HUNGARY M5 MOTORWAY: PHASE II

ENVIRONMENTAL IMPACT ASSESSMENT UPDATE REPORT

June 2004

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Hungary M5 Motorway: Phase II Environmental Impact Assessment Update

by the Lenders' Environmental Adviser

for

The Lenders represented by:

European Bank for Reconstruction and Development (EBRD)

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GLOSSARY OF TERMS

AKA	Project sponsors (concessionaire) also responsible for the commissioning of the environmental permit and construction permit reviews.
A Weighted Decibel	Internationally accepted unit for the most frequently used noise measurement.
Borrow Pit	Area used to obtain materials i.e. sand for construction.
CEMP	A manual which defines the approach to environmental management during construction.
DMRB	Design Manual for Roads and Bridges produced by the UK Highways Agency and recognised as a principal tool in evaluating impact, and designing mitigation, on road and bridge projects.
EIA	Environmental Impact Assessment is a procedure for considering the potential environmental effects of land use change. EIA helps to inform decision-making and enables decisions on land use change to be taken with full knowledge of the likely environmental consequences.
Eurout	Technical Advisors to the design team and Ministry.
Expropriation	The government's act of taking title to property owned by a private party without that party's consent under the authority of a law or statute, while paying compensation to the former owner.
Findspot	Place where artefacts of archaeological interest have been found.
FRAMA	Contractor responsible for conducting the Environmental Monitoring.
Habitat	The environment in which species live or grow.
Impact	The predicted physical change to the baseline conditions attributable to the construction and operation of the Phase II motorway (e.g. areas of landtake, levels of noise, degree of visual intrusion etc.).
Intertoll	Contractor responsible for Operation and Maintenance.
Mitigation Measure	Actions proposed to reduce adverse effects and to enhance ones arising from the whole or specific elements of the Phase II motorway
Ove Arup	Independent engineers to the concessionaire.
RAMSAR	The Convention on Wetlands, signed in Ramsar, Iran, in 1971, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. There are presently 138

	Contracting Parties to the Convention, with 1368 wetland sites, totalling 120.5 million hectares, designated for inclusion in the Ramsar List of Wetlands of International Importance.
SPA	Special Protection Areas are strictly protected sites classified in accordance with Article 4 of the EC Directive on the conservation of wild birds (79/409/EEC), also known as the Birds Directive, which came into force in April 1979. They are classified for rare and vulnerable birds, listed in Annex I to the Birds Directive, and for regularly occurring migratory species.
Strabag	Part of the CJV group and with specific responsibility for obtaining water permits and borrow pit licences.
Swale	A shallow vegetated channel designed to conduct and retain water, but may also permit infiltration; the vegetation filters particulate matter.
Utiber	Partners to Ove Arup (Engineers to concessionaire).
Uvaterv	Preparation of the Detailed Design.

LIST OF ABBREVIATIONS

AKA	AKA Alföld Koncessziós Autópálya Rt
CEMP	Construction Environmental Management Plan
CJV	Construction Joint Venture (Bouygues Travaux Publics S.A., Colas S.A., & BAU Holding Beteiligungs AG)
dB (A)	Decibel Level (A weighted)
DMRB	Design Manual for Roads and Bridges
EBRD	European Bank for Reconstruction and Development
EEC	European Economic Community
EIA	Environmental Impact Assessment
EPI	Environmental Protection Inspectorate
EU	European Union
Gov.	Government
HUF	Hungarian Forint
HUF/km	Hungarian Forint per kilometre
Km	Kilometres
Kph	Kilometres per hour
LPA	Landscape Protection Area
m	Metres
MSZ	Hungarian Standards Institution
NGO	Non Government Organisation
NO_2	Nitrogen Dioxide
NPA	National Park Authority
SO_2	Sulphur Dioxide
SPA	Special Protection Area
Veh/day	Vehicles per day
WHO	World health Organisation

1 INTRODUCTION

1.1 Background

In April 2004, Scott Wilson was commissioned by the European Bank for Reconstruction and Development (EBRD) as the Lenders' Environmental Adviser (LEA) for the M5 Motorway, Phase II, between Kiskunfelegyhaza and Szeged in Hungary. The LEA's task was to perform an Environmental Due Diligence review (referred to as a Gap Analysis Report) of the Environmental Impact Assessment (hereafter referred to as EIA) process..

This environmental due diligence review was followed by an environmental update study to ensure that the original Halcrow Fox EIA produced for the EBRD in 1999 complied with current EBRD procedures, Hungarian legislation and European Union (EU) legislation. The history of the project is discussed in more detail in Section 1.6 of this report.

1.2 Objectives of the Assignment

Based on the information provided to the LEA (Scott Wilson) at the start of the project in April 2004, it was recognised that the previous environmental studies may be out of date and might not comply with the new Hungarian EIA regulation (mainly transposed from the EU Directive 85/337/EEC), as well as other Loan Arrangers' requirements and the EBRD's Environmental Policies and Procedures. As such, the Arrangers commissioned Scott Wilson to perform an independent Environmental Due Diligence review into the EIA process followed by the selective update of the EIA documentation to verify the adequacy and standard of the documents, assess and provide advice and help reduce the environmental impact of the project.

This report is a selective update of the Halcrow Fox EIA (1999) to ensure EIA is brought in to line with current EBRD procedures, Hungarian legislation and European Union (EU) legislation. The Halcrow Fox Executive Summary of the EIA is provided in Annex A. This document is referenced throughout this report, and as such should be referred to in conjunction with this report.

1.3 Principal Changes to the original EIA

Scott Wilson concluded in the April 2004 due diligence review that the main environmental topic areas that required updating were the ecology, air quality, noise and vibration and water quality assessments and additional mitigation measures were likely to be required. In addition, the location of the construction compounds was not known in 1999. These have now been selected and are considered within this EIA update.

The draft Construction Environmental Management Plan (CEMP) has now been produced by the Construction Joint Venture (CJV) and sets out measures for the prevention of environmental impacts during construction. Scott Wilson have reviewed the draft CEMP and proposed addition measures for inclusion in the CEMP as set out in Section 6 of this report. The CJV has agreed to incorporate our recommendations within its final CEMP.

The draft monitoring plan has also been produced by FRAMA, on behalf of the CJV. FRAMA also carried out the monitoring for Phase I of the M5 Motorway. Scott Wilson has also reviewed this document as part of the scope of work for this project and has made suggestions for revisions to the proposed programme of monitoring. This is discussed in more detail in Section 7 of this report. The CJV and FRAMA have indicated that they will incorporate these recommendations in the final monitoring plan.

1.4 Operational Framework

The project will be constructed in accordance with current Hungarian EIA and environmental legislation, EU environmental legislation that has been adopted in Hungary, together with EU Directives that are shortly due to be implemented in Hungary, International Conventions (in particular the Aarhus Convention 2001) that have been adopted and the EBRD's Environmental Policies and Procedures.

The Hungarian and EU environmental legislation introduced prior to, and post 1999, together with relevant International Conventions, are set out in Annex B of this report, and discussed briefly in Section 3.1.

1.5 Project History

In 1991 UVATERV, a Hungarian consultant firm prepared an environmental assessment (in Hungarian with an English summary) for the proposed M5 Motorway. This report was in compliance with Hungarian environmental legislation in effect at the time. In 1998/early 1999 UVATERV prepared an update EIA report (produced in February 1999) for Phase IIa (Chainages 113.5 and 126.4 km) and Phase IIb (Chainages 126.4 and 161 km). This EIA was submitted to the Lower Tisza Environmental Protection Inspectorate (EPI) in order to obtain the necessary Environmental Permit. Environmental Permitting is discussed in more detail in Section 3.2 of this report.

The EBRD was approached for financing of the Phase II section of the M5 in 1998. The EBRD commissioned Halcrow Fox to prepare an EIA Update of the UVATERV reports to ensure that that assessment was in conformity with both the Hungarian regulations of the time and EBRD's Environmental Procedures of 1996.

A Scoping Meeting was held in Szeged in July 1998 as part of the Halcrow Fox update. However, because the motorway extension was cancelled, the updated EIA was never disclosed to the public.

The project has now returned to EBRD for consideration of financing and is subject to review under the EBRD's Environmental Policy. There is also a need to ensure it complies with current Hungarian Legislation and EU Legislation.

Hungary's environmental law has changed substantially since 1999, to bring it into harmony with EU Legislation. Furthermore, the EBRD has adopted both a new environmental policy and a new public information policy (2003). As indicated in previously in this report Scott Wilson completed a Gap Analysis Report in May 2004 to outline any deficiencies in the original studies (1991 and 1998/99), with particular reference to current EBRD Procedures, Hungarian

Legislation and EU legislation. The recommendations of this study are summarised in Section 1.8 below.

Scott Wilson has prepared this EIA update to set out how the various parties involved in the project have addressed the issues and shortfalls identified in the Gap Analysis Report, following meetings with key stakeholders and a new Scoping Meeting on 14th of June.

1.6 Analysis of Alternatives

The alignment was defined with the aim of avoiding demolition, as far as possible, of the small farms, farming and industrial buildings in the area. Due to the long timescale of the project and the fact that the alignment was identified many years ago, development and new construction has been restricted in this area thereby managing the potential future impact on the residents of this area.

Background to the analysis of alternatives is provided in Section 2.4 of the Halcrow 1999 EIA Report.

In summary, alternatives for the entire alignment length of the M5 Motorway were considered in a study for the Hungarian Government originating back to 1977. A decision on the alignment of the preferred route was made in the early 1980's by the Hungarian Government. However, construction of the M5 Motorway was halted in 1985 due to lack of financial funding. It was reported by representatives of the Ministry of Economy and Transport during the preparation of this current study, that there have been no changes to the preferred Phase II alignment of the motorway since the mid 1980s. The former reports on the analysis of the alternatives were not available to review by Scott Wilson, as it was reported that these documents have since been archived as these studies originated back to the late 1970's and early 1980's.

1.7 Recommendations from Gap Analysis Report

Based on the findings of our Environmental Due Diligence Study, Scott Wilson recommended that the following additional works should be carried out:

- The water (surface/ground), air quality and noise sections of the EIA should be updated to reflect the current situation. In particular, this would include the new environmental legislation that has been introduced in Hungary since 1999 and the changes to the proposed toll system and traffic forecast
- The concerns of the National Parks should be followed-up and the mitigation reviewed to ensure that adequate wildlife protection was included in the Detailed Design.
- The following documents should be reviewed: the Construction Environmental Management Plan; Pollution Incident Plan; sodium chloride ice removal procedures and the procedures for collecting sandblown dust on the roads; and the recultivation design for the liquid manure plant.
- The locations of the proposed Borrow Pits should be reviewed together with the environmental situation and information produced in regard to these sites.
- The detailed design should be reviewed and updated to reflect any recommended revisions to the mitigation measures in the updated EIA.

- The applications for the outstanding permits should be submitted to the appropriate authorities as soon as possible to reduce the risk of delay to the time schedule.

The above recommendations formed the basis for the Scott Wilson update of the Halcrow Fox EIA Executive Summary produced in 1999, which are described further in this report.

1.8 Structure of the Report

The remainder of this document is organised as follows:

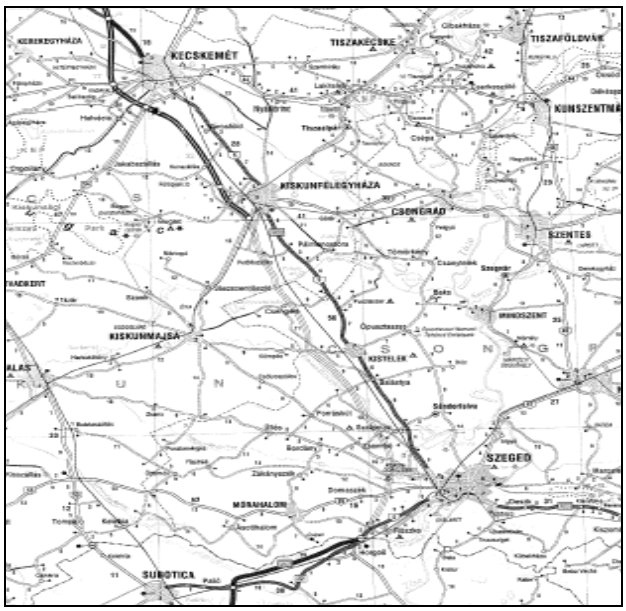
- Section 2 briefly describes the project description and key design features whilst Section 3 summarises current environmental legislation and environmental permitting requirements;
- Section 4 discusses the environmental topics and environmental issues that required updating from the previous environmental studies;
- Section 5 summarises the public consultation that has been carried out to-date on the project;
- Section 6 describes the proposed environmental mitigation measures whilst Section 7 discusses recommendations for the draft environmental monitoring plan;
- Section 8 details the management plan and Section 9 makes recommendations for the Construction Environmental Management Plan; and
- Section 10 provides an overall Environmental Summary of the main findings of the EIA Update Report.

Please refer to the Contents for a list of figures and Annexes referenced throughout this report.

2 PROJECT DESCRIPTION

2.1 Overview

Phase II of the M5 Motorway starts at Kiskunfélegyháza-South Interchange, where Phase I of the M5 presently ends. The alignments starts in the administrative area of Bács-Kiskun and ends at the Szeged-North interchange in Csongrád County. The Phase II alignment is shown in Figure 1 below.



Phase II of the M5 Motorway comprises two sections:

Section II/A 113.5 – 126.4 km (Bács-Kiskun County)
Section II/B 126.4 – 161.0 km (Csongrád County)

2.2 Key Design Features

The key design features of the M5 motorway are as follows:

- The motorway will be dual two-lane carriageway (4 x 3.75m) with hard shoulders (2 x 3.0m) for emergency use.
- Three new interchanges at Kistelek, Balástya and Szeged and the remaining half of Kiskunfélegyháza interchange.
- Three ecological underpasses and four game passes. One of the game passes can be used only by small game (Height<2.5 m) and can be considered to be an ecological pass (km 147+354)
- 16 local crossings of the Motorway at intervals along the alignment.
- Canal crossings (culverts):
    - Between km 117+116 and 126+200 there are 6 motorway crossings + 16 (parallel and crossing roads, rest area)
    - Between km 126+200 and 139+530 there are 11 motorway crossings + 13 (crossing roads, interchanges, rest areas)
    - Between km 139+530 and 159+300 there are 12 motorway crossings + 23 (parallel and crossing roads)

    - There are 2 crossings with a bridge, one of them is the ecological pass at km 147+354
    - From the above, amphibian passes are located at the following chainages:
      Km 125+280, 126+180, 126+520, 135+240, 140+800, 157+446
- There will be rest areas at Petőfiszállás, Csengele and Szatymaz
- An Operating and Maintenance Centre just south of Szeged North Interchange.

The design team, UVATERV, have indicated that there has been no reported change to the alignment since the 1999 proposed design. There has been a change on the interchange at Szeged. Originally it was proposed that the connecting road to the proposed M43 would be a single carriageway road (2x1). It was requested that the design team revised this design to a dual carriageway (2x2) for some 6.3km from the Szeged interchange going east.

A detailed project description is provided in Annex A of the Halcrow EIA Summary report.

3 ENVIRONMENTAL LEGISLATION AND PERMITTING

3.1 Environmental Legislation

At the time of the previous environmental studies, the Hungarian Act LIII of 1995 on the General Rules of Environmental Protection was considered to be the umbrella environmental legislation.

This Act also forms the core parent directive for new Government Decrees adopted since 1995. Since the latter part of the 1990s, Hungary has made significant progress in implementing relevant parts of the European Union ('EU') environment acquis for EU accession. This has culminated in the adoption in April 2001 of new legislation (20/2001. (II.14.) Gov. Decree on Environmental Impact Assessment) on Environmental Impact Assessment. The Government also ratified the Aarhus Convention in July 2001 making new provisions on access to information, public participation in decision making and access to justice in environmental matters. Several other new environmental laws, relating to air, noise, waste, surface water and groundwater protection, have also been introduced since 1999 in preparation for Hungary joining the EU on 1st May 2004. These are listed in Annex B.

3.2 Environmental Permitting

3.2.1 Environmental and Construction Permit

To-date the Ministry of the Environment together with other ministries, such as, Transport, Agriculture and Regional Development, has been in charge of overall environmental policy planning and implementation, and of drafting environmental legislation in Hungary. The Ministry of the Environment, its Environmental Protection Inspectorate ('EPI'), and 12 Regional Environmental Inspectorates are the key institutions in managing the EIA process.

The 1999 EIA Report has already outlined the Hungarian EIA procedures. In Hungary, an individual environmental permit is issued in the course of the environmental assessment procedure from the relevant Regional Environmental Inspector. The new 2001 legislation does not make any changes to the current EIA procedures. It primarily brings the list of activities requiring an EIA into line with the EU Directive (97/11/EC).

An Environmental Permit (No. 49.894-53/1999) was issued by the Lower Tisza EPI, located in Szeged, on 6th December 1999 for Section 126.4 km - 174.5 km of the Phase II route. This permit expires on 31st December 2004. The Environmental Permit was granted on the basis of the preliminary 1999 design and the 1999 EIA report prepared by UVATERV. Since then, some relevant environmental standards have changed and new environmental legislation (as outlined above) has been introduced.

UVATERV submitted an enquiry to the Lower Tisza EPI on 26th March 2004 with regards to the current status of the environmental permit and whether any amendments/revisions or ultimately renewal of the permit would be required. At the time of SW site visit the Lower Tisza EPI verbally advised AKA/ UVATERV that they would not seek any revision to the permit so as not to hinder the

construction, and as such no revision or reissuing of the existing Environmental Permit is required by the Lower Tisza EPI.

The current Environmental Permit is related to the Csongrad county section 126.4 km to 174.5 km of the M5 Motorway. The concessionaire stated that for section 113.5 – 126.4 km an Environmental Permit is not required due to the fact that environmental protection is covered with the Phase I Construction Permit. This permit was issued in 1992 by the Traffic Chief Inspectorate, Budapest.

The Construction Permit was authorised in 2000 for Section 126.4 km - 174.5 km of the Phase II route.

3.2.2 Water Permits

Two water permits were issued to AKA by the Water Supervisory Authority of the Lower River Tisza Region on 19th April 2004. These permits related to:

- Water establishment licence for the drainage of Section IIb of the M5 Motorway between Chainages 126.35 and 140.0 km, and
- Water establishment for the drainage of Section IIc of the M5 Motorway at Highway 430.

These permits set out conditions related to surface and groundwater protection. Details of all the permits including the Environmental Permit are shown in Annex C. Environmental issues regarding surface and groundwater protection are discussed further in Section 4.2.

3.2.3 Borrow Pit Licences

Seventeen borrow pit permits have been obtained. A further two are in progress. It is the responsibility of the owners of the borrow pits to apply for permits. This is overseen by the Contractor on behalf of the Concessionaire District Inspectorate of Mines.

Issues associated with borrow pits are discussed further in Section 4.10.

4 ENVIRONMENTAL TOPICS

4.1 Land use and Settlements

As stated in the 1999 EIA (Annex A), the main land use impacts of the M5 Motorway will be the severance of agricultural land and demolition of properties. Originally all properties within 30m of the Motorway alignment were due to be demolished. However, Hungarian air quality legislation introduced in 2001, specifies that a 50m protective zone should be established along new Motorways. All properties within 50m of the M5 alignment have now been expropriated, following the procedures of the Ministry of Transport, and will be demolished. No settlements are directly affected by the M5, but journey times and routes between existing settlements will be affected. These problems will be largely overcome by the provision of 16 local crossings of the Motorway at intervals along the alignment and the creation of new earth roads parallel to the M5.

4.2 Water Quality

4.2.1 Background

The Halcrow EIA (Annex A) identified water quality as a key issue in this area. Maintaining good water quality is particularly important in this area because the M5 Motorway will pass though protected wetlands, and an area that is now identified as a potential Special Protection Area (SPA). Groundwater protection is also important view of the sensitivity of the area.

4.2.2 Site Inspection Visit

The site was inspected by the Scott Wilson expert on Tuesday 18 May 2004. The whole length of the proposed phase 2 of the M5 motorway was inspected from a 4-wheel drive vehicle. At features of interest, such as canals and wet areas, a closer inspection on foot was undertaken. It is understood that there had been rain the previous weekend. At the time of the inspection the weather was dry and sunny.

Meetings were held on 19 and 20 May 2004 as follows:

- 19 May (morning) – National Park Authority in Kecskemet;
- 19 May (afternoon) – Tibor Kovacs (drainage engineer) and John Rudolf (environmental designer) of UVATERV in Budapest;
- 20 May (morning) – Szillery Laszlone of Also Tisza region Environmental Inspectorate in Szeged.

All the meetings and inspections were attended by Peter Mansell of Scott Wilson accompanied by Gabor Szemeti of AKA.

In addition to this constructions drawings were made available for inspection at the offices of AKA.

4.2.3 Drainage System

The highway crosses an area of almost flat plains. There is a very gentle gradient from north-west to south-east. The only surface water features are man made drainage channels that flow towards the River Tisza to the east of the proposed motorway alignment. These vary in size from ditches 1 to 2 m wide to larger channels up to approximately 10m wide and all are ephemeral. At the time of the inspection all were wet but flows were low (estimated to be less than 10 litres per second in all cases). The groundwater surface is typically 1 to 2 m below the ground surface. At the time of the inspection standing water was visible at many locations only 200 to 500 mm below ground level. This groundwater level is understood to be higher than usual.

The motorway will be built on a shallow embankment, typically 1 to 4 m above existing ground level. Surface runoff from the paved surface will flow over the grassed shoulder to a grass lined toe ditch running down each side of the motorway. Where the embankment height exceeds 3 m the runoff will be directed down concrete lined chutes to prevent erosion. The toe ditches will act as swales though they have not been specifically designed as such.

Water collected in the toe ditch will flow to the next surface water drainage channel where it will be discharged. In some locations the toe ditch is laid at zero gradient and in these sections some infiltration is expected though no additional soakaway structures have been provided. If infiltration does not occur then the water can still flow by gravity to the next drainage channel.

The discharges to the four channels at km130+880, 133+460, 134+280 and 147+400, which were classed as protected watercourses, cleaning structures are shown in the current design on each toe ditch prior to discharge. These structures are sections of lined channel 10 m long, 1.5 m wide and 1.2 m deep with skimmer boards at the downstream end. They have two functions: the skimmers will trap any oil or floating debris and they will provide a settling basin for coarse sediments. It is understood that these have been designed to comply with the requirements of the environmental permits to provide oil interceptors and settling facilities. At bridges the runoff is collect by kerbs and discharged to the toe drain at each end of the bridge.

It is understood that water permits will be required for each discharge of highway runoff: the current permits are being revoked and new permits will be required. These will need to require with the quality standards in Joint Decree 10/2000.

4.2.4 Receptors

Aquatic receptors comprise the groundwater and the surface water channels. The nearby wetlands are indirect receptors.

There unsaturated zone above the groundwater table is very shallow and the sandy soil can be very permeable. It is thus considered to be a sensitive receptor.

4.2.5 Water Quality Standards

The water quality standards to be achieved are detailed in Annex 3 of Joint Decree 10/2000, column B pollution limit values.

4.2.6 *Impact Assessment*

Construction Effects

The current assessment of construction effects is limited to provision of bunded storage areas for oils and other construction chemicals.

The key water quality issues are:

- Temporary vegetation and soil removal;
- Temporary interception or loss of perched water table and associated seepage zones;
- Construction dewatering – temporarily alters local flow regime;
- Contractors plant/fuel storage and workshop facilities, ground investigation drilling and piling, temporary water demands and dust suppression;
- Temporary obstruction of watercourse channels (i.e. arterial drainage) and floodplains leading to flooding;
- Changes in runoff, peak flows or low flows due to construction earthworks and construction site drainage;
- Changes in groundwater recharge and flow patterns; and
- Deterioration in water quality caused by pollutants, either through spillages of liquids or runoff contaminated with liquids or particulate matter, or interception, disturbance and mobilisation of pollutants in existing areas of contaminated ground.

The potential construction impacts will be reduced to acceptable levels through the adoption of construction good practice, as set out in the Construction Environmental Management Plan (CEMP) recommendations in Section 1.9

Operational Effects

Two potential sources of pollution exist from operational highways:

- routine pollutants in runoff such as fine sediments, wear products and drips of fluids from vehicles; and
- intermittent pollution from accidental spillage.

The only measures currently included to control routine pollution are the “cleaning structures” to be provided at the four protected watercourses. However, the toe ditch may act as a swale even if it has not been designed as such. No assessment of the effect on receiving water bodies has been undertaken.

It is recommended that the effects of pollutants in routine runoff on ground and surface should be assessed. One appropriate methodology for such an assessment is included in the UK Design Manual for Roads and Bridges (DMRB). It is understood that data on water quality from highways is currently being collected in Hungary on highway 2A and that this is being compared with data in the DMRB.

It is recommended that either the performance of the "cleaning structures" needs to be demonstrated to show that oils and silts will be removed (this will be required for the water permit application) or alternatively for oil removal a bypass oil interceptor to European Standard EN 858-2:2003 class 1 with sludge trap and sampling shaft should be specified and separate provision should be made for silt removal.

The Environmental Inspectorate has stated that the water permits are being revoked and new applications will have to be made. These will have to show that the discharge of pollutants complies with the pollution limit value (B) for groundwater given in Joint Decree 10/2000 on the protection of groundwater. A method of demonstrating this may be to use the methodology in the UK Design Manual for Roads and Bridges Volume 11, Section 3, Part 10, Annex III. The toe drains may be considered to act as swales, which are effective at removing a range of pollutants, if it is shown that they meet the design requirements for swales.

In areas where the groundwater is considered to be particularly sensitive a lining to the toe ditches comprising a sacrificial gravel layer 300 mm thick over a geotextile separating membrane has been proposed. This is now considered to be inappropriate but is being retained to comply with the environmental permit and to avoid the delays that would follow if the terms of the permit were to be changed.

It is recommended that a risk-based approach should be adopted towards accidental pollution and that the risk should be assessed. One appropriate methodology for such an assessment is included in the UK Design Manual for Roads and Bridges (DMRB).

The accidental pollution assessment should be linked to control measures identified in the pollution incident plan that is to be produced as part of the detailed design.

4.2.7 Flows and Water Levels

The risk that the motorway toe ditch will tend to drain the nearby legally protected wetland areas has been identified. Whilst it is our opinion that the motorway toe ditches will have only a small effect on groundwater levels nearby this needs to be demonstrated by the designers.

The risk that the game passes under the motorway will be flooded has been identified. The number and type of game passes and ecological passes has been varied in amendment 3 to the concession contract (exhibit 7.3). New details have been provided that show the 20m wide game pass as requested by the National Parks Authority

A preliminary assessment of potential flooding of the game passes has been undertaken during the visit though no attempt has been made to determine the significance of flooding is considered in the Natural Resources and Ecology Section 4.7. Details of bridge 64, the game pass at 137+280 were made available with the technical description in English:

- Bridge soffit level 91.7 m aBd;
- The typical ground level 89.75 m aBd;
- The maximum expected groundwater level (with an annual probability of 6.7%, return period of 15 years) is 89.7 m aBd;
- Typical wet season groundwater level (1 to 2 month per year) 89.2m aBd;
- Construction (summer, dry season) groundwater level 88.7 m aBd;
- Mimimum ground level though underpass 88.2 m aBd.

To allow this to be readily assessed all the relevant groundwater level information should be included on all the game pass drawings (currently this information is shown in various documents):

- Bridge soffit level;
- Typical ground level;
- Maximum expected groundwater level;
- Typical wet season groundwater level;
- Construction (summer, dry season) groundwater level;
- Minimum ground level though underpass.

4.2.8 Mitigation

The proposed mitigation is set out in the Mitigation Section 6. The potential construction impacts will be reduced to acceptable levels through the adoption of construction good practice, as set out in the CEMP recommendations in Section 9.

As information to demonstrate the effectiveness of the proposed "cleaning structures" has not been provided, and due to the sensitivity of the area in terms of both surface water and groundwater, we advise that for oil removal bypass oil interceptors to European Standard EN 858-2:2003 class 1 with sludge trap and sampling shaft should be specified and separate provision should be made for silt removal.

An accidental pollution assessment should be carried out and linked to control measures identified in the pollution incident plan that is to be produced as part of the detailed design.

4.3 Traffic

The 1999 reports were based on a traffic regime that was based upon a toll charging system for the M5 Motorway, and looked at two scenarios: a toll level of 10 HUF/km and one of 20 HUF/km.

Since that time the Hungarian Government has decided to abandon the toll system on the M5 Motorway and to replace it with a Vignette system, whereby drivers purchase what is in effect a permit to travel on motorways. As a result, the operational traffic data on which the 1999 air quality, noise and pollution assessment predictions were based has recently been updated (refer to see Table 1 below) and both baseline and "with motorway" predictions have been extensively revised.

The new "with motorway" scenario is based on replacing the 10 to 20 HUF/km toll options with a vignette system.

Table 1: Traffic Data

Road Link		Total vehicles per 24hr			% Change new data versus UVATERV 'with motorway' data	
		New data 'with motorway' 2015#	UVATERV 'with motorway' data 2015*			
			Toll 10	Toll 20	Toll 10	Toll 20
50	M5 ap. - Kistelek	287	4178	7557	-93	-96
50	Kistelek	287	4656	8439	-94	-97
50	Kistelek - Balástya	2649	8394	11453	-68	-77
50	Balástya - Szatymaz	3896	9344	12005	-58	-68
50	Szatymaz - M43 csp.	3896	9380	12005	-58	-68
50	M43 csp. - Szeged	4802	11218	12776	-57	-62
50	Szeged - Országhatár	2541	6824	7197	-63	-65
M5	Kiskunf. - Kistelek	14803	17905	10766	-17	+37
M5	Kistelek - Balástya	15682	18129	10766	-13	+46
M5	Balástya - Szeged É	15213	17529	10454	-13	+46
M5	Szeged É. - Szeged Ny	8301	11516	7925	-28	+5
M5	Szeged Ny-országhatár	6589	8393	8020	-21	-18
M43	M5 ap. - 50.sz. főút	13177	16461	7700	-20	+71
5411	Kiskunmajsa - M5 ap.	1035	907	616	+14	+68
5411	M5 ap. - Kistelek	789	1266	656	-38	+20
5422	Forráskút - M5 ap.	555	1857	1844	-70	-70
5422	M5 ap. - Balástya	892	1609	1663	-45	-46
55	Domaszék - M5 ap.	7822	12873	12882	-39	-39
55	M5 ap. - Szeged	5359	8233	10853	-35	-51

Notes: Data supplied by AKA, prepared by UVATERV in June 2004
* Predictions made in 1999, related to a worst case scenario based on a toll of 10 HUF/km.
# Predictions revised in 2004, related to an operational scenario based on a vignette scheme.

Table 1 illustrates that the latest operational 2015 'with motorway' traffic data for a vignette system and we have based our studies on these figures.

4.4 Air Quality

4.4.1 Background

The previous environmental studies identified baseline conditions for oxides of nitrogen, carbon monoxide, sulphur dioxide, lead and carbon black (soot). A description of baseline air quality is presented in the Halcrow EIA. It should be noted that the original air quality assessment was based on traffic forecasts predicted for a tolling system. The tolling system on the M5 was abolished in March 2004, and as such this update review takes on board revised traffic forecasts based on the new vignette system. This review also considers the recent ban on HGV over 7.5 tonnes on Route 5, and the change in traffic speed on the motorway from 120 kilometres per hour (kph) to 130 kph. A comparison of traffic data is provided in Table 1 above.

4.4.2 Baseline Information

Monitoring of baseline concentrations of nitrogen dioxide (NO_2) and sulphur dioxide (SO_2) between 1999 and 2003 (additional data supplied by AKA in June 2004) at monitoring stations in Kistelek and Szeged identifies a pattern of frequently occurring episodes in which relevant Hungarian short-term air quality limits are exceeded.

This is to be expected in this region of Europe, where the climate is associated with frequently occurring periods during which the dispersion of pollutants can be significantly impaired. Hungary has implemented a number of national measures to control the magnitude of emissions from road traffic and whilst this should lower the baseline annual average concentration of pollutants in future years, adverse meteorological conditions will remain a dominant factor in the frequency of exceedances of short term limit values.

Monitoring of the above pollutants reported in the previous studies identifies that existing pollutant concentrations at existing receptors is identified as being close to or in exceedance of national air quality limits during the period 1999-2003. No additional baseline air monitoring is considered to be required as baseline conditions can reasonably be expected to improve before 2015 as controls on emissions of air pollutants introduced to align national legislation with EU Directives, take effect.

The assertion that lead emissions need not to be considered in future scenarios following the withdrawal of leaded fuel is consistent with the experiences of other European countries.

4.4.3 Impact Assessment

As already revealed the previous studies identified the impact on air quality for future baseline and future with development scenarios. The 10 HUF/km option was predicted to generate the largest volume of traffic on the M5 route and as such represent the worst case scenario along the route of the M5 and as a consequence was predicted in the Halcrow report (Table 3.3, Halcrow EIA) as offering the greatest benefit in air quality at receptors along the route of Route 5. The impact of the emissions under both the 10 HUF/km and the alternative 20 HUF/km tolling schemes is reported to be a minor change at receptors along the route of roads 5411 and 5422.

The short term concentration of carbon monoxide, oxides of nitrogen and carbon black have been calculated using the relevant sections of Hungarian State Standard MSZ 21459/2-81 which sets out a prescriptive method for the calculation of the polluting effect of line sources.

The future operational pollutant levels in 2015 with the Phase II Motorway in operation have been predicted by UVATERV at distances of 10m, 20m, and 50m from each of 3 road sections of the M5, 1 section of the M43 and 6 sections of Route 5. 24-hour and 30 minute air quality limits were reported by Halcrow to be achieved within 50 m of the M5 for carbon monoxide, oxides of nitrogen and carbon black. At the time of the original studies the only receptors within this 50 m zone were 10 occupied farms.

On the basis of the baseline and with development traffic flows utilised by UVATERV in 1999 and reviewed by Halcrow during the same year, the predicted scale of impacts on air quality at receptors along existing routes appear to be reasonable, although no detailed working was available for review during this update review, and it has not therefore been possible to review the predictions in detail.

As already discussed the operational traffic data on which the 1999 air quality assessment predictions were based has recently been updated (refer to see Table 1 in Section 4.3) and both baseline and with development predictions have been extensively revised.

The new with development scenario is based on replacing the 10 to 20 HUF/km toll options with a vignette system.

Table 1 in Section 4.3 Traffic, illustrates that the latest operational 2015 'with motorway' traffic data for a vignette system is considerably lower than the corresponding UVATERV traffic data for a toll of 10 HUF/km. The only exception to this is where new traffic data is slightly higher (+14%) on road link 5411 Kiskunmajsa - M5 ap., however, although this is a large rise in percentage terms the actual volume of traffic with motorway will be around 1035 vehicles per hour, and this is not sufficient to impact adversely on receptors outside the 50 m air quality buffer.

Along the new M5 motorway the new data is 13-28% lower than the UVATERV 10 HUF/km toll data, therefore it is reasonable to predict that the recalculation of pollutant concentrations using the same Hungarian State Standard MSZ 21459/2-81 method would identify that limit values will be achieved at reduced distances from the M5.

Along surrounding existing roads, in particular Route 5, the predicted operational pollutant levels based on the new data are likely to be considerably lower, therefore the beneficial impact of the Phase II alignment at receptors along surrounding roads is likely to be greater than reported in the previous studies for the 10HUF/km scenario. The increase of +14% on road 5411, with the new data compared to the 10HUF/km scenario, is likely to increase predicted concentrations of nitrogen dioxide, carbon monoxide and carbon black at receptors along this road by a negligible amount.

As the prescribed short-term (30 minute) and 24 hour limits to be achieved have not changed since the previous UVATERV and Halcrow reports were completed, and the new traffic data reduces the adverse impact of the proposed M5 at nearby receptors and increases the beneficial impact at receptors along existing surrounding roads, the conclusion drawn by the previous studies, that air quality limits can be achieved at all receptors beyond the 50 m perimeter, is considered to be valid at locations where baseline air quality is already good.

Construction Impacts

It is not possible to carry out predictions of construction dust impacts accurately until precise details of the working methods and equipment to be used are available. Therefore, the absence of such predictions is considered reasonable at this stage. The control of dust emissions from construction activities is

primarily a matter of employing best practice control measures such as those detailed in the CEMP recommendations in Section 9 of this report.

4.4.4 *Mitigation*

The Halcrow Report proposes that noise barriers of various heights and lengths that are recommended along all sections of the proposed M5 could also have benefits as a mitigation method for airborne pollutants. No details of the research mentioned are given nor have any example calculations been provided, therefore no check on the predicted pollutant levels has been possible.

During Phase I (1996-1999) monitoring at 8 sampling points identified that concentrations of carbon monoxide, lead and oxides of nitrogen were all restricted to levels equivalent to 10-25% of the respective limit values. Whilst levels of oxides of nitrogen might become more significant at phase one sites as traffic volumes increase, it is unlikely that levels of lead or carbon monoxide will rise sufficiently to place limit values at risk. It is therefore recommended that for Phase II that monitoring of carbon monoxide and lead is excluded from the monitoring programme and resources reassigned to enable additional dust monitoring at sensitive receptors close to the perimeter of the alignment.

New air quality legislation was introduced in 2001 (Government Decree No. 21/2001 (II.14.) Korm. on certain rules governing the protection of air quality). This introduces the designation of air quality zones according to the ambient air quality, with ambient air quality limit values. New motorways are required to have a 50m protective zone established along the axis of the road. Ambient air quality limit values shall be met along the outside borders of these protective zones.

The Government has now acquired all land within 50m of the motorway. It has been reported that all expropriation has been completed, and all houses will be demolished within 50m of the road.

It has been stated by a representative of Szatymaz local government during the June 2004 environmental meeting that small farms and houses are still located very close to the perimeter to the alignment, some 60 – 70m, and that there are some concerns with respect to dust pollution, in particular during construction. It is recommended that the extension of dust monitoring to these receptors is regarded as an appropriate course of action in particular during construction and during the first couple of years of operation in addition to the sites at Szatymaz, school and Ch: km 152+200.

Summary

The assessment process and results reported in the previous reports is concluded to be reasonable. No check on actual pollutant predictions has been undertaken, as use of the revised traffic data would predict impacts on air quality of a lower magnitude than were predicted by the original assessment. The latest operational traffic data strengthens the overall conclusions of the previous studies. The required air quality limit values are likely to be met beyond a distance of 50 m from the road without additional mitigation measures during the operational phase.

The recommended mitigation measures to minimise dust emissions during the construction phase should be developed as additional details of the potential sources of dust generating activities, and locations of receptors and sources

becomes available. This is discussed further in the CEMP recommendations in Section 9.

4.5 Noise and Vibration

4.5.1 Background

Monitoring of existing baseline noise levels was carried out at nine locations in July 1998. The UVATERV and Halcrow reports state that the relevant Hungarian Standards for noise measurements were followed (MSZ 18150-1-83 and MSZ 13-183-1-92). Based on the limited mapping information available (Figure 6 Halcrow Report) the baseline monitoring locations appear to be representative of relevant locations both along the route of the proposed M5, the direct impact area, (3 locations on connector roads), and existing surrounding major roads, the indirect impact area (6 locations mainly along Route 5).

4.5.2 Baseline Information

Existing noise levels at isolated farms along the proposed route have been estimated as less than 45 dB A) during the day and less than 40 dB(A) at night, such an assumption is considered reasonable. Ideally actual noise monitoring at a selection of isolated farms would have been carried out to confirm this assumption. However, as the Hungarian impact assessment methodology focuses more on meeting absolute noise limits rather than the change in noise levels due to the motorway, such baseline noise measurements are not considered essential. No additional baseline noise monitoring is considered to be required.

No monitoring of existing baseline vibration levels has been carried out and none is considered to be required, as there are no significant existing sources of vibration along the proposed route.

4.5.3 Impact Assessment

Future baseline noise levels in 2015 without the motorway have been estimated to undergo no change at isolated farms along the proposed route, a negligible increase of less than 1 dB (A) is estimated at the 3 monitoring locations in the direct impact area on existing minor connector roads. These assumptions are considered reasonable. At the six monitoring locations along existing major roads (the indirect impact area) future baseline traffic noise levels have been predicted using future baseline traffic data and the Hungarian Traffic Noise Prediction Methodology (MSZ 07-3702-1991). Increases above current traffic noise levels of up to 2.8 dB (A) are predicted.

The future operational noise levels in 2015 with the motorway in operation have been predicted at a total of 128 small farms (a number of which are reported as being abandoned), 2 operational schools and 1 abandoned school, within 200m of the proposed M5. In addition, the future operational noise levels at the 6 monitoring locations along existing surrounding roads have been predicted using future operational traffic data and the Hungarian Traffic Noise Prediction Methodology. No operational noise predictions are provided for the 3 monitoring locations in the direct impact zone, such an omission is not considered to be fundamental to the overall conclusion of the assessment

No details of the noise prediction process prescribed in MSZ 07-3702-1991, or example noise calculations have been provided, therefore no check on the predicted noise levels has been possible.

The predicted traffic noise levels have been compared to the noise limits prescribed in Decree 4/1984 (I.23.). This decree has now been replaced by Decree 8/2002 (III.22.). However, the relevant prescribed noise limits for road traffic noise during the day and night remain unchanged.

With the proposed mitigation measures, noise levels should be reduced at receptors along the M5 motorway.

At the 6 monitoring locations along existing roads operational noise levels are predicted to reduce, though some exceedances of the limits are still predicted.

The operational traffic data on which the noise predictions are based has recently been updated (in Section 4.3).

Table 1 illustrates that the latest operational 2015 'with motorway' traffic data is considerably lower than the corresponding UVATERV traffic data for a toll of 10 HUF/km, the new traffic data is slightly higher (+14%) on only one road, link 5411 Kiskunmajsa - M5 ap.

Along the new M5 motorway the new data is 13-28% lower than the UVATERV 10 HUF/km toll data, therefore, the predicted operational traffic noise levels at the 128 small farms and 3 schools will be slightly less than predicted by UVATERV in 1999 for this scenario. The reduction in predicted traffic noise levels using the new traffic data is likely to be up to 1 dB (A), compared to the 10HUF/km toll scenario.

Along surrounding existing roads, in particular Route 5, the predicted operational noise levels using the new data are likely to be considerably lower, therefore the beneficial impact of the motorway at receptors along surrounding roads is likely to be greater than reported in the UVATERV and Halcrow reports for the 10HUF/km scenario. The increase of +14% on road 5411 with the new data compared to the 10HUF/km scenario, is likely to increase predicted noise levels at receptors along this road by a negligible amount, less than 1 dB (A).

As the prescribed noise limits to be achieved have not changed since the UVATERV and Halcrow reports were completed, and the new traffic data reduces the adverse impact of the proposed M5 at nearby receptors and increases the beneficial impact at receptors along existing surrounding roads, the conclusion drawn by the UVATERV and Halcrow reports that, with mitigation, the required noise limits can be met is considered to be valid.

No predictions of operational vibration levels along the proposed M5 have been carried out, however, as all residential properties within 50m of the road will be removed prior to the road opening no such predictions are required. Traffic vibration impacts at 50m will be negligible. At receptors located along existing roads the UVATERV report concludes that vibration levels will remain below the specified limits with the motorway in operation. This conclusion appears to be based on assessments carried out under similar conditions. No details of these assessments have been provided therefore, it is not possible to comment on this

conclusion. The required vibration limits specified in decree 8/2002 (III.22.) appear to be lower than those reported in the UVATERV reports. However, as the motorway will result in a reduction in traffic on surrounding roads the impact of the motorway on current vibration levels will be beneficial.

Construction noise and vibration predictions at specific receptors have not been carried out, therefore it is not possible to determine if the current required construction noise limits prescribed in decree 8/2002 (III.22.) will be met. However, it is not possible to carry out such predictions accurately until precise details of the working methods and equipment to be used are available. Therefore, the absence of such predictions is considered reasonable at this stage. The location of the two construction compounds is now known, and the CJV have informed us that there are no properties within 200m of the compounds. Therefore a significant adverse impact on properties is not anticipated, although monitoring should be carried out to verify this. CJV will clarify the location of the nearest residential properties to the construction compounds in order to ensure that suitable construction mitigation measures are employed, where required.

4.5.4 Mitigation

The UVATERV Report recommends noise barriers of various heights and lengths are constructed along all sections of the proposed M5 where receptors are predicted to exceed the prescribed limits. The predicted traffic noise levels with the barriers in place are reported to meet the prescribed limits at all receptors. No details of the barrier attenuation or example calculations have been provided, therefore no check on the predicted noise levels has been possible.

In addition, the demolition of 8 small farms is recommended by the UVATERV reports, all the recommended farms are located within 50m of the proposed M5, therefore, they will be automatically demolished.

4.5.5 Summary

The assessment process and results reported in the UVATERV reports and summarised in the Halcrow report is concluded to be reasonable. No check on actual noise predictions has been possible. The change in the decree specifying noise and vibration limits and the latest operational traffic data does not affect the overall conclusions of the UVATERV and Halcrow reports. The recommended mitigation should be implemented to ensure the required noise limits are met.

4.6 Landscape

The 1999 EIA described the landscape characteristics of the area. In summary, the landscape of the M5 corridor is typical of the Great Hungarian Plain region, mainly flat with gentle undulations orientated in a north-west to south-east direction. The areas lies between the Danube and Tisza rivers.

The overall effect within the area of the Phase II alignment would be the introducing of a major structure, which will be a prominent feature and landmark within the current rural landscape. There will be a direct loss of agricultural land and some habitats due to the construction of the M5. There will also be the loss

of breeding grounds for amphibians and shore birds in the vicinity of Oszeszek Lake. The motorway will also form a linear feature in the landscape.

The National Park Authority has confirmed in June 2004 that the Phase II alignment does not affect any Landscape Protection Areas (LPA). The nearest LPA is some 300m to the east of the Phase Ii alignment near Kiskundorosza.

Recommended mitigation measures for landscape protection have included planting of tress, shrubs and grasses for landscaping purposes adjacent to the motorway, and also provide protective forest belts to nature reserve of Petéri and Õszeszek. The National Park has requested that only native species of plants are used for planting purposes in particular adjacent natural and near-natural habitats. They have also requested that no additional landtake is acquired with consultation with the NPA. The final detailed landscape plan was not available for review by Scott Wilson.

4.6.1 *Construction Impacts*

The construction activities that would give rise to landscape and visual impacts over and above these experienced during operation would include the following activities:

- Presence of construction compounds, storage and stockpile areas and activities within them. It is reported that the closest house to the construction compound is 200m.
- Movement of construction machinery, plant and delivery vehicles on the existing road network and temporary haul roads from the borrow pit areas.
- Presence of any large earth moving equipment.
- Potential closure of access to any existing farm roads, if required.

Mitigation measures with respect to reducing landscape and visual impacts during construction is described in Section 6.

4.7 Natural Environment and Ecology

4.7.1 *Background*

The Halcrow EIA (Annex A) identified the main impact as being the loss of marsh orchid and thistle stock, together with transylvania plantain.

4.7.2 *Impact Assessment*

Designated Sites

The route passes through a potential Special Protection Area (SPA), which has been designated as such due toits populations of Stone Curlew, Lesser Grey Shrike and Eurasian Roller, all of which are listed on Annex 1 of the Council Directive (79/409/EEC) on the conservation of wild birds. This directive requires Member States to classify the most suitable territories of these species as Special Protection Areas (SPA). Member States are also required to "*take appropriate steps to avoid pollution or deterioration of these habitats or any disturbances affecting the birds*". The impact on birds using the potential SPA will, in part, depend on the distribution of these bird species within the potential SPA. However, the landtake will result in the loss of breeding and foraging habitat. There will also be a potentially severe disturbance to protected breeding

or foraging bird during construction, and minor disturbance during the operation of the road.

The route may also affect a number of locally designated conservation sites. The National Park should be invited to make detailed recommendations for the protection of these sites during construction and operation, based on the reason for their designation. The National Park have already asked that the construction compounds are not located on these sites and this will be incorporated in the CEMP.

Habitats

Some of the habitats affected by landtake may be Annex I habitats under the Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (e.g. 'Saline meadows' may fall within the Atlantic and continental salt marshes and salt meadows – Inland salt meadows Annex I habitat type).

Species

Pond Tortoise (*Emys orbicularis*), a reptile species, is protected under the Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora and Act No. LIII. of 1996 on Nature Conservation in Hungary. This species should be clear from the construction compounds and right of way, and if found it should collected and released in suitable habitat away from the construction area.

In addition to the protected Marsh Orchid (*Orchis laxiflora* ssp. *palustris*), Bug Orchid (*Orchis coriophora*) and Thistle (*Cirsium brachycephalum*) being present along the route, subsequent surveys[1] have identified 13 other protected plant species. The National Park does not consider it possible to translocate these protected plant species.

Water Quality

UVATERV agreed to undertake an assessment of the potential loading of routine runoff during operation and in the event of accidental spillage using the DMRB method of calculation. However, as they have not provided this information it has not been possible to assess the effect of run-off on receiving waterbodies. This is of particular concern with respect to the adjacent wetlands. It is recommended that the effects of pollutants in routine runoff on ground and surface waters be assessed to ascertain their potential impact.

UVATERV were also asked to produce calculation to assess the extent of draw down caused by the toe ditches should be assessed to determine whether there is likely to be significant drying out of adjacent wetlands. It is recommended that the extent of draw down caused by the toe ditch is assessed to determine whether significant drying of the adjacent wetlands is likely.

4.7.3 Comments on mitigation

General

Act No. LIII. of 1996 on Nature Conservation in Hungary does not appear to require mitigation for loss of or disturbance to protected species, only that a permit is issued by the Directorate. As such, no mitigation for loss of protected

[1] Gaskó Bèla (2001). Thoughts about the basic surveys on flora and fauna covering the track of M5 motorway within Csongrád County carried out between 1998 and 2000.

plant species, disturbance to bird species or loss of amphibian habitat is provided. It is noted that the permit has already been issued and that the National Park have not requested mitigation for these impacts.

It is recommended that a Construction Environmental Management Plan is prepared to minimise the potential for impacts to occur on sensitive ecological receptors. The key issues in relation to ecology are:

- Temporary loss of flora and habitats;
- Runoff and pollution resulting in a deterioration in water quality of adjacent wetlands and water bodies (refer to discussion on Water Quality);
- General disturbance (noise and human activity) to breeding and foraging birds; and
- Killing or injury of protected fauna during site clearance.

Designated sites

Mitigation for impacts on birds using the potential SPA should be considered. The presence of deer/game fencing will reduce the incidence of bird strike on the road, however, there will potentially be a direct loss of habitat and indirect impacts due to disturbance during construction and operation. Consideration could be given to providing compensation habitats to replace those lost through landtake. Consideration should be given to minimising the disturbance of the SPA species during construction through screening of working areas and/or seasonal timing of works.

It is understood that the National Park has requested that no construction compounds are situated within areas designated for their conservation importance. In addition consideration should be given to the sensitivity of each of these areas to disturbance during construction. Appropriate mitigation, such as screening, may need to be considered should construction compound be located within proximity of such sites.

Game Passes

It is noted that in the Memorandum about the Coordination Meeting Held on the Subject of Game and Ecological Underpasses being Constructed along the Section of the M5 Motorway between Kiskunfelegyhaza-Roszke (25 May 2004) that the National Park has agreed to the provision of seven underpasses. Three of these are planned to have headrooms of 2-3m and width of 8m. European guidelines recommend that game passes need to have a minimum headroom of 3m, with 4m being more appropriate for red deer, and the minimum width should be 15m^2. The proposed function of these underpasses is unclear. Should they be for game, in addition to other fauna, then the European guidelines should be followed.

To enable further assessment of flooding of underpasses, ground water level information should be included on all underpass drawings. This information has so far been provided for game passes 64, 67/a and 70/a. Where underpasses are likely to be flooded for any period of time, particularly during the deer dispersal phases, their efficacy in facilitating movement of game will be reduced.

[2] European Union COST 341 (2003). Wildlife and Traffic: A European Handbook for identifying conflicts and designing solutions. European Commission Action 341 on "Habitat Fragmentation due to Transportation Infrastructure".

The same goes for underpasses associated with canals. For these to be of use to game, a dry corridor must be present for the majority of the year. At least one side of the canal should comprise a natural substrate (*i.e.* soil) to facilitate movement of fauna.

Amphibian tunnels will need to have associated amphibian fencing to channel animals towards tunnel.

Protected species
Marsh Orchid (*Orchis laxiflora* ssp. *palustris*), Bug Orchid (*Orchis coriophora*) and Thistle (*Cirsium brachycephalum*) are protected under Act No. LIII. of 1996 on Nature Conservation in Hungary, as are 13 other plant species identified in subsequent surveys[3]. Article 42 (6) of the Act states:
"The authorisation of the Directorate shall be required for removing, destroying or possessing any individual, flower, fruit or any organ that can be propagated of strictly protected plant species."

Article 42 (7) states:
"*In the case of strictly protected plant species or plant species falling under international conventions, the authorisation [of the Directorate] shall only be granted out of nature conservation or other public interest*."

Recommendations on the draft monitoring plan and Construction Environmental Management Plan are provided in Section 7 and Section 9 respectively. It is also recommended that other suitable habitats for the protected plant species be identified, and if possible enhanced, in order to ensure their survival elsewhere.

4.8 Archaeology and Cultural Heritage

4.8.1 Information

Information regarding cultural heritage was gathered from discussions Scott Wilson held with both the Museum of Bács-Kiskun and the Móna Ferenc Museum (Museum of Szeged for Csongrád County). In addition, Halcrow's 1999 EIA (Annex A) provides a general overview of archaeological issues identified during their study in 1999.

In total, five archaeological sites were excavated by the Museum of Bács-Kiskun County (Bács-Kiskun Megyei Önkormányzat Múzeumi Szervezete) between 1996 and 2000. A brief summary of the findings is provided as follows:

- **Kiskunfélegyháza – Kővágó ér:** Early bronze age settlement, Sarmatian cemetery and objects of the settlement
- **Petőfiszállás –Bekötőút:** Grave of an Avar chief. A warrior buried with gold and silver belt back-plate, gold earrings, sword, bow, the grave is a single grave.
- **Petőfiszállás – Dósa Tanya:** Site beside a Copper age settlement, buildings of the VIII. century settlement, and Arpad age settlement objects.

[3] Gaskó Bèla (2001). Thoughts about the basic surveys on flora and fauna covering the track of M5 motorway within Csongrád county carried out between 1998 and 2000.

- **Petőfiszállás – Tőzeges:** Objects of a summer lodgement from Arpad age
- **Petőfiszállás – Galambos-éri csatorna:** Living space of animals of an Arpad age settlement, with cattle-grid and drainage ditches

Within Csongrád County, over 100 archaeological sites have been discovered by the Móra Ferenc Museum along the route of the M5 ranging from the northern boundary of Csongrád County to the state border. Details of the Excavations in Csongrád are provided in Annex D. Since 1993 over 60 hectares of land has been excavated by the Museum from some 69 find spot areas of archaeological significance. The 69 excavated sites date back to various historical periods with the oldest sites dating back to 9000 years ago, and the youngest to 200-300 years ago. Archaeological findings were identified from historical periods including: prehistoric, the Age of Prince Árpad, Sarmatian Age, Copper and Bronze Age and the Age of Avars. All findings with Csongrád County now lie with the Móra Ferenc Museum. The Museum also published a book[4] in 2004 describing and summarising the work that they carried out along the M5 Motorway up until 2000.

4.8.2 Impact Assessment

Both Museums have reported in June 2004 that all potential sites of archaeological interest within the alignment area have been investigated. A certificate of the completion of works will be issued by the Office of National Heritage during the week of 21st June 2004 declaring the site ready for works, and confirming that all archaeological excavations within the alignment area have been completed. This certificate is to be issued to the Ministry of Economy and Transport (see 4.10 below concerning archaeological excavations at borrow areas).

Details on recommendations for a watching brief during construction is detailed further in Section 9.

The Museums reported that there are no ancient archaeological monuments or other man made objects of interest directly affected by the alignment of the M5 motorway. A protected church ruin, Csengele, is located some 15 m from the proposed outer boundary of the right of way at Chainage 131 km. It is recommend that no temporary storage areas are located in this area close to the church ruin during construction.

4.9 Social and Community

4.9.1 *Community and Stakeholder*

Section 4.10 in the Halcrow EIA discusses socio-economic factors, whilst Section 5.9 discusses impacts identified in 1999. As indicated in the Halcrow 1999 report the highway construction is likely to result in some worsening of transport connections for rural citizens connecting to urban areas, negative impacts on cultivation of agricultural land, increased noise and air pollution for small farm residents. Nuisance factors during construction are also identified.

[4] Entitled: On the Road: Museum Research along the intended route of the M5 Motorway. Móna Ferenc Museum. 2004.

Crossing points to improve connectivity of rural communities to local urban centres are planned at the following points:

Table 2 - Location of local communities crossing points

Crossing points – chainage (km)		
115.7	118.5	125.1
129.1	131.6	134.9
139.1	141.4	142.6
126.9	146.6	148.0
151.1	152.3	154.7

Positive social and economic impacts are expected at local, regional and national scale. These include contributions to regional development plans, improved employment opportunities, improved national and regional transport connections and improved environmental and safety conditions for settlements along Route 5. Some of these positive impacts will be limited – for example, certain economic benefits may only be enjoyed by settlements with an entry and exit junction to the motorway.

4.9.2 Involuntary Resettlement

Expropriation procedures have already been completed. The Ministry of Economics and Transport was responsible for expropriation procedures required for a number of small farms along the alignment or within a 50m vicinity of the alignment. The destruction and expropriation has already taken place. It is not known how much of the resettlement consequent from expropriation was involuntary. However, the Halcrow EIA report indicated that a number of farms had been abandoned prior to expropriation procedures commencing. The original alignment for the road was done in the 1970s, since when, no new construction has been permitted, reducing the number of households affected. Scott Wilson has received verbal assurance from the National Motorway Company that expropriation procedures were conducted in accordance with Hungarian law. However, no written report on the process has been received from the Ministry.

A grievance procedure was put in place by the Ministry of Transport and reportedly involved the following steps:

- Ministry of Economics and Transport contacts owners to buy land;
- Contracts are held in the local administrative office;
- Owner can register a complaint about the contract. However the owner cannot negotiate a higher price. On a case-by-case basis, some landowners can require that their entire plot is purchased. Initial claims are filed at the local administrative office; and
- If grievance is not settled, landowners can go to court to appeal.

An Ex-Post Evaluation could be conducted to evaluate resettlement and its impact on the standards of living of the resettlers and the host population as part of the project completion report as part of the monitoring of impacts of the Phase II alignment. However, this will only be practicable if the Ministry of Economics and Transport holds records of socio-economic baseline data on expropriated households.

4.9.3 Vulnerable Groups

The most badly affected group in terms of disbenefits identified are small-scale farming households living along the route, including those affected by expropriation. Older households who are reliant on community support are likely to be amongst the vulnerable. Given that no new construction has been permitted along the alignment since the 1970s, it is likely that there is a significant proportion of older people remaining near to the motorway route. The Ministry of Economics and Transport has not provided any demographic data on households, so Scott Wilson has been unable to verify this assumption during this update review.

4.9.4 Forced and Child Labour

Construction is considered to be an inherently dangerous activity and thus no children under 18 should be employed on the construction site. Forced labour is not acceptable in accordance with both the Arrangers' and EBRD's policies. It is recommended that if the CJV subcontract work to external parties that these subcontractors abide by the CJV's employment policies, Hungarian Employment laws, and the EBRD's policies.

4.9.5 Road safety

Traffic accidents are a likely potential impact of the motorway. A WHO health status report on Hungary shows that there has been positive progress on reducing traffic accidents. The highest risk groups are likely to be farmers and their families, particularly children, living very close to the motorway. Several parties have raised the concerns verbally to Scott Wilson that several accidents happen daily with people being knocked down attempting to cross the motorway. It is recommended that AKA together with other parties involved in the project and local government should undertake a Road Safety campaign for children in local schools in order to raise the awareness on road safety in their areas, although the game fences will provide some protection.

4.9.6 Social Impacts of Noise and Air Pollution

Noise and dust pollution is the main concern to have been raised during public consultations. The WHO identified traffic as the main cause of air and noise pollution in Hungary, affecting communities living close to roads. The project is expected to have positive benefits for residents of urban settlements currently negatively affected by air pollution and noise of the existing Road no. 5. Up to 112 residences are likely to experience increased noise pollution from the M5 identified in the 1999 study.

Recommendations for noise and air pollution monitoring are discussed further is Section 6 and 9 of this report.

4.10 Borrow Pits

The Halcrow 1999 EIA Report identified a number of borrow pit areas that had already been granted permits by the Szolnik District Inspectorate of Mines, located within close proximity to the M5 corridor. It was the general consensus at that time that no new borrow pits would be created. The Mining Authority and local Councils at the time in 1999 requested that every effort should be made to use the listed permitted borrow pits before new borrow pits are opened.

Following on from the 1999 studies Arup (Independent Engineers to AKA) recently carried out a desk study [5] in April 2004 on behalf of AKA to identify suitable borrow pits. Arup concluded that out of the twenty-one borrow pits that they identified, listed in Table 3 below, only three are suitable to be exploited (Balástya I., Szatymaz II., Szatymaz I.). At the time of producing their assessment in April 2004, the remaining eighteen areas were not suitable as they did not have approved exploitation plans in place, some of the areas had very high water levels and six of them are in known archaeological areas of interest.

Table 3: List of Potential Borrow Pits for Exploitation during Construction

Borrow Pit	Chainage (km)	Possible Exploitation Volume (m3 * 1000)	Planned Exploitable Volume (m3 * 1000)	Permit	Comment
Kiskunfelegyhaza IV	115+600	315	300	Y	
Kiskunfelegyhaza V	114+000	200	180	Y	
Petőfiszállás I	118+500	400	300	Y	
Petőfiszállás II	120+000	220		N	Archaeological Investigation will be required prior to any exploitation
Petőfiszállás III	122+000	?	225	Y	
Csengele I	128+500	480	300	Y	Archaeological Investigation will be required prior to any exploitation
Csengele II	129+500	250	215	Y	Site with archaeological interest
Csengele III	132+500	210	114	Y	Site with archaeological interest
Csengele IV	135+000	300	120	In progress	
Csengele V	137+500	595	475	In progress	
Kistelek I	135+700	540	135	Y	
Balástya I	148+500	140	119	Y	
Balástya II	140+200	350	220	Y	Site with archaeological interest
Balástya III	140+000	275	250	Y	Site with archaeological interest
Balástya IV	143+000	1240	650	Y	

[5] Letter Report to AKA from Arup 'M5 Motorway, 2 Phase, Borrow Areas', dated 19th April 2004

Borrow Pit	Chainage (km)	Possible Exploitation Volume (m3 * 1000)	Planned Exploitable Volume (m3 * 1000)	Permit	Comment
Balástya V	146+000		100	Y	Archaeological Investigation will be required prior to any exploitation
Szatymaz I	154+000	40		N	Pit near exploitation limit
Szatymaz II	152+000	1000	300	Y	
Szatymaz III	151+000	600	300	Y	Archaeological Investigation will be required prior to any exploitation
Szeged III	158+000	325	350	Y	Archaeological Investigation will be required prior to any exploitation
Szeged IV	163+500	270		Y	
Total		**7750**	**4303**		

Following on from this study, recent discussions with CJV have revealed that progress has been made over the past two months to obtain the necessary permits. To date 17 borrow pits permits have been obtained, as indicated in the table above. Progress is being made to obtain the remaining outstanding permits.

The Museum of Bács-Kiskun and the Móna Ferenc Museum (Museum of Szeged for Csongrád County) have indicated that there are outstanding archaeological excavations to be carried out at 5 of the potential borrow pits. It is reported by CJV that some 4 million m^3 of borrow pit material will be required for construction purposes. The CJV have reported that they have enough material from the 16 borrow pits that do not require any additional archaeological investigations prior to exploitation. These pits could potentially supply some 6 million m^3 of material.

It is noted that several of the borrow pits that have already obtained permits are located in areas that are very rich in archaeological finds, and there is a possibility for further encounters during exploitation. It is a recommended that an archaeological watching brief is carried out at the sites with a high archaeological interest. This is outlined further in the CEMP in Section 9.

The Recultivation plan for the aftercare of the borrow pit is the responsibility of the borrow pit owner, under the terms of the borrow pit permit.

4.11 Other Issues

There was some outstanding issues raised in the Gap Analysis Report regarding appropriate procedures for the use of sodium chloride for ice removal and appropriate re-cultivation of the liquid manure plant.

At present salt imported from Romania is used to grit the motorway during the winter months. The Operation and Maintenance Contractor, Intertoll, have a motorway gritting procedure in place that logs the quantity of salt spread on the motorway at that time in accordance with local Hungarian standards. The environmental permit specifies that '*in the course of the winter months, we propose you to elaborate to introduce a different method instead of sodium chloride for the ice removal of the pavement*'. As yet no consideration has been given to introduce a new method of ice removal for Phase II. It is standard practice in Eastern Europe that salt is still used to grit motorways. As indicated above the amount of salt used during application is controlled by local Hungarian standards. The operator must abide by these standards. It is recommended that the operator continues to control the use of salt. It is also recommended that the operator in accordance with the Environmental Permit considers the use of a different substance instead of sodium chloride.

It is recommended that Intertoll satisfy conditions of the Environmental Permit by considering and researching use of other substances instead of sodium chloride for gritting the motorway. In addition, they must ensure to follow Hungarian standards to control the amount of salts applied to the motorway during winter months.

There is a condition in the Environmental Permit which request that a plan is designed for the recultivation of the liquid manure plant located at chainage 158.5 km. The 1999 EIA recommended that the soil is removed and disposed of to a licensed contaminated spoil area. Recultivation of this plant was the responsibility of the Ministry of Transport, who relayed that the plant was remediated in accordance with local Hungarian procedures, and all waste material disposed of to a licensed landfill site.

5 PUBLIC INFORMATION AND CONSULTATION

5.1 Original Consultation for the M5 Motorway

Summarised from Previous UVATERV Studies

Prior to 1993 there was no legal requirement in Hungary to consult the public. As a result there has been no public consultation for the selection of the preferred alignment during UVATERV's review of options for bypassing Kecskemét in 1979. Voluntary consultations were undertaken by UVATERV from 1990 – 1992, on the original proposals for the M5 Motorway.

The main public consultations took place in 1990 during the production of Plans for Public Discussions, although there was also consultation in 1991 – for Plans for Approval stage and in 1992 during Construction Permits. These have been summarised in Table 4 below.

The main public consultation involved a range of techniques including information letters and public meetings. At this time Environmental Protection Plans were also being produced for each town and village in the M5 corridor. Prior to these public forums meetings were also held with local Government officials in Kecskemét, Kiskunfélegyháza and Szeged, and interested groups were also consulted at this time.

Letters were sent out to all residents located within 300m of the preferred alignment route. These letters informed residents of the project and solicited their views. They also provided details of the evening public meetings that were being held.

Public meetings were held in ten settlements located in the M5 corridor by:

- Kecskemét;
- Városföld and Kunszálás;
- Kiskunfélegyháza;
- Petöfiszállás;
- Csengele;
- Kistelek;
- Balástya;
- Szatymaz;
- Szeged;
- Domaszék and Röszke.

A presentation of the proposed M5 motorway was given, with exhibitions of the motorway and time allocated for a question and answer session. In addition to the general public media representatives also attended.

The public responses were collated into a report and included suggestions for changes to the alignment. Once approved by the Motorway Directorate and Roads Administration UVATERV prepared a summary of key consultation issues for each county within the scheme alignment footprint. Modifications were subsequently made to the Plan.

The second consultation exercise in 1991 consisted of more detailed technical discussions of the Plan with local Government Officials. Additional consultations were also carried out with residents, although it is not clear how these were conducted or with whom. Once finalised the Plans were submitted to obtain the Construction Permit in 1992 for the Phase I Section of the M5 Motorway.

At this stage there was also a limited opportunity for public involvement whereby objections could be submitted. No objections were made during the 15-day period within which they had to register.

5.1.1 Consultation During Phase II: Modified Design for Approval

During Phase II, where modifications were made to the Approved Alignment, additional consultation meetings took place. It was initiated by an Inaugural general meeting on 12th November 1998 and included mayors from Kiskunfélegyháza, Petõfiszállás, Csengele, Kistelek, Balástya, Szatymaz, Kiskundorozsma and Domaszek, with discussions focusing on local roads, interchanges and farmers' access onto the motorway. Follow-up meetings were conducted between December 1998 and January 1999.

As part of Halcrow Fox's scope of work on behalf of the EBRD an Environmental Scoping meeting was held on 23rd July 1998, attended by 46 people, including representatives from the Mayor's office of the towns in the M5 corridor and relevant County organisations, as well as national and regional Governmental environmental organisations and non-governmental environmental organisations.

Table 4: Summary of consultation carried out for M5 Motorway to-date (including Phase I and Phase II)

Date	Stage	Techniques involved	Outcome
Phase I			
1990	Plans for Public Discussion	Meetings with local Government officials, Meetings with interested groups, Notification letter, Public forum meetings, Exhibition.	Production of Report of written responses and comments. Production of Summary of Key issues raised. Modifications to Plan.
1991	Plans for Approval	Technical meetings with local Government officials, Consultations with local residents.	Finalised and submitted detailed design plans.
1992	Construction Permits	Objections could be made within 15 days after submission.	No objections made within the timescale. Permit granted (1992).
Phase II			
1998-1999	Phase II Modified Design for Approval	Inaugural general meeting to consult on the Construction Permit. Follow-up meetings.	Informed modification of design discussions.
1998	Halcrow Fox EIA on behalf of EBRD	Environmental Scoping Meeting for Phase II.	Report produced of meeting: 'EIA Scoping Meeting at Szeged' 1998.
14th	Environmental	Update Environmental	Some questions raised by

Date	Stage	Techniques involved	Outcome
June 2004	review update on behalf of EBRD	Review Meeting: specific invitations, radio and newspaper announcement.	the Museum of Szeged and the NPA. Minutes of meeting provided in Annex E1.

5.1.2 *Consultation for Update of the 1999 EIA and Environmental Review Meeting*

In accordance with the EBRD's environmental procedures on public consultation an update Environmental Review meeting took place on 14th June 2004, in Szeged town hall. Those present included AKA, UVATERV, CJV, EBRD and Scott Wilson.

Following discussions with AKA a stakeholder profile was developed that identified the key organisations, groups and individuals who were likely to be affected and should therefore be consulted. This list can be viewed in Annex E2. Invitations were sent out to some 60 stakeholders (Annex E2). In addition to invitations to specific organisations, groups and individuals, an announcement was broadcast on Radio 88 Szeged on 11th June 2004 at 14:30 and on 12th June 2004 at 11:20. Advertisements went into two local newspapers that were identified as being the main daily newspapers read by local people in both Bács-Kiskun County and Csongrád County. Petőfi Népe (Bács-Kiskun County) published the advertisement on 15th May 2004 and Délmagyarország (Csongrád County) published the advertisement on 18th May 2004. Annex E3 has a copy of the newspaper advertisement.

The purpose of the meeting was to inform and update stakeholders and the general public on the Phase II M5 Motorway alignment, and to provide them with an opportunity to obtain more information or to make their views known. The agenda for this meeting can be found in Annex E4. A Public Information Disclosure Document was also produced providing a brief history of the project, and how the information collected for the development of the second phase of the M5 Motorway would be made available to the public. It was distributed to attendees. A copy of this document can be found in Annex E5.

Questionnaire distributed to all attendees was used to solicit advice and suggestions on mitigation for the project and on improving dissemination of information to the public. Participants could either complete the questionnaire at the meeting or could return it to the address marked by the 21st June 2004. They could also request additional information. Please see Annex E6 for a copy of the Questionnaire.

Some 38 attendees attended the update meeting although no one from the general public or a Non-Government Organisation (NGO) attended. Eleven people completed and returned the questionnaire. Annex E7 contains the list of attendees.

Presentations were given at the meeting by UVATERV and Scott Wilson Consultants illustrating the key environmental issues identified to-date and proposed measure for mitigation and recommendations (refer to Annex E8 for a copy). During the meeting people raised a number of issues (see Annex E1 for the minutes of the meeting). Key concerns discussed during the meeting were:

- Museum of Szeged – concerns that the archaeological watching brief during construction has yet to be agreed;
- National Park Authority: concerns that the NPA have yet to see a monitoring programme being developed for ecological impacts, also concerns about the protection of some selected Special Protected Areas with Natura 2000 programme in the National Park;
- National Park Authority: questions related to the proposed design of the game passes and game fencing;
- National Park Authority: concerns regarding the protection of surface water quality from runoff;
- National Park Authority: not convinced that noise barriers to mitigate adverse impacts on birds and residents are required; and
- Representative from Szatymaz local government: how will the updated Environmental Report be made available.

5.1.3 Dissemination of Information to the Public

This Environmental Impact Assessment update report will be made available for 60 days from June 25th 2004 to provide stakeholders and the general public with opportunities to make further comments. Information will also be provided that illustrates how the comments received have been considered within the study. These can be viewed in a number of different ways:

- The Mayor's offices (listed in Public Disclosure Document, see Annex E5);
- EBRD's Budapest office;
- The web page of EBRD : www.ebrd.com;
- The web page of AKA. : www.aka.hu; and
- Personal requests (to be posted or emailed).

6 PROPOSED MITIGATION MEASURES

The measures to be taken to moderate the environmental and social impacts of the M5 Motorway, during construction and operation are set out in Table 5 below.

Table 5: Proposed Mitigation Measures

EIA Topic	Potential Impact	Mitigation	Residual Impact
Landuse and Settlement - Construction	Local severance of routes between settlements and increased journey times. Disruptions and deterioration of local roads due to use by construction traffic.	Use of local roads restricted to routes specified by the local authority. Ongoing maintenance of local roads during construction to standards agreed by the local authorities.	Temporary increase in journey times and severance of routes between settlements
Landuse and Settlement - Operation	Local severance of routes between settlements and increased journey times	16 local crossings at intervals along the alignment and the creation on new earth roads parallel to the alignment.	Minor increase in journey times
Water Quality - construction	Ground water.	The CEMP specifies detailed measures to reduce the risk of groundwater contamination during construction.	For this, specifics should be considered.
	Surface water	The CEMP specifies detailed measures to reduce the risk of surface water contamination during construction.	None
Water Quality - operation	Accidental spillage (of what?) polluting local ground water table?	Pollution Incident Plan.	None
	Accidental spillage (of what?) polluting local surface water	Pollution Incident Plan.	None
	Run-off from routine operation affecting ground water	Oil Interceptors	None
	Run-off from routine operation affecting surface water	Oil Interceptors	None
	DMRB assessment- check	Emergency response procedures	None
Air Quality - construction	Potential minor impact in the vicinity of the construction compounds (asphalt and cement plant). The two construction compounds are	Licences will be obtained from the relevant authority prior to operation.	None

EIA Topic	Potential Impact	Mitigation	Residual Impact
	located 200m away from the nearest properties.		
	Dust nuisance during construction in vicinity of compounds, haul roads and the right of way	Water sprinklers and wheel washing.	None
Air Quality - Operation	No adverse air quality impact on beyond the 50m buffer	None required.	None
Noise and Vibration - Construction	Potential noise impact in the vicinity of the construction compounds, haul roads and right of way. The two construction compounds are located 200m away from the nearest properties.	The CEMP sets out measures to reduce noise impacts during construction. Monitoring will also be carried out to ensure the levels remain below the Noise Standards for construction.	Adverse noise impacts may still be experience during construction but they will be temporary.
Noise and Vibration - Operation	Significant adverse noise impact on 126 small farms outside the 50m noise buffer.	Noise barriers at chainages indicated in the 1999 reports.	Minor adverse noise impact on 126 small farms outside the 50m noise buffer.
	Significant positive noise impact on houses along Route 5	None required.	None
			None
	Moderate adverse noise impact on Natura 2000 site (SPA).	The National Park did not consider noise barriers appropriate.	Moderate adverse noise impact on SPA
Landscape - construction	Presence of construction compounds, stock pile areas and activities within them. Also direct loss of agricultural land and some habitats.	The CEMP sets out measures to reduce impacts during construction.	None
Landscape - Operation	Introduction of a major operation structure.	Appropriate plantation as agreed with the NPA and specified in the environmental permit and 1999 EIA reports.	None
Natural Environment and Ecology - construction	Destruction or disturbance of nesting sites for protected species	The CEMP specifies that the nest of protected species will not be disturbed during construction. The National Park will also monitor the construction works to ensure no disturbance occurs.	None
	SPA disturbance.	Screening and timing of work.	None
Ecology - operation	Severance of deer populations-	Game passes with dry corridors where they are adjacent to canals.	None
	Severance of amphibian populations	Amphibian passes and amphibian	None

EIA Topic	Potential Impact	Mitigation	Residual Impact
		fencing to channel them near the entrance to the pass.	
	Loss of land from, and severance of, a potential Special Protection Area (SPA).	None replacement habitat requested by National Park. The game fencing is of a sufficient height to reduce bird strike in the potential SPA.	None
	Loss of protected plant species	None requested by National Park but managing other areas to enhance them for these species should be considered.	None
	Drying out of adjacent wetlands	The extend of draw down should be calculated, and appropriate measures taken is it is anticipated to have a significant effect.	None
	No significant impact is anticipated on the National Park (RAMSAR SITE) as it is located 20km from the M5 alignment.		None
Cultural Heritage – construction & Archaeology	Unknown, unanticipated archaeological artefacts damaged through construction	Establish dedicated archaeological watching brief	None
	Potential impact on remains of church at Szentkut near Petöfiszallas at (chainage 121.5) near to the right of way.	Construction works will remain within the right of way along the entire route and in this area	None
	Potential archaeological remains in borrow pits	Potential archaeological remains will be excavated prior to the use of material from the borrow pits for construction	None
Social – construction	Deterioration of local access routes due to use by construction traffic	The Contractor has negotiated agreements with the local town councils to use specified local roads and ensure the remain in a good condition	None
	Potential impact on physical health of construction workers	Occupational Health and Safety Management System: Occupational health and safety policy Organizational framework, competence	None

EIA Topic	Potential Impact	Mitigation	Residual Impact
		requirements, perating procedures, training programs, system documentation, communication OHS objectives (quantified) Hazard prevention - - Risk assessment - prevention and control measures: management of changes, emergency preparedness and response , procurement (tools, equipment, plants, services, contractors) - Performance monitoring and measurements - hazard prevention measures, work related injuries, ill health, diseases and incidents -Evaluation - feed back - corrective measures	
	Under 18s employed on construction site 'Gang' labour	Age check on all construction workers, including sub-contractor employees Verify legal and tax status of sub-contractors	None
	Local severance from market, church, other services	Reparation of local roads used by construction traffic Reporting mechanisms for affected farms	None
Social - operation	Local severance from markets, church etc…	Overpasses will be constructed to allow access across the road	Some journey times may still be longer once the road is constructed
	Traffic safety	The game fencing will reduce the likelihood of people attempting to cross the Motorway. Local crossings will also be provided.	None
	Loss of livelihood and other social and economic impacts experienced by affected households	Ensure expropriation procedures followed Grievance procedure observed	Risk of social and economic impacts not fully compensated by extant expropriation procedures
	Social and economic losses to elderly or other vulnerable households	Stakeholder analysis of affected households, on basis of demographic data to inform appropriate steps	None

EIA Topic	Potential Impact	Mitigation	Residual Impact
	Inconvenience and disruption to local households	Reporting mechanism for affected communities	None
	Local severance from market, church, other services	Overpasses Improvement of existing dirt roads	Some households may still experience worsened connections
	Death or injury	Road safety campaign in local schools	None
Borrow Pits - construction	Potential unforeseen damage to environmental assets due to the use of illegal borrow pits.	Only licensed borrow pits will be used to source construction material	None

7 RECOMMENDATIONS FOR DRAFT MONITORING PLAN

The draft environmental monitoring report has been produced by FRAMA. This document was reviewed by the relevant specialists and the following measures and recommended for incorporation in the final Monitoring Plan.

7.1 Water Quality

Surface Water and groundwater quality measurement should be taken in all the watercourses crossed by the Motorway alignment prior to the commencement of construction to enable comparison with later monitoring results. This will allow the identification of whether any changes in water quality are attributed to the construction of the Motorway.

7.2 Air Quality

During Phase I (1996-1999) monitoring at 8 sampling points identified that concentrations of carbon monoxide, lead and oxides of nitrogen were all restricted to levels equivalent to 10-25% of the respective limit values. Whilst levels of oxides of nitrogen might become more significant at phase one sites as traffic volumes increase, it is unlikely that levels of lead or carbon monoxide will rise sufficiently to place limit values at risk. It is therefore recommended that for Phase II, monitoring of carbon monoxide and lead is excluded from the monitoring programme and resources reassigned to enable additional dust monitoring at sensitive receptors close to the perimeter of the alignment.

A number of small farms and houses are still located very close to the perimeter to the alignment, some 60 – 70m. It is recommended that the dust monitoring is extended to include these receptors, during construction and during the first couple of years of operation, in addition to the sites at Szatymaz, school and Ch: km152+200.

In regard to the two construction compounds that will be combined concrete mixer and asphalt mixer sites, the impact of fugitive dust emissions should be minimised in the first instance by maximising the distance between the sources and the nearest receptors. In so far as monitoring is concerned the use of a deposition gauge as proposed at other sites would be an acceptable minimum.

7.3 Noise and Vibration

The noise monitoring proposed in the draft FRAMA Environmental Monitoring Plan is adequate; however, care must be taken to ensure a selection of the closest receptors to the new M5 and along the existing roads where a benefit is expected are included. Noise monitoring should also be carried out at the nearest properties to the two construction compounds.

7.4 Landscape

Visual inspection of the works areas should be undertaken on a weekly basis to ensure there are no large areas of base soil.

7.5 Natural Environment and Ecology

The draft Environmental Monitoring Plan of M5, Phase 2 prepared by FRAMA identifies nine monitoring locations for fauna and flora. On the information available it has not been possible to determine whether this encompasses all of the most sensitive areas along the route (*e.g.* wetlands, locally designated sites). However, on initial inspection this would appear to be adequate. The report states that monitoring will be continual. Further detail should be provided on the frequency on monitoring visits and the duration for which monitoring will continue after construction.

7.6 Socio-Economic

The following Socio-Economic monitoring should be carried out by the CJV as indicated in the table below:

Table 6: Recommended Socio-Economic Monitoring

Impacts	Monitoring	Responsibilities	Time frame
Potential impact on physical health of construction workers	Occupational Health and Safety Management System monitoring of hazard prevention measures, work related injuries, ill health, diseases and incidents	Contractor	Pre-construction to end of construction
Under 18s employed on construction site	Monitor age of employees, including sub contractor employees	Main contractor	From start of construction to end
Forced 'Gang' labour	Monitor contracts of employees, legal and tax status of sub-contractors	Main contractor	Duration of construction activity
Loss of livelihood and other social and economic impacts experienced by affected households	Monitor income of expropriated households and households within 60m proximity of route	Ministry of Economics and Transport	Pre-construction make available existing data Gather on annual basis
Social and economic losses to elderly or other vulnerable households	Monitor income and reported hardships of households with elderly members and children	Ministry of Economics and Transport /local administrative office	Pre-construction make available existing demographic data Survey on annual basis
Inconvenience and disruption to local households	Monitor complaints received by affected households	Local administrative office	Duration of construction
Local severance from market, church, other services	Interview of households identified as affected by severance	Main contractor	Agricultural harvest time

Impacts	Monitoring	Responsibilities	Time frame
Traffic accidents	Record of accidents	Ministry of Economics and Transport	Annual check
Employment opportunities	Survey of employment of working age members of affected households	Ministry of Economics and Transport	Pre-construction – make available existing employment data Survey on annual basis
Involuntary resettlement	Ex-post evaluation (if required by WestLB)	Ministry of Economics and Transport –	Pre-construction: make available data on expropriation proceedings followed Post-construction: evaluation of social and economic impacts

7.7 Bank Monitoring

The monitoring report should be submitted to the EBRD, National Park and Environmental Inspectorate on an annual basis. The EBRD should also be notified in the event of a major emergency, with details of the event and the measures to be taken to remedy the situation.

8 MANAGEMENT PLAN

This plan sets out measures to manage the environmental impacts of the M5 Motorway and highlights the recommended the responsibilities for parties involved in the project.

Table 7: Proposed Management Plan

Ref No.	EIA Topic	Mitigation	Responsibility	Timeframe	Cost
L1	Landuse and Settlement - Construction	Use of local roads restricted to routes specified by the local authority. Ongoing maintenance of local roads during construction to standards agreed by the local authorities.	CJV	Duration of construction	The mitigation related to the contractors working practices will be included as a special specification for inclusion in the contractor's method statement. CJV have indicated a cost of 150,000 Euro for existing road maintenance.
L2	Landuse and Settlement - Operation	16 local crossings at intervals along the alignment and the creation on new earth roads parallel to the alignment.	CJV/UVATERV	Included in detailed design	CJV have indicated a cost of 1,000,000 Euro for maintenance of access during construction.
WQ1	Water Quality - construction	The CEMP specifies detailed measures to reduce the risk of groundwater contamination during construction.	CJV	Duration of construction	CJV have indicated a cost of 100,000 Euro for temporary drainage / culverts during construction.
WQ2		The CEMP specifies detailed measures to reduce the risk of surface water contamination during construction.	CJV	Duration of construction	Refer above.
WQ3	Water Quality - operation	Pollution Incident Plan.	Intertoll (Contractor responsible for motorway maintenance)	To be in place prior to operation	The mitigation related to the contractors working practices will be included as a special specification for inclusion in the contractor's method statement. These measures are standard good site practices and do not have any additional costs.
WQ4		Oil Interceptors.	UVATERV	To be incorporated into the detail	No costs provided at this stage.

Ref No.	EIA Topic	Mitigation	Responsibility	Timeframe	Cost
				design	
WQ5		Emergency response procedures.	Intertoll	Prior to operation and to maintained for duration of operation – periodically review procedures	The mitigation related to the contractors working practices will be included as a special specification for inclusion in the contractor's method statement.
AQ1	Air Quality - construction	Licences will be obtained from the relevant authority prior to operation of the compounds.	CJV	Prior to construction of the compounds	Management time costs.
AQ2		Water sprinklers and wheel washing.	CJV	As required during summer months (dry period) during construction	Cost not available.
AQ3	Air Quality - Operation	None required.		Review monitoring data to confirm if any additional works required	Management time costs.
N1	Noise and Vibration - Construction	The CEMP sets out measures to reduce noise impacts during construction. Monitoring will also be carried out to ensure the levels remain below the Noise Standards for construction.	CJV	During construction	Note: It is estimated by CJV that the costs for Environmental monitoring (including water, air, noise etc.) will be some 200,000 Euro
N2	Noise and Vibration - Operation	Noise barriers at chainages indicated in the 1999 reports.		Prior to operation	Noise protection wall estimated as 7,200,000 Euro Noise protection forest belt estimated at 3,500,000 Euro.
LS1	Landscape - construction	The CEMP sets out measures to reduce landscape impacts	CJV	Duration of construction	The mitigation related to the contractors working practices will be included as a

Ref No.	EIA Topic	Mitigation	Responsibility	Timeframe	Cost
		during construction.			special specification for inclusion in the contractor's method statement. These measures are standard good site practices and do not have significant additional costs.
LS2	Landscape - Operation	Plantation will help to reduce landscape impacts.	CJV	Prior to operation	Included in costs of noise protection forest belt
Ecol1	Natural Environment and Ecology - construction	The CEMP specifies that the nest of protected species will not be disturbed during construction. The National Park will also monitor the construction works to ensure no disturbance occurs.	CJV	Duration of nesting periods. Liase with NPA regarding nesting periods.	The mitigation related to the contractor's working practices will be included as a special specification for inclusion in the contractor's method statement. These measures are standard good site practices and do not have significant additional costs.
Ecol2		Screening and timing of work.	CJV	Duration of construction	Construction site good practice, no additional cost.
Ecol3	Ecology - operation	Game passes with dry corridors where they are adjacent to canals.	UVATERV	Included in detail design	Estimated at 4,000,000 Euro.
Ecol4		Amphibian passes and amphibian fencing to channel them near the entrance to the pass.	UVATERV	Included in detail design	Estimated at 400,000 Euro.
Ecol5		No replacement habitat requested by National Park. The game fencing is of a sufficient height to reduce bird strike in the potential SPA.	UVATERV/AKA	Included in detail design. Review during monitoring programme	Check final design and monitoring reports, management time costs.
Ecol6		None requested by National Park but managing other areas to enhance them for these species should be considered.	AKA	Review during monitoring programme	Management time costs.
Ecol7		The extend of water table drawdown should be calculated, and appropriate measures taken is it is anticipated to have a significant effect.	UVATERV	Included in detail design	If no measures required management time costs.

Ref No.	EIA Topic	Mitigation	Responsibility	Timeframe	Cost
Arch1	Cultural Heritage – construction & Archaeology	Establish dedicated archaeological watching brief.	CJV	Duration of construction	Management time costs, good site practices.
Arch2		Construction works will remain within the right of way along the entire route and in this area.	CJV	Duration of construction	Management time costs, good site practices.
Arch3		Potential archaeological remains will be excavated prior to the use of material from the borrow pits for construction.	CJV	Prior to exploitation of borrow pit during construction period	Estimated costs of archaeological investigations 200,000 Euro.
Soc1	Social – construction	The Contractor has negotiated agreements with the local town councils to use specified local roads and ensure they remain in a good condition.	CJV	Duration of construction	The mitigation related to the contractor's working practices will be included as a special specification for inclusion in the contractor's method statement. These measures are standard good site practices and do not have any additional costs.
Soc2		Development of a Occupational Health and Safety Management System to include: • Occupational health and safety policy, • Organizational framework, competence requirements, operating procedures, training programs, system documentation, communication • OHS objectives (quantified) • Hazard prevention - - Risk assessment - prevention and control measures:	CJV	Prior to construction and to be review during construction	Management time related costs.

Ref No.	EIA Topic	Mitigation	Responsibility	Timeframe	Cost
		management of changes, emergency preparedness and response, procurement (tools, equipment, plants, services, contractors) • Performance monitoring and measurements - hazard prevention measures, work related injuries, ill health, diseases and incidents • Evaluation - feed back - corrective measures • Age check on all construction workers, including sub-contractor employees • Verify legal and tax status of sub-contractors			
Soc3		Reparation of local roads used by construction traffic. Reporting mechanisms for affected farms.	CJV	Duration of construction	Good site practice. Estimate costs already indicated for existing road maintenance.
Soc4	Social - operation	Overpasses will be constructed to allow access across the road.	UVATERV	Included in detail design	Assumption that cost included in overall design cost.
Soc5		The game fencing will reduce the likelihood of people attempting to cross the Motorway. Local crossings will also be provided.	UVATERV	Included in detail design	Management time costs.
Soc6		Ensure expropriation procedures followed, Grievance procedure observed.	AKA	Prior to operation	Management time costs.

Ref No.	EIA Topic	Mitigation	Responsibility	Timeframe	Cost
Soc7		Stakeholder analysis of affected households, on basis of demographic data to inform appropriate steps.	AKA	Prior to operation	Management time costs.
Soc8		Reporting mechanism for affected communities	AKA/FRAMA	During construction and operation	Management time costs.
Soc9		Overpasses Improvement of existing dirt roads.	CJV	During construction	Cost included in maintenance of access and existing road maintenance.
Soc10		Road safety campaign in local schools.	AKA	During construction and operation	Good involvement with local communities, management time costs.
B1	Borrow Pits – construction	Only licensed borrow pits will be used to source construction material.	CJV	Duration of construction	The mitigation related to the contractor's working practices will be included as a special specification for inclusion in the contractor's method statement. These measures are standard good site practices and do not have any additional costs.
Waste1	Waste management - construction	Ensure waste management and waste disposal procedures are in accordance with all new waste legislation. A waste minimisation plan should be produced for the construction activities. All appropriate waste transfer notes must be retained on file.	CJV	Duration of construction	The mitigation related to the contractor's working practices will be included as a special specification for inclusion in the contractor's method statement. These measures are standard good site practices and do not have any additional costs. No information has been provided on local landfill disposal costs.
Waste2	Waste management – operation	Ensure waste management and waste disposal procedures are in accordance with all new waste legislation. A waste minimisation plan should be produced for all operation and maintenance activities. All	Intertoll	Duration of Operation	The mitigation related to the contractor's working practices will be included as a special specification for inclusion in the contractor's method statement. These measures are standard good site practices and do not have any additional costs. No information has been provided on local

Ref No.	EIA Topic	Mitigation	Responsibility	Timeframe	Cost
		appropriate waste transfer notes must be retained on file.			landfill disposal costs.
Other1	Other Issues – use of sodium chloride as an ice remover - operation	Ensure local Hungarian standards followed. Satisfy conditions of the Environmental Permit by considering and researching use of other substances instead of sodium chloride.	Intertoll	Prior to operation and duration of operation	Management time costs.

Note on timeframe scale:
Duration of Construction – considered being a short to medium term management. Construction period currently estimated from May 2004 to end December 2005
Prior to Operation – recommended that procedures etc. are in place prior to operation of motorway i.e. by the beginning of January 2006
Duration of Operation – considered being a long term management during the life cycle of the Phase II motorway

9 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

The draft CEMP has been produced by the CJV. We recommend, as discussed and agreed with the CJV, that the following measures are incorporated in this document to enhance the environmental mitigation and protection during the construction of the M5 Motorway.

9.1 Water Quality

The potential for impacts to occur should be minimised by adoption of the following measures in the Construction Environmental Management Plan CEMP:

- Areas of bare soil should be kept to a minimum;
- In order to prevent water pollution resulting from worker-generated sewage effluents, portable toilets should be provided or alternatively existing toilet facilities located on the site would be identified for construction worker use;
- Where water would need to be removed from excavations, it should be transferred the minimum practical distance to discharge.
- Storage compounds (for the storage of construction materials or temporary stockpiling of excavated soils) should be located away from surface watercourses and drains;
- Drums and barrel should be stored in a designated bunded safe area within the site compound;
- All drums and barrels should be fitted with flow control taps;
- All drums and barrels should be properly labelled;
- The placing of any wet concrete in or close to any watercourse should be controlled to minimise the risk of leakage of wet cement into the watercourse;
- The washing of any concrete mixing plant or ready mix lorries should be carried out so as to prevent effluent from cleaning from being allowed to flow into any watercourse or drain;
- Haul roads on the site and the approaches to the watercourse should be regularly cleaned to prevent the build up of mud;
- Before any discharge of water is made from the site, adequate provisions should be made to ensure that it is not polluting, for example by incorporating silt settlement techniques. The techniques to be employed should be suitable for the particular site. Techniques may include settlement lagoons, use of straw bales for silt trapping and use of flocculants;
- All pumped drainage from the construction works including areas used for temporary storage of construction materials or excavated soils, should be passed through silt settlement treatment prior to discharge to surface watercourses or drains; silt settlement treatments may, for example, include straw bales, grassland soak away, silt settlement lagoons;
- All roads and hardstanding should be kept clean and tidy to prevent the build up of oil and dirt that may be washed into a watercourse or drain during heavy rainfall;

- Where appropriate, watercourses should be bunded to prevent contamination from surface water runoff;
- The use of water sprays to reduce dust or to wash down construction areas should be carefully regulated to avoid washing substantial quantities of silt etc. into surface water drains. Where large quantities of gravel, mud or other such material required clearing, the area should be swept clean prior to any subsequent hosing down;
- Manholes and catchpits should be covered to prevent concrete/cement ingress;
- Concreting at watercourse culvert sites should be closely supervised to prevent concrete contamination of the watercourses;
- The washing of any concrete mixing plant or ready mix lorries should be carried out so as to prevent effluent from cleaning from being allowed to flow into any watercourse or drain;
- Storage compounds for fuels, oils or other liquid chemicals should be sited away from surface water drains. They would have an impermeable base and bund with a capacity of 110%, and would not drain directly into the surface water drains. Where practicable, drainage from storage compounds would be passed through oil interceptors prior to discharge;
- Small plant such as pumps should be equipped with drip trays;
- Emergency response procedures should be included to handle any leakages or spillages of potentially contaminating substances;
- Spill kits should be located on sites near to watercourses and within the works compounds;
- Staff should be trained in the use of spill kits;
- Groundwater should be pumped from excavations into Lagoons/settlement tanks to enable sediment to drop out and, if necessary, aided by addition of flocculants;
- Subsoil should be exposed for a minimum length of time after topsoil strip. Cut-off trenches, where necessary, should be excavated to prevent massive surface water run-off into watercourses. Cut-off trenches should discharge into sediment lagoons; and
- Topsoil/vegetation along watercourses should be retained to aid attenuation and sediment infiltration.

9.2 Landscape

- Particularly intrusive activities should be sited away from any sensitive areas, such as residential properties. Hoarding and other screens should be erected between sensitive receptors and construction sites;
- The remediation of areas affected by construction sites and activities should be carried out as early as possible.
- Where possible existing trees and vegetation groups should be retained and protected; and
- The National Park should be asked to recommend and/or approve the species used in any of the proposed planting.

9.3 Noise and Vibration

- At night, construction vehicles should be required to operate at 15 mph and the use of horns will be banned;
- The operation of noisy equipment should be prohibited from 22.00 – 6.00 each day;
- Transportation of construction materials on the exiting roads should be carefully scheduled to avoid any disturbance to the local traffic;
- Noisy elements, i.e. compressors, haul roads, etc., should be located in less sensitive areas making use of any existing natural or artificial features that could shield the construction noise;
- The noise emission of construction equipment should be reduced through the use of mufflers and continued good maintenance on all equipment; and
- A complaints mechanism should be established for the duration of the project

9.4 Natural Environment and Ecology

- Pond Tortoise and other protected fauna should be removed and excluded from working areas;
- The National Park should be allowed on site during construction to survey protected fauna (including birds);
- The National Park should be invited to attend any relevant health and safety training for site workers;
- Measures identified by the National Park to reduce impacts on protected fauna during construction should be carried out;
- Where construction compounds or working areas are in close proximity to sensitive birds habitats, hoarding of a minimum of 1.8m in height should be used to screen working areas;
- The disturbance of the SPA species during construction should be minimised through screening of working areas and/or seasonal timing of works;
- Construction should be confined to designated areas to minimise temporary landtake;
- Where protected plant species occur adjacent to the construction compounds or working areas, these areas should be clearly marked to avoid disturbance by machinery associated with construction; and
- Measures should be taken to ensure that there is no pollution of sensitive wetlands during construction (see Water Quality).

9.5 Archaeology

- The Directorate of Museums in Bács-Kiskun and Csongrád Counties have permission to access the working areas to undertake a watching brief, providing the report to the site supervisor on arrival and follow the appropriate health and safety procedures;
- The Museums should be invited to attend any relevant health and safety training for site workers; and
- The arrangement with the Museums for the watching brief, and actions to be taken in the event of an archaeological find, should be formalised through contractual agreements.

10 ENVIRONMENTAL SUMMARY

The following Section summarises the key environmental issues raised during our update assessment and details our recommendations for revisions to the detailed design. The recommendations for the draft Construction Environmental Management Plan and monitoring plan should be incorporated in the final CJV working documents and FRAMA monitoring programme.

10.1 Screening Category and Rationale for Classification

The project has been screened as A/0, thereby requiring an Environmental Impact Assessment (EIA), in accordance with EBRD environmental procedures.

10.2 Information Reviewed

In compliance with Hungarian environmental legislation in effect at the time, UVATERV, a Hungarian consultant firm, prepared an environmental assessment (in Hungarian with an English summary) in 1991. An updated EIA report prepared for Phase IIb and Phase IIc sections of the M5 motorway was prepared by UVATERV in 1998/1999 (document dated February 1999), and was submitted as part of the environmental permitting process.

When the EBRD was approached for financing in 1998, based on the findings of the 1991 assessment, a Scoping Meeting was held in Szeged in July 1998 to ensure that that UVATERV Assessment was in conformity with both the Hungarian regulations of the time and EBRD's Environmental Procedures of 1996. Halcrow Fox prepared an EIA Update on the basis of this Scoping Meeting in 1998, but because the motorway extension was cancelled, the EIA was never disclosed to the public.

The project has now returned to EBRD for consideration of financing and is subject to review under the EBRD Environmental Policy of 2003. Hungary's environmental law is being fully harmonised with those of the EU, and EBRD adopted a new environmental and public information policy. These two events reinitiated a review of the previous 1999 EIA. Scott Wilson completed a Gap Analysis Report in May 2004 to outline any deficiencies in the original studies. The Gap Analysis Report identified the necessity for this EIA Update.

This EIA update has been prepared by Scott Wilson, following a new Scoping Meeting on 14th of June, and will be made public after scrutiny by EBRD.

10.3 Environmental Issues

10.3.1 Environmental Permits

An Environmental Permit (No. 49.894-53/1999) was issued by the Lower Tisza EPI, located in Szeged, on 6th December 1999 for Section 126.4 km -

174.5 km of the Phase II route (Csongrád County). The Environmental Permit was granted on the basis of the preliminary 1999 design and the 1999 EIA report prepared by UVATERV, and expires on 31st December 2004.

UVATERV submitted an enquiry to the Lower Tisza EPI on 26th March 2004 regarding whether any amendments/revisions or ultimately renewal of the permit would be required. The Lower Tisza EPI advised AKA/ UVATERV that the National Environmental Inspectorate were now responsible for the permit. As the existing environmental permit has not expired AKA/ UVATERV decided not to pursue the matter further.

The current Environmental Permit is related to the Csongrád county section 126.4 km to 174.5 km of the M5 Motorway. The concessionaire stated that for section 113.5 – 126.4 km an Environmental Permit is not required due to the fact that environmental protection is covered with the Phase I Construction Permit. The Traffic Chief Inspectorate, Budapest, issued this permit in 1992.

10.3.2 Construction Permit

The Construction Permit was authorised in 2000 for Section 126.4 km - 174.5 km of the Phase II route.

10.3.3 Archaeology and Cultural Heritage

A total of five archaeological sites were excavated by the Museum of Bács-Kiskun County (Bács-Kiskun Megyei Önkormányzat Múzeumi Szervezete) between 1996 and 2000.

Within Csongrád County, over 100 archaeological sites have been discovered by the Móra Ferenc Museum along the route of the M5 ranging from the northern boundary of Csongrád County to the state border. A total of 69 sites were excavated by the Museum. All findings with Csongrád County now lie with the Móra Ferenc Museum.

Both Museums have reported in June 2004 that all potential sites of archaeological interest within the alignment area have been investigated. The Office of National Heritage will issue a certificate of the completion of works during the week of the 21st of June 2004 declaring the site ready for works, and confirming that all archaeological excavations within the alignment area have been completed. This certificate will be issued to the Ministry of Economy and Transport.

10.3.4 Natural Environment and Ecology

The M5 alignment is 20km from the National Park (Ramsar site) therefore no adverse impacts are anticipated. It is possible that a number of the proposed underpasses will be flooded for a period of time each year, reducing their ability to facilitate the passage of game. This also applies to the underpasses associated with canals. For these to be of use to game, a dry corridor must be present for the majority of the year. At least one side of the canal should comprise a natural substrate (i.e. soil) to facilitate movement of

fauna. The amphibian tunnels will need to have associated amphibian fencing to channel animals towards the tunnels.

Mitigation for impacts on birds using the potential Special Protection Areas (SPA) should be considered. The presence of deer/game fencing will reduce the incidence of bird strike on the road, but there will potentially be a direct loss of habitat and indirect impacts due to disturbance during construction and operation. Consideration could be given to providing compensation habitats to replace those lost through landtake. Adequate water quality treatment is essential in this SPA as specified in the water quality section.

Protected plant species will also be lost and although it is not considered possible to translocate these species other areas should be managed to enhance this for these species.

The draw down of the water table by the presence of toe ditches should be calculated in order to ensure that the impact on the adjacent wetlands will be minor.

10.3.5 Water Quality

Water quality is a key issue in this area. In the absence of information to demonstrate the effectiveness of the proposed "cleaning structures" we recommend that oil removal bypass oil interceptors to European Standard EN 858-2:2003 class 1 with sludge trap and sampling shaft should be specified and separate provision should be made for silt removal.

An accidental pollution risk assessment (e.g. DMRB) should be carried out and linked to control measures in the pollution incident plan produced as part of the detailed design.

The effects of pollutants in routine run-off should also be assessed using the DMRB calculations.

10.3.6 Social and Community

Community and Stakeholder

The motorway construction is likely to result in some worsening of transport connections for rural citizens connecting to urban areas, negative impacts on cultivation of agricultural land, and increased noise and air pollution for residents of small farms. Nuisance factors during construction are also identified.

Positive social and economic impacts are expected at local, regional and national scale. However, some of these positive impacts will be limited – for example, certain economic benefits may only be enjoyed by settlements with an entry and exit junction to the motorway.

Involuntary Resettlement

Expropriation procedures have already been completed by the Ministry of Economics and Transport. It is not known how much of the resettlement consequent from expropriation was involuntary. Scott Wilson has received

verbal assurance from the National Motorway Company that expropriation procedures were conducted in accordance with Hungarian law.

Vulnerable Groups
The most badly affected group in terms of disbenefits identified are small-scale farming households living along the route. The Ministry of Economics and Transport has not provided any demographic data on households, so Scott Wilson has been unable to verify this assumption during this update process.

Forced and Child Labour
Forced labour is not acceptable in accordance with both the Arrangers' and EBRD's policies. The CJV group has stated that it has strict corporate polices and procedures in relation to employment, and will abide by all Arrangers' and EBRD's policies.

Road Safety
Traffic accidents are a likely potential impact of the motorway. Several parties have raised the concern that several accidents happen daily with people being knocked down attempting to cross the motorway. Games fences reduce the likelihood of people crossing the motorway. There are no planned dedicated cycle or pedestrian walk routes on the proposed communities crossing points.

It is recommended that AKA together with other parties involved in the project and local government should undertake a Road Safety campaign for children in local schools in order to raise the awareness on road safety in their areas.

Workers' Health and Safety
Workers' health and safety will be managed by the CJV through the development of a Health and Safety Management System. This document will be review by the Independent Engineers including all risk assessments and working methodology statements.

10.3.7 Air Quality and Noise/Vibration

The latest operational 2015 traffic data for a vignette system is considerably lower than the corresponding UVATERV traffic data for a toll of 10HUF/km. The only exception to this is where new traffic data is slightly higher (+14%) on road link 5411 Kiskunmajisa – M5 approach.

The projected volume of traffic is not sufficient to have an adverse air quality impact outside the 50m air quality buffer. Furthermore, the reduction in air and pollution along surrounding existing roads is likely to be less than that reported in the 1999 EIA, as traffic will divert from the existing roads to the motorway.

From our review it can be concluded that the required air quality limit values are likely to be met beyond a distance of 50 m from the road without additional mitigation measures during the operational phase (based on new

traffic predictions for a vignette system). However, mitigation measures are recommended to minimise dust emissions during the construction phase.

As the prescribed noise limits to be achieved have not changed since the 1999 reports were completed, and the new traffic data reduces the adverse impact of the proposed M5 at nearby receptors and increases the beneficial impact at receptors along existing surrounding roads, the conclusion drawn by the 1999 reports that, with mitigation, the required noise limits can be met is considered to be valid.

The UVATERV Report recommends that noise barriers of various heights and lengths are constructed along all sections of the proposed M5 where receptors are predicted to exceed the prescribed limits. The predicted traffic noise levels with the barriers in place are reported to meet the prescribed limits at all receptors.

During the Environmental Update Meeting UVATERV expressed their intention to re-calculate the noise impact based on updated traffic predictions when they become available.

10.3.8 Borrow Pits

Some 4 million m3 of borrow pit material will be required for construction purposes. To-date 17 borrow pits permits have been obtained from the identified 21 locations. Progress is being made to obtain the remaining outstanding permits. The Museum of Bács-Kiskun and the Móna Ferenc Museum have indicated that there are outstanding archaeological excavations to be carried out at 5 of the potential borrow pits. However there is enough material from the remaining 16 borrow pits that do not require any additional archaeological investigations prior to exploitation. These pits could potentially supply some 6 million m3 of material.

10.3.9 Public Consultation

Prior to 1993 there was no legal requirement in Hungary to consult the public. During the early 1990s UVATERV carried out voluntary public consultation for the M5 Motorway. Then as part of Halcrow Fox's scope of work on behalf of the EBRD in 1998 an Environmental Scoping meeting was held on 23rd July 1998, which was attended by 46 people, including representatives from the Mayors' offices of the towns in the M5 corridor and relevant County organisations, as well as national and regional Governmental environmental organisations and non-governmental environmental organisations.

A further update Environmental Review meeting took place on 14th June 2004, in Szeged town hall in accordance with EBRD's new public information policy (2003). Advertisements were placed into two of the biggest local newspapers that were considered to be the most popular newspapers read by local people in both Bács-Kiskun County and Csongrád County. In addition, an announcement was broadcasted on Radio 88 Szeged over the weekend prior to the meeting in order to remind local people, local businesses and other interest parties about the review meeting.

A Public Information Document outlining a brief history of the project, and how the information has been collected for the development of the second phase of the M5 Motorway was distributed to all attendees as well as a Questionnaire.

Some 38 attendees attended the update meeting although no one from the general public or any Non-Government Organisation (NGO) was present. Eleven people completed and returned the questionnaire. Key concerns discussed during the meeting were from the Museum of Szeged regarding concerns that the archaeological watching brief during construction has yet to be agreed; and from the National Park Authority with concerns regarding game pass design and environmental monitoring.

10.3.10 Monitoring

The draft environmental monitoring report has been produced by FRAMA. We have reviewed this report and made recommendations for incorporation in the final Monitoring Plan. A key addition is that additional surface water quality data should be collected as soon as possible for incorporation in to the baseline data, to provide a basis for the comparison with subsequent measurement. As the location of the construction compounds is now known, baseline monitoring should be carried out at these locations before they are set up and the monitoring plan should provide for subsequent monitoring at these locations.

10.3.11 Construction Environmental Management Plan (CEMP)

The draft CEMP has been produced by the CJV. We recommend, as discussed and agreed with the CJV, that the measures specified in this document are incorporated in the CEMP to enhance the environmental mitigation and protection during the construction of the M5 Motorway.