protected zones within the vicinity of surface water bodies have been identified, in which no transmission tower will be erected. ➢ The location of the transmission towers have considered the location of the surface water bodies ➢ The minimum vertical distance between the ground and the maximum deflection of the overhead conduction lines at stream crossings shall comply with the requirements of the Electrical Power Plants Regulation ➢ The height of the OHL passing over streams shall be at least 10m to allow enough clearance for cleaning machines (boom lifts) ➢ A protocol will be signed with the regional DSi Directorate in the event a transmission line is located on a DSi service road ➢ The water spring as well as the stream course shall be protected. ➢ Local irrigation canals shall be protected	➢ Construction Best Practice for the storage of materials and clear-up of any accidental spillages. ➢ Ensure the requirements of the DSI General Directorate of State Hydraulic Works are adhered to.

Environmental Resource	Impacts identified in the EIA	Mitigation measures identified in the EIA	Recommendation's
	They have given their permission in principle as long as certain site specific requirements detailed in their letter are complied with.	Requirements outlines in the letter from the DSi includes: ➢ OHL poles should not be placed on DSI service roads. In the event that they are, an emergency protocol should be signed with Adana 6th regional directorate of DSI and the easement of the land should be transferred and the poles should be constructed avoiding any disturbance in transportation. ➢ The OHL route should be constructed around the DSI irrigation projects Aslanköy, Güzelyayla and Gözne. In case of an emergency the maximum water levels of 1092.05 m for Gözne Pond and 920.08 m for Güzelyayla Pond should be taken into consideration for the elevation of OHL. ➢ For the rivers with high flood risks the poles should be placed appropriately allowing access of the heavy duty vehicles to the river bed to prevent the flood. ➢ The OHL route goes through the Eregli İvriz irrigation area. The water structures in that area and the irrigation system should not be damaged and the necessary technical information should be obtained from Konya 4th regional directorate of DSI.	
Groundwater	The EIA identifies groundwater and thermal sources of water within the Mersin, Karaman and Konya Provinces.	None specified.	N/A

Environmental Resource	Impacts identified in the EIA	Mitigation measures identified in the EIA	Recommendation's
	The EIA includes the result of a consultation with the Mine Works General Directorate (MIGEM) to assess impact on existing mine, mine exploration, geothermal source, mineral water exploration licenses. No impacts were identified.		
Wastewater Management	The EIA estimates the approximate amount of domestic waste water generated by construction staff.	In the case a construction site is established, waste water will be collected in mobile water tight tanks. Disposal by transport to the nearest municipality will be in compliance with the Water Pollution Control Regulation.	N/A
Geology and Land	The EIA estimates the amount of vegetative top soil that will need to be stripped and the amount of soil excavated.	The removed vegetative top soil and excavated sub soil will be stored on site. Once the tower feet are installed the sub soil will be used to fill around the feet followed by relaying of the vegetative top soil. Any over-excavation will be disposed of in the nearest municipality.	Mitigation measures for both activities should be formalised.
	Another impact to land identified by the EIA relates to the building of service roads.	New service roads will be limited with a route causing the least damage, avoiding areas of visual value and areas with surface water. All necessary local permits will be obtained.	N/A

Environmental Resource	Impacts identified in the EIA	Mitigation measures identified in the EIA	Recommendation's
Ecosystems and Flora	Noise, air quality, habitat severance and disturbance impacts to flora have been considered by the EIA along the route of the transmission line. No endemic flora species are found in the IUCN red list. However some are listed in the Red Data Book of Turkish Plants	➢ Flora in these areas has to be removed, stored under suitable conditions and used again once construction is completed. ➢ Excavations must comply with the Construction and Demolition Waste Control Regulation and Wetland Conservation Regulations ➢ Turkish Ministry of Environment and Urbanisation must be consulted during site preparation	➢ An ecologist should undertake pre-construction surveys to check for the presence of protected species. Any particularly sensitive habitats should be identified and fenced off prior to the commencement of construction. ➢ Vegetation clearance should not be undertaken during the bird breeding season. ➢ Design and install conductors and isolators to avoid any electrocution hazard by following best engineering practice and technical recommendations given in the i) Recommendations of the Bern Convention no. 110/2004 ii) Resolution no. 7.4 of the (Bonn) Convention on the protection of migratory species iii) Recommendations of the working group Birdlife International for birds and transmission lines. ➢ Sections of the OHL associated with a potential risk of bird collision should be marked with bird diverters. In addition, in these areas, the phase conductors should be fitted with fluorescent tubes (bird lights) to reduce the risk of nocturnal collisions. ➢ A post construction monitoring programme along particular sections of diverter-marked and unmarked transmission line should take place to assess the effectiveness of the mitigation measures. The monitoring should be carried out during the first three years of operation and be more intensive during the
Fauna	Noise, air quality, habitat severance and disturbance impacts to fauna have been considered by the EIA along the route of the transmission line. A number of mammalian, amphibian and reptilian species found in the IUCN red list were identified during the field study. Some birds identified during the field study fall under categories in the IUCN red list. Some species are listed in the Bern Convention Appendix II and III	➢ Conduct construction activities outside of breeding seasons ➢ Restore habitat to original state (as far as practicable) post construction ➢ Install bird 'scarers' on transmission towers and warning spheres along the lines ➢ Must comply with the protective measures of article 6 and 7 of the Bern Convention. ➢ Train construction staff in how to prevent habitat damage ➢ Use noise barriers and select low noise equipment	

Environmental Resource	Impacts identified in the EIA	Mitigation measures identified in the EIA	Recommendation's
			breeding/fledging period and during the migration period. ➢ Reduce the risk of bird collision with the operational transmission line by selecting tower locations in relation to existing topography, vegetation or woodlands e.g. transmission towers below the height of nearby trees.
Geohazards / Seismic	The potential for Rockfalls, floods, landslides, earthquakes and metamorphism and magmatism along the route of the transmission line has been considered by the EIA.	➢ Micro tremor measurements will be conducted along the project route ➢ Undertake earthquake hazard risk analysis evaluating parameters such as ground vibration periods and geological and geotechnical characteristics ➢ The severity of ground shaking and the liquefaction hazard will be assessed. ➢ Implement an Emergency Response Plan	➢ Ensure construction staff is trained in the Emergency Response Plan. ➢ Ensure that the Detailed Design contractor takes account of the seismic profile of the area in relation to the tower design, and the need to avoid collapse.
Waste Management	The EIA considers general domestic waste and excavation waste.	➢ Sealed containers will be installed on site ➢ Disposal to existing municipal waste management facilities, landfills for mineral materials or recycling facilities. ➢ The EIA reports that excavation waste will be limited as vegetative top soil and sub soil will be returned. Any surplus will be taken to the nearest municipality for appropriate disposal.	Ensure construction staff is trained to dispose of waste appropriately.
Cultural Resources	➢ The EIA states that although the overall Provinces through which the OHL is routed have	If cultural property that needs to be protected under the definition of law No. 2323 is found during the site preparation or construction phase. The nearest civilian authority or museum director	➢ Formally document the chance/find procedure to be used during construction. ➢ The assessment should consider whether there are areas with a higher potential for

Environmental Resource	Impacts identified in the EIA	Mitigation measures identified in the EIA	Recommendation's
	significant cultural and archaeological heritage. Nothing of significance is located on the proposed route. ➢ Potential destruction of previously undiscovered assets during ground works.	will be notified.	undiscovered archaeology to be present, where an archaeological watching brief should be used. ➢ Review the report from the Adana Cultural Heritage Conservation District Board on the area investigated in Mersin and implement mitigation as necessary.
Visual Landscape	Not considered in ESIA	New services roads to avoid areas of visual value	A landscape and visual impact assessment should be completed. The visual assessment would look at the effect of visual change on people whilst the landscape assessment would focus on the impact of landscape change as an environmental resource.
Electric and magnetic fields	The EIA considers potential impact on staff involved in the installation.	Installation will be undertaken in accordance with Regulations on Enterprise Safety, article 59, Entering Power Installations and article 60, Working in Power Installations.	N/A
Operational Period			
Climate and Air Quality	Not considered in ESIA	None specified	N/A
Noise and Vibration	The EIA reports that noise from the corona discharge during operation is expected but not predicted to be significant.	None specified	N/A
Water Supply	None identified.	None specified.	N/A
Surface Water	None identified.	None specified.	N/A
Groundwater	None identified.	None specified.	N/A
Wastewater Management	None	None specified.	N/A
Geology and Land	Following the reinstatement of	None specified.	N/A

Environmental Resource	Impacts identified in the EIA	Mitigation measures identified in the EIA	Recommendation's
	all bare areas of ground during construction no impacts are anticipated.		
Ecosystems and Flora & Fauna	Impacts on birds	Install birdscarers on transmission towers and warning spheres along the lines	A post construction monitoring programme along particular sections of diverter-marked and unmarked transmission line should take place to assess the effectiveness of the mitigation measures. The monitoring should be carried out during the first three years of operation and be more intensive during the breeding/fledging period and during the migration period.
Geohazards / Seismic	The potential for Rockfalls, floods, landslides, earthquakes and metamorphism and magmatism along the route of the transmission line has been considered by the EIA.	Implement an Emergency Response Plan	N/A
Waste Management	The EIA discusses limited waste generation during operation, relating to maintenance activities. Timeworn or damaged isolators and dilated or torn wires.	TEIAS to manage within existing waste management processes.	N/A
Cultural Resources	None identified.	None specified.	N/A
Visual landscape	Not considered in ESIA	None specified.	N/A
Electric and magnetic fields	The EIA considers the effect of the electric and magnetic field strength of the OHL, compares national and international	Lines will be erected in line with: ➢ Regulation on taking the Necessary Measures to Protect the Environment and Public from Negative Effects of Non-Ionizing	Ensure that the relevant horizontal / vertical distances as stipulated in the Regulation of Electric Power Installations No. 24246 (30.11.2000) are adhered to and within built up

Environmental Resource	Impacts identified in the EIA	Mitigation measures identified in the EIA	Recommendation's
	standards and specifies mitigation measures.	Radiation; and ➢ Construction permits stipulating the allowable distances to settlements, roads and facilities and vertical distances between the ground and the maximum deflection of the overhead conduction lines (Regulation of Electric Power Installations).	areas of Mersin, where the proposed refurbished line passes over commercial properties, undertake detailed calculations to determine the levels of expected EMF and build the results into the tower design.

8.2 ASSESSMENT AGAINST SPECIFIC EIA REQUIREMENTS

A summary of the compliance status against the EU EIA Directive Annex III is presented in Table 8-2 below.

Table 8-2 Compliance with the EU EIA Directive

	Requirement of EU EIA Directive Annex III	Compliance Assessment
1	Description of the project.	A description of the project is provided in the existing EIA/supplementary document with comprehensive mapping of the proposed corridor.
	Description of the physical characteristics of the whole project and the land-use requirements during the construction and operational phases,	The project description covers the: • Basic concept • Technical concept • Construction approach but not technology. • Limited information on the operating regime
	Description of the main characteristics of the production processes, for instance, nature and quantity of the materials used,	Limited materials will be consumed during the construction and operational phases. Drinking and industry water is estimated.
	An estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc.) resulting from the operation of the proposed project.	It provides some estimates, by type and quantity, of expected residues and emissions (water, air, noise, etc.) resulting from the construction of the proposed project. Minimal emissions are expected during the operational phase.
2	Where appropriate, an outline of the main alternatives studied by the developer and an indication of the main reasons for his choice, taking into account the environmental effects.	The EIA states that as part of the process of obtaining the relevant approvals from the TEIAS Transmissions Line Department, a number of factors including protected areas, geographic conditions and use of existing roads needed to be considered.
3	A description of the aspects of the environment likely to be significantly affected by the proposed project, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the inter-relationship between the above factors.	Population: The EIA discussed the main regions through which the project will run through, providing demographic profiles and information on social infrastructure. Fauna and Flora: The EIA provides sufficient information on terrestrial and aquatic ecosystems and protected species. Soil: The EIA includes a map of geology along the route of the transmission line and provides information on seismology and geohazards. Water: The EIA provides information on the existing hydrology and hydrogeology. Air and Climatic factors: The EIA does not describe the existing meteorology and climate. Material assets including architectural and archaeological heritage and landscape: The EIA describes protected natural and historical landmarks. Inter-relationship between above factors: is considered in places.
4	A description (1) of the likely significant	The EIA sets out an assessment of the likely significant

	effects of the proposed project on the environment resulting from: the existence of the project, the use of natural resources, the emission of pollutants, the creation of nuisances and the elimination of waste; (2) This description should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the project.	effects during construction and operation of the proposed transmission line project. Population: Impacts of traffic, especially during the construction stage is not fully identified but not considered to be significant given the limited natural of the construction work. Flora & Fauna: Noise, air quality, habitat severance and disturbance impacts to flora have been considered along the route of the transmission line. Soil: The amount of vegetative top soil that will need to be stripped and the amount of soil excavated has been estimated. The Impact of building additional service roads has been considered. Water: Water use will be a combination of drinking water (carboys) and dust suppression (tanked to site). An estimation of quantities has been provided. Air: Potential sources of emissions and dust problems during construction are identified. Climatic factors: Greenhouse gas emission and issues of impacts on the microclimate are not identified Cultural heritage assets: archaeological heritage assets are identified. Landscape: Landscape impacts are not considered. Positive effects are also listed, such as the secured energy supply to the regions the line runs through and economic benefits. The existing EIA generally describes those impacts with short/long-term effects but each impact is not categorised as being direct or indirect; short, medium or long term; or permanent or temporary. Cumulative effects over the environment components are not addressed and quantified within EIA.
	The description by the developer of the forecasting methods used to assess the effects on the environment.	The impact assessment methodology is transparent.
5	A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.	The EIA sets out the proposed mitigation and offsetting measures during construction and operation. Population: There is a no description of the proposed location of access roads and site compounds. There is no proposed traffic management plan. Further mitigation is required for impacts on the local population. Fauna and Flora: Further mitigation measures to protected species are required. Soil: Mitigation measures for the removal of vegetative top soil and sub soil should be formalised. Water: No further measures are required. Air: Further mitigation measures are required. Climatic factors: Greenhouse gas emission and issues of impacts on the microclimate are not considered. Cultural heritage: An assessment should consider

		whether there are areas with a higher potential for undiscovered archaeology to be present, where an archaeological watching brief should be used. Landscape: Not assessed a landscape and visual impact assessment should be completed.
6	A non-technical summary of the information provided under the above headings.	There is a Non-Technical Summary.
7	An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the developer in compiling the required information.	Not provided.

Overall, after the implementation of the ESAP conditions, the EIA general approach and content would align with EIA requirements in the EU as required by EBRD.

8.3 MERSIN CCGT

Table 8-3 Environmental and Social Impacts and Mitigation Identified in ESIA

Environmental Resource	Impacts identified in the EIA	Mitigation measures identified in the EIA	Recommendation's
Construction Period			
Climate and Air Quality	The air quality modelling undertaken for the EIA focuses on the operational CCGT and does not consider air impacts during the construction phase. An estimation of air impacts from the use of construction vehicles based on USEPA emissions factors is provided in the EIA. This determines that predicted emissions from construction are low enough not to warrant being modelled. The sensitive receptor (new domestic abuse shelter) on the west boundary is not considered in the modelling.	The emissions from constructions vehicles should be measured by authorised organisations.	➢ Air quality impacts arising from the construction of the CCGT plant should be estimated and the new sensitive receptor on the west boundary should be included within the assessment. ➢ Visual dust monitoring should be undertaken daily during construction, and dust dampening measures taken if required. ➢ A complaints hotline should be established for the duration of the works and the number should be displayed at appropriate locations near the scheme.
Noise and Vibration	The EIA identifies a potential for construction noise and vibration impacts on nearby sensitive receptors, such as residential properties. Construction noise impacts were found to be within national limits at the two sensitive receptors	Monthly noise measurements shall be conducted at the project site and the nearest sensitive receptor to ensure levels do not exceed 3dBA above background. The contractor will implement appropriate mitigation in the event that it does exceed.	➢ Update the modelling to include recently built housing adjacent to the west boundary. ➢ Hearing protection should be provided to construction works exposed to 85 dBA and above. No workers should be exposed to noise levels over 87dBA.

Environmental Resource	Impacts identified in the EIA	Mitigation measures identified in the EIA	Recommendation's
	assessed. Limits are comparable with EU standards. Occupational noise impacts on workers have not been considered.		
Water Supply	The EIA includes an estimation of the water required for the project. No impacts identified.	None specified.	N/A
Surface Water	The main surface water body in the region is the Delicay, located 800m from the project site. Potential impacts from soil and liquid waste and excavation activities are discussed in brief by the EIA. One sample of water was analysed in 2013 showing exceedances across a number of parameters. The water body is classified as over wasted.	Surface water in the vicinity of the project will be monitored as a precaution.	➢ Construction Best Practice for the storage of materials and clear-up of any accidental spillages. ➢ Further details on specific actions to prevent surface water impacts are needed.
Groundwater	The EIA reports that the region is abundant in groundwater resources and information from the DSi around use and annual yield is provided. No impacts identified.	General measures in compliance with national regulations will be implemented to prevent impact from contaminants on site.	Construction Best Practice for the storage of materials and clear-up of any accidental spillages.
Wastewater Management	The EIA reports that domestic waste water from staff involved	Compliance to MESKI regulations on discharge to waste water to sewerage system.	N/A

Environmental Resource	Impacts identified in the EIA	Mitigation measures identified in the EIA	Recommendation's
	in the construction will be discharged directly into the local sewerage network.		
Geology and Land	A geologic and geotechnical report has been compiled. Information reported in the ESIA does not specify any impact outside of the project site.	None specified.	Undertake a contaminated land survey to benchmark site soil conditions and identify any necessary remediation prior to construction and/or necessary construction permits that need to be in place.
Ecosystems and Flora & Fauna	Air quality, noise, cooling water discharge and vehicular traffic impacts are considered within the EIA. The report confirms that no flora under the protection of international agreements is found on the project site. Some fauna (reptiles) under protection regimes were identified on the site during the field study.	All precautions required for amphibians, reptilians, birds and mammalians of which risk categories, protection status and endemism conditions are determined in national and international agreements.	➢ Precautions need to be further defined. ➢ An ecologist should undertake pre-construction surveys to check for the presence of protected species. Any particularly sensitive habitats should be identified and fenced off prior to the commencement of construction.
Geohazards / Seismic	Earthquakes, tsunami, liquefaction potential and flooding have been considered and discussed in some detail within the EIA. ➢ The site is located in the third degree earthquake zone.	Must comply with the Regulations on Constructions in Disaster Areas	N/A

Environmental Resource	Impacts identified in the EIA	Mitigation measures identified in the EIA	Recommendation's
	➢ Modelling confirms no risk from a tsunami. ➢ No risks from liquefaction potential ➢ No flood risk		
Waste Management	The EIA reports that where possible waste will be recycled or disposed of in line with local regulatory requirements. A table of expected wastes and their EWC codes is provided. Excavation material will be used as filling material, landscaping.	➢ Compliance with relevant waste duty of care Regulations. ➢ A waste management plan will be developed for the construction phase detailing collection, storage, treatment and /or disposal methods.	Ensure staff is trained to segregate and appropriately dispose of waste.
Cultural Resources	The cultural heritage of the surrounding area is discussed within the EIA. However no impacts are identified as no protected cultural assets are located within the project area.	➢ Adana Directorate of Regional Board of Protection of Cultural Assets was consulted ➢ All works shall be carried out in line with the Code of Protection of Cultural and Natural Properties	N/A
Visual Landscape	Not considered in ESIA	None specified.	N/A
Operational Period			
Climate and Air Quality	The ground level concentration at a number of sensitive receptors was assessed in an air quality modelling study within the EIA and these included nearby settlements. Predicted emission impacts (for NOx and	Continuous emissions monitoring (CEMS) for stack emissions will be installed.	Update the modelling for the new sensitive residential receptor on the west boundary.

Environmental Resource	Impacts identified in the EIA	Mitigation measures identified in the EIA	Recommendation's
	CO) were found to be within the limit values. The newly built housing on the west boundary has not been included.		
Noise and Vibration	The EIA states that there is potential for operational noise and vibration impacts on nearby sensitive receptors, particularly residential properties. The impacts at the nearest sensitive receptor is predicted to be 32.9dBA (day & night) which is below both the local limits (RAMEN) and World Bank guidelines (55dBA day / 45dBA evening).	Selection of suitable equipment, noise absorbers and isolation.	➢ Update the modelling to include recently built housing adjacent to the west boundary. ➢ The background noise levels at the sensitive receptors should be included within the report. At present only LAeq levels are provided.
Water Supply	Potable and cooling water requirements for operation have been estimated in the EIA. No impacts have been identified.	None specified.	N/A
Surface Water	No specific impacts identified within the EIA.	Measures to prevent impact from contaminants on site will be taken.	➢ Further details on specific actions to prevent surface water impacts are needed. ➢ Construction Best Practice for the storage of materials and clear-up of any accidental spillages.
Groundwater	No specific impacts identified within the EIA.	Measures to prevent impact from contaminants on site will be taken.	➢ Further details on specific actions to prevent impacts are needed.

Environmental Resource	Impacts identified in the EIA	Mitigation measures identified in the EIA	Recommendation's
			➢ Construction Best Practice for the storage of materials and clear-up of any accidental spillages.
Wastewater Management	The EIA confirms that domestic waste water will be discharged to the MESKI waste water treatment plant.	Permit compliance required.	Specify the need for permits.
Geology and Land	No impacts are anticipated.	None specified.	N/A
Ecosystems and Flora & Fauna	Air quality, noise, cooling water discharge and vehicular traffic impacts are considered.	Following commissioning an environmental monitoring programme shall be implemented.	
Geohazards / Seismic	Earthquakes, tsunami, liquefaction potential and flooding have been considered. ➢ The site is located in the third degree earthquake zone. ➢ Modelling confirms no risk from a tsunami. ➢ No risks from liquefaction potential ➢ No flood risk	None specified.	N/A
Waste Management	The EIA estimates the type and amount of waste that will be generated during operation e.g. medical waste from on-site infirmary and packaging waste.	Compliance with relevant waste duty of care Regulations.	N/A
Cultural Resources	Not considered in ESIA.	None specified.	N/A
Visual landscape	No impact.	➢ Plant species suited to the region will be selected for landscaping	N/A

Environmental Resource	Impacts identified in the EIA	Mitigation measures identified in the EIA	Recommendation's
		➢ Plantation for stabilising excavations and embankment slopes shall provide environmental landscaping	

8.4 ASSESSMENT AGAINST SPECIFIC EIA REQUIREMENTS

A summary of the compliance status against the EU EIA Directive Annex III is presented in Table 8 below.

Table 8-4 Complaince with the EU EIA Directive

	Requirement of EU EIA Directive Annex III	Compliance Assessment
1	Description of the project.	A description of the project is provided in the existing ESIA.
	Description of the physical characteristics of the whole project and the land-use requirements during the construction and operational phases,	The project description covers the: • EIA History of the project • Basic concept • Technical concept • Construction approach but not technology • Limited information on the operating regime
	Description of the main characteristics of the production processes, for instance, nature and quantity of the materials used,	Included within the existing EIA and Supplementary Document for ESIA Study.
	An estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc.) resulting from the operation of the proposed project.	Estimates of relevant emissions and residues by type and quantity are provided.
2	Where appropriate, an outline of the main alternatives studied by the developer and an indication of the main reasons for his choice, taking into account the environmental effects.	Alternatives to the site location were not considered as the new plant will replace an existing thermal plant that has been sat idle for 15 years. Some alternative technology options are briefly listed but discounted in favour of CCGT on the basis of air emissions and energy efficiency.
3	A description of the aspects of the environment likely to be significantly affected by the proposed project, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the inter-relationship between the above factors.	Population: Local settlements are identified and included within impact assessments. Sufficient information on demographic of the area, social infrastructure and economy is provided. Fauna and Flora: The EIA/supplementary document provides sufficient information on terrestrial and aquatic ecosystems and protected species. Soil: The EIA/supplementary document describes the existing geology and provides information on seismology and other geo-hazards. However, no information on the presence or otherwise of land contamination at the project site is provided. Water: The EIA provides information on the existing hydrology and hydrogeology of the area and pollution sources and water protection are described. Air and Climatic factors: The EIA/supplementary

		document describes the existing meteorology and climate and includes the results of a detailed air quality modelling study. Material assets including architectural and archaeological heritage and landscape: The EIA/supplementary document describes protected natural and historical landmarks. Inter-relationship between above factors is considered in places.
4	A description (1) of the likely significant effects of the proposed project on the environment resulting from: the existence of the project, the use of natural resources, the emission of pollutants, the creation of nuisances and the elimination of waste; (1) This description should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the project.	The EIA/supplementary document sets out an assessment of the likely significant effects during construction and operation of the Mersin CCGT plant. Population: Impacts of traffic, especially during construction and operational stages are not identified. Fora and Fauna: Impacts are sufficiently identified Soil: geology and geotechnical information is provided. However, no land contamination data has been provided. Water: Impacts regarding construction water use, operational cooling water use and potable/drinking water consumption are discussed in the existing EIA/supplementary document. Air: Potential sources of emissions during operation are identified. This detailed modelling needs to include new housing adjacent to boundary. Dust emissions during construction have not been modelled. Climatic factors: Greenhouse gas emission and issues of impacts on the microclimate are not identified. Cultural heritage assets: archaeological heritage assets are identified. Landscape: A visual and Landscape assessment should be conducted. Positive effects are included such as a decrease in the country's dependence on external energy resources. The existing EIA/supplementary document does not identify whether an impact is direct or indirect; short, medium or long term; or permanent or temporary. Cumulative effects over the environment components are not addressed and quantified.
	The description by the developer of the forecasting methods used to assess the effects on the environment.	The impact assessment methodology is transparent.
5	A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.	The ESIA sets out the proposed mitigation and offsetting measures during construction and operation. Population: Further mitigation is required for impacts on the local population. Fauna and Flora: Mitigation needs to be further defined. Soil: seismic activity and geohazards have been considered and no further mitigation is required. Water: Further details on specific actions are required. Air: Further measures may be required, once the

		assessment is updated to include the new housing adjacent to the site. Climatic factors: Greenhouse gas emission and issues of impacts on the microclimate are not considered. Cultural heritage: Measures to protect cultural heritage assets adequately addressed. Landscape: Not assessed.
6	A non-technical summary of the information provided under the above headings.	A Non-Technical Summary is included.
7	An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the developer in compiling the required information.	Not provided.

Overall, after the implementation of the ESAP conditions, the EIA general approach and content would align with EIA requirements in the EU as required by EBRD (considering a feasibility study stage EIA).

9 SITE HEALTH AND SAFETY PERFORMANCE

9.1 HEALTH AND SAFETY PERFORMANCE MONITORING

Health and safety monitoring is undertaken via an online system. This takes into account both accidents and near misses. The system incorporates the following:

- Details of the problem;
- The solution identified;
- Targeted action taken;
- Completion date of the action; and
- Signatory by senior management as complete.

There is a Health & Safety Policy with the declared intention of zero harm, but it is not set as a specific target.

The company does not include in their reporting, the accidents of their construction contractors. Within the law, it is reported to be their responsibility to report these. However, they do account for contractors working on their own managed / operated sites, such as maintenance contractors or caterers etc.

9.2 ACCIDENT REPORTING AND INVESTIGATION

There is an online Accident Investigation system, which is aligned with the Turkish Regulatory reporting system requirements. This includes investigation of accident causes, as well as corrective action. It was described that a general approach of root cause assessment is undertaken. Actions planned are in line with the root cause analysis.

It was reported that in the last 2 years, there have not been any accidents relating to Akfen Energy staff or direct contractors.

There is a 'near miss' reporting system in place. Near miss reporting is via site level review, and monthly reporting centrally (currently via emails) and sharing across the company.

Only accidents which result in hospitalisation or off site medical attention would be officially recorded. Minor incidents are recorded on site and it was reported that the associated risk assessment would be reviewed but these smaller incidents are not escalated. There is no accident frequency rate for minor accidents.

SIGNIFICANT INCIDENTS

There was one historical accident at Doruk during the construction phase which resulted in four fatalities. Three of these were employees and one was the son of an employee aged 17. The fatalities were due to a landslide during the works. This has been subject to a legal accident investigation by the regulatory agencies and was related to the activities of Akfen Construction.

Two near misses were recorded at Dogancay HEPP for 2015 (30/01/2015 and 26/04/2015). The near miss forms were seen during the audit.

There was a significant near miss on the way to the Cicekli site involving the vehicle containing the audit team and a local excavator used as part of an existing mining operation. Whilst the audit team was driving along a high mountain road to the construction area an excavator reversed directly out of a cave on the mountainside and narrowly avoided hitting the vehicle containing the team. The vehicle driver repeatedly pressed on his horn to alert the excavator driver of the imminent danger which he became aware of before an accident occurred. This could have had serious implications given a steep embankment and no guard rails on the edge of the road should an impact have occurred.

Akfen stated that this road would not be used once the construction laydown area is completed. The alternative route which was used returning from the site is less hazardous, although still used by excavators and other mining vehicles. As such a recommendation has been included within the ESAP with regards to developing a traffic management system including more comprehensive communication and safe driving practices in conjunction with the company carrying out the mining activities.

9.3 HEALTH AND SAFETY TRAINING

COMPANY STAFF

Each employee is given twelve hours of health and safety training per year which comprises:

- Fire risk and actions in the event of a fire;
- Evacuation procedure and assembly point;
- PPE; and
- Meaning of emergency signage.

After the health and safety training has been completed, the staff take an exam and are given a grade which is put in their employee file. In addition a further four hours per year of training is given with regards to medical/first aid. This was confirmed at Dogancay HEPP.

At Doruk first aid training was provided by the Doctor during the regular site visits.

All staff that either transport or use explosives are required to having training. Akfen Construction is also required to obtain permission from the Province to store and use explosives.

At Sekiyaka HEPP 2 the crane operators licence (Omer Arslan) was checked and found to be correct.

RISK ASSESSMENTS

A new system has been developed to undertake risk assessments, involving a H&S expert, doctor, employee representative and a relevant technical representative from the site. As many sites have low staff numbers (~10 or 12) often all staff are involved in developing the risk assessment. Risk assessments are related to specific assets on the site and stored electronically using an on-line system.

Risk assessment approach looks at work task, the hazards and the risks associated with it. Mitigation is proposed to reduce level of the risk. The risk assessments are reviewed as needed, but experts visit the site each month. If the risk is high level, then immediate actions are taken and more frequent inspections then monthly are undertaken.

Health and safety risk assessments are carried out internally by a member of Akfen Energy for 9 of the operational sites. Doruk and Yagmur are currently done by a third party although there are

plans to ensure that all sites are risk assessed by trained Akfen Energy staff in future in order to ensure consistency across the sites.

OHS PROCEDURES

There is currently no formal permit to work system in place for activities undertaken on site and no formal EHS system and corporate procedures in place for Akfen Energy.

At Otluca, Camlica and Dogancay a series of procedures for normal operation and maintenance activities were observed. One focused on electrical safety and another on how to deliver first aid.

Also at Dogancay, although no standard permit to work system was in place, work orders for non-routine activities e.g. major overhauls and maintenance work was used and this included a check on the appropriateness of person undertaking the work.

TRAINING NEEDS

There is a responsibility matrix aligned with Turkish regulatory training requirements, defining the training needs for specific roles, e.g. electrical equipment use. There is also a safety induction system. The risk assessments provide can stimulate a specific training need, such as working at height, which is not directly covered by the Safety Training Regulations.

CONTRACTORS

The Health and Safety representative and Operations Manager are responsible for the health and safety performance of contractors. This is implemented at the contract stage with specific conditions around H&S performance stipulated within. Prior to commencement of work, all sub-contractors must submit a risk assessment for review by Akfen Energy.

It was commented that Akfen's contractors are also covered by the same Turkish Laws, in relation to Health & Safety and Risk Assessments. Akfen do conduct checks on contractors, to check that their arrangements are aligned with the legal requirements and they are managing the risks.

Should any non-conformances be observed by Akfen Energy then they reserve the right to stop the job and notify the contractor, cancel the contract or impose penalties as defined by the contractual agreement.

Also, in general as there is more than 50 staff on a construction site, it was reported that they have to form a health and safety committee. An employee representative and the contractor companies are involved in this safety committee.

Upon arrival at the sites the audit team were handed a card with a map of the site detailing the location of all fire extinguishers, evacuation route and assembly area in the event of an emergency.

The company provide bus connection service to their site for employees at a number of locations. It was reported that there were no accidents during transportation of staff.

9.4 AUDITS, PROGRAMMES AND INSPECTIONS

Approach aligned with Turkish H&S Statute – updated in June 2012 – affected from 1st July 2013. Law defines three levels of 'danger classification'. Hydro power and all other power generation is classed as 'most dangerous' division. Law requires that there needs to be a minimum of a monthly visit to the site by a H&S expert. The Experts need to spend a defined number of hours on site each month. Law provides two options; provide a designated H&S Expert company, or

employ an in-house qualified Expert. Akfen use both in house experts and also some consultants to discharge this requirement.

An inspection system is in place. New risks noted are entered into the on-line system with photographs and training needs agreed. There is an overall intention to drive continual improvement and the system operates as a dynamic risk assessment process. There is a scoring system employed (hazard consequence x likelihood) and then a residual risk rating is also used.

Each of the HEPPs is subject to a monthly site visit and inspection. For nine of the operational sites this is done by an internal member of Afken whilst for Doruk and Yagmur this is outsourced to a contractor. Each site has a health and safety log under which each of the issues raised during the inspection is recorded along with the actions taken and who signed it off.

At Cicekli Akfen Construction use a third party contractor for health and safety arrangements and are also subject to random inspections from the ministry of labour.

Ministries conduct safety inspections. They can fine the company if there are any breaches.

9.5 HEALTH AND SAFETY RISK MANAGEMENT

PERSONAL PROTECTIVE EQUIPMENT (PPE) AND TEMPERATURE EXPOSURE

Upon arrival at the sites the audit team were handed relevant PPE in terms of high visibility vest, helmet and hearing protection at those sites where it was relevant.

At Sekiyaka HEPP 2 one worker was not wearing the issued protective footwear.

Water is available at all sites visited and the operational stes have air conditioned offices and rest rooms.

WORKING AT HEIGHT

Each of the HEPP sites has a man safe system for working on crane gantry areas. These systems allow an employee to hook their safety harness karabiner onto a rope with a metal loop which can then travel along with them as they move along the gantry. This type of system is in use on the ladders to the gantry but there is inconsistency in the approach as they are only on ladders above 6m in height. All fixed ladders are of a hooped type, to provide some fall arrest capability.

At Dogancay there were a number of trip hazards at height due to cable trays being routed along the top of steps. If the cables cannot be rerouted, the hazard should be highlighted to staff using signs or hazard tape.

At Sekiyaka HEPP 2 construction site there was scaffolding in place which was fixed to the wall in several locations by the scaffolding being within the concrete. The guard rails on the scaffolding over the turbine hall construction area were very narrow and flimsy. The walkways at height on the scaffolding were two across in places and one in others. The walkways were metal and could present a slip hazard in wet weather.

DISPLAY SCREEN EQUIPMENT USE

If any requests are made, e.g. for work station comfort, the company will respond. There is no proactive monitoring or statistics maintained.

CONFINED SPACES AND CONFINED SPACE ENTRY

There is no confined space procedure in place. It was commented by Akfen Energy that they intend to develop a procedure and have this authorised by the Health and Safety representative when there is a requirement to go into areas like the penstock. It is proposed that this should be developed and applied to staff and contractors. See ESAP.

PRESSURE SYSTEMS

It was reported that pressure systems are tested every three months by a qualified mechanical engineer in the presence of a representative from Akfen Energy management (conducted during one of the monthly site audits). Records are maintained centrally.

WORKING ON ELECTRICAL SYSTEMS

Earthing arrangements are subject to an annual visual inspection by external electrical engineers. At Yagmur one of the earthing strips did not have an earthing wire attached to it. Indeed the earthing wire was attached to an adjacent guard rail and didn't appear to be earthing the bar as it was supposed to be.

At Demerciler an electrical lock-off was used on the generator cabinets to prevent anyone accessing them whilst the plant is operational. However, the keys were in the padlocks rendering the lock-off system ineffective.

Electrical technicians are suitable qualified and trained by the grid operator with a certificate issued after training.

LIFTING EQUIPMENT

Each of the HEPP sites visited had both internal and external cranes. The lifting limits were clearly displayed on the cranes and were tested annually by the mechanical engineers chamber as well as being maintained every 6 months by the manufacturer.

A temporary crane was in place at Sekiyaka HEPP 2 construction site for lifting operations. This was not bolted to the concrete plinth on which it was sited but had approximately 50 tonnes of ballast for a lifting weight of 1 tonne at the end of the boom and 3 tonnes near to the framework. The mechanical engineering department at the local municipality check the crane every 3 months. This should be reviewed for suitability by a qualified crane engineer.

At Doruk there were a number of slings observed for which there were no inspection details recorded. It was stated that the slings are checked annually and replaced if any sign of wear exhibited. There was also a length of rope which was used for lifting operations that was clearly frayed and damaged. It is recommended that each sling or rope is given a unique identification number and inspected with these inspections recorded.

At the weirs for the HEPPs there are points where safety harnesses can be attached to guard rails in order for staff to be able to reach over and clean the trash racks with a large rake. The safety harnesses are replaced annually although the site was too new to verify this. In the UK, equipment lifting people is usbkject to pre-use checks and a thorough inspection every 6 months. It is recommended that this approach is applied. Furthermore, none of the harnesses have unique identifiers in order to assess and control their replacement.

PROVISION AND USE OF WORK EQUIPMENT

At Sekiyaka work was being undertaken on a concrete chamber with a vertical concrete face to the penstock below. The penstock is built on a steep downhill slope to the second HEPP at the bottom of the valley. There was a ladder which was being used by an employee to access this concrete chamber. The ladder was not secured to the wall in anyway and given the steepness of the slope it is unlikely the feet were secured against slippage. Also, the ladder was about 3 feet below the bottom of the chamber lip which would have meant that whoever was using the ladder had to stretch to get onto the rungs above a 15 foot vertical drop. The ladder had extra rungs and could have been extended. The ladder would also have to have been carried down a steep embankment to be able to be set up and work in that location.

The electrical supply for welding had a temporary repair with electrical tape and had been in use for about a week with the repair open to the elements.

At the Sekiyaka HEPP 2 construction site, a walkway had been constructed out of wood to climb up three feet to a concrete plinth and had large gaps between the steps, was very crude in nature with the guard rail unlikely to prevent anyone should they slip or fall. In addition, planks were placed across an open drop where the gates are to be located. These planks were insufficient to reach across the whole of the gap and if stood on either end would lift up.

The floodlight for the construction area had damage to the earthing cable which appears to have been repaired.

Sub-contractors welding equipment showed signs of fraying and damage to electrical connections along with temporary repairs.

At Demirciler, four ladders were hung on a wall for storage. They had tie ins but were not effectively secured and whilst three ladders appeared to be fine one had no feet and would not be secure and would resent a slip hazard if used.

SAFETY SIGNAGE

Safety signage was clearly displayed throughout the HEPPs along with the potential risks, for example, risk of electrical exposure etc.

Safe walkway areas were clearly marked at the HEPPs visited.

GENERAL WORKFORCE WELFARE ARRANGEMENTS

At each of the HEPPs employees are provided with their own locker for their workwear, showers, toilet facilities, dining area and kitchen facility. At Doruk there was also a table tennis table for the staff to utilise on their breaks.

At the Cicekli construction site workers were given drinking water and toilet facilities but there were no other welfare arrangements in place such as dining arrangements or areas where could take their breaks undercover. It was stated that welfare facilities would be provided when the construction laydown area had been completed. These facilities would include a kitchen, toilets and showers.

NOISE EXPOSURE

The Turkish limit with regards to the need to wear hearing protection is 85 dBA. At Doruk a noise assessment had been undertaken and the measurements came back at approximately 90dBA which means that hearing protection is required which was enforced during the site visit.

Health surveillance checks (see below) include a hearing check.

VIBRATION

No concerens were reported or observed from health risks associated with vibration.

HAZARDOUS MATERIALS

The main hazardous materials utilised at the HEPPs are oils used within the generator and turbine. These are stored in drums in a secure compound and staff can use goggles when handling the oils during maintenance activities. Stores are appropriately signed.

OTHER PHYSICAL FACTORS: RADIATION EXPOSURE

No radioactive sources are present in any of the facilities.

OCCUPATIONAL HEALTH MONITORING

There is a surveillance programme in place for worker occupational health on the operational plants. Under the Labour law every employee is given a health check at commencement of employment which helps to detail what monitoring is required going forward on an annual basis. There are additional requirements for any workers who undertake any 'listed hazardous tasks' (as defined in Turkish Regulations). Central staff are given a health assessment but only on induction into the company. The medical check, undertaken by a medical professional comprises:

- Hearing test;
- Eye examination;
- Blood sample and test;
- Inoculations such as tetanus; and
- Heart and lung function.

The results are compared with the previous year's results to identify any changes and abnormalities.

Part of the occupational health monitoring is a consideration as to whether the individuals are able to work at height.

FIRE AND EXPLOSION RISK MANAGEMENT

Some sites have smoke (and some heat) detectors and some have sprinkler systems, according to the risk.

Around all the HEPPs fire extinguisher locations were shown on all site plans handed to visitors and on noticeboards in the office area. The fire extinguishers were dry powder extinguishers and all viewed were in date. All fire extinguishers are tested 6 monthly.

DRUG AND ALCOHOL USE

There is no specific drug and alcohol policy. It was reported that there is a commitment, but this is not specifically published as a policy. However, there is coverage in all employment contracts. The company does not currently undertake any testing.

SITE ACCESS

All sites visited had security fencing in place with a security guard in order to limit any unauthorised access to the site. There is extensive use of CCTV surveillance at sites both for the manned areas as well as the weir areas.

LONE WORKING

It was stated that whilst the SPPs do not need to be manned there are security guards at the site one per shift. The guards monitor the site through a series of CCTV cameras and if any problems are identified then they would call the police in the event of a security issue or EPC contractor in the event of a fault.

There are currently no reporting arrangements to ensure the welfare of lone workers and it is recommended that one be put in place.

EMERGENCY PLANS

There are emergency response plans in place; first aid, fire, floods. Plan cover details such as response approaches, reporting etc, and are locally tailored, showing areas such as fire exit route etc. There is a specifically nominated and trained team at each location, for handling of emergency situations. There is coverage on each shift. There is coverage on each shift. There are no off site emergency plans based on the sample of sites assessed.

IDENTIFIED HAZARDS

At Yagmur HEPP one of the grills which were used as a walkway over the surface water drainage channel had been removed and posed a fall hazard. Also at Yagmur down in the turbine hall area one of the guard rails had been removed to provide access to enable inspection of the incoming pipework.

At Demerciler various materials and supplies were being stored and had crept into the safe walkway around surrounding the large open turbine hall area above a 40 foot drop.

9.6 DAM SAFETY

Relevant to this project, in the policy is: “Large dams and other impoundments designed for the holding back or permanent storage of water”. Large dam is defined under the International Commission on Large Dams (ICOLD) as a dam with a height of 15 metres or more from the foundation. Dams that are between 5 and 15 metres high and have a reservoir volume of more than 3 million cubic metres are also classified as large dams. Currently the only operational HPP installation that includes a Dam that falls within the definition of large dams is Camlica. However, there is potential that future investments could include dams classified as ICOLD ‘Large Dams’.

Irrespective of whether any dams featured within schemes are classed as ICOLD ‘Large Dams’, it is required to ensure adequate community health and safety protection and EBRD / IFC compliance, that any dams (such as regulator dams on the run of the river schemes) do consider the best practice management and maintenance requirements as set out in the ICOLD standards.

It was reported that the overall design of the dams has been carried out in accordance with International Best Practice using experienced contractors in their construction. We have been advised that the dams are designed to be able to pass safely the Maximum Probable Flooding levels and have spillways sized accordingly.

It appears that most of the dams are operated with the reservoir maintained several metres below overflow level so that in the event of a large flood entering the reservoir it will be stored initially before the water reaches overflow level. Dams within the HPPs visited appear to have been provided with adequate freeboard. Hydrological data for the rivers and catchments are held by Akfen.

The hydro power plants with any associated dams are manned on a 24 hour basis and are provided with instrumentation systems to monitor performance. Camilca is the only dam holding back a specific dedicated reservoir, and Camlica is fitting with an alarm system in case of dam failure.

The dams observed in general appear to be in good condition and well maintained, although one concern in regard to a minor leakage was noted at Demerciler, although it was later reported by Akfen and their maintenance contractor that this was not a concern in regard to overall dam Integrity. The leak was located where the pipe entered the concrete to the outlet. The join between two concrete seams had the leak.

In the event of emergencies arising at the dam, it was reported that emergency communication procedures and action plans are in place; with initial notification being to the Municipal Authority and that the Emergency Services have coordinated plans.

DAM SAFETY MAINTENANCE AND INSPECTION

The Akfen HEPP Dams are newly constructed and it is recognised that many are not yet within the window for the first round of detailed integrity inspections. However, Akfen currently do not have a fully formalised approach to the delivery of an effective planned maintenance regime to ensure that the highest levels ate dam safety are maintained.

It is recommended as an ESAP item that a centralised formal procedure for the management of dam safety is developed. This should incorporate the recommended maintenance and integrity inspection requirements contained within the ICOLD standards. The procedure should define the:

- inspection frequency of each dam structure at each HPP;
- inspection coverage and general review of dam function and condition;
- requirements regarding competence of personnel or contractors who will undertake the inspection;
- response recording, general record keeping and engagement within any required emergency or other statutory authorities.

10 SOCIAL AND EMPLOYEE RELATED PERFORMANCE

10.1 NUISANCE AND OTHER COMMUNITY CONCERNS

WORK IN THE COMMUNITY

Over the last couple of years, Akfen has engaged with stakeholders and implemented a number of community projects. A list of local community projects completed by Akfen HEPP Projects is provided below.

- Sekiyaka HEPP
  - Based on the protocol signed between Sekiyaka HEPP and Seydikeme Town an annual donation is made for the services at Söğütlüdere Village.
  - Children's park was constructed in Söğütlüdere Village by Sekiyaka HEPP. Donations were made supporting the construction of water line of the village and the villagers were supported in their requests for construction materials.
  - Donation for the municipal garbage truck to support environmental cleaning.
- Kavakçalı HEPP
  - Donation for the village mosque and constructed its minaret.
  - Constructed the village headman's house.
  - Donation for village's potable water pipeline.
- Demirciler HEPP
  - Donation for the repair and additional construction of irrigation channels which are used by the local people.
- Doğançay HEPP
  - Donation for the mosques and repair of the village schools.
  - Constructed a new concrete bridge replacing the old bridge.
  - Donation for the vehicles and equipment to be used by the local people.
  - Donated stationery and clothes for the student the village schools.
  - Donation for the repair of the village roads.
  - Constructed flood passes for the discharge of rain water at the village.
  - Donation for the football team of Boğazköy.
  - Constructed a house for the imam.
- Doruk HEPP
  - Donation for the local union named Tepeköy Doğayı Yaşatma Derneğine and repair of the schools was completed.
  - Donated stationery and clothes for the student the village schools.
  - Donation for the repair of the main and village roads.
  - Donation for the event which gathered the people whose hometown is Giresun in Istanbul.

- Funding for the dormitory named Dereli Öğrenci Yurdu" and vocational high school.

→ Saraçbendi HEPP
- Donation for the construction of village roads.

→ Çamlıca HEPP
- Constructed the dormitory named Yahyalı Öğrenci Yurdu.

→ Gelinkaya HEPP
- Donation for the local irrigation union.

→ Yağmur HEPP
- Donated stationery and clothes for the student the village schools.

→ Yağmur HEPP
- Donation for the training of women at Köprübaşı district governorship's public education and culture centre.
- Paid for the asphalt fee for the OHL road crossing the village road.
- Donation to Köprübaşı Municipality for environmental cleaning.

→ Çalıkobası HEPP
- Constructed house for two people who are deaf mute.
- Enlarged and repaired the village roads. The requests of local people on construction material were supplied.
- Donation for construction of the OHL to highland.

→ Otluca HEPP
- Donation for the construction of potable water conveyance line for the villages.
- Recruitment of local people is preferred for all of the projects.
- The shopping and service are supplied locally as much as possible.
- In all the projects forestation and erosion control projects are done voluntarily.

→ Doruk HEPP and Saraçbendi HEPP donated to the local sports clubs.

→ Donations to the foundation TEMA Vakfı and WWF Vakfı are done at Father's day.

→ Türkiye İnsan Kaynakları Vakfı is founded by Akfen holding. It gives scholarship to students and establishes programmes supporting their social progress. http://www.tikav.org.tr/

COMMUNITY HEALTH, SAFETY AND SECURITY

There are no public health issues identified for the proposed project sites in relation to their activities so long as the construction and operation of the sites are in compliance with European norms in Section 4.

10.2 STAKEHOLDER DIALOGUE

STAKEHOLDER ENGAGEMENT

Stakeholder engagement processes in the past has primarily involved engagement on regulatory matters and internal engagement of employees.

In the past, it is reported that prior to construction of new projects consultation has been undertaken with the various local communities. Although it is reported that this consultation has

not been formally recorded, and is not proactively continued by Akfen during operation of their projects.

Two sites were subject to a further social assessment after the initial site visits as they were assessed as having potential social issues and these were to be reviewed by having meetings with local community stakeholders. These sites were Sekiyaka and Cicekli.

SEKIYAKA SOCIAL SITE VISIT (23RD JUNE 2015)

Sekiyaka HEPP 1 and HEPP 2 power plants were visited on 23.06.2015 together with the company executives of Akfen. The project field was observed and some information was obtained. Thereafter, the Mukhtar, the Chairman of Yukarı Akçay Irrigation Union, an associate of Mukhtar and 5 villagers using irrigation water attended a meeting in the building of Mukhtar.

Based on the information provided by Akfen executives, they stated that they provided information about the project by holding various meetings with the villagers about the project before the EIA process. The objective of these meetings was declared as eliminating the existing doubts of the public on the effects of the project and fully gaining the trust of them. When asked if the women attended the meetings, it was stated that the women did not tend to attend such meetings due to the traditional structure and habits and that the company did not need to make a special effort on this matter. The brochures handed out in the meetings were examined.

As per the statutory obligations, the visual presentation of the project was submitted to the villagers and the related public institution executives (local authority, district governor, ministry representative, etc.) during the expropriation and EIA processes, and newspaper advertisements were placed during the EIA process again. These promotions were conducted by both inviting the executives to the meetings and visiting them.

During the expropriation process, only 9 immoveable properties were expropriated against remuneration.

This communication process continued for approximately six months and a fiduciary relationship was built with the villagers and the Mukhtar during this period.

Although the project provided timely, and accessible information to stakeholders in a transparent and understandable format, the most significant factor that negatively affected the process was especially that people against HEPP projects in general who came from outside the region tried to provoke the people of Söğütlüdere by misleading with the purpose of protecting the environment although they did not know the project thoroughly. They partially achieved this and some villagers started to believe that HEPP would damage the village life. There is a NGO among them as well. This information was obtained both from company executives and the local people.

All the legal procedures were followed in the project implementation. Within this scope, the water use right agreements were made with SHW (28.05.2012) and a protocol was signed between the Municipality of Muğla Seydikemer and Beyobası Electricity Generation Corporation regarding the regulation of water use and the second protocol was signed between Muhktar and the company (see below).

Akfen postponed the establishment of the second power plant for 1 year in order that the public could see the results of the project (HEPP I) and could be fully convinced, so, the people were given the chance to observe that the first power plant did not have any negative effect on the supply of irrigation water.

According to the statements of the authorities, the biggest concern of the public at the beginning of the project was the destruction to be caused by the construction works and if there would be any irrigation water loss. However, these doubts were eliminated for HEPP I at the beginning after the project plans were clearly explained by the company and SHW executives. Further, various

meetings which were announced via the mosque helped to persuade the local community that there would be no impacts.

After the completion of HEPP 1, irrigation water was taken from the old DSİ (SHW) canal and passed through the pressure pipe ended the need to repair the old canal which had collapsed due to flooding from excessive precipitation. While the damages occurred due to the flood were under the responsibility of the Irrigation Union before the responsibility has passed to the company now. This situation led to satisfaction with the project from local stakeholders and there has not been a problem in the irrigation water supply.

The company promised the villagers that HEPP 2 would not be operated during the irrigation season and that it would be activated only in winter. The Mukhtar stated that they were expecting them to keep their promises after HEPP 2 came into operation. He said that he would closely follow up the process, but that he believed nothing negative would happen.

One negative effect observed by the villagers is that the cement which is poured from the cement mixer trucks going up the hill is set on the way and causes mounds and disrupts the road. These mounds were removed by the villagers and the company executives. It was stated that the dust caused due to the heavy vehicles passing to the construction site was normal and did not cause any significant problem.

Further, the bridge which was built over the stream in order to carry the construction materials will be permanent for the use of the villagers, and the road between the project field and the village will be paved with asphalt by the company. This is a satisfactory situation for the villagers.

In terms of CSR activities Akfen Energy has adopted a responsive and collaborative approach. It is reported that for employment positions which do not require a specific expertise then Akfen Energy considers to employ local people as much as possible.

At present, when Muhktar or other community members have a project related problem or questions, project experts and officers are always reachable and communicable.

Agreement between Sekiyaka and Akfen Energy

1. In case that the village roads and land roads (including the bridge) of Söğütlüdere Village are disrupted during the construction of SEKİYAKA II HES Project, the necessary works shall be conducted in order to recover them.

2. The potable water to be taken via a pipe from approximately 500m distance to the regulator area (SHW canal) shall be transferred to the potable water tank through the canal route. These works shall be conducted by the company.

3. During the irrigation season (summer), the power plants (HES-1 and HES-2) shall be operated upon the instruction of the Irrigation Union (Mukhtar of Söğütlüdere). The irrigation waterworks shall be strictly followed.

4. Outside the irrigation season, all the water taken from the stream bed shall be left to the stream bed again after passing it through HES-1 and HES-2 and generating energy.

5. If there is any damage during the construction period, the loss shall be compensated by the Company.

6. 20.000,00 TL (twenty thousand Turkish liras) shall be granted to the legal entity of the village every year during the license period (49 years) in order to use for the village services.

7. The Parties mutually agree that the Central Courts of Ankara and the Enforcement Offices are in charge in any dispute that may arise due to this Protocol between the Parties.

8. The second power plant shall not be built without the permission of the Mukhtar.

CICEKLI SOCIAL SITE VISIT (25TH JUNE 2015)

Cicekli HEPP was visited on 25.06.2015 together with the company executives of Akfen. The project field was observed and some information was obtained. Thereafter, a meeting was held with the inhabitants who were living in the settlements on the access road to the HEPP.

There are two different access roads to the HEPP construction site. One of them is already being used by the construction vehicles of the mining company. There are approximately 10 detached houses on this road. It is understood that none of them are permanent residences, but used as “Mountain Houses” in summer, and even some of them are derelict houses.

The other road passes through the residential area, Petek neighborhood, which reaches up to the forest. This road is partly asphalt and partly stabilized. No expansion has been planned and Akfen (the company) has no permission for this operation. During the construction this road will not be used. Reasons are as follows:

1. The road is quite narrow for the vehicles

2. Steep

3. Longer to access the construction site.

Company vehicles use the road to the mining area. This road has been extended to the construction site by the company and is still under construction. During the construction of the HEPP, this road will be used.

It is stated that heavy vehicles will pass through this road for only once, and they will return when the construction site is completed. During the construction, heavy vehicles will not be used to transport construction materials; these materials will be produced on the construction site with available materials obtained from the extended road and site construction. For only once, the additional materials for the cement will be transported.

The company has undertaken the HEPP construction work after purchasing it from Kurtal Company. EIA became ready when the purchase was completed. The company held a public disclosure meeting regarding the progress of the works.

From the community meeting it is clearly understood that the community has no objection to the HEPP in this area and there is no unjust treatment regarding the construction activities. On the contrary, they believe that such investments have a big contribution to the regional and country-level development and to reduce the dependence on foreign energy resources.

The fact that one of the oldest HEPPs has existed in this area since 1941 supports this approach and they are aware of the function and necessity of the HEPPs. Furthermore, the HEPP has already increased the rate of employment in this settlement and it is also recognized as an economic contribution since it prevents out-migration to some extent. The company also supplies their own heavy vehicles from a sub-contractor in the region.

Community members stated that they would finally have the road to the mountains which they had been expecting from the government for many years. They need this access road to easily facilitate their beekeeping activities and to access to the plateau and the forest in order to transport wood.

In the past, Petek people put up an organized resistance against the gold prospecting activities of the mining company, because they were aware of the damages of these activities on the environment and human life. They expressed that if there would be any damage and harmful treatment towards their regular and natural life, they would show a major reaction all together, including the women and children.

The chairman of the Nature Conservation Union of Murgul said that they were very satisfied with the attentive works of the company at that time; however they expected the necessary rehabilitation measures from the company when the HEPP construction was completed and they would follow up and evaluate the process constantly. Indeed, the company is obliged to conduct rehabilitation works according to the protocol mutually signed between the Ministry of Environment and Forestry and the Company.

OBSERVATIONS FROM AKFEN ENERGY STAKEHOLDER COMMUNICATION ACTIVITIES

During the site visits and interviews with both the community and the company executives, it was observed that Akfen was extremely careful of its corporate image and attached importance to the public participation process to gain the consent of the public.

Akfen Energy established a strategy in accordance with this principle during the project implementations and followed all the legal procedures. Although Akfen Energy intended to comply with all the procedures and works with years of experience in community relations, no stakeholder engagement plan (SEP) took place during the project implementations. Instead of a SEP, Akfen executives worked with the community. The main identified gaps are as follows:

4. The roles and the participation and/or involvement level of the stakeholders, and different interaction and communication methods have not been determined. Especially the groups who are affected from the project activities or the other interest groups in general are in a disadvantageous and vulnerable position. A certain format has been implemented almost for all the projects. This includes the required meetings, one-to one conversations, visits and brochure disseminations. No communication strategy and tools have been specified for different stakeholders.

5. No action plan document(s) has/have been prepared and disclosed to the affected communities. The brochure (which is used as a standard for all the projects) includes all the technical and legal details and emphasizes the RES character of the project and the preservation of the nature. This document may not be comprehensible for all the stakeholders. However, this issue has not been discussed with the stakeholders.

6. A strategy has not been determined to handle the problems or objections that may emerge within the community or the other parties. Solutions are discussed when the problem occurs. It is observed that sincere and long-lasting relationships with the community are built which let to build interactions based on mutual trust, but this is not sufficient to handle, for instance, the third-party provocative groups or NGOs who tried to influence the local people. There is not a clear mechanism to respond to people's concerns, suggestions and complaints.

7. The company has not established a monitoring and evaluation system within the company regarding the Project Stakeholder Management processes yet. When a serious problem occurs, the experts discuss it with the managers and conduct networking via e-mailing. There is no registered follow-up mechanism. However, the company experts who have a close contact with the stakeholders and all the parties involved are aware of the need for having a monitoring system to be followed up and evaluated in the future or/and whenever this is required. The proper addressing of the environmental and social issues at the construction stage of the projects is ensured by the topographical engineer who is responsible for the land expropriation management plan.

8. Regarding the projects that are currently being implemented as well as the future projects, in order to implement the above mentioned practices and to include all the vulnerable groups and female groups within a planned frame, assigning an experienced specialist for planning, monitoring and evaluating the stakeholder management and community relations would be useful. At the moment, those activities are executed by Akfen executives and managers.

9. Communication training (objectives and communication plan) for the company executives would be useful to improve the project implementation and follow-up procedures.

The ESAP has included a number of conditions in order to address these identified issues.

COMPLAINTS AND GRIEVANCES

No environmental complaints are reported to have been received by Akfen from any of their project activities that have been subject to site visit.

All employees are reported to be able to set up appointments to discuss their grievances with their Managers and/to the Human Resources Team. Each employee gets a copy of the company employee handbook within which there are a number of HR staffs contact details who are available 24/7. Whilst this was stated as being a mechanism by which employees can air their grievances the normal route is to submit a formal grievance which would then be responded to. The process would benefit from being formalised and clearer guidance included within the employee handbook.

There is no formal grievance mechanism in place for local communities should they require to contact Akfen Energy. It was stated that for all project locations the local village halls/ Mayor's offices have the company contact details should they be required to contact them.

A formalised mechanism for grievance management will be included within the SEP developed as part of this project.

LITIGATION AND DISPUTES

There is currently no labour related court disputes reported.

There have been a number of environmental penalties imposed by various Government or regional bodies as detailed in Table 8-1 below.

Table 8-1 Environmental Penalties

SITE	AMOUNT OF RESTITUTION AND GOVERNMENT DEPARTMENT	REASON	SOLUTION
SARAÇBENDİ HES	1,188 TL Gemerek district governorship	Opening underground well without permission	Permit obtained
SARAÇBENDİ HES	14,244 TL Sivas Provincial Directorate of Environment and Urbanization	No fences along the channel route	Fenced.
SARAÇBENDİ HES	2,050 TL Sivas Provincial Directorate of Agriculture	OHL pole is constructed without permission.	Permit is obtained
DORUK HES	15,705 TL Giresun Provincial Directorate of	No septic tank for wastewater	Septic tank was built.

SITE	AMOUNT OF RESTITUTION AND GOVERNMENT DEPARTMENT	REASON	SOLUTION
	Environment and Urbanization		
DORUK HES	14,244 TL Giresun Provincial Directorate of Environment and Urbanization	Excavation debris was spilled to river bed	Taken and rehabilitated
YAĞMUR HES	28,488 TL Trabzon Provincial Directorate of Environment and Urbanization	Wastewater discharge to the receiving environment.	Discharge to the receiving environment is prevented.
GELİNKAYA HES	14,244 TL Erzurum Provincial Directorate of Environment and Urbanization	Excavation debris was spilled to an unauthorized site	Taken and rehabilitated

10.3 SOCIAL AND EMPLOYMENT CONDITIONS

LABOUR MANAGEMENT

Labour management is carried out centrally from the head office through the Human Resources (HR) Department.

Issues related to labour practices and human resources are handled by Akfen's HR department. All issues related to conditions of employment, such as wages, working hours and overtime work, sick leave, etc are regulated by the employment contract, signed by the employee and the employer in accordance with Turkish Labour Law.

CORPORATE POLICIES

These are discussed in Section 5.3. There is a need for Akfen Energy to develop more detailed EHS procedures.

SELECTION AND RECRUITMENT OF STAFF

First step is the definition of a role. The first step is to create a 'pool' of potential internal candidates. If no one is available internally, then the role is advertised externally.

There are generally two interviews conducted, as well as a level of testing; personality profiling, English language evaluation as well as an analysis thinking test.

A documented evaluation form is used and maintained as a record of the decision made.

This is reported to be an open and transparent process for the appointment of suitable candidates.

WORKING HOURS, OVERTIME AND CONDITIONS

The national maximum working hours is 45 hours per week. The shift patterns at each of the hydropower stations visited show that at most a member of staff will undertake 6x 8 hour shifts per week. Each shift has a 30 minute lunch break to ensure that the national requirements are met.

Staffing levels are minimal at each of the HEPPs and it looked like there could be issues when staff take holidays or are off sick. However, there are two day shift workers and they are used to fill shifts during these circumstances.

WAGES

Each position is allocated against a pay scale / wage range. This is advertised or communicated during the recruitment process. There is a system to allow some flexibility in the wage ranges, for example if a high salary is negotiated.

The company aligns with the Turkish minimum wage system. However, it was commented that all staff are above the minimum wage (currently 949 lire / month net).

The cook and security guards who are the lowest paid of Akfen Energy's staff commence work on approximately 1500 TL per month well above the national minimum requirement.

TRADE UNIONS, WORKER ORGANISATIONS AND COLLECTIVE ARRANGEMENTS

Akfen Energy does not currently have any staff who are members of Unions. However, it was commented by the HR Director that all employees are free to participate in collective bargaining or join union if they choose to do so.

BENEFITS

Workers have a range of additional benefits provided to them by Akfen Energy which includes:

- Holidays based on experience 14 days in first year, 20 days after 5 years and then 26 days after 20 years' service;
- Double time for working during bank holidays;
- Meal provided;
- Two sets of summer and winter work wear;
- PPE appropriate to their job function;
- Sick pay if have medical report from doctors;
- Washing machines to enable them to wash workwear on site;
- Service bus or transport fee provided;
- Personal accident insurance, including within sub-contractors;
- Maternity leave, in line with Turkish Law, which allows for a defined leave period before and after the birth; and
- There is currently also a system for paternity leave for new fathers (5 days).

EQUAL OPPORTUNITIES AND NON-DISCRIMINATION

Whilst there are no barriers to women being employed within the HEPPs it was observed by Akfen Energy that culturally in some of the areas where the HEPPs are located the women do not apply for jobs due to

BRIBERY AND CORRUPTION

There is a published 'Ethics Code' which is published at the holding company level, but is also applicable to all operating companies. This has a clear specific commitment in relation to employee behaviour and to ensuring that bribery and corrupt activities are not present.

DISMISSAL POLICIES

The company's procedures are aligned with Turkish Law, and include:

- There is communication of employees right; and
- There is a documented system in place to manage misconduct dismissal. This can include direct dismissal in case of gross misconduct. Otherwise there is a system of verbal and written warnings.

FORCED LABOUR

There is no use of forced labour. All staff are free to leave the company.

Within discipline procedures, it is defined that the company has the right to charge financial compensation in case of disciplinary action. However, it was reported that this route has never been implemented. However, there is the ability to impose a financial penalty on sub-contractors, for instance in case of safety non-conformance. This is defined in the specific contracts with the sub-contractor companies.

In exceptional circumstances, financial assistance may be provided to employees, for instance in case of employee specific hardship or medical issues etc. However, only small numbers of staff have made this claim and an agreement is made where this is paid back over an extended period. It is considered by the company that these are in general small amounts and that this would not be likely to affects an individual's ability to freely resign. Payback periods were commented to be short (eg 6 months).

It was confirmed that the company does not employ prison labour.

CHILD LABOUR

The defined minimum working age in Akfen is 18 years old. Proof of age is checked as part of employment contracting.

In regard to contractors, there is a statement in the contracts that contractors must comply with Turkish law, with a general working age of 18, but with an overall minimum age of 16, but with special controls required for persons aged 16 – 18 years old.

It should be noted that one of the fatalities during the construction of Doruk was of a 17 year old son of a construction worker who would be viewed as under age in some European countries but old enough to take part in the workplace

10.4 EMPLOYEES AND RETRENCHMENT

CURRENT EMPLOYMENT PROFILE

There are 21 head office employees for the HEPP as detailed in Table 8-2 below.

Table 8-2 Head Office Employees

#	Akfen HEPP Head Office
General Manager	1
Assistant to General Manager	1
Legal Affairs Specialist	1
Deputy General Manager - Operations	1
Deputy General Manager - Finance & Accounting	1
Manager - Project Design	1
Manager - Contracts	1
Manager - Energy Transmission Lines	1
Manager - Finance	1
Assistant Manager - Accounting	3
Assistant Manager - Public Institutions Relations	1
Senior Specialist - Accounting	1
Specialist - Environmental Impact Assessment	1
Specialist - Finance	1
Specialist - Accounting	1
Specialist - Purchasing	1
Specialist - Electrical Works Project	1
Specialist - Mechanical Works and Health & Safety	1
Specialist - Expropriation	1
Total - Head Office	**21**

Table 8-3 below shows that there are a further 149 employees at the HEPPs broken down into specialisms. This will increase when the further 3 HEPPs are built with each HEPP adding approximately 10 employees to staffing levels.

Table 8-3 HEPP Employees

HEPPs (#)	Sırma	Otluca	Saraçbendi	Çamlıca-3	Demirciler	Yağmur	Gelinkaya	Kavakçalı	Sekiyaka	Doruk	Doğançay	Total
Electrical & Electronics Engineer	1	1	1	1	2	1	1	1	1	1	1	11
Mechanical Engineer	-	-	-	-	-	-	-	-	-	-	1	1
HEPP Technician	-	-	-	1	-	-	-	1	2	-	-	4
Electrical Technician	-	9	-	1	1	-	-	5	1	5	2	24
Electrical Operator	3	2	6	5	3	6	2	1	3	3	10	44
Electronics Technician	-	-	1	-	1	1	-	-	-	-	-	3
Electronics Operator	-	-	-	-	-	-	1	-	-	-	-	1
Mechanical Technician	-	1	1	-	-	-	1	1	-	-	1	5
Mechanical Operator	2	1	-	-	1	-	1	-	-	1	1	7
Mechanic	-	1	1	2	1	1	-	-	1	2	1	10
Assistant Operating Manager	-	2	2	2	-	-	1	1	-	-	-	8
Security Staff	2	-	2	2	2	2	-	-	-	-	-	10
Receptionist	-	2	-	-	-	-	1	1	-	2	2	8
Driver	-	1	-	-	-	-	-	-	-	-	-	1
Chef	-	1	1	1	1	1	1	1	-	1	2	10
Irrigation Union	-	-	-	-	-	-	2	-	-	-	-	2
Total - Power Plants	**8**	**21**	**15**	**15**	**12**	**12**	**11**	**12**	**7**	**15**	**21**	**149**

Denizli SPP has 4 employees as security guards.

RETRENCHMENT

Akfen commented that in case of any retrenchment, the Turkish legal requirements would be followed in regards to selection, transparency, notice and employee assistance.

It was reported that Akfen Energy that there has previously not been any programmes of retrenchment and currently there are no intended programmes of retrenchment and that the investment programme is to help facilitate growth and expansion of the business and staffing numbers.

11 CONCLUSIONS AND RECOMMENDATIONS

11.1 OVERALL CONCLUSIONS

The audit and assessment has demonstrated that Akfen Energy generally has a good awareness of health and safety risks associated with their activities. The audit has also identified where there are opportunities for Akfen Energy to improve their EHSS performance.

There are structures and policies in place within Akfen Holding to which Akfen Energy as one of the subsidiaries is required to comply with. However, EHSS management systems, responsibilities reporting, procedures and policies should all be put in place which are tailored specifically to the operations conducted by Akfen Energy.

The audit and assessment has identified a number of opportunities of improvement in EHSS performance, which have been summarised in the ESAP, in Appendix B. Going forwards, reports should be compiled and submitted to the EBRD and IFC on the status of ESAP implementation and EHSS performance, including the resolution of any greivances from future operations.

11.2 SUMMARY AGAINST EBRD PERFORMANCE REQUIREMENTS AND IFC PERFORMANCE STANDARDS

INTRODUCTION

In respect of specific EBRD Performance Requirements (PRs) and the IFC's Performance Standards (PSs), the environmental and social appraisal has been conducted against these requirements as presented in the previous chapters. A high level summary of the project against the performance requirements is provided in Table 9-3 overleaf in a compliance summary table in accordance with EBRD guidance.

The compliance summary provides a systematic review of project compliance with the EBRD Environmental and Social Policy, as defined through the applicable Performance Requirements (PRs). The scope of compliance is for all PRs applicable to non-FI projects, such as this project. Following, a review of the PRs all are applicable with the exception of PR 7: Indigenous people and PR 9 Financial Intermediaries.

Therefore compliance has been assessed for the following EBRD PRs:

- PR 1: Environmental and social appraisal and management
- PR 2: Labour and working conditions
- PR 3: Pollution prevention and abatement
- PR 4: Community health, safety and security
- PR 5: Land acquisition, involuntary resettlement and economic displacement
- PR 6: Biodiversity conservation and sustainable management of living natural resources
- PR 8: Cultural heritage
- PR 10: Information disclosure and stakeholder engagement

And for the following IFC PSs:

- Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts
- Performance Standard 2: Labor and Working Conditions
- Performance Standard 3: Resource Efficiency and Pollution Prevention
- Performance Standard 4: Community Health, Safety, and Security
- Performance Standard 5: Land Acquisition and Involuntary Resettlement
- Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- Performance Standard 8: Cultural Heritage

The details in the compliance table will provide a baseline against which to judge future performance of the project through the annual environmental and social reporting process that is undertaken by EBRD and IFC. The compliance table as provided in the ToRs provides between 2 and 10 indicators for each of the applicable PRs: 1 - 10.

EBRD AND IFC COMPLIANCE SUMMARY GUIDANCE

For all PRs (Indicators with whole number references) a summary of overall compliance with the PR has been provided. Where there are derogations from a PR, a justification has been provided and supporting documents referenced as required.

For each indicator within a PR, 3 steps have been completed as below in accordance EBRD guidance:

1. *Decide whether the indicator is applicable.* For Category A and B projects the starting point is that all indicators are applicable unless the project has no significant aspects relevant to the indicator (i.e. no risks), in which case the indicator should be scored "NA" and a brief summary of the reason given. For Category C projects the starting point is all indicators are NA unless the project has a significant aspect relevant to the indicator (i.e. there is a material risk).
2. *Decide whether an opinion is possible.* If not (for example if the indicator will apply, but it is too early in the project) score as "NOP" and provide a brief summary of why. Where lack of opinion represents a material omission to the review refer to where this is addressed in the report and summarise any recommendations.
3. *Score the indicator as follows and provide brief justification.*

Table 9-1 Indicator Scoring

EC	**Exceeding Compliance** The project has gone beyond the expectations of EBRD's PR requirements. EBRD should be able to use projects rated EC as a role model for positive Environmental and Social effects.
FC	**Fully Compliant:** The project is fully in compliance with EBRD's requirements, and EU and local environmental, health and safety policies and guidelines.
PC	**Partial Compliance:** The project is not in full compliance with EBRD's requirements, but has systems, processes or mitigation measure in place which are working towards addressing the deficiencies.
MN	**Material Non-compliance:** The project is not in material compliance with EBRD's requirements, and the systems, processes and mitigation measures in place are not working towards addressing the deficiencies.

1. *Comments/Issues: Provide a brief commentary on the relevance of this requirement for the project and an explanation of the chosen score.*
2. *Actions Required: Where applicable, briefly describe any actions required by the client to achieve full compliance with each requirement. Where a relevant action is included in the ESAP for this project, please provide a reference to the ESAP.*
3. *PR Summary: Provide an overall summary against the PR, using the above compliance definitions with supporting commentary. In some cases it may be sufficient to address a PR at summary level only, depending on Stage 1 above.*

Note: The Material Non-compliance score (at both Indicator and PR level) has significant implications for Project approval and requires particular care. In judging whether the measures sufficiently address deficiencies the consultant should consider in a structured way both the level of residual (post-approval) risk and the level of confidence that the Project can successfully bring the issue into compliance with the Policy through the ESAP. Table 10 below illustrates the approach to be taken.

Table 9-2 Risk / Confidence

Risk	**High**	**PC**	**MN**	**MN**
	Medium	**PC**	**PC**	**MN**
	Low	**FC**	**PC**	**PC**
		High	**Medium**	**Low**
	Confidence			

Table 9-3 Summary of EBRD Performance Requirements and IFC Performance Standards for the Investment Programme

KPI REF.	PERFORMANCE REQUIREMENT	EBRD PR	IFC PS	SCORE	COMMENTS / ISSUES	ACTIONS REQUIRED	ESAP REF.
EBRD PR 1 **IFC PS 1**	ASSESSMENT AND MANAGEMENT OF ENVIRONMENTAL AND SOCIAL IMPACTS AND ISSUES ASSESSMENT AND MANAGEMENT OF ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS **Summary:** EIAs completed where required and decision letters obtained however there are a number of sites where the EIA process is underway or required. Akfen Energy does not operate a certified environmental management system.						
1.1	**Environmental and Social Assessment**	✓	✓	PC	EIA has been completed for Mersin CCGT and Overhead Line (OHL) and decision letter obtained. The EIA gap analysis for both Mersin CCGT and the OHL by WSP PB against EU, IFC and EBRD standards completed as part of this EHSS audit has identified a number of shortcomings in the EIA for both projects. Of special note is the update of noise and air quality modelling to take into account potential impacts on the newly built domestic abuse shelters. There are a number of recommendations that are included in the ESAP.	Ensure that the shortcomings identified in the EIA gap analysis for both Mersin CCGT and OHL are assessed prior to finalisation of detailed design and construction.	3.1.2 3.1.3
					The HEPP projects are currently at various stages. EIAs have been completed where required and decision letters obtained; however there are a number of sites where the EIA process is underway or still required. All WPPs require an EIA but not as yet completed; these will be undertaken after pre-licensing application from energy regulator. Four SPP projects require an EIA but not yet available (Yaysun-1 has an official EIA exemption letter).	Ensure where required all EIAs are undertaken in accordance with national and international requirements.	3.1.1
					The 154 kV east-west line upgrade running through Mersin town has been declared to be in no way directly associated to the project supported by EBRD and IFC, and Akfen are committed to obtain a letter from the national network operator to confirm this. This is an important aspect in determining the depth of the Category A project coverage.	Letter regarding disaggregation of east-west 154 kV line in Mersin.	1.1.3
1.2	**Environmental and Social Management**	✓	✓	PC	Afken Energy does not currently operate a certified environmental management system (EMS).	Develop and implement an EMS aligned to ISO 14001. This should	1.1.1

KPI REF.	PERFORMANCE REQUIREMENT	EBRD PR	IFC PS	SCORE	COMMENTS / ISSUES	ACTIONS REQUIRED	ESAP REF.
	Systems				Management approaches adopted by Akfen Energy are currently based on risk assessment and inspection processes to inform specific safety controls to be implemented at their operational sites. A number of centralised procedures (or standards) have been established for consistent management of key safety risk areas.	include an audit program for the EMS and legal compliance to be undertaken by an external consulting company to identify gaps and opportunities for Improvement.	
1.3	**Environmental and Social Policy**[4]	✓	✓	PC	A formal Environmental Policy developed by Akfen Holding Company is used by Akfen Energy, although it is not tailored to their specific operations. There is a formal health & safety policy established for Akfen Hydro power only (part of Akfen Energy) since 2012. It is currently being considered to extend this policy to cover Akfen Energy.	Develop and implement an overarching policy specific to Akfen Energy defining environmental and social objectives and principles to achieve sound performance in these areas.	1.1.1
1.4	**Identification of Risks and Impacts**		✓		Refer to KPI Ref 1.1 above.	Refer to KPI Ref 1.1 above.	
1.5	**Environmental and Social Management Plan / Programmes**	✓	✓	PC	No environmental and social management plans/ programmes have been developed for any Akfen Energy project as part of the EIA process to address identified environmental and social risks and impacts of projects. Of particular note, significant risks were identified around traffic management at Cicekli HEPP and further improvements required around stakeholder management. Refer to KPI Ref 4.7 and 10.1 below.	Refer to KPI Ref 4.7 and 10.1 below.	4.7.1 and 10.1.1
1.6	**Organisational Capacity, Commitment and Competency**	✓	✓	PC	Akfen Energy has a management structure established for EHS, with a designated Board member of Akfen Energy/ Holdings Board responsible for EHSS. An environmental engineer who works across operations of Akfen Energy and a central Environmental Assistant who provides technical assistance. Furthermore, each of TPP, HEPP and SPP portfolio has a dedicated head with	As part of the development of the EMS clearly defined reporting structures and responsibilities should be implemented from Akfen Holding through Akfen Energy to each individual site.	1.1.2

[4] Where the project represents a substantial extension to the client activities, confirm that Policy and supporting management systems and plans are appropriate for the new activities.

KPI REF.	PERFORMANCE REQUIREMENT	EBRD PR	IFC PS	SCORE	COMMENTS / ISSUES	ACTIONS REQUIRED	ESAP REF.
					overall responsibility for all permits, licenses and overall EHSS management for that part of the business. However, reporting structures and responsibilities within Akfen Energy between individual sites and senior management levels were not clearly defined.		
1.7	**Supply Chain Management**	✓			Akfen use suppliers that have the potential to influence EHSS performance in construction, provision of energy production and maintenance. Construction support is predominantly provided by Akfen Construction (also part of Akfen Group) who operates to their own certified management systems, and work to a project specification provided by Akfen Energy. Key suppliers and contractors can also be used for major project delivery using a turnkey, EPC model or separate engineering and procurement contracting.	It is important that the relevant ESAP requirements, as well as other documentation are cascaded down to these major suppliers / contractors as relevant. This is a critical area in ensuring that the requirements of EBRD and IFC are implemented on the projects.	1.1.3
1.8	**Project Monitoring, Reporting[5] and Review**	✓	✓	PC	A system of monthly inspections at each project locations has been established aligned to Turkish legal requirements. Formal internal audits are undertaken by Akfen Holding Company as per a published audit schedule covering technical, environmental and health and safety aspects. Akfen Holding Company also completes spot checks using third party external EHS specialists. Audit reports are formally reviewed by Akfen Energy Management, with findings being addressed and closed out using a formal corrective action system. Current reporting of project performance against the full range of EHSS requirements is not currently formally undertaken.	Develop and implement an EMS aligned to ISO 14001 that includes project monitoring, reporting and review procedures.	4.2.1 10.1.1
1.9	**Stakeholder Engagement**		✓	PC	Refer to KPI Ref 5.1-5.9 and 10.1 below.	Refer to Section 10 below.	

[5] At appraisal stage there will be limited information. Compliance assessment should address specific plans for monitoring and reporting (against for example ESAP requirements) and also consider whether there is evidence of weak monitoring/reporting by client on other relevant projects - which may reduce confidence in future performance.

KPI REF.	PERFORMANCE REQUIREMENT	EBRD PR	IFC PS	SCORE	COMMENTS / ISSUES	ACTIONS REQUIRED	ESAP REF.
1.10	**External Communications and Grievance Mechanisms**		✓	PC	There is no current external communication procedure established. Refer to KPI Ref 10 below regarding Grievance Mechanisms.	Refer to KPI Ref 10 below.	10.1.1
EBRD PR 2 **IFC PS 2**	LABOUR AND WORKING CONDITIONS **Summary:** Afken Energy's approach to labour, working conditions and health and safety complies with national labour law. Further improvements are required in terms of developing a policy and procedure to fully comply with international requirements. A number of actions have been identified where gaps exist.						
2.1	**Human Resource Policies, Working Relationships and Procedures**	✓	✓	PC	Human Resources processes relating to Akfen Energy reside at Corporate level and comply with national labour laws. Akfen Energy's procurement documentation requires compliance with national law on labour and working conditions and stipulate health and safety performance requirements at contract stage prior to awarding the works. However, observations made during the site visits and review of documentation in the data room indicated occasions of non-compliance by appointed contractors/ sub-contractors with these requirements.	Develop and adopt Human Resource Policy and management system covering all employees, contractors and sub-contractors.	2.1.1
2.2	**Terms of Employment, Wages, Benefits, Working Conditions and Accommodation**	✓	✓	PC	Akfen Energy provides terms of employment, wages, benefits and working conditions align with national legal requirements, and are regulated by an employment contract, signed by the employee and the employer in accordance with Turkish Labour Law. It was noted that staffing levels at HEPPs appears minimal. Akfen Energy does not provide worker accommodation for their operational sites. No suitable welfare facilities were established at the Cicekli project during the construction of the road to the proposed HEPP location prior to the construction of laydown area and more semi-permanent facilities.	Refer to KPI Ref 2.1 above. Arrangements should be in place for construction workers so that they should have access to welfare facilities such as drinking water, toilets and dining facilities prior to the construction of laydown area and more semi-permanent facilities aligned with the joint EBRD and IFC standards for worker	2.1.1 2.1.3

KPI REF.	PERFORMANCE REQUIREMENT	EBRD PR	IFC PS	SCORE	COMMENTS / ISSUES	ACTIONS REQUIRED	ESAP REF.
						accommodation and welfare (non-residential).	
2.3	**Workers Organizations**	✓	✓	FC	There is no trade union type of worker's organisation currently operating within Akfen Energy. It is currently unknown whether contractors used by Akfen Energy have worker's organisations and whether they have a collective agreements in place. It was reported that workers would be free to join, however it is recommended to formalise this arrangement.	Develop and adopt Human Resource Policy and management system covering all employees, contractors and sub-contractors to include access to worker's organisations.	2.1.1
2.4	**Non-Discrimination and Equal Opportunity**	✓	✓	PC	There are no barriers for women to work at Akfen Energy sites. However, culturally women at some locations do not typically apply for jobs on HEPPs. It is recommended that to formalise this arrangement.	Develop and adopt Human Resource Policy and management system covering all employees, contractors and sub-contractors to include non-discrimination and equal opportunity.	2.1.1
2.5	**Retrenchment**[6]	✓	✓	FC	No retrenchment has occurred and none is foreseen by Akfen Energy.	No actions required.	
2.6	**Grievance Mechanism**	✓	✓	PC	There is currently no central grievance management process or published grievance mechanism. An unofficial grievance mechanism was reported during the site visit indicating that there is an "open" door policy and employees are encouraged to approach their line manager and senior management to discuss any complaints, comments or incidents.	Set up and maintain a formal grievance mechanism for employees and contractors and disseminate information about its uses to the workforce.	2.1.2
2.7	**Child and Forced Labour**	✓	✓	PC	Akfen do not use child or forced labour. An "Ethics Code" is published at holding company level that sets out a clear specific commitment on employee behaviour. The minimum working age in Akfen is 18 years old and proof of age is checked as part of the employment contracting process. Furthermore, there is a statement in the	Develop and adopt Human Resource Policy and management system covering all employees, contractors and sub-contractors to include child labour and force labour policies.	2.1.1

[6] Will not be applicable to many projects at appraisal stage. However evidence, within the last 3 years of client approach to retrenchment which is not compatible with the Policy should be taken into consideration.

KPI REF.	PERFORMANCE REQUIREMENT	EBRD PR	IFC PS	SCORE	COMMENTS / ISSUES	ACTIONS REQUIRED	ESAP REF.
					contracts with sub-contractors that they must comply with national law with a general working age of 18 (but with an overall minimum age of 16 with special controls required for persons aged 16-18 years old).		
2.8	**Occupational Health and Safety**		✓		Refer to Section 4 below.	Refer to Section 4 below.	
2.9	**Non-Employee Workers / Workers Engaged by Third Parties**	✓	✓	NA	Akfen Energy employs people on contracts as employees. The contractual agreements and schedules of contractors and other employees are unknown. Akfen Energy requires all contractors and sub-contractors to comply with the requirements in the procurement documents in line with national legal requirements.	No actions required.	
2.10	**Supply Chain**	✓	✓	PC	Akfen Energy's procurement documentation requires compliance with national law on labour and working conditions and stipulate health and safety performance requirements at contract stage prior to awarding the works. Whilst checks are completed, the supervision within the supplied construction companies are failing to enact the procedures that have been established.	Develop and adopt Human Resource Policy and management system covering all employees, contractors and sub-contractors.	2.1.1
2.11	**Security Personnel Requirements**	✓		FC	Security guards are employed as Akfen employees on a number of Akfen's sites, and they are required to comply with Akfen's policies and procedures. No armed guards are used by Akfen and training of guards is undertaken.	No actions required.	
EBRD PR 3	RESOURCE EFFICIENCY AND POLLUTION PREVENTION AND CONTROL						
IFC PS 3	RESOURCE EFFICIENCY AND POLLUTION PREVENTION						
	NB. Appraisal should carefully consider (and state) what regulations or standards have been applied to compliance assessment (eg EU, National, Sector Best Practice). Assessments should address consideration of the performance of alternative techniques.						
	Summary:						
	A number of action areas have been listed below where gaps have been identified by this review.						
3.1	**Resource Efficiency**	✓	✓	PC	A preliminary high-level assessment of BAT has been completed for Mersin CCGT as part of this assignment against proposals from Akfen Energy's Technical Specification. This review was to determine whether techniques have been considered in the determination of		

KPI REF.	PERFORMANCE REQUIREMENT	EBRD PR	IFC PS	SCORE	COMMENTS / ISSUES	ACTIONS REQUIRED	ESAP REF.
					BAT in order to limit environmental impacts and evaluate compliance with PR/ PS 3. There were a number of areas identified where BAT requirements are not met, including: • Akfen does not currently operate a formalised management system. • Detailed design for the CCGT is currently being finalised and suitability of expansion turbines in has supply line is unknown. • Stack optimisation study has been completed as part of the detailed air quality modelling assessment (stack determined at 30m). However, a new sensitive receptor (housing adjacent to west) has been identified. • Currently the final destination of the combustion residues is unknown.	Develop and implement an EMS aligned to ISO 14001. Assess feasibility of using expansion turbines once EPC contractor has been selected. Update the air quality impact and stack optimisation studies to consider impacts on the new sensitive receptor. Consider reuse/ recycling options for the combustion residues.	1.1.1 3.1.3 3.1.3 3.1.3
3.2	**Pollution Prevention and Control - Air emissions**	✓	✓		The detailed design for Mersin CCGT is currently unknown. Quantitative air modelling was undertaken in July 2013 using internationally recognised tool. The study indicated that the predicted emission impacts at settlements were within limit values and the air quality report concludes that the effect of Mersin CCGT on ambient air quality in the receiving environment is not anticipated to be significant. However, since this modelling was undertaken new housing has been developed on the western site boundary, and as such this new sensitive receptor was not considered within the July 2013 air modelling exercise. HEPP, WPP and SPP projects do not emit air emissions.	Check air quality impacts and the stack optimisation taken in to consideration this new sensitive receptor (new housing adjacent to western site boundary).	3.1.3
3.3	**Pollution Prevention and Control - Wastewaters**	✓	✓	PC	Mersin CCGT wastewater discharges include cooling water discharge, release from the desalination plant and also the demineralisation plant. The technical specification developed by Akfen to invite EPC contractor tender does include liquid effluent limits in line with the WPCR for Turkey and World Bank EHS Guidelines for Thermal Power Plants. Wastewater discharges from HEPPs, WPPs and SPPs is	Ensure chosen design meets the environmental limits stipulated in Akfen's technical specification. Review and improve controls to	3.1.3

KPI REF.	PERFORMANCE REQUIREMENT	EBRD PR	IFC PS	SCORE	COMMENTS / ISSUES	ACTIONS REQUIRED	ESAP REF.
					limited to surface water run-off typically to river. However, some of the hazardous material stores were equipped with an underground sump to collect potentially contaminated water in the event of accidental spillage/ leakage. Akfen has been subject to a number of environmental penalties associated with unauthorised dumping of construction wastes or wastewater discharge.	management of liquids with the potential to cause harm. Measures should be implemented to ensure that during maintenance activities no oil can discharge to drainage channels such as the cooling water channel at Yagmur next to the generator. This should be reviewed for risks across all sites	3.1.4
3.4	**Pollution Prevention and Control - Land**		✓	MN	A geotechnical site investigation was performed on the Mersin CCGT site (installed 15 boreholes). No information on ground contamination was available. National law stipulate a set of pollution indicator parameters for the previous use of the site for electricity generation, transmission and distribution, and that should the land change ownership the new owners would be responsible for ensuring the site's land condition complies with the pollution indicator parameter requirements. All the operational HEPPs and one operational SPP are recently constructed and there are no visible signs of ground contamination at those that were subject to site visit.	Complete an appropriate site investigation to determine the soil and groundwater contamination and undertake any remedial work in accordance with the Regulation.	3.1.3
3.5	**Greenhouse Gases**[7]	✓	✓	PC	GHG emissions from Mersin CCGT have been calculated in this report using both the EBRD GHG Assessment Methodology and the IFC tool, although the volume of SF_6 contained in the generator circuit breakers is unknown so potential release could not be quantified. This CO_2 figure should be offset by the renewable proportion of the energy portfolio. Akfen energy will need	Systems should be put in place with regards to the control and management of SF_6 across all sites. This should detail how much is used at each site along with leak detection measures and where required to top up how much has	3.1.6

[7] Particular attention should be given to client demonstration of consideration of alternatives. Projects expected annually to produce more than 25,000 tonnes of Co2 equivalent should provide an emission inventory and plans for annual reporting.

KPI REF.	PERFORMANCE REQUIREMENT	EBRD PR	IFC PS	SCORE	COMMENTS / ISSUES	ACTIONS REQUIRED	ESAP REF.
					to prepare annual project environmental reports for this project; this mechanism could be used to quantify and report GHG emission related to the investment, including direct emission, but offset by the renewables assets within the investment portfolio.	been used and lost. GHG reporting to EBRD and IFC.	10.1.6
3.6	**Water**	✓	✓	PC	Information is provided on water consumption for the CCGT abstracted from the sea via cooling water intake, with a proportion sent to desalination unit, and potential discharges and impacts overall. Cooling water is needed to return the condensate to the HRSG and an option being considered is wet cooling using a natural or mechanical draft cooling tower. Significant volumes of water from nearby rivers are used at HEPPs to drive the turbines to generate power; this water is return to the river to maintain ecological flow. The cumulative impacts of water abstraction for the HEPPs is monitored and assessed, and mitigation measures have been implemented. There is no significant use of water at the WPPs and SPPs projects.	A chemical dosing regime for the CCGT needs to be established if the option of the Cooling Towers is selected. It is recommended that an environmental monitoring assessment is undertaken to verify the biological effectiveness of the ecoflows.	3.1.11
3.7	**Wastes**	✓	✓	PC	Anticipated wastes have been identified within this review from operational and construction sites and disposal routes are confirmed. Note: Wastewater discharges from HEPPs, WPPs and SPPs is limited to domestic and sanitary wastewater typically collected in septic tanks and tankered off-site for disposal. Some sites are fitted with an underground sumps associated with the hazardous materials that can collect potentially contaminated water in the event of accidental spillage/ leakage.	All oil and septic waste transfers should take place on hardstanding away from drainage gullies or land with no primary containment. Systems should be implemented at construction sites for the segregation and collection of wastes in a similar fashion as to that from operational sites. This would ensure effective collection and storage.	3.1.4 3.1.7
3.8	**Safe Use and Management of Hazardous Substances and Materials**	✓	✓	PC	No significant use of hazardous materials at Akfen Energy operational sites and construction sites. Where such exposure risks are present risk assessment have been completed and control measures have been established to minimise risk of exposure and impact on sensitive receptors. However, there are further	All oil stores should be bunded, bunds should be resistant to materials being stored and not constructed from blocks. Spill kits should be maintained at all	3.1.4 3.1.5

KPI REF.	PERFORMANCE REQUIREMENT	EBRD PR	IFC PS	SCORE	COMMENTS / ISSUES	ACTIONS REQUIRED	ESAP REF.
					protection measures that are required in the form of addition secondary containment, provision of spill kits, and inspection/ maintenance regimes implemented at the sites (e.g. around bunding and seals between block bunds, concrete and mesh used for landslip protection). Furthermore, the LPG storage at Yagmur is in an area where the septic tank is located and there is the potential for accidental damage via vehicle movements.	sites including construction sites to minimise any potential release to the environment. It should be confirmed for Yagmur when the site has ceased to use LPG for heating. The LPG storage is in an area where the septic tank is located and there is the potential for accidental damage via vehicle movements. Aquatic grid on inlet at Otluca HEPP may be insufficient and needing corrected; review required. Ensure there is an inspection and maintenance regime put in place at all sites.	3.1.8 3.1.9 3.1.10
3.9	**Pesticide Use and Management**	✓	✓	NA	No pesticides are reported to be used or managed at the sites.	No actions required.	
EBRD PR 4 **IFC PS 4**	HEALTH AND SAFETY COMMUNITY HEALTH, SAFETY, AND SECURITY **Summary** A number of actions areas have been identified where gaps have been identified in this review.						
4.1	**Occupational Health and Safety**	✓		PC	There is currently no formal permit to work system in place for activities undertaken on the sites and no formal EHS system and corporate procedures in place for Akfen Energy. H&S approaches by Akfen Energy are based on risk assessment and inspection processes to inform specific safety controls to be implemented at the respective sites. A number of centralised procedures (or standards) have been established for consistent management of key safety risk areas. There were a number of deficiencies in health and safety arrangements noted during the site visits, including establishment of formalised inspections for safety and	Develop and implement a health and safety management system aligned to OHSAS 18001. This should include an audit program for health and safety and legal compliance to be undertaken by an external consulting company to identify gaps and opportunities for Improvement. Inspections for safety and suitability of all equipment used for worker protection or use need to be	4.1.1 4.1.4

KPI REF.	PERFORMANCE REQUIREMENT	EBRD PR	IFC PS	SCORE	COMMENTS / ISSUES	ACTIONS REQUIRED	ESAP REF.
					suitability of worker equipment (e.g. safety harnesses, man-safe systems, ladders and slings/ ropes), slip/ trip and fall hazards on ground and at height, potential confined space entry, lack of earthing on some electrical cabling, ineffective electrical lock-off system, inadequate and unsecured use and storage of ladders, temporary repair to portable electrical equipment, lone working. Health and safety issues were also noted at the construction sites comprising use of inadequate footwear by construction operator, insufficient supervision of construction works by Akfen Energy, inadequate construction walkways and scaffolding erected presenting a potential slip/ trip/ fall hazard, damage to earthing cable of flood light that had been temporarily repaired, piece of welding equipment showing signs of fraying and damage to electrical connections along with temporary repairs, lack of first aid provision and insufficient welfare facilities. There is a health surveillance programme in place. Health and safety monitoring is undertaken via an online reporting system that takes into account accidents and near misses. The company does not include in their reporting, the accidents of their construction contractors. Within the law, it is reported to be their responsibility to report these.	formalised and recorded. Health and safety arrangements should be reviewed at all operational and construction sites to include PPE provision, pedestrian walkways/ vehicle access delineation, portable electrical equipment checks, first aid kit provision (construction sites) and sun protection/ drinking water provision for workers. All equipment used for bridging gaps and working at height at construction sites should be fit for purpose. A review of cable tray locations should be undertaken at all sites to prevent the potential for trip hazards. A review of earthing should be undertaken at all sites to ensure effective arrangements are in place.	4.1.2 4.1.5 4.1.6 4.1.7
4.2	**Community Health and Safety**	✓	✓	PC	There are no public health issues identified for the proposed project sites in relation to their activities, as long as the construction and operation of the sites are in compliance with European norms. There are opportunities to implement safe practices during construction to minimise potential impacts to local communities during construction (incidents with road, communities and livestock). During the 12km section of the proposed route for the 380kV OHL (partly renewed) from the Mersin CCGT to the Mersin 380kV substation, a number of commercial properties were observed which are likely to be within the	Implementation of safe practices during construction to minimise potential impacts to local communities during construction. These measures should be part of Construction Environmental Management Plans – which should include traffic management plans). Ensure that the relevant horizontal / vertical distances as stipulated in the Regulation of Electric Power Installations No. 24246	4.1.3 4.1.9

KPI REF.	PERFORMANCE REQUIREMENT	EBRD PR	IFC PS	SCORE	COMMENTS / ISSUES	ACTIONS REQUIRED	ESAP REF.
					route of the OHL.	(30.11.2000) are adhered to and within built up areas of Mersin, where the proposed refurbished line passes over commercial properties, undertake detailed calculations to determine the levels of expected EMF and build the results into the tower design.	
4.3	**Infrastructure, Building, and Equipment Design and Safety**	✓	✓	PC	Afken Energy does incorporate health and safety considerations into the design, construction and operations of their projects. Although, a few deficiencies were noted during the site visits, including water seepage noted in the concrete of the turbine hall at Demerciler; this needs to be assessed for whether this requires remedial action. The measures in place at Otluca that were reported to protect fish looked more like a barrier to catch debris entering the plant and the site could not confirm the associated dimensions. As the Dams within the HEPPs are new there is not currently a formalised system for inspection and maintenance as part of the formal Dam Safety Programme.	Ensure there is an inspection and maintenance regime put in place at all sites to cover water ingress on concrete joints in turbine halls. Aquatic grid on inlet at Otluca HEPP insufficient and needing corrected. Develop and implement a Dam Safety programme to align with ICOLD Standards.	3.1.10 3.1.9
4.4	**Hazardous Materials Management and Safety**	✓	✓	PC	There is no significant use and management of hazardous materials at operational sites. Any bulk hazardous materials at the CCGT site will be demineralisation chemicals and back-up fuel in dedicated bunded aboveground storage tanks. The main raw materials and consumables used at each of the HEPP sites are oils for use within the transformers and generators that are delivered in 205 litre drums and stored in secure storage areas. Although some minor improvements are still required.	It is recommended at the Camlica HEPP that a containment kerb be added to the front of the waste oil store and that secondary containment extends to include the new oil drums. All HEPP sites are recommended to keep a spill containment kit adjacent to the drum storage areas.	
4.5	**Ecosystem Services**		✓	NA	Refer to Section 6 below.	No actions required.	
4.6	**Product and Services Safety**	✓		PC	This project does not involve production of and/ or trade in consumer products. The project involves the provision	Refer to Section 1 above.	1.1.1

KPI REF.	PERFORMANCE REQUIREMENT	EBRD PR	IFC PS	SCORE	COMMENTS / ISSUES	ACTIONS REQUIRED	ESAP REF.
					of renewable energy to communities. Afken Energy does not currently operate a certified management system to ensure through appropriate management systems to avoid risk and impacts on workers or community health and safety. Public access to Akfen's operational sites is strictly controlled.		
4.7	**Traffic and Road Safety**	✓		MN	Risks associated with traffic and vehicle movement on construction projects are not fully evaluated. This was evident during the site visit where there was a significant near miss collision on the way up to the Cicekli site involving the vehicle containing the audit team and a local excavator used as part of an existing mining operation. No traffic management plan/ system were in place for these construction works. There was no traffic management plan developed and implemented as part of the Mersin CCGT EIA.	Implementation of safe practices during construction to minimise potential impacts to local communities during construction. These measures should be part of Construction Environmental Management Plans – which should include traffic management plans).	4.1.3
4.8	**Natural Hazards**	✓		FC	Risk of landslides if disturbed areas are in place on steep slopes within the vicinity of a number of HEPPs. Landslide mitigation measures as part of the project design had been implemented at a number of HEPP sites, however the concrete/ mesh protection at the site is not subject to formal inspection/ maintenance regime.	Ensure there is an inspection and maintenance regime put in place at all sites to assess concrete and mesh used for landslip protection. Continue soil stabilisation programmes with replanting schemes.	3.1.10
4.9	**Workers Exposure to Disease**	✓		FC	There will be a construction welfare facility (no accommodation facility to be provided) at Cicekli associated with the HEPP development at that location. There will be a construction workforce present in the area, the majority are anticipated to be local and will reside in the local settlement. The construction workforce are not likely to represent a substantial risk in terms of disease profile or sexually transmitted diseases.	No actions required.	
4.10	**Community Exposure to Disease**	✓	✓	NA	There is no public health issues identified for the proposed project sites in relation to their activities as long as construction and operation of sites are in compliance with European norms.	No actions required.	

KPI REF.	PERFORMANCE REQUIREMENT	EBRD PR	IFC PS	SCORE	COMMENTS / ISSUES	ACTIONS REQUIRED	ESAP REF.
4.11	**Emergency Preparedness and Response**	✓	✓	PC	There are emergency response plans in place; first aid, fire, floods. Plan covers details such as response approaches, reporting etc, and are locally tailored, showing areas such as fire exit route etc. There is a specifically nominated and trained team at each location, for handling of emergency situations. There is coverage on each shift. There are no off site emergency plans based on the sample of sites assessed.	ESAP item to under review of Dam Safety in line with ICOLD standards, which may include a required off-site emergency planning for any key risk locations.	4.1.8
4.12	**Security Personnel**		✓	NA	Refer to Item 2.11 above.	No actions required.	
EBRD PR 5 **IFC PS 5**	LAND ACQUISITION, INVOLUNTARY RESETTLEMENT AND ECONOMIC DISPLACEMENT LAND ACQUISITION AND INVOLUNTARY RESETTLEMENT **Summary:** A number of actions areas have been identified where gaps have been identified in this review.						
5.1	**Avoid or minimise displacement**	✓		PC	Akfen Energy have acquired or will acquire the land for each of their operational sites through an agreed structured acquisition process either with individual stakeholders, treasury or from the Ministry of Forestry and Water to avoid or minimise displacement. 274 transmission towers (132 carrier towers and 142 stopping towers) are proposed along the along the 115km OHL route. Expropriation of areas along the route will be carried out through the conciliation committee established by TEIAS in line with national law. The exact area to be expropriated cannot be confirmed until expropriation plans are fully developed. However, the line route has been designed to avoid any physical resettlement.	Develop and implement a land acquisition and compensation framework to ensure IFC and EBRD requirements are implemented. Ensure that the shortcomings identified in the EIA gap analysis for the OHL are assessed.	3.1.2
5.2	**Consultation and Community Engagement**	✓	✓	PC	In the past, consultation has been undertaken with the various local communities prior to construction of new projects often aligned with regulatory systems (e.g. for EIA project) and for five projects developed under the CDM carbon credits system. This consultation has not been formally recorded, and is not proactively continued by Akfen during operation of their projects. No action	Implement the SEP (See Action 10.1 to develop an SEP).	5.1.1

KPI REF.	PERFORMANCE REQUIREMENT	EBRD PR	IFC PS	SCORE	COMMENTS / ISSUES	ACTIONS REQUIRED	ESAP REF.
					plan document(s) has/have been prepared and disclosed to the affected communities, and no strategy been determined to handle the problems or objections that may emerge within the community or other parties.		
5.3	**Compensation and Benefits for displaced persons**	✓	✓	PC	Land valuing takes into account the current use of the land and this is reflected in the valuing (eg if it is productive agricultural land etc). There is no currently prescribed and systematic method to incorporate economic displacement and livelihood restoration risks as part of this process. Projects have involved physical and economic resettlement, and new houses etc have been developed, but on a case by case basis rather than through a published and systematic approach. There are still 17 expropriation cases outstanding in relation to Doruk HEPP awaiting the final decision of the court due to issues around inheritance. The expropriation procedure was in accordance with that required by Turkish Law.	Provide an update on the progress to close out all land acquisition claims with regards to Doruk Provide details with regards to the proposed financial compensation with regards to the purchase of the shelters near to Mersin CCGT. This should include all stakeholder communications, minuted meetings and evidence that all issues raised have been addressed.	5.1.2 5.1.3
5.4	**Grievance mechanism**	✓	✓	PC	There is no formal grievance mechanism in place for local communities should they require to contact Akfen Energy. It was stated that for all project locations the local village halls/ Mayor's offices have the company contact details should they be required to contact them.	Implement a formal grievance mechanism, and continued consultation with people affected by land acquisition	5.1.1
5.5	**RAP/LRP documentation**	✓		PC	No Resettlement and/ or Livelihood Restoration Framework has been established to set out Akfen's land acquisition related activities. Although, Akfen Energy does acquire land for each of their projects through an agreed structured acquisition process with respective land owners.	Develop a land acquisition and compensation framework for the purchase of land for new projects.	5.1.4
5.6	**RAP/LRP planning and implementation**	✓	✓				
5.7	**Monitoring**	✓		PC	Akfen Energy has not as yet established a monitoring and evaluation system for Project Stakeholder Management processes. Issues as and when they arise tend to be addressed via e-mail and there is no registered follow-up mechanism.	Refer to KPI Ref 5.6 above.	5.1.4
5.8	**Physical Displacement**	✓	✓	PC	Physical displacement has been a feature of only one	Refer to KPI Ref 5.6 above.	5.1.4

KPI REF.	PERFORMANCE REQUIREMENT	EBRD PR	IFC PS	SCORE	COMMENTS / ISSUES	ACTIONS REQUIRED	ESAP REF.
					project, the Calikovasi HEPP.		
5.9	**Economic Displacement**	✓	✓	PC	Due to land demands of the projects, there is potential for economic displacement, mainly through the use of agricultural land and pastures. Some projects have included economic settlement features, such as funding of local amenities etc.	Refer to KPI Ref 5.6 above.	5.1.4
EBRD PR 6 **IFC PS 6**	BIODIVERSITY AND LIVING NATURAL RESOURCES BIODIVERSITY CONSERVATION AND SUSTAINABLE MANAGEMENT OF LIVING NATURAL RESOURCES **Summary:** A number of action areas have been identified where gaps have been identified in the ESIA as follows.						
6.1	**Assessment of Biodiversity and Living Natural Resources**	✓	✓	PC	The EIAs (and supplementary documents) for both the CCGT and OHL provide sufficient information on terrestrial ecology and aquatic ecosystems and protected species. Although mitigation measures need to be further defined for the CCGT, and further mitigation is required for the OHL for species protection. No detailed assessment of bird interests has been carried out at these sites by Akfen Energy. A high-level desk-based screening review of existing information by WSP PB to identify constraints to the proposed WPP was completed as part of this assignment. WPPs were identified with Major (two), Moderate (five), Minor (two) or no known constraints (five) relating to bird interests.	Ensure shortcomings of the EIA gap analysis for both Mersin CCGT and OHL are assessed. Full site-specific ecological and ornithological survey across relevant WPPs if required and extending over a sufficient timeframe.	3.1.1 3.1.2 6.1.2 6.1.3
6.2	**Protection and Conservation of Biodiversity**	✓	✓	PC	EIA contains mitigation proposals to safeguard protected species. Although mitigation measures need to be further defined in relation to the Mersin CCGT project, and further mitigation is required for the OHL for species protection. A number of mammalian, amphibian and reptilian species found in the IUCN red list were identified during the OHL field study, in addition to some birds that fall under categories in the IUCN red list and some species listed in the Bern Convention Appendix II and III. Required mitigation is included in the ESAP.	Pre-construction surveys of Mersin CCGT and OHL corridor required to check for presence of protected species. Design and installation of conductors and isolators on OHL to avoid electrocution hazard. OHL sections that are vulnerable to bird collision marked with bird diverters.	3.1.2 3.1.3

KPI REF.	PERFORMANCE REQUIREMENT	EBRD PR	IFC PS	SCORE	COMMENTS / ISSUES	ACTIONS REQUIRED	ESAP REF.
6.3	**Management of Ecosystem Services**		✓	PC	The calculated ecological flows at the HEPPs represent in all cases at least 10% of the mean annual flow and are variable monthly. There is a lack of consistency in the choice of methods from one HEPP to the other. For example, in the case of Demirciler HEPP, the ecoflow is based on the result of the wet environmental method. For Yagmur, the ecoflow is the average of Tennant and wet environment methods. For Cicekli, it is the flow duration indicator.	It is recommended that an environmental monitoring assessment is undertaken to verify the biological effectiveness of the ecoflows	3.1.11
6.4	**Supply Chain**	✓	✓	PC	Refer to KPI Ref 2.10. Relevant to cascade of ESAP requirements to EPC or construction contractors.	Refer to KPI Ref 2.10.	
EBRD PR 7	INDIGENOUS PEOPLES **Summary:** Not applicable as there are no indigenous people in Turkey.						
7.1	**Indigenous People Assessment**	✓		NA	There are no indigenous peoples.	No actions required.	
7.2	**Adverse Effects Avoidance and Indigenous Peoples Development Plan**	✓	✓	NA	There are no indigenous peoples.	No actions required.	
7.3	**Information Disclosure, Meaningful Consultation, Informed Participation and Consent**	✓	✓	NA	There are no indigenous peoples.	No actions required.	
7.4	**Grievance Mechanism and Prevention of Ethnically Based Discrimination**	✓	✓	NA	There are no indigenous peoples.	No actions required.	
7.5	**Compensation and Benefit-Sharing (including mitigation**	✓	✓	NA	There are no indigenous peoples.	No actions required.	

KPI REF.	PERFORMANCE REQUIREMENT	EBRD PR	IFC PS	SCORE	COMMENTS / ISSUES	ACTIONS REQUIRED	ESAP REF.
	and Development Benefits)						
7.6	**Impacts/Relocation on Traditional or Customary Lands and Cultural Heritage**	✓	✓	NA	There are no indigenous peoples.	No actions required.	
EBRD PR 8 **IFC PS 8**	CULTURAL HERITAGE **Summary:** EIAs for OHL and Mersin CCGT have considered cultural heritage areas, and assessed as not significant. No information is available HEPP, WPPs or SPPs under construction or in planning.						
8.1	**Assessment and Management of Impacts on Cultural Heritage**	✓			The EIAs for the OHL and Mercin CCGT describe protected natural and historical landmarks, but they are not assessed to be significant and no impacts identified respectively. No information on cultural heritage is provided for the HEPP, WPPs or SPPs under construction or in planning.	Ensure that during the EIA process for all proposed sites that cultural heritage implications are considered. Develop a chance find procedure to be used during construction to aid in managing archaeological finds. The procedure should include a method for assessing whether the risk of finds are lesser or greater prior to commencement of construction activities.	8.1.1 8.1.2
8.2	**Protection of Cultural Heritage in Project Design and Execution**		✓				
8.2	**Consultation with affected communities and other stakeholders**	✓	✓		Refer to KPI Ref section 5.1 – 5.9.	Refer to KPI Ref section 5.1 – 5.9.	
8.3	**Project's use of Cultural Heritage**	✓	✓	NA	No project use of cultural heritage envisaged.	No actions required.	
EBRD PR 10	INFORMATION DISCLOSURE AND STAKEHOLDER ENGAGEMENT **Summary:** Stakeholder engagement is typically aligned with national legal requirements. The development and implementation of a Stakeholder Engagement Plan (SEP) and grievance mechanism that ensure on-going formal consultation is required.						
10.1	**Stakeholder Engagement Plan**	✓		MN	Stakeholder engagement is undertaken for the development of each project location, often aligned with	Develop a SEP and Non-technical summary with a link to the SEP.	10.1.1

KPI REF.	PERFORMANCE REQUIREMENT	EBRD PR	IFC PS	SCORE	COMMENTS / ISSUES	ACTIONS REQUIRED	ESAP REF.
					regulatory systems. Stakeholder public meetings are carried out for each project advertised locally and nationally. Attendance in addition to comments and questions raised are recorded. On-going formal consultation has not been proactively continued Akfen during operation. The development of a SEP to ensure on-going formal consultation has been recommended as an ESAP item.	Implement the SEP to ensure systematic stakeholder engagement programme throughout project lifecycle. Appoint experienced Community Liaison Officer (CLO). Disclose documents (SEP, NTS and ESAP) as required for Category A projects.	10.1.2 10.1.3 10.1.4 10.1.5
10.2	**Operational Grievance Mechanism**	✓		MN	There is currently no central grievance management process or published grievance mechanism. The formal implementation of a grievance mechanism has been raised as an ESAP item.	Implement the grievance mechanism to ensure systematic stakeholder engagement programme throughout project lifecycle.	10.1.3
	OVERALL COMPLIANCE						
	National Environmental, Social, Health and Safety Requirements			PC	Akfen Energy portfolio is anticipated to meet national EHS legal requirements.	Action proposed in this table and ESAP.	All
	EU Environmental, Social, Health and Safety Requirements			PC	As per comments provided in this table. The implementation of the recommendations highlighted in this report will ensure that EBRD and IFC requirements are met.	Action proposed din this table and ESAP.	All

Appendix A

PHOTOGRAPHIC DOCUMENTATION

APPENDIX A-1

PHOTOLOG

Appendix X: Photographs

Photo 1: Otluca HEPP - Head race and waste segregation

Photo 2: Otluca HEPP - Oil storage compound – good practice (no spill kit present).

Photo 3: Otluca HEPP - Fish Ladder

Photo 4: Otluca HEPP - Intake Protection Grill

Photo 5: Otluca HEPP - Landscaping

Photo 6: Otluca HEPP - Enclosed ladders with fall arrestment systems

Photo 7: Mercin CCGT Site: General site and new development adjacent to the site.

Photo 8: Mercin CCGT Site: Plinths for redundant former oil tanks.

Photo 9: Mercin CCGT Site – potential asbestos containing materials

Photo 10: Mercin region OHL Route – Current 154 kV line route that will be replaced.

Photo 11: Mercin region OHL route – line likely to pass over or near commercial buildings in this area.

Photo 12: OHL new route – general rural areas to the north of Mercin town

Photo 13: Doruk HEPP - septic tank adjacent to river.

Photo 14: Doruk HEPP - LPG storage.

Photo 15: Cecekli HEPP - Road construction.

Photo 16: Cecekli HEPP - Road construction.

Photo 17: Cicekli HEPP - Proposed construction compound.

Photo 18: Yagmur HEPP - Flow monitor at.

Photo 19: Yagmur HEPP - Oil storage compound (rear) with no kerb adjacent to SE drain direct to river (drainage grill removed resulting in fall hazard).

Photo 20: Yagmur HEPP Turbine hall at lower elevation.

Photo 21: Yagmur HEPP - Regulator upstream (fish ladder to right).

Photo 22: Yagmur HEPP - Intake Protection Grill at Regulator.

Photo 23: Sekiyaka I HEPP.

Photo 24: Sekiyaka I - Oil storage compound without secondary containment.

Photo 25: Sekiyaka II - Upstream construction (unsecured ladder visible).

Photo 26: Sekiyaka II - Construction site.

Photo 27: Sekiyaka II - Construction site.

Photo 28: Sekiyaka II - Construction site (slip, trip and fall hazards).

Photo 29: Sekiyaka II - Construction site (inside new HEPP).

Photo 30: Demirciler HEPP - Sump to rear of oil storage compound (restricted access).

Photo 32: Demirciler HEPP - Water seepage through join in concrete wall.

Photo 33: Denisli SPP - Newly commissioned.

Appendix B

ENVIRONMENTAL SOCIAL ACTION PLAN (ESAP)

APPENDIX B-1

ESAP