ALBANIA

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VLORA BYPASS

Final Design

Environmental and Social Impact Assessment (ESIA)
Final Report

Design	Drawings				Phase	Section/ Bridge			Type	Free number		
A	1	5	E	V	2	0	0	0	R	0	0	3

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1. NON-TECHNICAL SUMMARY

1.1. BACKGROUND

This is the Draft ESIA report for the construction of the Vlorë Bypass.

Vlorë is a strategically located city and port, situated 180 km south of Tirana that provides access to other Mediterranean ports and countries. It is one of the main entry points for tourists coming in ferries to visit regional amenities offered by the southern Albanian coast. Vlorë is also an important fishing port and will also in the future accommodate new strategic development such as power stations, etc.

North of Vlorë, the national road network is currently being developed with the construction of new dual two carriageway links. The closest section between Levan and Vlorë is currently under construction and will end close to the port in the northern part of the city.

On the south outskirt of Vlorë, the existing Coastal single lane route has been considerably upgraded, thanks to the important infrastructure spending of the last decade, not only to improve access to towns but also to contribute to the emergence of tourism by providing better access to beaches and coastal resorts.

The legal framework for Environmental and Social Impact Assessment (ESIA) procedure in Albania is based on Law No. 8990 on Environmental Impact Assessment approved on January 23, 2003, as amended by Law no.10050, dated 24.12.2008. A new law on Environmental Impact Assessment is now being studied by the government of Albania. A draft of this law has been released on June 25th 2010. This law is not yet entered into force.

However, because the Ministry of Transport and Telecommunications has requested the European Bank for Reconstruction and Development ("EBRD") to participate in the funding of the Project, the ESIA has also been structured to meet EBRD's specific requirements for an ESIA.

1.2. TECHNICAL ASPECTS OF THE PROJECT

Vlorë Bypass comprises a 29.0 kilometres route that will be classified, according to Albanian

1.1. PARATHENJE

Ky është raporti i Draftit ESIA për ndërtimin e Bypass-it të Vlorës.

Vlora është një qytet dhe port i vendosur në një pozicion strategjik, i ndodhur 180 km në jug të Tiranës që ofron mundësi hyrjeje në portet dhe shtetet e tjera të Mesdheut. Ajo është një nga pikat kryesore hyrëse për turistët që vijnë me anije për të vizituar këndaqësitë që ofron bregdeti jugor i Shqipërisë. Vlora është gjithashtu një port peshkimi dhe do të akomodojë në të ardhmen një zhvillim të ri strategjik si stacionet e energjisë, etj.

Në veri të Vlorës, rrjeti i rrugës kombëtare është në zhvillim e sipër me ndërtimin e dy linjave të dyfishta të transportimit. Pjesa më e afërt ndërmjet Levanit dhe Vlorës aktualisht është në ndërtim e sipër dhe do të përfundojë afër portit në pjesën jugore të qytetit.

Në pjesën periferike të Vlorës, rruga bregdetare ekzistuese njëkalimshme me një korsi është përmirësuar në mënyrë të konsiderueshme, falë infrastrukturës së rëndësishme të investuar dekadat e fundit, jo vetëm për të përmirësuar hyrjen në qytete por gjithashtu edhe për të kontribuar në emergjencën e turizmit, duke ofruar akses më të mirë në plazhe dhe në resortet bregdetare.

Procedura e Sistemit ligjor për Vlerësimin e Ndikimit Mjedisor dhe Social në Shqipëri është e bazuar në Ligjin nr. 8990 mbi Vlerësimin e Ndikimit të Mjedisit i miratuar më 23 janar 2003, i rregulluar nga Ligji nr. 10050, datë 24.12.2008. Një ligj i ri mbi Vlerësimin e Ndikimit të Mjedisit është tani në studim e sipër nga qeveria shqiptare. Një draft i këtij ligji është kaluar më 25 qershor 2010. Ky ligj nuk ka hyrë ende në fuqi.

Megjithatë, për shkak se Ministria e Punëve Publike, Transportit dhe Telekomunikacionit i ka kërkuar Bankës Europiane për Rikontruktim dhe Zhvillim ("BERZH") që të jetë pjesëmarrëse në financimin e Projektit, ESIA është strukturuar gjithashtu për të plotësuar kërkesat specifike për një ESIA.

1.2. ASPEKTE TEKNIKE TE SKEMES

Bypass-i i Vlorës përshin një rrugë prej 29,0 km të gjatë e cila do të klasifikohet, sipas Manualit të

Road Design Manual (ARDM), as a secondary road with a single carriageway.

Km 0 is located where a roundabout will be built at the end of the Levan to Vlorë Carriageway. For the first 800 m, the alignment will first follow a small valley, and will pass close to approximately 20 houses. Then for 2,2 km, it will climb up a hill covered with olive groves. On the top of the hill, it will pass close to a single house, a water reservoir and a cemetery. Until the Babica e Madhe roundabout at km 7+150, the Project will go trough an agricultural plain.

Then for 350 m the alignment follows an existing agricultural dirt road where two houses are located. At km 7+500, the alignment starts to climb up hills covered with olive trees all the way to the junction with the existing road to Kaninë at km 10+070.

From this point the Bypass will offer to the motorist spectacular views toward the bay of Vlorë. The Project is positioned on the slopes below the village, avoiding the centre of the village. Some cut will be more then 10 m high.

After Kaninë, the road starts to climb again, on mountains covered with low Mediterranean vegetation, until it reaches it summit close to a bridge situated at 513 m above sea level at km 16+000. Going down, the Project encounters pastureland and younger olive groves. In the valley of Dukati, the Project goes trough agricultural lands and two small rivers.

The Vlorë Bypass is planned to be in operation in 2014.

The economic justification is based on savings in travel time, vehicle operating costs, accidents and coherent urban development.

1.3. ALTERNATIVE OPTION CONSIDERED

In the Preliminary design Study, 3 alternatives were considered. Two peripheral options and one option following an existing street situated in Vlorë city center. (See figure 3.1)

- *Alternative A is the longest of the three alternatives.*
- *Alternative B, in its Northern part follows more or lest the same alignment as Alignment A, but it joins the existing road sooner in Radhimë,*
- *Alternative C is the shortest and is situated*

Dizenjuar për Rrugët në Shqipëri (ARDM) , si një rrugë dytësore me një korsi kalimi.

Km 0 është vendosur aty ku do të ndërtohet një rrugë e tërthortë në fund të autostradës Levan Vlorë. Për 800 m e parë, rreshtimi do të ndjekë në fillim një luginë të vogël, dhe do të kalojë afër 20 shtëpive të vlerësuara. Në vazhdim për 2,2 km, ajo do të ngjitet mbi një kodër të mbuluar me pemishte ulliri. Në majë të kodrës, ajo do të kalojë pranë një shtëpie të vetme, një rezervuari dhe një varreze. Deri tek rruga e tërthortë Babica e Madhe në km 7+150, Projekti do të përshkojë një fushë bujqësore.

Në vazhdim, për 350 m rreshtimi ndjek një rrugë bujqësore me baltë ku janë të vendosura dy shtëpi. Në km 7+500, rreshtimi fillon me ngjitjen në kodër të mbuluar me pemishte ulliri përgjatë gjithë rrugës në kryqëzimin me rrugën ekzistuese në Kaninë në km 10+070.

Nga kjo pikë Bypasi do t'i ofrojë automobilistit pamje spektakolare përgjatë gjirit të Vlorës. Projekti shmang qendrën e fshatit duke qënë se është i planifikuar në shpatet poshtë fshatit. Disa prerje do të jenë më shumë se 10 m të larta.

Pas Kaninës, rrugët fillojnë të ngjiten përsëri, në male të mbuluara nga bimësia mesdhetare, deri sa të arrijë majën e tij afër urës së ndodhur në 513 m mbi lartësinë e detit në km 16+000. Duke ecur më poshtë, Projekti ndeshet me peisazhe kullote dhe rrënjë më të reja ulliri. Në fushën e Orikumit, Projekti kryqëzohet me toka bujqësore dhe dy lumenj të vegjël.

Bypass-i i Vlorës është planifikuar të vihet në zbatim në 2004.

Justifikimi ekonomik është bazuar duke kursyer kohën e udhëtimit, kostot operative të makinave, aksidentet dhe zhvillimin aktual urban.

1.3. GJENDJA EKZISTUESE E MJEDISIT

1.3.1. TRASHEGIMIA ARKEOLOGJIKE DHE KULTURORE

Zona në studim karakterizohet nga prezenca e qyteteve antike, fshatrave të vjetra në majë të kodrës dhe ndërtesave të tjera historike.

Kanina, me pamje nga Vlora, është një vendbanim ilir në majë të kodrës e cila ka qënë veçanërisht e lulëzuar në Mesjetë. Pjesë të mbetura të një kalaje mund të vërehen edhe në ditët e sotme.

Tragjasi i vjetër është vendbanimi i dytë më i vjetër në zonë dhe ndoshta është krijuar si një

in the Vlorë City center.

Based on a combined evaluation of criteria related to Natural Resources, Cultural Heritage, Amenity and Welfare and Socio-Economics, Alternative A is more attractive from an economical, technical and environmental point of view and should be preferred to all alternatives.

1.4. THE EXISTING ENVIRONMENT

1.4.1. ARCHAEOLOGY AND CULTURAL HERITAGE

The study area is characterized by the presence of ancient cities, old hilltop villages, and other historical buildings.

Kaninë, overlooking Vlorë, is an Illyrian hilltop settlement that was particularly prosperous in the Middle Ages. Remains of a fortress can still be observed nowadays.

Old Tragasi is the second oldest settlement in the area and was probably founded as a result of the destruction of Ancient Orikum.

Located at the southern end of the bay of Vlorë, Orikum was an ancient Greek city in the northern part of Epirus.

Potential archaeological sites or remains might be concerned by the proposed route at Kaninë.

1.4.2. LANDSCAPE AND VISUAL AMENITIES

The Project will cross 5 landscape character units:

- *The **coastal plain of Vlorë** surrounded by hills covered with maquis vegetation, olive groves and recent urban development.*
- *The flat, vast, open and agricultural **Babica plateau**, where small cultivated plots of lands are subdivided by drainage ditches.*
- *The **Shushica hills** where the historical Illyrian town and fortress of Kaninë is situated overlook the city and the bay of Vlorë.*
- *Higher and more barren than the Shushica hills, the **Gombitrit Mountains** host only few small valleys with woody vegetation. The historical village of Rhadimë is situated in this landscape unit on a lower hill, overlooking the bay of Vlorë and the valley*

rezultat i shkatërrimit të Orikumit të Lashtë.

I vendosur në fund të pjesës jugore të gjirit të Vlorës, Orikumi ka qënë një qytet i lashtë grek në pjesën jugore të Epirit.

Vendqendrime potenciale arkeologjike mund të kryqëzohen nga rruga e propozuar e Kaninës.

1.3.2. PEISAZHET DHE KENAQESITE VIZUALE

Projekti do të përshkojë 5 unitete me karakter peisazhi:

- ***Fushën bregdetare të Vlorës** e rrethuar nga kodra të mbuluara me bimësi të dendur, pemishte ulliri dhe zhvillime të fundit urbane.*
- ***Pllajën e sheshtë, të hapur dhe bujqësore të Babicës**, ku ngastra të vogla të kultivuara toke janë nëndarë nga kanale drenazhesh.*
- ***Kodrat e Shushicës** ku qyteti historik ilir dhe kalaja e Kaninës është e vendosur, me pamje nga qyteti dhe gjiri i Vlorës.*
- *Më të larta dhe më jopjellore se kodrat e Shushicës, **Malet e Gimbritit** mirëpresin vetëm disa lugina të vogla me bimësi drurore. Fshati historik i Radhimës është i vendosur në këtë njësi peisazhi në një kodër më të ulët, me pamje nga gjiri i Vlorës dhe luginës së Orikumit.*
- ***Lugina e Dukati** është në vazhdimësinë vizuale të gjirit të Vlorës. Topografia e saj e sheshtë dhe strukturat e kontrasteve të saj unike bujqësore me kodrat e rrëpirta të gadishullit të Karaburunit në pjesën perëndimore dhe Malet Orimanges në pjesën lindore.*

1.3.3 KLIMA

Temperaturat mesatare minimale dhe maksimale në korridorin e rrugës variojnë në 22 gradë, me një mesatare vjetore prej 17 gradësh. Në dimër, temperaturat shumë rrallë shkojnë nën 0 gradë. Temperaturat e verës rregullisht kalojnë 32 gradë. Rreshjet vjetore janë 995 mm në Vlorë.

RELIEVI, GJEOLOGJIA, TOKA DHE UJRAT-N/TOKESORE

Projekti kalon ndërmjet dy njësive gjeomorfologjike: fushës së Vlorës dhe Orikumit dhe kodrat janë të vendosura në pjesën lindore të qytetit të Vlorës.

Fushat e Vlorës dhe të Orikumit formojnë një zonë të

of Dukati.

- *The **valley of Dukati** is in the visual continuity of the bay of Vlorë. Its flat topography and its unique agricultural patterns contrasts with the steep hills of the Karaburun peninsula to the West and the Orymanges Mountains to the East*

1.4.3. CLIMATE

Average minimum and maximum temperatures in the road corridor range over 22 degrees centigrade, with a yearly average of about 17 degrees centigrade. In winter, temperatures rarely drop below 0 degree centigrade. Summer temperatures regularly exceed 32 degrees centigrade. Annual rainfall is 995 mm in Vlorë.

1.4.4. RELIEF, GEOLOGY, SOIL AND GROUNDWATER

The Project passes through two main geomorphologic units: the plain of Vlorë and Orikum and the hills situated at the East of the city of Vlorë.

The plains of Vlorë and Orikum form a large flat area filled with alluvial and maritime deposits, which has been created by the tectonic activity during Neocene and Quaternary periods.

Hills situated at the East of the city of Vlorë follow a North South direction. They are built from sedimentary rocks and form steep rocky slopes. The more gentle slopes are cultivated, whereas the steeper slopes are covered with maquis and small trees. Areas with limestone are generally covered with olive groves.

Vlorë and Orikum are part of the Ionian geological region, where sedimentary deposits, limestone rock and granular rock can be found.

The road corridor is considered to be in an area of major seismic activity.

As the Project lies mainly on limestone, it crosses an area rich in groundwaters. Numerous karstic springs supply population in freshwater.

1.4.5. HYDROGRAPHY AND SURFACE WATER

Surface waters are scarce on the site. The hydrogeology of the Vlorë, Kaninë, Radhimë, Orikum area is characterised by the porous structure of the limestone terrain, easily percolated by waters running

gjerë dhe të sheshtë të mbushur me depozita të hedhura dhe detare, të cilat janë krijuar nga aktivitetet tektonike gjatë Neocenit dhe Periudhave të Katërsorit.

Kodrat e vendosura në pjesën lindore të qytetit të Vlorës ndjekin drejtimin Veri-Jug. Ato janë ndërtuar nga shkëmbinj sedimentarë dhe formojnë pjerrësi të rrëpirta shkëmbore. Pjerrësitë më të buta janë të kultivuara, ndonëse pjerrësitë më të rrëpirta janë të mbuluara me bimësi të dendur dhe pemë të vogla. Zonat me gurë gëlqerorë në përgjithësi janë të mbuluara me pemishte ulliri.

Vlora dhe Orikumi janë pjesë e rajonit gjeologjik jonian, ku mund të gjenden depozita sedimentare, shëmbinj me gurë gëlqerorë dhe shëmbinj granulorë.

Korridori i rrugës konsiderohet se është një zonë me aktivitet të madh sizmik.

Meqë Projekti shtrihet kryesisht në gurët gëlqerorë, ai përshkon një zonë të pasur me ujëra nëntokësorë. Burime të shumta karstike furnizojnë popullsinë me ujë të freskët.

1.3.5. HIDROGRAFIA DHE UJRAT SIPERFAQESOR

Ujërat e sipërfaqes janë të rralla në vendndodhje. Hidrologjia e zonës së Vlorës, Kaninës, Radhimës dhe Orikumit karakterizohet nga strukturë poroze e terrenit gëlqeror, lehtësisht e përshkuar nga ujëra që rrjedhin nëpërmjet kanaleve nëntokësore. Për këtë arsye, shumica e përrenjve dhe e rrymave të zonës së studiuar kanë ujë vetëm në dimër dhe në pranverë. Një nga lumenjtë e vetëm me ujëra të rrjedhshëm permanentë të zonës së studiuar të lumi i Tragjasit i cili e ka origjinën nga burimet karstike të Izvoritit.

Një pjesë e rëndësishme në burimet hidrike të zonës janë stacionet e furnizimit me ujë të bëra nga vetë njeriu. Fundi i Projektit të njërit prej tyre është Babica.

1.3.6. MJEDISI I GJALLESAVE DHE BIODIVERSITETI

Projekti kalon mes për mes tre zonave ekologjike të dallueshme. Pjesa më e madhe e rrugës do të ndërtohet në kodra dhe male, në lindje të Vlorës ku pemishtet me ullinj mbizotërojnë në kufirin më të ulët dhe ku bimësia e dendur dhe pjerrësitë kanë kolonizuar një luginë të vogël dhe akoma më lart terreneve të ekspozuara. Në Babicë dhe në luginën e Dukatit, projekti përshkon toka kullote dhe fusha bujqësore. Në pjesën më të madhe të gjatësisë së Projektit, aktivitetet njerëzore dominojnë dhe lënë pak hapësirë për ndonjë banesë të një interesi të veçantë ose të një

through underground channels. For that reason, most of the torrents and streams of the study area have water only in winter and spring. One of the only rivers with permanent running waters of the study area is Tragjasi river that originates from the karstic springs of Izvorit.

An important part in the hydric resources of the zone is man-made waterworks. The Project skirts one agricultural water reservoir in Babica.

1.4.6. HABITAT AND BIODIVERSITY

The Project passes through three distinct ecological zones. Most of the route will be build on hills and mountains, east of Vlorë where olive groves prevail on the lower hedge and where maquis and steppes have colonised small valley and higher more exposed terrains. At Babica and in the Dukati valley, the Project crosses pastureland and agricultural fields. For most of the length of the Project, human activities dominate and leave little room for any habitats of ecological interest or importance. No rare or endangered species of flora and fauna are likely to be found in the planned road corridor.

Two protected areas are closed to the project: To the North, the Narta Landscape Protected area (19 738 ha) and the Managed Nature Reserve of Karaburun/Vlorë (aprox 20 000 ha).

At the Southern edge of the Project, the alignment will go through the site of the proposed national park of the Karaburun peninsula.

1.4.7. AIR QUALITY

Precise and relevant results describing air quality in Albania and in the study area are unavailable.

Emissions of air pollutants in Albania have fallen since the late 1980s and early 1990s. During that time the relative contributions from the different sources has also changed. Emissions from industrial production have fallen due to reduced industrial activity over the past 10-15 years. In the early 1990s household emissions also dropped for the same reason and because of the change from fossil fuels to electricity use. This trend seems to have continued throughout the 1990s. During the same period emissions from traffic have increased following a rapid growth in car

rëndësie ekologjike. Në korridorin e rrugës së planifikuar nuk ndodhen specie të rralla ose të rrezikshme.

Dy zona të mbrojtura ndodhen afër projektit: në veri, zona e mbrojtur e Peisazhit të Nartës (19 738 ha) dhe Rezervuari i Menaxhuar i Karaburunit/Vlorë (aëfrsisht 20 000 ha).

Në kufirin jugor të Projektit, rreshtimi do të kalojë mes për mes pjesës së parkut kombëtar të propozuar të gadishullit të Karaburunit.

1.3.7 CILESIA E AJRIT

Nuk janë të disponueshme rezultate të sakta dhe të përshtatshme që përshkruajnë cilësinë e ajrit në Shqipëri dhe në zonën e studiuar.

Emetime të ndotësve të ajrit në Shqipëri kanë rënë që prej fundit të 1980 dhe fillimit të 1990. Gjatë asaj kohe kontributet relative nga burime të ndryshme kanë ndryshuar gjithashtu. Emetime nga prodhime industriale kanë rënë për shkak të reduktimit të aktivitetit industrial në 15 vitet e fundit. Në vitet 1990 emetime shtëpiake janë hedhur për të njëjtën arsye dhe për shkak të ndryshimit nga lëndët djegëse fosile për përdorim elektrik. Kjo tendencë duket se ka vazhduar gjatë gjithë viteve 1990. Gjatë së njëjtës periudhë emetimet nga trafiku janë rritur duke ndjekur një rritje të shpejtë në pronësinë e makinës si edhe në përdorimin e saj.

Cilësia e ajrit monitorohet në Vlorë nga një institucion i veçantë i kontraktuar dhe i financuar nga Minsitria e Mjedist, e Pyjeve dhe e Administrimit të Ujërave. Stacioni në Vlorë ka matur këto të dhëna ndotjeje: CO, SO2, NO2, 03, PM10, PM2.5, dhe Benzen.

1.3.8. ZHURMA

Zona e studiuar dhe që përshkohet nga Projekti është e ndarë në tre lloje të veçanta zonash. Urbane, gjysëmurbane dhe rurale.

Zona urbane ekziston vetëm në pjesën më veriore të projektit. Nuk ka asnjë informacion në lidhje me nivelet ekzistuese të ndotjes, zhurmës së mjedisit. Zhurma mund të jetë një shqetësim domethënës në zonën direkt që rrethon Projektin, veçanërisht për kilometrat e parë ku shtëpitë do të jenë afër rrugës së re. Për shkak se ky Projekt do të lidhet me skemën Levan/Vlorë, tashmë ekziston emetim i zhurmës nga trafiku kur hyn për në Vlorë.

ownership and use.

Air quality is monitored in Vlorë by a scientific institution contracted and financed by the Ministry of Environment, Forestry and Water Administration. The station in Vlorë is measuring the following pollutants: CO, SO2, N02, 03, PM10, PM2.5, and Benzene.

1.4.8. NOISE

The study area crossed by the project is divided into three distinctive type areas. Urban, semi-rural and rural.

Urban area is present only at the very Northern part of the project. There is no information concerning the existing ambient noise pollution levels in the Vlorë area. Noise can be a significant concern in the immediate area surrounding the Project, especially for the first kilometre where houses will be close to the new road. Because this project will connect to the Levan/Vlorë scheme, there is already noise emission coming from traffic entering Vlorë.

Going South, the project encounters very punctual small residential neighbourhood or individual houses. Finally to the southern end the project will be built in relatively remote area where no important roads or industrial activities generate considerable amount of noise. They are calm areas because noise levels, even during the day are relatively low.

1.4.9. LOCAL COMMUNITY AND SOCIO-ECONOMICS

The area surrounding the proposed road is inhabited by a population of circa 151,286 inhabitants (Vlorë district, 2009). The density is 54,4 inhabitants/km2. In the district of Vlorë, the population growth rate during 2010-2001 was about 3%, with an average annual growth of 275 persons per year. The future trend foresees a further growth in the number of families and a reduction in the number of members per family. In 2001, 59% of the population was urban. The percentage of urban population increased to 80% in 2009.

Vlorë remains a major seaport and commercial centre, with a significant fishing and industrial sector. The surrounding region produces petroleum, natural gas, bitumen and salt. Rock quarrying and mining takes place in river valleys throughout the Vlorë area. The city is also the location of important installations of

Duke shkuar në jug, Projekti ndeshet me lagje të vogla banimi ose shtëpi individuale. Më në fund, në pjesën fundore jugore Projekti do të ndërtohet relativisht në një zonë të largët ku asnjë rrugë e rëndësishme ose aktivitet industrial të prodhojnë sasi të konsiderueshme të zhurmave. Ekzistojnë zona të qeta ku nivelet e zhurmës, madje edhe gjatë ditës janë relativisht të ulëta.

1.3.9. KOMUNITETI LOKAL DHE EKONOMIA SOCIALE

Zona që rrethon rrugën e propozuar është e banuar nga një populsi prej afërsisht 151,286 banorë (qarku i Vlorës). Dendësia është 54,4 banorë/km2. Në qarkun e Vlorës, rritja mesatare e popullsisë gjatë 2000-2001 ishte afërsisht 3% me një rritje mesatare vjetore prej 275 personave në vit. Tendenca e ardhshme parashikon një rritje të mëtejshme të numrit të familjeve dhe një reduktim të numrit të pjesëtarëve për familje. Në 2001, 59% e popullsisë ishte urbane. Përqindja e popullsisë urbane është rritur në 80% në 2009.

Vlora mbetet një port bregdetar i rëndësishëm dhe një qendër tregtare, me një peshkim të rëndësishëm dhe sektor industrial. Zonat përreth prodhojnë naftë, gaz natyral, bitum dhe kripë. Qyteti gjithashtu është vendndodhja e ndërtimeve të rëndësishme të Flotës Ushtarake Detare Shqiptare.

Vlora është rritur në rëndësi si një qendër bujqësore me plantacione të shkallës së gjerë të ullinjve dhe pemëve frutore, dhe si një qendër e përpunimit ushqimor, të eksporteve të industrisë së vajit dhe bitumit. Komunat që e rrethojnë janë kryesisht bujqësore dhe blegtorale, prodhojnë tërshërë, misër, pambuk, vaj ulliri, bagëti, dele, lëkurë, gëzof dhe gjalp. Turizmi është bërë një industri madhore në vitet e fundit, me shumë hotele, resorte dhe plazhe të mëdhenj.

1.4 RENDESIA NDIKIMIT MJEDISOR

1.4.1 TRASHEGIMIA ARKEOLOGJIKE DHE KULTURORE

Ekzistojnë dy ndikime kryesore të autostradës së re në burimet arkeologjike të zonës së studiuar. Një është negativ dhe tjetri pozitiv. Ndikimi negativ është kërcënimi i shkatërrimit të mbeturinave arkeologjike dhe ndikimi pozitiv është mundësia e zhvillimit dhe e integrimit të kësaj trashëgimie në zhvillimin e ardhshëm të zonës.

Në afërsi të Kaninës ku do të ketë një fushë të re

the Albanian Navy.

Vlorë has grown in importance as an agricultural center with very large-scale planting of olive and fruit trees, and as a center of the food processing, oil and bitumen export industries. The surrounding municipalities are mainly agricultural and pastoral, producing oats, maize, cotton, olive oil, cattle, sheep, skins, hides and butter. Tourism has become a major industry in recent years, with many hotels, resorts and beaches.

1.5. Significant Environmental Impacts

1.5.1. Archaeology and Cultural Heritage

There are two major impacts of the new highway on the archaeological resources of the study area. One is negative and the other one is positive. The negative impact is the threat of destruction of archaeological remains and the positive impact is the possibility evaluation and integration of this heritage into the future development of the area.

In the vicinity of Kaninë where there will be new land acquisition and construction works, archaeologists will need to conduct surveys to determine if there are any other remains of interest. Finds of great importance might necessitate amending the design of the road.

1.5.2. Landscape and Visual Amenities

At the Northern end, the Project will blend with the urban character of the area but it might cause some disturbance to the inhabitants. Then the Project easement will require wood clearing trough a well established olive grove consisting of mature trees.

On the Babica plateau the Project will cross agricultural lands with no particular scenic value.

Kaninë is famous for its view towards the bay and the sea. The project will be visible in the foreground and will change the character of the view.

In the Gombitrit Mountains, important cuts and imposing retaining walls will be built in order to constitute the platform on which the road will be built. Those earth works will be highly visible from Vlorë seafront

përvetësimi dhe ndërtimi veprash, arkeologët do të kenë nevojë për të drejtuar survejimin që të përcaktojnë nëse ekzistojnë mbeturina të tjera arkeologjike me interes. Gjetje të një rëndësie të madhe mund të ndryshojnë dizenjimin e rrugëses.

1.4.2. Peisazhet dhe Kenaqesite Vizuale

Në pjesën fundore jugore, Projekti do të përzihet me karakterin urban të zonës por ai mund të shkaktojë disa shqetësime për banorët. Atëherë lehtësimi i Projektit do të kërkojë pastrimin e drurëve nëpërmjet një pemishteje ullinjsh të rregulluar mirë, që konsiston në pemë shumëvjeçare.

Në pllajën e Babicës Projekti do të përshkojë toka bujqësore pa ndonjë vlerë të veçantë piktoreske.

Kanina është e famshme për pamjen e saj drejt gjirit dhe detit. Projekti do të jetë i dukshëm në prioritet dhe do të ndryshojë karakterin e pamjes.

Në malet Gombitrit, do të ndërtohen prerje shkurtime të rëndësishme dhe mure mbajtëse madhështore me qëllim për të formuar një platformë mbi të cilën do të ndërtohet rruga. Këto punime të tokës do të jenë shumë të dukshme nga bregdeti i Vlorës dhe nga anijet që do të lundrojnë në gji.

Në luginën e Orikumit, Bypass-i i Vlorës gjithashtu do të shërbejë si një kufi për zhvillimin urban të Orikumit. Ngastrat e sheshta fqinje të tokës do të zihen me lehtësi nga ndërtime të paplanifikuara nëse rregullimi i zhvillimit urban nuk fuqizohet me përpikmëri.

Përgjatë Projektit, veçanërisht në veri, janë identifikuar disa toka të cilat kanë potencial të lartë për disa shkallë të ndikimit vizual.

1.4.3 Klima

Ndikimi I projektit te rruges ne klimen e zones eshte I pa perfillshem.

1.4.4. Relievi, Gjeologjia, Toka dhe Ujrat-N/tokesore

Ndikimi më i madh potencial në furnizimin me ujë lidhet me potencialin për infektimin nga kalimi i rrugës dhe nga firot aksidentale të kimikateve të rrezikshme të Projektit. Risku i infektimit potencial nga kalimi i rrugës dhe nga firot aksidentale të kimikateve të rrezikshme është i.

and from boats cruising in the bay.

In the valley of Dukati, the Vlorë Bypass will also serve as a limit for the urban development of Orikum. The adjoining flat plots of land will be easily occupied by unplanned constructions if regulation on urban development is not strictly reinforced.

Along the Project, especially to the North, some properties were identified as having potential for some degree of visual impact.

1.5.3. CLIMATE

The impact of the Project on the climate will not be significant.

1.5.4. RELIEF, GEOLOGY, SOIL AND GROUNDWATER

The greatest potential impact on water supply wells relates to the potential for contamination from road runoff and the accidental spillage of hazardous chemicals on the Project. The risks of potential contamination from road runoff and the accidental spillage of hazardous chemicals are minor.

1.5.5. HYDROGRAPHY AND SURFACE WATER

A number of existing watercourses are to be regraded as part of the drainage works for the proposed road. These are generally minor works, mostly to maintain existing temporary or permanent small streams. Temporary streams are numerous given the nature of the geology.

During construction, discharge of silt into the water column during construction is considered a potential negative impact. This might be an acute problem for the only permanent stream crossed by the project in Tragasi.

1.5.6. HABITAT AND BIODIVERSITY

During the operational phase, the most important impact will be accidental mortality for animal species that will cross the road. Numerous minor potential direct and indirect impacts might be found such as noise, lighting, air pollution and providing new accesses to secluded areas for illegal and uncontrolled hunting.

During construction there are also numerous

1.4.5. HIDROGRAFIA DHE UJI SIPERFAQSOR

Një numër i kanaleve ekzistuesë duhet të rivlerësohet si pjesë e punimeve të drenazhit për rrugën e propozuar. Në përgjithësi ato janë punime të vogla, më shumë për të ruajtur përrenjtë ekzistuesë përkohësisht apo përherësisht. Përrenjtë e përkohshëm janë të shumtë duke i dhënë natyrën e gjeologjisë.

Gjatë ndërtimit, hedhja e baltës në kolonat e ujit gjatë ndërtimit konsiderohet një ndikim negativ potencial. Ky mund të jetë një problem akut për dy përrenjtë e fundit që përshkohen nga Projekti në jug

1.4.6. MJEDISI I GJALLESAVE DHE BIODIVERSITETI

Gjatë fazës operacionale, ndikimi më shumë i rëndësishëm do të jetë vdekshmëria aksidentale për specie kafshësh që do të përshkojnë rrugën. Mund të krijohen ndikime të shumta dhe të vogla, direkte ose indirekte si zhurma, ndriçimi, ndotja e ajrit dhe ofrimi i akseseve të reja për të izoluar zonat gjueti ilegale dhe të pankontrollueshme.

Gjatë fazës operacionale, ekzistojnë gjithashtu ndikime të shumta dhe të vogla, direkte ose indirekte si pastrimi i bimësisë, erozioni pjerrësirave gjatë prerjeve dhe mbushjeve, shkatërrimi i pemëve ekzistuese të vlefshme dhe e tokave pyjore, etj.

Ekzistojnë dy zona të mbrotjura përsa i përket biodiversitetit të tyre në afërsi të Projektit. (Zona e mbrojtur e Peisazhit të Nartës dhe Rezervuari Natyral i Menaxhuar i Karaburunit/Vlorë). Ndikimi i Projektit në këto Rezerva Natyrore do të jetë i papërfillshëm.

1.4.7. CILESIA E AJRIT

Per shkak te nivelit te ulet te parashikuar te trafikut per 2024 (15 vjet mbas perfundimit te rruges) do te kemi mbetje te pakta te shkaktuara nga trafiku ne rrugen e re. Keto mbetje do te zvogelohen si rezultat i permiresimit ne te ardhmen te mbetjeve per njesi te mjeteve.

Gjate aktivitetit te ndertimit do te kete pluhur ne mjedisin perreth.

1.4.8 ZHURMA

Gjatë fazës operacionale, përgjatë Projektit, janë identifikuar prona që kanë ndikim potencial për krijimin e zhurmës së prodhuar nga Projekti. Ato

minor potential direct and indirect impacts such as vegetation clearing, erosion of slopes on cuts and fills, destruction of existing valuable trees and woodland, etc.

There are two protected areas for their biodiversity in the vicinity of the Project. (Narta Landscape Protected area and Managed Nature Reserve of Karaburun/Vlorë). The impact of the Project on these Nature Reserves will be negligible because the project does not go through those protected areas.

1.5.7. AIR QUALITY

Due to relatively low forecasted traffic levels for 2034 (20 years after opening of the road) low emissions are likely to be caused by the traffic of the Project. Emissions will also decrease, as improvement in unitary vehicle emissions will take place in the future.

During operational phase of the project, most of the transit traffic will be deviated outside the center of the town leading to a potential diminution of pollutant emission in the center of Vlorë.

During construction, dust is likely to be generated by construction activities.

1.5.8. NOISE

During the operational period, along the Project, properties were identified as having potential noise impact generated from the Project. They are situated in Vlorë and in Kaninë.

During construction, a variety of engines will be in use. It is also possible that rock breaking may be required on occasions and there will be vehicular movements to and from the site that will make use of existing roads. Due to the nature of the activities undertaken on a large construction site, there is potential for generation of significant levels of noise. However, the impact due to construction activities will be transient in nature and most of the time will be located in inhabited areas.

1.5.9. LOCAL COMMUNITY AND SOCIO-ECONOMICS

For all municipalities situated along the Project, impacts have been evaluated for land use, road infrastructure, water supply network, power and gas supply, health, education, culture and sport

janë të vendosura në Vlorë dhe në Kaninë.

Gjatë ndërtimit, do të përdoren një shumëllojshmëri makinash. Gjithashtu, ka mundësi që thyerja e shkëmbinjve mund të jetë e nevojshme sipas rastit dhe do të bëhen lëvizje makinash përgjatë pjesës së rrugëve ekzistuese. Për shkak të natyrës së punimeve të ndërmarra në një pjesë të gjerë të ndërtimit, ekziston një potencial për prodhimin e niveleve të konsiderueshme të zhurmës. Megjithatë, ndikimi për shkak të punimeve të ndërtimit do të jetë i përkohshëm në natyrë.

1.4.9. KOMUNITETI LOKAL DHE EKONOMIA SOCIALE

Për të gjitha komunat që shtrihen përgjatë Projektit, ndikimet janë vlerësuar për përdorimin e tokës, për infrastrukturën e rrugës, për network-un e furnizimit me ujë, me energji dhe me gaz, për shëndetin, për edukimin, për kulturën dhe lehtësimet sportive si edhe për industrinë dhe për biznesin.

Ndikimet kryesore negative janë:

- *Rruga e propozuar do të jetë një pengesë potenciale për fermerët dhe lëvizjet e bagëtive (Pemishtet e ullinjve, fushat e pllajës së Babicës, Kullotat e luginës së Orikumit),*
- *Rruga e re do të sjellë zhvillime të paplanifikuara urbane dhe ndërtime ilegale për tokat tashmë të paprekura, të kullotave dhe të zonave pyjore,*
- *Në disa vende, rruga e propozuar do të jetë një pengesë potenciale për të shkuar në shkollë, në dyqane dhe lehtësira të tjera lokale.*
- *Gjatë ndërtimit, furnizimi me ujë, me elektriciteti dhe me gaz për banorët dhe fermerët mund të dëmtohen nga Projekti,*
- *Gjatë ndërtimit mund të ndikohen vaditjet e fushave.*

Ndikimet kryesore pozitive janë:

- *Rruga e re do të krijojë një lidhje më të mirë brenda rajonit dhe brenda vendit, qendra e mbipopulluar e Vlorës Bypassing;*
- *Rruga e re do të përmirësojë kalimin për në fshatrat e Kaninës dhe të Rradimës, dhe;*
- *Rruga e re do të jetë fitimprurëse për zgjerimin e Vlorës dhe për infrastrukturat turistike në Vlorë. Rruga e re do të rigjallërojë ekonominë lokale (dyqane, restorante, bare, pik afurnizimi, produkte lokale, etj).*

facilities as well as industry and business.

The principal negative impacts are:

- *The new road will bring unplanned urban developments and illegal constructions to yet untouched agricultural, pasture or wood lands,*
- *The proposed road will be a potential obstacle for farmers and cattle movements (Olive groves, fields of the Babica plateau, and pasturelands of the valley of Dukati), some farmers will lose their field and their crops.*
- *During construction, water, electricity and gas supplies to the inhabitants and farms might be affected by the Project,*
- *During construction irrigation of the fields will be affected.*
- *The construction works may require important quantity of water whereas fresh water availability in the area is often scarce.*

The principal positive impacts are:

- *The new road will create a better connection within the region and the country, Bypassing the congested centre of Vlorë;*
- *The new road will improve the access to the villages of Kaninë and Rhadimë, and;*
- *The new road will be beneficial for the expansion of Vlorë and its touristic infrastructures. The new road will make southern Albanian localities more accessible. The works will provide temporary increases of revenue for hotels and restaurants situated near the alignment.*

1.6. PROPOSED MITIGATION MEASURES

1.6.1. GENERAL MEASURES

As a general mitigation measure, during construction, the road contractor(s) will be required to prepare an environmental plan that will ensure that:

- *Construction works occurs mainly during dry season,*
- *Stream and river beds diversion are kept to*

1.5. PROPOZIMI MASAVE LEHTESUESE

1.5.1. MASA TE PERGJITHESHME

Si një masë lehtësuese e përgjithshme, gjatë ndërtimit, kontraktorëve e rrugës do t'ju kërkohet të përgatisin një plan mjedisi i cili do të sigurojë se:

- *Punimet e ndërtimit do të kryhen vetëm gjatë stinëve të thata,*
- *Shtratet e përrenjve dhe të lumenjve do të mbahen në një minimum,*
- *Punimet do të mbahen në minimun afër shtretërve të lumenjve dhe të përrenjve.*
- *Basene të përkohshme sedimentimi janë krijuar për mbledhjen e baltërave,*
- *Mbeturina solide dhe të lëngshme janë mbledhur dhe/ose ricikluar,*
- *Platforma e rrugës është ujitur gjatë periudhave të thata për të shmangur emetimet e pluhurit,*
- *Zona të përkohshme magazinimi dhe kampe punëtorësh janë rehabilituar për përdorimet e tyre parësore (toka bujqësore, toka natyrale, etj.)*
- *Pemë me vlerë si pemë ulliri janë mbrojtur.*

1.5.2. MASA TE VECANTA

1.5.2.1 Arkeologjia dhe Trashegimia Kulturore

Në pjesën e njohur të Kaninës, për shkak të distancës ndërmjet rrugës së propozuar dhe trashëgimisë së identifikuar kulturore brenda zonës së studiuar, ekzistojnë mundësira të vogla të produkteve arkeologjike që mund të zbulohen gjatë gërmimeve. Në rastin e produkteve të zbuluara, procedurat do të përfshijnë: (a) asnjë lëvizje ose heqje e produkteve nga ana e punëtorëve, (b) ndërprerja e menjëhershme e punimeve dhe njoftimi zyrtar i Institutit të Arkeologjisë, (c) vazhdimi i punimeve vetëm pas miratimit zyrtar të qeverisë.

Gjatë ndërtimit, është propozuar se një monitor i përshtatshëm arkeologjik, i kualifikuar do të monitorojë nxjerrjen, ose punimet e përgatitjes së terrenit në zonat të cilat nuk janë testuar të plota përpara ndërtimit.

a minimum,

- *Works are strictly kept to the minimum near river and stream beds,*
- *Temporary sedimentation basins are created for siltation,*
- *Solid and liquid wastes are collected and/or recycled,*
- *Road platform and temporary access roads are watered during dry periods to avoid dust emissions,*
- *Temporary storage areas and workers campsites are rehabilitated to their original uses (agricultural land, natural land, etc.),*
- *Valuable trees such as olive trees are protected.*

1.6.2. SPECIFIC MEASURES

1.6.2.1. Archaeology and Cultural Heritage

In the known site of Kaninë, due to the distance between the proposed road and identified cultural heritage sites within the study area, there are slight possibilities of archaeological artefacts being discovered during excavations. In case of artefacts being discovered, procedures shall include: (a) no moving or removal of any artefacts by workers, (b) immediately stop work and notify official from Institute of Archaeology, (c) only continue work after official government approval.

During construction, it is proposed that a suitably qualified archaeologist monitor soil stripping, or ground preparation works in areas that are not comprehensively tested in advance of construction.

1.6.2.2. Landscape and Visual Amenities

General measures will be applied over the entire Scheme depending on the nature of the particular road section, but will ensure that as a minimum, continuous grassland will be established along the Vlorë Bypass.

For the cuttings and embankments of the sections crossing the Shushica hills and Orymanges Mountains that are highly visible from Vlorë city centre and seafront, all retaining structures (gabion or reinforced earth) will use stones found directly on site or earth tone colour material. No rough gray

1.5.2.2. Peisazhi dhe Kenaqesite Vizuale

Do të aplikohen masa të përgjithshme në të gjithë Skemën të cilat do të varen nga natyra e pjesës së veçantë të rrugës, por që do të sigurojnë se si minimum, toka me lëndina do të ngrihen përgjatë Bypass-it të Vlorës.

Përsa i përkët prerjeve dhe argjinaturave të pjesës përgjatë kodrave të Shushicës dhe Maleve të Orimanges, të cilat janë të dukshme nga qendra e Vlorës si edhe nga bregdeti, në të gjitha strukturat e mbajtura (cilindra ose terren i përforcuar), do të përdoren gurë të gjetur direkt ose materiale me ngjyrë të gjetura po aty. Nuk do të ndërtohen mure konkrete përforcuese të palëmuara ngjyrë hiri.

Trajtimet e peisazhit do të sigurojnë se speciet lokale do të përdoren për impiantet e propozuara.

Do të merren Masa Specifike Lehtësuese të Peisazhit me qëllim mbrotjen e pronave fqinje nga ndërhyrja vizuale. Masa të tilla do të përfshijnë impiantet e amortizatorëve me qëllim për të zvogëluar ndërhyrjen vizuale të Projektit.

1.5.2.3. Relievi,Gjeologjia, Toka dhe Ujrat N/tokesore

Një mbikqyrje e të gjitha të mirave brenda 250 m të linjës së murit rrethues të Projektit do të kryhet përpara ndërtimit të Projektit. Do të shmanget ndonjë ndikim negativ si edhe furnizimet e bëra për rikthimin e furnizimit me ujë për të gjithë pronarët.

Në rastin e një firoje serioze të kimikateve ose të fluideve gjatë ndërtimit, do të aplikohet një program për matjet e sipërfaqes dhe të ujërave nëntokësorë, nga ana e Kontraktorëve.

1.5.2.4. Hidrografia dhe Uji Siperfaqesor

Plani i Menaxhimit të Mjedisit dhe ai Social do t'i kërkojë Kontraktorit të implementojë procedura të përshtatshme gjatë ndërtimit për të reduktuar riskun e ndotjes së burimeve të ujit. Këto masa do të përfshijnë furnizimin e skelave dhe të mureve rrethuesë të tokës.

Rezerva të materialeve të ndërtimit, si asfalti, vajra ose kimikate nuk do të vendosen afër asnjë sipërfaqeje të ujërave nëntokësorë, rezervuarëve ose puseve të ujit. Rezervat do vendosen në sipërfaqe të mbyllura.

Do të ndërtohen hendeqe anësore përpara ndërtimit të rrugës, për të parandaluar rrëshkitjen e rrugës përgjatë përrenjve, diga ose toka

concrete retaining walls will be built.

Landscape treatments will ensure that local species are used for the proposed plantings.

Specific Landscape Mitigation Measures will be established in order to protect neighbouring properties from visual intrusion. Such measures will include plantation of buffer strips in order to diminish the visual intrusion of the Project.

1.6.2.3. Relief, Geology, Soil and Groundwater

A survey of all wells within 250m of the Project fence line will be undertaken prior to construction of the Project. Any wells negatively impacted will be abandoned and provisions made for replacement water supplies for the well owners.

In the event of a serious spillage of chemicals or fluids during construction, a programme of surface and groundwater measurements will be established by the Contractor.

1.6.2.4. Hydrography and Surface Water

The Environmental and Social Management Plan will require the Contractor to implement suitable procedures during construction to reduce the risk of pollution of water courses. These will include provision of bunds and siltation fences.

Stockpiles of the construction materials, such as asphalt, oil and chemicals shall not be located near to any surface watercourses, reservoirs or water wells. The stockpiles will be located on sealed surfaces.

Side ditches will be constructed prior to road construction, to prevent the road run off flowing into streams, ditches or farmland. Temporary ditches will be provided to replace any existing ditches to be temporarily occupied.

During the phases of concrete casting necessary for the construction of structures (bridges, culverts, retaining walls), measures will be implemented in order to avoid the dispersion of water and concrete in the soil and in the surface and groundwater.

The site run off discharged from construction yard activities will also be treated.

Where the site run off is to be discharged to a river, the rate of discharge will be controlled so that it does not cause erosion or localised

bujqësore. Do të ngrihen hendeqe të përkohshme për të siguruar zëvendësimin e hendeqeve ekzistuese që mund të jenë të zënë përkohësisht.

Gjatë fazave të derdhjeve konkrete, do të jetë e nevojshme për ndërtimin e strukturave (ura, kanaleve nën rrugë, muret mbajtëse), me qëllim shmangien e dispersionit të ujit dhe konkretisht në tokë dhe në sipërfaqet e ujërave nëntokësorë.

Pjesa nga ndërtimi i kantiereve të punimeve do të trajtohet gjithashtu.

Aty ku anët do të lahen afër një lumi, shkalla e larjes do të kontrollohet, kështu që të mos shkaktojë përmbytje të lokalizuar në kanalet e ujit.

Digat ekzistuese, kanalet, hendeqet dhe kanalet e ndërprera nga rruga e propozuar, përveç rastit ku është e ndaluar bashkimi vertikal i rrugës, janë mbajtur të hapura nën nivelin e rrugës për të ruajtur itineraret ekzistuese të rrjedhës. Do të ndërtohen kanale vaditjeje duke përdorur kanale nën rrugë ose devijime të rrjedhjes së ujit sipas nevojës, si pjesë e Projektit.

1.5.2.5. Mjedisi i Gjallesave dhe Biodiversiteti

Ndërtimi i rrugës mund të ketë një ndikim domethënës në rritjen e zogjve. Kontrata do të kërkojë që shkatërrimi i vendbanimeve të planifikohet me qëllim që të sigurohet mosshqetësim i çerdheve të zogjve. Kjo gjë do të jetë më shumë e rëndësishme aty ku rrethimi është përcaktuar mes tokave pyjore dhe bimësisë së dendur.

Pasi punimet të kenë mbaruar, banorët duhet të rehabilitohen. Argjinaturat e rrugës duhet të zbukurohen pas ndërtimit për të ndihmuar zëvendësimin e humbjes së vendbanimeve për shkak të ndërtimit të rrugës.

Shenjat e rrugës do të vendosen në vende që tregojnë pjesët e rëndësishme për kalimet e kafshëve dhe për migrimin e tyre. Në vazhdim, në vendet delikate, kanalet konkrete nën rrugë për përdorim si nënkalimet për kafshët dhe rrethimet e mbyllura të lidhura për të siguruar drejtimin e kafshëve në këto kanale nëntokësore që përshkojnë dhe si rrjedhim për të parandaluar përshkimin rrugën në vende të tjera.

Do të forcohen ligje me qëllim mbrojtjen e zonave të reja të lejuara nga gjuetia dhe nga prerja-transportimi i trupave.

Zhvillime urbane do të kontrollohen përgjatë autostradës së propozuar për të shmangur shkatërrimin e vendbanimeve të vlefshme.

flooding in the watercourse.

The existing channels, ditches and drains intercepted by the proposed road, except where prohibited by the vertical alignment of the road, have been kept open beneath the carriageway to maintain existing flow paths. Irrigations channels will be re-established using culverts or diverted as necessary as part of the project.

1.6.2.5. Habitat and Biodiversity

Road construction can have a significant impact on breeding birds. The contract will require that destruction of habitat shall be scheduled to ensure nesting birds are not disturbed. This will be most important where the alignment is routed through natural woodlands and maquis.

After the work is finished the habitats should be rehabilitated. The road embankments should be landscaped after construction to assist in replacing the loss of habitat due to the road construction.

Road signs will be put in place showing sites of importance for animal movements and migration. In addition, at sensitive locations, concrete culverts under the road for use as animal underpasses and close-linked fencing to ensure that animals are guided to these culvert crossings and thus prevented from crossing the road at other locations.

Laws will be reinforced in order to protect newly accessible areas from hunting and logging.

Urban development should be controlled along the proposed highway to avoid destruction of valuable habitats.

1.6.2.6. Air Quality

During construction, dust suppression systems will be implemented.

During operation, no mitigation measures are proposed with regard to the low impact of the Project. However, in order to verify the air quality in the study area and to follow its evolution, measurements using passive samplers might be done before constructing the road and some years after construction as part of the Environmental and Social

1.5.2.6. Cilesia e Ajrit

Asnjë masë lehtësuese nuk është propozuar me qëllim për ndikimin e ulët të Projektit. Megjithatë, me qëllim që të verifikohet cilësia e ajrit në zonën e studiuar dhe për të ndjekur evoluimin e saj, masat që përdorin modele pasive duhen marrë përpara ndërtimit të rrugës dhe disa vjet pas ndërtimit të saj si pjesë e Planit të Mjedisit dhe e Menaxhimit Social.

1.5.2.7. Zhurma

Përsa i përket modelit të parashikimit, pronat e ndikuara të cilat do të përballen me zhurmën mbi nivelin e limitit 55dB Laeq, në 2034 (20 vjet pas hapjes së rrugës) do të mbrohen nga zhurma që vjen nga Projekti. Këto mbrojtje do të marrin formën e pengesave të zhurmës ose të veçimit të zhurmës së fasadave.

Për ndërtimin, kontraktori do të jetë i detyruar të marrë masa specifike për zhurmën dhe të përmbushë rekomandimet e Komunitetit Europian. Kjo duhet të përfshijë mbrojtjet nga zhurma e pjesës së ndërtimit dhe masat për reduktimin e zhurmës në minimum.

1.5.2.8. Komuniteti Lokal dhe Ekonomia Sociale

Shërbimet Publike: Gjatë ndërtimit do të merren masa specifike nga ana e kontraktorit, në marrëveshje me ESMP, me qëllim mbrojtjen e ujit, të elektricitetit dhe të shërbimit të gazit për banesat fqinje dhe banorët e fermave dhe të industrive. Vaditje dhe kanale drenazhi do të vihen gjithashtu në funksionim.

Efektet-Barriera: Masa lehtësuese mund të merren nga një seleksionim i kujdesshëm i drejtimit të rrugës me qëllim minimizimin e efekteve-barrierë për komunitetet e rrugës së propozuar. Por aty ku efektet-barrierë nuk ndodhin mund të reduktohet në maksimum me futjen e nën/mbikalimeve dhe kryqëzime shtesë për të siguruar kalim përgjatë ose në rrugën e re.

Ndikime të mundshme të detyruara me Aktivitetet Ekonomike: Skema e propozuar mund të pritet për të drejtuar zhvillimin rezidencial dhe tregtar afër rrugës së re. Nëse zhvillimi merr hov në tokën bujqësore disponibël përgjatë rrugës, skema mund të ketë ndikim të zbutur në këto burime. Ndërsa

Management Plan.

1.6.2.7. Noise

According to the prediction model, the impacted properties that will experience a noise level above the threshold limit of 55dB L_{aeq}, in 2034 (20 years after the opening of the road) will be protected from the noise coming from the Project. These protections will take the form of noise barriers or noise insulation of facades.

For construction, the contractor will be obliged to take specific noise abatement measures and comply with the recommendations of the European Community. This should include predictions of noise from the construction site, measures to reduce noise to minimum and public information.

1.6.2.8. Local Community and Socio-Economics

Public Services: during construction specific measures will be taken by the contractor, in accordance with the Environmental and Social Monitoring Plan, in order to maintain water, electricity and gas services to the neighbouring residents and farm inhabitants and industries. Irrigation and drainage channels will also be kept functioning as well.

Barrier-effect: mitigation measures can be provided by careful selection of the route of the road in order to minimise the barrier-effect to the communities of the proposed road. But where barrier-effect does occur it can be reduced to a minimum by the introduction of under/overpasses or additional junctions to provide access across or onto the new road.

Possible Induced Impacts through Economical activities: the proposed scheme can be expected to lead to increased residential and commercial development adjacent to the new road. If development takes place on valuable agricultural land along the route, the scheme could have a moderate impact on these resources. Whilst planning regulations are available to control this type of development, often the regulations are not enforced. Therefore it will be essential for the Planning Authorities to strictly enforce the regulations for planning control in order to ensure that the land surrounding the proposed new road is not despoiled by unplanned developments. Enhanced enforcement is also janë të disponueshme rregullime të planifikuara për të kontrolluar këtë lloj zhvillimi, nëse rregulloret nuk janë përforcuar. Megjithatë, do të jetë kryesore për Autoritetet Palnifikuese për të përforcuar me saktësi rregulloret për kontrollin e planifikuar me qëllim sigurimin e rrethimeve të tokës se rruga e re nuk është e rrembyer nga zhvillime të paplanifikuara. Duhet gjithashtu një siguri e madhe për të mbrojtur tokën dhe për të parandaluar skemën që çon në rritjen e rrëzimit të pemëve të palicensuar dhe plaçkitjen e tyre, dhe gjithashtu zbrazja ilegale e materialeve përgjatë rrugës.

Shëndeti dhe Siguria: Auditi për Sigurimin e Rrugës do të merret përsipër nga një ekspert sigurie për rrugët. Programi i auditit për Sigurinë e rrugës do të përfshijë auditet në fazat e mëposhtme: në plotësimin e ndërtimit dhe përpara përfundimit të rrugës; dhe përsëri afërsisht pas dy viteve kur rruga të jetë hapur.

Përvetësimi i tokës dhe asete të tjera dhe sterhimi i banorëve do të minimizohet në maksimum. Të gjithë personat që punojnë për Projektin (PAPs), që strehohen, punojnë, kryejnë biznes, kultivojnë ose kanë të drejta mbi burimet brenda zonës së Projektit janë të titulluar për t'u kompensuar për asetet e tyre të humbura sipas kostove të zëvendësimit.

1.5.3. VEPRIMTARI TE TJERA

1.5.3.1. Konsultimi me Publikun

Është rënë dakort për Konsultimin publik me Ministrinë e Punëve Publike, Transportit dhe Telekomunikacionit.

Janë ftuar gjithashtu njerëzit për të marrë pjesë në seksionet e konsultimit gjatë fillimit dhe fazës finale të ESIA. Një seksion i tillë konsultimi është zhvilluar në Vlorë më 23 nëntor 2011 për fazën fillestare dhe një roun tjetër do të zhvillohet në janar – shkurt 2012. Janë bërë gjithashtu konsultimet me komunitetet drejtpërdrejt të ndikuara nga Projekti gjatë përgatitjes së ESIS duke përdorur pyetësorë.

Raporti i ESIA do të paraqitet përpara publikut të gjerë. Vendi i paraqitjes do të publikohet në shtypin lokal dhe mundësisht i anoncuar edhe nëpërmjet radios. Përmbledhja Ekzekutive e ESIA do të vendoset gjithashtu në website-in e ERBD.

(http://www.ebrd.com/pages/project/eia.shtml)

required to protect the land and to prevent the scheme leading to an increase in unlicensed tree-felling and quarrying and also illegal dumping of waste materials alongside the route.

Health and Safety: road Safety Audits shall be undertaken by a road safety expert. The road safety audit programme will include audits at the following stages: on completion of construction and prior to commissioning of the road; and again approximately two years after the road has been opened.

Acquisition of land and other assets and resettlement of people will be minimised as much as possible. All Project Affected Persons residing, working, doing business, cultivating, or having rights over resources within the project area are entitled to compensation for their lost assets at replacement cost.

1.6.3. OTHER ACTIVITIES

1.6.3.1. Public consultation

Public consultation has been agreed with Ministry of Public Works, Transportation and Telecommunications.

The public was invited to take part in consultation sessions during the scoping and the final phase of the ESIA. A public consultation session was held in Vlorë on November 23rd 2011 (see appendices 9 & 10) for the scoping phase another round will take place for the ESIA phase in January – February 2012. Consultations with communities directly impacted by the Project were also carried out during the preparation of the ESIS using a questionnaire.

The ESIA Report will be put on display open to the general public. The display location will been advertised in the local press and possibly announced on local radio. The Executive Summary of the ESIA will also be placed on the web site of the EBRD.

(http://www.ebrd.com/pages/project/eia.shtml)

1.6.3.2. Environmental and Social Management Plan

An Environmental and Social Management Plan (ESMP) is being prepared as part of the ESIA study in order to define the environmental measures and procedures that will need to be adopted for the Project and to identify those responsible for their implementation. The ESMP will be finalised when the design of the

1.5.3.2. Plani Kontrollit Mjedisit

Një Plan për Menaxhimin e Mjedisit dhe atë Social është duke u përgatitur si pjesë e sutdimit ESIA me qëllim për të përcaktuar masat dhe procedurat mjedisore që do të nevojiten për adopitimin e Projektit dhe për të indentifikuar ato si të përgjegjshme për implementimin e tyre. PMMS do të finalizohet kur dizenjimi i Projektit të jetë përfunduar dhe metodat e punimeve të kontraktorëve të jenë bërë të njohura dhe të rëna dakort. Mund të jetë e nevojshme që të rishikohen gjatë kohëzgjatjes së implementimit të Projektit.

PMMS është projesktuar për të përshfirë informacionin e mëposhtëm:

- *Masat e lehtësimit*
- *Plani i monitotimit të mjedisit*
- *Masat institucionale që do të ndërmerren gjatë ndërtimit dhe operacionit të projektit.*
- *Veprimet e nevojshme për implementimin e masave.*

ESMP do të përcaktojë koordinimin, frekuencën, kohëzgjatjen dhe koston e masave lehtësuese për një implementim të skemës dhe integrimin e këtyre veprimeve me gjithë planin e punës së Projektit.

ESMP do të gjejë mënyrat e monitorimit të ndikimeve mjedisore dhe të implementimit të masave lehtësuese gjatë fazës së ndërtimit. Monitorimi do të fokusohet në numrin e limituar të ndikimeve të identifikuara gjatë ESIA për të siguruar eficencën e masave lehtësuese të planifikuara.

Project is completed and the contractors' working methods are known and agreed. It may need to be revised during the course of the Project implementation.

The ESMP is designed to contain the following information:

- *mitigation measures;*
- *environmental monitoring plan;*
- *institutional measures to be taken during project construction and operation;*
- *actions needed to implement measures.*

The ESMP will define the timing, frequency, duration and cost of mitigation measures in an implementation schedule and integrate these actions with the overall Project work plan.

The ESMP will set out the ways in which the monitoring of the environmental impacts and the implementation of the mitigation measures during the construction phase will be carried out. The monitoring will be focused on the limited number of impacts identified during the ESIA to ensure the efficiency of the planned mitigation measures.

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LIST OF ABBREVIATION

ARDM	Albanian Road Design Manual
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
ESIS	Environmental and Social Impact Statement
ESMP	Environmental and Social Management Plan
EBRD	European Bank for Reconstruction and Development
EU	European Union
GRD	General Road Directorate
NGO	Non-Governmental Organisation
PR	Performance Requirement

2. INTRODUCTION

2.1. GENERAL

The present ESIA relates to Vlorë Bypass part of the following contract: EuropeAid/129604/C/SER/AL VLORË BYPASS, Preparation of Feasibility Study, Preliminary and Detailed Design - MILOT/RRËSHEN, Preparation of Preliminary and Detailed Design for doubling the road section. The construction of the Vlorë Bypass is only one of the two projects concerned by this contract.

2.2. PROJECT OVERVIEW

Vlorë Bypass consists of a 29,0 km long route composed of:

- *a new single carriageway highway, designed according to the Albanian Road Design Manual , contouring Vlorë to the East,*
- *numerous new bridges and 8 at grade junctions.*

Vlorë is a strategically located city and port, situated 180 km south of Tirana that provides access to other Mediterranean ports and countries. It is one of the main entry points for tourists coming in ferries to visit regional amenities offered by the southern Albanian coast. Vlorë is also an important fishing port and will also in the future accommodate new strategic development such as power stations, etc.

North of Vlorë, the national road network is currently being developed with the construction of new dual two carriageway links. The closest section between Levan and Vlorë is currently under construction and will end close to the port in the northern part of the city.

On the south outskirt of Vlorë, the existing Coastal single lane route has been considerably upgraded, thanks to the important infrastructure spending of the last decade, not only to improve access to towns but also to contribute to the emergence of tourism by providing better access to beaches and coastal resorts.

The new Bypass will also provide an alternative itinerary to Sarandë which is at the moment best connected by a longer route via Tepelenë.

The Vlorë Bypass can be considered the “missing link” that remains to be constructed along this itinerary. Today all through traffic has to cross the centre of the city causing congestion, delays, costs, hazards, pollution and globally negative impacts on the environment and quality of life of Vlorë’s citizens.

In order to provide an easier access to the coastal road and to divert the through traffic away from the city and the seafront of Vlorë, which is under development at the moment, the Employer intends to build a Bypass for Vlorë that takes the through traffic away from the city centre.

Vlorë Bypass will be approximately 29,0 km in length and will be classified as a secondary road, with a single carriageway, according to Albanian Roads Design Manual (ARDM).

Expected benefices are: journey time savings, reduction of accidents, reduction of vehicle operating costs and contribution to the improvement of the link between Tirana, Northern Albania, other Balkan countries and the southern coast of Albania.

Figure 2.1 - Map - Project location

2.3. LEGAL AND INSTITUTIONAL FRAMEWORK

2.3.1. ALBANIAN LEGAL FRAMEWORK ON EIA

The legal framework for Environmental Impact Assessment (EIA) procedure in Albania is based on Law No. 8990 on Environmental Impact Assessment approved on January 23, 2003, as amended by Law no.10050, dated 24.12.2008.

As stated previously, a new law on Environmental Impact Assessment is now being studied by the government of Albania. A draft of this law has been released on June 25th 2010. This law is not yet entered into force.

Law No.8990 aims to provide:

- *A general integrated estimation of environmental impacts of the projects or activities which will be realized thus preventing and attenuating the negative effects on the environment in time.*
- *An impartial and administrating evaluation process with the participation of central and local institutions, public institutions and non-profit organizations for the environment, project promoter, environmental specialists and juridical people specialized in environmental issues.*

Article 26 of law Nr. 8990 requires public participation in the process of Environmental Impact Assessment in line with the requirements of the new environmental legislation and the relevant EU directives.

The most important regulations and laws applied to the EIA are as follows:

- *2009 - Law Nr. 10119 "On land use planning" as amended by law Nr. 10258 of 2010;*
- *2007 - Law Nr. 9774 "On the assessment of noise pollution" and guideline Nr. 8 on noise emission limits applicable in certain environments;*
- *2006 - Law Nr. 9587 "On biodiversity protection";*
- *2006 - Guideline Nr. 6 "Approving the methodology of the Environmental Impact Assessment";*
- *2004 - Law Nr. 9244 "On agricultural land protection";*
- *2003 - Law Nr. 9048 "On cultural heritage" as amended by law Nr. 9592 of 2006;*
- *2003 - Law Nr. 8990 "On Environmental Assessment Studies" as amended by Law no.10050, dated 24.12.2008;*
- *2002 - Law Nr. 8934 "On Environmental protection" as amended by law Nr. 9890 of 2008;*
- *2002 - Law Nr. 8906 "For protected areas" as amended by law Nr. 9868 of 2008;*
- *2002 - Law Nr. 8897 "On the protection of the air from pollution";*
- *1999 - Law Nr. 8561 "On the resettlement and temporary use of property for public interest";*
- *1996 - Law Nr. 8093 "On the water resources" as amended by Laws Nr. 8375, 8605, 8736, and*
- *1992 - Law Nr.7623 "On forests and their protection" as amended by articles 63 and 64 from Law Nr. 7839 "On the exploiting of forests".*

2.3.2. ADMINISTRATIVE FRAMEWORK

The EIA system is administered by the Ministry of Environment. This Ministry is also responsible for environmental licensing, inspection, and enforcement of environmental laws and standards.

2.3.3. SUMMARISED PROCEDURE OF THE ALBANIAN EIA

- ***Screening**: the applicant provides a preliminary description of the project to the Regional Environmental Agency, to define whether the project requires a summary EIA or a detailed EIA;*
- ***Local consultation phase**: When the first draft of the EIA is completed, a non-technical summary is sent to local governments and the applicant and its consultants participate to public consultations organized by communes, group of communes or municipalities, in order to take into consideration their opinion;*
- ***Approval phase**: After public consultations, the EIA is updated and submitted to administrations that approve the EIA before issuing the permit to the applicant.*

2.3.4. EBRD PERFORMANCE REQUIREMENTS ON ESIA

The Vlorë Bypass has adopted EBRD Performance Requirements (PRs) as an international reference standard for their social and environmental strategies.

Under the proposed project is classified as Category A when it could result in potentially significant and diverse adverse future environmental and/or social impacts and issues which, at the time of categorisation, cannot readily be identified or assessed. Although single carriageways are not included in the indicative list of Category A projects is presented in Appendix 1 to EBRD E&S Policy, it is likely that the Project could result in significant potential adverse environmental or social impacts. Therefore, it is categorised A, requiring an ESIA. As a special formalised participatory assessment process is required according to EBRD Performance Requirements, the process should include:

- *A preliminary and a full Environmental and Social Impact Assessment in compliance with PR 1 Environmental and Social Appraisal Management and PR 10 Information Disclosure and Stakeholder Engagement, including an examination of the technically and financially feasible alternatives and the rationale for the alternative selection.*
- *Also addressing PRs 2 and 4, the Preliminary and the final ESIA will identify the issues related to potential risks related to community health, safety and security, as well as labour and working conditions.*
- *During the construction of the road, in compliance with PR 3 (Pollution Prevention and Abatement), the promotion of environmentally sound practices trough an Environmental and Social Management Plan (ESMP).*
- *An assessment of involuntary resettlement issues according to PR 5 Land Acquisition, Involuntary Resettlement and Economic Displacement.*
- *The sustainable use of the natural resources and the protection of biodiversity will have to be considered as instructed by PR 6.*
- *An assessment of impacts on cultural heritage according to PR 8 Cultural Heritage.*

2.3.5. GAP BETWEEN ALBANIAN LAW AND EBRD PERFORMANCE REQUIREMENTS

Taking into consideration the Albanian procedure for the EIA, the application of EBRD standards requires also the following processes:

- *Scoping: a process by which stakeholders are consulted to contribute to the identification of key issues to be investigated as part of the ESIA.*
- *Stakeholder Engagement Plan: a comprehensive approach to the communication and consultation with the identified stakeholders throughout the whole project lifecycle.*
- *Focus on Social Issues: whereas the Albanian legislation mainly refers to environmental impacts the EBRD approach also focuses on the identification of impacts on the impacted communities.*

2.4. CONSULTATION WITH STATUARY BODIES AND THE PUBLIC

2.4.1. CONSULTATIONS WITH THE PUBLIC

The public were invited to take part in consultation sessions during both the scoping and the final phase of the ESIA. These consultations were advertised in the press and on display in public venues in the locality.

The public consultation sessions were held in public venues in Vlorë on November 23rd 2011 (see appendix 9 & 10 for the Minutes of the Meeting), for the scoping phase and will be held in January 2012 for the final phase. At all sessions, staff from GRD and EGIS was available to answer questions and listen to suggestions and objections. Numerous submissions were received and consideration was given to each submission.

2.4.2. COMMUNITY CONSULTATION

Consultation with communities directly impacted by the Project was carried out during the preparation of the Environmental and Social Impact Statement (ESIS). This consultation was carried out using two questionnaires presented in Appendix 3. Detailed design has been undertaken for most of the Project, but final design for the intersections the agricultural underpasses, the calming areas in towns and the finalisation and choices of some alternatives in the rehabilitated section were yet to be completed.

As the design development was progressing, the concerns of communities had lead to changes in the design of several aspects of the Project.

2.4.3. FORMAL SCOPING

In addition to formal scoping described above, a number of Government and non-government bodies were also consulted with regard to the information to be contained in the ESIS.

2.5. OUTLINE OF THE SCOPE OF THE ESIA

The Environmental and Social Impact Assessment is a systematic analysis of the proposed development in relation to the existing environment. The approach adopted in the assessment and preparation of the ESIA was generally based on that recommended in the European Commission Guidance on ESIA and EBRD Environmental and Social Policy.

The preparation of the ESIA is a systematic and iterative process that is inherently linked to the preliminary design of the Project. An initial Project was developed which formed the basis of the assessment of the likely significant impacts on the receiving environment. In cases where significant adverse impacts were identified, mitigation measures were proposed to avoid or minimise impacts.

Where feasible, these measures were then incorporated into the design of the Project. The Final Design is assessed in this Environmental and Social Impact Statement.

For the purposes of this document the environmental issues identified were addressed under the following headings:

- ***Section 6 – Cultural Heritage***
    - *Chapter 1: Archaeology and Cultural Heritage*
    - *Chapter 2: Landscape and Visual Amenity*
- ***Section 7 - Natural Resources***
    - *Chapter 1: Climate*

- *Chapter 2: Relief, Geology, Soil and Groundwater*
- *Chapter 3: Hydrography and Surface Water*
- *Chapter 4: Habitat and Biodiversity*

- ***Section 8 - Human Environment***
  - *Chapter 1: Air Quality*
  - *Chapter 2: Noise*
  - *Chapter 3: Local Community and Socio-Economics*
- ***Section 9 – Environmental and Social Management Plan***

2.6. ASSESSMENT TEAM

The Environmental and Social Impact Assessment was undertaken by EGIS on behalf of the General Road Directorate (GRD). EGIS was assisted by Albanian consultants presented on page 2.

2.7. IDENTIFICATION OF LIKELY SIGNIFICANT IMPACT

The EC Guidance on ESIA defines an impact as "Any change in the physical, natural or cultural environment brought about by a development project".

Where possible, mitigation or ameliorative measures are proposed to address each significant impact identified. Mitigation measures may include, but are not limited to, additions or modifications to the proposed design or application of specific construction methodology. An assessment of the significance of impacts, once the proposed mitigation is incorporated, is undertaken for all environmental aspects. These residual impacts are the impacts that can be expected from the Project with all the proposed mitigation incorporated.

The scale used to describe the magnitude of the impacts of the Project on the receiving environment is outlined on Figure 2.2. The level 'severe' is reserved for adverse effects only. Each of these levels is accompanied by a definition of an assumed relationship to the decision making process as presented in Figure 2.2 specifically for this Project.

Using Figure 2.2 as a reference point, significance criteria have then been developed for each environmental topic of relevance to this ESIA. These are presented in the relevant chapters of the ESIA.

2.8. STRUCTURE OF THE ESIS

The ESIS has been divided into the following ten sections for ease of use.

1. *Section 1: Non-Technical Summary*
2. *Section 2: Introduction*
3. *Section 3: Alternative Options considered in Conceptual Design*
4. *Section 4: Characteristics of the Project*
5. *Section 5: Scope of the Environmental and Social Impact Assessment*
6. *Section 6: Cultural Heritage*
7. *Section 7: Natural Resources*

- *8. Section 8: Human Environment*
- *9. Section 9: Environmental Management Plan*
- *10. Section 10: Appendices*

2.9. SUBMISSION IN RELATION TO THIS ESIA

Submissions in relation to the likely effects of the Project on the environment must be received in writing by GRD within the period and before the date specified in the published notices.

Representations may also be made at the Public Consultation for consideration by GRD. Details of the Public Consultation will be specified in the published newspaper notices.

Figure 2.2 - Table - Impact Assessment Significance Criteria for the Project

Glossary of Impacts	*Significance level*	*Criteria*
Profound or Significant ***Impact: Negative only***	***Severe***	*Only adverse effects are assigned this level of importance as they represent key factors in the decision-making process. These effects are generally, but not exclusively associated with sites and features of national or regional importance. A change in a regional or district scale site or feature may also enter this category. Typically, mitigation measures are unlikely to remove such effects.*
Significant Impact ***Positive or Negative***	***Major***	*These effects are likely to be important considerations at a local or district scale but, if adverse, are potential concerns to the Project that may become key factors in the decision making process. Mitigation measures and detailed design work are unlikely to remove all of the effects upon the affected communities or interests.*
Moderate Impact ***Positive or Negative***	***Moderate***	*These effects, if adverse, while important at a local scale, are not likely to be key decision making issues. Nevertheless, the cumulative effect of such issues may lead to an increase in the overall effects on a particular area or on a particular resource.* *They represent issues where effects will be experienced, but mitigation measures and detailed design work may ameliorate/enhance some of the consequences upon affected communities or interests. Some residual effects will still arise.*
Slight Impact ***Positive or Negative***	***Minor***	*These effects may be raised as local issues but are unlikely to be of importance in the decision making process. Nevertheless, they are of relevance in enhancing the subsequent design of the Project and consideration of mitigation or compensation measures.*
Imperceptible	***Not significant***	*No effects or those which are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.*

3. ALTERNATIVE OPTIONS CONSIDERED IN PRELIMINARY DESIGN

In the Preliminary design Study, 3 alternatives were considered:

3.1.1. ALTERNATIVE A (PERIPHERAL ALTERNATIVE) (PREFERRED ALTERNATIVE)

With approximately 29.0 km, Alternative A is the longest of the three alternatives. It starts, north of Vlorë, at the future roundabout that will be built at the end of the Levan Vlorë dual Carriageway.

The longitudinal profile is rather flat during the first 6.0 km, then the road starts its ascension southward to join Kaninë. The project is bypassing Kaninë on the west, on the slope that overlooks Vlorë.

After Kaninë, in order to avoid the very unstable terrain of the slopes that plunge to the sea, the road goes all the way up to 520 m above sea level. Then, for a stretch of about 12.0 km the alignment goes over a terrain where the geology is stable, consisting mainly of limestone, before going down to Orikum.

With the junctions at the beginning and at the end of this alternative, there are 6 other junctions planned with the existing road network:

- *One at Babica e Vogel,*
- *One at Babica e Madhe,*
- *Two at Kaninë,*
- *One at Radhimë,*
- *One at Orikum.*

3.1.2. ALTERNATIVE B (PERIPHERAL ALTERNATIVE)

This alternative starts further north then alternative A, connecting to the Levan Vlorë dual Carriageway at Panaja. During the first 7.0 km the bypass uses an existing road that will require improvements. Then Alternative B follows more or less the same alignment as alternative A. It bypasses also Kaninë but on the east side of the town. After Kaninë, Alternative B goes down to join the existing road, through very bad unstable terrain for about 3.5 km.

With the junctions at the beginning and at the end of this alternative, there are 3 other junctions planned with the existing road network:

- *One at Babica e Vogel,*
- *One at Babica e Madhe,*
- *One at Kaninë.*

3.1.3. ALTERNATIVE C

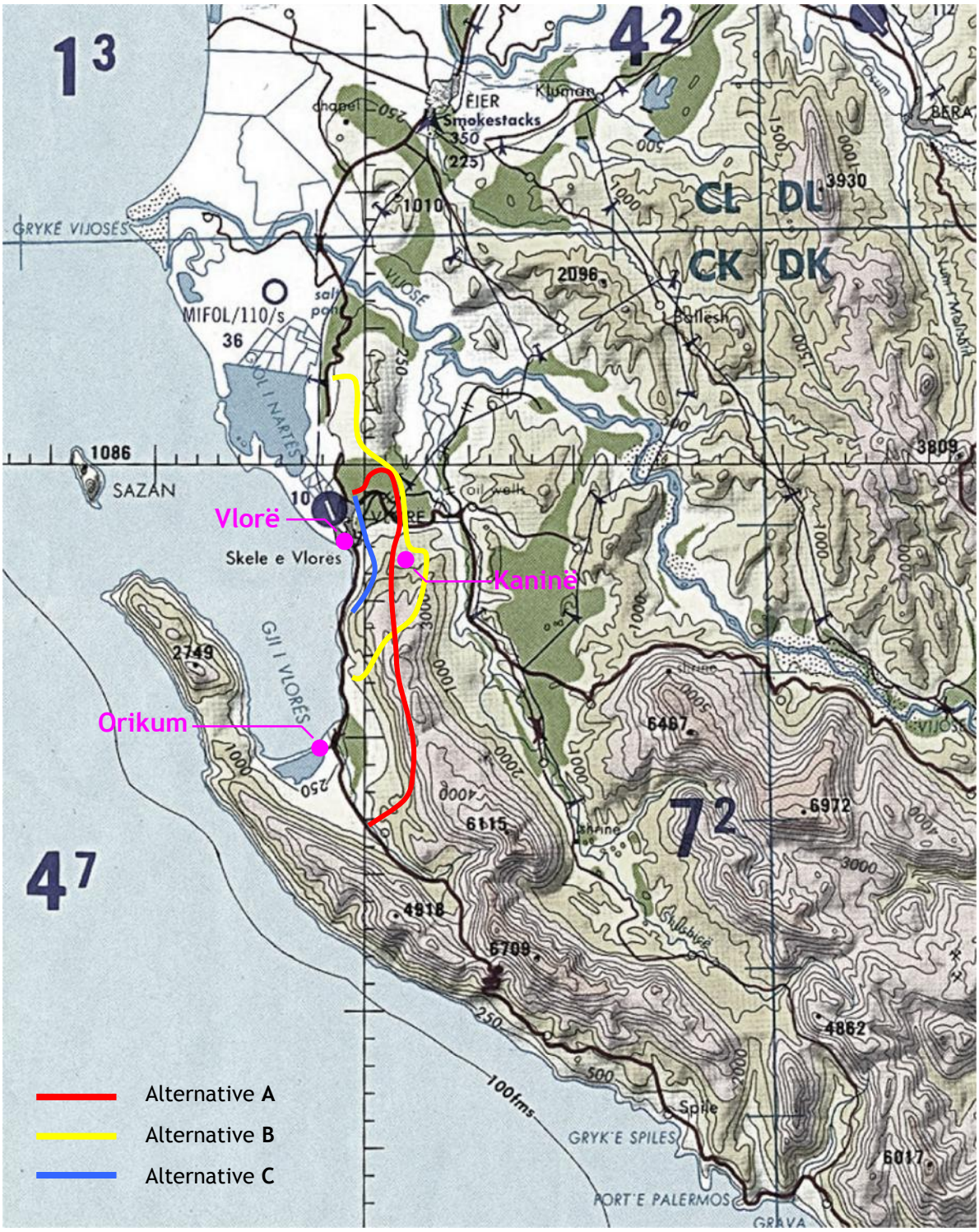
Alternative "C" is the shortest alternative with a total length of approximately 10,0 km. It starts at the end of the double carriageway Levan Vlore and terminates on the existing coastal road, shortly after the existing tunnel.

This alternative follows an existing street within a highly dense and quickly expanding urban area. Only on this first 4.3 km stretch of road, the Project intersects with 21 main arteries and side streets. Giving the limited right of way, the Project would take the form of an urban boulevard, with two side lanes and a main carriageway with one lane in each direction intercepting only with main streets with roundabouts.

After this section, the Project would follow a new alignment, east of the existing street, crossing a less dense inhabited area. However, the Project would go through very difficult terrain where serious geotechnical issues are present.

As Alternative C is using an existing urban street, there are no connections with other towns or suburbs of Vlore.

Figure 3.1 - Map - Alternatives location



3.2. CRITERIA AND PRIORITY FOR THE SELECTION OF THE PREFERED ALIGNMENT

3.2.1. ECONOMIC CRITERIA

The Alternative Report of February 2011 shows that the construction cost, including land acquisition is similar for the three alternatives:

- *Alternative A and B: 53 Million Euros,*
- *Alternative C: 56 Million Euros.*

Afterward, on March 9th 2011, a traffic economy study of the Bypass has been submitted to the Contracting Authority. It concludes by saying that the Project will be economically viable, especially if peripheral solutions are chosen, the benefits of the Project arising mainly from time savings due to the provision of additional road capacity and the relief of congestion in central Vlorë.

Considering the actual concern about the growing traffic coming from the centre of the country and other region of the Balkans towards the southern coast of Albania, it is obvious that alternative C will not contribute positively to time saving in traffic journeys, nor to relief of congestion in central Vlorë, even if a complete revision of the city traffic management would be achieved.

Further, alternative C does not allow as much possibilities for the future development of Vlorë. Also, with the cost of land acquisitions and without the additional cost for the relocation of utilities, this variant appears to be the most expensive. Finally, this proposal did not get any support from Vlorë Municipality. Consequently, from an economical point of view, alternative C should not be considered for the Bypass.

3.2.2. TECHNICAL CRITERIA

Geology: Alternative A avoids the difficult terrain encountered at the south end by Alternatives B and C.

Geometry: Alternatives A and B are much longer and complex. They will require climbing lanes for slow vehicles as long and steep slopes are foreseen in their design. Being built in an urban environment, especially in the first 4.1 km, alternative C has a design that allows only two side lanes for providing access to local streets and adjacent properties and only one two lanes central carriageway for through traffic.

Displacement of utilities: Peripheral alternatives (A and B), for most of their length, do not impact existing utilities. Alternative C, being in the city centre, will impact a dense network of existing utilities.

3.2.3. ENVIRONMENTAL CRITERIA

Natural resources: peripheral alternatives might have adverse impacts on natural habitats even if no known threaten habitats are crossed by peripheral alternatives.

Cultural heritage: peripheral alternatives might have adverse impact on unknown archaeological remains in the vicinity of the historical town and the citadel of Kaninë, whereas alternative C might encounter remains close to the historical center of Vlorë.

Amenity and welfare: peripheral alternatives avoid Vlorë city centre, but may encourage unplanned urban sprawl on untouched rural landscape. Both alternatives A and B will offer spectacular scenic views towards the bay of Vlorë, while only alternative A will open to the historical remains of Kaninë. Important cuts and fills will be visible from Vlorë city center and seafront. Peripheral alternatives, for most of their length, are far from houses reducing the risk of noise and air pollution impact on inhabitants.

Socio-economics: peripheral alternatives bring through traffic outside the city centre of Vlorë providing opportunities for touristic development and urban beautification projects. Those alternatives provide also a much better access to Kaninë and will help develop its tourism potential.

Alternative A is coherent with urban development strategies of Vlorë and Orikum. The southern end of Alternative B is not as coherent as it link to the existing road earlier in a zone that will be dedicated to tourism development.

Figure 3.2 - Table - Potential adverse impacts of the different road alternative

Theme	*Alternative A*	*Alternative B*	*Alternative C*
Natural resources	*Negative Locally moderate*	*Negative Locally moderate*	*Negative minor*
Cultural Heritage	*Negative and positive Locally moderate*	*Negative and positive Locally moderate*	*moderate*
Amenity and welfare	*Positive major*	*Positive moderate*	*Negative major*
Socio-Economics	*Positive major*	*Positive moderate*	*Negative major*

3.3. PREFERRED ALIGNMENT

Based on a combined evaluation of the criteria presented, ***Alternative A*** is more attractive from an economical, technical and environmental point of view and should be preferred to all alternatives.

4. CHARACTERISTICS OF THE PROJECT

4.1. MAINLINE DESCRIPTION

The Preliminary Design has planned the road as follow:

Vlorë Bypass comprises a 29.0 kilometres route that will be classified, according to Albanian Road Design Manual (ARDM), as a secondary road with a single carriageway.

Km 0 is located where a roundabout will be built at the end of the Levan to Vlorë Carriageway. For the first 800 m, the alignment will first follow a small valley, and will pass close to appreciatively 20 houses. Then for 2,2 km, it will climb up a hill covered with olive groves. On the top of the hill, it will pass close to a single house, a reservoir and a cemetery. Until the Babica e Madhe roundabout at km 7+150, the Project will cross an agricultural plain.

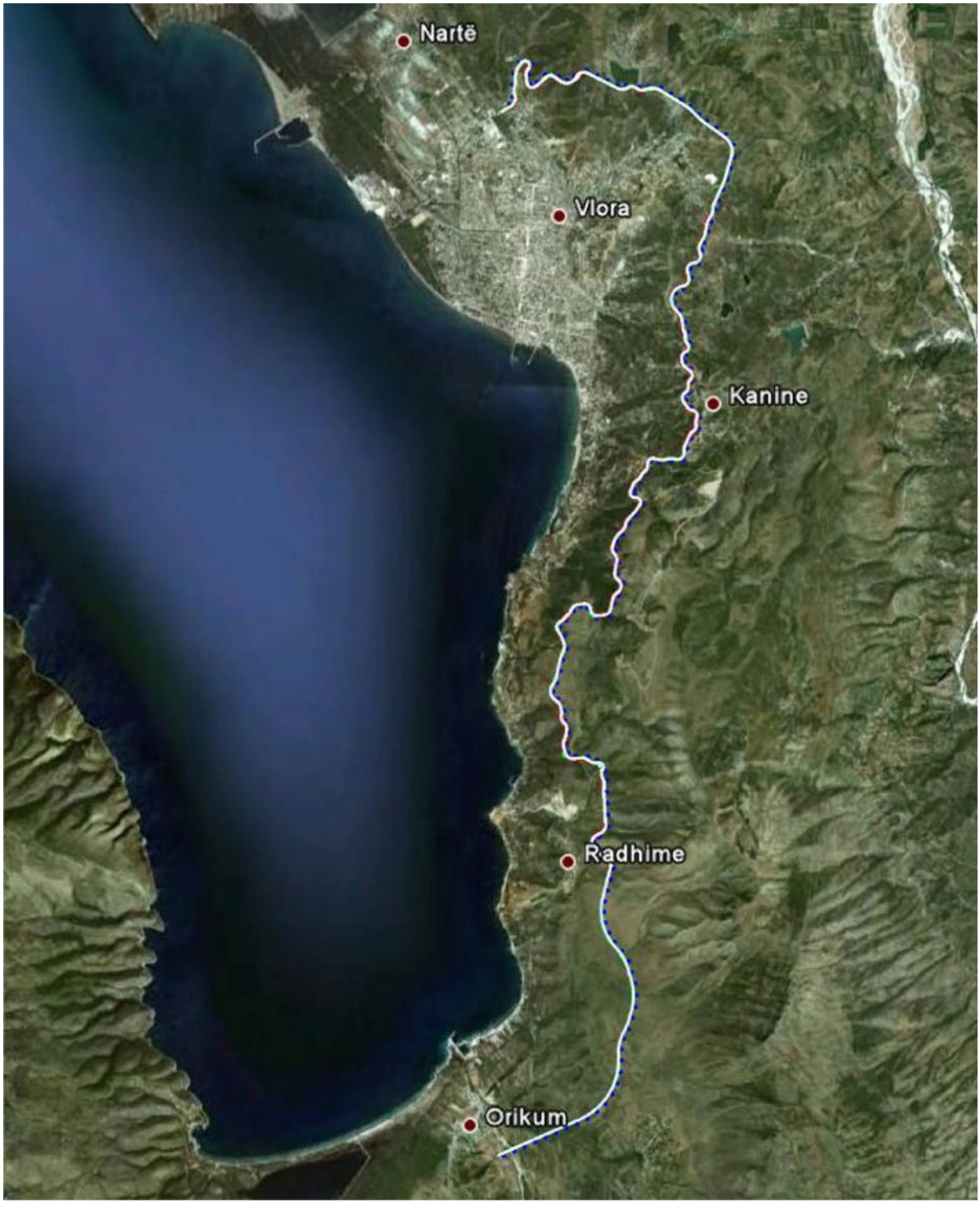
Then for 350 m the alignment follows an existing agricultural dirt road where two houses are located. At km 7+500, the alignment starts to climb up hills covered with olive trees all the way to the junction with the exiting road to Kaninë at km 10+070.

From this point the Bypass will offer to the motorist spectacular views toward the bay of Vlorë. The Project avoids the centre of the village by being planned on the slopes below the village. Some cut will be more then 10 m high.

After Kaninë, the roads start to climb again, on mountains covered with low Mediterranean vegetation, until it reaches it summit close to a bridge situated at 513 m above sea level at km 16+000. Going down, the Project encounters pastureland and younger olive groves. In the plain of Orikum, the Project crosses agricultural lands and two small rivers.

See also three-dimensional views of the project in appendix 3.

Figure 4.1 - Map - Project location (detailed)



(Source: Google Earth)

4.2. PHYSICAL FORM OF THE DEVELOPMENT

Road standards: The preliminary design has used Albanian Road Design Manual as standards.

Cross sections: cross-sections have been designed considering an Annual Average Daily Traffic that ranges from 5 000 to 12 000 Veh./day:

Figure 4.2 - Table - Typical cross-sections

Design speed	Carriageway	Hard Shoulder	Climbing lanes
50 to 100 kph	*2 x 3,75 m*	*2 x 1,50 m*	*3,75 m (descending)* *3,50 m (ascending)*

Junctions: Two types of intersections will be implemented:

- Roundabout, and;
- T-junction.

Locations of intersections are presented on mitigation measures maps in appendix 12.

4.3. WORK PROGRAMME FOR ENVIRONMENTAL AND TECHNICAL STUDIES

Figure 4.3 - Table - Time frame for the environmental and the technical studies

Phase	Time objective
Technical Feasibility Studies *Preliminary Environmental and Social Impact Assessment (PESIA)*	*July 2011*
Final ESIA Scoping report	*August 2011*
ESIA Scoping public meeting	*October 2011*
Environmental Mitigation Plan	*November 2011*
Draft ESIA and disclosure public meetings *Draft Technical Final design*	*January 2012*
Final ESIA and Final Design	*March 2012*

4.4. WORK PROGRAMME FOR CONSTRUCTION

The Vlorë Bypass is planned to be in operation in 2014.

4.5. RELATIONSHIP WITH OTHER EXISTING OR PLANNED PROJECT

The Project is linked to the Levan to Vlorë Scheme which is under completion.

4.6. PROJECT DESIGNER

The Project is designed by Albegis and EGIS.

5. SCOPE OF THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

The Environmental and Social Impact Assessment had addressed the impacts identified during the scoping phases, which had included a preliminary identification of environmental and social issues confirmed or modified by results of field's investigations, consultations of third parties and public hearings.

5.1. ESIA CONTENT

The ESIA in divided according the following sections:

- *Cultural Heritage:*
  - *Archaeology and Cultural Heritage,*
  - *Landscape & Visual Amenity.*
- *Natural Resources:*
  - *Climate,*
  - *Relief, Geology, Soil and Groundwater,*
  - *Hydrography & Surface Water,*
  - *Habitat and Biodiversity.*
- *Human Environment:*
  - *Air Quality,*
  - *Noise,*
  - *Local Community and Socio-Economics.*

5.2. IMPACTS ASSESSMENT

5.2.1. EXTENT OF IMPACTS

Environmental impacts in a route-wide and/or strategic context are also addressed. These comprise the following:

- ***Key local impacts*** *- individual local impacts that are significant in a regional or national context (e.g. impact on a nationally significant resource and/or the amenity derived from it);*
- ***Cumulative impacts*** *- an accumulation of local impacts whose significance is realised as their product (e.g. jobs created by construction or a decline in overall bird breeding habitat);*
- ***Holistic impacts*** *- impacts that are manifest for the Project as a whole irrespective of any particular local relevance (e.g. enhanced accessibility due to the Project, contribution to economic re-generation strategies or operational use of energy and resources);*
- ***Strategic impacts*** *- impacts that support or compromise the ability of national or regional government to achieve its objectives (e.g. support or hindrance to national and strategic policies or conformance with national and regional sustainability objectives).*

5.2.2. TYPES OF ENVIRONMENTAL IMPACTS

The ESIA identifies the following types of environmental impact:

- ***Positive impacts*** *that have a beneficial influence;*
- ***Negative impacts*** *that have an adverse influence;*
- ***Direct impacts*** *that arise from activities that form an integral part of the Project (e.g. new infrastructure);*
- ***Indirect impacts****, where these are apparent, that arise where a direct impact results in other downstream environmental impacts (e.g. reduced amenity of a community facility as a result of construction noise);*
- ***Secondary impacts****, where these are apparent, that result from changes associated with the development (e.g. noise changes due to road traffic);*
- ***Cumulative impacts*** *that arise from the accumulation of different impacts at a specific location, the recurrence of impacts of the same type at different locations, or the interaction of different impacts over time; and combined impacts that arise from the interaction of the Vlorë Bypass in conjunction with other development projects.*

5.2.3. TIMEFRAME FOR ENVIRONMENTAL IMPACTS

5.2.3.1. When will Impacts Arise

The ESIA addresses impacts arising from the construction and operation of the Vlorë Bypass Project. Construction impacts may arise from the construction activities themselves, from temporary occupation of land or from associated changes such as traffic. Operational impacts may arise from the fixed infrastructure.

In both cases, impacts are assessed in relation to a baseline, i.e. the conditions that would prevail in the event that the activities giving rise to impacts did not take place.

The baseline year for the assessment of construction impacts is assumed to be 2012 and for the majority of operational impacts: 2014.

It is normal practice for the assessment of transport projects to allow for the growth of traffic or use over time. For road projects, this growth is usually assumed to reach a stable peak 20 years after opening. The year 2034 is therefore assumed as the baseline for the assessment of operational impacts for topics such as noise & vibration and traffic & access.

5.2.3.2. How Long Will Impacts Last

The duration of impacts is one of the factors considered in determining their significance. The ESIA distinguishes between permanent and temporary impacts as follows:

- *Permanent impacts are those that result from irreversible change to the baseline environment or which persist for the foreseeable future.*
- *Temporary impacts are those that persist for a limited period only; for example those associated with particular construction activities or which may disappear due to natural recovery of the environment or their assimilation into it. Temporary impacts have been divided into:*
  - *short-term (less than one year's duration),*
  - *medium-term (one to five years),*
  - *long-term (five to 20 years).*

Where possible the likely duration of impacts has been identified.

5.3. MITIGATION STRATEGY

5.3.1. ENVIRONMENTAL AND SOCIAL DESIGN MANAGEMENT

A fundamental part of the ESIA process is the feedback of the emerging results into the design and decision-making processes. The most cost-effective way of applying mitigation is by designing it into the Project. As potential significant adverse effects are identified these will be fed into the design process so that, where possible, they can be mitigated until the residual effects are deemed to be "as low as reasonably practicable" (ALARP). The iterative "predict-evaluate-mitigate" sequence is at the core of ESIA and design. This sequence can also be applied to the identification of positive opportunities (predict-evaluate-enhance).

The ALARP principle is most applicable in the context of addressing individual effects. Determining what is 'reasonably practicable' is something that the ESIA team cannot achieve in isolation. Factors such as safety, technical feasibility, constructability and operability all feature in ALARP. The other key factor is cost. In defining ALARP for an impact/mitigation measure, the proportionality of the cost to the benefit must be given proper consideration.

5.3.2. MITIGATION HIERARCHY

Taking an approach as systematic as possible to the identification of mitigation measures to meet the design aims and design criteria and in applying the ALARP principle can help considerably. The most effective form of mitigation is to design the Project to avoid environmental damage. The severity of an impact that cannot be entirely avoided can possibly be reduced (to ALARP). When an impact has been reduced to ALARP, but still remains significant, it may be possible to remedy the damage by some repair mechanism or, if not, to compensate for it by some other means. Even where there is no adverse impact, many projects offer opportunities to enhance the environment by improving environmental conditions or by creating new environmental features.

The ***Avoid - Reduce - Abate - Repair - Compensate - Enhance*** model provides a useful framework for the development of a checklist of mitigation options and is illustrated below:

- *Avoid at source. Avoiding at source is essentially 'designing' the Project so that a feature causing an impact is designed out (e.g. by avoiding a location for a construction site),*
- *Reduce at source. Reducing at source is about changing a design so that an impact is reduced (e.g. by lowering the height of a visually intrusive structure or reducing land take).*
- *Abate on site. This involves adding mitigating features to the basic design to reduce the impact (e.g. oil interceptors or wheel washers on a construction site, noise barriers for the operational road).*
- *Abate at receptor. If an impact cannot be reduced on site then measures can be implemented off site (e.g. installation of double-glazed windows at properties affected by noise, or the planting of a hedge around a residential property to provide visual screening).*
- *Repair or remedy. Some impacts involve unavoidable damage to a resource (e.g. land take to natural habitats or settlement damage to listed properties). Repair essentially involves restoration and reinstatement type measures.*
- *Compensate in kind or compensate through other means. Where other mitigation is not possible or fully effective, then compensation for loss or damage might be appropriate (e.g. creating a new habitat elsewhere to replace what has been lost, financial compensation for temporary loss of amenity or undertaking recording, documentation and preservation of archaeological artefacts excavated prior to development).*

5.4. CONSULTATION WITH THIRD PARTIES

Consultation is an integral part of the ESIA process. In line with the development of the ESIA a consultation strategy has been prepared. For instance, the Scoping Report has been issued to statutory and other key consultees.

The consultation with local/national expertise has been carried out in two project stages.

The first stage took place after the preparation of the scoping report and the second took place after preparing the draft ESIS.

The consultation on environmental matters has focused on:

- *Community and affected parties;*
- *Experts on the relevant environmental fields;*
- *Responsible authorities or decision makers on local and national levels;*
- *Specialised Institutions or agencies in both local and national level; and*
- *Environmental authorities in all levels;*

While the focus of consultation necessarily changes to reflect the different stages of the project's development, the principles under which consultation is carried out remain the same, namely that:

- *It should lead to improvement of the Project;*
- *There should be no surprises for people and organisations affected by the Project;*
- *Through consultation, the ESIA is finalised in a collaborative rather than confrontational manner.*

6. CULTURAL HERITAGE AND LANDSCAPE

6.1. CULTURAL HERITAGE AND ARCHAEOLOGY

6.1.1. INTRODUCTION

Archaeological resources are defined: as ground remains, artefacts, ecofacts or soil deposits of known cultural significance. Buildings of historic and architectural interest are also considered in this chapter.

Like any other major infrastructure, the construction of the Vlorë Bypass is going to have a significant impact on the environment as well as on the cultural heritage of the area through which the road goes. This impact will be particularly evident on the archaeological heritage, which is very fragile and may suffer irreparable destruction from development. On one hand, the construction of the new road will potentially cause the destruction of several archaeological sites and on the other hand it will make it easy for the general public and tourists to access other important sites in the area.

6.1.2. SOURCES OF INFORMATION

The following sources of baseline data have been examined as appropriate and have included discussions with the local authority maintaining the records:

- *List of religious cultural Monuments of Albania;*
- *MedWetCoast - Management Plan, Llogora-Rreza e Kanalit-Dukat-Orikum-Tragjas-Radhime-Karaburun Complex Site - December 2004;*
- http://www.bashkiavlore.org/ - *Vlorë city website*

Further sources, such as aerial photographs and other unpublished reports have been also consulted during the assessment.

6.1.3. METHODOLOGY

The archaeological resource comprises the cumulative material remains of human culture. It can be recognised at every scale from the individual artefact to relict landscapes, and for much of the last 500,000 years is the only record of mankind's endeavours. This resource includes obvious structures such as medieval castles, Roman villas and monuments of the industrial age, but it also encompasses the less visible, such as concentrations of prehistoric artefacts or natural deposits that may contain important information on past societies' interaction with their environment.

The resource is, however, unified by one common feature, namely that it is a finite and non-renewable resource that is in many cases highly fragile and vulnerable to damage and destruction.

The most highly valued resources are Scheduled Ancient Monuments, which are recognised as being of national importance and worthy of statutory protection. Such designations, however, are usually site specific and as such do not always reflect the true character and extent of archaeological remains. In such circumstances local authority designations such as Archaeological Priority Areas are useful as they highlight the potential if not the established presence of archaeological deposits over extensive areas.

The following archaeological resources have been identified and considered for this study:

- ***'Made Ground' or 'Fill'*** *- engineering terms to describe soil formations deposited and/or created by man-made activities. This is an objective term that does not imply any particular sites and monument type, or date of deposit, and for the purpose of this study includes extant earthworks and below ground structures such as ancient building remains;*

- ***Artefacts*** *– man made objects found in the ground, associated or not with 'made ground' or 'fill';*
- ***Ecofacts*** *– natural soils and contained environmental materials that are useful for defining and understanding the environment in which our forebears lived.*

The importance of the resource has been assessed, as far as possible, by determining the relative value of a 'site' or group of related 'sites' in the context of relevant policy, legislative designations and rarity at the appropriate scale. Relative values for importance will then ascribed as follows:

- *resources of national importance;*
- *archaeological sites of regional;*
- *archaeological sites of district or local importance;*
- *Archaeological sites that are so poorly preserved as to not justify their inclusion in a higher grade.*

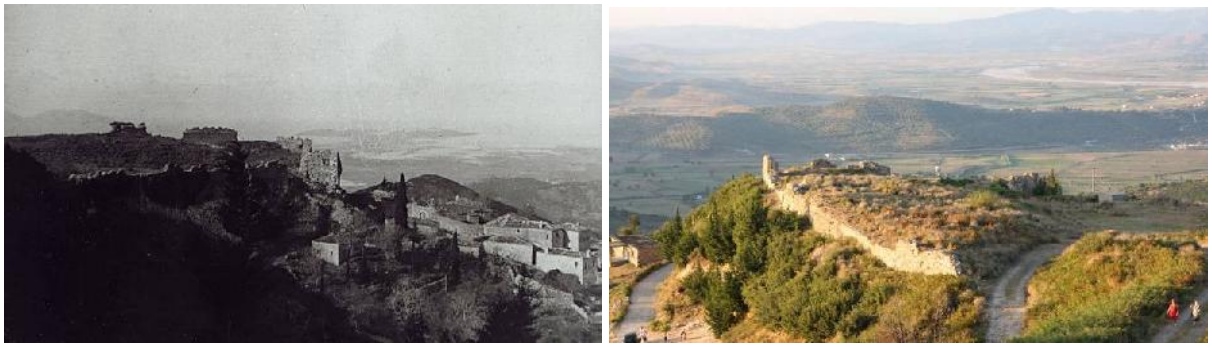
Archaeological resources presented in the following paragraphs are located on baseline environment maps in appendix 11.

6.1.4. EXISTING ENVIRONMENT

6.1.4.1. Castle, Fortress and Village of Kaninë

Kaninë settlement is located 6 km far from Vlorë city. The castle rises on the side of the Shushica Mountain, about 380 meters above the sea level. The castle was built on the site of an ancient settlement, one of the oldest in the Vlorë region. The defensive circuit is about 1,000 m long and encloses an area of about 3.62 ha.

Figure 6.1 - Photo - Fortress of Kaninë in 1913 and today



(Source: www.Albanian Photography.net - Robert Elsie)

Kaninë was originally an Illyrian hilltop settlement and in many periods in its history formed part of the defensive system for Vlorë. In antiquity it was closely linked with the inland city of Amantia, controlling its sea trade. It was particularly prosperous in the Middle Ages, when Vlorë was in decline and Kaninë became the centre of a settlement that was to all intents and purposes independent. The Emperor Andronicus II gave the town trading rights in the 13th Century, when it was the seat of a bishopric for a time.

Remains of the walls dating from various periods can be seen behind the village with some large blocks of Illyrian foundation dating from the 4th century and 3rd century BC, and evidence of rebuilding in the time of Justinian (6th century AD) and Byzantine, Venetian and Turkish masonry constructed afterwards. Kaninë declined after the 16th century when Vlorë re-established its former importance. Although the remains of walls are of a common pattern found through Albania, the visit is worthwhile because of the spectacular views, over Sazani Island and along the coast towards Mali I Flamurit (826 m) on the promontory at the southwest side of the Vlorë bay. It was originally built by Italians as a military road in 1939.

6.1.4.2. Castles and Villages of Trajasi

Old Trajasi

Old Tragjasi is located on a crescent shaped hill between two streambeds which define its morphological shape. The crescent cradles the outlet of a spring at mid slope facing north. This water source accounts for the crescent shape of the hill. Tragjasi is the second oldest settlement in the area and was probably founded as a result of the destruction of Ancient Orikum.

Figure 6.2 - Photo - Remains at the old city of Tragjasi

(Source: Panoramio (Xhovani, 2011))

The village was quite large, with about 250 houses. The urban fabric of the village was quite dense, 5 streets were radiating from a central plaza where springs where found. During the Second World War the village was bombed and burned three times. The devastation was so complete that the entire village has been deserted since. In the meantime, people moved down to New Tragjasi and to other villages. Inhabitants from the area also used corner stones, steps and window stones from the old houses for construction. This has left the village vulnerable to further deterioration due to structural instability.

An interesting pattern of burial has been noted in all the historical settlements on the east side of the Orikum valley. Graves are found scattered throughout the countryside without a common cemetery. Often it seems that people are buried on their private properties, and sometimes even in the middle of the town. Most of these tombs seem to be Muslim with a few exceptions. Some of the tombs have stunted trees growing out of them.

The low pass along the road between new Tragjasi and Old Tragjasi is called the Pass of the Tombs because there are many tombs scattered in the landscape there. Inside the village itself, there are two tombs worth remarking. One is known as the “Tomb of the Jew” and was built as a mausoleum inside the village not far from the spring. It was built by the villagers to honour a prominent Jewish doctor. A star of David was carved on each of its four sides on the triangular shaped stone between two arches.

New Trajasi

The Village of New Tragjasi sits just above the Izvorit Artesian Springs on the lower foothills to the Northeast of Fusha Hallibe. New Tragjasi's proximity to several regional cultural monuments gives it an advantage for cultural heritage tourism.

The castle of Gjon Bocarit sits on a promontory across the valley and is located 5km far from New Tragjas village. It is visible from some areas of the upper slopes. The castle was built by the Boçari family, one of the principal Albanian families of Tragjasi. It is an important fortification of the 16th-17th centuries AD. This fortification features a characteristic "arrow loop" design for artillery openings in the walls, which began to be used in Albanian building construction in the 16th century. Typical of castles built along the southern Albanian coast during this period, the castle itself is a large fortification with towers on the northern and eastern corners of the building. The stone walls form a rectangle surrounding the courtyard and have a width of 1,25 m and a height of 5,5 m.

Figure 6.3 - Photo - Izvorit Artesian Springs in new Tragjasi

(source: Panoramio (Besnian Kosma, 2009))

6.1.4.3. The ancient Greek city of Orikum

Orikum/Orikum is located at the southern end of the bay of Vlorë and 42 km south of the Greek colony of Apollonia. Orikum or Orikos (Greek: Ὥρικος or Ὡρικός) was an ancient Greek city in the northern part of Epirus (modern south Albania), at the south end of Vlorë's Bay. Its geographical position made it an important harbour on the Adriatic coast.

The city have been founded by Euboeans, was originally on an island, but already in ancient times it became connected to the mainland; it covered an area of 5 hectares, but archaeological remains are scarce. It was well situated for communication with Kerkyra, and was only 40 miles across the sea from Otranto, making it a convenient stopping point on the journey between Greece and Italy. Ancient sources (for instance, Herodotus) describe it as a limen, or harbour, but eventually it achieved the status of a polis, and from around 230 to 168 BC it issued its own coins with the legend ΩΡΙΚΙΩΝ ('of the Oricians').

Orikum was used by the Romans in ancient times as a defensive base in the wars against the Illyrians as well as in the 3rd century B.C. against the Macedonians, who in fact occupied it in 214 B.C. Julius Caesar stationed his troops in camps there for several months, until they were taken by Pompey (Pompeius Magnus). After this, Orikum "became more of a civilian settlement, and the few remains which can be seen today date from the 1st century BC or later. The Ottomans renamed Orikum Pashaliman, 'the Pasha's harbour', and the lagoon still bears this name, as does the nearby Albanian navy base."

Figure 6.4 - Photo - Orikum, remains of the ancient theatre

(Source: Panoramio (iglipustina, 2009))

Being in the crossroads of such influences, Orikum became a civilized urban centre, as evidenced by various archaeological ruins, such as part of an Orchestra, a small theatre, which is thought to have seated 400 spectators, traces of wall ruins and streets that are clearly seen, albeit lying under the water of the lagoon, and the nearby Marmiroi Church. This church dates back to the early Byzantine period, of the Byzantine emperor Theodore of the 13th century A.D. It has a small 6m x 9m main hall and a dome approximately 3m in diameter that is supported by four Roman arches. The internal walls still feature fragments of murals characteristic of Byzantine culture. The church has three entrances and is renowned for its complex construction and architectural values. To reach the church one has to pass through the modern town of Orikum, in the direction of Pashaliman.

Figure 6.5 - Photo - An early Byzantine church near Orikum (Marmiroi church)

(Source: Panoramio (Eduard Van Herck, 2007))

6.1.5. IMPACTS ON ARCHAEOLOGY AND CULTURAL HERITAGE

6.1.5.1. Potential Major Impacts

Except for Kaninë, all the sites described above are far from the selected alignement. The alignment has been selected to avoid known archaeological sites. However, as the project is passing close to Kaninë, there are two potential major impacts of the new highway on the archaeological resources of Kaninë: one is the threat of destruction of buried remains situated in the vicinity of the citadel or the old town and the second is the possibility of fresh exploration evaluation and integration of essential parts of this heritage into the future development of the area; Kaninë might become more easily accessible to tourists and visitors.

6.1.5.2. Other Potential Impacts

The potential sources of impact, the nature of the impact and the principal phase of currency are listed below. Impacts may be beneficial as well as adverse:

Figure 6.6 - Table - Potential Impacts for Archaeology and Cultural Heritage

Source of Impact	*Nature of the impact*	*Pre-construction*	*Construction Phase*	*Operational Phase*
Site investigation works such as boreholes and test pits, trial piles and augering. Including archaeological works.	*Disturbance and destruction of archaeological remains*			
Enabling works such as utility diversions	*Disturbance and destruction of archaeological remains*			
Setting up work compounds	*Small-scale disturbance of archaeological remains*			
Demolition and breaking out	*Disturbance and destruction of archaeological remains*			
Underpinning and/or strengthening of existing foundations	*Disturbance and destruction of archaeological remains*			
Piling and excavations for pile caps	*Disturbance and destruction of archaeological remains*			
Ground excavation	*Disturbance and destruction of archaeological remains*			
Site de-watering	*Desiccation and oxidation of preserved organic remains*			
Mitigation works, such as noise bunds or noise barriers	*Disturbance of archaeological remains*			

Source of Impact	Nature of the impact	Pre-construction	Construction Phase	Operational Phase
Ground movement and soil compaction due to new ground loading from embankments	*Disturbance and distortion of archaeological remains*			
Ground moisture and chemistry changes from surface drainage and inserted groundworks	*Desiccation and oxidation of preserved organic remains*			
Any above ground structures	*Intrusion on setting*			
Archaeological site reburial	*Restriction of access for study; also protection of site from further impacts*			
Consideration of design in relation to the historic environment	*Improvement of setting and greater enjoyment and appreciation of historic resource*			

6.1.5.3. Negative Impacts

Reduction in the Significance or Integrity of the Archaeological Resource

The disturbance or destruction of the resource at a given location can lessen the value and importance of the resource by reducing its extent and diminishing its complexity. As well as the actual destruction of the historic fabric of the monument, important scientific and cultural data may also be lost. In addition, these 'site-based' effects have to be seen in a wider context and the effects on the regional and national resource recognised in terms of loss of group, scientific and amenity value as well as overall diversity. The survival of the resource has become of increasing concern to receptors and as a result the surviving in situ resources have an increasing value due to increasing rarity.

Deterioration in the Preservation Conditions of an Archaeological Site

Certain works may impact indirectly on the preservation of previously stable archaeological deposits disrupting their condition and thus compromising long-term survival.

Diminution of the Quality of the Setting of an Archaeological Resource and a <reduction in its Appreciation and Understanding

Where new buildings or structures are located with insufficient regard to the historic environment damage may be caused to the setting of archaeological monuments such that it causes a diminishing of their appreciation or understanding. New works may also not fit well with the form, scale, pattern and character of a historic landscape.

6.1.5.4. Positive Effects

Enhanced knowledge

The great majority of archaeological work is undertaken now as a consequence of and funded by development. The integration of archaeology within the planning process has given unrivalled opportunity for the study of the known resource as well as to investigate chance discoveries. This opportunity often applies to land that has not been available for considerable periods of time and provided that the work is undertaken within the framework of carefully considered objectives the effect can be a major benefit to all receptors. In this context, the effect is a direct consequence of mitigation rather than construction impact.

Protection of a resource by increasing land take and some surface works

The incorporation of any new land and therefore potentially more archaeological resources within the Vlorë Bypass can afford long-term protection to them. Here, the effects would be regarded as positive, as the resources are protected for long periods. In this sense, the protection can match that afforded by legal instruments such as scheduling.

Improving the quality of the setting of an archaeological monument and increasing its appreciation and understanding

Careful design and construction methods can avoid archaeological impacts, facilitate site management, improve the setting and 'sense of place' of any above ground features and, through careful interpretation, increase awareness of the presence and significance of local history features.

6.1.5.5. Where Impact Occur

Most impacts arise as a direct consequence of construction works and result in the physical disturbance of archaeological remains. For this reason, the great majority of potential impacts will be confined to the area of land take.

6.1.5.6. When Impacts Occur

Compaction, desiccation and oxidation of archaeological deposits would occur over a longer period of time and extend into the operation period. In these circumstances, the impacts may decrease or disappear as new but degraded stable states of preservation are attained.

6.1.6. MITIGATION MEASURES FOR ARCHAEOLOGY & CULTURAL HERITAGE

As it is now made clear in the new Cultural Heritage Law passed in the Albanian Parliament in 2003 and its amendment of 2006 that during the works for the construction of the road, a constant collaboration is needed with specialised archaeologists in order to minimise potential damage to the sites and monuments.

6.1.6.1. Pre-Construction Mitigation Measures

In the vicinity of Kaninê citadel and old town, The Governmental Competent Authority and/or the Project appointed Archaeologist, on the basis of their knowledge of the study area, will recommend test excavation in advance of construction.

6.1.6.2. Construction Mitigation Measures

In the vicinity of Kaninë citadel and old town, a suitably qualified archaeologist will monitor soil stripping, or ground preparation works.

In the event of the discovery of archaeological finds or remains, the relevant authority will be notified immediately and no work should be allowed until decision is taken by competent

authorithies. The area subsequently will be investigated and possibly fenced off, allowing no further development to take place in that area until the site is resolved under license.

All construction work will be confined to the works corridor. In the event that further lands take or construction related activity will be required outside the works corridor, the Project Archaeologist will be informed in advance.

In cases where archaeological sites could be compromised by construction activity, the site will be protected by substantial fencing to prevent inadvertent or negligent damage to the archaeology.

In relation to potential construction compounds, such sites should be placed in areas free from known archaeological sites or archaeologically sensitive areas.

6.1.7. ASSUMPTIONS AND LIMITATIONS

6.1.7.1. Assumptions

General

The ESIA had incorporated certain assumptions that are outlined below. These relate to the level of design and construction detail available for the Project, as well as the nature of the known archaeological resource.

Assumptions Concerning Design and Construction

- *Impacts had been assessed on the assumption that the final design would be as illustrated on drawings provided to date with only minor amendments.*
- *Piling will lead to the complete destruction of archaeological deposits beneath pile caps.*

6.1.7.2. Assumptions Concerning the Baseline Environment

It is assumed that the archaeological resource baseline is incomplete. For instance, archaeological remains can remain undetected beneath buildings, made ground, superficial geological deposits, woodland and permanent pasture. Lack of fieldwork can also lead to low detection rates even when conditions are favourable.

In some locations the nature of the archaeological resource and the greater intensity of past fieldwork allows for resource prediction through lateral extrapolation from areas with a known resource to those where it may be suspected to be present. In some circumstances, and over short distances, this can be undertaken with some accuracy.

In some cases, close parallels with other similar archaeological sites, the location and patterning of extant finds and topographical and geological determinants to past settlement may suggest that there is good reason to believe that archaeological remains are present. In such circumstances the potential for archaeological resources at a given location has been recognised.

6.1.7.3. Assumptions Concerning the Prediction of Impacts

It has been assumed that new works would not impact on archaeological remains where existing cuttings or basements, for instance, are known to have involved excavation to a depth of at least 5m below present ground level.

It has been assumed that works would not impact on the archaeological resource in circumstances where the following criteria are met:

- *where actual or potential archaeological remains have already been removed by existing cuttings - usually at least 1m deep below present ground level;*

- *where actual or potential archaeological remains are buried beneath existing embankments greater than 1m in height;*
- *in any other circumstances where the works do not impact beyond the depth of the existing formation or other modern made ground (provided that a 'buffer' zone of at least 100mm is retained);*
- *where the works are in areas where existing buildings have necessitated the removal of fill to allow founding on suitable soil or rock.*

Where specific conditions indicate that any assumptions may not be valid any impacts identified will be assessed through the normal process.

6.1.8. CONCLUSIONS, RECOMMENDATIONS AND RESIDUAL IMPACTS

It is clear from the information given above that, near Kaninë, the new road will go through areas with potential for archaeological remains.

A clear procedure has been also explained in the new Cultural Heritage Law passed in the Albanian Parliament in 2003 and amended in 2006. During the works for the construction of the road, a constant collaboration is needed with specialised archaeologists in order to minimise potential damage to sites and monuments. In all the planning stages of this public infrastructure it should be considered that the new highway goes through an area that has been an important human settlement throughout the history, and thus, modern investment should be respectful to the earlier achievements of humanity.

Figure 6.7 - Table - Impacts and Mitigation Measures on Archaeology, Cultural Heritage during Construction

Impacted Sites	*Sources of Impact or Effect*	*Potential Negative Impact or Effect*	*Potential Positive Impact or Effect*	*Magnitude*	*Mitigation measures*
Potential Archaeological Sites of Kaninë	*Demolition and breaking out,* *Ground excavation,* *Archaeological site reburial.*	*Disturbance and destruction of archaeological remains,* *Restriction of access for study.*	*Protection of site for further impacts,* *Enhance Knowledge.*	***minor***	*Test excavation in advance of construction,* *Monitoring of soil stripping and ground preparation works by a qualified archaeologist.* *If valuable archaeological remains are found either during text excavation or soil stripping monitoring, thorough archaeological investigation will be performed before works can resume.*

6.2. LANDSCAPE AND VISUAL AMENITY

6.2.1. INTRODUCTION

This section describes existing landscape within the study area, provides an assessment of the landscape and visual impacts of the Project, details the methodology used and proposes measures to mitigate negative impacts.

This chapter reports on the methodology for the assessment of effects on landscape character - that is the combination of features and attributes that contribute to the special and distinctive character of different areas.

6.2.2. SOURCES OF INFORMATION

Sources of information that has been used to carry out the baseline assessment include:

- *Sites visits (see photographs presented in appendix 2 and viewpoints of those photographs in appendix 10)*
- *Aerial photographs (including those of Google Earth) (see three-dimensional views of the Project in appendix 3);*
- *Geology maps;*
- *Ordinance Survey mapping of scales 1:25 000;*

Other useful background document that has been used was:

- *The Landscape Institute and Institute of Environmental Management and Assessment (2002) Guidelines for Landscape and Visual Impact Assessment: Second Edition;*

6.2.3. METHODOLOGY

The assessment is made with regard to the vulnerability of the landscape to change and to the location of visual receptors relative to the Project. Landscape is assessed under two separate aspects: visual impact and landscape character impact.

Visual impact is the extent to which a new structure in the landscape can be seen.

Landscape character impact is evaluated taking account of the various natural and man-made features together with the visibility of and the views to and from the landscape.

Visual impacts are categorised as follows:

- *Visual intrusion is the impact on a view without blocking the view;*
- *Visual obstruction is the impact on a view involving blocking the view.*

Various aspects are evaluated including during winter and summer months and construction and operation of the Project. Two basic assessments of visual impacts are made:

- *Pre-establishment - The impact is assessed on a winter's day in the opening year of the Project. As such, the assessment is made in the period following construction at initial operation of the road where proposed landscaping still has to develop as effective mitigation. This development usually takes five to seven years after planting.*
- *Post-establishment - the impact is assessed fifteen years after opening. At this stage proposed mitigation measures will have developed as effective mitigation.*

Landscape and visual impacts are rated as low, moderate or high as defined on Figure 6.19.

6.2.4. EXISTING ENVIRONMENT

6.2.4.1. General

The landscape along the future Vlorë Bypass is characterised by a wide array of land uses. The landscape has been profoundly modified by human activities. Only in rather very few places are natural and semi-natural vegetation and biotopes found.

The Project crosses five landscape character units:

- *Coastal plain of Vlorë and the surrounding hills (kp 0+000 to 2+500),*
- *Babica plateau (kp 2+500 to 9+000),*
- *Shushica hills (kp 9+000 to 13+500),*
- *Gombitrit Mountains (kp 13+500 to 22+500),*
- *The valley of Dukati (kp 22+500 to 28+700).*

6.2.4.2. Landscape Character

The character of the five landscape character units is described as follow:

- ***The coastal plain of Vlorë and adjacent hills** now host recent urban development where previously agricultural fields occupied flat terrains. Vlorë is also surrounded by hills covered with maquis vegetation and olive groves that are characteristic of the area.*
- ***The Babica plateau** is a flat, vast, open and agricultural, where small cultivated plots of lands are subdivided by drainage ditches.*
- ***The Shushica hills** is where the historical Illyrian town and fortress of Kaninë is situated, overlook the city and the bay of Vlorë. They are covered with olive groves, scarce woodlands and maquis. New houses have sprung out, here an there, at the bottom of the slopes.*
- ***The Gombitrit Mountains** are higher then the Shushica hills and they are more barren, only few small valleys host woody vegetation. The historical village of Radhimë is situated in this landscape unit on a lower hill, overlooking the bay of Vlorë and the valley of Dukati. New houses have sprung out, here an there, at the bottom of the slopes, along the seaside.*
- ***The** valley of Dukati is in the visual continuity of the bay of Vlorë. Its flat topography and its unique agricultural patterns contrast with the steep hills of the Karaburun peninsula to the West and the Orymanges Mountains to the East. Historical towns are positioned where important karstic springs provide plenty of fresh water and lush riverine vegetation throughout the year. Agricultural lands are divided in small parcels with irrigation and/or drainage ditches.*

6.2.4.3. Trees and Woodland

The Project doesn't cross major woodlands. Some mature Sycamore trees are however established along the main stream especially in the valley of Dukati. There are also valuable riverine forests along the river. Hills are generally covered by olive groves and by degraded and much degraded Mediterranean maquis.

Figure 6.8 - Photo - The plain of Vlorë and the adjacent hills covered with olive groves

Figure 6.9 - Photo - The agricultural plateau of Babica

Figure 6.10 - Photo - Houses of Kaninë that will be overlooking the Project

Figure 6.11 - Photo - The barren Gombitrit Mountains on which the Project will go through

Figure 6.12 - Photo - The visually open valley of Dukati

6.2.5. IMPACT ON LANDSCAPE AND VISUAL AMENITY

The operational impacts of the Project are described below.

6.2.5.1. Principal Features of the Project

In general and given the various constraints, the mainline has been selected to minimise, wherever possible, adverse impact on properties and the landscape.

Nevertheless, the following elements of the Project have the potential for landscape and visual impacts:

- *Presence of significant cuts and embankments;*
- *Presence of elevated structures such as retaining walls and bridges;*
- *Traffic during operation.*

Visually significant cuts

Visually significant cuts (4m+ in height) include:

Figure 6.13 - Table - Visually Significant Cuts

Location	*Kilometric Point*	*Length*	*Approximate maximum height*
Vlorë	*1+200 to 1+250*	*50 m*	*5,00 m*
Vlorë	*1+300 to 1+400*	*100 m*	*4,50 m*
Vlorë	*1+550 to 1+575*	*25 m*	*4,50 m*
Vlorë	*1+825 to 1+900*	*75 m*	***6,25 m***
Vlorë	*2+100 to 2+175*	*75 m*	***6,00 m***
Vlorë	*2+400 to 2+625*	*225 m*	***11,00 m***
Vlorë	*3+775 to 3+825*	*50 m*	*5,00 m*
Vlorë	*7+875 to 7+975*	*100 m*	*5,00 m*
Vlorë	*8+200 to 8+325*	*125 m*	*4,00 m*
Vlorë	*8+425 to 8+500*	*75 m*	*4,00 m*
Vlorë	*8+700 to 8+825*	*125 m*	*4,00 m*
Kaninë	*9+550 to 9+625*	*75 m*	*4,00 m*
Kaninë	*9+750 to 69+850*	*10 m*	*4,00 m*
Kaninë	*11+325 to 11+375*	*50 m*	*4,00 m*
Kaninë	*11+600 to 11+650*	*50 m*	***6,00 m***
Kaninë	*13+400 to 13+575*	*175 m*	***6,00 m***
Kaninë	*13+750 to 13+850*	*100 m*	*5,00 m*
Kaninë	*13+900 to 14+200*	*300 m*	*5,00 m*
Kaninë	*14+500 to 14+700*	*200 m*	*5,00 m*
Kaninë	*14+875 to 14+975*	*100 m*	***7,00 m***
Kaninë	*15+350 to 11+450*	*100 m*	***7,00 m***
Kaninë	*16+000 to 16+125*	*125 m*	***9,00 m***
Radhimë	*18+775 to 18+900*	*125 m*	***7,00 m***
Radhimë	*19+025 to 19+125*	*100 m*	*5,00 m*
Radhimë	*19+525 to 19+625*	*100 m*	*5,00 m*
Radhimë	*21+625 to 21+675*	*50 m*	*4,00 m*

Visually significant embankments

Visually significant embankments (4m+ in height) include:

Figure 6.14 - Table - Sections of Visually Significant Embankments

Location	*Kilometric Point*	*Length*	*Approximate maximum height*
Vlorë	*0+850 to 1+150*	*300 m*	***6,00 m***
Vlorë	*1+650 to 1+750*	*100 m*	***6,00 m***
Vlorë	*2+300 to 2+425*	*125 m*	***9,00 m***
Vlorë	*3+475 to 3+575*	*100 m*	***6,50 m***
Vlorë	*3+850 to 4+025*	*175 m*	***12,00 m***
Vlorë	*6+850 to 6+925*	*75 m*	*5,00 m*
Vlorë	*7+600 to 7+625*	*25 m*	*5,00 m*
Vlorë	*8+325 to 8+375*	*50 m*	*5,00 m*
Vlorë	*8+875 to 8+975*	*100 m*	***15,00 m***
Kaninë	*9+500 to 9+550*	*50 m*	***8,00 m***
Kaninë	*9+625 to 9+775*	*150 m*	*5,00 m*
Kaninë	*16+150 to 16+200*	*50 m*	***7,50 m***
Radhimë	*20+100 to 20+175*	*75 m*	***22,00 m***
Radhimë	*20+625 to 20+725*	*100 m*	***7,00 m***
Radhimë	*21+075 to 21+175*	*100 m*	***10,00 m***
Radhimë	*21+750 to 21+825*	*75 m*	***12,00 m***
Radhimë	*21+925 to 22+025*	*100 m*	***15,00 m***
Radhimë	*22+400 to 22+575*	*175 m*	***15,00 m***
Radhimë	*23+750 to 24+000*	*250 m*	***15,00 m***
Radhimë	*24+375 to 24+525*	*150 m*	***12,00 m***
Orikum	*26+175 to 26+450*	*275 m*	***6,50 m***

Visually significant bridges

Figure 6.15 - Table - Visually Significant bridges

Location	Kilometric Point	Length	Height
Vlorë	*2+000*	*120 m*	*13 m*
Kaninë	*11+300*	*90 m*	*25 m*
Kaninë	*13+600*	*90 m*	*52 m*
Kaninë	*16+025*	*120 m*	*18 m*
Radhimë	*19+700*	*-*	*54 m*
Orikum	*28+850*	*-*	*7 m*

Visually significant retaining walls

Figure 6.16 - Table - Visually Significant retaining walls

Location	Kilometric Point	Length	Maximal height	Type
Vlorë	*3+638 to 3+738*	*100 m*	*5,75 m*	
Kaninë	*10+038 to 10+113*	*75 m*	*5,25 m*	
Kaninë	*10+188 to 10+288*	*100 m*	*6,40 m*	
Kaninë	*10+338 to 10+488*	*150 m*	***12,10 m***	
Kaninë	*10+663 to 10+813*	*150 m*	***10,70 m***	
Kaninë	*10+963 to 10+988*	*25 m*	*8,45 m*	
Kaninë	*11+488 to 11+613*	*125 m*	***16,10 m***	
Kaninë	*11+738 to 11+788*	*50 m*	*9,50 m*	
Kaninë	*11+863 to 11+938*	*75 m*	*5,40 m*	
Kaninë	*12+613 to 12+663*	*50 m*	*4,65 m*	
Kaninë	*12+738 to 12+963*	*225 m*	***14,40 m***	
Kaninë	*13+263 to 13+413*	*150 m*	*7,90 m*	
Kaninë	*13+513 to 13+713*	*200 m*	***12,20 m***	
Kaninë	*13+838 to 13+888*	*50 m*	*8,10 m*	
Kaninë	*14+338 to 14+488*	*150 m*	*6,50 m*	
Kaninë	*14+788 to 14+863*	*75 m*	*9,10 m*	
Kaninë	*14+938 to 15+088*	*150 m*	***17,15 m***	

6.2.5.2. Impact on Existing landscape Character

The road by its very presence results in landscape disturbance, landscape severance and alteration of the landscape character. In this regard the ability of the landscape to absorb the development determines the overall impact of the Project.

- ***The coastal plain of Vlorë and adjacent hills**: for the first kilometre, the Project will blend discretely in the existing urban fabric. However on the adjacent hills, for the next 1,5 km, the Project will go trough a well established olive grove consisting of mature trees. The Project easement will require wood clearing. All the olive trees situated in the work easement will be either cut down or transplanted wherever it is feasible or suitable.*

- ***The Babica plateau**: until the kilometric point 10, the Project crosses agricultural lands with no particular scenic value. With time; the Project will probably serves as a limit for the urban sprawl of Vlorë. Recent urban neighbourhoods, an important cemetery and a large electrical substation have already urbanised the landscape of this unit.*

- ***The Shushica hills**: here, the Vlorë Bypass will be built on the foot of the fortress and the old village of Kaninë. Kaninë is an historical and touristic town where people come to enjoy the view towards the bay of Vlorë. The Project will be visible from many points of view and will interfere negatively with the quality of the existing views.*

- ***The Gombitrit Mountains**: Important cuts and imposing retaining walls will be built in order to constitute the platform on which the road will be built. Those earth works will be highly visible from Vlorë seafront and from boats cruising in the bay.*

- ***The Dukati valley**: the Vlorë Bypass will here also serve as a limit for the urban development of Orikum. As the terrain is gently sloping down towards the bay, and with minimum landscaping works, the Project will be easily integrated into the landscape. However, those adjoining flat plots of land will be easily occupied by unplanned constructions if regulation on urban development is not strictly reinforced.*

6.2.5.3. Visual Impact

Some 8 communities were identified as having potential for some degree of visual impact.

These impacts will occur during pre-establishment and post-establishment stages.

Figure 6.17 - Table - Visual Impact on Communities on both Pre- and Post- Establishment stage.

Approximate Kilometric point	*Town or Village*	*Description of impact*
kp 0+000 to 0+825 East and West	*Vlorë*	*Visual intrusion of the Project caused by the road itself, construction sites and traffic.*
kp 3+225 South	*Babica*	*Same as above.*
kp 5+575 to 5+800 East and West	*Babica*	*Same as above*
kp 7+125 to 7+200 West	*Babica*	*Visual intrusion of the Project caused by the road itself, fills, construction sites and traffic.*
kp 9+150 West	*Kaninë*	*Same as above*
kp 10+575 to 12+150 East	*Kaninë*	*Visual intrusion of the Project caused by the road itself, retaining walls, cuts, construction sites and traffic.*
kp 12+750 to 12+750 East and West	*Kaninë*	*Visual intrusion of the Project caused by the road itself, retaining walls, construction sites and traffic.*
kp 26+550 West	*Orikum*	*Visual intrusion of the Project caused by the road itself, construction sites and traffic.*

6.2.5.4. Specific Impacts on Landscape and Visual Amenity during Construction

Landscape and visual impacts will be most pronounced during the construction stage and in the short term thereafter as mitigation is not in place or is limited in its effectiveness. In general negative visual impact will arise from residential and other properties close to or adjoining the construction boundary. Visual impact will arise through, visual disturbance and visual intrusion from tree and hedgerow screening loss, alteration of ground levels and construction traffic. Properties in close proximity to embankments under construction may also experience visual obstruction.

The following construction stages have potential for landscape and visual impact:

- *Tree and bush removal;*
- *General construction disturbance;*
- *Construction of embankments and to a lesser degree cuttings;*
- *Construction of elevated structures especially retaining walls;*
- *Re-alignment of local roads.*

Impact on Trees and Woodland

The road passing on agricultural land and on existing alignment, there is very few existing trees and woodlands that will be impacted by the Project. However, on the hills adjoining Vlorë, the Project will cause tree clearings in the mature olive groves.

Impact on Landscape Character

Any road development especially one set off-line and at a distance from similar major roads has the potential for significant impact on the existing fabric and structure of the landscape.

As such the overall short to medium term impact on landscape character is considered to be moderate with some local significant negative impacts. In the longer term as the road is integrated through establishment and development of landscape mitigation the impact is considered to be moderate to negligible.

6.2.5.5. Where Impacts Occur

Impacts on landscape are likely to occur within those character areas affected directly or indirectly by proposals. Direct impacts may occur as a result of physical changes to landscape whereas indirect impacts may occur as a result of visual intrusion that could affect the character of the landscape. In the particular context of this Project, impacts will also be felt from the Vlorë seafront where the Gombitrit Mountains, on which the road will be built, serve as the background of many view.

Figure 6.18 - Photo - the Gombitrit Mountains in the background of the Vlorë seafront

6.2.5.6. When Impacts Occur

Impacts on landscape have been assessed during construction and during operation. Impacts will be either temporary or permanent.

Figure 6.19 - Table - Rating of quality of Landscape Character

Sensitivity	Description
High	• *A high quality landscape of particularly distinctive character that is instantly recognisable;* • *A landscape that is in good condition and well maintained;* • *A landscape that is aesthetically and historically highly valued usually nationally.*
Moderate	• *A landscape with a moderate strength of character;* • *A landscape that is in moderate condition with average levels of maintenance;* • *A landscape that is aesthetically and historically valued locally.*
Low	• *A landscape with weak character, perhaps as a result of demolition or dereliction;* • *A landscape with a poor quality environment that appears uncared for;* • *A landscape that does not possess any special aesthetic or historic value*

Figure 6.20 - Table - Description of Permanent Impacts and Effects for Landscape and Visual Amenity

Permanent Impacts	Permanent Effects
Permanent land take for new infrastructure	• *Change in landscape morphology and character;* • *Possible severance or `islanding';* • *Permanent loss of vegetation;* • *Permanent loss of heritage resource, the built heritage and/or its setting.*
Provision of new landscaping	• *Change in the sense of enclosure, skyline, vegetation and patterns of activity and introduction of new landscape features;* • *Change in protected views;* • *Change of character of the setting of heritage features.*
Creating additional traffic movements	• *Altering the character of the streetscape.*
Permanent lowering of the water table	• *Impacts on existing vegetation and resulting change of character of the landscape.*

6.2.6. MITIGATION MEASURES FOR LANDSCAPE AND VISUAL AMENITY

6.2.6.1. General

Consideration was given to avoidance of impacts wherever possible during the selection and design of the Project. In this respect the alignment has been selected to minimise impact on residential property, topographical features, trees and woodland wherever possible. However, as with any development some degree of impact is inevitable and wherever possible measures have been proposed to mitigate the negative nature of these impacts.

6.2.6.2. Construction Stage

Contracts will be framed to ensure good working practices so as to reduce any negative impacts arising from construction to the lowest possible level and to ensure that machinery operates within the Project construction area.

Storage areas will be located to avoid impacting further on existing residential properties, olive groves, trees, bushes, drainage patterns etc. and such areas will be fully re-instated at the end of the construction contract.

On completion of the Project, side slopes including cuttings and embankments, verges and other soft areas will be prepared for soiling, topsoiled and either seeded or planted as set out below. Where the Project encroaches on private garden areas, a schedule of existing planting and boundaries affected will be prepared and reinstated on completion of the works in consultation with the property owner.

Wherever possible, olive trees will be transplated.

6.2.6.3. Landscape Strategy

The Project will pass close to existing houses and private garden, existing agricultural and rural landscape with historical and touristic towns (Kaninë and Radhimë). As such an approach, which aims to protect the rural and residential amenity and enhance the touristic potential of the area, the objectives for the landscape works to the Project are:

- *To propose a landscape mitigation measures that relates to the patterns, scale and diversity of the existing landscape character;*
- *To develop a landscape structure which physically and visually integrates the Project, its retaining walls, cuts and embankments into the local surroundings;*
- *To minimise visual intrusion and reduce the negative nature of any visual obstruction;*
- *To protect, reinstate or enhance elements of the existing landscape, directly or indirectly affected by the proposal;*
- *To assist in the creation of pleasant safe driving conditions;*
- *To enhance the touristic potential of the area crossed by the Project;*
- *To enhance attractive views from the Project.*

Landscape mitigation will entail general landscape measures to be applied over the Project as whole and other more specific landscape proposals at certain locations. Each is discussed in turn hereunder.

6.2.6.4. General Landscape Mitigation Measures

General measures will include that at minimum a continuous grassland will be established along the Project, except where other landscape treatments negate the requirement for the grassland, e.g. extensive woodland planting or special concrete treatment for retaining walls.

Where woodland is required (screening and integration for the development), resistant Mediterranean species will be established. Treatments will take into consideration the assessment and recommendations of the Habitat and Biodiversity Section of this document and will ensure that local species are used in the proposed plantings. Other general details include:

Areas in Cut and on Fill

A grass sward will generally be established over the entire slope. In addition, planting at sensitive locations particularly close to residential and recreational amenities will be used to reduce the

visual intrusion and mitigate against visual obstruction caused by the raising of the Project on to embankments, especially at junctions.

Areas at Grade

At sensitive locations (see list at Figure 6.17), if appropriate, woodland plantation will ameliorate the negative impacts of vehicles, and the visual expanse of the Project.

Other Areas

Along the length of the Project, landscape areas within junctions and small areas of severed fields, farms or other property acquired for the construction of the Project will be varyingly treated including planted in copse like fashion with native or semi-native woodland species typical of the local agricultural patterns.

Such woodland blocks dispersed along the Project will assist in the improvement of the longer term visual character of the Project and local surrounds. Details of these specific measures are set out below.

In specific locations noise bounds will be provided to reduce the impact of noise. Such bounds will also have the effect of providing visual screening from properties and will wherever possible be integrated within the proposed landscaping.

6.2.6.5. Specific Landscape Mitigation Measures

The Plain of Vlorë (kp 0+000 to kp 0+800)

Along the first kilometre of the Project, where it borders a residential neighbourhood, standard trees will be implemented along the road at a distance of 20 meters from plant to plant and at minimum of 7 m from the edge of the carriageway. This will affirm the presence of the new road and its importance in the socio-economic pattern of the area and serve as screening for the adjacent properties. Shrub planting will also be implemented in order to complete the Noise Insulation Mitigation Measures.

The Adjacent Hills Covered with Olive Groves (kp 0+800 to kp 2+900)

Wood clearing will be kept to the strict minimum in order to avoid unnecessary cuttings of olive trees. Transplantation of olive trees will be considered wherever possible. Location of this mitigation measure is presented on mitigation measures map in appendix 12.

The Babica Plateau (kp 2+900 to kp 9+000)

In this section, continuous grassland will be established along the Project except at the vicinity of adjacent private properties where woodlands will be implemented for screening. Strict reinforcement of urban development regulation avoiding unplanned urban sprawl along the Project.

The Shushica Hills (kp 9+000 to kp 13+000)

Wood (maquis) clearing will be kept to the strict minimum in order to avoid unnecessary cuttings of maquis vegetation. Wherever possible, especially on cuts, plantation or seeding of Mediterranean native species will be provided. Coming from the North, a car parking should be implemented on the edge of the road at the point where the motorist first encounter a view towards the city and the bay of Vlorë. Location of this mitigation measure is presented on mitigation measures map in appendix 12.

The Gombitrit Mountains (kp 13+000 to kp 22+500)

As retaining walls are numerous in this section and will be seen from the seafront of Vlorë, a special care will be taken in the choice of the material and the colour of those walls. In order to blend with the surrounding landscape, Earth tone, similar to the colour of the natural rock, and or dark colour will be preferred to natural concrete or light gray colour. Location of this mitigation measure is presented on mitigation measures map in appendix 12.

Coming from the North, at kp 12+700, a parking should be implemented on the edge of the road. Coming from the South another parking should be implemented on kp 16+500 for motorists to enjoy a breathtaking view towards the bay and the city of Vlorë, the Karaburun peninsula and the Sazan Island. Location of this mitigation measure is presented on mitigation measures map in appendix 12.

Figure 6.21 - Photo simulation - View from a potential rest parking at kp 16+500

(source: Google Earth)

The Dukati Valley (kp 22+500 to kp 28+700)

In this section, continuous grassland will be established along the Project except at the vicinity of adjacent private properties where woodlands will be implemented for screening. Strict reinforcement of urban development regulation will be applied to avoid unplanned urban sprawl along the Project.

6.2.6.6. Planting Specification

The proposed planting will generally be established with forestry planting techniques i.e 'bareroot transplants', 'whips' and 'feathered' trees which adapt readily to disturbed ground conditions. A proportion of 'standard' and taller size trees will be used to supplement these plantings especially in the area of residential properties. All planting mixes will take cognisance of, and include native and local species as identified in the Habitat and Biodiversity section.

Tree species utilised will be selected from a list of primarily native, naturalised and indigenous species (except where the proposal is contiguous with existing plantations containing non-indigenous species). Planting sizes will be from 500mm to 2500mm high and planted at an average of 4m centres.

Grass seeding areas to be topsoiled and seeded with a low maintenance naturalised mix.

6.2.7. ASSUMPTIONS AND LIMITATIONS

The assessment has been based on the following assumptions:

- *Planting will be provided wherever it would mitigate a significant effect and would be both feasible and appropriate;*
- *Planting will be in character with its surroundings and indigenous where appropriate;*
- *In assessing the impacts caused by temporary construction sites unless there is a permanent impact from the presence of the site, for example as a result of demolition of buildings, their impact would not result in a significant effect;*

- *Temporary impacts from construction works would not result in a significant effect;*
- *Construction sites, when no longer required, would return to their former use unless specific proposals for other uses or redevelopment have been agreed.*

6.2.8. CONCLUSIONS, RECOMMENDATIONS AND RESIDUAL IMPACTS

As with any road development, the Project by means of its very presence and notwithstanding the various impacts from severance through to visual impact will have a permanent and therefore residual impact on the character of its immediate environs along its entirety.

Of particular note in terms of residual impacts will be the impact on the existing rural setting of the intersection areas. In these situations the extent of development including realignment of local roads will be permanently intrusive.

The permanent nature of the impact will also effect surrounding residential and other property in these and other areas especially where such property is at proximity to the proposed road and remote from other roads. However, in mitigation considerable effort has been given to minimising such adverse or residual impacts. In terms of this provision for landscaping, the Project has the potential for appreciable positive impact in terms of improving native woodland, habitat diversity visual integration and tourist enhancement.

Figure 6.22 - Table - Residual Impacts and Mitigation Measures on Landscape and Visual Amenity during Operation

Impacted Sites	*Sources of Impact or Effect*	*Potential Impact or Effect*	*Magnitude*	*Mitigation Measures*
The plain of Vlorë (kp 0+000 to kp 0+800)	*Visual intrusion of the Project caused by the road itself, construction sites and traffic.*	*Visual Intrusion of the project infrastructure and the operational traffic for the neighbouring communities.*	***moderate***	*Plantation of a tree alignments and shrub along the new Project,* *Plantation of the noise bunds or barriers in order to diminish the visual intrusion of the Project.*
The adjacent hills covered with olive groves (kp 0+800 to kp 2+900)	*Visual intrusion of the Project caused by the road itself, construction sites and traffic. Olive trees removal*	*Fragmentation of the Landscape character.*	***moderate***	*Wood clearing will be kept to the strict minimum in order to avoid unnecessary cuttings of olive trees. Transplantation of olive trees will be considered wherever possible.*
The Babica plateau (kp 2+900 to kp 9+000)	*Visual intrusion of the Project caused by the road itself, construction sites and traffic. Urban sprawl*	*Visual Intrusion of the Project infrastructure and the operational traffic for the neighbouring communities. Fragmentation of the Landscape character. Urban sprawl*	***moderate***	*In this section, a continuous grassland will be established along the Project except at the vicinity of adjacent private properties where woodlands will be implemented for screening. Strict reinforcement of urban development regulation to avoid unplanned urban sprawl along the Project.*
The Shushica hills (kp 9+000 to kp 13+000)	*Visual intrusion of the Project caused by the road itself, construction sites and traffic.*	*Same as above and visibility of the Project from many points of view that will interfere negatively with the quality of the existing views.*	***moderate***	*Wood clearing will be kept to the strict minimum. Plantation or seeding of Mediterranean native species. Coming from the North, a car parking should be implemented on the edge of the road.*

Impacted Sites	Sources of Impact or Effect	Potential Impact or Effect	Magnitude	Mitigation Measures
The Gombitrit Mountains (kp 13+000 to kp 22+500)	*Same as above*	*Visual Intrusion of the Project infrastructure and the operational traffic for the neighbouring communities.* *Fragmentation of the Landscape character.*	***moderate***	*Careful selection of material and the colour of retaining walls. (Earth tone, similar to the colour of the natural rock, and or dark colour).* *Two car parkings should be implemented on the edge of the road to enjoy the view.*
The Dukati valley (kp 22+500 to kp 28+700)	*Visual intrusion of the Project caused by the road itself, construction sites and traffic. Urban sprawl*	*Visual Intrusion of the Project infrastructure and the operational traffic for the neighbouring communities. Fragmentation of the Landscape character. Urban sprawl*	***minor***	*In this section, a continuous grassland will be established along the Project except at the vicinity of adjacent private properties where woodlands will be implemented for screening. Strict reinforcement of urban development regulation to avoid unplanned urban sprawl along the Project.*

7. NATURAL RESOURCES

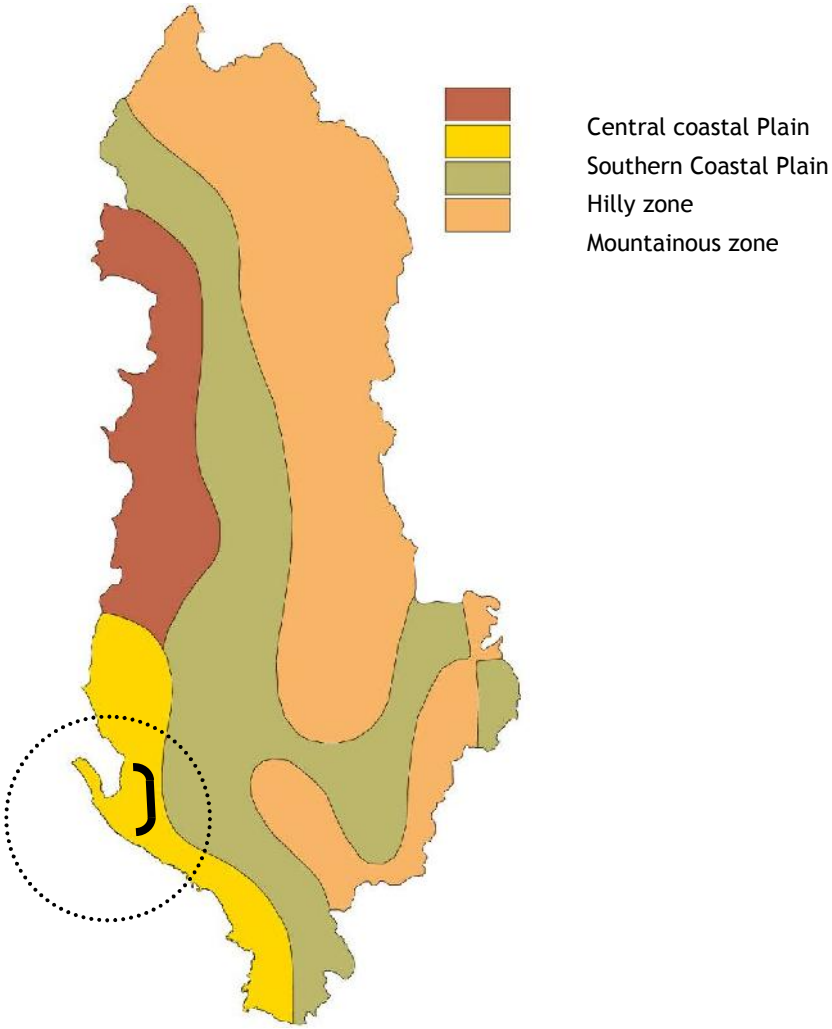
7.1. CLIMATE

7.1.1. INTRODUCTION

Climate can refer to both the long-term weather patterns in an area (macroclimate) and to the localised atmospheric conditions or micro-climate. Climate can have distinct implications for the type of flora and fauna supported in an area and also in overall land use practices.

Based on the categorisation of the climate of Albania, the Project lies in the Southern Coastal Plain that covers almost all the low coastal part of Albania. It is characterised by hot and dry summers and cool and moist winters. The annual average amount of rainfall is from 1000 to 1200 mm/year, much of which (70-80%) falls during the period October to April. The annual average temperature is: 17° C. The lowest temperatures are reached during the month of January. They may go down to 6° C in average. Snowfalls are almost absent or in rare cases they fall in very small amounts and thaw immediately.

Figure 7.1 - Map - Climatic zones of Albania



(Source: Integrated Coastal Development Study and Plan, PAP/RAC - SOGREAH Consortium (2005))

7.1.2. SOURCES OF INFORMATION

- *Government of Albania (2005), Integrated Coastal Development Study and Plan;*
- *Vlorë weather station.*

7.1.3. METHODOLOGY

As potential impacts of the project on the climate of the study area are not significant, no specific methodology has been developed.

7.1.4. EXISTING ENVIRONMENT

7.1.4.1. Air Temperature

- *The annual average temperature is: 17 ^{0}C;*
- *The average maximum temperature is between 24 and 26 ^{0}C in July and August;*
- *The average minimum temperature is between 8 and 10 ^{0}C in January.*

Figure 7.2 - Mean annual temperature in Vlorë

(Source: Hydrology of Albania, 1984)

7.1.4.2. Wind

Being on the coast, the sea breeze influences directly the climatic conditions, especially in the summer time. From October to March the predominant wind direction is East, while in spring the wind directions are South and Northwest. From June to September the dominant wind directions are Northwest and West. The mean wind velocity is estimated at 2.5 m/s in the Vlorë region. During winter the predominant directions are Northeast (30%), and South (35%). These winds have a mean velocity of 7.2 m/s. In special synoptic situations, high wind velocities of up to 40 m/s are observed. These winds have southern direction.

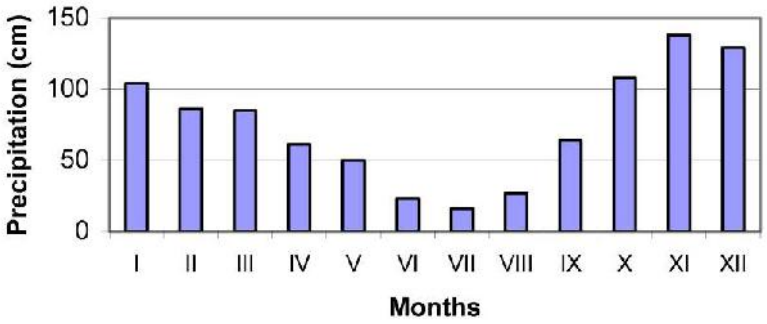
7.1.4.3. Rainfall

Precipitation occurs mostly as rain, but can also occur as hail, sleet, snow, fog or dew.

The period with more rainfall is the cold half of the year. During this period, in all areas, on average 70% of the annual rainfall occurs and in the summer period 30%. Most of the rainfall is concentrated in the winter, with less in the summer. In the study area, November is the month with most rainfall: 161 mm.

The quantity of rainfall in the study area, in the drought months of July and August, varies from 12.0 mm to 37 mm, whereas annual rainfall is in average 995 mm. In the study area, the total days with rainfall during the year is approximately 120 days. November and December are the months with the most rainfall days.

Figure 7.3 - Precipitation in Southern Coastal Region by months



(Source: Hydrology of Albania, 1984)

7.1.5. Impact and Mitigation Measures on Climate, Micro-Climate and Climate Change

Even if the operation of this road will lead to the reduction of Green House Gas emissions in the city center of Vlorë, considering the forecasted traffic levels, the impact of the Project on the climate and on global climate change will not be significant.

Thus, for both constructional and operational phase, mitigation measures will not be necessary.

7.1.6. Assumptions and Limitations

Evaluation of the impact of the project on the climate of the study area is based on the most recent data available.

7.1.7. Conclusions, Recommendations and Residual Impacts

The effect of construction on the climate of the study area being not significant their will not be any residual impacts.

7.2. Relief, Geology, Soil and Groundwater

7.2.1. Introduction

The soils and geology of the area is a composite of many aspects of the environment including flora and fauna, landscape, water and climate. Impacts on these individual aspects are addressed in the relevant sections of this ESIA.

This section describes also the existing hydrogeological conditions of the extended area in which impacts are likely to occur, and identifies potential impacts of the Project on groundwater. Where significant negative impacts are predicted, mitigation measures are proposed to reduce those impacts.

7.2.2. Sources of Information

The sources of baseline information on relief, geology soil and groundwater features were obtained from the following sources:

- *A.L.T.E.A. / Geostudio - On the geological and geoengineering conditions of the area where will be built Vlorë Bypass, Preliminary study - February 2011;*
- *Polemio, Pambuku and Petrucci - The Coastal Karstic Aquifer of Vlorë (Albania) - June 2008;*
- *ZDRULI, LUSHAJ, PEZZUTO, FANELLI, D'AMICO, FILOMENO, DE SANTIS, TODOROVIC, NERILLI, DEDAJ, and SEFERI - Preparing a georeferenced soil database for Albania at Scale 2:250,00 using the European soil bureau manual of procedures 1.1 - no date.*

7.2.3. METHODOLOGY

Ground conditions along the Project have been based on desk study information, aerial photography and geophysical and intrusive site investigation data from a detailed geological and geotechnical study for the Project.

Site visits and sampling analysis have been performed by A.L.T.E.A. / Geostudio to gather data on geology and soil characteristic along the axis.

7.2.4. EXISTING ENVIRONMENT

7.2.4.1. Relief

The area is characterized by both hilly and mountainous relief. The Project intersects several small streams and small valleys. The Project passes through two main geomorphologic units: the plain of Vlorë and Orikum and the hills situated at the East of the city of Vlorë.

Plains of Vlorë and Orikum

The plains of Vlorë and Orikum form a large flat area, which has been created by the tectonic activity during Neocene and Quaternary periods. The flat area created by the tectonic movements of that period is filled with alluvial and maritime deposits. At the beginning of quaternary this area raised above the sea level leaving the plain of Vlorë and Orikum.

Hills situated at the East of the City of Vlorë

These hills follow a North South direction. They are built from sedimentary rocks and form steep rocky slopes. The more gentle slopes are cultivated, whereas the steeper slopes are covered with maquis and small trees. Areas with limestone are generally covered with olive groves. On those hills, there are several existing quarries that are used to satisfy the requirements of construction materials of the city of Vlorë.

7.2.4.2. Geology and Soils

Geology

Vlorë and Orikum are part of the Ionian geological region, where sedimentary deposits, limestone rock and granular rock can be found. See Figure 7.4. In particular, the Project corridor encounters the rock formations and deposits listed below:

- *Limestone rock (Pg2, Cr2, Cr10, J1, J2-3, upT3): are white to grey in colour, show little cracking are stiff and very resistant against atmospheric agents. They are very appropriate for the bridge foundations. Embankment and cuts performed with this material are likely to be very stable.*
- *Palaeogene's deposits (Pg1, Pg31): are flysch deposits composed of mudstone and sandstone. They have brown to beige colour, medium to weak cementation; the superficial layers are weathered. Generally they form unstable slopes. Some very active landslides areas are found near the village of Radhimë.*
- *Neogene's Deposits (N12h, N12t, N13): are composed of mudstone, sandstone and, more rarely conglomerates, conglobreccias. They have brown to beige colour, good to weak cementation and their superficial layers are weathered. In general these rocks have stable slopes where layers of sandstones and conglomerates predominate. In those segments where layers of mudstones are present in the thickness of colluvium deposits, landslides can be observed.*
- *Quaternary Deposits (Q4): According to the way these deposits are formed, they are divided into alluvial, torrent, colluvium or maritime deposits:*

- *Alluvial Deposits are typical of the deposits of both Shushica and Ducati rivers. They are made of coarse to cobble gravel, sands and seldom silty sand and silty clay. They are consolidated deposit, found in the river beds and have a thickness of 20 to 25 m.*
- *Torrent Deposits are found underneath Panaja stream and other smaller streams. In some cases these deposits intertwine with alluvial deposits. They are composed of silty clays, sands and silty sands; are moderately consolidated. They have a thickness of 8-15 m.*
- *Colluvium Deposits are composed of silty clays and gravelly silty clays. They are moderately consolidated and are found on the valley slopes. These deposits rest on the core formations and have a thickness of 2.0 to 4.5 m. In some cases these deposits are unstable; they can be prone to slide downhill.*
- *Maritime Deposits are composed of silty clays, silty sands and sometimes sands with peat layers. They are moderately consolidated. These deposits are found near the coast, rest on the core formations and have a thickness of 20 to 40 m.*

Soils

Coastal alluvial plains are covered with Luvisols, Phaeozems, Arenosols, Fluvisols, Gleysols, Vertisols, Solonchaks and Histosols.

Steep limestone mountains are covered with Regosols, Luvisols and Phaeozems.

7.2.4.3. Physical, geological and geodynamical processes

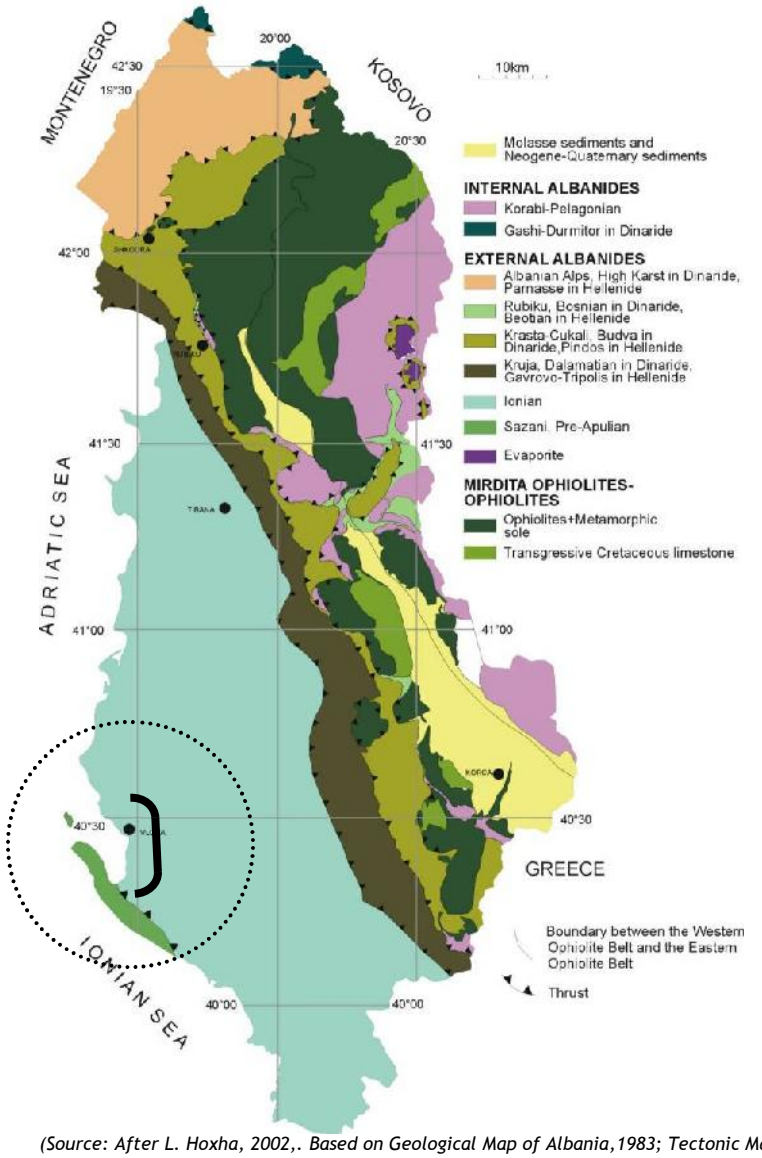
Erosion

Erosion phenomenon are visible in the hills east of Vlorë, starting from Pusi Mezinit up to Orikum city, close to the southern end of the Project. Rain, during heavy rainfall, erodes the weathered part of the core formation and transport the material to the lowest points of the relief. The Project will be exposed to this phenomenon.

Land Slides

Limited land slides are present all along the Project corridor.

Figure 7.4 - Map - Tectonic map of Albania



(Source: After L. Hoxha, 2002,. Based on Geological Map of Albania,1983; Tectonic Map of Albania, 1984, 1999; Hoxha 2001)

Weathering

Weathering phenomenon are likely to occur in rock formations that are composed of sedimentary rocks (mudstone sandstone and conglomerates) that are new deposits with weak clay cementation. These rocks under the action of the atmospheric agents are transformed from weak rocks to soils. This phenomenon is seen in the hills east of Vlorë. From the northern part of the Project corridor up to the village of Kaninë, some parts of the new road will be built by excavating hills formed by soft rocks.

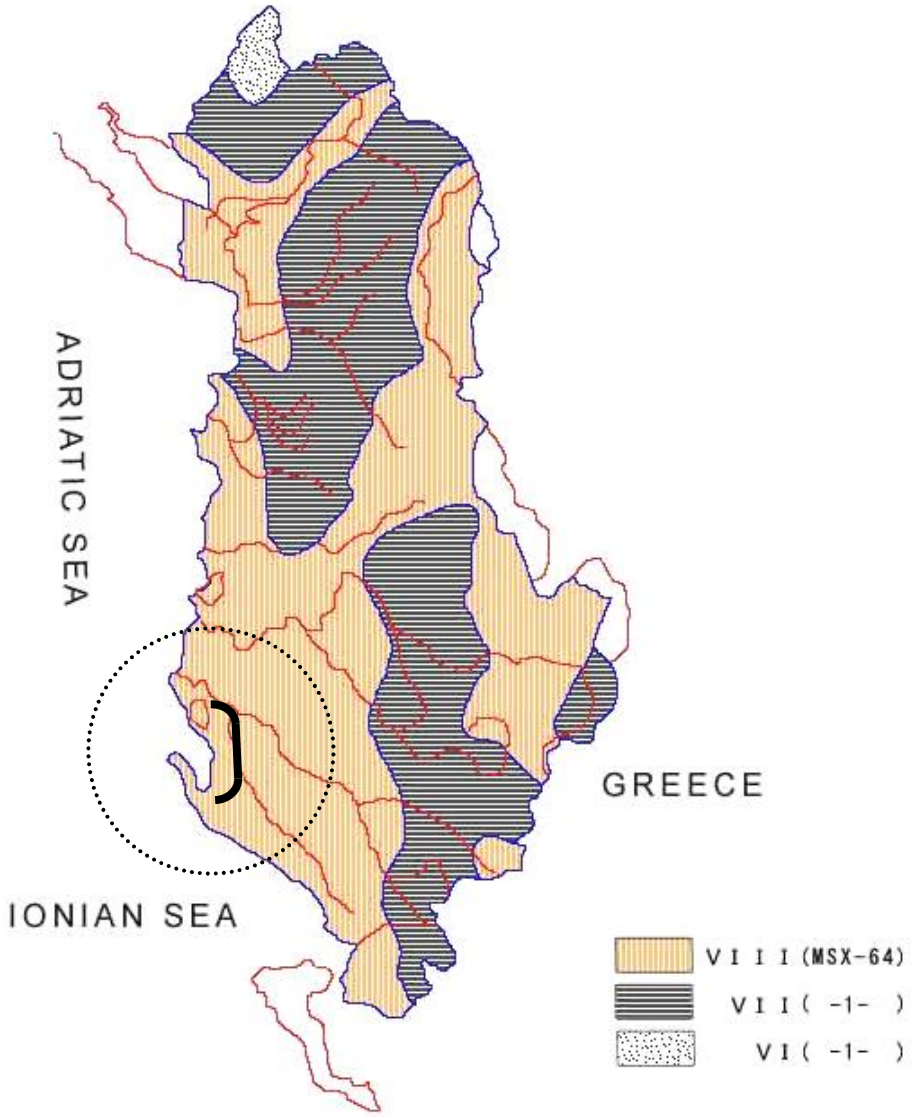
Consolidation of maritime deposits at flat of Vlorë and Orikum

The maritime deposits of Vlorë and Orikum are composed of sand and clay layers containing organic matter. The sand layers are generally not consolidated, whereas the clay layers are strengthened under the action of the pressure of the weight of the land above it.

Seismic Hazard

The current and official documents concerning seismic design parameters of Albania are the Seismic Map of Albania by the Seismologic Institute in Tirana and the "Design Seismic Norm KPT – No. 2 – 89", edited in 1989 by the Seismological Institute of Tirana and Construction Ministry. The Seismic Map shows that all the Project area is evaluated with an oscillation intensity of VIII degree.

Figure 7.5 - Map - Seismic zones of Albania



(Source: Seismological Institute of Tirana and Construction Ministry, 1989)

7.2.4.4. Groundwater

As the Project lies mainly on limestone, it crosses an area rich in groundwaters. Numerous karstic springs supply population in freshwater. One of the most important Karstic springs of the study area are Uji i Ftohtë springs (Kalaja springs) just south of Vlorë center and Izvorit springs, near Tragjasi village. At the moment, groundwater is supplying drinking waters for the locals and is sufficient to respond to their demands as well as to potential tourism development of the site

Investigations (boreholes and exploratory holes) in the Project corridor show that the undergroundwater level is generally very deep and that it changes considerably from winter to summer. In the areas of river and some stream beds the water level is closer to the ground level. In the plain of Orikum and Vlorë area groundwater level is very close to the surface. Analysis performed by GEOSTUDIO shows that water PH is neutral.

7.2.5. IMPACTS ON SOIL, GROUNDWATER AND WELLS

7.2.5.1. Soil

Rock Excavation Method

In areas where significant cuts are required, it is possible that rock will be encountered, and will require removal. The method of removal can range from digging the material out with the bucket of an excavator to blasting, which can have significant noise and vibration associated with it. (The noise and vibration impacts associated with blasting are discussed in more detail in the Noise and Vibration chapter).

Re-use of Excavated Material

The material to be excavated from cut sections is a natural resource and its use within the Project will be maximised by utilising construction techniques that retain and/or enhance the compactibility of the material for use as engineered fill.

However, there will inevitably be a significant proportion of material, which due to its physical and structural properties is not suitable for use as engineering fill within this Project. This material is however suitable for other activities such as landscaping where such stringent structural requirements do not apply. The re-use of this material will be maximised within the Project, and any excess material will be transported off site.

Soil Contamination

The ground underlying the road may be at risk, during both construction and operation, to contamination from hydrocarbon spills, accidents and chemical spilling. The ground may then act as a source of contamination when intercepted by groundwater.

7.2.5.2. Groundwater

Constructional impacts

Due to the karstic nature of the geology, stripping the surface material will increase groundwater vulnerability. The potential will exist for groundwater contamination from construction plant leaks and accidental spillages of vehicle fuels and oils. Provided appropriate pollution control measures are put in place during construction, these impacts should be minor.

Silt and clay particles mobilised by rainfall and construction activities can percolate to a shallow water table, resulting in an impact on groundwater quality in the immediate vicinity of the construction works. However, natural groundwater quality should be restored within about 50m of flow down gradient; therefore the impact may be regarded as a minor impact.

Local dewatering will be required during construction to install foundations for bridges and culverts, for some pipelines crossing beneath the highway, deep manholes, etc. This impact is therefore considered to be minor.

Operational Impacts

The most significant potential impact of the Project is the reduction of the natural protection of the groundwaters in the important aquifers underlying parts of the route, as a result of the removal of part of the unsaturated zone.

The reduction of an aquifer's natural protection allows the potential for contaminants associated with the operation of the proposed highway to more readily gain access to its groundwaters.

Similarly, the aquifers are more vulnerable to contaminants accidentally released as a result of spillages of chemicals or hydrocarbons.

7.2.5.3. Adjacent Wells

The greatest potential impact on water supply wells relates to the potential for contamination from road runoff and the accidental spillage of hazardous chemicals on the Project.

The potential reduction of recharge to the wells, where the ground is covered, is less significant owing to the low rate of abstraction from these wells.

The criteria for assessing the potential impact of the Project on the water supply wells which are site specific include:

- *Distance to the highway;*
- *Project up gradient or down gradient of the well;*
- *Aquifer classification (regional, local, poor);*
- *Aquifer vulnerability;*
- *Road and drainage design;*
- *Abstraction rate;*
- *Well construction.*

The risk of contamination can only be assigned to individual wells on the basis of an examination of the type of information outlined above. However, in very general terms the risk posed to low yielding water supply wells can be categorised as follows:

- *High: wells within 50m of the boundary of the proposed highway;*
- *Medium: wells within 150m of the boundary of the proposed highway;*
- *Low: wells up to 250m of the boundary of the proposed highway.*

The permanent road drainage may also lower the groundwater level, particularly in the areas surrounding cut sections, which may affect any wells whose radius of influence encounters the cut.

7.2.5.4. Where Impacts Occur

With regards to soil, contamination effects within the inner area have been assessed for:

- *land to be occupied by permanent infrastructure;*
- *construction sites and any land likely to be disturbed during construction; and*
- *areas within 250m of the above.*

For groundwater, the study has covered all abstractions located within a radius of 500m from the work sites included within the scope of the ESIA.

7.2.5.5. When Impacts Occur

Soil and groundwater effects have been assessed in relation to the construction phase only (2012-2014). Effects on groundwater resources have been considered in relation to both construction and operation, starting in 2014.

7.2.6. MITIGATION MEASURES FOR SOIL, GROUNDWATER AND WELLS

7.2.6.1. Soils

Re-use of Excavated Material during Construction

During construction, excavated materials intended for other activities such as landscaping will be handled and trafficked to a minimum and stockpiled in such a way so as to minimise the effects of weathering. The time between excavation and re-use during wet periods will be kept to a minimum. During prolonged wet periods, the contractor will suspend excavation and placement of these materials, to prevent degradation due to wetting.

Soil Contamination during Construction

During construction, all petroleum-based products and chemicals shall be stored in a bunded compound.

The area for filling trucks and other engines shall have an impermeable surface. Mechanical repairs shall be carried out in an area with a similar surface. Runoff from both areas shall be discharged through a hydrocarbon interceptor.

All chemicals, petroleum based products, mechanical and electrical equipment shall be removed prior to closure of the site.

7.2.6.2. Groundwater

Groundwater Contamination during Construction

Similar measures to soil protection described above will be implemented.

Groundwater Contamination during Operation

Similar In areas of high aquifer vulnerability, a sealed/positive drainage system will be used to collect surface water from the road. This will prevent road runoff from percolating into the ground resulting in contamination of the groundwater.

7.2.6.3. Adjacent Wells

A survey of all wells within 250m of the Project fence line will be undertaken prior to construction of the Project. This survey will complete and confirm the results of the questionnaire. (see appendices 7 & 8 for questionnaires and results). On the basis of the information obtained a protocol will be developed for assessing the potential risk to the wells close to the proposed highway boundaries. The protocol shall be based on the criteria for assessing the potential impact outlined in the previous section:

- *Distance to the Project;*
- *Groundwater gradient;*
- *Aquifer classification;*
- *Aquifer vulnerability;*
- *Type of highway construction (cut or fill);*
- *Well construction;*
- *Absorption rate.*

Any wells negatively impacted will be abandoned and provisions made for replacement water supplies for the well owners. A protocol for the proper abandonment of private wells and geotechnical boreholes will be developed prior to construction of the Project.

Similarly, a survey of all waste/effluent storage and disposal systems within 50m of the footprint of the proposed highway shall be undertaken, and a protocol formulated during the detailed design stage for the proper abandonment of septic tanks on the footprint of the proposed development.

7.2.7. ASSUMPTIONS AND LIMITATIONS

The principal assumptions were as follows:

- *the assessment has been based upon outline engineering designs, drawings and calculations;*
- *the design, construction and operation of the Vlorë Bypass will satisfy minimum standards in respect of the aquatic environment consistent with contemporary legislation, best practice and current knowledge;*
- *measures will be included during construction (based on Pollution Prevention Policies of the Ministry of Environment, Forestry and Water Administration of Albania and other best practice) to protect against pollution of the aquatic environment;*
- *the use of herbicides will comply with current Albanian codes of practice and will be restricted to those which are approved by the relevant regulatory body;*
- *licence data supplied by the Environment Agency and data on private water abstractions will identify all groundwater abstractions or protected rights requiring consideration and assessment;*
- *baseline conditions are established from historical data but owing to the dynamic nature of the aquatic environment, these conditions may change before or during the construction and operation of the Project;*
- *impacts will be assessed assuming no mitigation incorporated into the Project in response to the possible presence of contaminated land;*
- *a Health and Safety Plan will be developed to protect construction and maintenance workers, and hence these receptors has been excluded from the assessment;*
- *the Project will adopt a strategy for the disposal of contaminated spoil that complies with all relevant waste management legislation. Compliance with the Regulations will ensure that the significant impacts due to contaminated spoil disposal are avoided.*

The following limitations will also apply:

- *Possible contaminated sites have been identified through the study of historic records and other desk study information; these records may not indicate all potentially contaminated sites. Published data on the contaminants typically associated with particular land uses will be used to characterise the probable nature of contaminants present. These data sources may not identify all contaminant types;*
- *Potentially contaminating land uses might not be shown on maps;*

7.2.8. CONCLUSIONS, RECOMMENDATIONS AND RESIDUAL IMPACTS

Despite mitigation residual impacts are possible. These include:

- *Depending on ground conditions encountered, construction dewatering is likely to be required.*
- *Ground may be contaminated by spills.*
- *Soft ground areas will require removal and replacement or engineered measures.*
- *Highly fractured or weathered areas of rock may require monitoring and maintenance.*
- *Deterioration of materials for re-use may occur.*

Figure 7.6 - Table - Impacts and Measures on Soil and Groundwater and Wells during construction

Impacted Theme	*Sources of Impact or Effect*	*Potential Impact or Effect*	*Magnitude*	*Mitigation Measures*
Rock excavation method	*Construction of the road.*	*Noise and vibration coming from digging and blasting.*	***minor***	*See Noise and Vibration chapter.*
Re-use of excavated material	*Construction of the road.*	*Noise and dust coming from transportation of the material.*	***moderate***	*Excavated materials intended for re-use will be trafficked to minimum using covered trucks.* *The time between excavation and re-use during dry periods will be kept to a minimum.*
Groundwater during construction	*Stripping the surface material will increase groundwater vulnerability.*	*Increase of groundwater vulnerability.*	***minor***	*Provided appropriate pollution control measures to be put in place during construction.*
Same as above	*Construction plant leaks.*	*Accidental spillages of vehicle fuels and oils.*	***minor***	*same as above*
Same as above	*Silt and clay particles mobilised by rainfall and construction activities.*	*Impact on groundwater quality in the immediate vicinity of the construction works.*	***minor***	*same as above*
Same as above	*Construction and installation of foundations for bridges and culverts, for some pipelines crossing beneath the highway.*	*Local dewatering.*	***negligible***	*same as above*

Figure 7.7 - Table - Residual Impacts and Measures on Relief, Geology, Soil and Groundwater during operation

Impacted Theme	*Sources of Impact or Effect*	*Potential Impact or Effect*	*Magnitude*	*Mitigation Measures*
Aquifers situated nearby or underneath the Project.	*Operation of the road and operational traffic.*	*Potential contamination of the ground from spills, accidents, road setting and chemicals.*	***minor, locally moderate***	*A sealed/positive drainage system will be used to collect surface water from the road.*
Adjacent wells situated nearby the Project.	*Operation of the road and operational traffic.*	*Potential contamination of the ground from spills, accidents, road setting and chemicals.*	***moderate***	*Any wells negatively impacted will be abandoned and provisions made for replacement water supplies for the well owners.*

7.3. HYDROGRAPHY AND SURFACE WATER

7.3.1. SOURCES OF INFORMATION

Baseline conditions are those prevailing in the reviewed literature and are assumed to represent the existing situation with allowance for any foreseeable changes.

The following sources of data were consulted:

- *Polemio, Pambuku and Petrucci - The Coastal Karstic Aquifer of Vlorë (Albania) - June 2008;*
- *MedWetCoast - Management Plan, Llogora-Rreza e Kanalit-Dukat-Orikum-Tragjas-Radhime-Karaburun Complex Site - December 2004.*

Additional and supplementary information on surface water features were obtained from OS maps, site surveys and aerial photographs.

7.3.2. METHODOLOGY

7.3.2.1. General Principles

The general principles behind the drainage design are as follows:

- *The proposed road will cross existing watercourses. The road crossings of these watercourses will be designed so as to have no significant impact on the surface water drainage regime of the area through which the road passes.*
- *Existing overland flows which the proposed road may impede will be intercepted and discharged to a suitable outfall. subgrade drainage will be provided for the mainline carriageway and all new sections of rural and county roads. This must be directed to an existing watercourse.*

7.3.3. EXISTING ENVIRONMENT

Surface waters are scarce on the site. The hydrogeology of the Vlorë, Kaninë, Radhimë, Orikum area is characterised by the porous structure of the limestone terrain, easily percolated by waters running through underground channels. For that reason, most of the torrents and streams of the study area have water only in winter and spring. One of the only rivers with permanent running waters of the study area is Tragjasi River that originates from the karstic springs of Izvorit.

An important part in the hydric resources of the zone is man-made waterworks. The Project skirts one of them in Babica.

Surface waters coming from streams have been used in the past (before 1991) for irrigation of fields. Pumping stations and irrigation channels were built to make possible the use of these waters to agriculture land of the site. Nowadays, most of this irrigation scheme is out of functioning, due to severe damages caused during the transition period, after the collapse of communist regime.

7.3.4. IMPACT ON HYDROGRAPHY AND SURFACE WATER

7.3.4.1. Constructional Impacts

Construction works will be temporary in nature but have the potential to cause impacts on the aquatic environment. Discharge of silt into the water column during construction is considered a potential negative impact. This might be an acute problem for the two last permanent stream crossed by the project to the South.

There is also the potential for other pollutants associated with construction activities to enter the stream at this point during construction.

A number of existing watercourses are to be regraded as part of the drainage works for the proposed road. These are generally minor works, mostly to maintain existing temporary or permanent small streams. Temporary streams are numerous given the nature of the geology.

As the road crosses areas where irrigation ditches currently exist, their use, organisation and effectiveness will be affected by the construction works.

7.3.4.2. Operational Impacts

In agricultural area, a number of smaller ditches along the Project will be rationalised i.e. where there are a number of small ditches close to each other they will be realigned to pass under the road through one crossing. (e.g. Babica Plateau).

Following construction of the road, surface water collected by the carriageway drainage will be discharged into the streams along its length and in some instances to streams close to the proposed road.

Where the route passes over a stream, these will be bridged or culverted. These crossings are designed to cater for the 1 in 100 year storm.

In areas where the highway cuts into the existing topography, the base of the cutting may be below the existing water table as herringbone drains will be provided to stabilise cut slopes where necessary. This can result in the lowering of the water table in the vicinity of the cut and the dewatering of shallow wells.

7.3.4.3. Where Impacts Occur

The study area can be defined as the surface water catchments through which the Vlorë Bypass will pass and that will potentially be affected by the elements of work within the scope of the ESIA.

The assessment has considered impacts on surface waters in the context of a zone of 250m radially from the boundary of each major work site within the inner area. In relation to the works bridges, impacts were considered on these rivers up to 1km upstream and downstream of the works.

7.3.4.4. When Impacts Occur

Effects on surface water were considered in relation to both construction (2012-2014) and operation, commencing in 2014.

It should be noted that some impacts associated with the construction phase could have long-term effects persisting during operation (e.g. changes in river morphology due to gradual deposition of sediment).

7.3.5. MITIGATION MEASURES FOR HYDROGRAPHY AND SURFACE WATER

7.3.5.1. Constructional Phase

Pollution control measures will be put in place during the construction process. These will include bunding and maintaining siltation fences.

7.3.5.2. Operational Phase

Water Courses Protections

Long-term mitigation measures to be designed into the Project will primarily be directed at pollution control and preventing increased risk of flooding on all watercourses. The existing streams, ditches and drains intercepted by the proposed road, except where prohibited by the vertical alignment of the road, have been kept open beneath the carriageway to maintain existing flow paths. In some instances streams have been diverted and regraded to facilitate the lowering of the vertical alignment, reducing the visual impact of the Project.

Where there are watercourse crossings of fisheries importance along the Project, flat/modest gradients within culverts are desirable to allow passage by fish. Where possible, bottomless culverts will be used. If closed culverts are used; the appropriate measures to maintain the passage of fish will be implemented.

7.3.6. ASSUMPTIONS AND LIMITATIONS

The principal assumptions and limitations are as follows:

- *the design, construction and operation of the Vlorë Bypass will satisfy minimum standards in respect of the aquatic environment consistent with contemporary legislation, practice and knowledge;*
- *measures to protect against pollution of the aquatic environment during construction will be enforced and monitored through the construction contracts;*
- *the assessment will be based upon outline engineering designs, drawings and calculations;*
- *baseline conditions have been established from historical data but owing to the dynamic nature of the aquatic environment, these conditions may change before or during the construction and operation of the Project.*

7.3.7. CONCLUSIONS, RECOMMENDATIONS AND RESIDUAL IMPACTS

Measures to mitigate impacts of the Project on flooding, aquatic ecology and water quality and fisheries have been incorporated into the drainage design.

In non karstic areas, where the road cuts into the existing topography, the base of the cutting may be below the existing water table. This can result in the lowering of the water table in the vicinity of the cut and the dewatering of shallow wells.

In extreme rainfall events there may be flooding of points where the route will cross existing rivers.

Figure 7.8 - Table - Impacts and Mitigation Measures on Surface Water during Construction

Impacted Theme	*Sources of Impact or Effect*	*Potential Impact or Effect*	*Magnitude*	*Mitigation Measures*
Surface water Quality	*Discharge of silt into the water column.*	*Lowering of the water quality.*	***minor***	*Building of siltation fences.*
Same as above	*Other pollutants associated with construction activities to enter streams.*	*Lowering of the water quality.*	***minor***	*Pollution control measures to be put in place during construction.*

Figure 7.9 - Table - Residual Impacts and Mitigation Measures on Surface Water during Operation

Impacted Theme	*Sources of Impact or Effect*	*Potential Impact or Effect*	*Magnitude*	*Mitigation Measures*
Water courses physiognomy	*Regrading of existing watercourses and proximity and capacity of the adjacent streams.*	*Discharge from the road is likely to increase the peak flow rate of water within watercourses.*	***minor to locally moderate***	*Preventing increased risks of flooding by locally implementing attenuation ponds.*
Water Quality	*Surface water collected by the carriageway drainage to be discharged into the adjacent streams.*	*Lowering of the water quality from the road discharge and potential accidental chemical spills.*	***minor***	*See mitigation measures on relief, geology, soil and groundwater during operation.*

7.4. HABITAT AND BIODIVERSITY

7.4.1. INTRODUCTION

Data collected from recent research in the study area are showing a quite rich and diverse flora, high diversity of habitats and plant associations of a particular national importance, both from a scientific and an economic point of view. In the study area, there are probably a certain number of plant species that belongs to the national list of rare species, while there are probably a number of plants that are distinguished for their specific scientific interest.

7.4.2. SOURCES OF INFORMATION

Baseline conditions will be assumed to be those prevailing at the commencement of construction. These will be established from the existing situation, modified to allow for any foreseeable changes.

Baseline conditions were established from:

- *MedWetCoast - Management Plan, Vjose-Narta Landscape Protected Area - June 2005;*
- *MedWetCoast - Management Plan, Llogora-Rreza e Kanalit-Dukat-Orikum-Tragjas-Radhime-Karaburun Complex Site - December 2004;*
- *International Union for Conservation of Nature site: http://www.iucn.org. (see appendix 4 for complete list of endangered or threatened species in Albania); and*
- *Field's surveys performed by the ESIA project team on the selected road corridor in September and October 2011.*

7.4.3. METHODOLOGY

The assessment has considered all the impacts on biodiversity (ecosystem, habitats, flora and fauna). The approach also ensured that the Vlorë Bypass do not significantly reduce the biodiversity at any of its levels and enhance biodiversity wherever possible.

7.4.3.1. Biodiversity

The subject of this general description has been the whole biodiversity group including terrestrial and aquatic flora and fauna.

The goal of this survey was to gather existing baseline information on the diversity of habitats and species through carrying out surveys of all habitats likely to be directly or indirectly affected and of selected key species.

Special attention was paid to those habitats and species considered as threatened either nationally or internationally and habitats and species having a particular interest in the economic and conservation context.

7.4.3.2. Description of Habitats and Species

The area under survey shelters different habitats. Habitat changes are reflected in the faunistic distribution with different animal communities in different types of habitats. This general description includes only the main habitats and species that are present in the road construction area. Keeping in mind that ESIA studies should also look at indirect impacts on the environment, we also give general information on the species and habitats occurring outside the road construction area.

Locations of semi-natural habitats are presented on baseline environment maps in appendix 11.

7.4.4. EXISTING ENVIRONMENT

7.4.4.1. Natural Habitats

The slopes of Karaburun peninsula, Shushica hills and Orymanges Mountains are characterized by a great diversity of vegetation types.

Broadleaved evergreen forests (Assoc. Orno –Quercetum ilicis): There are small areas on the north facing little valleys of the Shushica hills and Orymanges Mountains that are covered by broadleaved evergreen forests. Predominant tree species are: Quercus ilex, Fraxinus ornus, Quercus coccifera, Acer campestre. Widespread Mediterranean species comprise much of the undergrowth of these forests e.g. Pistacia lentiscus, Quercus coccifera, Phillyrea angustifolia etc. These forests represent the climax vegetation of the evergreen zone at altitudes 0 to 900 m.

Macquis vegetation: It consists of dense evergreen shrubs up to 3 m tall. This type of vegetation is quite widespread throughout the coastal region of Vlorë. In this project site, it occurs mainly on acid soils. Macquis is believed to constitute local climax vegetation, but, more often, it is the result of the degradation of broadleaved evergreen forests. The main plant communities of macquis in this region are:

- *Plant communities dominated by Quercus coccifera (Assoc. Orno-Quercetum cocciferae) are widespread in region, mostly over limestone, at altitudes 0-900 m. Others evergreen shrubs, forming the shrub layer of these plant communities are: Pistacia lentiscus, Quercus ilex, Fraxinus ornus, Myrtus communis and Laurus nobilis;*

- *Plant communities dominated by Arbutus unedo and Erica arborea (Assoc. Arbutus unedo-Erica arborea) can be found on some of the slops, mostly over limestone, but rarely over flysh substrate (above Uji i Ftohte) are covered by a macquis of evergreen shrubs and small trees such as: Arbutus unedo, Erica arborea, Phillyrea angustifolia, Pistacia lentiscus, Rhamnus alaternus, Quercus coccifera, etc. (Some species of deciduous shrubs may occur here, too, and become an important element on the upper belt distribution of these plant communities (Cotinus coggygria, Ostrya carpinifolia, Carpinus orientalis, etc.).*

- *Cutting, grazing or burning of macquis or evergreen shrubs has produced similar but slightly taller vegetation called garrigue. This anthropogenic vegetation is common in rocky areas of the study area. It is dominated by spiny shrubs, often with small, rigid leaves much as Quercus coccifera, Calicotome villosa, etc.*

Mediterranean pine forests (Assoc. Pistacio-Pinetum halepensis): These forests occupy some of the slopes of Shushica hills and Orymanges Mountains. The main species found is Pinus halepensis and less often Pinus pinea. They occur from the sea level up to 400-500 m. There is no doubt that these forests are not indigenous as there were reforestation projects some 30-35 years, where Pinus halepensis was often used. These communities grow on poorly developed soils. They are often heterogeneous from a phytosociological point of view. In the study area there are tree layers formed

exclusively by Pinus halepensis; with no shrub layer and only a small amount of dwarf shrubs and herbaceous species.

Phrygana vegetation (Assoc. Chrysopogono – Phlometum fruticosae, Assoc. Ericetum manipuliflorae): is low shrub type vegetation, usually not exceeding 100 cm in height, with often cushion – shaped, loosely spaces shrubs. This vegetation occurs on dry shallow soil over limestone at altitudes 0-900 m. The dominant shrub species of the phrygana vegetation are: Erica manipuliflora, Thymus capitatus, Phlomis fruticosa, Urginea maritima, Chrysopogon gryllus, Anthyllis hermaniae, etc.

Similar to the maquis vegetation, phrygana might represent a local climax vegetation of hot and dry hilly slopes, but quite often, it is result of the degradation of maquis vegetation. It also constitutes an early succession stage following burning of coniferous forest.

Pseudo-steppe vegetation dominated by Brachypodium ramosum (Assoc. Brachypodium ramosi): overgrazing has transformed the garrigue into a pseudo-steppe vegetation type dominated by grasses mostly Brachypodium ramosum. Those pseudo-steppes have a rich grass flora. Graminaceae and Fabaceae are well represented, mostly by annual species. Prominent among the latter group are: Avena barbata, Aegilops ovata, Anthoxanthum odoratum, Poa trivialis, P. bulbosa, Bromus sterilis, Trifolium stellatum, Medicago minima, Lotus corniculatus, Cardus pycnocephalus, Orlaya daucorlaya, Malva sylvestris, Anthemis arvensis, etc.

The other areas with heavy human impact, including the cultivated and abandoned fields, road sides and other ruderal environments, contain a large number of species or different type of vegetation which is not found in natural settings. Flat grounds and much of the hill slopes are now largely cultivated with cereals, olives, oranges etc. and most of the hillside vegetation was transformed by cutting and grazing into bushwood.

Quercus ithaburensis subsp. macrolepsis (known as Valona oak): is the dominant species of Oak forests. It is met here and there all over the study area at altitudes 0- 800 m. Forests with predominance of Quercus ithaburensis subsp. macrolepsis are growing within the evergreen forest belt (below 800 m), but not forming a distinct forest belt.

7.4.4.2. Species of Conservation Concern

As stated above the area under the direct impact of the Vlorë Bypass (construction, operation and maintenance) is composed mainly of agricultural land, degraded Mediterranean forests and maquis, as well as Pseudo–steppe vegetation. Bibliographic research (including both terrestrial and aquatic species) as well as our own specialists' expertise shows that the likelihood of finding threatened species in the study area is low.

Among the list of 160 threatened species in Albania, 26 species might be found in the study area (see Figure 7.10 below and detailed list of species in appendix 4).

Figure 7.10 - Table - Threatened species in Albania according to the IUCN Red List and presence on the Vlorë Bypass

Species group	Critically Endangered	Endangered	Vulnerable	Near Threatened	Vlorë Bypass
Plants	-	-	-	-	-
Molluscs	6	22	21	21	1
Insects	1	1	3	5	7
Crustaceans	-	-	-	1	1
Fish	6	8	25	10	1
Amphibians	-	1	1	-	1
Reptiles	1	1	2	2	2
Birds	1	1	3	10	9
Mammals	1	-	2	5	4
Total	16	34	56	54	26

Figure 7.11 - Photo - Examples of threatened or near threatened species that might be present in the study area

European Roller (Coracias garrulous) @ Philippe Boissel

Four-lined Snake (Elaphe quatuorlineata) @ Zopidis Lefteris

Eurasian otter (Lutra lutra) @ Elliot Neep

Grecian Copper (Lycaena ottomana) @ Matt Berry

Common Bentwing Bat (Miniopterus schreibersii) @ Dietmar Nill

freshwater crab (Potamon fluviatile) @ Giacomo Radi

Hermann's Tortoise (Testudo hermanni) @ Thor Hakonsen

Greater Spotted Eagle (Aquila clanga) @ Umang Dutt

7.4.4.3. Areas of Conservation Concern

a) Narta Landscape Protected Area - (Vth IUCN Category)

The Narta lagoon and its catchments is a wetland complex located in Vlorë District. The site covers an area of 19,738 hectares. The altitude of the wetland site varies between 0m and 246m.

The Protected Area comprises land from two communes: Qendra Commune in the south and Novosela Commune in the north. The area includes 18 villages (Zverrnec, Narta, Panaja, Hoshtime, Kerkove, Bestrove, Aliban, Poro, Novosele, Mifol, Cerkovine, Skrofotine, Fitore, Trevllazer, Akerni, Bishan, Delisuf, Dellinje) with a total population of 24,000 inhabitants. The nearest town is Vlora, one of the largest cities of Albania, with 106,000 inhabitants.

The main habitats of Narta include wetlands, agricultural land, forests and urban areas. Wetland habitats occupy 52 % of the total surface. The other main habitat (circa 40%) is agricultural land. Forests compose the third main habitat covering only 6% of the territory. The core wetland is Narta lagoon, a shallow marshland of 2,900 hectares surrounded by hills in the southern and western part, salinas (saltflats) and agriculture land in the north, and two shallow wetlands in the north-west. The salt flats and the lagoon are divided by a dyke of 13.8 km2.

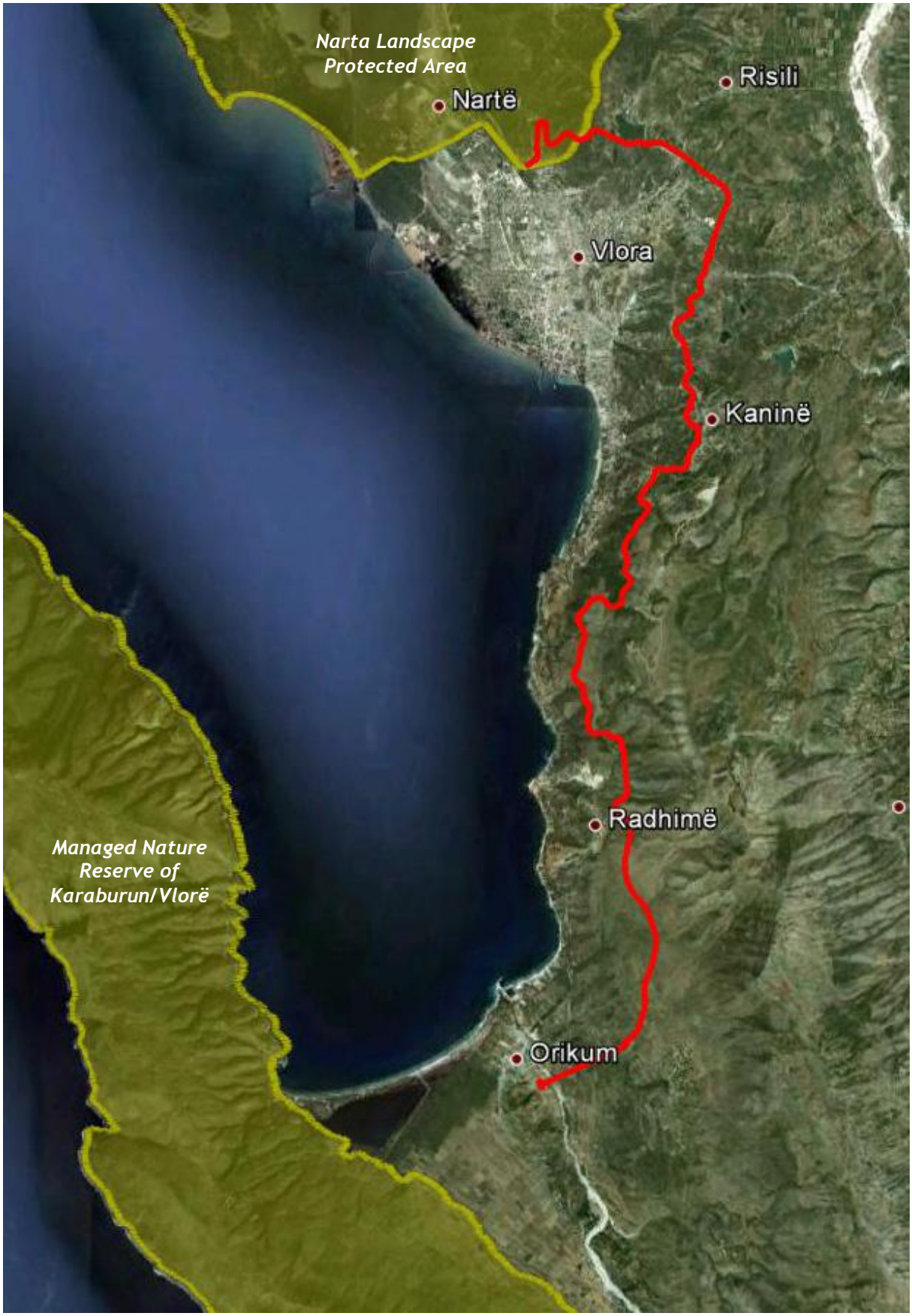
The Project skirts the extreme south portion of the Sustainable Development Zone of the ***Narta Landscape Protected Area*** on 2,2 km. See figure 7.12 on the following page.

b) Managed Nature Reserve of Karaburun/Vlorë - (IVth IUCN Category)

This Protected Area covers a surface of 20,000 ha and it is located in the Vlorë District. It has been designated as a Protected Area since 1968. The day-to-day administration of this area is also under the responsibility of the General Directorate of Forestry and Pastures.

The closest edge of the Managed Nature Reserve is 2,9 km from the project. See figure 7.12 on the following page.

Figure 7.12 - Map - Protected areas in the vicinity of the Project



(Source: Google Earth, http://protectedplanet.net/ (UNEP))

7.4.5. IMPACT ON HABITAT AND BIODIVERSITY AND MITIGATION MEASURES

7.4.5.1. Constructional Impacts and Mitigation Measures

The following impacts have been assessed in relation to temporary land take and operation:

Figure 7.13 - Table - Potential Impacts and Mitigation Measures during Construction

Source of Impact	*Impacted taxa*	*Potential Impact*	*Magnitude*	*Mitigation measures*
Workers Camp Site	*Habitat & Species*	*Natural habitat destruction, degradation,* *Biodiversity losses during construction,* *Migration of animal populations due to disturbance,* *Creation of new habitats for invasive animal species*	***minor***	*Avoidance of camping sites near river bed,* *Construction work during dry season,* *Rehabilitate the habitats after the work is finished*
Solid and liquid waste from the camp site	*Terrestrial and more particularly aquatic habitats and aquatic fauna, water quality*	*Pollution of soils,* *Habitat degradation,* *Biodiversity losses, damage or destruction of breeding sites for fish and benthic species.*	***minor***	*Creation of sedimentation basins,* *Avoidance of works in the river bed,* *Collection and recycling of solid and liquid wastes in camping sites*
Car fuel/lubricants leaking	*Terrestrial and more particularly aquatic habitats and aquatic fauna*	*Pollution of soils, deterioration of water quality,* *Habitat degradation, biodiversity losses,* *Damage or destruction of breeding sites for fish and benthic species.*	***minor***	*Avoidance of works in the river bed,* *Measure to avoid the accidental leaking of lubricants and fuel,* *Collection and recycling of lubricants,* *Construction work during dry season*
Accidents (leaded and unleaded fuel, lubricants, hazardous waste)	*All the taxa*	*Pollution, deterioration of water quality,* *Habitat degradation, biodiversity losses, damage or destruction of breeding sites for fish and benthic species.*	***minor***	*Construction of an appropriate drainage system for surplus water,* *Immediate collection and recycling of waste*
Noise	*Birds, Mammals, Amphibians, Reptiles*	*Migration of animal populations due to disturbance,* *Reduction of breeding success in the vicinity of the road.*	***minor***	*No mitigation measures.*
Vibration	*All the faunistic taxa*	*Migration of animal populations due to disturbance,* *Reduction of breeding success in the vicinity of the road.*	***minor***	*No mitigation measures.*
Lighting	*All the faunistic taxa*	*Migration of animal populations due to disturbance,* *Reduction of breeding success in the vicinity of the road.*	***minor***	*No mitigation measures.*
Air emissions	*All the taxa*	*Temporary removal from the area,* *Reduction of breeding success in the vicinity of the road.*	***minor***	*No mitigation measures.*
Dust	*All the taxa especially*	*Habitat degradation, reduction of food resources for fauna species.*	***minor***	*Watering of road during dry season.*

Source of Impact	Impacted taxa	Potential Impact	Magnitude	Mitigation measures
River diversion	Aquatic habitats, aquatic species	Deterioration of water quality, Habitat degradation, Damage or destruction of breeding sites for fish and benthic species.	**minor**	Do not divert.
Dike constructions	Aquatic habitats, aquatic species	Deterioration of water quality, Habitat degradation, Damage or destruction of breeding sites for fish and benthic species.	**minor**	Avoidance of works in the river bed, Construction work during dry season.
Vegetation clearing	Degraded Mediterranean maquis	Habitat destruction, Migration of animal populations due to disturbance, Creation of new habitats for invasive animal species.	**minor**	Rehabilitation of impacted areas, Vegetation clearing will be limited to strict necessity on locations indicated on mitigationmeasures maps in appendix 12.
Creation of parking areas	Arable land, degraded Mediterranean maquis and forests	Habitat destruction, Migration of animal populations due to disturbance, Creation of new habitats for invasive animal species.	**minor**	Avoidance of Parking Areas near the river bed, Construction work during dry season, Construction of an appropriate drainage system for surplus water.
Erosion (of slopes)	Both terrestrial and aquatic habitats when the road goes near the river)	Habitat degradation, species removal, Damage or destruction of breeding sites for fish and benthic species.	**minor**	Planting of exposed surfaces (slopes), Construction work during dry season.
Digging and filling	Both terrestrial and aquatic habitats when the road goes near the river)	Habitat degradation, species removal, Migration of animal populations due to disturbance.	**minor**	Avoidance of works in the river bed, Works during dry season.
Depositing of extractions	Aquatic habitats	Habitat destruction and degradation, Removal of fauna.	**minor**	Works during dry season.
Water extraction	Aquatic habitats	Habitat destruction and degradation, Removal of fauna, Damage or destruction of breeding sites for fish and benthic species, Monitoring of water quality,	**minor**	Monitoring of aquatic biota indicators.
Hunting	Birds, large mammals	Reduction of species and their respective abundance, Migration of animal populations due to disturbance.	**minor**	Enforcement of hunting regulations.
Logging for firewood	Riverine, Mediterranean and pine forests	Habitat destruction and degradation, Migration of animal populations due to disturbance.	**minor**	Enforcement of respective regulations.
Incidental (unintentional) fire	Terrestrial vegetation	Habitat destruction and degradation, Biodiversity losses, migration of animal populations due to disturbance.	**minor to moderate**	Avoid camp fire during dry season.

7.4.5.2. Operational Impacts and Mitigation Measures

The following impacts have been assessed in relation to permanent land take and operation:

Figure 7.14 - Table - Residual Impact on Habitat and Biodiversity and Mitigation Measures during Operation

Source of Impact	*Impacted taxa*	*Potential Impact*	*Magnitude*	*Mitigation measures*
Solid waste deposition	*Habitat and species*	*Pollution.*	***not significant***	*Enforcement of laws against littering.*
Hunting	*Birds, large mammals*	*Reduction of species and their respective abundance, Migration of animal populations due to disturbance.*	***minor***	*Enforcement of hunting regulations.*
Logging for firewood	*Riverine, Mediterranean and pine forests*	*Habitat destruction and degradation,* *Migration of animal populations due to disturbance.*	***minor***	*Enforcement of respective regulations.*
Accidents (leaded and unleaded fuel, lubricants, hazardous waste)	*All the taxa*	*Pollution, deterioration of water quality,* *Habitat degradation, biodiversity losses, damage or destruction of breeding sites for fish and benthic species.*	***minor***	*Construction of an appropriate drainage system for surplus water,* *Immediate collection and recycling of waste.*
Noise	*Birds, Mammals, Amphibians, Reptiles*	*Migration of animal populations due to disturbance,* *Reduction of breeding success in the vicinity of the road.*	***minor***	*Enforcement of laws against noise (engines, mufflers, horns, etc…).*
Vibration	*All the faunistic taxa*	*Migration of animal populations due to disturbance,* *Reduction of breeding success in the vicinity of the road.*	***not significant***	*No mitigation measures.*
Lighting	*All the faunistic taxa*	*Migration of animal populations due to disturbance,* *Reduction of breeding success in the vicinity of the road.*	***not significant***	*No mitigation measures.*
Air emissions	*All the taxa*	*Temporary removal from the area,* *Reduction of breeding success in the vicinity of the road.*	***not significant***	*No mitigation measures.*
Urban development Construction works in the future		*Habitat destruction and degradation,* *Biodiversity losses, migration of animal populations due to disturbance,* *Competition for food between wild and domestic animals.*	***minor***	*Avoid urban development near the river bed,* *Construction work during dry season.*
Heavy traffic	*Fauna*	*Accidental mortality for animal species due to traffic.*	***moderate***	*Tables showing sites of importance for animal movements and migration,* *Road signs.*
Introduction of invasive species	*Flora and fauna*	*Habitat degradation, biodiversity losses.*	***minor***	*Control and monitoring of alien species invasion.*
The road itself	*Fauna*	*Habitat consummation.*	***minor***	*Small animals crossing using box culverts.*
	Flora	*Habitat destruction.*	***minor***	*No mitigation measures.*

7.4.5.3. Where Impacts Occur

The spatial scope of the assessment has reflected the scale of the proposed works and the character of the surrounding environment. Important ecological resources have been considered within 500m of works.

7.4.5.4. When Impacts Occur

Ecological effects could be long term or short term depending on the ecological receptor that is impacted upon. It is assumed that the impacts will occur mainly during construction but there may be some that will have permanent or long terms impacts during the operational phase.

7.4.6. ASSUMPTIONS AND LIMITATIONS

The assessment has adopted the following assumptions:

- *Contractors engaged to undertake work for the Project will adhere strictly to any wildlife protection practices;*
- *Pre-baseline ecological conditions in Year 1 of operation are assumed to be the same as those existing in 2012. The contractors' environmental management plans will take account of any changes in ecological conditions prior to works commencing on site;*
- *Usually Fauna and Flora studies are undertaken over a one-year period. Because of the length of the ESIA Study (4 months), a complete inventory of wildlife and vegetation was not possible. As no sites of known high value for their biodiversity are crossed by the alignment, only existing data were used.*

The principal limitations on the assessment were as follows:

- *The assessment considered published and unpublished data from a variety of sources collected at different times;*
- *The field survey data to be gathered specifically for the assessment were limited to certain times of the year;*
- *The assessment was constrained by the inability to gain full access to certain areas.*

8. HUMAN ENVIRONMENT

8.1. AIR QUALITY

8.1.1. INTRODUCTION

Emissions of air pollutants in Albania have fallen since the late 1980s and early 1990s. During that time the relative contributions from the different sources has also changed. Emissions from industrial production have fallen due to reduced industrial activity over the past 15-20 years. In the early 1990s household emissions also dropped for the same reason and because of the change from fossil fuels to electricity use. This trend seems to have continued throughout the 1990s. During the same period emissions from traffic have increased following a rapid growth in car ownership and use.

Air quality is monitored in Vlorë by a scientific institution contracted and financed by the Ministry of Environment, Forestry and Water Administration. The station in Vlorë is measuring the following pollutants: CO, SO2, N02, 03, PM10, PM2.5, and Benzene.

There are no major point sources of air emissions in the Vlorë area, but it is assumed that current air quality conditions in the Vlorë area satisfy a "moderate" air quality classification according to World Bank criteria.

8.1.2. METHODOLOGY AND SOURCES OF INFORMATION

A qualitative approach was preferred according to the general poor knowledge of air quality in the Vlorë area. In addition, the following reports were used to describe the general situation in Albania:

- *European Environment Agency - The European environment State and Outlook 2010, Air pollution, State and impacts (Albania) November 2010;*
- *Ministrisë së Mjedisit, Pyjeve dhe Administrimit të Ujërave, Raporti i Gjëndjes ne Mjedis - 2008;*
- *Ministry of Environment, Forestry and Water Adminsitration - Environmental Sector and Cross-Cutting Strategy - November 2007;*
- *Ministry of Economy, Trade and Energy, MHW Counsulting - Final Environmental Impact Assessment, Vlorë combined - October 2003;*
- *Institute of Public Health, DELIU, Agron - Report on Air Quality in Albania, year 2001-2004 - October 2005.*

8.1.3. EXISTING ENVIRONMENT

8.1.3.1. Air Quality in Albania

The relative contributions from the different sources of air pollutants in Albania have changed since the late 1980s and early 1990s. During that time emissions from industrial production have fallen due to reduced industrial activity over the past 10-15 years. In the early 1990s household emissions also dropped for the same reason and because of the change from fossil fuels to electricity use. This trend seems to have continued throughout the 1990s. During the same period emissions from traffic have increased following a rapid growth in car ownership and use.

From the report on Air Quality in Albania, year 2001-2004, (October 2005), it is estimated from air quality monitoring that actually over 80-90 percent of urban population in main cities of the country

are exposed to higher concentrations of PM 10 than Albanian limit values (2003) and WHO guideline values (1987).

8.1.3.2. Pollutant Emissions from Transport

The main source of urban air pollution is transport. The number of vehicles continues to grow from year to year and emissions of gases from vehicles (including PM10) contributes to a large extent to air pollution causing respiratory problems, especially in the young and the elderly

In urban areas traffic is of particular concern as the car ownership increases very quickly and is expected to grow as the economy develops.

90 per cent of all passenger cars registered in Albania are equipped with diesel engines and the age of the car fleet is important as Albanians import large quantities of old cars from Western Europe. This explains why sulphur dioxide (SO_2) and particulate matter (PM) emissions per vehicle are relatively high. In addition, sulphur content in car fuel is likely to be above European standards (0.035% in 2000, sulphur-free fuel (rate < 0.005%) programmed in 2005), as well as that of lead. Due to the poor quality of the fuel, it is likely that few of the catalytic converters still work.

8.1.3.3. Air Quality Policy and Monitoring

The legal obligation to monitor air quality and to survey industrial emissions derives from the Law on Environmental Protection adopted in 1998 and the Air Protection Law passed in 2002. However, their implementation and the responsibilities of different administrations are not spelled out.

Air quality standards are yet established by the 1974 regulation although the Environmental Law states that norms and objective values should be based on EC Directives.

Efforts are made by the government to align the environmental legislation on European standards and protocols but no time schedules have been set.

The Institute of Public Health operates the central air pollution control laboratory and monitoring in major urban areas (Tirana, Korce, Durres, Elbasan, Shkoder, Fier and Vlorë). The Institute of Hydrometeorology also undertakes air quality measurement at six of its meteorological stations.

According to monitoring studies carried out in Vlorë, the annual average concentrations of the main air pollutants 2006 were as below.

Figure 8.1 - Table - The annual average concentrations of pollutants in air of Vlorë in 2006

Pollutants	*LNP (road dust)*	*PM10*	*SO_2*	*NO_2*	*Ozone*
Concentration (µg/m³)	*187*	*86*	*16*	*23*	*107*
Albanian limit values (2003)	*140*	*70*	*60*	*60*	*120*
Guideline values of WHO (1987)	*-*	*50*	*50*	*40*	*120*

(Source: Ministry of Environment, Forestry and Water Administration, Environmental Sector and Cross-Cutting Strategy - November 2007.)

According to the data presented in this table, it can conclude that the situation of urban air quality in Vlore has the same tendency as in the other main city of Albania. The main problem of air quality is the pollution from particulate matter which obviously surpasses the national and international standards as in term of LNP, as well as for PM10. The others indicators of air quality are within allowable values settled by National and International standards.

These results should be considered with caution as the measurements are limited in terms of geographical extent and methodology. Finally, it should be noted that the programmes set up with support from the World Bank to improve transports infrastructures in Albania (rehabilitation of the road network, Bypass projects for urban areas) may lead to an improvement in general air quality.

However, emissions are expected to rise with economic development and further actions from the government will be necessary to avoid degradation in air quality (accession to the Convention on Transboundary Air Pollution, incentive tax for cleaner vehicles, implementation of new fuel quality standards and law compliance with European air quality guidelines).

8.1.4. IMPACT ON AIR QUALITY

8.1.4.1. Constructional Impacts

During the construction phase the emission of dust is associated with various activities such as the removal of trees and topsoil, the excavation of earth material and the placement of the same material in embankments and the construction of structures. The emission of dust depends firstly on the weather conditions and on the level of activity and the type of operations being carried out. Also dust is raised by the wheels of the heavy construction vehicles as they pass along the construction site during dry weather conditions.

8.1.4.2. Operational Impacts

General Situation

Pollutants typical for road traffic (COx, NOx, CxHy, fine particulate matter (PM_{10}), heavy metals and dust) generally affect areas adjacent to the current roads. Diesel vehicles, in particular, tend to produce increased levels of particulates that are increasingly identified as a significant threat to health. This is of particular interest in a country where a very high population of old diesel powered vehicles is found.

The areas along the studied alignments are generally open, rural areas, with very few inhabitants and dwellings, except at the Northern end of the project.

Operational Impacts

Present and predicted AADT's (Average Annual Daily Traffic) on the Vlorë Bypass are presented in the table below.

Figure 8.2 - Table - Predicted AADT's on the Vlorë Bypass

Vlorë Bypass	*2014 AADT*	*2034 AADT*
	8 000 veh./day	*12 000 veh./day*

The traffic levels in 2034 are relatively low and are likely to cause low emissions taking also in consideration the improvement in unitary vehicle emissions in the future.

In regard to traffic levels and the open character of areas crossed by the proposal (except in the Southern part of the Project that is far less populated), the Project itself should not lead to any significant increase in pollutant levels. In consequences, the WHO air quality guidelines are likely to be respected.

In order to appreciate the actual air quality in the area and to follow its evolution, some measurements using passive samplers might be done before and some years after the opening.

During operational phase of the project, most of the transit traffic will be deviated outside the center of the town leading to a potential diminution of pollutant emission in the center of Vlorë.

8.1.4.3. Where Impacts Occur

The spatial scope of the air quality assessment will cover the following.

- *During construction, the effects of particulates fallout (including dust) (a) on any property within 100 metres of each discrete works site and (b) on other sensitive receptors within 200 metres of each works site; and*
- *The effects on air quality due to changes in traffic flows during construction or operation at distances up to 100 metres from the relevant road centrelines.*

8.1.4.4. When Impacts Occur

Atmospheric effects will be addressed primarily for the construction phase of the Project (between 2012 and 2014).

Long-term or permanent atmospheric effects would derive from road traffic.

8.1.5. MITIGATION MEASURES FOR AIR QUALITY

8.1.5.1. Mitigation measures during construction

During construction, the most frequently recommended measures with regard to earthworks consist of:

- *The implementation of dust suppression systems: watering of site roads, using retention devices to limit dust emissions (for example: using wheel washes at every storage area, which are maintained daily); and*
- *Limiting the speed of mobile plant on site roads.*

In order to maintain air quality and to avoid causing any nuisance to local residents, it is advisable that soil stabilisation (quicklime, hydraulic binder) should only be performed:

- *during periods of low wind;*
- *in the extraction area; and*
- *in the cut sections among areas where there are not sensitive plantations, in order to naturally contain airborne dust.*

The reduction of construction impacts also includes:

- *potential location of sites required for site installations, storage and soil stabilisation areas; and*
- *transport routes used for materials delivery.*

8.1.5.2. Mitigation measures during operation

No mitigation measures are proposed in regard to the low impact of the Project.

8.1.6. ASSUMPTIONS AND LIMITATIONS

It is assumed that contractor's compliance with its Environmental Management Plan is likely to reduce airborne dust arising under normal weather conditions from construction activities.

8.1.7. CONCLUSIONS, RECOMMENDATIONS AND RESIDUAL IMPACTS

Figure 8.3 - Table - Residual Impacts and Mitigation Measures on Air Quality during Operation

Impacted Theme	*Sources of Impact or Effect*	*Potential Impact or Effect*	*Magnitude*	*Mitigation Measures*
Operational Impact on Air in the city center	*Traffic reduction in city center.*	*Diminution of pollutant emission in the center of Vlorë.*	***minor***	*Positive impact.*
Operational Impact on Air Quality along the Project	*Increase in traffic in area with little traffic in present conditions.*	*The traffic levels in 2034 are relatively low and are likely to cause low emissions taking also in consideration the improvement in unitary vehicle emissions in the future.*	***not significant***	*No mitigation measures.*
Constructional Impact on Air Quality	*Construction traffic and earthworks.*	*Emission of dust associated with various construction activities.*	***moderate to major***	*Dust suppression systems,* *Speed of trucks on and off-sites,* *Appropriate location of storage sites and transport routes.*

8.2. NOISE

8.2.1. INTRODUCTION

This section summarises the scope and methodology for the assessment of effects of noise caused by the construction and operation of the Vlorë Bypass included within the scope of the ESIA.

8.2.2. SOURCES OF INFORMATION

Baseline conditions were established from:

- *Ordinance Survey mapping of scales 1:25 000;*
- *Aerial photographs; and*
- *Field survey.*

8.2.3. METHODOLOGY

8.2.3.1. Establishment of Baseline and Sources of Information

Baseline noise levels have been derived/interpolated using a noise level predictions method based on traffic evolution.

8.2.3.2. Operational Period Noise - Thresholds of significant impacts

Noise threshold for the Vlorë Bypass is 55 dB L_{aeq} during the day. This threshold is defined in the Instruction no.8 of 27.11.2007 for limit values of noise in certain environment from the Minstry of Environment and Forestry, and the Ministry of Health and Water Management. (See appendix 5).

8.2.3.3. Determination of the Impact of the Project

The evaluation of significant effects for residential properties has been determined by considering the number of properties affected (impacted) by the threshold limit 20 years after the opening of the road, i.e. 2034.

Significant effects for non-residential properties have been determined by considering the severity of impacts and the quality and utility of the resources affected. Particularly sensitive buildings e.g. churches, hospitals will merit individual consideration.

8.2.4. EXISTING ENVIRONMENT

The study area crossed by the project is divided into three distinctive type areas: urban, semi-rural and rural

Urban area is present only at the very Northern part of the project. There is no information concerning the existing ambient noise pollution levels in the Vlore area. Noise can be a significant concern in the immediate area surrounding the Project, especially for the first kilometre where houses will be close to the new road. Because this project will connect to the Levan/Vlorë scheme, there is already noise emission coming from the traffic entering Vlorë.

Going south, the project encounters very punctual small residential neighbourhood or individual houses. Finally to the southern end the project will be built in relatively remote areas where no important roads or industrial activities generate considerable amount of noise. They are calm areas where noise levels, even during the day are relatively low.

8.2.5. IMPACTS RELATED TO NOISE

8.2.5.1. Constructional Impacts

A variety of items of plant will be in use, such as excavators, lifting equipment, dumper trucks, compressors and generators. Rock breaking will be required along the scheme and there will be vehicular movements to and from the site that will make use of existing roads.

Due to the nature of the activities undertaken on a large construction site, there is potential for generation of significant levels of noise. The flow of vehicular traffic to and from a construction site is also a potential source of relatively high noise levels.

Due to the fact that the construction programme has been established in outline form only, it is not possible to calculate the actual magnitude of noise emissions to the local environment. However, the impact due to construction activities will be transient in nature, and most of the time will be located in inhabited areas.

8.2.5.2. Operational Impacts

Noise generated by the Project has been assessed using a computer model. The following table shows where the threshold limit of 55dB L_{aeq} will be exceeded in 2034 according to the forecasted traffic using the Vlorë Bypass. (See also appendix 6).

Figure 8.4 - Table - Properties affected by a noise level of 55dB L_{aeq} in 2034

Approximate Kilometric point	Municipalities (Village)	Approximate number of Properties affected
Kp 0+000 to 0+800	Vlorë	35
kp 5+600	Quendër	1
kp 7+000	Quendër	4
kp 9+200	Quendër (Kaninë)	2
kp 10+300	Quendër (Kaninë)	2
kp 10+800	Quendër (Kaninë)	6
kp 11+900	Quendër (Kaninë)	8
kp 12+700	Quendër (Kaninë)	1
	Total :	59

8.2.5.3. Where Impacts Occur

Construction

An assessment of airborne noise due to construction/work site activity has been undertaken within 500m horizontal distance although in practice this will be limited further by having regard to the threshold values in the evaluation criteria.

Operation

An assessment of airborne noise from the road has been assessed up to 300 metres from the road boundary and is limited further by having regard to the threshold values in the evaluation criteria. This distance varied along the route depending on the pre-existing noise climate.

Changes in road traffic noise will generally be limited to 300m and will only address permanent road closures and those routes where there is a significant change in traffic flow that can be directly attributed to the Project.

8.2.5.4. When Impacts Occur

Construction and operational impacts have been assessed for day, evening and night periods, in accordance with the evaluation criteria set out below. The construction stage is assumed to cover the period 2012 to 2014.

The operational noise and vibration assessment will be made for year 20 after the opening of the new service, which represents the highest noise levels expected over the first 20 years of operation i.e. 2034.

8.2.6. MITIGATION MEASURES RELATED TO NOISE

Mitigation Measures during construction

The contract documents will clearly specify that the Contractor undertaking the construction of the works will be obliged to inform residents about the construction programme and work schedule and to take specific noise abatement measures and comply with the recommendations of the European Communities (Directive 200/14/EC relating to the noise emission in the environment by equipment for use outdoors). These measures will ensure that:

- *No plant used on site will be permitted to cause a public nuisance due to noise.*

- *The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations.*
- *All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.*
- *Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.*
- *Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use.*
- *Any plant, such as generators or pumps, that is required to operate before and after legal working hours will be surrounded by an acoustic enclosure or portable screen.*
- *General public and adjoining residents will be informed in advance when works emitting considerable noise will be performed.*

8.2.6.1. Mitigation measures during operation

In order to protect the adjoining properties, noise protections (noise barriers or noise insulation of facades) will be implemented at the following locations (see also mitigation measures maps in appendix 12):

Figure 8.5 - Table - Location of noise protections

Approximate Kilometric point	*Village or Hamlet*	*Type - Number or Quantity*	*Length (m)*	*height (m)*
pk 0+000 to 0+150 North	*Vlorë*	*Noise Barrier - n°1*	*150 m*	*4,00 m*
pk 0+000 to 0+350 South	*Vlorë*	*Noise Barrier - n°2*	*350 m*	*4,00 m*
pk 0+400 to 0+800 South	*Vlorë*	*Noise Barrier - n°3*	*400 m*	*4,00 m*
kp 5+600	*Quendër*	*Noise insulation - 1 u.*	-	-
kp 7+000	*Quendër*	*Noise insulation - 4 u.*	-	-
kp 9+200	*Quendër (Kaninë)*	*Noise insulation - 2 u.*	-	-
kp 10+300	*Quendër (Kaninë)*	*Noise insulation - 2 u.*	-	-
kp 10+300	*Quendër (Kaninë)*	*Noise insulation - 6 u.*	-	-
kp 10+300	*Quendër (Kaninë)*	*Noise insulation - 8 u.*	-	-
kp 10+300	*Quendër (Kaninë)*	*Noise insulation - 1 u.*	-	-

8.2.7. ASSUMPTIONS AND LIMITATIONS

8.2.7.1. Construction

The construction noise and vibration assessment has been based on the following assumptions:

- *Construction activities will be carried out according to the methods and programmes assumed by the Project engineers. This includes assumptions concerning work which has to be carried out during the night and weekends.*
- *Measures to reduce or mitigate the effects of noise and vibration will be carried out where reasonably practicable and cost effective.*

- *The uses of buildings shown on the Ordnance Survey Maps or Aerial Photos will be taken from land use surveys and on site surveys.*
- *The construction noise assessment shall have regard to existing structures (which may act as noise barriers) and local topography as relevant.*

8.2.7.2. Operation

The operational noise assessment will be based on the following assumptions:

- *Traffic figures to be used will be those forecast in the Vlorë Bypass Traffic and Economic Study of March 2011;*
- *Traffic speeds will be the ones used for the purpose of designing the road.*

8.2.8. CONCLUSIONS, RECOMMENDATIONS AND RESIDUAL IMPACTS

During the construction phase of the Project there will be some impact on nearby residential and business properties due to noise emissions from site traffic and other activities. The application of binding noise limits and hours of operation, along with implementation of appropriate noise control measures, will ensure that noise impact is kept to a minimum.

Figure 8.6 - Table - Impacts and Mitigation Measures related to Noise during construction

Impacted Theme	*Sources of Impact or Effect*	*Potential Impact or Effect*	*Magnitude*	*Mitigation Measures*
Constructional Impact on Noise.	*Construction traffics, plants, compressors,* *Pilling operation.*	*Construction sites activities may locally cause disturbance due to excessive noise.*	***minor to locally moderate***	*The contract documents will clearly specify that the Contractor undertaking the construction of the works will be obliged to take specific noise abatement measures, comply with the recommendations of the European Community and inform the public.*

Figure 8.7 - Table - Residual Impacts and Mitigation Measures related to Noise during operation

Impacted Theme	*Sources of Impact or Effect*	*Potential Impact or Effect*	*Magnitude*	*Mitigation Measures*
Operational Impact on Noise.	*Increase in traffic. Improvement of the carriageway surfaces.*	*The traffic levels in 2034 will generate a noise Level of 55 dB L_{aeq} and more at several communities and/or dwellings along the Project.*	***moderate***	*Noise barriers and noise insulation of facades will be implemented to reduce the predicted noise level.*

8.3. LOCAL COMMUNITY AND SOCIO-ECONOMICS

8.3.1. INTRODUCTION

This section describes the scope and methodology adopted for the assessment of potential impacts on local communities and on Socio-Economics. It focuses on changes to the provision of, and access to, community facilities. These are defined as facilities contributing to the quality of life in the community. They include schools, hospitals, churches, key shops and services, open space, and the accessibility of these facilities to the local population.

8.3.2. SOURCES OF INFORMATION

Baseline data on receptors and resources have been collected for each area within the Study area.

Baseline conditions are assumed to be those prevailing at the commencement of construction. For the purpose of establishing the baseline, the assessment will not attempt to predict social change or to assume changes in the pattern of use of facilities over time.

The following sources were used:

- *Land use survey information;*
- *Local, structure and unitary development plans;*
- *Local/regional community related strategies/policies;*
- *Field inspection and questionnaires (see appendices 7 & 8);*
- *Interviews with users and operators of facilities (where appropriate); and*
- *Directories of local services and businesses.*

The general baseline information gathered consists of:

- *Number of the population and its dynamic;*
- *Residence structure according to the zone (rural/urban) and the dynamic's structure;*
- *Population density;*
- *Natural increase of the population;*
- *Migration/emigration and their consequences;*
- *Social morphology, ethnic groups;*
- *Education status;*
- *Health care status;*
- *Basic economical activities;*
- *Employment and income distribution;*
- *Relevant regional planning and economic development strategies / guidance documents; and*
- *Relevant local authority approved / deposit review development plans documents;*

8.3.3. METHODOLOGY

The socio-economic and community impacts of the proposed Vlorë Bypass were assessed at a regional, sub-regional, and local level. Particular attention was given to:

- *Assessing the impact of the proposed road network on the journeys which people make. Such impacts can include changes in journey lengths and travel patterns as well as changes in amenity. In this context, amenity is defined as the relative pleasantness of a journey.*

- *Evaluating the impact of the proposed road network with regard to community severance. Essentially community severance is the separation of residents from facilities and services they use within their community caused by new or improved roads or by changes in traffic flows.*
- *Beneficial effects result when existing severance is relieved, as for example when a road Project diverts traffic and makes an existing road easier for people to cross.*
- *Adverse effects can occur when a new road forms a barrier deterring people from using certain facilities, or when traffic flow increase sharply on an existing road.*
- *Assessing the impact of the proposals on community facilities, with particular emphasis being given to the effects on schools and recreational facilities.*
- *Addressing in general terms the impacts for businesses and for land losses along study area.*

Locations of main land uses are presented on baseline environment maps in appendix 11.

8.3.4. EXISTING ENVIRONMENT

8.3.4.1. Socio-Economical Context of the Municipality of Vlorë

Demographics

The city of Vlorë, with a population of approximately 120,000 inhabitants, is a district capital and Albania's second largest seaport.

There are seven small towns in the District of Vlorë: Nartë, Panaja, Trevllazëri, Varibopi: I.lakatundi, Peshkëpia, and Drashovicë. Nartë is a small farming and fishing town located south of the Narta Lagoon that is rapidly becoming a popular suburb of Vlorë. Varibopi, Lkatundi and Peshkëpia are all agricultural towns located in northeast, central, and eastern portions of the Vlorë District, respectively. Drashovica is an agricultural town built along the western bank of the Shushice River and the National Road to Gjirokastër and Greece.

In addition to the towns listed above, there are approximately 100 small villages or communes recognized in the Vlorë District. The villages in the Vlorë District are mainly concentrated along the National Road and along the base of the hills in the Vjose and the Shushices river valleys. Due to poverty and relatively high rates of unemployment (12,1 % in 2008, Labour Force Survey), most of the young people in these communes, often with their families, have migrated to urban areas within Albania or have emigrated abroad. Almost 90 percent of the families in Vlorë have at least one member who has emigrated. Most emigrants go to Italy and Greece.

Economy

Agriculture is the main economic activity in the rural areas of the Vlorë District. Olives, grapes, and citrus fruits are grown throughout the area, especially near the coast. Grains, vegetables, and forage crops are grown along the river valleys, and sheep, goats and cattle are grazed throughout the rural communes. Livestock production accounts for about 36 percent of the country's annual agricultural production. In addition, Vlorë is also the main fishing port in Albania.

Service industries, including construction, transportation, and telecommunication services are also an important component of Vlorë's economy. State and public sector enterprises include essential services such as road maintenance, water and electricity distribution, railroad and port facilities, public transportation and oil by-product distribution. Transportation of goods and passengers is an expanding national sector, particularly in the Vlorë District. Two private firms, Grabove and Dukat Transport, are based in Vlorë.

Construction is also a very active sector throughout the area. A large construction firm, SIAC Construction, is based in Vlorë. This is a joint venture with the Albanian government and an Italian

firm. Fourteen other private construction firms operate in Vlorë. Housing construction is particularly active in Babica, Peshkepia and Armen.

Rock quarrying and mining takes place in river valleys throughout the Vlorë area. Bitumen has been mined in the Vjose River valley and near the town of Selenice for many years. Production has recently stalled due to a lack of basic equipment and supplies, but reserves are estimated to be sufficient for several decades. The bitumen deposits are used for road paving and the manufacturing of roof shingles.

Sand and gravel extraction is common along the major river channels, especially near the larger cities. The most prominent sites are at Drashovice on the Shushices River and east of Mifol on the Vjose River. The limestone quarry near Drashovice is operating on a limited basis. The extensive gravel extraction and washing operation near Mifol was formerly state-owned, but is now privately controlled. The washed gravel is used as an aggregate material in concrete and as fill material for construction projects.

Lime and rock quarrying takes place at a location south of Kaninë. This operation is connected to the cement plant on the southeast side of Vlorë via a 3.75 km overhead tramway, however the cement plant is not currently operating.

As discussed above, salt is produced on the north side of the Nartë Lagoon at the Skrofotina Salt Works. Most of the salt produced is used in industrial processes or is exported for use as a de-icing agent on roadways.

Several manufacturing plants used to operate in the Vlorë area, however most have shut down over recent years. Engineering facilities were designed to produce spare parts and assist the country in eliminating imports, however none of them are currently operating. Light industrial facilities included textile plants, shoe factories, and bicycle assembly plants. Leather goods were also formerly manufactured at the Vlorë industrial area.

Food processing is done on a limited basis on Vlorë, though it used to be much more prevalent. Fish and frogs are currently exported to Italy and snails are exported to France. Seafood processing takes place in Novosela. Other food processing in the area includes two breweries (including non-alcoholic production) and milk processing, as well as three vegetable oil plants in the Qendër Commune (Panaja, Bestrova and Babice). Dairies and a slaughterhouse operate in the Shushice Commune. Two smaller mills operate in Lubonje and Armen (Shushice Commune).

Employment

There are actually 8,409 enterprises in the region. 7,748 enterprises have 1-4 employees, 356 have 5-9, 270 have 10-49 and 35 enterprises have more than 50 employees. Most of employees are employed in production enterprises, trade and services.

In the region of Vlorë most of enterprises, 69%, are located in the district of Vlorë, meanwhile 26% in Saranda and 5% in Delvina, which remains a remote district. The sectoral regional distribution is similar to other regions: Enterprises in production of services occupy 40% of enterprises; commerce enterprises 20%; 10% of enterprises operate in production of goods, 9% in hotels, bars and restaurants, 5% in industry, 6% in other services and 5% in transport and communication. Agricultural and construction enterprises consist of 2% and 3 % of region's enterprises. The sectoral districts' distribution evidences the domination of enterprises in production of services, which occupy respectively 40% of enterprises in Vlorë, 39 in Saranda and 37 in Delvina. Commercial enterprises consist of respectively 20% in Vlorë, 19% in Saranda and 23 in Delvina. Enterprises in production of goods occupy respectively 10%, 115 and 13%; hotels, bars and restaurants 8%, 10% and 6%; industrial enterprises 5%. 5% and 8%; other services 6%, 6% and 3%; transport and communication enterprises 6%, 4% and 4%.

Roads

Less than 25 percent of Albania's 18,500 km road network is paved and most roads are in poor condition requiring major rehabilitation. Because Vlorë is an important transportation and shipping

hub for southern Albania, it is linked to the country's other major cities via paved highways. However, the district of Vlorë's own transportation infrastructure is generally in poor condition and is not adequate for existing volumes of traffic, especially in remote areas. The poor condition of the roads is attributed to the fairly rugged topography, lack of maintenance funds, and increased traffic loads. Recent easing of border restrictions has lead to increased vehicle traffic throughout the country.

The government of Albania indicates that there are 18.8 km of asphalt highway (National Road) in the Vlorë area. In addition, there are 42.5 km of other paved roads, 70.3 km of improved gravel roads, 30.7 km of seasonal roads, and 111.7 km of pedestrian roads. Roads are considered adequate along the coastal plain near Vlorë and near the larger communities, but roads in more remote areas are in poor condition. In wet weather some of the smaller roads can be treacherous, and dust is often a problem during the summer dry season.

A number of existing roads are being rehabilitated and some new roads are being constructed. In particular, the road from Xhyherina to Beshishti (Shushice Commune) is being reconstructed and the World Bank is funding the construction of a new 11 km rural road from Novosela to Grykapishe (Novesela Commune). Additionally, a road to Trevllazeri (about 7 km) is reportedly being constructed by the Albanian Development Fund.

Port Facilities

Vlorë is Albania's second largest port after Durrës. The country's other principal port facilities are located in Saranda and Shëngjin. The port of Vlorë is used primarily for industrial purposes, though some passenger transport (via ferries) occurs as well. Ferries from Vlorë serve Brindisi and Otranto (Italy) and Patra (Greece). Freight shipping in Albania was generally stagnant throughout the 1980's due to the decline of oil and oil product exports. However, available figures indicate that freight traffic is once again growing as importing of food and oil becomes more prevalent. Albania's Institute of Statistics (INSTAT) reports that during the first quarter of 2001, the Port of Vlorë processed approximately 95,400 tons of freight, which amounts to about 15 percent of the country's total sea traffic. The Port of Durrës processed about 70 percent of the country's total sea traffic, or approximately 432,000 tons, during the same time frame.

In the northern portion of the Bay of Vlorë, adjacent to the Site, there is an offshore oil tanker terminal that connects to oil and fuels storage facilities situated near the town of Nartë. The existing tanker terminal is located 3.4 km from shore and is connected via two parallel pipelines, 300 mm and 250 mm in diameter.

Communications

Mail services are offered only in the major towns and commune centres within the Vlorë area. Major newspapers are regularly delivered to Vlorë and the larger towns in the area. Some magazines are also available in towns along the major roads, but rarely in the centre of the communes. Bookstores in Vlorë and the larger towns supply magazines and other reading materials.

The Vlorë area currently has access to television stations in Tirana, two local television stations, and several Italian stations. A private company, Trio Cable Television, is reportedly introducing a 20-channel cable system, but this is not available yet. Approximately 93 percent of families in the Shushice Commune have television, 37 percent of which have satellite dishes. Similar conditions exist in the Armen and Vllaine communes. Nearly all of the families in the Qendër Commune have television.

The telephone service in Vlorë is fairly reliable. There is a large public phone facility in the post office in Vlorë and three smaller post office phone centres in outlying towns. New telephone lines are being installed to expand the capacity of the system. The post office phone centres function as self-financed entities with some measures of independent control.

Telephone service is available at the post office in the Shushice Commune, but no telephone lines serve the village. The situation is improved in Qendër Commune, where telephone service is available in Babice, Sherishta and Nartë. Two telephone lines serve Novosela, but the villages in the

commune do not have service. Similar situations exist in the Armen and rural villages are connected using wireless phone systems. Wireless telephone antennae are commonly seen on houses and apartment buildings in these villages.

Four Mobile Companies are operating in the Albanian market starting with the Albanian Mobile Communication (AMC) Company that was established in late 1995 to help develop wireless communication systems.

Water Supply and Water Resources

Vlorë's municipal water system is primarily of water wells, springs, reservoirs, and distribution lines. There are no water treatment facilities. Water is supplied to families in the city of Vlorë two to three times daily during set hours. Water is supplied by a spring at Uji I Ftohte and is stored at reservoirs at Kuz-Baba before it is distributed to consumers.

Outlying towns and villages have their own water supply and distribution systems. The water supply in the Shushice Commune includes a drinking water reservoir near Rrapi I Pashait and a water well that supplies the village of Risili. Many villages in the commune are supplied with water from local springs or from water transported to the villages by pack animals. New water well is being completed at Tetshet.

Kaninë in the Qendër Commune is supplied with water from a water pumping station in the village. Babica is supplied from Vlorë, but often no water is available. Panaja, Nafte, Zverneci, Bestrova and Kerkova are supplied from a water station at Novosela, which occasionally malfunctions. Conflicts between the commune and the local government of Vlorë often arise over delays in supplying the commune drinking and irrigation water. Lack of available water has occasionally forced residents to purchase drinking water for approximately 200 Leks per 30 litres.

Water is supplied to half of the villages in the Novosela Commune from the central pumping station at Novosela. The other villages are supplied from local sources. Often the water in these local wells is salty and may contain harmful chemical substances. The water supply in the commune is under study by the World Bank.

A pump, presumably from a groundwater source, supplies water to communities in the Armen Commune. No information is available concerning water supplies to the Vllaine Commune.

Sewage Treatment and Solid Waste Disposal

The sewage treatment plant is under development as well as the rehabilitation and upgrading of the sewerage network. There are no solid waste disposal facilities in Vlorë. Actually the city of Vlorë discharges sewage directly into the Bay of Vlorë near the location of the abandoned soda chemical plant. Outlying towns and villages dispose of sewage and solid waste directly into rivers and streams. Sewer lines are typically old and poorly maintained. Much of the solid waste in Vlorë is dumped along the roadway leading to Zverneci. There are no provisions for the disposal of hazardous wastes.

Education

Most of the labour force in the Vlorë District has completed secondary schooling. The schools include 19 elementary schools, three general high schools, one trade high school, one industrial high school and one artistic high school. Vlorë has one University, the Polytechnic University, which offers undergraduate degrees in business, tourism, engineering, teaching (elementary school level), English, and Italian. Vlorë also has two higher education institutions, the School of Aviation and the Marine Academy.

Health Care

Vlorë is served by a large hospital in the suburbs and one central ambulance building. In addition, each zone of the city has its own small ambulance building. A psychiatric hospital and a dystrophic

hospital (for children with delayed mental development) are also found in the suburbs. Vlorë has two orphanages: one for preschool-aged children (six years old and younger) and one for children older than six years.

8.3.4.2. Socio-Economical Context of the Municipality of Orikum

General Information

Orikum Municipality is part of Vlorë District and is located 5 km away from the city of Vlorë. Orikum is bordered by the Municipality of Vlorë in the South and by the Municipality of Himara in the North. The border lines of this area are defined by the western inclination of Çika Mountain, the borders of the National Park of Llogara, the Boundary of the Channel, the Valley of Dukat, the Peninsula of Karaburun and the Island of Sazan.

After the Second World War, modern Orikum was founded in the vicinity of the ancient city. The population settlement started in 1949 and in 1961 Orikum was proclaimed a city which outgrew its size especially after the construction of terraces in Jonufer. As an administrative unit, Orikum is made up of five villages: Radhimë, Tragjas, New Dukat and Old Dukat.

The old city of Orikum lies on the base of Karaburun Peninsula in the south-western coast of the Bay which holds the same denomination. The ancient author, Apollonius of Rhodes, connects the foundation of the city with Eubeans and their return in the city of Troy. The historian Livius mentions the important role played by the city in the battles of Romans against the Macedonian King, Philip V, as well as in the battles of Caesar against Pompey in Orikum, battles which are included by historians in Caesar's Civil Wars Records.

The historical data, the archaeological findings and 19 cultural monuments highlight the fact that Orikum has been one of the most developed and civilised regions in the Southern Albania. This is confirmed by the findings at seven old cities which are rich in artefacts, ancient arenas, cult objects, monumental graves etc.

Demographics

Besides the city of Orikum, the Municipality of Orikum includes the villages of Radhimë, Tragjas, New Dukat and Old Dukat. The total population of Orikum Municipality is 11 381 inhabitants. The city of Orikum where 38% of the overall municipal population has settled is the community. In general, the area of Dukat is characterized by new settlements of population in the course of these last years with the largest number of population compared to other villages of the Municipality. New Dukat is the largest village in terms of population. The smallest village in terms of population is Radhimë with 954 inhabitants. As all over the region, immigration in the administration of Orikum has resulted in a mechanical movement of the population in this area.

Education

In the Municipality of Orikum, there are six schools out of which four are ninth-grade schools; one is a four grade school including the preschool education and finally a general secondary school.

The total number of students who finished the school year 2008-2009 at the ninth-grade education reaches 919 students, out of which 404 students finished the elementary education and 515 finished the primary education.

In contrast to other areas in the country, school attainment rate is 100% and the phenomenon of school drop-out is not a serious problem.

In both secondary schools, the total number of students who finished the school year is 408 with a school rate attainment of 84% and with a quality of 6.85%. The pre-school education is covered by 5 kindergartens which are in a good condition but which need more equipments and the necessary basis for providing a better quality of teaching. All villages have their own kindergartens.

The survey on inhabitants' perception of education which was conducted in spring 2009 pointed out that 49% of inhabitants are satisfied with the existing situation of schools and kindergartens, 24 % are unsatisfied and 8% of interviewees are extremely unsatisfied.

Culture and Entertainment

There is no cultural centre in the municipality of Orikum. The survey conducted with the inhabitants of the municipality pointed out that 44% of the interviewees are unsatisfied with the artistic and cultural programs provided by the municipality. Whereas in terms of services for the young, 42% of the inhabitants are unsatisfied and 36% are extremely unsatisfied.

Currently it might be said that the cultural life is relatively poor. However there are two folk groups: The Group of Dukati and the Group of Tragjas.

Health Services

In the municipality, there is a health centre with six different halls including the consultation clinic, the injection hall and the lab. Although this centre was reconstructed in 2007, still improvements are needed as the centre is located in a tourist area which hosts local and international tourist. The health services are provided by a staff of 25 medical employees.

Each village has its own outpatient clinic but they are in bad conditions and need to be reconstructed. According to the findings of the survey displayed in the chart below, 48% of the inhabitants confirm being satisfied or very satisfied with the services provided , whereas 49% claim being unsatisfied or extremely unsatisfied.

Social Assistance

The number of disabled persons is too high in the Municipality of Orikum. There are 95 disabled persons, 53 labour invalids and 20 blind persons. There are only 7 families which receive economic assistance. The third age is becoming a social concern given the large number of emigration. The survey conducted on the services provided to this group age pointed out that 73% of the inhabitants are unsatisfied or not satisfied at all with the services provided for the seniors.

Quality of Life

A survey conducted on the quality of living bears out that 70% of the interviewees assert that their living conditions are somewhat improved these last three years. This high rate of positive perception is explained by the fact that these last years public investments are carried out in the Municipality which in return have resulted in better living conditions for the inhabitants. Among these investments it is worth mentioning the construction and illumination of the city's main boulevard, the construction of the city ring road which has facilitated the circulation of vehicles, the upgrading of schools and water supply system. However, more needs to be done in terms of potable water supply and clean up and waste collection services.

Economy

Orikum is a region of high tourist potentials and tourism is one of the most significant sectors in economy which provides the main incomes to the inhabitants. Given the upland terrain, animal farming plays an important role in the local economy but the sector of agriculture remains the main economic activity given the favourable background for the development of such activity. There is a multiplicity of small business entities in the region of Orikum. These small business entities reach the number of 280, including 40 entities which are considered as big businesses. The majority of these business enterprises are located in Orikum, Radhimë and Dukat. Referring to the profile of these big businesses it might be said that they are mainly construction companies, hotels, coffee shops and restaurants.

Agriculture

The largest part of the arable land consists in the field of Fushe-Dukat, Tragjas and Orikum which are formed from the sediments of Dukati River. The field of Tragjas and some land plots of Orikum are classified as fertile arable lands which are suitable for various agricultural crops.

The area is characterized by the cultivation of viticulture, horticulture and agriculture whose production follows an increasing trend. In contrast to other regions in the country where the cultivation of cereals takes a substantial part in the agricultural production, in the municipality of Orikum, the main place in the agricultural production is taken by viticulture.

Stock farming

For times in memorial, animal husbandry has been the most important economic activity, especially the sheep and goat raising. As a developing sector, animal farming plays an important role in the Municipality of Orikum. A considerable number of persons are employed in this sector. Due to the favourable geographical position, the lowland and upland relief the number of livestock has increased these last years. Some of the problems encountered in this sector concern the improvements in sheep breeds, the improvement in the structures of feeding and the creation of suitable hygiene and sanitary conditions. Orikum enjoys a good reputation for the quality of the milk.

Tourism

There are great chances that tourism will become the main sector in the region of Orikum in the years to come contributing in this way in the economic growth and prosperity of the local population. The main tourist attraction is the coastal area of Radhimë-Orikum for the quality of beaches and the beauty of the landscape it offers. In the recent years, alongside its coastal length, there are constructed about 45 hotels, 13 bars, 10 tent shops, 6 touristic villages (with 10-20 wooden rooms) and 192 dwelling houses which vary from one-storey to four-storey houses. Another touristic attraction is the National Park of Llogara which is located in the area of Shata. This area runs along the national road and is renowned for its healthy climate.

The National Park of Karaburun: This coastal region is spread over 120 km of area, 60 km out of which belong to the Municipality of Orikum.

Fishery and Aquaculture

Fish farming in this zone is mostly concentrated in the lagoon of Orikum. There are four main fish varieties in the lagoon: Sparus aurata, Mugil cephalus, Anguilla anguilla and Dicentrarchus labrax. The bivalve molluscs in the lagoon are very important both in the economic and ecologic aspect. Rudipates decussatus and Venerupis aurea are the two main clam varieties in the area. They grow at the edges of the channel which links the lagoon to the sea, under sub layers of gravel. The total annual production of molluscs is 100 quintals.

In addition to fish the lagoon produces 15-20 quintals of molluscs per year which are very demanded at the market owing to their high quality.

Telecommunications & Information Technology

All the villages in the municipality of Orikum have access to mobile coverage network as everywhere else in Albania (Vodafone, AMC and Eagle Mobile). In terms of landline phone, Albtelecom operator covers only the area of Orikum, whereas Oritel which is a private operator covers the villages of Dukat-Fushe and Dukat. Albtelecom provides also the internet service that is to say only the city of Orikum can benefit from such a service. In addition, the city of Orikum is provided with the mail service (post office) which serves for the whole territory of the Municipality.

Road System

According to a survey conducted on the condition of the road network in spring 2009, 42% of the interviewed inhabitants assert being unsatisfied, whereas 27% report that the road system in their area is less problematic than in the other regions of the country. All villages have access to the national road via automobile roadways. Anyhow the need for road upgrading is present considering the fact that Orikum is a touristic area.

Provision of Drinking Water

In spite of the vast water potentials, all the water supply systems cannot guarantee the 24 hour provision with drinking water for the inhabitants

The water supply schemes in spite of the fact that many of them are gravity water supply schemes continue to be managed ineffectively and inefficiently.

In general the quality of the water is good and there is no need for treatment. The water chlorination treatment is done only for the main water supply schemes.

Provision of Sewer and Drain Systems

In the city of Orikum there is constructed a sewer system which is incapable of covering the whole city area (only 60% of the city is provided with this facility). These sewer mains are discharged into a big interceptor and transported to the Hydrovor of Vallto in Orikum to be finally disposed into the sea. Some villages have no sewer systems at all. The inhabitants use the septic tanks which are another concern for the community regarding the pollution of the environment. The survey conducted with the inhabitants on this issue points out that 56% of the interviewees are either unsatisfied or extremely unsatisfied with sewer systems..

8.3.4.3. Socio-Economical Context of the Municipality of Qendër

General Information

Qendër Commune was established in 1992 following the local elections of that same year.

Before these elections, the territory of the villages, which constitute Qendër Commune, were organized at that time under the Olive Farming Enterprise under the jurisdiction of Nartë-Panaja, Kaninë, Drashovicë and Sherishtë Farming Cooperatives, which also constitute the basis of the present-day administrative organization.

Qendër Commune is located in Vlorë Bay and its territory partially surrounds Vlorë city, thus creating its eastern crown. A part of the Commune territory is located along the Adriatic coast. The Commune consist of 11 villages by including also areas of natural and cultural importance such as Kaninë, Nartë, Panaja, Zvernec and other villages such as Babicë e Madhe, Babicë e Vogël, Bestrovë, Kërkovë, Oshtimë and Xhyherinë. Qendër Commune has a population of about 18,000 inhabitants and a surface of about 12,000 hectares and coastline along the Adriatic Sea of approximately 10.5 km.

A number of monuments of historical importance including Kaninë Castle, the village where Ismail Qemali, the founder of the first Albania state and the declarer of Albanian's independence in 1912, may be found in the Commune territory. Nartë lagoon, with a water surface of about 42 km2, with a unique biodiversity and a medieval age monastery, which is located on a small island in the middle of the lagoon is another important natural resource.

About 200 businesses, 36 of which are classified as large businesses, 144 as small businesses and the remaining part including individual vendor services actively operate in the Commune territory. Development of family tourism in new houses, which enable provision of bed & breakfast service, has already started in villages such as Zvërnec and Nartë, while there is additionally a number of bars and restaurants.

Demographics

A number of Qendër Commune villages are recognized as ancient settlements. Kaninë is recognized as a settlement since the last millennium B.C., while archaeological researches indicate that it was a fortified castle since the IV century B.C.

Qendër Commune is one of the largest in the country. It has a population of 18,200 inhabitants living in 11 villages arranged as indicated in the table hereunder provided.

Nartë, Babica e Madhe and Kaninë are the largest villages, in which approximately 55% of the population is concentrated.

Over the last 18 years, the population has increased by an annual average of 5.5% per year versus the total increase, which is more dedicated to migration and less to the population natural growth. Based on this growth rate, the commune population in 2020 is expected to be about 21, 000 (twenty one thousand) inhabitants.

Emigration rate from the commune is assessed to be about 37 %, which is a considerable figure consisting mostly of emigrants who have emigrated to Italy and Greece and who play an important role in the economy of households by means of their remittances.

Tourism

The tourism aspect of the commune is followed by a summary of the economic profile in general and by other aspects. Qendër Commune, as an integral part of Vlorë Bay area, has a diversity of natural, cultural and historical assets and very favourable conditions for tourism development. The geographic location, considerably long coastline with attractive beaches, the special landscape of Nartë lagoon, Zvernec forests, historical monuments of antiquity are still pristine and thy actually constitute the major potential for tourism development.

Economy

Qendër Commune is generally a rural area with important resources for agriculture, fruit farming and stock farming. The place has an agrarian economic structure, therefore it displays all challenges that development of this sector contains in Vlorë Region and, additionally, across the whole country.

Agriculture

Qendër Commune has around 5270 hectares of farming land, 80% of which are not under irrigation, while 20% are under irrigation that is provided by sing the rivers and six reservoirs that were built before ’90. The rest of the land includes 295 hectares of forests and 2702 hectares of pastures, which constitute an important development resource.

Fruit farming and specifically olives comprises the main resource, on which farming activities are actually based. The Commune has about 134 000 olive trees, 120 000 of which are actually cultivated and produce fruits in a surface of 1573 hectares out of the total of 1928 hectares that fruit farming generally occupies. Although the sector suffers the consequences of a fragmented organization, olives and oil generated from them keeps increasing and this is as an important factor for the economy of farming households.

Stock Farming

The Commune has experienced a permanent increase of stock farming products and resources including specifically the permanent increase of the number of sheep and cows in addition to their products. Based on the 2008 data of the Commune, the stock farming activity generated about 347 tons of meat or about 19 kg meat/capita and about 42 litters of milk/capita.

Other Economic Activities

A considerable number of other economic activities, which are practically concentrated in low areas and along the national road connecting Vlorë with Tirana, are carried out at present in the territory of the commune.

According to 2008 data, approximately 200 businesses, 140 of which are registered as physical persons, 36 as juristic persons and a part of them as day vendors, carry out their activity in the commune. These are mostly small businesses including commercial services, while the most significant ones include a number of olive oil-making units, liquor-making units and fish farming making units.

Urban Planning

The Commune does not actually have updated urban plans to regulate development and to efficiently manage the land. Although urban planning and land management are local government functions as of January 2001, not much has been accomplished since then in terms of carrying out development based on modern urban planning and, therefore, minimization of informal buildings in areas of interest for tourism and farming development.

A large number of informal residential and industrial buildings have been placed on both sides of the national road. In addition, informal buildings have also been built in the areas with tourism development potential including Nartë, Zvernec and Kaninë. The other villages, the most typical of which is Babica, suffer from discrepancy of the development dynamics with the old building borders (villages yellow line), which were defined before ’90 under the conditions of the centralized economy and state ownership on land. The Commune will immediately start the procedures of drafting a general Regulating Plan.

This plan will have to initially demarcate the yellow line (the area boundaries legally authorized for building) of the villages and of the areas, which have building of tourism installations and urban planning conditions (including resorts, tourist complexes and infrastructure) as their priority and, especially, of those with tourism development potential.

The Commune inherits a road network of about 73 km, 64% of which are not asphalted. Development of road infrastructure is in focus and it constitutes priority number one for the Commune in addition to the improvement of other infrastructures. The 2007-2009 investments plan includes a projection of 67.073 million Albanian Leks or, 59% of the total plan of investments for this 3-year period for roads reconstruction.

Recent investments of the Commune included the completion of the reconstruction of the local main road, which is about 17 km long, from the Commune centre up to the border with Novosele Commune. This road connects the centre with the villages of Nartë and Zvernec, while it turns all beaches and Nartë lagoon into operational and utilizable.

The construction of the Fier to Vlorë motorway and the Vlorë Bypass in addition to the construction of these local roads will increase the opportunities of local tourism resources, and will increase the local incomes from the tourism in the seacoast and Nartë lagoon by offering more benefits for the Commune as well.

Water Supply

The water and sewer system is also another important challenge and, at the same time, a priority of the Commune. The existing infrastructure conditions and the service remain at insufficient levels. Only Nartë village is actually supplied by Vlorë water supply system with a 24 hours water supply per day, whilst the rest manages to have only an average water supply of 1 to 2 hours per day. In addition, villages of Kaninë and Zvërnec receive water supply from Vlorë supply system, but the supplied amount is provided only for less than 1 to 2 hours per day.

The sewer system at commune level is dominated by septic tanks. A number of 450 families out of 1300 of Babicë e Madhe village are connected to the sewer system. In addition, 450 families in

Babicë e Vogël village are also connected to the sewer system. In Bestrovë the number of families connected to the sewer system is roughly 50. The rest of all other villages of the Commune have solved this problem only through the so-called septic tanks, which are nothing more in themselves than common holes without any kind of technology to treat sewerage apart from their natural infiltration.

The Commune has projected in the frame of local investment plan to invest in this sector about 17.5 million Albanian Leks from its own revenues and various grants, whereas in the case of building the systems in Kaninë and Babicë e Madhe, this plan has not included the respective amounts of 22 million Albanian Leks and 44 million Albanian Leks.

Power Supply

Almost all households and businesses get the power supply from the 400 kv grid. The supply is of average quality down to poor quality due to the low voltage essentially in the peripheral villages and in the peripheral areas inside the villages themselves. Service continuation is practically affected by the supply schedule of the Distribution System operator.

Waste Collection and Disposal

Qendër Commune commits an annual budget of about 2.0 million Albanian Leks (2008) for the solid waste collection and disposal of about 3350 tons of solid waste per year and for the cleaning of about 50 000 m2 of roads and squares in the villages. The Commune pays upon a special contract for the cleaning of the beaches and of the areas around once a year at the beginning of tourist season.

Reorganization of this service and, especially, in tourist areas and Commune beaches takes up a special place in the Commune objectives. Increasing of the number of collection sites, introduction of dumpsters into use, rising of inhabitants' awareness, application of the service fee and increasing of the cleaning frequency for the beaches and the areas around other tourism facilities is deemed a priority in terms of achieving a reasonable level of these services.

Telecommunication and Information Technology

SABATEL provides telephone service to the Commune through a fixed telephone line network and this network covers the villages of Panaja, Hoshtimë, Nartë, Babicë e Madhe, Babicë e Vogël, Kaninë, Sherishtë with a total number of 1200 subscribers. The cellular telephone network covers the entire territory of the Commune. All villages of the Commune are covered by the postal service provided by the state run company "Posta S.A.".

Education

The Commune has actually 10 operational 9-year schools with 1156 kids attending and 92 teachers teaching. The Commune has 10 kindergartens for kids, 8 of which are incorporated in the school buildings, while 2 of them are in separate buildings. The kindergartens ate attended by 275 kids

Healthcare Service

The healthcare service within the administrative borders of the commune is provided by 2 health clinics located in Nartë and Sherishtë and by 10 ambulatory patient clinics, which include 12 units of advice service for women. The Commune population receives the healthcare service from a team consisting of 7 physicians and 23 nurses. Meanwhile, the Commune inhabitants receive a part of services and, especially, the hospital service mostly in Vlorë City.

8.3.5. IMPACTS ON LOCAL COMMUNITY AND SOCIO-ECONOMICS

The impact can be both negative and positive.

The most important likely negative impacts are:

- *The new road will bring unplanned urban developments and illegal constructions to yet undeveloped agricultural, pasture or woodlands;*
- *In some areas, the new road will be a barrier for the movement of cattle and sheep;*
- *During the construction phase the electric power and water supply may be impaired;*
- *During the construction, the irrigation ditches and the drainage channels will be temporarily affected.*

The main likely positive impacts are:

- *The new road will create a better connection within the region and the country, bypassing the congested centre of Vlorë;*
- *The new road will improve the access to the villages of Kaninë and Radhimë;*
- *The new road will be beneficial for the expansion of Vlorë and its touristic infrastructures.*

The local communities will benefit from the following positive impacts:

8.3.5.1. Population

There is a significant population and activity in the study area. The new road will provide a better connection between the smaller settlements, and also between them and Vlorë and wider Albania, to the extent that the road could lead to improved economic conditions, not only for the residents alongside the existing road, but also for all the traffic in Vlorë city.

8.3.5.2. Public Health

There is one hospital situated in the city of Vlorë. There are also some public clinics along the existing road section. The new road will increase the speed and therefore provide a faster access for the people to these services. Provision of the new road will also reduce the traffic on the existing road, achieving the same purpose. In these conditions less air pollution will be produced by the same quantity of traffic. Since the new road avoids the settlements, this is another positive aspect for reducing air pollution within the inhabited areas.

8.3.5.3. Public Services

The improvement of traffic flow along the existing road is expected to have a slight impact on public services. These will include hospitals, clinics, schools, municipal buildings, other public service facilities and Vlorë Port. Travel times to the public services may be shorter and employment with them may be more attractive, but the effect is expected to be small. On the other hand, the improvement of the existing road in the area where traffic is really a big problem could have a major direct impact. Access to public services will be far better.

The operation of the road can be expected to have a significant beneficial effect on the economy of the area through increased access to markets, enhanced agricultural production and secondary processing of materials, increased tourism and associated services, leading to an increase in employment. Improved access to health services and other facilities would have a positive effect on social welfare.

8.3.5.4. Temporary Employment during Construction

It is highly likely that there will be an opportunity for temporary employment of local labourers.

The following negative impacts upon the local communities will need to be addressed:

8.3.5.5. Public Health

Although the new road will increase the speed and therefore provide a faster access for the people to public health services, there is however a correlation between speed and fatal accidents which needs to be managed along the proposed road through the traffic police operations and by the use of correct road signs.

8.3.5.6. Economical Activities

The proposed scheme can be expected to lead to increased residential and commercial development adjacent to the new road. If development takes place on valuable agricultural land along the route, the scheme could have a moderate negative impact on these resources.

On another hand, the new road will improve the access to the villages of Kaninë and Radhimë it will be beneficial for the expansion of Vlorë and its touristic infrastructures.

8.3.5.7. Unplanned Development and Illegal Construction

Although an assessment of possible induced impacts is impossible, from past experience of new road construction in Albania it is highly likely that following the completion of the road, if not actually during its construction, there will be an increase in development of properties, both legal and illegal, adjacent to the new road. All new roads constructed to date have experienced this form of unplanned development. The types of development range from petrol stations, restaurants/bars, vehicle scrap yards, commercial shops/private kiosks and housing.

8.3.5.8. Land Acquisition and Resettlement

The proposed road uses a new corridor across areas of mostly hilly and agricultural terrain with a very limited number of residents and businesses. However, few agricultural fields and crops, pasturelands, olive groves and private gardens will be negatively impacted or affected by the project.

8.3.5.9. Where Impacts Occur

Potential impacts on community facilities have been considered on all resources and receptors within the Limits of Land to be Acquired or Used (LLAU). They will also include:

- *Any locations at which community resources are likely to be subject to other significant impacts e.g. noise, air and visual intrusion (as identified by these assessments);*
- *Resources affected by severance, closure or diversion of public rights-of-way or key access routes.*

8.3.5.10. When Impacts Occur

Effects on the local community have been identified for the construction period (2012 to 2014) and early operational stages of the Project.

Impacts are considered unlikely to persist into the longer-term (e.g. when design capacity is reached at 2034), because the users of the facilities are expected to adjust to them, and new or replacement facilities are likely to appear if demand exists.

Socio-economic effects have been identified in relation to both the construction stage of the Project (2012 to 2014) and the operational stage (commencing in 2014 and reaching design capacity in 2034).

It is recognised that, in some cases, effects may become apparent before construction commences (e.g. due to prior knowledge of land take or as a result of development decisions taken in

anticipation of the Project). Long-term effects of the Project may also extend well beyond the design capacity date.

8.3.6. MEASURES FOR COMMUNITY AND SOCIO-ECONOMICS

8.3.6.1. Public Services

During construction specific measures will be taken by the contractor, in accordance with the EMP, in order to maintain water, electricity and gas services to the neighbouring residents and farm inhabitants and industries. Irrigation and drainage channels will also be kept functioning as well.

8.3.6.2. Barrier Effect

Mitigation measures can be provided by careful selection of the route of the road in order to minimise the barrier-effect to the communities of the proposed road. But where barrier-effect does occur it can be reduced to a minimum by the introduction of under/overpasses or additional junctions to provide access across or onto the new road.

8.3.6.3. Unplanned Development and Illegal Construction

The Project can be expected to lead to increased residential and commercial development adjacent to the new road. Whilst planning regulations are available to control this type of development, often the regulations are not enforced. Therefore it will be essential for the Planning Authorities to strictly enforce the regulations for planning control in order to ensure that the land surrounding the proposed new road is not despoiled by unplanned developments. Enhanced enforcement is also required to protect the land and to prevent the scheme leading to an increase in unlicensed tree-felling and quarrying and also illegal dumping of waste materials alongside the route.

8.3.6.4. Health and Safety

Road Safety Audits shall be undertaken by a road safety expert. The road safety audit programme will include audits at the following stages: on completion of construction and prior to commissioning of the road; and again approximately two years after the road has been opened.

8.3.6.5. Acquisition and Resettlement

Acquisition of land and other assets and resettlement of people will be minimised as much as possible. Where impact on properties is unavoidable, all Project Affected Persons residing, working, doing business, cultivating, or having rights over resources within the project area are entitled to compensation for their lost assets at replacement cost.

For instance, based on the General Road Directorate (GRD) practices and referred subject by laws, the people that will be expropriate and lose their crops will get financial compensation through GRD expropriation fund.

GRD has a commitment to respect EBRD's Performance Requirements n°5 (Land Acquisition, Involuntary Resettlement and Economic Displacement). During project development, GRD will:

- *proceed with properties registration and legalization;*
- *update the methodology for calculation of compensation for land and structures to include full replacement costs;*
- *set up of a proper Grievance Mechanism; and*
- *assist Affected Households and restore Livelihood.*

8.3.7. ASSUMPTIONS AND LIMITATIONS

The following assumptions will be made in undertaking the local community assessment:

- *unless stated otherwise, the baseline environment will be assumed to remain unchanged from observations during site inspections and from current land use information (exceptions may include community facilities which have planning permission but have not yet been constructed); and*
- *markets, shops and services other than those defined as 'key' are not regarded as sensitive resources since the users could reasonably expect to travel in order to use them. The presence of an alternative comparable facility within walking distance of one affected by the Project will be regarded as mitigating any loss of use of amenity of that facility.*

8.3.8. CONCLUSIONS, RECOMMENDATIONS AND RESIDUAL IMPACTS

The new road will encourage the development of Vlorë area. Amelioration of the access will improve the business capability, trade intensity, and through this all infrastructural development. The improvement of the road access will encourage the tourist industry which has such huge potential in Historical and Archaeological Tourism, Scientific tourism, Sun-Water tourism, Nature or Ecotourism, Business tourism etc. On the other hand, other industries should be developed in the area by providing the most important part of the infrastructure, like the road under study in Albania. The following are some overall recommendations, which can help maintain this investment as much as possible as a powerful sustainable development instrument:

- *Native and foreign business should be directed towards the most important economic sectors by the help of Projects.*
- *The traditional profitable productions should be stimulated.*
- *Tourist sector should be better assisted, stimulated and restructured (balneary, urban, familiar, cultural, historic etc.) making the community more aware and improving the tourist infrastructure.*
- *Population increase should be preceded by studies and plans regarding regulation and protection of nature through stimulation of new policies.*
- *The interests and priorities to be well-harmonised in order for economic development and to increase the well-being and not impact on the environment.*
- *The extension of the city on agricultural lands and sectors of ecological interest (specific ecosystems) should be forbidden.*

Figure 8.8 - Table - Impacts and Measures on Local Community and Socio-Economics during construction

Impacted Theme	Sources of Impact or Effect	Potential Impact or Effect	Magnitude	Mitigation Measures
Constructional Impact	*Water, electricity, gas supply and irrigation network.*	*Inhabitants, farms and industries might experience a lack of those services during the construction of the Project.*	***minor to locally moderate***	*The contract documents will clearly specify that the Contractor undertaking the construction of the works will be obliged to take specific measures in order to keep these difficulties to a minimum.*

Figure 8.9 - Table - Residual Impacts and Measures on Local Community and Socio-Economics during operation

Impacted Theme	Sources of Impact or Effect	Potential Impact or Effect	Magnitude	Mitigation Measures
Negative operational Impact	*New road crossing yet undeveloped land (fields, pasture or semi-natural habitats)*	*Unplanned urban developments and illegal constructions*	***moderate***	*Provision of traffic calming devices at the entrance of towns and villages, pedestrian sidewalks, crossings and lighting.*
Negative operational Impact	*Agricultural land, crops, business and private properties being acquired for the contruction of the road.*	*Lost of business and agricultural revenues. Lost of property.*	***minor***	*All Project Affected Persons residing, working, doing business, cultivating, or having rights over resources within the project area will receive compensation for their lost assets at replacement cost.*
Negative operational Impact	*Agricultural territory being fragmented by the road.*	*Difficulties for farmers to reach their land and cattle their pasture.*	***minor***	*Provision of cattle underpasses and local road crossings.*
Positive Operational Impact	*Vlorë Bypass avoiding the congested city centre of Vlorë.*	*Creation of a better connection within the region and the country.*	***major***	*Not applicable.*
Positive Operational Impact	*Vlorë Bypass connecting smaller settlements and southern Albania*	*Improve access to villages and development of tourism.*	***moderate***	*Not applicable.*

9. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

During construction, the road contractor(s) will be required to prepare an environmental plan that will ensure that:

- *Test excavation is performed in potential archaeological sites,*
- *Valuable trees are protected;*
- *Vegetation clearing and soil-stripping works are performed outside of nesting season.*
- *Excavated materials intended for re-use will be trafficked to a minimum;*
- *The time between excavation and re-use of excavated materials during dry periods will be kept to a minimum;*
- *Appropriate pollution control measures are put in place during construction;*
- *Water quality in wells situated on adjoining properties are periodically controlled;*
- *Works are strictly kept to the minimum near river and stream beds;*
- *Temporary sedimentation basins are created for siltation;*
- *Solid and liquid wastes are collected and/or recycled;*
- *Construction works occurs mainly during dry season;*
- *Stream and river beds diversion are kept to a minimum;*
- *Temporary storage areas and workers campsites are rehabilitated to their original uses (agricultural land, natural land, etc.);*
- *Road platform and temporary acces roads are watered during dry periods to avoid dust emissions;*
- *Specific noise abatement measures and compliance with the directives of the European Community will be provided by the road contractor(s);*
- *Water, electricity, gas supply and irrigation network are kept in service during construction. Works sites' needs for water, gaz and electricity are fulfilled without compromising public access to those resources.*

9.1. ENVIRONMENTAL MONITORING PLAN

An Environmental Monitoring Plan is prepared as part of the ESIA study in order to define the environmental measures and procedures that will need to be adopted for the Project and to identify those responsible for their implementation.

The Environmental Monitoring Plan defines the timing, frequency, duration and cost of mitigation measures in an implementation schedule and integrates these actions with the overall project work plan.

The Environmental Monitoring Plan will set out the ways in which the monitoring of the environmental impacts and the implementation of the mitigation measures during the construction phase will be carried out. The monitoring will be focused on the limited number of impacts identified during the ESIA to ensure the efficiency of the planned mitigation measures.

The purpose of the Environmental Monitoring Plan is to ensure that all rehabilitation and construction work undertaken under the Vlorë Bypass Project is environmentally sound, complies with Albanian environmental laws and wherever possible satisfies the provisions of the Environmental and Social Impact Assessment.

This plan takes into account the mitigation measures highlighted in the Environmental and Social Impact Assessment. The primary concern will be to screen all new work proposals for potential

environmental impact and to influence the design and implementation of these to ensure they are environmentally sound.

9.1.1. APPROACH

Environmental management objectives are as follows:

- *To screen all new works proposed under the Project, rapidly assess impacts and comment as appropriate on environmental mitigation requirements. Assess contractor environmental plans and monitor performance in implementation, including health and safety practice.*
- *To co-operate with the National Environment and Planning Agencies, and advise and inform them on all matters relating to Project due diligence, and to ensure that Albanian environmental requirements are met.*
- *To assist in the identification design and implementation of environmental restoration works as part of the Project.*
- *To report to GRD on all emerging and outstanding environmental management issues, and advice on mitigation and control of environmental risks, including health and safety.*

The net result of the Project should be positive. With environmentally aware management and sensitive contractor implementation, there is no reason why all environmental risk areas cannot be overcome or avoided, and maximum benefits achieved from environmental restoration and enhancement works undertaken.

Attention to occupational health and safety, as well as environmental health, are key aspects of good quality environmental performance. Selected areas of necessary management activity are reviewed in the paragraphs below. Health and Safety Guideline document should be included in the appendix as aid to the contractor.

9.1.2. MODALITIES FOR ENVIRONMENTAL MANAGEMENT AND MONITORING

The Environmental Monitoring Unit (EMU) of the GRD will be responsible for implementation of appropriate management and monitoring of Project works. During the Project planning stages the Design and Supervision Consultant must take due account in their designs and specifications of areas deemed to be environmentally sensitive because of:

- *The fragility/ecological importance of the location, to the water body/rivers or conservation/heritage structure.*
- *The natures of the works envisaged, e.g. major changes to the environment, new use of borrow/quarry areas or potential for pollution from wastes or risks of technologies employed.*

The EMU will keep the Ministry of Environment informed of environmentally sensitive sites and will request their input to ensure compliance with all environmental regulations.

The EMU will undertake the environmental monitoring tasks as set out below. The EMU will complete environmental monitoring forms every month for all work sites and will submit these to the GRD and on a monthly basis for review and comments.

Project monitoring forms will be reviewed and updated as necessary and, where possible, designed to be related directly to Project activity type. Outstanding environmental concerns will be addressed in monthly and quarterly project reports, and to Ministry of Environment.

9.1.3. ENVIRONMENTAL MONITORING TASKS

9.1.3.1. Review of Contractor's Plant and Facilities

Any facilities to be installed by the Contractor for the purpose of conducting the construction works need to be approved by all relevant governmental agencies prior to the implementation of any of the works. They will be assessed on the fulfilment of required environmental impact mitigation criteria. Particular attention will be paid to:

- *Noise abatement devices on construction and support equipment present on the site with the objective of keeping the noise level within the acceptable construction noise standards as per contractual obligations and standards of the Pollution Regulations.*
- *Proper equipment of construction camps, storage facilities, health and safety.*
- *Adequate facilities for collection and treatment of waste water, storage and disposal of solid waste.*
- *Drainage systems including sedimentation/silt traps.*
- *Adequate location and protection of refuelling facilities, storage of hydrocarbons.*
- *Adequate location for plants with storage space for raw and surplus materials.*
- *Provisions and facilities for minimal discharge of fumes and dust.*
- *Pump trucks equipped with devices to prevent material spillage.*
- *Approval of borrow pits, disposal and dumping areas where applicable.*

9.1.3.2. Construction Traffic

The Contractor's arrangements for managing construction traffic will be continually reviewed. The site inspection team will be alert to the possibility of construction traffic causing pavement and structure damage due to overloading, increase in congestion and increased road safety hazards.

Arrangements such as plant mud reduction such as wheel washing or construction entrance/exit cleaners, or similar, for ensuring that mud is not deposited onto public highways will be regularly inspected. In the event that the contractor does cause damage to any road, he will be required to repair this at his own expense as provided for in the Contract.

9.1.3.3. Noise Nuisance

The level of noise nuisance from construction plant operation will be monitored. The Contractor will be required to use only plant which meets specified noise parameters, as stated in the contract documents. No driven piling works will be permitted within specified distances of noise sensitive premises unless 'silent' driving plant is employed.

In general it is anticipated that no piling works will be permitted to be undertaken outside daylight hours.

9.1.3.4. Water Abstraction

The Contractor's arrangements for obtaining water will be monitored to ensure that these do not result in competition for scarce water resources with local users. In general, by reference to appropriate clauses in the contract, the contractor will be required to make suitable arrangements for his own supply, and to provide an alternative supply to any users affected by abstraction.

9.1.3.5. Site Safety

The Contractor will be required to appoint a Safety Officer/Traffic Management Coordinator, who will be involved in drafting (using GRD's guidelines) the Contractor's Health and Safety Plan to include some or all of the following:

- *Pile driving,*
- *Batching plants/crushers,*
- *Working in or near water,*
- *Working at heights,*
- *Working in confined spaces,*
- *Interaction with the general public, especially road users and adjacent property owners/occupiers,*
- *Traffic management*
- *Disease control*

The EMU in conjunction with the Engineer will ensure that the supervising staff vet the Contractor's plan and ensure that it is enforced.

9.1.3.6. Disposal of Waste Materials

The Contractor's disposal of materials within the site boundary and at off-site locations will be monitored to ensure that appropriate consideration is given to proper disposal of all waste materials.

The disposal of all other waste materials will be disposed of only at officially designated sites.

In the event that any spillage of, or accident with, any hazardous or environmentally damaging material has occurred, or is likely to occur, the EMU will be notified immediately.

Full assistance will be given to the staff from EMU who will be responsible for ensuring compliance with existing regulations and environmental technical specifications.

(2.7) Approval of Contractor's Workmanship

The adequacy of the Contractor's workmanship to the requirements of the Environmental Specifications of the contract documents will be verified. In particular, attention will be paid to the need to:

- *Avoid extraction of river run stone from water beds whenever possible, and in any case without prior authorization,*
- *Avoid excavating borrow pits and ditches on lands with insufficient runoff drainage, or located in the vicinity of populated areas,*
- *Avoid dumping construction material in water courses,*
- *Reduce damage to vegetation to the strict necessity imposed by sound construction practices,*
- *Implement engineering practices to avoid erosion,*
- *Promote the re-use of removed materials or disposed of where possible,*
- *Organize works and optimize transport of materials in order to minimize negative impacts on local communities.*

9.1.3.7. General Effects

Method statements and environmental mitigation plans prepared by contractors will be reviewed regarding amongst other things:

- *Sourcing and transportation of materials*
- *Storage of material at site*
- *Movement of vehicles to and from site, and during work at site*
- *Construction practice affecting:*
  - *Erosion Control,*
  - *Noise and Vibration,*
  - *Waste Management/minimization,*
  - *Contaminated Materials and Wastes,*
  - *Emergency Response Procedures,*
  - *Air Quality,*
  - *Water Quality,*
  - *Litter,*
  - *Storage of Chemicals and Fuels,*
  - *Cleanliness of the road from mud etc from site traffic,*
  - *Hours of work in the vicinity of dwellings,*
  - *Movement and generation of surface water,*
  - *Pedestrian and vehicle diversion and safety,*
  - *Siltation and blockage of drains and river courses; and,*
  - *The level of monitoring to be undertaken.*

Recommendations will be made regarding any modifications that are necessary to achieve the desired level of environmental protection.

Throughout the construction period, regular site inspections will be made to monitor the effectiveness of environmental protection measures, as well as to check that no previously unforeseen impacts are occurring. In the event of the latter, recommendations will be made for additional environmental protection measures to be adopted.

The frequency of site inspections will vary depending on the nature of works being carried out at any one time. In general, attention will be concentrated on those operations and locations where the most potentially damaging impacts might be anticipated, with particular attention being paid to earthworks sites, riverbank sites, and all areas where possible wetland impacts could occur.

The frequency of inspection will be highest at the initiation of works at each site, so that any problems can be recognized at an early stage, and remedial works or procedures can be implemented before irreparable damage has occurred. Particular attention will be paid to checking that no undue erosion and sedimentation problems are occurring, and that all temporary measures such as silt traps are functioning efficiently.

9.1.3.8. Pollution of Watercourses

The Contractor's approved environmental management plan will be reviewed against site activities to ensure that pollution of watercourses does not occur.

Pollution of land, groundwater and surface water arising from sanitary and other wastes is a potential impact which must be covered in the Contractor's plans. This will make provision for the safe disposal of all wastes and prevention of spillages, leakage of polluting materials etc.

All bank and in-stream river works are to be carried out behind cofferdams to prevent disturbance to watercourse flows and adverse effects on water quality. Silt bearing water pumped from the cofferdam shall be diverted through an effective silt trap prior to discharge into the watercourse.

The contractor will be required to pay all costs associated with clearing up any pollution caused by his activities, and to pay full compensation to those affected.

9.1.3.9. Erosion of Earthworks

The Contractor's operations will be continuously reviewed to prevent erosion of earthworks leading to pollution of water bodies and deterioration of the earthworks themselves, the road shoulders and the pavement.

The earthworks specifications and Bills of Quantities will include provision for protection of all earthworks slopes including watering of laid turf or seeding as necessary until ground cover is fully established. Temporary works shall include suitable drainage measures and silt traps so as to minimize the quantity of material eroded during construction which then enters water bodies.

9.1.3.10. Works Site Restoration

On a continuous basis during the implementation of the works, the supervision team will impose on the Contractor the restoration of the Project site immediately after utilization of the concerned areas:

- *cover borrow sites with top soil*
- *cleaning up of all construction sites and road camps after completion of works*

Promote regeneration of native vegetation through restoration of ground cover, use of degradable geotextile when appropriate, and the use of indigenous plants.

10. APPENDICES

10.1. APPENDIX 1 - SOURCES

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10.2. APPENDIX 2 - PHOTOGRAPHS OF THE SITE'S VISIT OF JUNE 2011

Note: Locations of these photos are presented on Environmental Baseline maps in appendix 11.

A - Nartë - PK: 0,1 - Those properties will be very close to the new road, as the alignment crosses the field shown on this picture

B - Vlorë - PK: 0,3 - Those yards will be avoided by the project

C - Vlorë - PK: 0,4 - Those properties will also be very close to the new road;

D - Vlorë - PK: 1,0 - The alignment will cross this olive grove. Some trees will be cut.

E - Vlorë - PK: 3,6 - The alignment is passing between the house on the left and the power line.
The reservoir will also be avoided

F - Vlorë - PK: 3,8 - Those small sheds are sheltering pumps linked to the dam. They will be avoided ;

G - Vlorë - PK: 4,2 - This cemetery will also be avoided,
the new road will be laid between the margin of the cemetery and the power line

H - Vlorë - PK: 5,8 - The alignment will cross the fields between houses in the foreground

I - Vlorë - PK: 7,1 - Here, the alignment will follow the rural country road on the left for a while.
Existing houses will be avoided

J - Kaninë - PK: 9,2 - The alignment will wind up the hills to Kaninë

K - Kaninë - PK: 10,5 - The alignment will cross lush small valleys and will offer outstanding view towards Vlorë and its bay

L - Vlorë - The project will be seen from Vlorë's seafront

M - Kaninë - PK: 11,4 - The alignment will
be seen from Kaninë as it will lay on the lower fringe of the village

N - Kaninë - PK: 13,3 - The alignment will go trough this little hamlet, avoiding all the houses

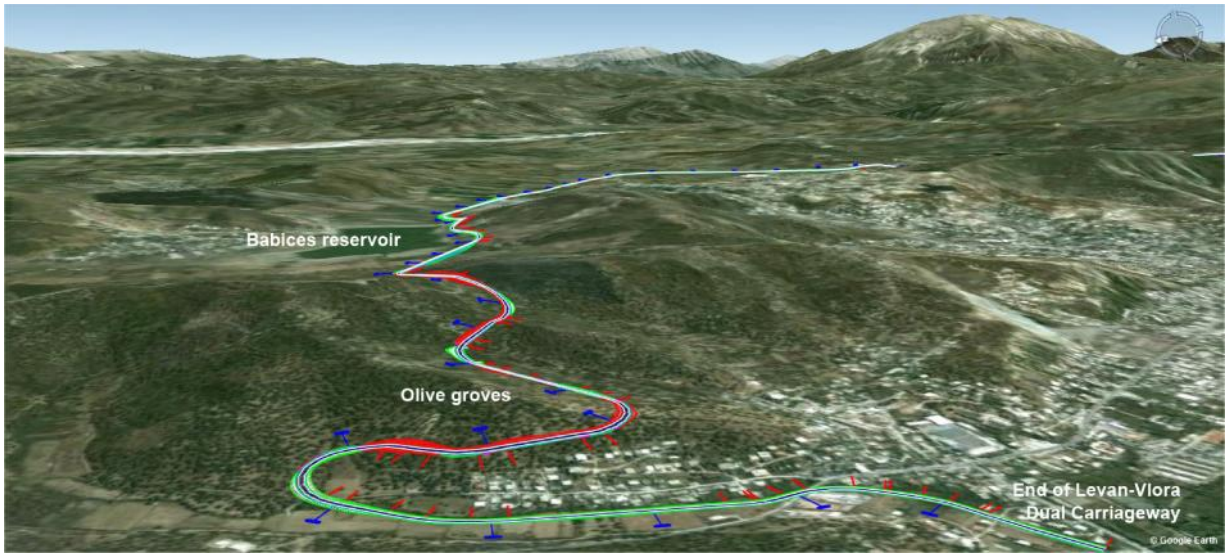
O - Radhimë - The new road will wind through those hills providing spectacular views and access to undeveloped areas

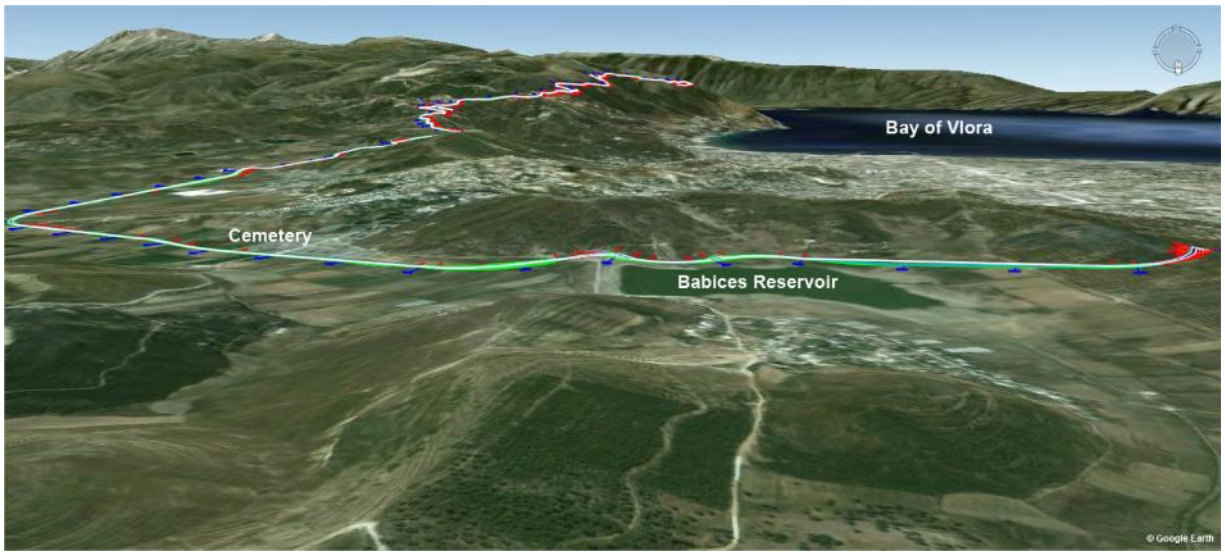
P - Radhimë - The alignment will lay on the upper fringe of the village of Radhimë, providing new access to the village while avoiding built areas.

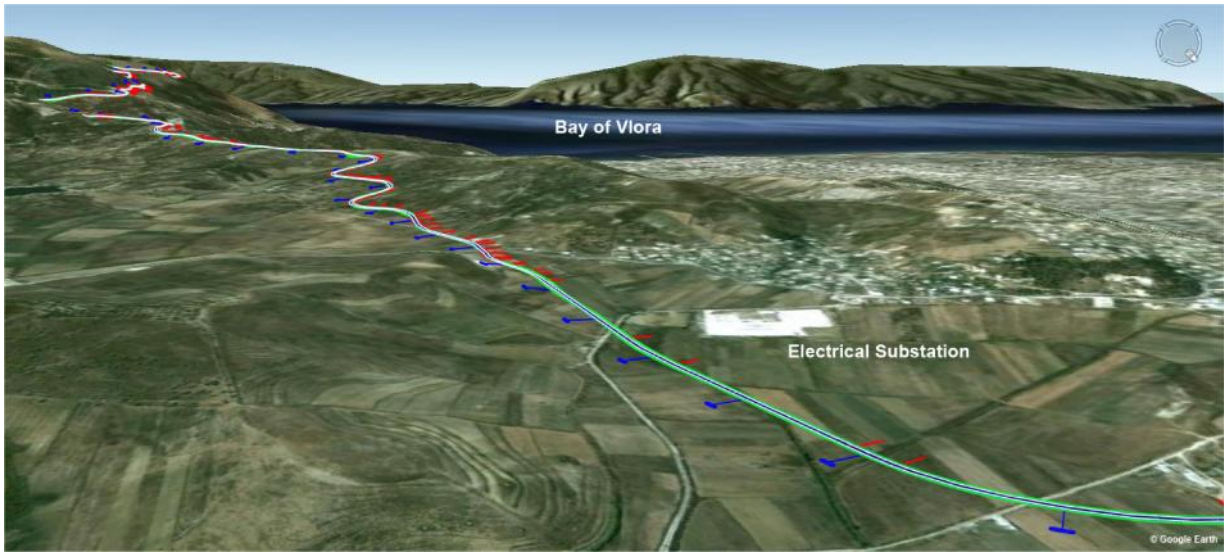
Q - Orikum - PK: 27,0 - The alignment will be laid behind this little hill and will cross fields

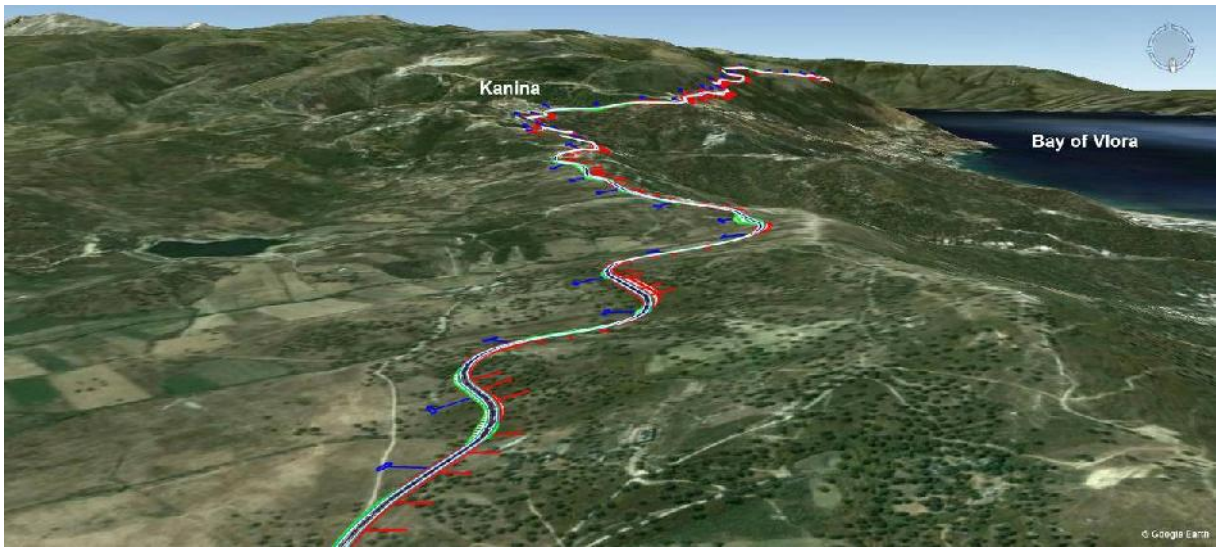
R - Orikum - PK: 28,9 - The alignment will cross fields and be linked to the existing road trough a roundabout

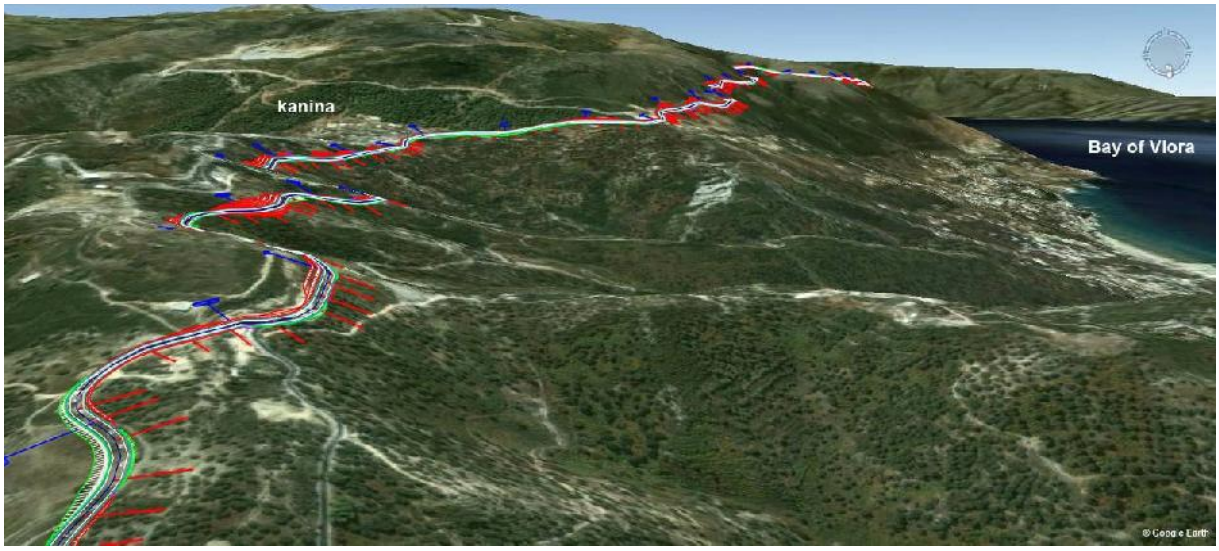
10.3. APPENDIX 3 - THREE-DIMENSIONNAL VIEW OF THE PROJECT

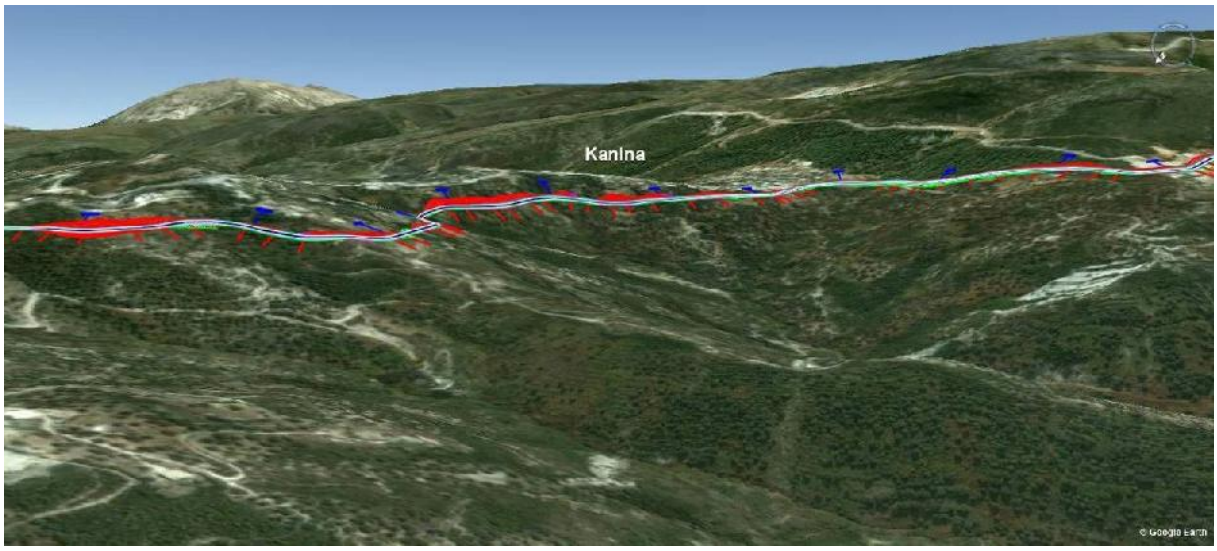







Kanina
Bay of Vlora


kanina
Bay of Vlora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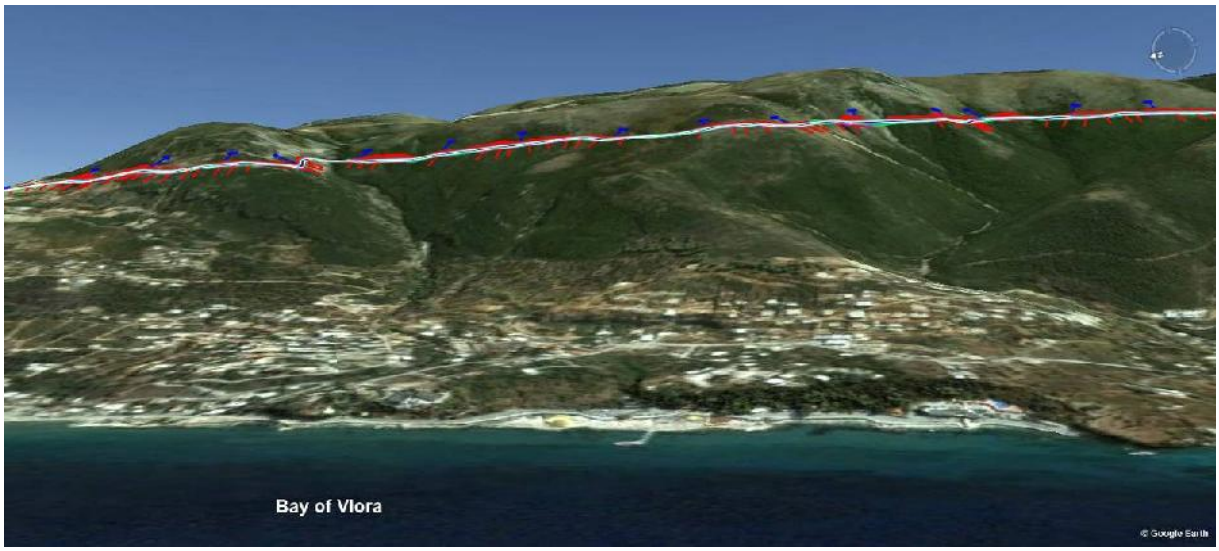
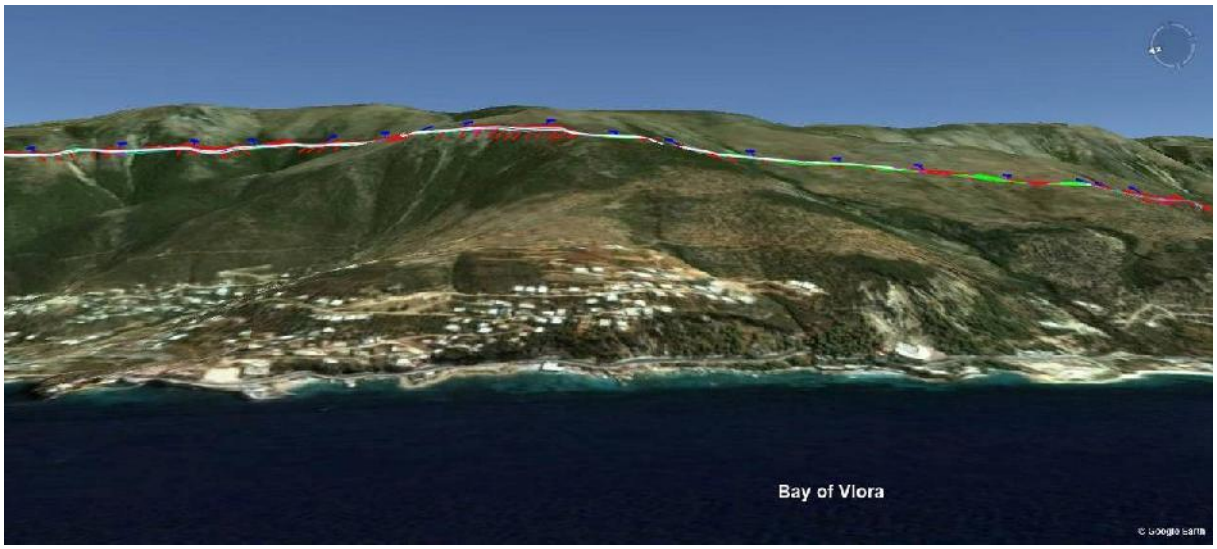

Bay of Vlora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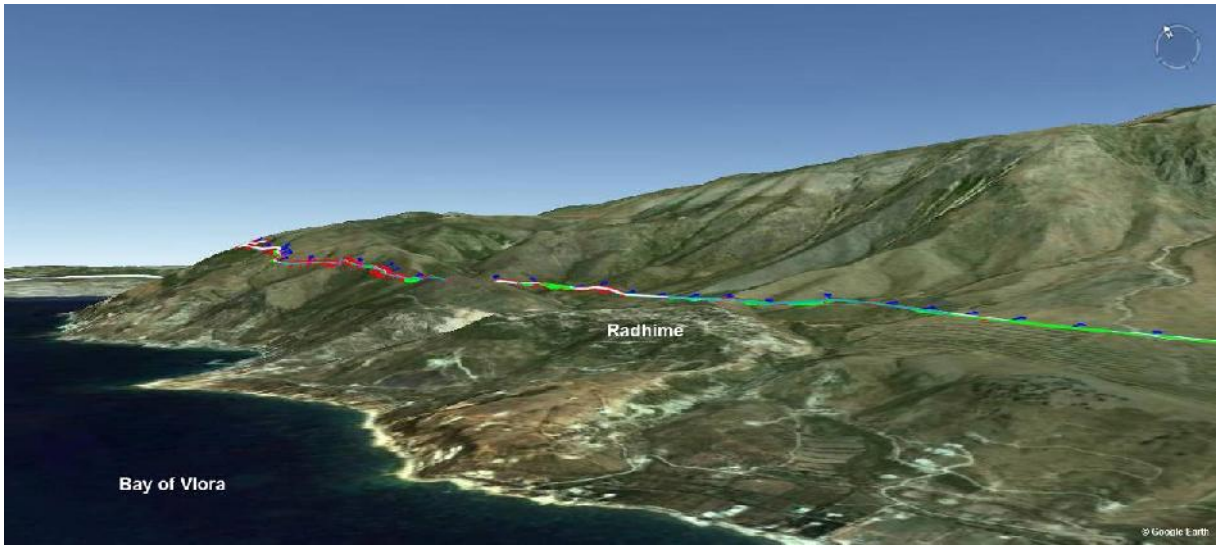
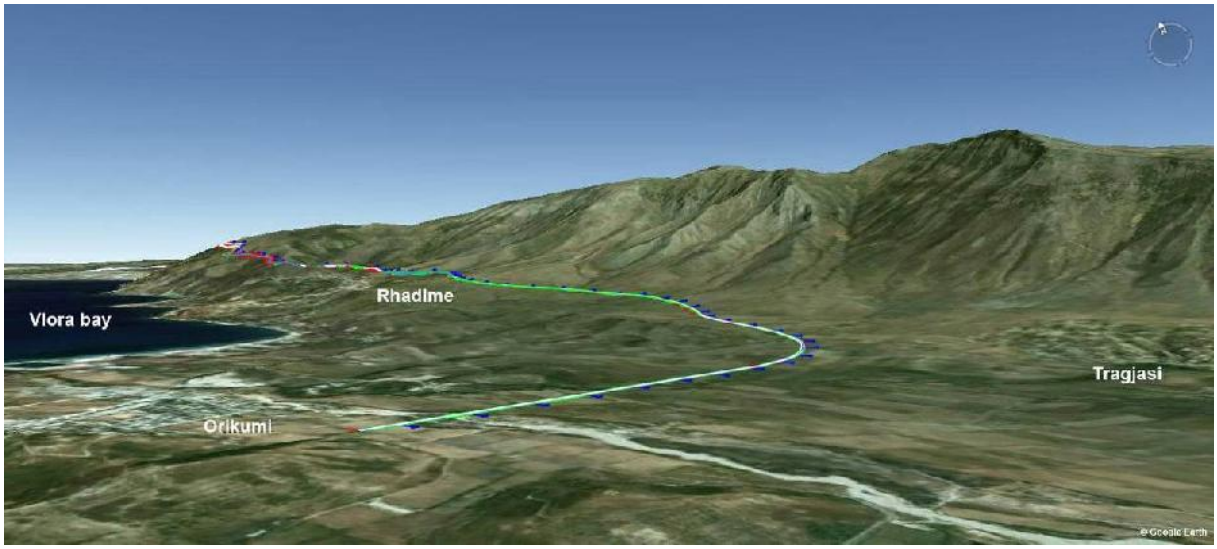

Radhime
Bay of Vlora


Vlora bay
Rhadime
Tragjasi
Orikumi

10.4. Appendix 4 - Lists of Endangered and Threatened Fauna Species in Albania

10.4.1. Critically Endangered Species According to IUCN

Class	Genus	Specie	English name
INSECT	*Pyrrhosoma*	*elisabethae*	Greek Red Damsel
MOLLUSC	*Chilostoma*	*harpya*	
MOLLUSC	*Malaprespia*	*albanica*	
MOLLUSC	*Parabythinella*	*malaprespensis*	
MOLLUSC	*Prespolitorea*	*malaprespensis*	
MOLLUSC	*Stankovicia*	*baicaliiformis*	
MOLLUSC	*Vinodolia*	*lacustris*	
FISH	*Acipenser*	*naccarii*	Adriatic Sturgeon
FISH	*Anguilla*	*anguilla*	European Eel
FISH	*Dipturus*	*batis*	Blue Skate
FISH	*Squatina*	*oculata*	Monkfish,
FISH	*Squatina*	*squatina*	Angel Shark
FISH	*Valencia*	*letourneuxi*	
REPTIL	*Dermochelys*	*coriacea*	Leatherback Turtle
BIRD	*Numenius*	*tenuirostris*	Slender-billed Curlew
MAMMAL	*Monachus*	*monachus*	Mediterranean Monk Seal

10.4.2. Endangered Species According to IUCN

Class	Genus	Specie	English name
INSECT	*Buprestis*	*splendens*	Goldstreifiger
MOLLUSC	*Bithynia*	*prespensis*	
MOLLUSC	*Bithynia*	*skadarskii*	
MOLLUSC	*Bithynia*	*zeta*	
MOLLUSC	*Gyraulus*	*crenophilus*	
MOLLUSC	*Gyraulus*	*fontinalis*	
MOLLUSC	*Gyraulus*	*meierbrooki*	
MOLLUSC	*Gyraulus*	*stankovici*	
MOLLUSC	*Lyhnidia*	*gjorgjevici*	
MOLLUSC	*Ohridohauffenia*	*depressa*	
MOLLUSC	*Ohridohauffenia*	*rotonda*	
MOLLUSC	*Ohridohauffenia*	*sanctinaumi*	
MOLLUSC	*Ohridohoratia*	*carinata*	
MOLLUSC	*Ohrigocea*	*samuili*	
MOLLUSC	*Ohrigocea*	*stankovici*	
MOLLUSC	*Parabythinella*	*macedonica*	
MOLLUSC	*Pisidium*	*edlaueri*	
MOLLUSC	*Pisidium*	*maasseni*	

Class	Genus	Specie	English name
MOLLUSC	*Pyrgohydrobia*	*prespaensis*	
MOLLUSC	*Radix*	*pinteri*	
MOLLUSC	*Radix*	*skutaris*	
MOLLUSC	*Unio*	*crassus*	Thick Shelled River Mussel
MOLLUSC	*Vinodolia*	*scutarica*	
FISH	*Epinephelus*	*marginatus*	Dusky Grouper
FISH	*Luciobarbus*	*graecus*	
FISH	*Pagrus*	*pagrus*	Common Seabream
FISH	*Pelasgus*	*prespensis*	
FISH	*Rhinobatos*	*cemiculus*	Blackchin Guitarfish
FISH	*Rhinobatos*	*rhinobatos*	Common Guitarfish, Violinfish
FISH	*Rostroraja*	*alba*	Bottlenose Skate
FISH	*Thunnus*	*thynnus*	Atlantic Bluefin Tuna
AMPHIBIAN	*Pelophylax*	*shqipericus*	Albanian Water Frog
REPTIL	*Caretta*	*caretta*	Loggerhead
BIRD	*Neophron*	*percnopterus*	Egyptian Eagle, Egyptian Vulture

10.4.3. VULNERABLE SPECIES ACCORDING TO IUCN

Class	Genus	Specie	English name
INSECT	*Coenonympha*	*orientalis*	Balkan Heath
INSECT	*Lycaena*	*ottomana*	Grecian Copper
INSECT	*Parnassius*	*apollo*	Apollo Butterfly
MOLLUSC	*Acroloxus*	*improvisus*	
MOLLUSC	*Ancylus*	*scalariformis*	
MOLLUSC	*Cochlostoma*	*fuchsi*	
MOLLUSC	*Codringtonia*	*neocrassa*	
MOLLUSC	*Cochlostoma*	*fuchsi*	
MOLLUSC	*Codringtonia*	*neocrassa*	
MOLLUSC	*Dreissena*	*blanci*	
MOLLUSC	*Ginaia*	*munda*	
MOLLUSC	*Gyraulus*	*albidus*	
MOLLUSC	*Microcondylaea*	*bonellii*	
MOLLUSC	*Micropyrgula*	*stankovici*	
MOLLUSC	*Neofossarulus*	*stankovici*	
MOLLUSC	*Ohridohoratia*	*polinskii*	
MOLLUSC	*Planorbis*	*presbensis*	
MOLLUSC	*Pseudohoratia*	*brusinae*	
MOLLUSC	*Pseudohoratia*	*lacustris*	
MOLLUSC	*Pseudohoratia*	*ochridana*	
MOLLUSC	*Pyrgohydrobia*	*grochmalickii*	

Class	Genus	Specie	English name
MOLLUSC	*Stankovicia*	*pavlovici*	
MOLLUSC	*Stankovicia*	*wagneri*	
MOLLUSC	*Valvata*	*hirsutecostata*	
MOLLUSC	*Valvata*	*relicta*	
MOLLUSC	*Xestopyrgula*	*dybowskii*	
FISH	*Alburnoides*	*ohridanus*	Ohrid Spirlin
FISH	*Alburnoides*	*prespensis*	Prespa Spirlin
FISH	*Alburnus*	*belvica*	
FISH	*Alopias*	*vulpinus*	Common Thresher Shark
FISH	*Alosa*	*sp. nov. 'Skadar'*	Skadar Shad
FISH	*Carcharias*	*taurus*	Grey Nurse Shark
FISH	*Carcharodon*	*carcharias*	Great White Shark
FISH	*Centrophorus*	*granulosus*	Gulper Shark
FISH	*Cetorhinus*	*maximus*	Basking Shark
FISH	*Chondrostoma*	*prespense*	
FISH	*Cobitis*	*meridionalis*	
FISH	*Galeorhinus*	*galeus*	Liver-oil Shark
FISH	*Gobio*	*ohridanus*	Ohrid Gudgeon
FISH	*Gymnura*	*altavela*	
FISH	*Isurus*	*oxyrinchus*	Shortfin Mako
FISH	*Labrus*	*viridis*	Green Wrasse
FISH	*Leucoraja*	*circularis*	
FISH	*Mustelus*	*mustelus*	Common Smoothhound
FISH	*Opeatogenys*	*gracilis*	
FISH	*Oxynotus*	*centrina*	Angular Rough Shark
FISH	*Rutilus*	*prespensis*	
FISH	*Salmo*	*ohridanus*	
FISH	*Salmo*	*pelagonicus*	Pelagos Trout
FISH	*Sphyrna*	*zygaena*	Smooth Hammerhead
FISH	*Squalus*	*acanthias*	Piked Dogfish
AMPHIBIAN	*Pelophylax*	*epeiroticus*	Epirus Water Frog
REPTIL	*Testudo*	*graeca*	Common Tortoise
REPTIL	*Vipera*	*ursinii*	Meadow Viper
BIRD	*Anser*	*erythropus*	Lesser White-fronted Goose
BIRD	*Aquila*	*clanga*	Greater Spotted Eagle
BIRD	*Pelecanus*	*crispus*	Dalmatian Pelican
MAMMALS	*Myotis*	*capaccinii*	Long-fingered Bat
MAMMALS	*Physeter*	*macrocephalus*	Sperm Whale

10.4.4. Near Threatened Species According to IUCN

Class	Genus	Specie	English name
INSECT	*Ampedus*	*cardinalis*	Cardinal Click Beetle
INSECT	*Cordulegaster*	*bidentata*	Sombre Goldenring
INSECT	*Cordulegaster*	*heros*	Balkan Goldenring
INSECT	*Hipparchia*	*fagi*	Woodland Grayling
INSECT	*Osmoderma*	*barnabita*	
MOLLUSC	*Candidula*	*castriota*	
MOLLUSC	*Cattania*	*maranajensis*	
MOLLUSC	*Cattania*	*petrovici*	
MOLLUSC	*Chilopyrgula*	*sturanyi*	
MOLLUSC	*Chilostoma*	*fuchsi*	
MOLLUSC	*Chilostoma*	*zebiana*	
MOLLUSC	*Chondrula*	*lugorensis*	
MOLLUSC	*Cochlostoma*	*pinteri*	
MOLLUSC	*Dreissena*	*presbensis*	
MOLLUSC	*Gyraulus*	*lychnidicus*	
MOLLUSC	*Ochridopyrgula*	*macedonica*	
MOLLUSC	*Ohridohoratia*	*pygmaea*	
MOLLUSC	*Ohridohoratia*	*sturanyi*	
MOLLUSC	*Oligolimax*	*apatelus*	
MOLLUSC	*Orcula*	*wagneri*	
MOLLUSC	*Paladilhiopsis*	*serbica*	
MOLLUSC	*Renea*	*kobelti*	
MOLLUSC	*Superba*	*grisea*	
MOLLUSC	*Superba*	*kulmakana*	
MOLLUSC	*Superba*	*reischuetzi*	
MOLLUSC	*Valvata*	*stenotrema*	
CRUSTACEAN	*Potamon*	*fluviatile*	
FISH	*Squalius*	*sp. nov. 'Aoos'*	Aoos Chub
FISH	*Carcharhinus*	*brachyurus*	Bronze Whaler
FISH	*Carcharhinus*	*brevipinna*	Spinner Shark
FISH	*Carcharhinus*	*limbatus*	Blacktip Shark
FISH	*Chimaera*	*monstrosa*	Rabbitfish
FISH	*Dipturus*	*oxyrinchus*	Sharpnose Skate
FISH	*Epinephelus*	*aeneus*	White Grouper
FISH	*Pelasgus*	*thesproticus*	
FISH	*Prionace*	*glauca*	Blue Shark
FISH	*Scyliorhinus*	*stellaris*	Nursehound
REPTIL	*Elaphe*	*quatuorlineata*	Four-lined Snake
REPTIL	*Testudo*	*hermanni*	Hermann's Tortoise

Class	Genus	Specie	English name
BIRD	*Aythya*	*nyroca*	Ferruginous Duck
BIRD	*Coracias*	*garrulus*	European Roller
BIRD	*Falco*	*vespertinus*	Red-footed Falcon
BIRD	*Ficedula*	*semitorquata*	Half-collared Flycatcher
BIRD	*Milvus*	*milvus*	Red Kite
BIRD	*Numenius*	*arquata*	Curlew, Eurasian Curlew
BIRD	*Circus*	*macrourus*	Pale Harrier, Pallid Harrier
BIRD	*Gallinago*	*media*	Great Snipe
BIRD	*Limosa*	*limosa*	Black-tailed Godwit
BIRD	*Puffinus*	*yelkouan*	Yelkouan Shearwater
MAMMAL	*Lutra*	*lutra*	Eurasian Otter
MAMMAL	*Miniopterus*	*schreibersii*	Common Bentwing Bat
MAMMAL	*Rhinolophus*	*euryale*	Mediterranean Horseshoe Bat
MAMMAL	*Myotis*	*bechsteinii*	Bechstein's Bat
MAMMAL	*Sorex*	*alpinus*	Alpine Shrew

10.5. APPENDIX 5 - INSTRUCTION FOR LIMIT VALUES OF NOISE

REPUBLIC OF ALBANIA

MINISTRY OF ENVIRONMENT,
FORESTRY and WATER MANAGEMENT
No. 6235 Prot. Tirane 27.11.2007

MINISTRY OF HEALTH

No. 4492 Prot. Tirane 4.12.2007

INSTRUCTION (No.8, date 27.11.2007)
FOR
LIMIT VALUES OF NOISE IN CERTAIN ENVIRONMENTS

According to paragraph 4 of Article 102 of the Constitution and the implementation of paragraph 2 of Article 2 of Law no.9774, dated 12.07.2007 "On the evaluation and management of environmental noise",

We instruct:

1. The limit noise levels for certain environments, must be according to the Guidance Values of the World Health Organization (WHO), given below in Annex 1, attached to this instruction.

2. For the purposes of this instruction, as certain environments, are identified the residential areas, (outside the housing, the housing interior environments), institutions (educational, preschool and health institutions), areas of socio-economic activities, urban areas and public parks.

3. Certified experts, who perform noise measurements in the premises mentioned in paragraph 2 of this instruction, must take in consideration the explanations accompanying Annex 1.

4. Ministry of Health and Ministry of Environment, Forests and Water Administration is in charge of the implementation of this instruction.

This instruction enters into power after its publication in the Official Journal.

Minister of Environment, Forests
Water Administration

Lufter XHUVELI

Minister of Health

Nard NDOKA

ANNEX 1

NOISE LIMIT VALUES FOR SPECIFIC ENVIRONMENTS

Environment	**Critical effect on health**	**LA_{eq} (dBA)**	**Time base (hour)**	**LAmax** Fast (dB)
Residential area				
Outside the house	Serious inconvenience (anxiety) daytime and evening	**55**	**16**	**-**
	Moderate inconvenience (concern) daytime and evening	**50**	**16**	**-**
Inside the house	Speech intelligibility (inconvenience) of moderate disturbance during the day and evening.	**35**	**16**	**-**
Inside the bedrooms	Sleep disturbance during night	**30**	**8**	**-**
Outside bedrooms	Sleep disturbance, windows open (outside values)	**45**	**8**	**-**
Institutions				
Teaching classes, preschool environment - institutions (inside)	Speech intelligibility, difficulty in receiving information, in communication of the message	**35**	During the learning	**-**
Sleeping rooms in the kindergartens (inside)	Sleep disturbance	**30**	Bedtime	**-**
School yard, school playground	Inconvenience (anxiety) - (external source)	**55**	Break time	**-**
Hospitals, halls, rooms (inside)	Sleep disturbance during night Sleep disturbance during daytime and evenings	**30** **30**	**8** **16**	**40**
Hospitals, treatment rooms (inside)	Interference with rest, recuperation	# 1		
Area with socio-economic activities				
Industrial area, shopping, traffic circulation (external and internal environment)	hearing impairment	**70**	**24**	**110**
Urban environment				
Public areas, exterior or interior	hearing impairment	**85**	**1**	**110**
Ceremonies, festivals and entertainments	Hearing impairment (clients <5 times / year)	**100**	**4**	**110**
Music through earphones	hearing impairment	85 # 4	**1**	**110**
Sounds - Impulse noise from firearms and fireworks	Hearing impairment (adults) Hearing impairment (children)	**-**	**-**	140#2 120#2
Public parks				
Natural parks and protected areas	Disruption of tranquillity	**#3**		

Explanations:

LAeq (dBA) = Equivalent level as measured on a scale of A
Time basis (hours) = Time during which the measurement is made
LAmax Fast (dB) = Level measured on a scale of A in Fast mode (Fast)
 # 1 = As low as possible.
 # 2 = Maximum Sound Pressure (LAmax, fast) measured 100 mm from the ear.
 # 3 = Quiet external areas should be protected and the ratio of additional /incoming noise to the disturbance of natural phony should be kept as low as possible.
 # 4 = The hearing under headphones, adapted to the free field values.

10.6. APPENDIX 6 - NOISE ASSESSMENT OF THE VLORË BYPASS

This report has been prepared by the acoustical department of EGIS Environnement.

10.6.1. INTRODUCTION AND METHODOLOGY

This report presents the noise assessment related to the construction of the Vlorë Bypass.

The purpose of the present assessment is to model the new road and perform acoustical calculations taking into consideration forecast traffic and to propose, if needed, measures to attenuate the impact of noise coming from the traffic generated by the Bypass.

The software used for computer simulations is CADNAA version 4.2.140.

10.6.2. REGULATORY FRAMEWORK

10.6.2.1. Texts

Acoustic studies of road infrastructures of Albania are based on WHO (World Health Organization) instructions, related to environmental noise and on Albanian instructions presented in Appendixes 6 - Instruction for limit values of noise.

10.6.2.2. Objectives

World Health Organization and Albanian instructions indicate that in order to protect citizens against a severe discomfort during the day, regular and continuous sound levels (LAeq) should be inferior to 55 dB(A) on balconies, terraces and outside residential areas or inferior to 35 dB(A) inside habitations. At night, limit values are reduced of 5 dB(A) to (50 dB(A) outside and 30 dB(A) inside).

Acoustic calculations are made at 5 cm in front of buildings bordering the project so as to not take into account the reflection of sound on facades which may increase of 3 dB(A) the levels calculated relative to regulatory values situated in open fields.

10.6.3. CALCULATION PARAMETERS

The calculations are made with CADNAA (version 4.2.140). The method of calculation is based on NMBP Route 96 with MITHRA compatibility.

Meteorological effects are taken into account by using factors in the occurrence of favourable propagation of sound at 50% in daytime (6AM-10PM) and 100% in night time (10PM to 6AM)

10.6.4. TRAFFIC FORECASTS USED FOR MODELING

The traffic of the future Vlorë bypass used is the one forecasted for 2034 which is 12 000 veh./day. This traffic was spread on normal traffic hours in daytime (6AM-10PM) and night time (10PM-6AM): 702 veh./hr including 5% of trucks in the day and 126 veh./hr including 10% of trucks at night.

With such traffic, sound levels are raised in daytime because results are above more than 5 dB(A) compared to sound levels at night time. The analysis of acoustic impacts of the project is performed only on daytime period.

10.6.5. RESULTS OF CALCULATION

The study site including the project was modelled in 3D based on the documents provided by the contracting authority. The building heights being non-available, a height of 6m (corresponding to a two storey building) was applied.

The maps on the following pages present the results of sound level calculations in front of the closer buildings in daytime. The buildings with a sound level superior to 55 dB(A) are represented in red.

Calculations being performed on the building's façade, results are presented in the area where buildings can be found near the future Bypass. Maps below are presenting dwellings that would experiment a sound level superior to 55 dB(A) in daytime in 2034 if without any noise protection:

Figure 10.1 - Map - kp 0+000 and kp 5+600

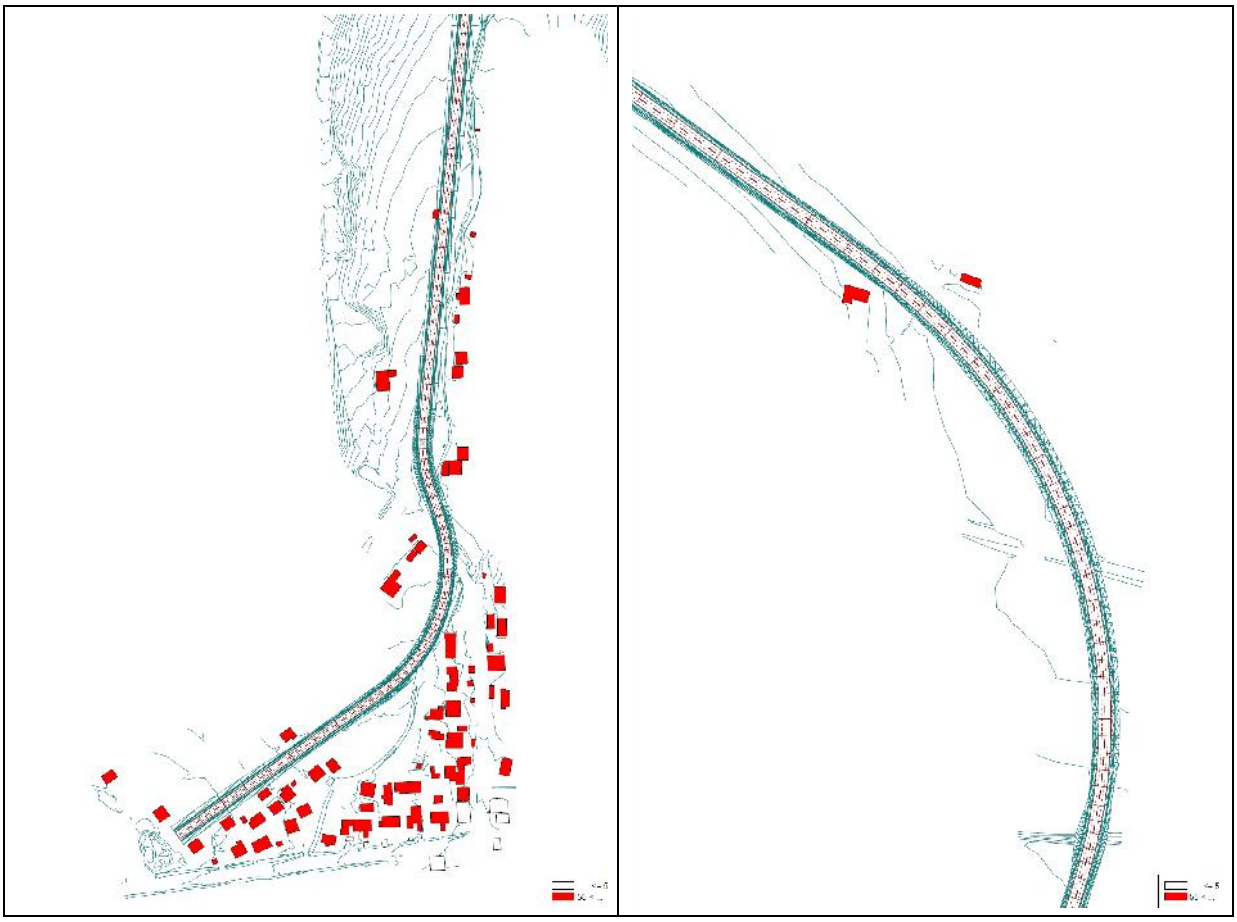


Figure 10.2 - Map - kp 7+000, kp 9+200, kp 10+800, kp 11+900

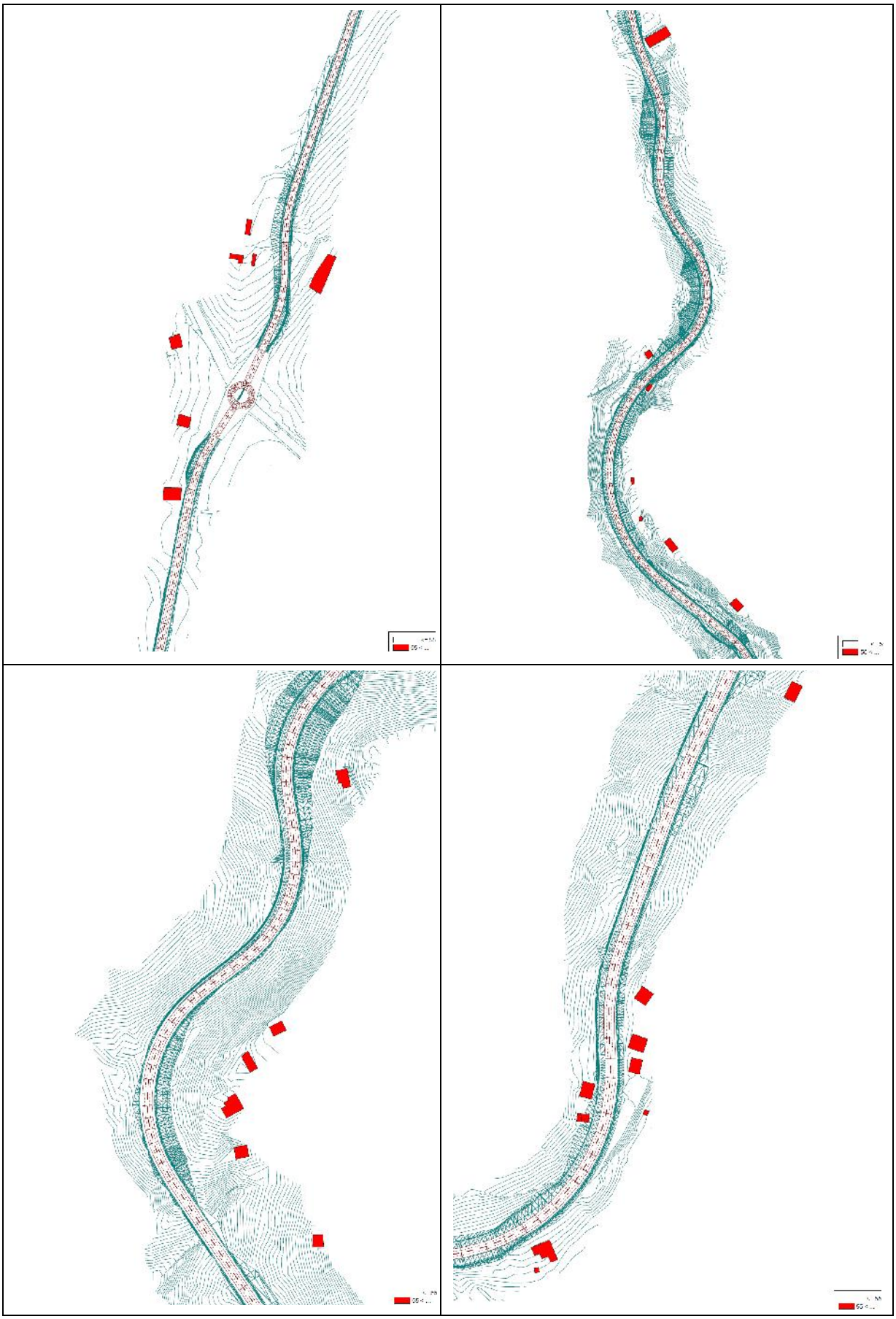
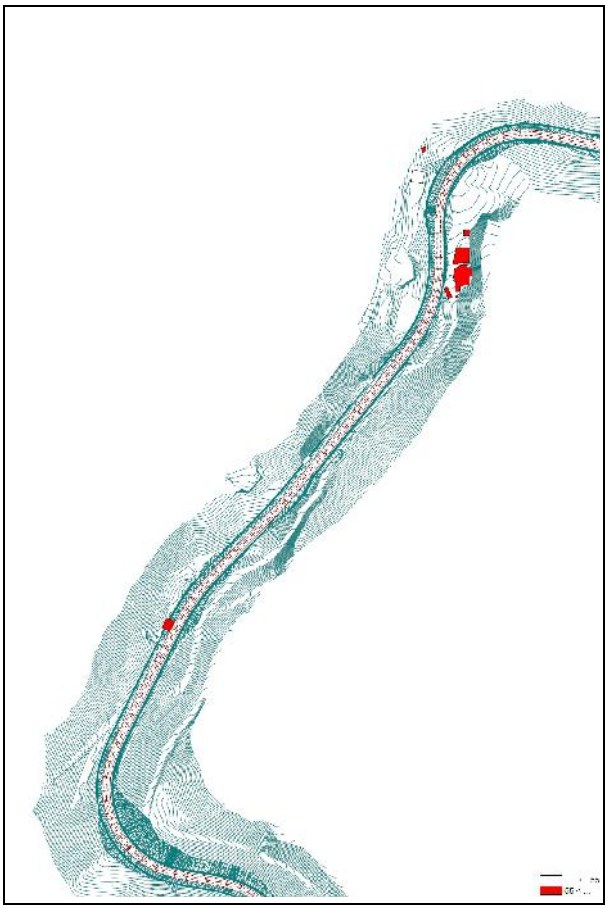


Figure 10.3 - Map - kp 12+700



10.7. APPENDIX 7 - QUESTIONNAIRES

The socio-economical evaluation has been facilitated using a questionnaire on the community stakeholders and representatives opinion on road building or providing the accessibility, changes on land use and possible changes on economical activity vectors etc.

The other questionnaire has been developed for drinking water sources, community pretends etc.

Both questionnaires have been given explanations on overall opinions on possible impacts seems to be generated by road construction and operation. It had helped clarify the community opinion on such a development action and had ensured their collaboration in all project steps.

10.7.1. QUESTIONNAIRE 1

Nr. _____

Date : _____

Village name : _____

Number of families : _____

Number of habitants : _____

1. **The drinking water for community is supplied by :**
   (indicate quantity when it applies) :
   a. Local natural surface running water sources ☐ _____
   b. Domestic wells ☐ _____
   c. Central pipeline supply system ☐ _____
   d. Is bought in market ☐ _____
2. **The water for agricultural needs and for domestic demands is taken from :**
   (indicate quantity when it applies) :
   a. Running waters ☐ _____
   b. Wells ☐ _____
   c. Basin water (reservoirs, lakes, etc.) ☐ _____
3. **Flow capacity (litre/sec.) for each well :**

Well 01	Well 05	Well 09
Well 02	Well 06	Well 10
Well 03	Well 07	Well 11
Well 04	Well 08	Well 12

Number of families which use water sources or wells water for drinking water or for agricultural demands :

_____

_____

_____

_____

4. For springs and wells, has the water quality been analyzed ?

☐ Yes ☐ No

If yes, is there a formal documentation on analyses results?

☐ Yes ☐ No

5. How many wells or running water sources, useful for the community (drinking or agricultural purposes), might be affected by the road construction ?

_____

_____

_____

For possible water sources affected, please give the following characteristics:

a. From where the water comes ?

_____

_____

b. Is the water flowing continuously ?

_____

_____

c. Is there any data on microbiological and physicochemical water quality (please give attached a copy of analysis results)

_____

_____

d. According to you, will the water sources be affected by the road construction?

_____

_____

6. What is the depth of the exploitable water layer?

_____

_____

The name and signature of
"Head of the Olders" of the Village

10.7.2. QUESTIONNAIRE 2

Nr. _____

Date: _____

Village name: _____

Number of families: _____

Number of habitants: _____

Specific areas/environments that could be affected from road construction:

- Historical, archaeological, religious, social/cultural monuments (Name and type):

_____
_____
_____
_____
_____

- Natural amenities:

- Natural protected areas such as National Parks, Protected landscapes, Managed Reserves, Natural Monuments etc. (Name and type):

_____
_____
_____
_____
_____

- Other natural amenities with exemplar or recreational features, such as forests or woodlands, running surface waters, water sources, lakes, etc (Name and type):

_____
_____
_____
_____
_____

3. Nr. of families which might be directly affected by the road construction: _____

- Nr. of houses that might be directly affected by the road construction: _____
- Nr. of families that might be affected by the road construction: _____
- Memorials that might be affected by the road construction: _____
- Water wells or reservoirs that might be affected by the road construction: _____
- Mature trees that might be affected by the road construction: _____

- Potential impacts on economical activities due to road construction: _____

_____

_____

_____

- Other potential impacts: _____

_____

_____

_____

4. Nr. of families to be affected potentially by indirect impacts generated by the road construction:

_____

- Impact on traffic and circulation (Impact on roads or paths that lead to) :

Places of work _____ Recreational amenities _____

Schools _____ Religious building or sites _____

Markets _____ Meeting places _____

- Impact on agricultural and/or domestic facilities :

Impact on irrigation or draining channels: _____

_____

Impact on domestic water aqueducts: _____

_____

Impact on sewage systems and networks: _____

_____

Impact on electricity and telephone lines: _____

_____

5. **Damages or destruction of existing infrastructure** (If the community think that the road construction will damage the existing infrastructure of the Village or other facilities)

a. Closing or destruction of existing roads ☐ Yes ☐ No

b. Main net of irrigation/draining system ☐ Yes ☐ No

c. Electricity power/generator ☐ Yes ☐ No

d. Multifunctional water bodies ☐ Yes ☐ No

e. Others …….. ☐ Yes ☐ No

f. Important buildings of public services like

- Health and ambulatory services ☐ Yes ☐ No
- Safety places/offices ☐ Yes ☐ No
- Garages ☐ Yes ☐ No
- Post office/telephone booth ☐ Yes ☐ No
- Stores ☐ Yes ☐ No
- Hotels/restaurants/cafeterias ☐ Yes ☐ No
- Others …….. ☐ Yes ☐ No

Name and signature of
"Head of the Older" of the Village

10.8. APPENDIX 8 - ANSWERS TO QUESTIONNAIRES

To be completed

10.9. APPENDIX 9 - MINUTES OF NOVEMBER 23RD 2011 PUBLIC MEETING

23 of November 2011

Preliminary Consultation Meeting in Vlorë

Minutes of Meeting

10.9.1. PARTICIPANTS

See list of Participants (Appendix 10)

10.9.2. TIME AND LOCATION

Time: 11:30 AM
Location: Vlorë University, Student City

10.9.3. AGENDA OF THE MEETING

1. Project Presentation from the Consultant
2. Questions and Discussions from the Participants

10.9.4. PROJECT PRESENTATION FROM THE CONSULTANT

Mr Gezim Bimbli on behalf of the Consultant Egis Route welcomed the participants in this First Consultancy Meeting of the Vlorë Bypass.

A list of participants was circulated among participants at the beginning of this meeting (see List of Participants, Appendix 10).

Mr. Bimbli followed with the Power Point presentation prepared by the Consultant.

The content of his presentation could be summarised as follows:

- *The EU Delegation in Tirana is financing the Feasibility Study and Detailed Design of Vlorë Bypass*
- *General Road Directorate of Albania (GRD) got a financing support from EBRD to finance the Vlorë Bypass road section*
- *The Consultant Egis Route is finalizing the Feasibility Study and the Detailed design*
- *At an early stage of this assignment, preliminary meetings and consultation contacts with several local experts and departments were done at the local level with the respective Municipalities where the Bypass road alignment is going through (Vlorë Municipality, Commune Qendër and Orikumi Municipality).*
- *Recent planning and project developments were provided to the Consultant as well as other necessary information were exchanged*
- *Based on above consultation and meetings the main variant was solved.*
- *Participants got information on the progress work done so far by the Consultant side and in addition technical data on the design were presented based on the ToRs. (Alignment variants, Preferred alignment, Typical cross sections, Tables on specific road elements as were length of by pass, nr. of bridges, culverts, etc,).*

- *The more important thing were the expropriation of the land which were asked to the Mayer of Vlorë and Orikum municipality and Head of Komuna Qendër to help and collaborate with Consultants and GRD during preparation of the owner list.*

- *In the end of his presentation Mr. Bimbli informed the participants on the Letter received by the Cultural and Patriotic Association of Tragjasi village*

After the project technical data presentation, Mr. Bimbli gave the flow to Mr. Daniel Gauthier for the Environmental and Social Impact Assessment (ESIA) content and the project done so far. The content of his presentation could be summarised as follows:

- *The ESIA follows the Guideline on ESIA, 2008 of the EBRD as well as the Albanian Legislation requirements*

- *The presentation went through all sites of the road alignment where the ESIA considers to define potential impacts (olive groves, slopes, visibility of road, landscape issues, replanting, safeguard issues on houses and working conditions, archaeological issues in Kaninë, water sources and water bodies crossing, scenic view, noise and accessibility in the existing settlements,*

- *Mitigation proposal measures were addressed per each site and issue where ESIA consider such impacts*

- *A summary of documentation that will support the ESIA as well as the period and process of consultation was given to the participants*

3.2 Questions and Discussions from the Participants

After completion of presentations from Consultant's side participants were invited to raise their questions and concerns.

This session was combined with Questions (Q) from participants and Answers (A) from the Consultant or GRD representatives.

Actions to be followed are given aside the respective Answer.

Below there is a detailed presentation of Qs and As according to the flow in this meeting:

Q – Mayor of Orikumi: How much in time and distance will be the advantage of the construction of this bypass?

A – Bimbli: The preferred variant is longer in distance but the best in technical and geometrical terms as well as based on the local urban planning and the perspective development of the area. It is estimated that the bypass distance will be covered less than 30 min avoiding delay in passing through Vlorë city.

Q – Muhedin Bego: Does this alignment has a panoramic view and is that considered in the design? Have the Designer considered the projects related with the Main Electrical Transmission Line and the Wind Electrical Power System?

A – Bimbli: The project team has been in contact and got detailed information on both issues mentioned. The consultations brought common agreement for the final adjustment of these infrastructure assets/projects on the site where crossing implication impacts were foreseen (new power station in Babica, poles above Radhimë area, etc.). Actually these issues are taken into account and each project has accommodated the readjustments needed.

Q – Elona Sara (NGO watchdog): Did the financing investment is secured and approved already?

A – Ermal Nuri (GRD): Feasibility Study and Detailed Design are financed by the EU IPA funds (under implementation). The Supervision costs and a part of construction cost are going to be funded by EU with

about 20 millions Euros, supported by the EBRD\EIB, in an amount of 36 millions Euros (last days the board of the bank gave the official approval of this funding).

Q – Elona Sara (NGO watchdog): I tried to download the documentations from the web site of GRD, but failed.

A – Ermal Nuri: There were few technical problems last days, but the site is accessible now and the documents can be downloaded easily.

Q – Meme Abazaj: We as representatives of the Regional Drainage Board are concern for the measures undertaken to avoid damages in the existing drainage system where the alignment is going through

A – Bimbli: The design is taking into consideration the existing drainage system and additional mitigation measures are considered to avoid blocking or damages from the road into the drainage system. We are concerned for the reservoirs and the canal near Babica where there are considered measures from the designer. The same considerations near Orikumi area.

Q – Geron Gunbardhi: As regards solid waste disposal during the construction phase, where it is foreseen to be placed?

A – Gauthier: The Contractor will develop the Environmental Management Plan where part of it will be the subject of solid waste disposal. You, as local REA, will provide collaboration and approve the disposal site. Monitoring activity from the supervision as well as the REA will be active too.

Q – Rep. of Vlorë Region: When it is foreseen to start the construction of the bypass?

A – Bimbli: Within spring next year the tender announcement for the construction will be published, while the construction activity will in place by the end of 2012 or beginning of 2013.

Q – Edmond Beqiri: Geological structures near Kaninë are sensible. What measures are foreseen?

A – Bimbli: We are aware from the geological survey. The alignment there (site Shpella e Fikut) will remain at the upper part and will stand on hard rock. Part of the alignment here will be used the existing road. Special slope protection and structures are foreseen in our design along these areas.

Q – Agim Begotaraj: Has this project foreseen exit points and/or connections with the existing roads going downward at the coast?

A – Bimbli: Yes, the design foreseen apart from the access connections with the settlements along the bypass several exit connections to the existing roads going downward to the coast. Of course the upgrade activity for the existing roads it is not part of this assignment, but in a suitable time they could be rehabilitated in connection to the bypass using other fund sources.

Q - Ilir Kokuri (Urban Office Orikum): We are in collaboration with the National Agency on Territorial Planning for a revising of the existing approved urban plan of Orikumi Commune. Your design had taken in to consideration the Orikumi Urban Plan as well as the recommendations to move upward in the Radhimë area where the Electrical Transmission Lines are moved as well. However, in case that the new updated

urban plan will be approved, you must consider eventual changes in the design. We as Orikumi Municipality will inform you about the development zone we will insist you to be consider in your design.

A - Bimbli: Provide with official letter to all parties on any eventual approval to the Orikumi Commune Urban Plan. In addition the bypass design could move upward but not more than 7% of longitudinal slope gradient of the road alignment. However, we will see your proposal and as you have been consulted already, the original alignment has been changed in close consultation with the other two projects mentioned above.

There is a letter from "The Cultural and Patriotic Association of Tragjasi Village" where is proposed a variant that follow partially the existing Orikum-Tragjasi road because the design alignment passing through high productive agriculture land, cutting irrigation channels and two rivers which need to build structures, etc.

In our design we have taken partially their request but because the technical parameters of this road we have to keep the ToR and standards design.

Q – Ardian Metaj: Please, the Consultant need to consider the proposals presented in the meeting regarding potential/possible changes (Radhimë area and last part of Orikumi link). After a comparative analysis of costs to be done these findings need to be discussed with the Contracting Authority in a coming meeting.

A – Bimbli: We agree, as Consultant, to present our findings and consider the requests of this meeting.

Abedin Muca, Director of Expropriation Department of GRD has a notice that GRD has already started the work and contacts with the three local governments within the bypass alignment for defining the affected properties and assets which will need to be compensated. He warned the Municipalities to make attention on those properties that are not in the official register of properties and/or properties under legalization.

In the end of the meeting the Consultant thank to the participation for their suggestion and contribution considering them on improving of the ESIA design project.

10.10. Appendix 10 - List of Attendees of the November 23 2011 Public meeting

Date 23 / 11 /2011

Lista e Pjesmarresve ne Konsultimin Publik te Rruges
''By - Pass i Vlores''
PREFEKTURA VLORE

Nr.	Emer Mbiemer	Profesioni	Adresa dhe nr. Tel.
1	Geran Gjinbordha	A. R. M. VLORË	0672074796
2	Fredo Berberi	K. Kom. Qender	0672010841
3	EDMOND BEQIRI	P/ZYRES URB. Kom. QENDER	0692082365
4	Emira Shtino	Arkitekte Kom. Qender	0682081933
5	Abedin Mucaj	Drejtor i shpronesimeve	0672064921
6	Ermal Nuri	PM / G.R.D	0672050363
7	Elfrim Zotaj	D. P. R. V	0672046772
8	Lejla Saraci	MPPT	0672081554
9	Edlirina Jkau	D. P. Qr	0682234180
10	ILIR KOKILI	D P U B ORIKUM	0632065330
11	Azem Selmani	Biznes	0682055154
12	Muhedin Bejo	Porta Vlore	0674018801
13	Agim Bepshari	Bashkia Orikum	0692262874
14	Gezim Capo	Kr. Bashkise Orikum	0692055935
15	Najada Dervishi	Drejtoria Shpronesimeve	0672021247
16	Leonora Hoxha	Specialiste drejtoria shpronesimeve DPR	0672025156
17	Andrea Mekaj	PM. EU Delegation	Andrea. Mekaj @ ecas. europa. eu
18	Arminda Jorbraj	DPRR. Qarkut Vlore	0672147348 bruni lolo 84 @ gmail
19	Xhafer Hoxha	N. Kryetar Komuna Q. Vl	0674065473
20	Meme Habazaj	K/A / Tekute St. Vlore Qendra	0682356793
21	NIKO DERVISHI	SPECIALIST PREFEKT	Prefektura, 0622513338
22	Elona Saro	Specialiste Mjedisi	0692029231 elona.saro@eelen.org
23	Merkur Zegiri	Albegis	0682662004
24	Mathieu Delobel	Egis	+386 49 36 234
25	Gezim Porhuleli	Albegis	0682037398
26	Rexhep Losi	Albegis	0692100004
27	Andrian Volo	Albegis	0682043525
28	Daniel Gauthier	Egis	
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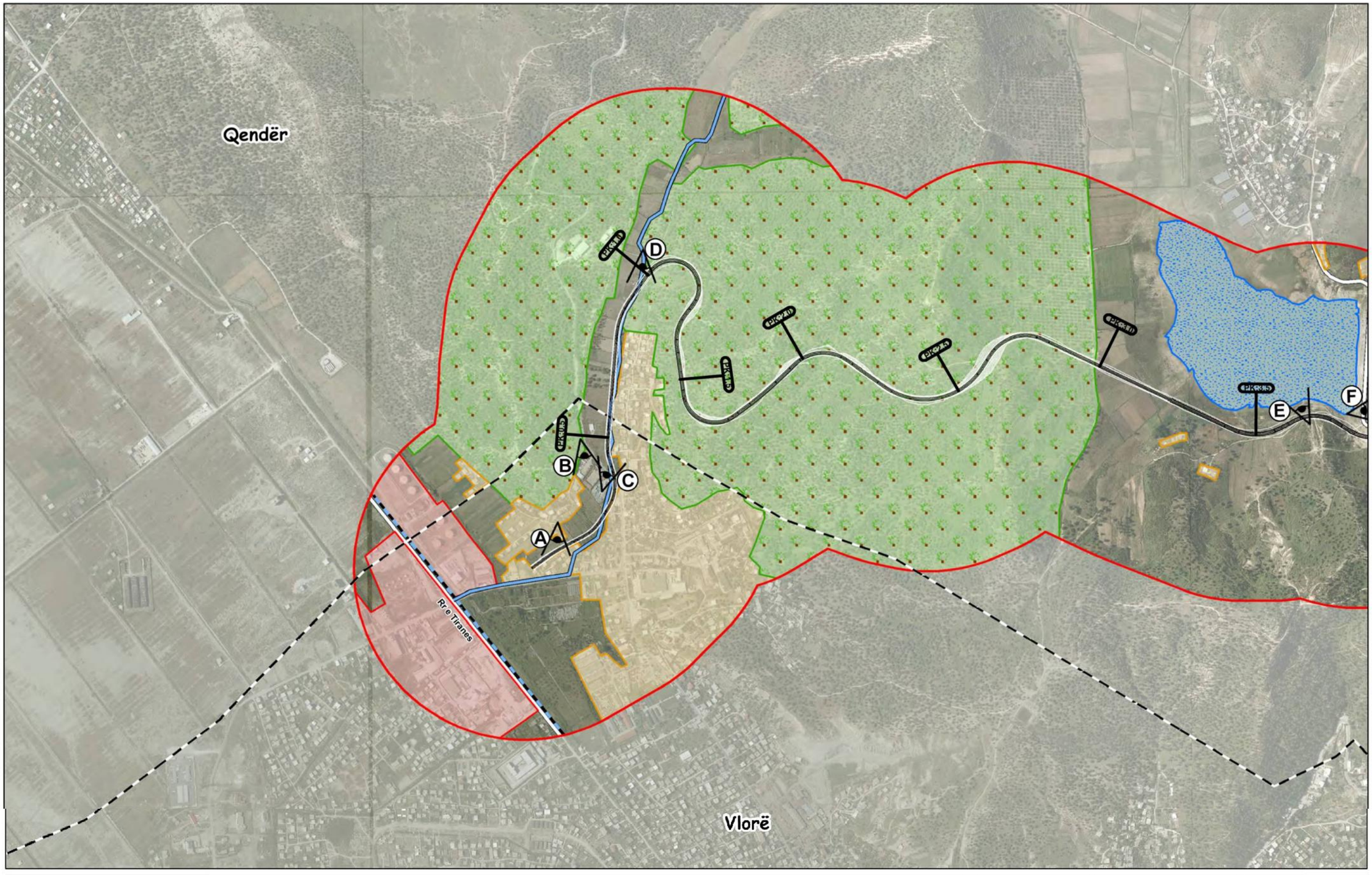
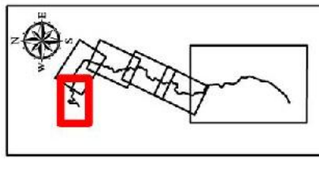
10.11. APPENDIX 11 - BASELINE ENVIRONMENT MAPS





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Municipality limits	photo Viewpoint	Historic village	Semi-naturel habitat Maquis	Industrial area	Drainage ditch
Study area	Citadel	Cemetery	River or stream	Residential area	Road
Project	Mosque		Canal / Lake	Olive grove	Electrical substation

Cultural Heritage - Landscape · *Natural resources* · *Human resources*

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Ministry of Public Works, Transportation and Telecommunication

Vlora Bypass - ESIA
Baseline conditions

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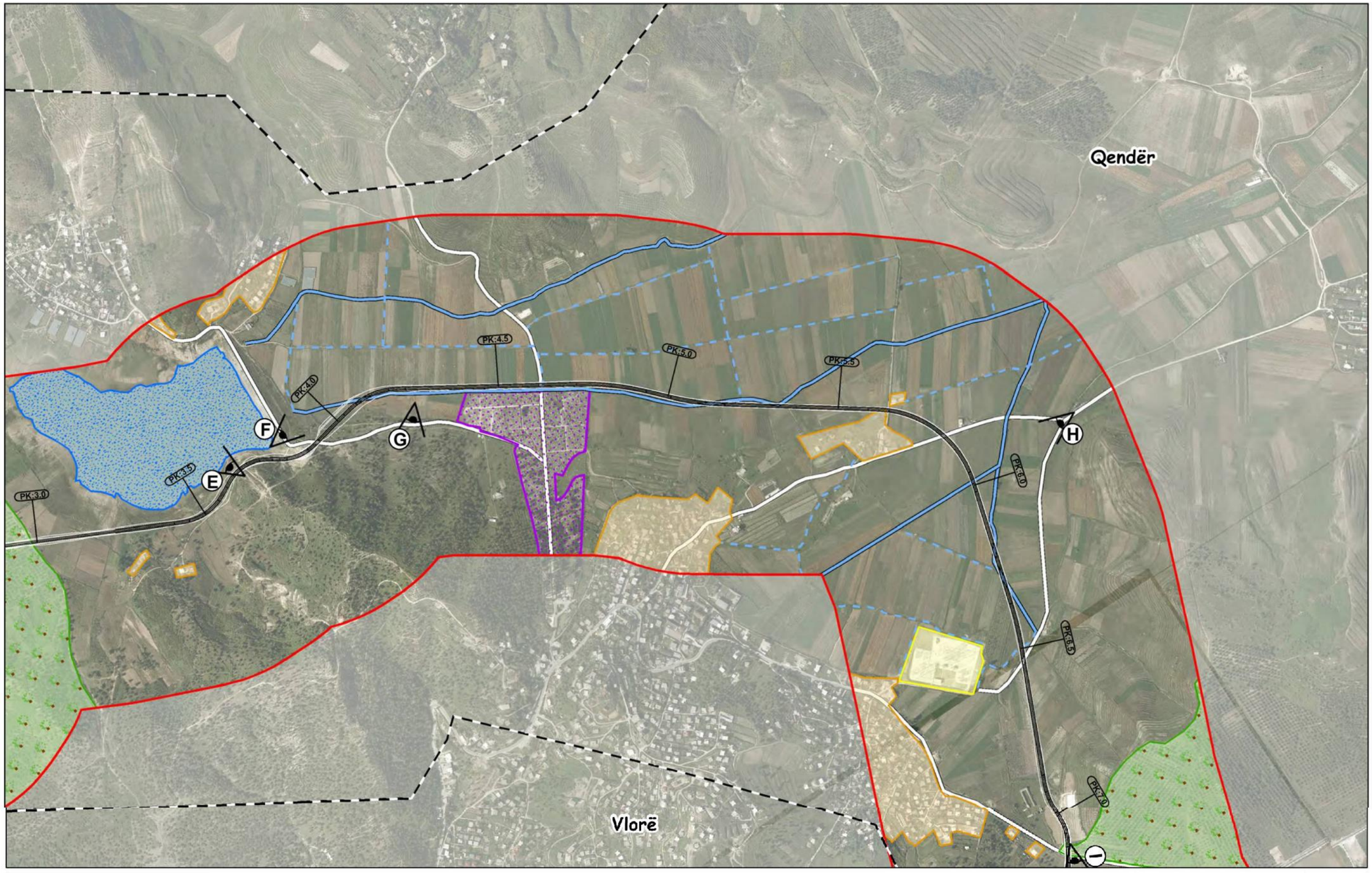
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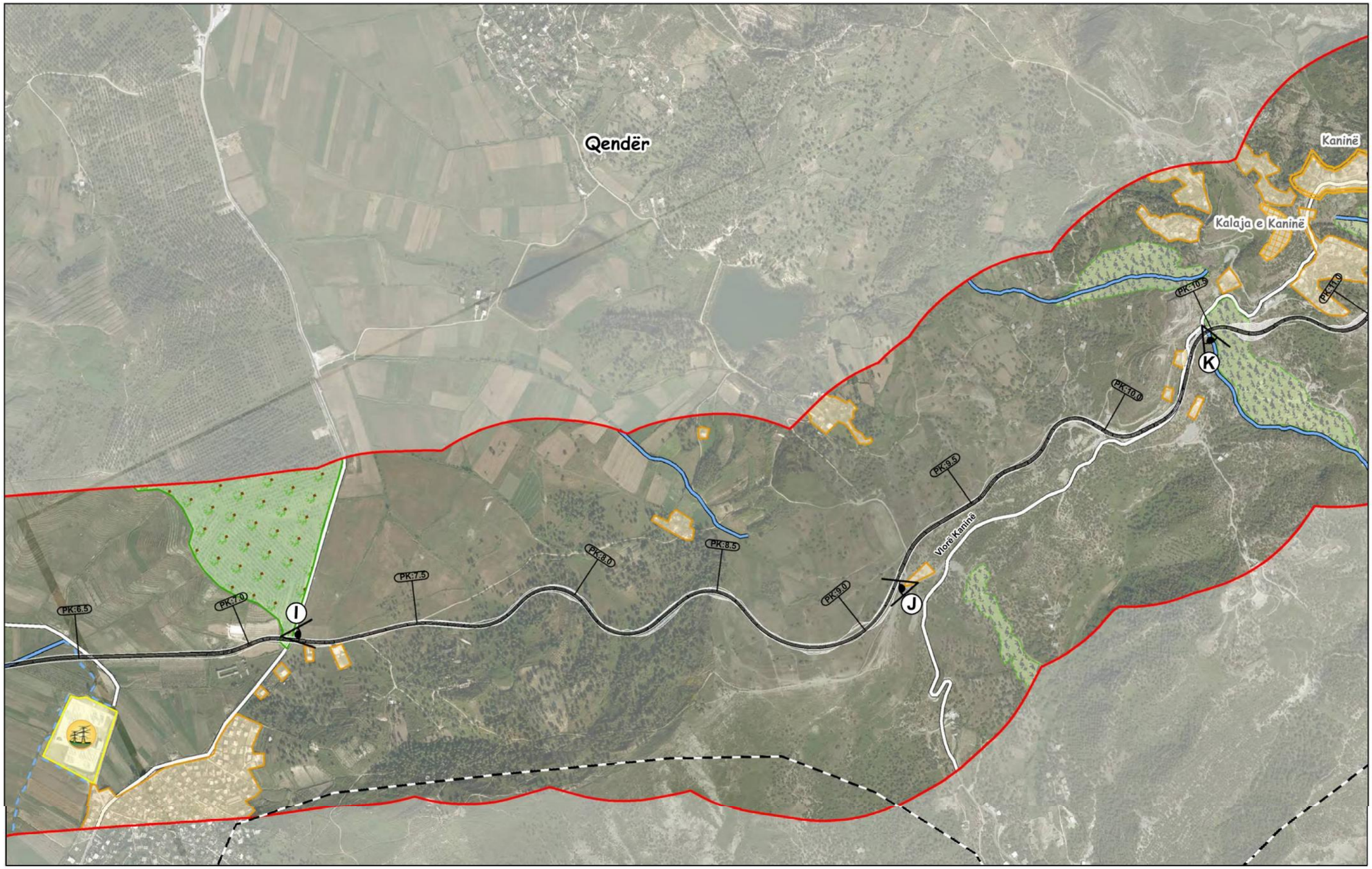

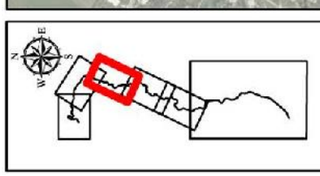

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photo Viewpoint
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Historic village
Cemetery

Natural resources

Semi-naturel habitat Maquis
River or stream
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Human resources

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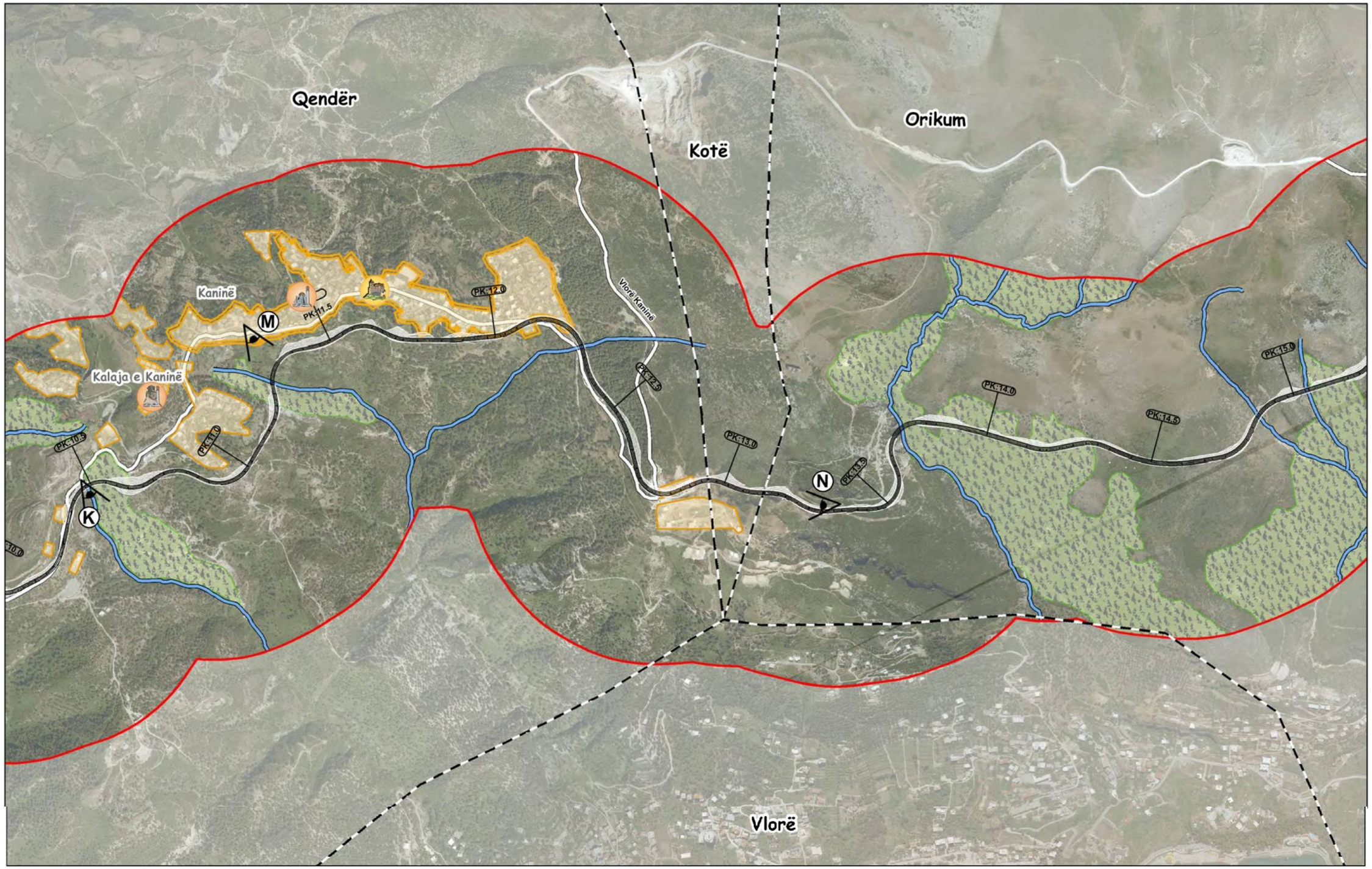
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Vlorë
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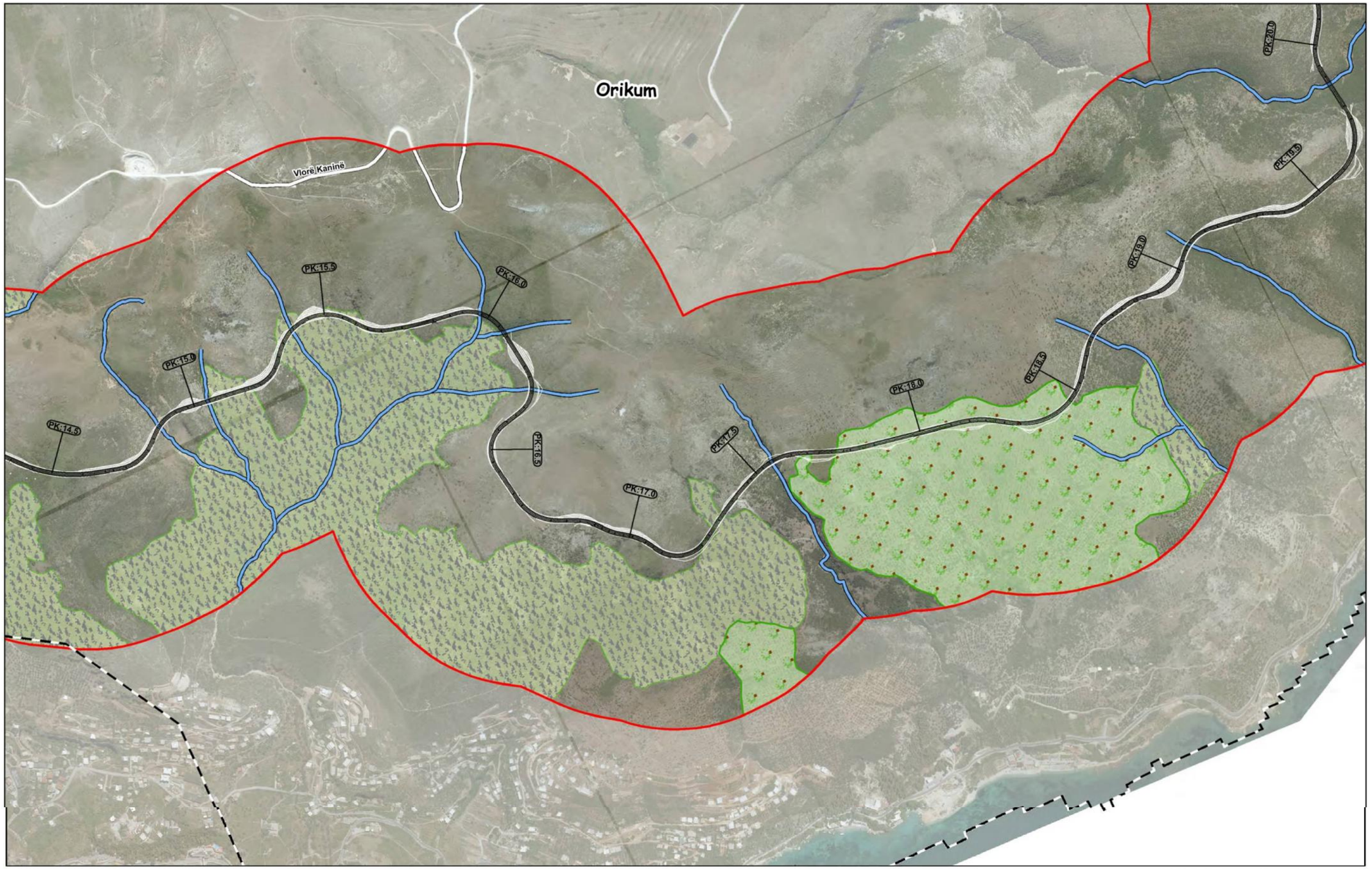
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photo Viewpoint
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Mosque
Historic village
Cemetery
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Semi-naturel habitat Maquis
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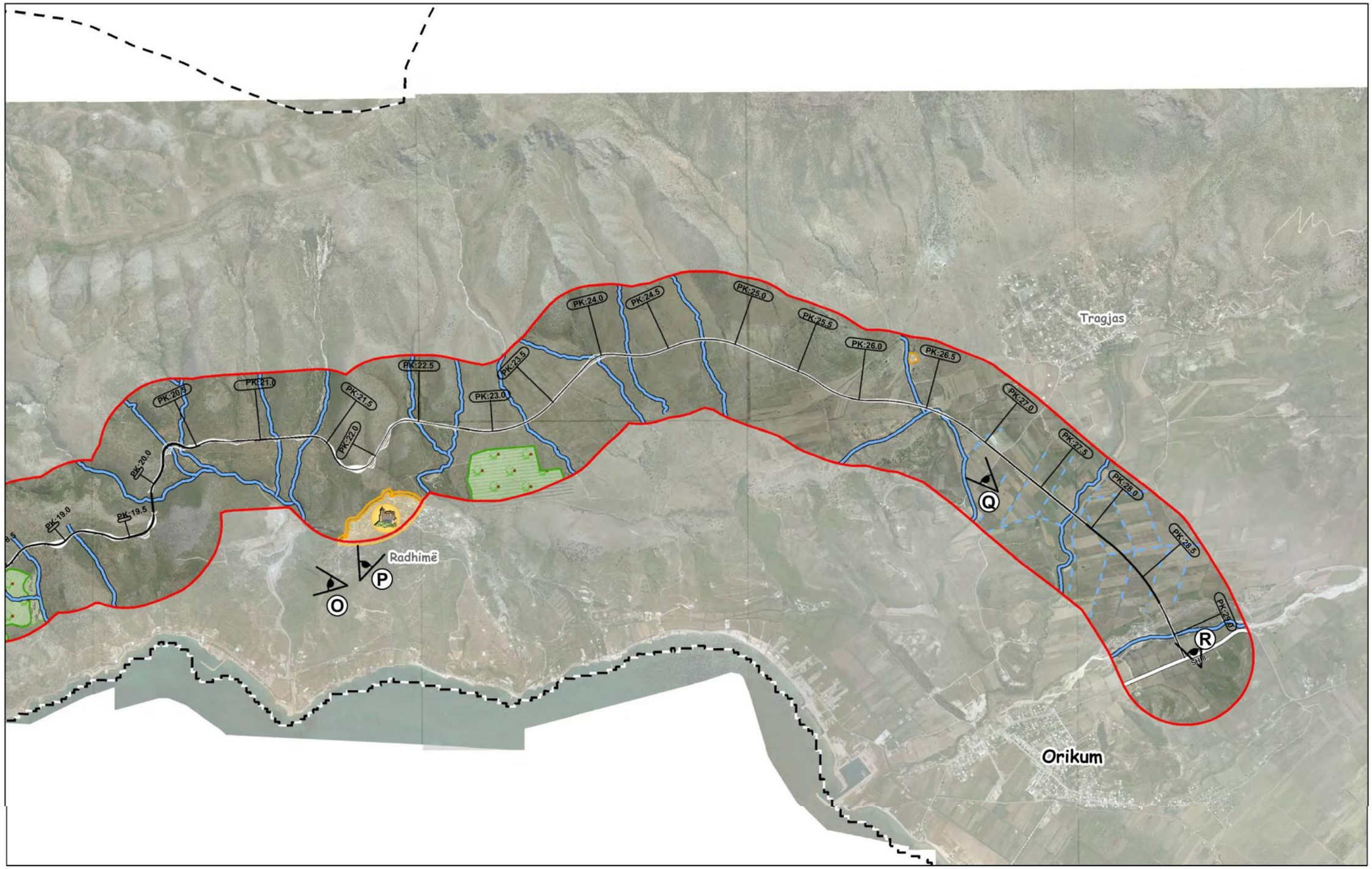
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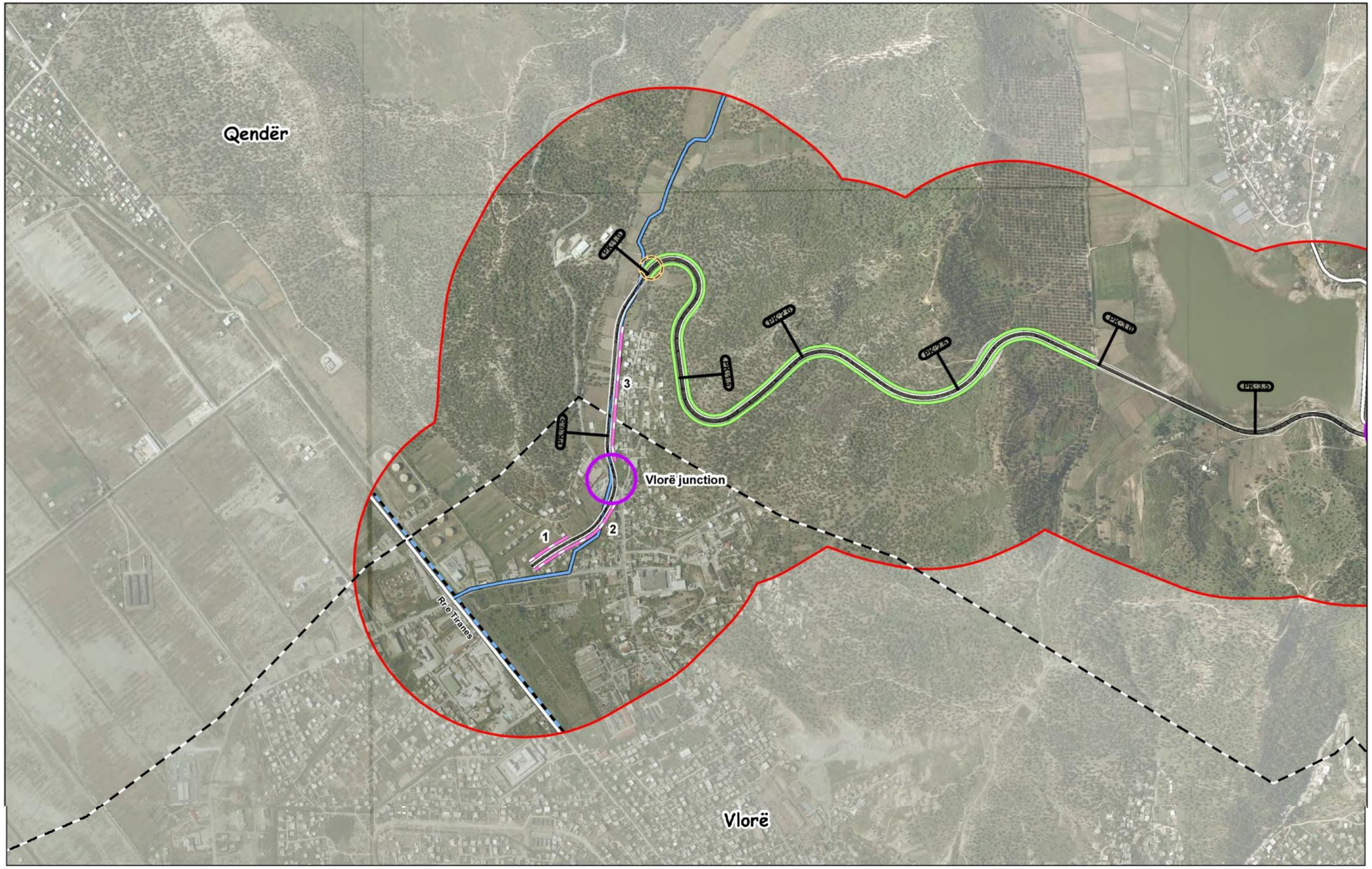
10.12. APPENDIX 12 - MITIGATION MEASURES MAPS



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Road

Mitigation measures

Junction
Underpass
Noise barrier
Sound insulation of facades
Sensitive water habitat crossing
Protection of olive grove or maquis
Retaining walls made of earthtone materials
Potential rest parking

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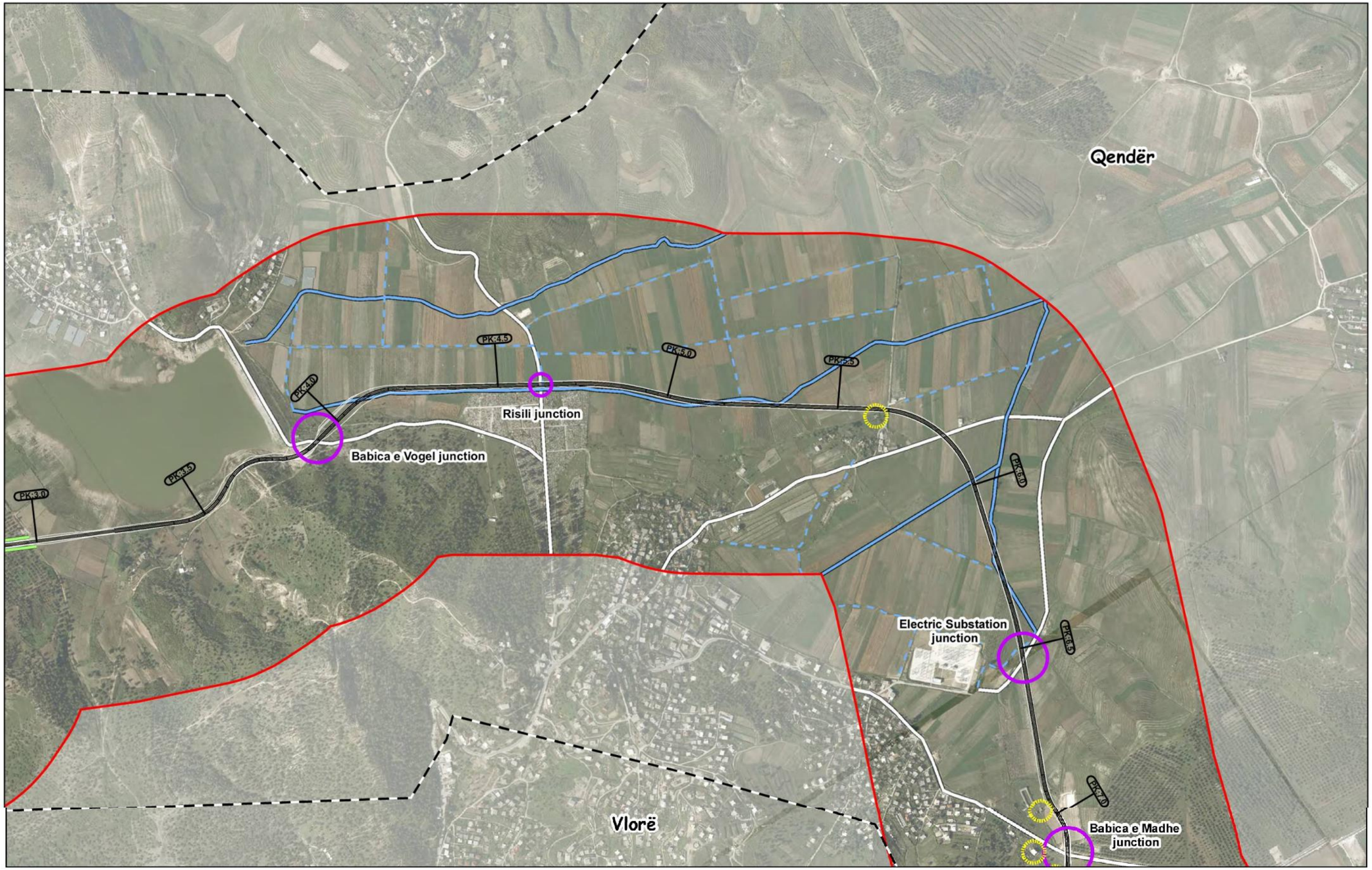
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Risili junction
Babica e Vogel junction
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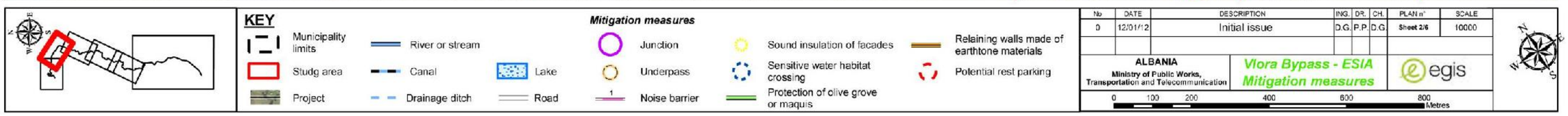
PK6.0
Electric Substation junction
PK6.5
PK7.0
Babica e Madhe junction
Vlorë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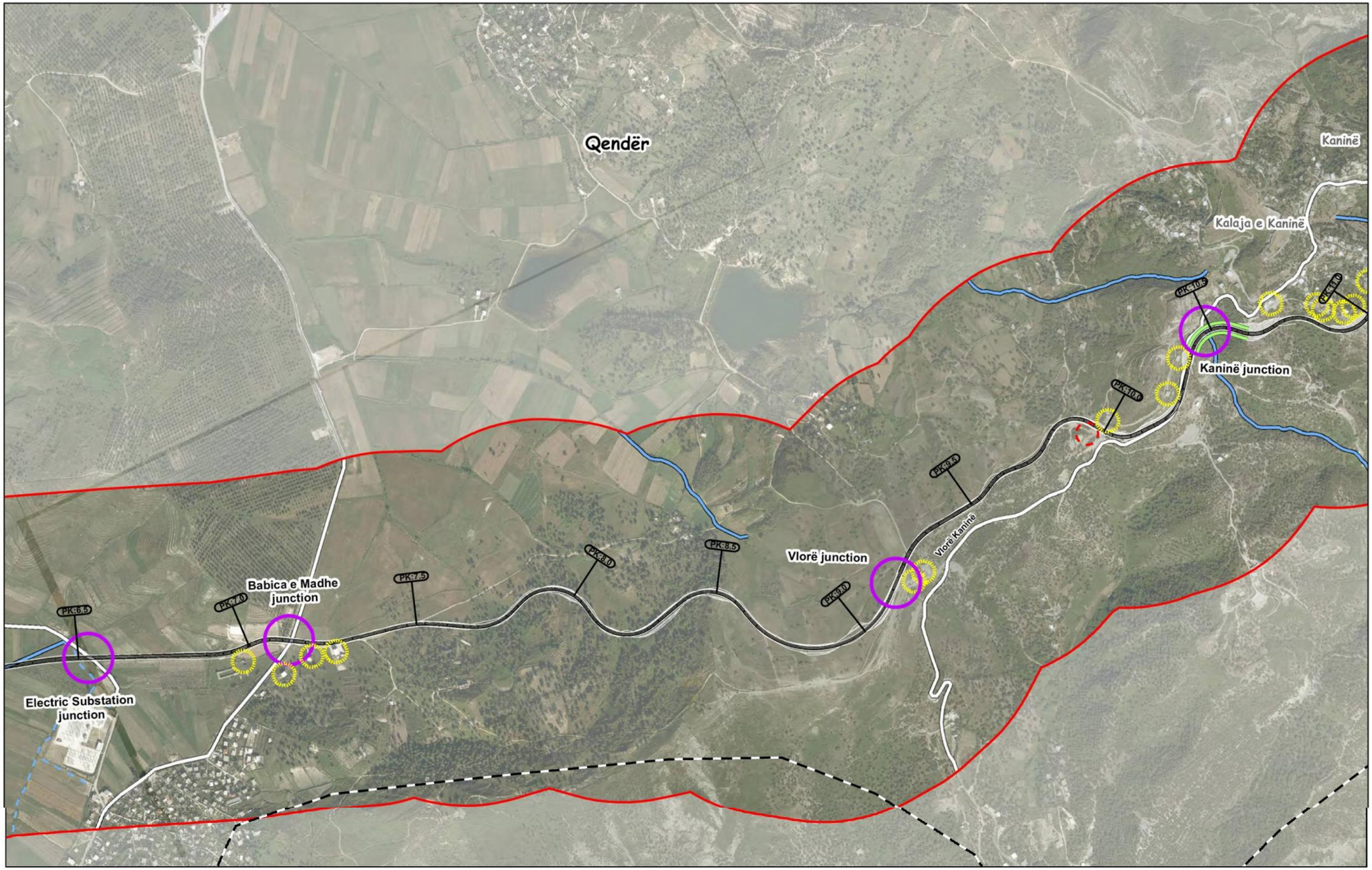

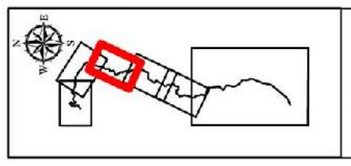

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Sensitive water habitat crossing
Protection of olive grove or maquis
Relaining walls made of earthtone materials
Potential rest parking

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Ministry of Public Works, Transportation and Telecommunication

Vlora Bypass - ESIA
Mitigation measures

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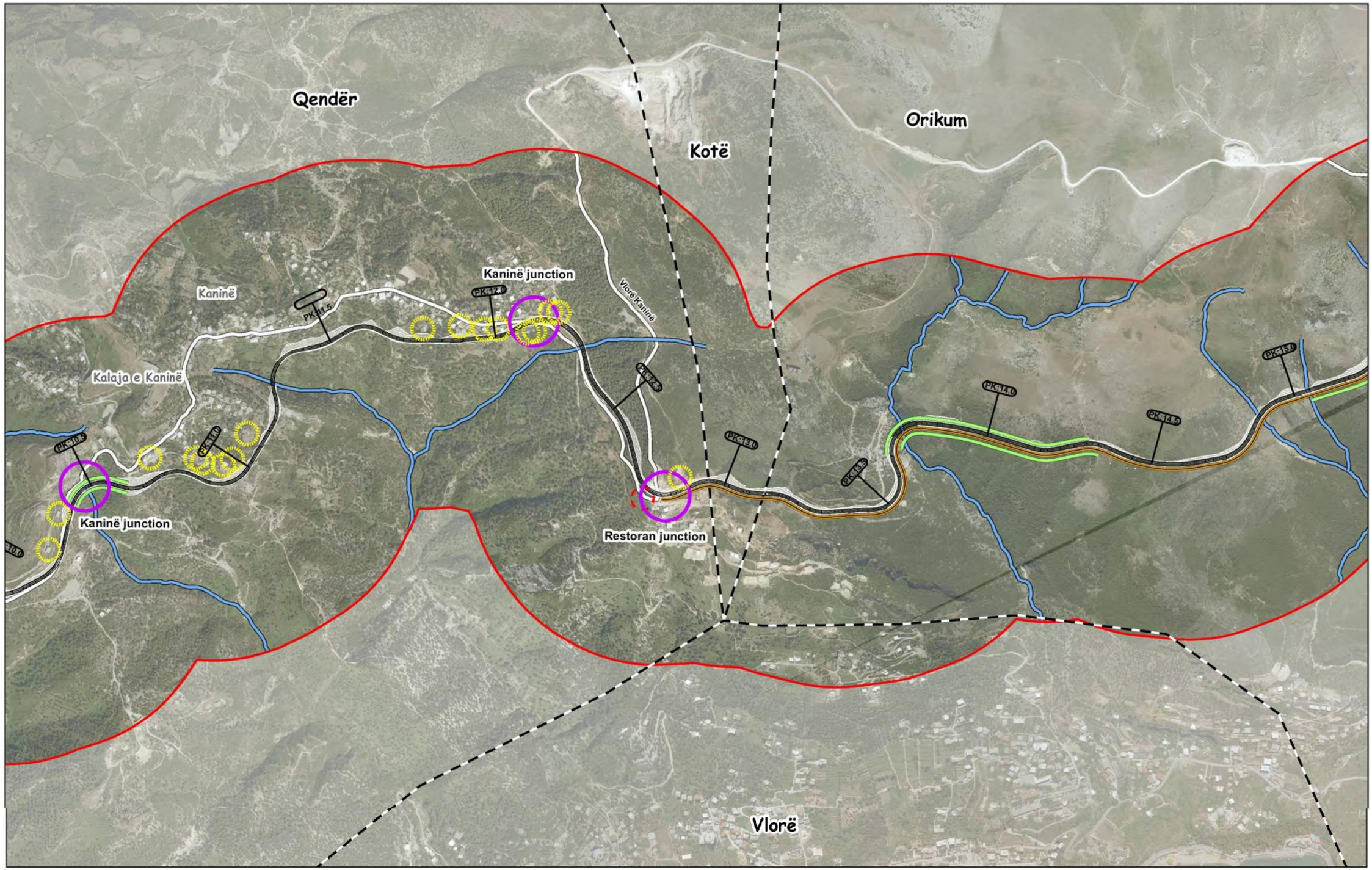

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Mitigation measures

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Sound insulation of facades
Sensitive water habitat crossing
Protection of olive grove or maquis
Retaining walls made of earthtone materials
Potential rest parking

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Ministry of Public Works, Transportation and Telecommunication

Vlora Bypass - ESIA
Mitigation measures

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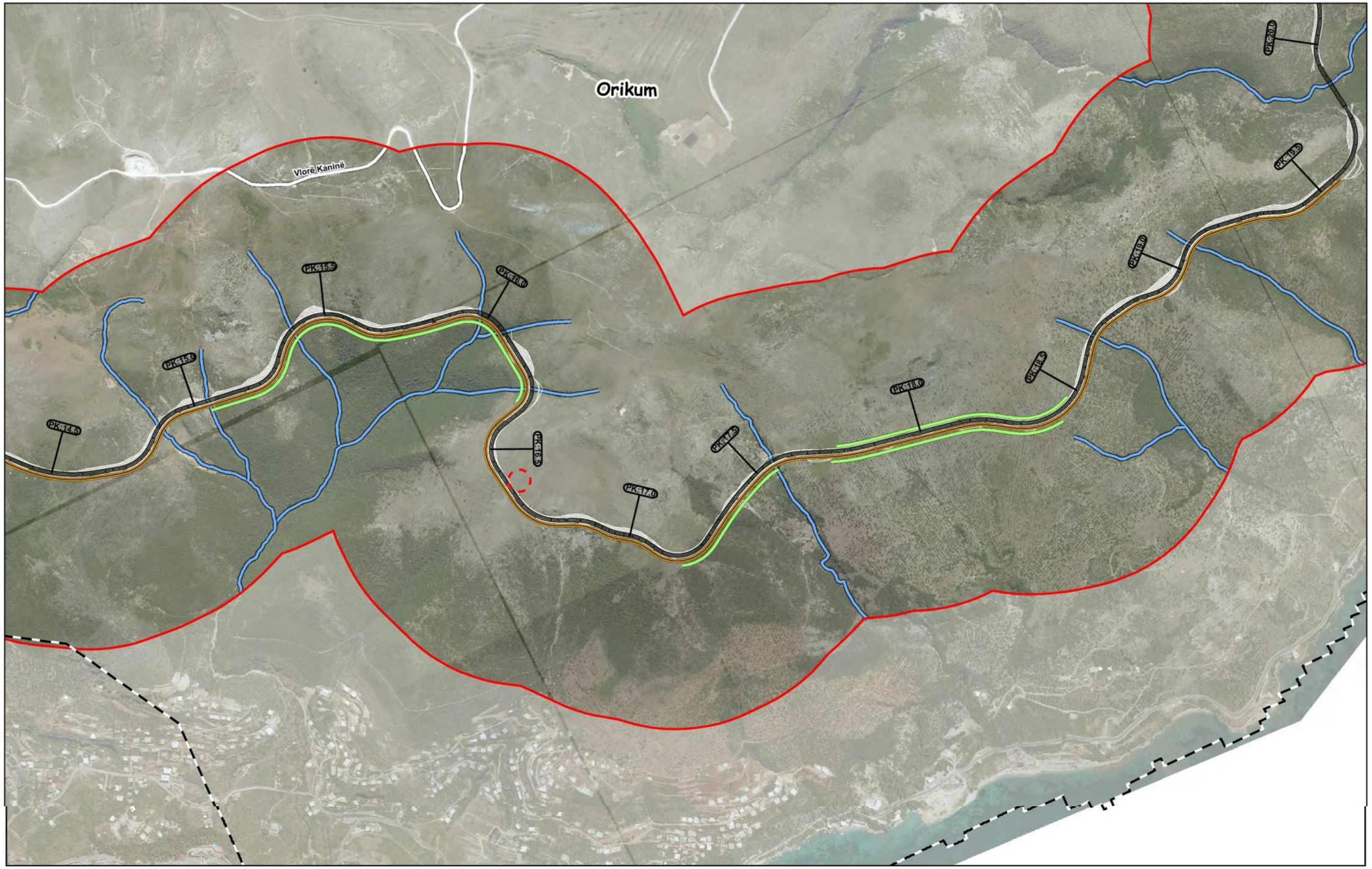
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Vlorë Kaninë
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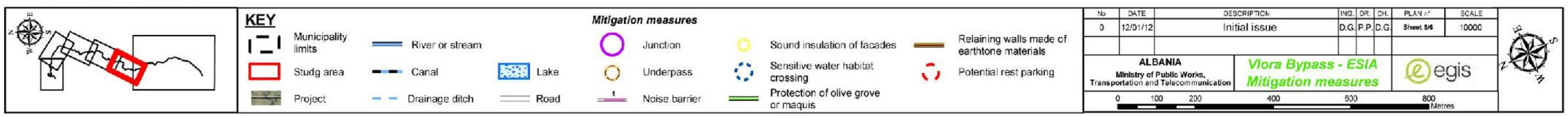
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Protection of olive grove or maquis
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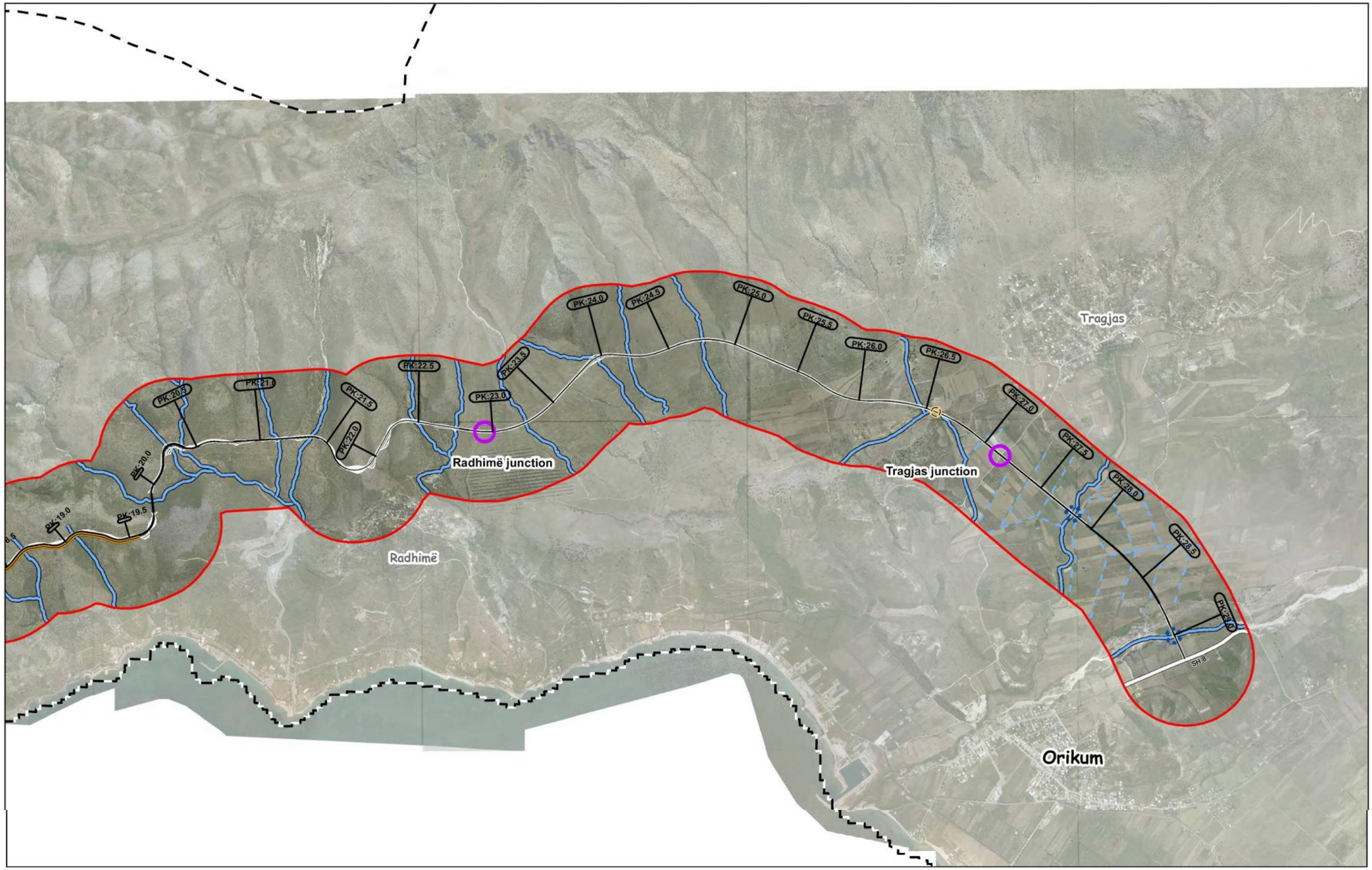
0
12/01/12
Initial issue
D.G.
P.P.
D.G.
Sheet 5/6
10000
ALBANIA
Ministry of Public Works, Transportation and Telecommunication
Vlora Bypass - ESIA
Mitigation measures
egis
0
100
200
400
600
800
Metres



KEY

Municipality limits
Studg area
Project
River or stream
Canal
Drainage ditch
Lake
Road

Mitigation measures

Junction
Underpass
Noise barrier
Sound insulation of facades
Sensitive water habitat crossing
Protection of olive grove or maquis
Relaining walls made of earthtone materials
Potential rest parking

No	DATE	DESCRIPTION	ING.	DR.	CH.	PLAN n°	SCALE
0	12/01/12	Initial issue	D.G.	P.P	D.G.	Sheet 6/6	25000

ALBANIA
Ministry of Public Works, Transportation and Telecommunication

Vlora Bypass - ESIA
Mitigation measures

egis

0 250 500 1 000 1 500 2 000 Metres