



**Ministry of Regional Development and Infrastructure of Georgia.
Roads Department of Georgia.**

**DETAILED DESIGN FOR THE CONSTRUCTION OF
POTI-GRIGOLETI-KOBULETI BYPASS.
SECTION OF INTERNATIONAL E-70 SENAKI-POTI (DETOUR) - SARPI (BORDER
OF TURKISH REPUBLIC) ROAD**

LOT 1: GRIGOLETI-KOBULETI BYPASS ROAD

**ACTIVITY 2 (DETAILED DESIGN, LOT 1)
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT**
(Annexes, volume 1)

Project Code: 5100160001-1GE

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ANNEX 1. METHODOLOGY

BASELINE DATA GATHERING METHODOLOGY

Botanical and faunistic surveys

The assignment consisted of a review of primary and secondary data (government and consultant reports, etc.). Botanical and fauna surveys were made. Field works were performed by biodiversity team (botanists and fauna specialists) in August and October 2016.

The objective of the botanical study was to identify plant communities within the section of interest, reveal sensitive populations and, if found, provide quantitative characteristics thereof. With consideration of expected direct and indirect impact, the corridor of 100 m on each side of the centreline was surveyed. The method of survey was walkover.

The main types of plants, as well as composition, distribution, dominant species, biome sensitivity and commercial value of plants were assessed. The presence of endemic, rare and other protected species in the project impact zone was identified.

Fauna field survey was organised with the purpose of verifying the data obtained from the literature on the animal species composition and areas of occurrence. A simple methodology of surveying including registration of animal footprints, droppings and dwellings was applied to collect information on key species of mammals and birds in the project impact area.

Negative impacts of road construction and operation were evaluated according to the main principles indicated in the Law on the Wildlife, the Law on the Red List and the Red List of Georgia. Along with the national legislation/ regulations, international requirements (such as the EBRD policy, the World Bank operation procedures, etc.), and the EU Directives to which Georgia is a party were taken into account.

Soil pollution

Evaluation of adverse impacts on soil and soil pollution was performed according to the Georgian laws and regulations (the law applicable to the largest extent is the Law on the Soil Protection).

For identification of the background quality of the soil along the road, samples were collected (October 2016). Taking into account that the area is mostly rural and no

significant sources of pollution, except for the road itself are available, four average samples were collected. The samples were collected from the sampling depth of 0-10cm. The total amount of soil collected from one site was 1 kg. Prior to sampling, the sampling spots were cleared of grass and stones. Samples were collected in plastic bags, labelled and delivered to the lab for testing. The samples are dried, averaged and sieved.

Methods of soil analysis

Cu, Zn, Pb, Ni, Co, Co, Cd	ISO 11047, ISO 11466 - Aqua Regia extract Determination of Cu, Mn, Fe, Mn, Co, Pb, Cd, Ni, Zn, Cr, Ni. Al
As	ISO 2590 - General method for the determination of arsenic – Silver diethildithiocarbamate photometric method

The sample analysis revealed that concentration of all metals is below relevant maximum allowable concentrations adopted in the EU.

Water sampling

Water from Supsa and Sepa rivers was sampled for identification of the background water quality. The samples were collected in 1.5-liter capacity plastic bottles. 1 liter glass bottles were used for Total Petroleum Hydrocarbon analysis of water. Samples were labelled and delivered to the lab the same day. Analyses were performed in compliance with the ISO and EPA standards.

Methods of surface water analysis

Parameter	Method
pH	ISO 10523-2008
Conductivity	ISO7888:1985
Cl	GOST 23268.17-1978
HCO3	GOST 23268.1-91
SO4	ISO 9280-1990
K	ISO 9964-3-1993
Ca	GOST 23268.5-1978

Parameter	Method
Mg	GOST 23268.5-1978
Na	ISO 9964-3-1990
DO	ISO 5814-72
Total N	ISO 7890-82
Total P	ISO 6878-04
TPH	EPA 418.1-1997

Samples were analysed by Gamma lab.

IMPACT ASSESSMENT METHODOLOGY (CRITERIA)

Impact Assessment Methodology

The impact of the project on the physical, biological and socio-economic environment has been assessed using methodology described below.

Identification of Impacts - The impact assessment process involves identification of activities and potential impacts (environmental and social environment) resulting from each activity at all phases (preparation, construction, operation and decommissioning) of the project as well as planned routine activities; planned non-routine activities; unplanned or accidental events. The types of possible impact are defined as follows:

- Negative – an impact that is considered to represent an adverse change from the baseline, or introduce a new undesirable factor;
- Positive or beneficial – an impact that is considered to represent an improvement to the baseline or introduces a new desirable factor;
- Direct/ primary – an impact that results from direct interaction between a planned activity and receiving environment;
- Secondary – impacts that follow on from the primary interactions between the project and environment as a result of subsequent interactions within the environment;
- Indirect – impacts that result from other activities that are encouraged to happen as a consequence of the project (e.g. new business set up to cater for increased traffic on roads);
- Cumulative – impacts that act together with other impacts, from the same or other projects, to affect the same environmental or social resource or receptor;
- Short-term – impacts that are predicted to last only for a limited period (e.g. during construction) but will cease on completion of the activity, or as a result of mitigation/reinstatement measures and natural recovery (e.g. temporary employment of unskilled workers during construction);
- Long-term – impacts that will continue over an extended period, but cease when the project stops operating. These will include impacts that may be intermittent or repeated rather than continuous if they occur over an extended time period;
- Permanent – impacts that occur during the development of the project and cause a permanent change in the affected receptor or resource (e.g. the destruction of a cultural artefact) that endures substantially beyond the project lifetime;
- Accidental – impacts that result from accidental (unplanned) events within the project or in the external environment affecting the project (e.g. landslide). In these cases the probability of the event occurring is considered.

Development of mitigation measures. The measures to avoid, eliminate, reduce or compensate identified impacts are developed. Part of mitigation measures is inherent

in design; others, are identified in the ESIA process. The mitigation measures are tracked through to the Project Commitments Register. Mitigation measures cover high and medium impacts. A hierarchy of options for mitigation has typically been explored as follows.

- Avoidance at source – remove the source of the impact
- Abatement at source – reduce the source of the impact
- Attenuation – reduce the impact between the source and the receptor
- Abatement at the receptor – reduce the impact at the receptor
- Remediation – repair the damage after it has occurred
- Compensation/offsetting – replace in kind or with a different resource of equal value.

Note: according to the good practice compensation/offset does not automatically make an impact 'acceptable'.

Residual impacts and defining significance. Any impacts remaining after mitigation measures have been applied are considered residual impacts. The significance level of the residual impact is assessed as a combination of: importance/sensitivity of the receptor and magnitude of the impact. To allow assessment of impact significance, tables have been specifically developed for this project to define the importance/sensitivity of receptor and the magnitude of a potential impact. Significance is ranked in four categories: high, medium and low adverse, and beneficial. The same rankings principle is used for both environmental and social residual impacts..

Importance/sensitivity of the receptor. The importance/sensitivity of receptor is defined taking into account such matters as its local, regional, national or international designation, importance to the local or wider community, ecosystem function or economic value. Importance/sensitivity of the receptor is determined on A–E tiered scale, where A = very low; B = low; C = medium; D = high; and E = very high.

Magnitude of Impact. Magnitude encompasses all dimensions of predicted impact including:

- nature of the change (what is affected and how)
- size, scale or intensity
- geographical extent and distribution
- duration, frequency and reversibility.

Project-specific magnitude tables have been developed for each impact. The magnitude of the impact is determined on 1–5 tiered scale. Where 1 = very low; 2 =

low; 3 = medium; 4 = high; 5 = very high.

Note: Where an impact meets criteria in more than one level of impact, it is categorised according to the highest level.

Impact significance assessment tables. Each topic has two associated tables, one indicating importance/sensitivity of receptors and the other indicating magnitude of impact.

Soil and ground conditions assessment criteria:

Receptor Importance/Sensitivity	Ranking	Examples
Very low	A	Unused land
Low	B	Land used for grazing by roaming graziers
Medium	C	Agricultural land used for cereals; Land used for permanent grazing
High	D	Land used for fruit or other high value crops;
Very high	E	Houses or communities close enough to be impacted by project. Sites of international importance/designated for protection at international level.

Ranking of magnitude of predicted impacts on soils and ground conditions

Magnitude	Ranking	Examples
Very Low	1	No detectable effect on soils or ground conditions;
Low	2	Restoration to initial (before the project) state is possible within several hours after 'removal' of the source of impact.
Medium	3	Restoration to initial (before the project) state is possible within days after 'removal' of the source of impact
High	4	Restoration to initial (before the project) state is possible within month after 'removal' of the source of impact
Very High	5	Restoration to initial (before the project) state is not possible

Surface water

Importance/Sensitivity of Surface Water Resources and Users

Receptor Importance/Sensitivity	Ranking	Examples
Very low	A	Highly polluted watercourses, e.g. those with severely restricted or impoverished ecosystems or biology restricted to pollution tolerant species Watercourses with no community use or only used for low grade industrial use; Fish are absent or very limited (met on sporadic basis).
Low	B	Watercourses with some pre-existing pollution that limit their use or value for wildlife or communities; Low-level use of water for agriculture/ industry; Fish is present in low numbers

Medium	C	River used for recreational fishing or bathing; Water used extensively for agriculture; Watercourse supports a good fish population
High	D	Watercourse of high quality, e.g. close to its natural state or close to that expected for an unpolluted river; Watercourse that is an important constituent of, or supports, an area or a species value or designated for its ecological importance at national level; Watercourse used for drinking or domestic use, e.g. washing and cooking, by a small number of users; Watercourse supporting fish; Watercourse supporting a commercial or subsistence fishery; Transboundary river
Very high	E	Watercourse of very high quality, e.g. in its natural state or corresponding to that expected for an unpolluted river; Watercourse that is an important constituent of, or supports, an area or a species valued or designated for its ecological importance at national/international level; Watercourse used for drinking or domestic use, e.g. washing and cooking, by a large number of users; Watercourse supporting sturgeons

Ranking of Magnitude of Predicted Impacts on Surface Water

Magnitude	Ranking	Examples
Very Low	1	Direct or indirect impacts largely not discernible; No effect on users;
Low	2	Scarcly visible deterioration of quality (e.g. increase of turbidity) short term, local and rapidly recoverable. Flow is not blocked. Physical disturbance of watercourse limited to immediate working area; Rapid return to baseline conditions on completion of project activities No impact on users.
Medium	3	Short term, visible deterioration of water quality – slight increase of turbidity, siltation of

		<p>riverbed. Impact recoverable within 1 hour after 'removal; of the source of impact.</p> <p>Physical disturbance of watercourse does not happen. Quality deterioration is in allowable limits.</p> <p>Direct or indirect impact on water users.</p>
High	4	<p>Visible sediment and siltation of watercourse.</p> <p>Pollution with spilled fuel/oil.</p> <p>Direct or indirect impact on community.</p> <p>Significant deterioration of the resource value or restriction of possibility of the resource use.</p> <p>Deterioration of quality endangers water biodiversity.</p> <p>Deterioration of quality exceeds allowable limits.</p>
Very High	5	<p>Deterioration of quality significantly exceeds allowable limits.</p> <p>Direct or indirect impact on community.</p> <p>Deterioration of the resource value that makes it unusable.</p>

Groundwater

Importance/Sensitivity of Groundwater Resources and Users

Receptor Importance/ Sensitivity	Ranking	Examples
Very low	A	Non-aquifer (soil/geology with no groundwater resource) very low quality, groundwater/ groundwater not used by community
Low	B	Water quality is low, Resource is not used.
Medium	C	<p>Groundwater used for industrial purposes or agriculture;</p> <p>Groundwater that provides base flow to surface watercourses used for recreational fishing or bathing;</p> <p>Springs and wells</p>
High	D	<p>Groundwater of high quality;</p> <p>Resource is used for drinking and household purposes.</p> <p>Ground water feeding surface water of high ecological value or wetland area.</p> <p>Transboundary aquifer.</p> <p>Underground mineral waters.</p>
Very high	E	<p>High quality ground water, used for drinking and household purposes by large number of users..</p> <p>Ground water that feeds surface water of high</p>

		<p>ecological value or wetland area.</p> <p>Transboundary horizon.</p> <p>Underground mineral water used for healing purposes.</p>
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Ranking of Magnitude of Predicted Impacts on Groundwater

Magnitude	Ranking	Examples
Very Low	1	-.
Low	2	Direct or indirect impact not visible. No impact on users. No change in water level.
Medium	3	Ground water level change negligible. No risk of pollution.
High	4	Temporary flooding of small area cause by water level change; Direct or indirect impact on population and value of the resource. Significant deterioration of quality that temporarily restricts the use of the resource.
Very High	5	Significant change of water level, flooding/waterlogging of the area; Significant change or loss of the resource

Air quality

Importance/Sensitivity of Receptors for Air Emissions

Receptor Importance/ Sensitivity	Ranking	Examples
Very low	A	Areas where people are not met; Pastures of unused land; Fauna not sensitive to dust emission.
Low	B	The areas were people are present on short term, temporary basis only. Plants/crops tolerant ro dust emissions (cereal, fooder crops). Fauna species tolerant to dust emissions (e.g. highly mobile mammals).
Medium	C	Places or buildings where people may stay for comparatively longer period of time – i.e. longer duration of impact is expected; Plants/cops with moderate tolerance to dust emissions. Fauna species with moderate tolerance to dust emissions.

High	D	Schools, offices, shops where impact is significant, but not permanent; Plants/crops with high sensitivity; Fauna with high tolerance to dust emissions
Very high	E	Residential buildings (including hospitals) where near-constant presence of people is possible and long-term exposure to dust is likely; Crops, vegetation and fauna of very high susceptibility/very low tolerance of dust emissions; Ecological sites designated at international level

Ranking of Magnitude of Impacts of Emissions to Air

Magnitude	Ranking	Examples
Very Low	1	Temporary combustion emissions during construction; Short term concentration (< 24 hrs) C < 0.5 MPC
Low	2	Spreading of dust (long term or frequent). Significant growth; Short term concentration (< 24 hrs) 0.5 < MPC < C < 0.75 MPC
Medium	3	Spreading of dust (long-term or frequent); Negligible disturbance of population – but no negative impact on human health; Short term concentration (< 24 hrs) 0.75 MPC < C < 1 MPC
High	4	Spreading of dust (long-term or frequent); Worth to mention nuisance for community, in particular for people sensitive to the impact; Short term concentration (< 24 hrs) 1 MPC < C < 1.5 MPC
Very High	5	Spreading of dust (long-term or frequent); High nuisance; Impact on health Short term concentration (< 24 hrs) C > 1.5MPC

Noise

Importance/Sensitivity of Noise Receptors

Receptor Importance/Sensitivity	Ranking	Examples
Very low	A	Project workforce; travellers; No other human receptors
Low	B	Workforce, people using the area on temporary basis
Medium	C	Residents

High	D	Schools
Very high	E	Hospitals

Ranking of Magnitude of Noise Emissions

Magnitude	Ranking	Examples
Very Low	1	Increase of acoustic background by <3 dBA .Not perceptible difference. Night time and daytime levels are not exceeded
Low	2	Increase of acoustic background in work area, industrial or commercial zone by 3–5 dBA. Increase at sensitive receptor is not perceptible
Medium	3	Increase of acoustic background at sensitive receptor by 6–10 dBA, value <70 dBA
High	4	Increase of acoustic background at sensitive receptor by >10 dBA, value >70 dBA
Very High	5	Significant increase of acoustic background at sensitive recipient. Value >70dBA, involves tonal and impulse noise.

Vibration

Importance/Sensitivity of Receptors for Vibration

Receptor Importance/Sensitivity	Ranking	Human Disturbance	Building Disturbance
Very low	A	There are no people in impact zone. Travelers	Industrial structures and buildings; Heavy public buildings
Low	B	Workforce; People temporarily using/being in the area	
Medium	C	Residents	Multi-storey reinforced concrete building; Timber residential buildings
High	D	Schools	Block or brick work residential buildings
Very high	E	Hospitals	Light and prefabricated constructions; Historical buildings and archaeological sites; Buildings containing

			equipment sensitive to vibration, e.g. recording equipment
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Ranking of Magnitude of Predicted Impacts from Vibration

Magnitude	Ranking	Human Disturbance	Building Disturbance
Very Low	1	Vibration unlikely to be perceptible (<0.14 mm/s PPV)	Cosmetic damage to building unlikely (<0.6 mm/s PPV)
Low	2	Vibration might be perceptible (<0.14-03 mm/s PPV)	Cosmetic damage to building unlikely (<0.6 mm/s PPV)
Medium	3	Vibration might be perceptible (0.3-1.0 mm/s PPV)	Damage to buildings possible at frequencies < 4hz (<0.6-15 mm/s PPV)
High	4	May cause complaints (1.0-10 mm/s PPV)	Damage of buildings is possible at frequency < 15Hz (<15-20mm/s PPV)

Ecology

Importance/Sensitivity of Ecological Receptors

Receptor Importance/Sensitivity	Ranking	Examples
Very Low	A	Commonly occurring habitats and species, not subject to significant decline; Habitats that are already disturbed
Low	B	Objects of local value that after removal of the source of impact can recover rapidly (i.e. habitats including easily recoverable species – ruderal plants); Widespread common species with low biodiversity value and not listed on the CITES, IUCN or Georgian Red List Species.
Medium	C	Sites, habitats of regional importance that get reduced at regional level; Natural habitats with diverse species composition or habitats; Areas of scientific or educational importance; Populations of regional importance (populations

		with diminishing trend on country and/or regional level). Rare or protected species (Georgian Red List, CITES, IUCN).
High	D	Protected areas. Habitats, that can not recover without external assistance, but can be restored in favourable conditions; Rare or protected species (Georgian Red List, CITES, IUCN).
Very high	E	Areas/species of international importance; Habitats restoration of which in natural conditions is very difficult or impossible.

Ranking of Magnitude of Predicted Ecological Impacts

Magnitude	Ranking	Examples
Very Low	1	Direct or indirect impacts on habitat and species largely not discernible; Less than 1% of a habitat is within the project area of influence
Low	2	Minor shift away from baseline conditions. Minor disruption of behaviour or species interactions not impacting overall health/integrity of the population of the species; Local, short term impact on individual group; Approximately 1–5% of habitat affected within the Project area of influence
Medium	3	Direct or indirect impact does not change habitat or species integrity; May cause quantitative change in one or two generations, but does not endanger population in whole; Approximately 5–20% of habitat affected within the Project area of influence.
High	4	Fundamental change; Endangers integrity of population or species so that natural growth is not sufficient for restoration of population/species or populations/species depending on it; Approximately 20–80% of a habitat is within the Project area of influence; Introduction of alien invasive species
Very High	5	Impact on whole population. Loss of habitat properties. Approximately 80% of a habitat is within the Project area

		of influence;
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Landscape and visual impact

Importance/Sensitivity of Visual Receptors and Landscapes

Receptor Importance/ Sensitivity	Ranking	Examples
Very low	A	<p><u>Landscape receptors</u> Landscape that is dominated by derelict, disused or degraded man- made structures and/ or which is not valued by local communities or others;</p> <p><u>Visual receptors</u> Receptors with no or very limited views</p>
Low	B	<p><u>Landscape receptors</u> A landscape with few intact or distinctive natural or historic features but which is valued at settlement/district/municipal level; Landscape with large, dominant, numerous and/or noisy modern man- made features; A natural landscape degraded or modified by uses such as arable or pastoral agriculture</p> <p><u>Visual receptors</u> People at their place of work, industrial facilities</p>
Medium	C	<p><u>Landscape receptors</u> Landscape with a number of distinctive natural landforms or historic/traditional features that add character and where modern man- made features may be present but do not significantly degrade the landscape character;</p> <p><u>Visual receptors</u> People travelling through; People engaged in outdoor recreation where enjoyment of the landscape is incidental rather than the main interest</p>
High	D	<p><u>Landscape receptors</u> Landscape valued or designated for its landscape importance at national level (e.g. attracts tourists within the country); Landscape with a high degree of naturalness or dominated by traditional/historic landscape features and an absence of modern man- made features</p> <p><u>Visual receptors</u> Local residents; Users of outdoor recreational</p>

		facilities , travellers
Very high	E	<u>Landscape receptors</u> Wilderness landscape or other landscape with a very high degree of 'naturalness', remoteness/ isolation and without any man-made features <u>Visual receptors</u> Local residents; Users of outdoor recreational facilities , travellers

Ranking of Magnitude of Assessed Impacts on Visual Receptors and Landscape Character

Magnitude	Ranking	Examples
Very Low	1	Small or imperceptible change in components of the landscape or introduction of a new element that is in keeping with the surroundings or no appreciable change to existing views
Low	2	Development would result in minor changes in views without affecting overall quality of views Minor permanent change in the landscape – new element is only slightly out of character, existing landscape quality is maintained; Temporary change where baseline landscape character is predicted to be restored
Medium	3	The development would result in a noticeable change in the existing view and or would cause a noticeable change in the quality and/or character of the view; Temporary (medium term) changes
High	4	The development would result in a prominent change in the existing view and/or would cause a prominent change in the quality and/or character of the view; Permanent changes over an extensive area and/or new development that will result in significant negative change to the existing landscape character; Long-term changes
Very High	5	Development will dominate the view or result in a dramatic change to the quality and/or character of the view; Permanent change over an extensive area and/or introduction of elements that will fundamentally change the landscape character;

Cultural heritage

The cultural heritage assessment is based upon International Finance Corporation (IFC) Performance Standard 8.

Importance/Sensitivity of Cultural Heritage Assets

Receptor Importance/ Sensitivity	Ranking	Examples
Very low	A	Assets with very little or no surviving archaeological interest, e.g. sites that have been previously heavily damaged, or destroyed
Low	B	Designated and undesignated assets of local importance; Assets compromised by poor preservation and/or poor survival of contextual associations; Assets of limited value, but with potential to contribute to local research objectives, e.g. sites that have been ploughed and are under threat of continued destruction by ploughing
Medium	C	Designated or undesignated assets that are regionally important or contribute to regional research objectives
High	D	Assets protected under national legislation, sites that are on the protected monuments list Assets that can contribute significantly to acknowledged national research objectives
Very high	E	UNESCO World Heritage Sites designated for their cultural, historic or archaeological value (including nominated sites) Assets that can contribute significantly to acknowledged international research objectives
Unknown	-	The importance of the resource is not currently known, insufficient assessment has been carried out to determine this

Ranking of Magnitude of Predicted Impacts on Cultural Heritage Assets

Magnitude	Ranking	Examples
Beneficial/ no change		Sites that were previously unknown or known but not previously surveyed and where survey or research as a result of the Project is predicted to lead to an increase in information/knowledge of benefit to researchers. No material change to the site. Applies to sites located in the study corridor outside the direct footprint of the Project

Very Low	1	Very minor changes to archaeological materials, or setting (the visible environment around the site or feature) (guide: 1–10% of surviving deposits damaged or destroyed)
Low	2	Changes to key archaeological materials, such that the asset is slightly altered (guide: 10–25% of surviving deposits damaged or destroyed) Slight changes to setting
Medium	3	Changes to many key archaeological materials, such that the resource is clearly modified (guide: 25–50% of surviving deposits damaged or destroyed) Considerable changes to setting that affect the character of the asset
High	4	Change to most of the key archaeological materials, such that the resource is significantly altered (guide: 50–75% of surviving deposits damaged or destroyed) Comprehensive changes to setting
Very High	5	Change to majority or all of the key archaeological materials, such that the resource is totally altered (guide: 75–100% of surviving deposits damaged or destroyed) Widespread changes to setting
Uncertain	-	The extent of data on the site/feature, or the nature of construction activities does not enable a determination of likely effects to be made at this stage

Evaluating Significance of Residual Impact

The residual environmental and social impacts is assigned a level of significance based on the importance/sensitivity of the receptor and the magnitude of that impact. For each residual impact, an importance/sensitivity ranking between A and E and an impact magnitude ranking of between 1 and 5 have been assigned to the impacts as indicated in the tables given above). Significance level of the residual impact is then determined using the matrix shown in matrix (Figure A1)

Impact Magnitude →

	B	1	2	3	4	5
E	B	L	M	M	H	H
D	B	L	M	M	H	H
C	B	L	L	M	M	H
B	B	L	L	L	M	M
A	B	L	L	L	L	M

↑ Importance / Sensitivity of receptor

Overall significance: H=High, M=Medium, L=Low, B=Beneficial

Figure A1. Significance Matrix

Environmental and Social Hazard and Risk Assessment

Risk is an expression of the likelihood that an event will occur and the magnitude of the potential consequences if it does occur. The residual risk has been evaluated based on the residual impact significance and event probability in accordance with the matrix presented below (Figure 2.)

		Probability							
		1	2	3	4	5	6	7	8
Impact Significance/Severity	Very High	L	H	H	H	H	H	H	H
	High	L	L	M	M	M	H	H	H
	Medium	L	L	L	M	M	M	M	M
	Low	L	L	L	L	L	M	M	M
	Very Low	L	L	L	L	L	L	M	M

Overall significance: H = High, M = Medium, L = Low

Figure A1_2. Residual Risk Significance Matrix for Unplanned Events

Cumulative Impacts

Cumulative impact assessment identifies those environmental and/or socio-economic aspects that may not constitute a significant impact on their own, but when combined with impacts from past, present or reasonably foreseeable future activities associated with this and/or other projects may result in a higher and more significant impact(s).

Management and Monitoring

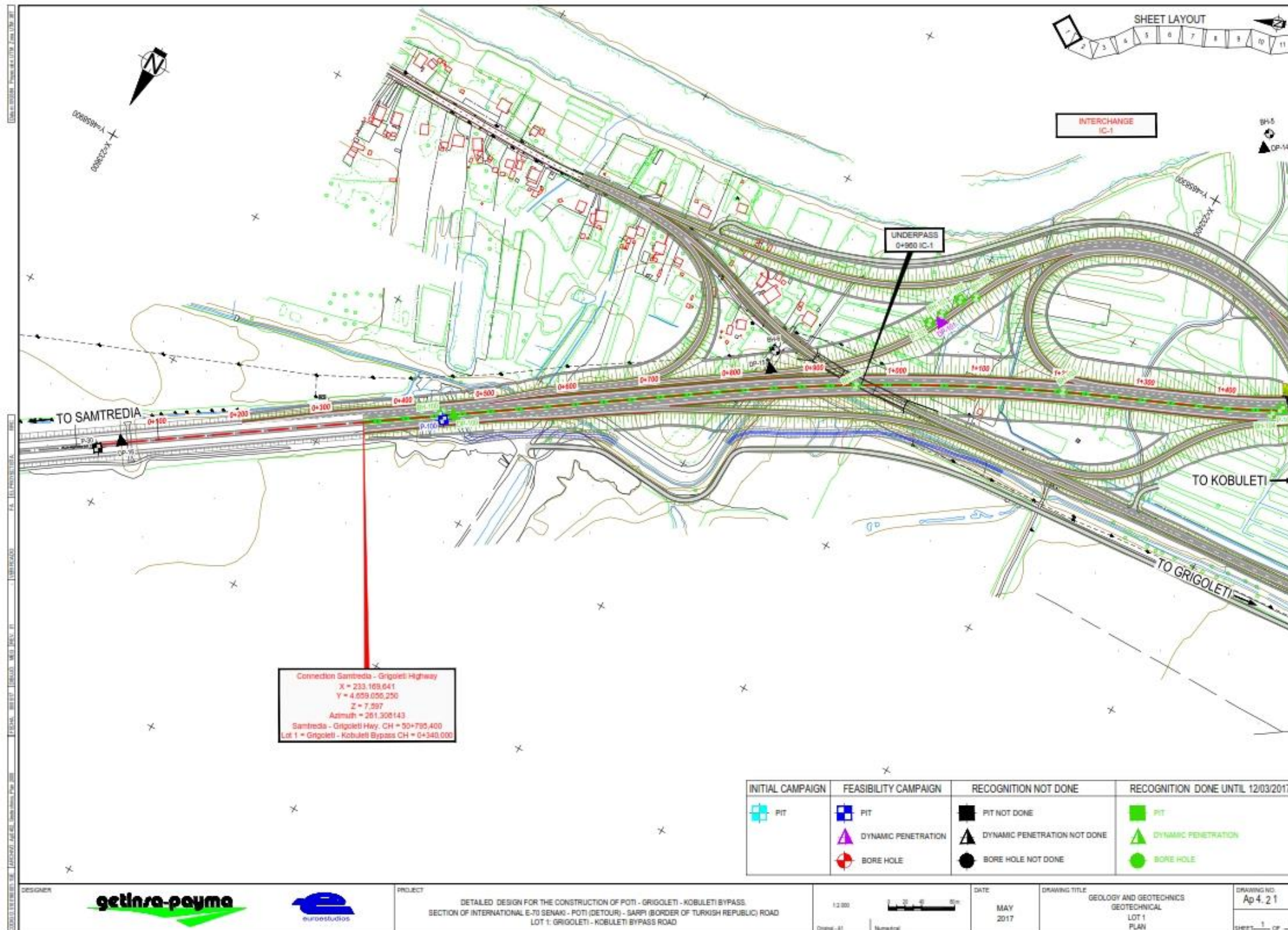
Critical to the successful implementation of the commitments and mitigation measures within this ESIA is the development of a commitments register. The construction phase commitments are then tracked through to environmental and social management plans (ESMMP), which will form the environmental and social management system (ESMS) in the construction phase.

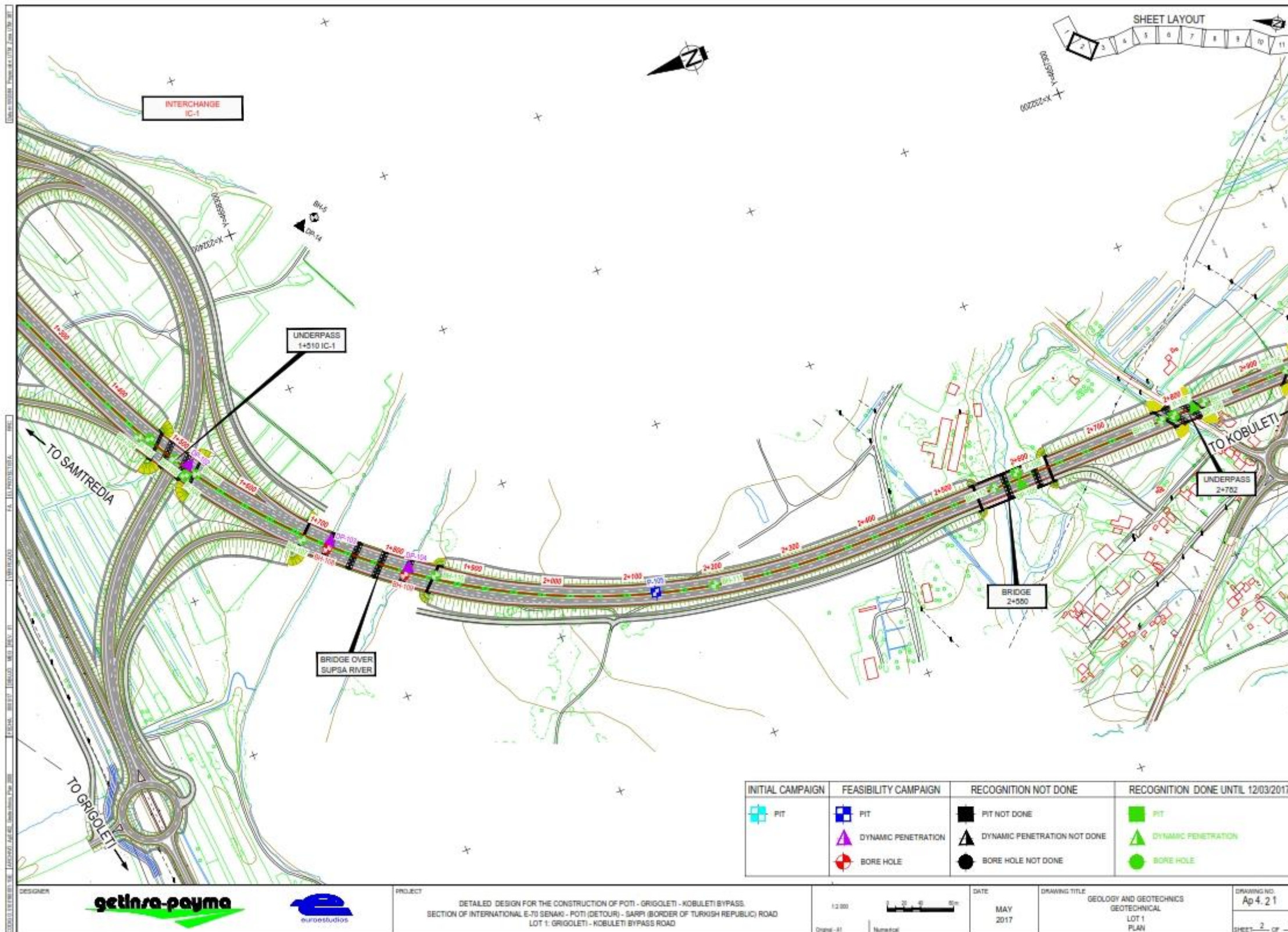
Operations phase commitments will be incorporated into the existing Operating Management System (OMS), which will include an integrated ESMS.

Monitoring during construction and operational phases of the project, through the audit of impact predictions and mitigation measures, will assure:

- Mitigation measures are implemented effectively
- Mitigation measures are appropriate and, if not, that they are amended or additional measures are designed and implemented
- Compliance with project standards, guidelines and best practice as applicable
- Assessment of cumulative and residual impacts, so that appropriate measures can be designed if necessary
- Continuation of the ESIA as an iterative process through to the construction and operational E&S management systems, which will be based on continual improvement.

ANNEX 2. GEOLOGICAL SAMPLING MAP





INITIAL CAMPAIGN	FEASIBILITY CAMPAIGN	RECOGNITION NOT DONE	RECOGNITION DONE UNTIL 12/03/2017
 PIT	 PIT	 PIT NOT DONE	 PIT
	 DYNAMIC PENETRATION	 DYNAMIC PENETRATION NOT DONE	 DYNAMIC PENETRATION
	 BORE HOLE	 BORE HOLE NOT DONE	 BORE HOLE

DESIGNER:  

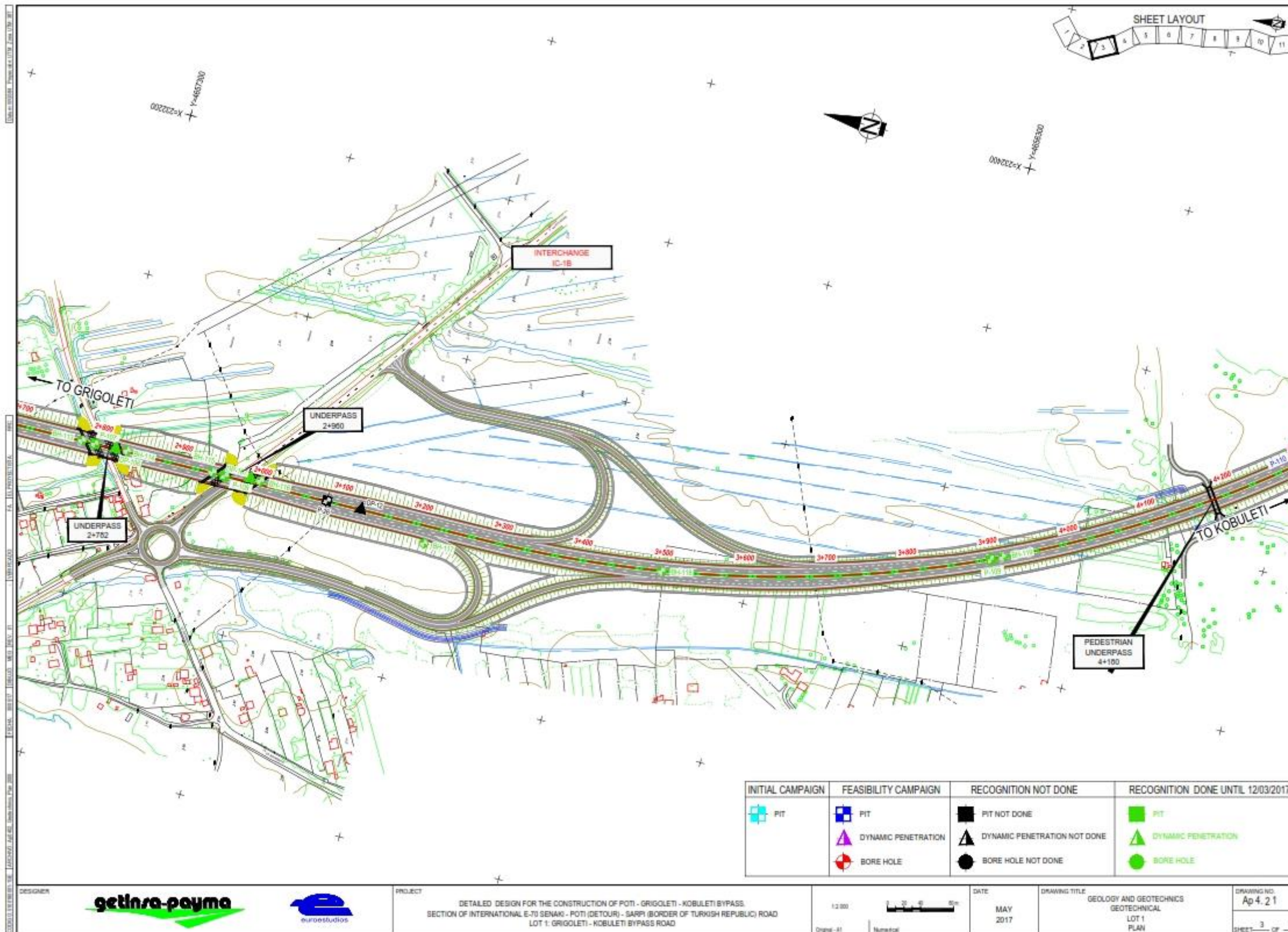
PROJECT: DETAILED DESIGN FOR THE CONSTRUCTION OF POTI - GRIGOLETI - KOBULETI BYPASS
SECTION OF INTERNATIONAL E-70 SENAKI - POTI (DETOUR) - SARPI (BORDER OF TURKISH REPUBLIC) ROAD
LOT 1: GRIGOLETI - KOBULETI BYPASS ROAD

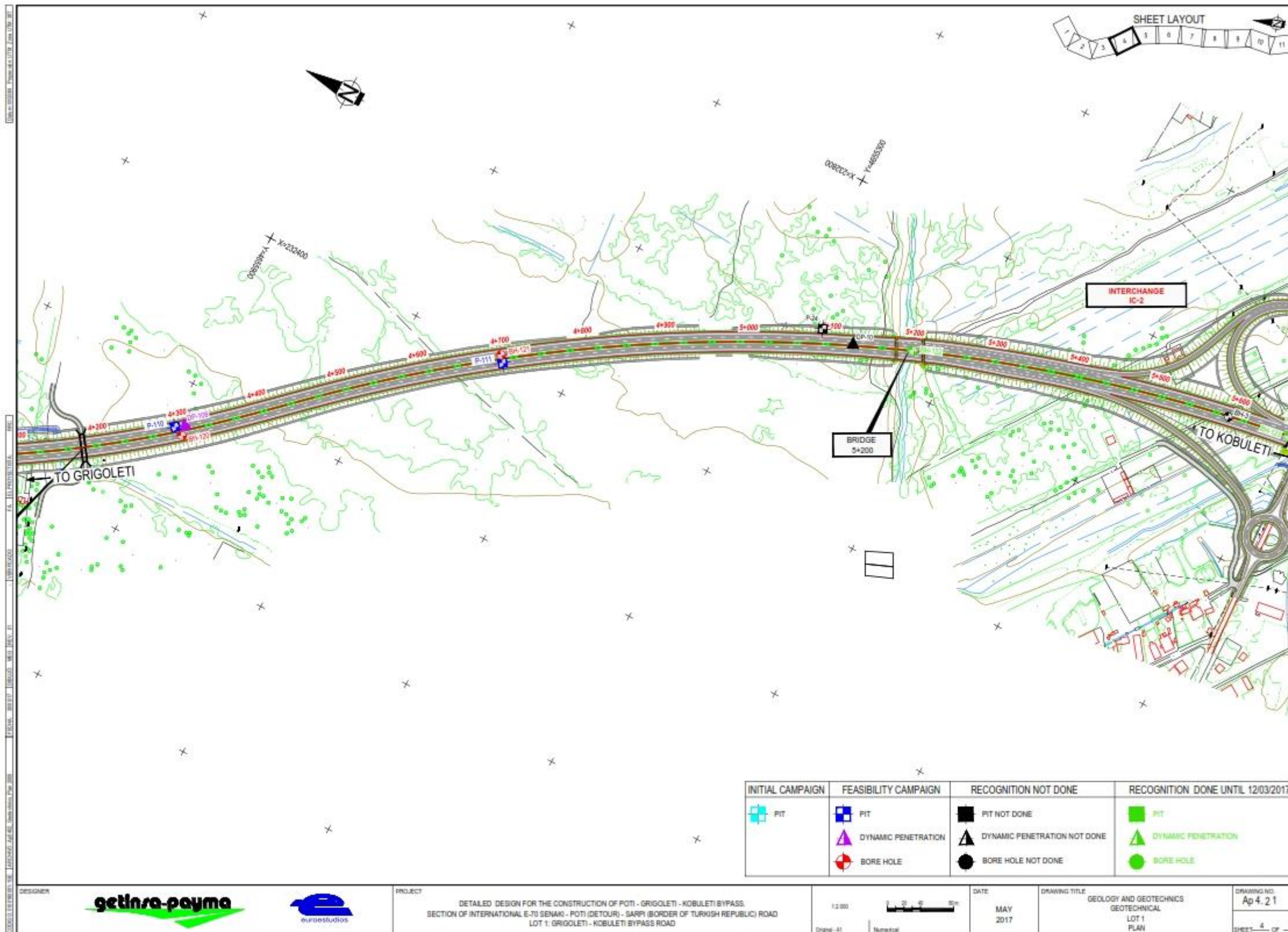
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Digital Numerical

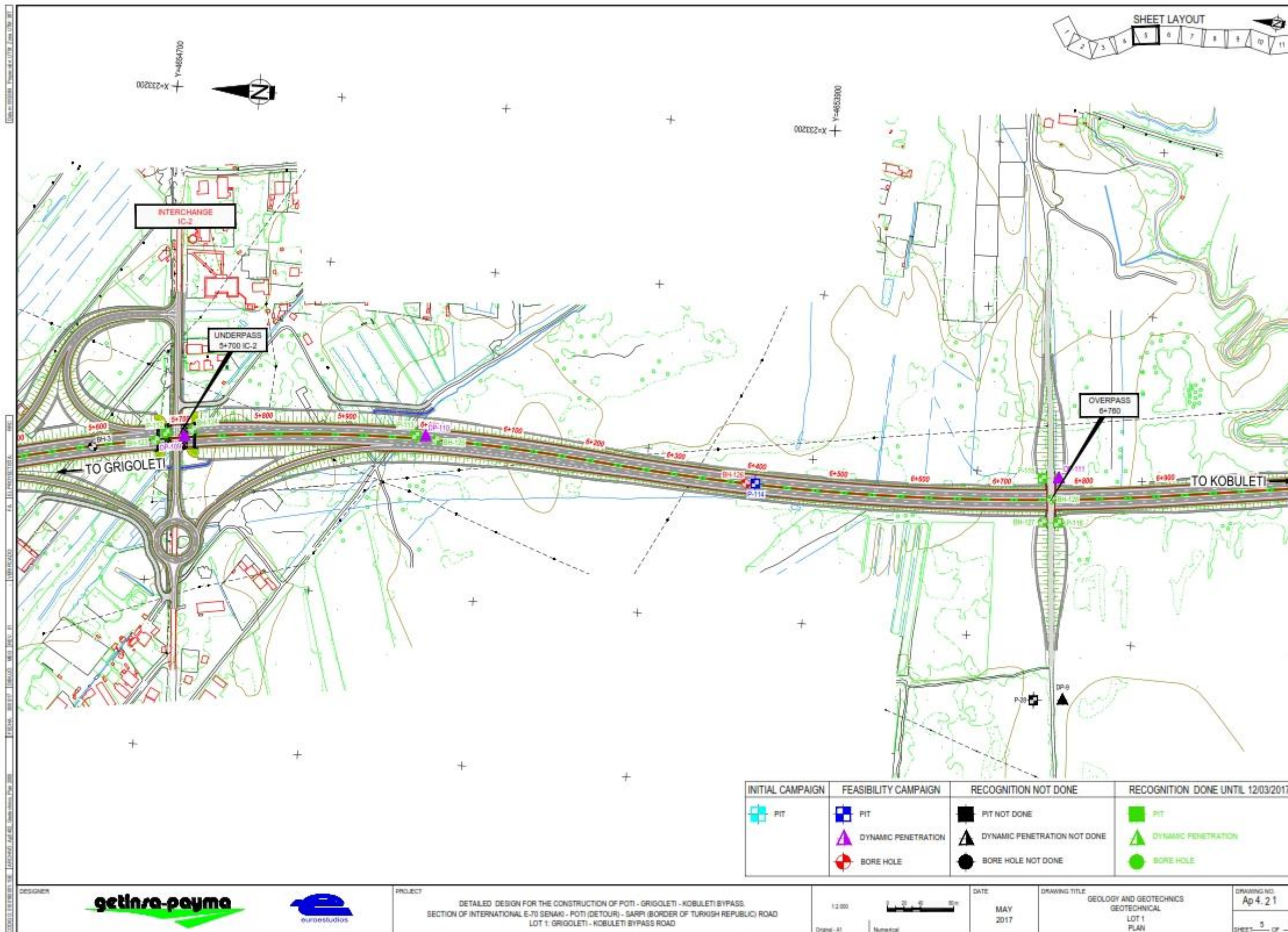
DATE: MAY 2017

DRAWING TITLE: GEOLOGY AND GEOTECHNICS
GEOTECHNICAL
LOT 1
PLAN



DRAWING NO.: Ap 4.21
SHEET 2 OF 11







INITIAL CAMPAIGN	FEASIBILITY CAMPAIGN	RECOGNITION NOT DONE	RECOGNITION DONE UNTIL 12/03/2017
PIT	PIT	PIT NOT DONE	PIT
	DYNAMIC PENETRATION	DYNAMIC PENETRATION NOT DONE	DYNAMIC PENETRATION
	BORE HOLE	BORE HOLE NOT DONE	BORE HOLE

DESIGNER:  

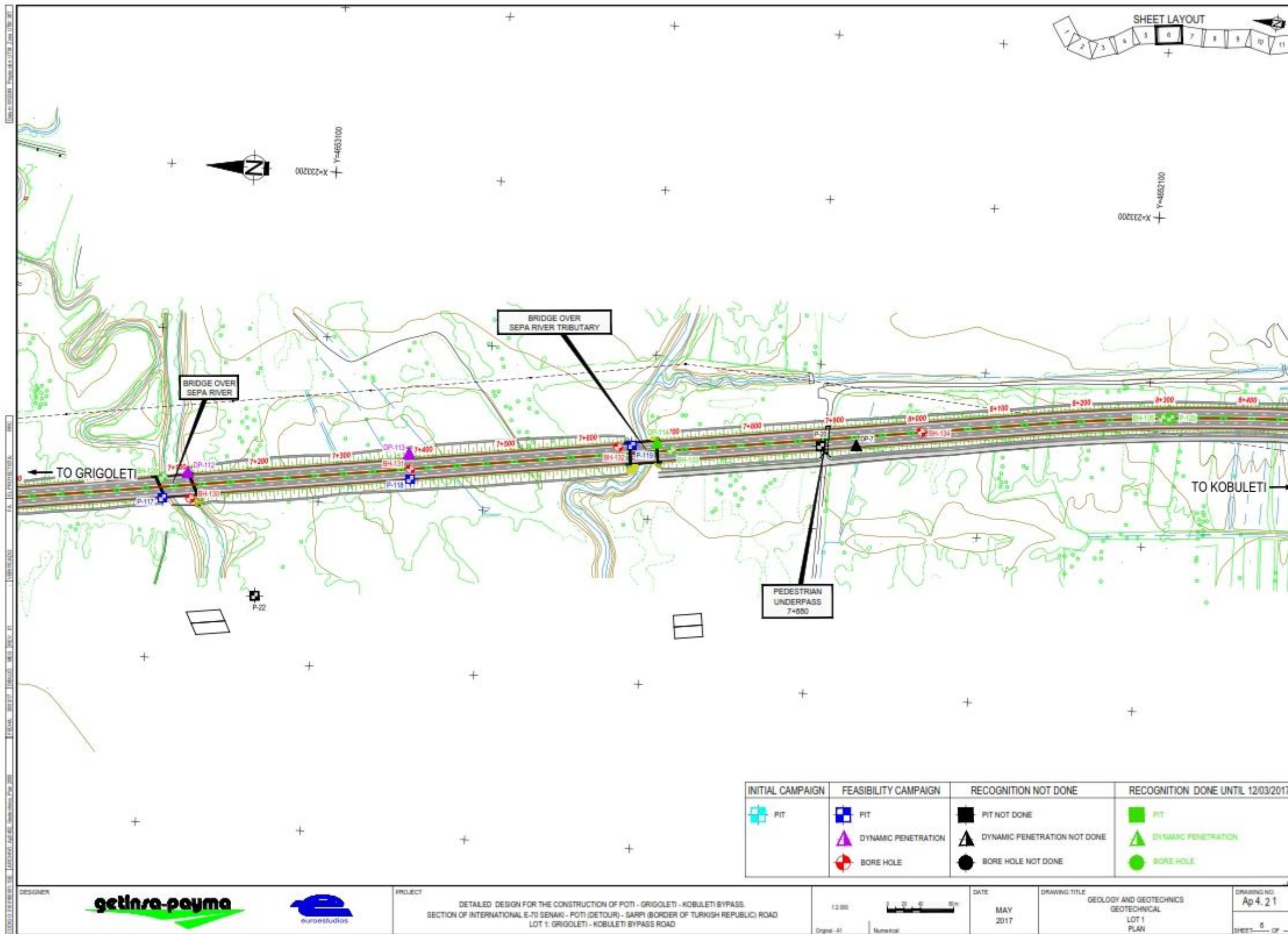
PROJECT: DETAILED DESIGN FOR THE CONSTRUCTION OF POTI - GRIGOLETI - KOBULETI BYPASS
SECTION OF INTERNATIONAL E-70 SENAKI - POTI (DETOUR) - SARPI (BORDER OF TURKISH REPUBLIC) ROAD
LOT 1: GRIGOLETI - KOBULETI BYPASS ROAD

1:2,000
Digital Numerical

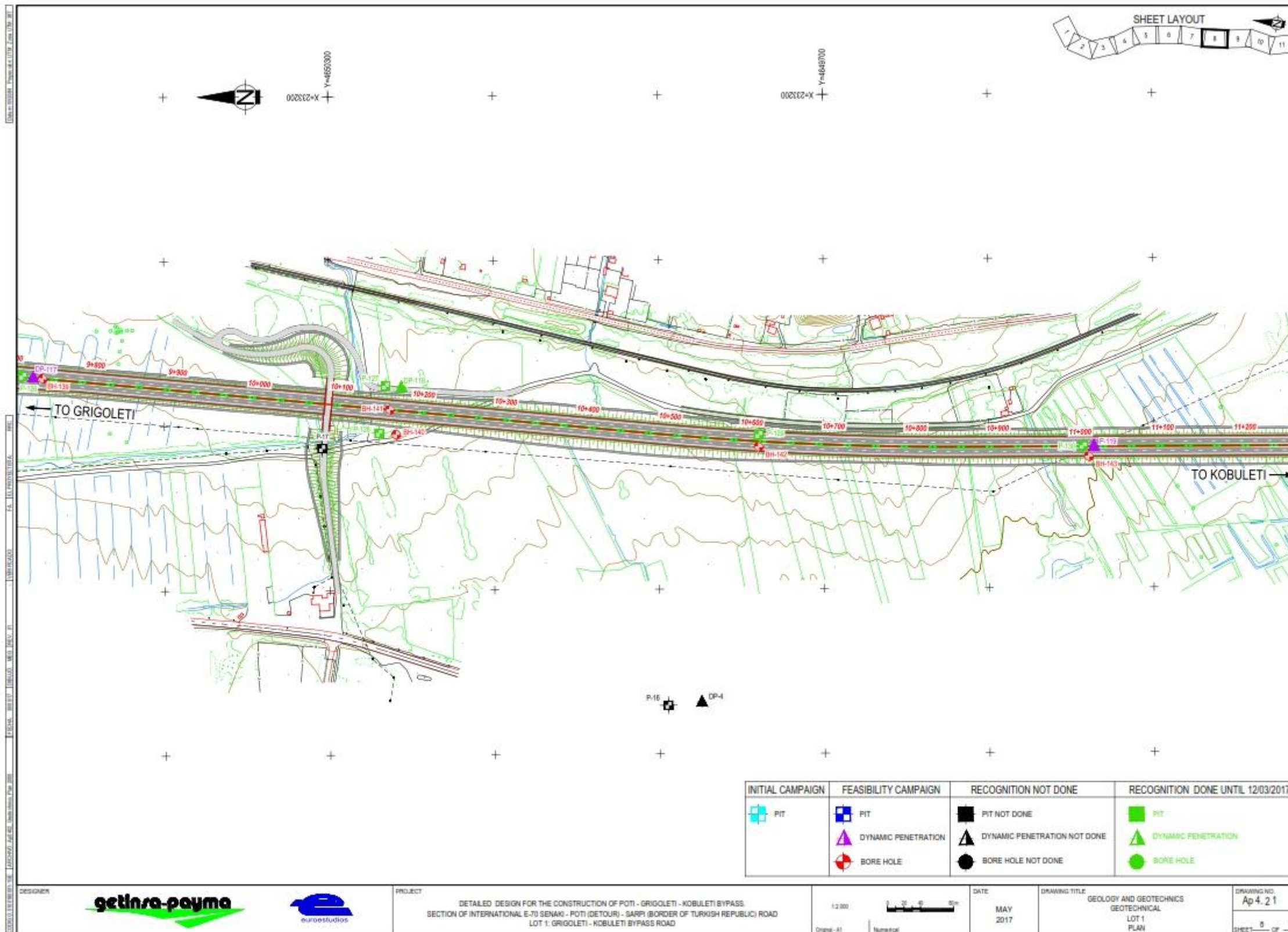
DATE: MAY 2017

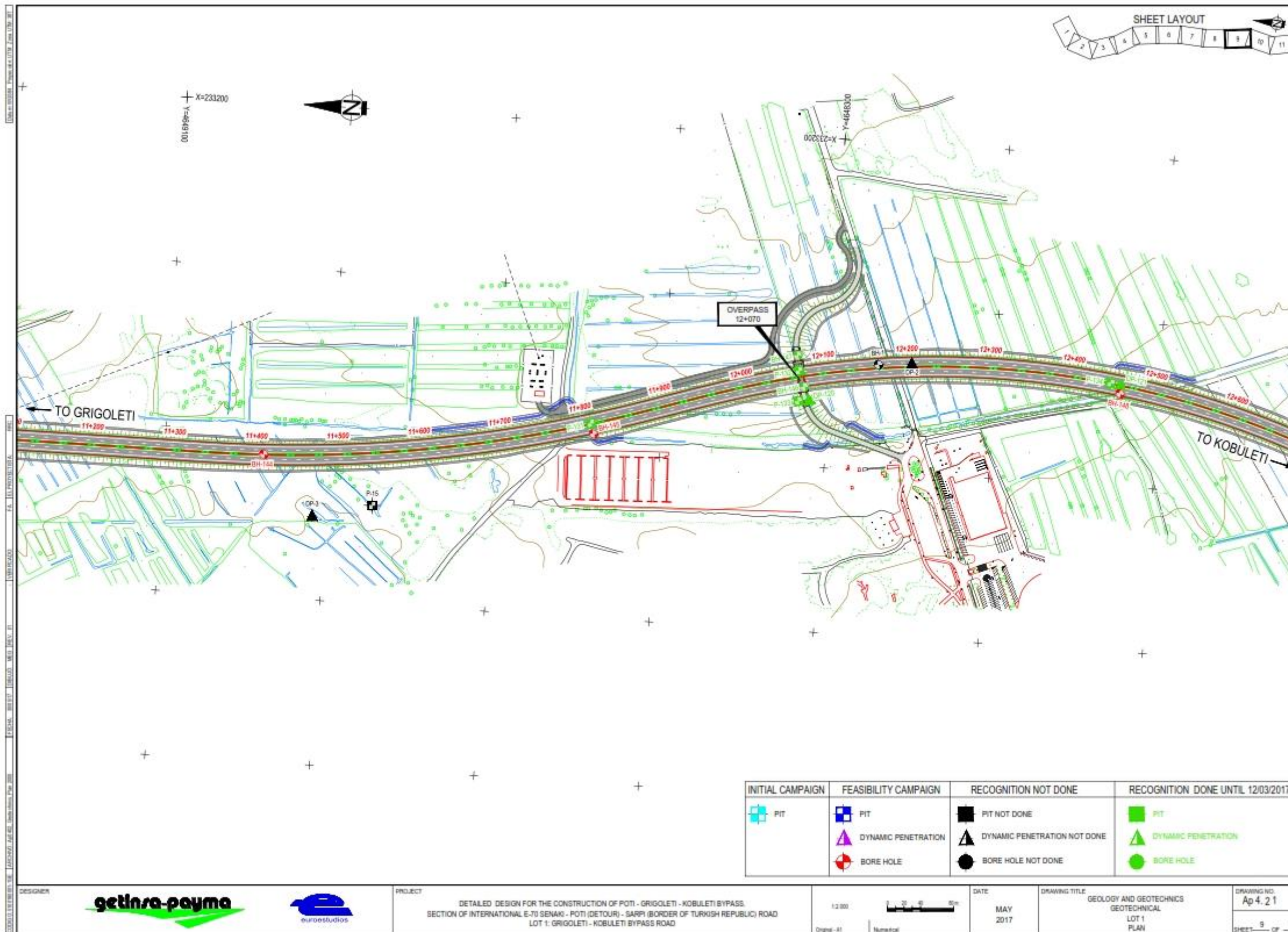
DRAWING TITLE: GEOLOGY AND GEOTECHNICS
GEOLOGICAL
LOT 1
PLAN

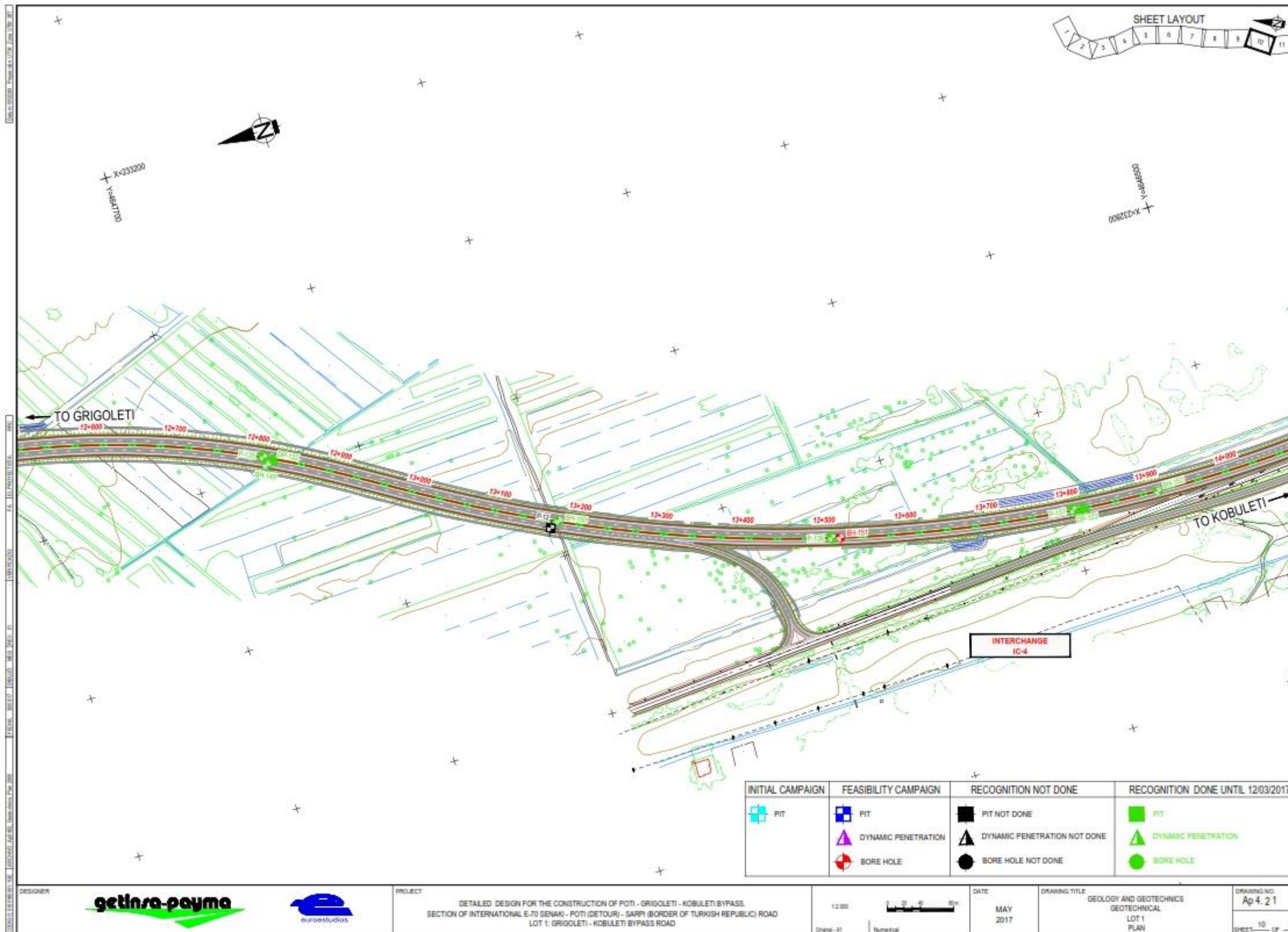
DRAWING NO. Ap 4.21
SHEET 3 OF 11

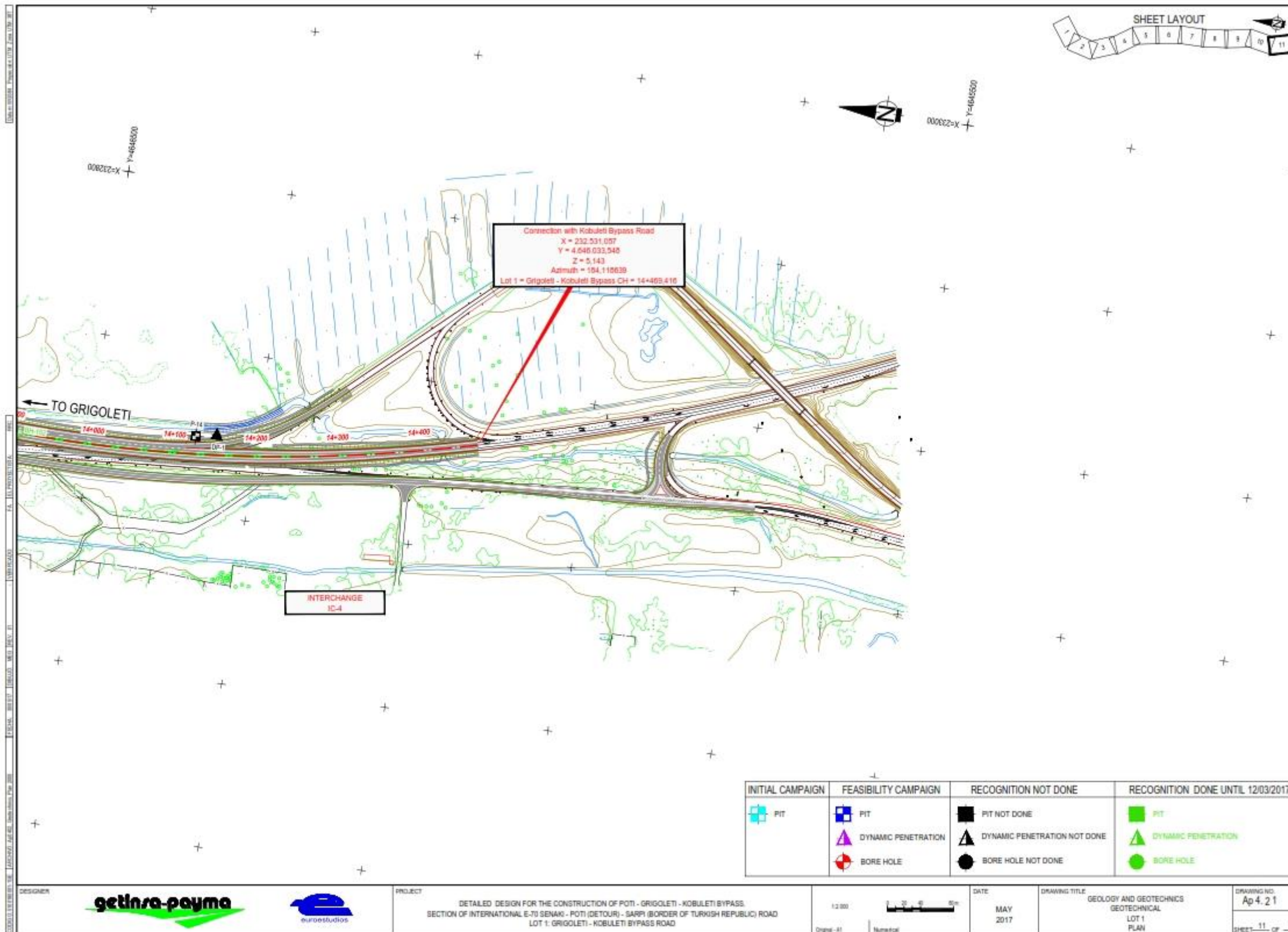














INITIAL CAMPAIGN	FEASIBILITY CAMPAIGN	RECOGNITION NOT DONE	RECOGNITION DONE UNTIL 12/03/2017
 PIT	 PIT	 PIT NOT DONE	 PIT
	 DYNAMIC PENETRATION	 DYNAMIC PENETRATION NOT DONE	 DYNAMIC PENETRATION
	 BORE HOLE	 BORE HOLE NOT DONE	 BORE HOLE

DESIGNER:  

PROJECT: DETAILED DESIGN FOR THE CONSTRUCTION OF POTI - GRIGOLETI - KOBULETI BYPASS
SECTION OF INTERNATIONAL E-70 SENAKO - POTI (DETOUR) - SARPI (BORDER OF TURKISH REPUBLIC) ROAD
LOT 1: GRIGOLETI - KOBULETI BYPASS ROAD

Scale: 1:2,000

DATE: MAY 2017

DRAWING TITLE: GEOLOGY AND GEOTECHNICS
GEOLOGICAL
LOT 1
PLAN

DRAWING NO.: Ap 4.21
SHEET 11 OF 11

COORDINATES OF PITS (INITIAL SURVEY STAGE)

Pit	Coordinate	
	X	Y
P-1	723636.43 m E	4675101.27 m N
P-2	722268.84 m E	4671888.50 m N
P-3	722154.70 m E	4668911.56 m N
P-4	722927.08 m E	4667648.84 m N
P-5	724023.43 m E	4664244.40 m N
P-6	724138.29 m E	4663816.89 m N
P-8	726052.87 m E	4659143.42 m N
P-9	729626.50 m E	4656472.89 m N
P-10	729644.07 m E	4653356.96 m N
P-11	729586.46 m E	4649829.38 m N
P-12	730055.16 m E	4646012.18 m N

COORDINATES OF BOREHOLES, PITS AND DYNAMIC PENETRATION TEST LOCATIONS (FEASEIBILITY STAGE SURVEY)

Description	Coordinates	
	X	Y
P-19	729296.038 m E	4650312.392 m N
BH-2	730045.418 m E	4650003.425 m N
DP-6	729281.604 m E	4650304.552 m N
P-11	729594.478 m E	4649807.195 m N
DP-5	730052.414 m E	4649963.452 m N
P-21	729238.053 m E	4651338.800 m N
DP-7	729998.847 m E	4651151.264 m N
DP-8	729223.618 m E	4651330.960 m N
DP-9	729547.373 m E	4652248.584 m N
P-23	729561.807 m E	4652256.425 m N
P-18	729586.312 m E	4649351.454 m N
DP-1	730022.815 m E	4645036.268 m N
P-14	730037.249 m E	4645044.109 m N
P-12	730112.044 m E	4645969.260 m N
DP-2	730326.234 m E	4646914.602 m N
BH-1	730319.238 m E	4646954.575 m N
DP-4	729743.083 m E	4648525.269 m N
P-16	729757.518 m E	4648533.110 m N
P-15	730067.788 m E	4647540.431 m N
P-17	730039.595 m E	4648966.058 m N
DP-3	730045.777 m E	4647611.043 m N
P-20	730013.038 m E	4651161.328 m N
P-27	729592.927 m E	4655911.440 m N
P-9	729667.884 m E	4656433.033 m N
DP-13	729578.736 m E	4655901.376 m N
DP-11	729409.092 m E	4655148.398 m N
BH-4	729402.231 m E	4655187.386 m N
BH-6	729377.967 m E	4657255.805 m N
P-30	730106.297 m E	4657894.540 m N
DP-16	730092.106 m E	4657884.477 m N
P-28	729331.958 m E	4656940.825 m N
DP-15	729369.319 m E	4657217.174 m N
P-25	729400.113 m E	4654460.583 m N
DP-10	729523.811 m E	4653888.671 m N
P-24	729538.001 m E	4653898.734 m N
P-10	729666.032 m E	4653457.528 m N

Description	Coordinates	
	X	Y
P-22	729744.622 m E	4651821.639 m N
BH-3	729684.696 m E	4653462.565 m N
DP-12	728574.054 m E	4655586.798 m N
P-26	728588.245 m E	4655596.862 m N
P-29	728532.045 m E	4656257.202 m N
DP-14	728743.046 m E	4656882.349 m N
BH-5	728767.165 m E	4656913.740 m N
P-12	730112.044 m E	4645969.260 m N
DP-2	730326.234 m E	4646914.602 m N
BHG-1	730319.238 m E	4646954.575 m N
DP-4	729743.083 m E	4648525.269 m N

COORDINATES OF LOCATIONS STUDIED AT THE DETAILED DESIGN STAGE

Description	Coordinates	
	X	Y
PD-113	232864.297	4652992.938
BH-132	232885.754	4652740.017
PD-112	232826.837	4653259.947
P-118	232832.992	4652989.920
P-119	232889.046	4652723.855
P-121	232956.056	4651683.161
PD-115	232955.813	4651670.926
PD-114	232893.664	4652693.239
P-120	232957.845	4652072.569
P-116	232742.917	4653598.133
BH-127	232742.583	4653616.929
PD-110	232797.242	4654370.388
P-114	232765.774	4653967.856
BH-128	232771.158	4653608.036
BH-129	232819.167	4653289.754
P-117	232794.092	4653288.824
P-115	232795.818	4653620.704
PD-111	232798.136	4653600.543
P-129	232787.070	4649778.671
P-130	232771.798	4649385.249
P-128	232791.110	4650239.312
BH-140	232789.271	4650218.733
P-119	232772.469	4649372.134
BH-147	232934.504	4648340.382
BH-146	232896.972	4648330.197
P-131	232835.943	4648585.466
P-132	232915.892	4648337.598
BH-137	232946.407	4651240.633
P-124	232735.845	4651280.797
P-122	232916.667	4651248.922
P-123	232947.761	4651259.689
P-125	232890.254	4650976.233
PD-117	232861.628	4650658.851
BH-141	232819.543	4650226.201
PD-116	232889.448	4650964.652
P-126	232862.476	4650671.405
BH-105	232170.026	4658461.010
BH-107	232022.783	4658351.193

Description	Coordinates	
	X	Y
P-104	232147.059	4658456.317
PD-102	232158.093	4658445.735
PD-103	232009.994	4658319.329
PD-104	231946.317	4658242.103
P-105	231809.829	4657973.268
BH-108	232001.837	4658326.829
BH-109	231938.442	4658250.501
PD-101	232615.833	4658594.406
P-101	232626.265	4658602.222
BH-100	233084.643	4658992.103
BH-153	232665.4	4658713.335
PD-100	233071.481	4658987.597
BH-102	232592.535	4658547.694
BH-104	232210.526	4658492.027
P-103	232203.322	4658479.915
P-102	232607.714	4658559.520
BH-101	232618.704	4658585.644
PD-108	232151.339	4655885.236
P-111	232399.008	4655580.363
P-109	231929.304	4656223.054
P-110	232143.262	4655894.341
BH-3	232756.361	4654773.025
BH-124	232785.509	4654653.286
P-113	232796.573	4654382.474
P-112	232779.421	4654684.786
PD-109	232777.443	4654663.035
PD-105	231774.650	4657512.153
BH-113	231784.616	4657325.696
BH-112	231780.517	4657544.565
P-106	231788.434	4657513.346
P-107	231784.784	4657309.583
P-108	231787.507	4657147.289
PD-107	231794.342	4657116.393
P-106	231787.077	4657283.603
BH-115	231788.241	4657162.723
BH-135	232956.812	4652083.143
BH-145	232823.302	4648581.638
BH-130	232795.052	4653255.398
BH-133	232885.439	4652675.215
BH-150	232642.596	4647294.226
BH-117	231770.759	4656892.844
BH-119	231935.735	4656209.824
BH-103	232444.153	4658593.926
BH-111	231792.499	4657903.025
P-100	233079.157	4658999.577
BH-106	232143.772	4658441.939
DP-4	232463.695	4649849.214
BH-110	231924.563	4658215.605
BH-114	231786.552	4657269.713
BH-121	232406.978	4655586.504
BH-123	232769.351	4654697.253
BH-116	231793.104	4657103.925

Description	Coordinates	
	X	Y
BH-118	231812.389	4656605.263
BH-144	232772.959	4648979.289
BH-148	232913.007	4647947.192
BH-142	232772.219	4649778.916
BH-143	232758.854	4649378.292
BH-149	232809.980	4647614.088
P-127	232848.308	4650231.340
PD-118	232847.546	4650211.909
BH-151	232524.199	4646973.256
BH-152	232466.653	4646587.667
BH-125	232792.686	4654357.773
BH-126	232765.341	4653979.301
BH-120	232137.959	4655882.150
BH-122	232646.741	4655148.199
BH-131	232845.065	4652990.486
BH-138	232887.657	4650954.772
BH-139	232859.214	4650647.266
BH-134	232924.340	4652373.829
BH-136	232954.660	4651661.126
BH-110	231924.563	4658215.605
DP-16	233405.629	4659216.365
DP-15	232766.526	4658746.270
P-30	233425.899	4659238.922
BH-6	232771.364	4658725.533
P-26	231790.512	4657019.587
DP-10	232620.715	4655216.563
P-20	232900.703	4652494.767
DP-12	231792.747	4656977.128
P-24	232618.668	4655257.641
P-134	232925.114	4647959.272
PD-121	232924.051	4647946.606
P-133	232879.172	4648336.149
PD-120	232882.185	4648323.397
P-135	232820.647	4647615.122
P-137	232474.711	4646692.790
PD-123	232473.886	4646680.589
PD-122	232814.946	4647603.537
P-136	232527.026	4646983.086
P-28	232526.255	4653613.376
BH-2	232884.964	4651305.225
BH-1	232929.362	4648241.887
DP-2	232933.599	4648201.523
BH-5	232383.363	4658197.168
P-18	232350.838	4650718.746
P-16	232459.053	4649889.900
DP-14	232380.982	4658214.435
P-22	232681.264	4653170.655
DP-5	232873.850	4651262.630
P-15	232719.530	4648844.048
DP-7	232903.556	4652451.670
DP-9	232529.948	4653578.170
DP-3	232702.511	4648916.044

Description	Coordinates	
	X	Y
DP-1	232499.420	4646348.597
P-12	232637.188	4647306.103
P-17	232772.622	4650308.564
P-14	232493.461	4646373.824

Additional information is given in volume 3 - Annexes.

ANNEX 3. EMISSIONS AND DISPERSION CALCULATION PRINTOUTS (IN RUSSIAN)

Магистраль-город, версия 3.0

Copyright ©1997-2013 ФИРМА «ИНТЕГРАЛ»

Расчет выбросов загрязняющих веществ произведен в соответствии с методикой определения выбросов автотранспорта для проведения сводных расчетов загрязнения атмосферы городов: СПб, 2010 г.

Программа зарегистрирована на: "Gamma Consulting" Ltd

Регистрационный номер: 01-01-2568

Релиз: 3.0.0.15

Город tbilisi

Магистраль: magnetit 2601 Тип магистрали: Центральная (Тип 1)

Данные о выбросах на магистрали			
Название в-ва	код в-ва	Выброс г/с	Выброс т/г
Азота диоксид	0301	0.139000	1.876500
Азота оксид	0304	0.022587	0.304931
Сажа	0328	0.003201	0.043214
Ангидрид Сернистый (SO ₂)	0330	0.000981	0.013247
Углерод оксид (CO)	0337	0.191771	2.588906
Бенз/а/пирен (3,4-бензапирен)	0703	2.750000e-8	3.712500e-7
Формальдегид	1325	0.000290	0.003921
Углеводороды, бензин	2704	0.032500	0.438750
Углеводороды, керосин	2732	0.037917	0.511875

Участок:

Данные о перегоне			
Координаты	X	Y	Z (ср. ширина м.)
Начало	0	0	15
Конец	500	0	
Длина участка м.	500.00		

Данные о транспортном потоке		
Тип транспортного средства	интенсивность, шт/20 мин	Скорость, км/час
Легковые	195	80
Грузовые от 3,5т. до 12т.	35	80

Данные о выбросах на магистрали			
Название в-ва	код в-ва	Выброс г/с	Выброс т/г
Азота диоксид	0301	0.139000	1.876500
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Углеводороды, керосин	2732	0.037917	0.511875
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Расчетные формулы

Расчет максимально разовых значений

$$M_{L1} = \frac{L}{1200} \cdot \sum_1^K M_{k,i}^L \cdot G_k \cdot r_{V_{k,i}}, \text{г/с}$$

$M_{k,i}$ (г/км) – пробеговый выброс i -го вредного вещества автомобилями k -й группы для городских условий эксплуатации, определяемый по табл. 4.1;

k – количество групп автомобилей;

G_k (1/20 мин.) – фактическая наибольшая интенсивность движения, т.е. количество автомобилей каждой из k групп, проходящих через фиксированное сечение выбранного участка автодороги в единицу времени (20 мин.) в обоих направлениях по всем полосам движения;

$r_{V_{k,1}}$ – поправочный коэффициент, учитывающий среднюю скорость движения транспортного потока (v_k (км/час) на выбранной автомагистрали (или ее участке) определяемый по табл. 4.2).

1

— коэффициент пересчета 20 минут в секунды;

1200

L (км) – протяженность автомагистрали (или ее участка) из которого исключена протяженность очереди автомобилей перед запрещающим сигналом светофора и длина соответствующей зоны перекрестка (для перекрестков, на которых проводились дополнительные обследования).

Расчет средне-годовых значений

Валовый выброс i -го загрязняющего вещества (т/год) автотранспортными потоками на автодороге оценивается по формуле

$$M_{L_i}^B = M_{L_i} \cdot n_T, \text{ т/г}$$

где: n – безразмерный усредненный коэффициент пересчета «г/с» в «т/г» в зависимости от типа автодороги, характеризующего разную изменчивость суммарной интенсивности автотранспортного потока, полученный на

Выбросы различных групп автомобилей

Группа автомобилей: Легковые

Название в-ва	Пробеговый выброс
Углерод оксид (CO)	3.5
Оксиды Азота (NOx)	0.9
Углеводороды, бензин	0.8
Сажа	0.007
Ангидрид Сернистый (SO2)	0.015
Формальдегид	0.0032
Бенз/а/пирен (3,4-бензапирен)	3E-7

Группа автомобилей: Грузовые от 3,5т. до 12т.

Название в-ва	Пробеговый выброс
Углерод оксид (CO)	6.8
Оксиды Азота (NOx)	6.9
Углеводороды, керосин	5.2

Сажа	0.4
Ангидрид Сернистый (SO ₂)	0.051
Формальдегид	0.022
Бенз/а/пирен (3,4-бензапирен)	2.1E-6

Группа автомобилей: Грузовые свыше 12 т.

Название в-ва	Пробеговый выброс
Углерод оксид (CO)	7.3
Оксиды Азота (NO _x)	8.5
Углеводороды, керосин	6.5
Сажа	0.5
Ангидрид Сернистый (SO ₂)	0.073
Формальдегид	0.025
Бенз/а/пирен (3,4-бензапирен)	2.6E-6

Группа автомобилей: Автобусы свыше 3,5т.

Название в-ва	Пробеговый выброс
Углерод оксид (CO)	5.2
Оксиды Азота (NO _x)	6.1
Углеводороды, керосин	4.5
Сажа	0.3
Ангидрид Сернистый (SO ₂)	0.042
Формальдегид	0.018
Бенз/а/пирен (3,4-бензапирен)	1.8E-6

Группа автомобилей: Автофургоны и микроавтобусы до 3,5 т.

Название в-ва	Пробеговый выброс
Углерод оксид (CO)	8.4
Оксиды Азота (NO _x)	2.1
Углеводороды, бензин	2.4
Сажа	0.038
Ангидрид Сернистый (SO ₂)	0.028
Формальдегид	0.0084
Бенз/а/пирен (3,4-бензапирен)	8E-7

Зависимость выбросов от скорости

Название в-ва	Код	10	15	20	25	30	35	40	45	50	60	75	80	100
Углерод оксид (СО)	337	1.35	1.3	1.2	1.1	1	0.9	0.75	0.65	0.5	0.3	0.45	0.5	0.65
Оксиды Азота (NO _x)	10000	1	1	1	1	1	1	1	1	1	1	1	1	1
Углеводороды, бензин	2704	1.35	1.3	1.2	1.1	1	0.9	0.75	0.65	0.5	0.3	0.45	0.5	0.65
Углеводороды, керосин	2732	1.35	1.3	1.2	1.1	1	0.9	0.75	0.65	0.5	0.3	0.45	0.5	0.65
Сажа	328	1.35	1.3	1.2	1.1	1	0.9	0.75	0.65	0.5	0.3	0.45	0.5	0.65
Ангидрид Сернистый	330	1.35	1.3	1.2	1.1	1	0.9	0.75	0.65	0.5	0.3	0.45	0.5	0.65
Формальдегид	1325	1.35	1.3	1.2	1.1	1	0.9	0.75	0.65	0.5	0.3	0.45	0.5	0.65
Бенз/а/пирен (3,4-	703	1.35	1.3	1.2	1.1	1	0.9	0.75	0.65	0.5	0.3	0.45	0.5	0.65
Азота оксид	304	1	1	1	1	1	1	1	1	1	1	1	1	1
Азота диоксид	301	1	1	1	1	1	1	1	1	1	1	1	1	1

Ecolog version 3 - air quality modelling (in Georgian)
УПРЗА ЭКОЛОГ, версия 3.1
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სერიული ნომერი 01-01-2568, "გამა კონსალტინგი" L

საწარმოს ნომერი 12600;

ქალაქი სუფსა

საწყისი მონაცემების ვარიანტი: 1, საწყისი მონაცემების ახალი ვარიანტი

გაანგარიშების ვარიანტი: გაანგარიშების ახალი ვარიანტი

გაანგარიშება შესრულებულია: ზაფხულისთვის

გაანგარიშების მოდული: "ОНД-86"

საანგარიშო მუდმივები: E1= 0.01, E2=0.01, E3=0.01, S=999999.99 კვ.კმ.

მეტეოროლოგიური პარამეტრები

ყველაზე ცხელი თვის ჰაერის საშუალო ტემპერატურა	23.4° C
ყველაზე ცივი თვის ჰაერის საშუალო ტემპერატურა	6.5° C
ატმოსფეროს სტრატოფიკაციის ტემპერატურაზე დამოკიდებული კოეფიციენტი, A	200
ქარის მაქსიმალური სიჩქარე მოცემული ტერიტორიისთვის (გადამეტების განმეორებადობა 5%-ის ფარგლებში)	13 მ/წმ

საწარმოს სტრუქტურა (მოედნები, საამქრო)

ნომერი	მოედნის (საამქროს) დასახელება
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გაფრქვევის წყაროთა პარამეტრები

აღრიცხვა:

- "%" - წყარო გათვალისწინებულია ფონის გამორიცხვით;
 - "+" - წყარო გათვალისწინებულია ფონის გამორიცხვის გარეშე;
 - "-" - წყარო არ არის გათვალისწინებული და მისი წვლილი არაა შეტანილი ფონში.
- ნიმუშების არარსებობის შემთხვევაში წყარო არ ითვლება.

წყაროთა ტიპები:

- 1 - წერტილოვანი;
- 2 - წრფივი;
- 3 - არარეგანიზებული;
- 4 - წერტილოვანი წყაროების ერთობლიობა, გაერთიანებული ერთ სიბრტყულად გათვლისთვის;
- 5 - არარეგანიზებული, დროში ცვლადი გაფრქვევის სიმძლავრით;
- 6 - წერტილოვანი, ქოლგისებური ან ჰორიზონტალური გაფრქვევით;
- 7 - ქოლგისებური ან ჰორიზონტალური გაფრქვევის წერტილოვანი წყაროების ერთობლიობა;
- 8 - ავტომაგისტრალი.

აღრიცხვა	მოედ. №	საამქ. №	წყაროს №	წყაროს დასახელება	ვარი-ანტი	ტიპი	სიმაღლ. წყაროს (მ)	დამეტრი (მ)	Объем ГВС (куб.м/წმ)	Скорость ГВС (მ/წმ)	აირ-ჰაეროვანი ნარევის ტემპერატ. (°C)	რელიეფის კოეფ.	კოორდ. X1-oc. (მ)	კოორდ. Y1-oc. (მ)	კოორდ. X2-oc. (მ)	კოორდ. Y2-oc. (მ)	წყაროს სიგანე (მ)
+	0	0	1	მონაკვეთი 1	1	8	2,0	0,00	0	0,00000	0	1,0	0,0	0,0	201,0	-442,0	15,00
ნივთ. კოდი				ნივთიერება	გაფრქვევა (გ/წმ)	გაფრქვევა (ტ/წლ)	F	ზაფხ.: Cm/ზღვ	Xm	Um	ზამთ.: Cm/ზღვ	Xm	Um				
0301				აზოტის (IV) ოქსიდი (აზოტის დიოქსიდი)	0.1390000	0,0000000	1	24,823	11,4	0,5	24,823	11,4	0,5				
0304				აზოტის (II) ოქსიდი (აზოტის ოქსიდი)	0.0230000	0,0000000	1	2,054	11,4	0,5	2,054	11,4	0,5				
0328				შავი ნახშირბადი (ჰვარტლი)	0.0040000	0,0000000	1	0,952	11,4	0,5	0,952	11,4	0,5				
0330				გოგირდის დიოქსიდი	0.0009000	0,0000000	1	0,064	11,4	0,5	0,064	11,4	0,5				
0337				ნახშირბადის ოქსიდი	0.2000000	0,0000000	1	1,429	11,4	0,5	1,429	11,4	0,5				
0703				ბენზ(ა)პირენი (3,4-ბენზპირენი)	3.000000e-8	0,0000000	1	0,107	11,4	0,5	0,107	11,4	0,5				
1325				ფორმალდეჰიდი	0.0003000	0,0000000	1	0,306	11,4	0,5	0,306	11,4	0,5				
2704				ბენზინის ფრაქცია	0.0325000	0,0000000	1	0,232	11,4	0,5	0,232	11,4	0,5				
2732				ნავთის ფრაქცია	0.0400000	0,0000000	1	1,191	11,4	0,5	1,191	11,4	0,5				
+	0	0	2	მონაკვეთი 2	1	8	2,0	0,00	0	0,00000	0	1,0	201,0	-449,0	252,0	-951,0	15,00
ნივთ. კოდი				ნივთიერება	გაფრქვევა (გ/წმ)	გაფრქვევა (ტ/წლ)	F	ზაფხ.: Cm/ზღვ	Xm	Um	ზამთ.: Cm/ზღვ	Xm	Um				
0301				აზოტის (IV) ოქსიდი (აზოტის დიოქსიდი)	0.1390000	0,0000000	1	24,823	11,4	0,5	24,823	11,4	0,5				
0304				აზოტის (II) ოქსიდი (აზოტის ოქსიდი)	0.0230000	0,0000000	1	2,054	11,4	0,5	2,054	11,4	0,5				
0328				შავი ნახშირბადი (ჰვარტლი)	0.0040000	0,0000000	1	0,952	11,4	0,5	0,952	11,4	0,5				
0330				გოგირდის დიოქსიდი	0.0009000	0,0000000	1	0,064	11,4	0,5	0,064	11,4	0,5				
0337				ნახშირბადის ოქსიდი	0.2000000	0,0000000	1	1,429	11,4	0,5	1,429	11,4	0,5				
0703				ბენზ(ა)პირენი (3,4-ბენზპირენი)	3.000000e-8	0,0000000	1	0,107	11,4	0,5	0,107	11,4	0,5				
1325				ფორმალდეჰიდი	0.0003000	0,0000000	1	0,306	11,4	0,5	0,306	11,4	0,5				
2704				ბენზინის ფრაქცია	0.0325000	0,0000000	1	0,232	11,4	0,5	0,232	11,4	0,5				
2732				ნავთის ფრაქცია	0.0400000	0,0000000	1	1,191	11,4	0,5	1,191	11,4	0,5				
+	0	0	3	მონაკვეთი 3	1	8	2,0	0,00	0	0,00000	0	1,0	253,0	-951,0	168,0	-1429,0	15,00
ნივთ. კოდი				ნივთიერება	გაფრქვევა (გ/წმ)	გაფრქვევა (ტ/წლ)	F	ზაფხ.: Cm/ზღვ	Xm	Um	ზამთ.: Cm/ზღვ	Xm	Um				
0301				აზოტის (IV) ოქსიდი (აზოტის დიოქსიდი)	0.1390000	0,0000000	1	24,823	11,4	0,5	24,823	11,4	0,5				
0304				აზოტის (II) ოქსიდი (აზოტის ოქსიდი)	0.0230000	0,0000000	1	2,054	11,4	0,5	2,054	11,4	0,5				
0328				შავი ნახშირბადი (ჰვარტლი)	0.0040000	0,0000000	1	0,952	11,4	0,5	0,952	11,4	0,5				
0330				გოგირდის დიოქსიდი	0.0009000	0,0000000	1	0,064	11,4	0,5	0,064	11,4	0,5				
0337				ნახშირბადის ოქსიდი	0.2000000	0,0000000	1	1,429	11,4	0,5	1,429	11,4	0,5				
0703				ბენზ(ა)პირენი (3,4-ბენზპირენი)	3.000000e-8	0,0000000	1	0,107	11,4	0,5	0,107	11,4	0,5				
1325				ფორმალდეჰიდი	0.0003000	0,0000000	1	0,306	11,4	0,5	0,306	11,4	0,5				

2704	ბუნების ფრაქცია	0.0325000	0,0000000	1	0,232	11,4	0,5	0,232	11,4	0,5
2732	ნავთის ფრაქცია	0.0400000	0,0000000	1	1,191	11,4	0,5	1,191	11,4	0,5

ემისიები წყაროებიდან ნივთიერებების მიხედვით

აღრიცხვა:

- "%" - წყარო გათვალისწინებულია ფონის გამორიცხვით;
 - "+" - წყარო გათვალისწინებულია ფონის გამორიცხვის გარეშე;
 - "-" - წყარო არ არის გათვალისწინებული და მისი წვლილი არაა შეტანილი ფონში.
- ნიმუშების არარსებობის შემტხვევაში წყარო არ ითვლება.

(-) ნიშნით აღნიშნული ან აღუნიშნავი () წყაროები საერთო ჯამში გათვალისწინებული არ არის

წყაროთა ტიპები:

- 1 - წერტილოვანი;
- 2 - წრფივი;
- 3 - არაორგანიზებული;
- 4 - წერტილოვანი წყაროების ერთობლიობა, გაერთიანებული ერთ სიბრტყულად გათვლისთვის;
- 5 - არაორგანიზებული, დროში ცვლადი გაფრქვევის სიმძლავრით;
- 6 - წერტილოვანი, ქოლგისებური ან ჰორიზონტალური გაფრქვევით;
- 7 - ქოლგისებური ან ჰორიზონტალური გაფრქვევის წერტილოვანი წყაროების ერთობლიობა;
- 8 - ავტომაგისტრალი.

ნივთიერება: 0301 აზოტის (IV) ოქსიდი (აზოტის დიოქსიდი)

№ მოვ. დ.	№ საამ. ქ.	№ წყარ. ოს	ტიპი	აღრიცხვა	გაფრქვევა (გ/წმ)	F	ზაფხ.			ზამთ.		
							Cm/ზღვ	Xm	Um (მ/წმ)	Cm/ზღვ	Xm	Um (მ/წმ)
0	0	1	8	+	0.1390000	1	24,8230	11,40	0,5000	24,8230	11,40	0,5000
0	0	2	8	+	0.1390000	1	24,8230	11,40	0,5000	24,8230	11,40	0,5000
0	0	3	8	+	0.1390000	1	24,8230	11,40	0,5000	24,8230	11,40	0,5000
სულ:					0.4170000		74,4690			74,4690		

ნივთიერება: 0304 აზოტის (II) ოქსიდი (აზოტის ოქსიდი)

№ მოვ. დ.	№ საამ. ქ.	№ წყარ. ოს	ტიპი	აღრიცხვა	გაფრქვევა (გ/წმ)	F	ზაფხ.			ზამთ.		
							Cm/ზღვ	Xm	Um (მ/წმ)	Cm/ზღვ	Xm	Um (მ/წმ)
0	0	1	8	+	0.0230000	1	2,0537	11,40	0,5000	2,0537	11,40	0,5000
0	0	2	8	+	0.0230000	1	2,0537	11,40	0,5000	2,0537	11,40	0,5000
0	0	3	8	+	0.0230000	1	2,0537	11,40	0,5000	2,0537	11,40	0,5000
სულ:					0.0690000		6,1611			6,1611		

ნივთიერება: 0328 შავი ნახშირბადი (ჰვარტლი)

№ მოვ. დ.	№ საამ. ქ.	№ წყარ. ოს	ტიპი	აღრიცხვა	გაფრქვევა (გ/წმ)	F	ზაფხ.			ზამთ.		
							Cm/ზღვ	Xm	Um (მ/წმ)	Cm/ზღვ	Xm	Um (მ/წმ)
0	0	1	8	+	0.0040000	1	0,9524	11,40	0,5000	0,9524	11,40	0,5000
0	0	2	8	+	0.0040000	1	0,9524	11,40	0,5000	0,9524	11,40	0,5000
0	0	3	8	+	0.0040000	1	0,9524	11,40	0,5000	0,9524	11,40	0,5000
სულ:					0.0120000		2,8573			2,8573		

ნივთიერება: 0330 გოგირდის დიოქსიდი

№ მოედ.	№ საამქ.	№ წყაროს	ტიპი	ალრიცხვა	გაფრქვევა (გ/წმ)	F	ზაფხ.			ზამთ.		
							Cm/ზღვ	Xm	Um (მ/წმ)	Cm/ზღვ	Xm	Um (მ/წმ)
0	0	1	8	+	0.0009000	1	0,0643	11,40	0,5000	0,0643	11,40	0,5000
0	0	2	8	+	0.0009000	1	0,0643	11,40	0,5000	0,0643	11,40	0,5000
0	0	3	8	+	0.0009000	1	0,0643	11,40	0,5000	0,0643	11,40	0,5000
სულ:					0.0027000		0,1929			0,1929		

ნივთიერება: 0337 ნახშირბადის ოქსიდი

№ მოედ.	№ საამქ.	№ წყაროს	ტიპი	ალრიცხვა	გაფრქვევა (გ/წმ)	F	ზაფხ.			ზამთ.		
							Cm/ზღვ	Xm	Um (მ/წმ)	Cm/ზღვ	Xm	Um (მ/წმ)
0	0	1	8	+	0.2000000	1	1,4287	11,40	0,5000	1,4287	11,40	0,5000
0	0	2	8	+	0.2000000	1	1,4287	11,40	0,5000	1,4287	11,40	0,5000
0	0	3	8	+	0.2000000	1	1,4287	11,40	0,5000	1,4287	11,40	0,5000
სულ:					0.6000000		4,2860			4,2860		

ნივთიერება: 0703 ბენზ(ა)პირენი (3,4-ბენზპირენი)

№ მოედ.	№ საამქ.	№ წყაროს	ტიპი	ალრიცხვა	გაფრქვევა (გ/წმ)	F	ზაფხ.			ზამთ.		
							Cm/ზღვ	Xm	Um (მ/წმ)	Cm/ზღვ	Xm	Um (მ/წმ)
0	0	1	8	+	3.000000e-8	1	0,1071	11,40	0,5000	0,1071	11,40	0,5000
0	0	2	8	+	3.000000e-8	1	0,1071	11,40	0,5000	0,1071	11,40	0,5000
0	0	3	8	+	3.000000e-8	1	0,1071	11,40	0,5000	0,1071	11,40	0,5000
სულ:					9.000000e-8		0,3214			0,3214		

ნივთიერება: 1325 ფორმალდეჰიდი

№ მოედ.	№ საამქ.	№ წყაროს	ტიპი	ალრიცხვა	გაფრქვევა (გ/წმ)	F	ზაფხ.			ზამთ.		
							Cm/ზღვ	Xm	Um (მ/წმ)	Cm/ზღვ	Xm	Um (მ/წმ)
0	0	1	8	+	0.0003000	1	0,3061	11,40	0,5000	0,3061	11,40	0,5000
0	0	2	8	+	0.0003000	1	0,3061	11,40	0,5000	0,3061	11,40	0,5000
0	0	3	8	+	0.0003000	1	0,3061	11,40	0,5000	0,3061	11,40	0,5000
სულ:					0.0009000		0,9184			0,9184		

ნივთიერება: 2704 ბენზინის ფრაქცია

№ მოედ.	№ საამქ.	№ წყაროს	ტიპი	ალრიცხვა	გაფრქვევა (გ/წმ)	F	ზაფხ.			ზამთ.		
							Cm/ზღვ	Xm	Um (მ/წმ)	Cm/ზღვ	Xm	Um (მ/წმ)
0	0	1	8	+	0.0325000	1	0,2322	11,40	0,5000	0,2322	11,40	0,5000
0	0	2	8	+	0.0325000	1	0,2322	11,40	0,5000	0,2322	11,40	0,5000
0	0	3	8	+	0.0325000	1	0,2322	11,40	0,5000	0,2322	11,40	0,5000
სულ:					0.0975000		0,6965			0,6965		

ნივთიერება: 2732 ნავთის ფრაქცია

№ მოედ.	№ საამქ.	№ წყაროს	ტიპი	ალრიცხვა	გაფრქვევა (გ/წმ)	F	ზაფხ.			ზამთ.		
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მოე დ.	საამ ქ.	წყარ ოს		ცხვა	(გ/წმ)							
							Cm/ზდკ	Xm	Um (მ/წმ)	Cm/ზდკ	Xm	Um (მ/წმ)
0	0	1	8	+	0.0400000	1	1,1906	11,40	0,5000	1,1906	11,40	0,5000
0	0	2	8	+	0.0400000	1	1,1906	11,40	0,5000	1,1906	11,40	0,5000
0	0	3	8	+	0.0400000	1	1,1906	11,40	0,5000	1,1906	11,40	0,5000
სულ:							0.1200000		3,5717		3,5717	

წყაროების გაფრქვევა ჯამური ზემოქმედების ჯგუფების მიხედვით

აღრიცხვა:

"%" - წყარო გათვალისწინებულია ფონის გამორიცხვით;

"+" - წყარო გათვალისწინებულია ფონის გამორიცხვის გარეშე;

"-" - წყარო არ არის გათვალისწინებული და მისი წვლილი არაა შეტანილი ფონში.

ნიშნულების არარსებობის შემტხვევაში წყარო არ ითვლება.

(-) ნიშნით აღნიშნული ან აღუნიშნავი () წყაროები საერთო ჯამში გათვალისწინებული არ არის

წყაროთა ტიპები:

1 - წერტილოვანი;

2 - წრფივი;

3 - არაორგანიზებული;

4 - წერტილოვანი წყაროების ერთობლიობა, გაერთიანებული ერთ სიბრტყულად გათვლისთვის;

5 - არაორგანიზებული, დროში ცვლადი გაფრქვევის სიმძლავრით;

6 - წერტილოვანი, ქოლგისებური ან ჰორიზონტალური გაფრქვევით;

7 - ქოლგისებური ან ჰორიზონტალური გაფრქვევის წერტილოვანი წყაროების ერთობლიობა;

8 - ავტომაგისტრალი.

ჯამური ზემოქმედების ჯგუფი: 6009

№ მოედ.	№ საამქ.	№ წყაროს	ტიპი	აღრიცხვა	კოდი B-Ba	გაფრქვევა (გ/წმ)	F	ზაფხ.			ზამთ.		
								Cm/ზღვ	Xm	Um (მ/წმ)	Cm/ზღვ	Xm	Um (მ/წმ)
0	0	1	8	+	0301	0.1390000	1	24,8230	11,40	0,5000	24,8230	11,40	0,5000
0	0	1	8	+	0330	0.0009000	1	0,0643	11,40	0,5000	0,0643	11,40	0,5000
0	0	2	8	+	0301	0.1390000	1	24,8230	11,40	0,5000	24,8230	11,40	0,5000
0	0	2	8	+	0330	0.0009000	1	0,0643	11,40	0,5000	0,0643	11,40	0,5000
0	0	3	8	+	0301	0.1390000	1	24,8230	11,40	0,5000	24,8230	11,40	0,5000
0	0	3	8	+	0330	0.0009000	1	0,0643	11,40	0,5000	0,0643	11,40	0,5000
სულ:						0.4197000		74,6618			74,6618		

განგარიშება შესრულდა ნივთიერებათა მიხედვით (ჯამური ზემოქმედების ჯგუფების მიხედვით)

კოდი	ნივთიერება	ზღვრულად დასაშვები კონცენტრაცია			*ზღვ-ს შესწორების კოეფიციენტი საორ. უსაფრ. ზემოქ. დონე	ფონური კონცენტრ.	
		ტიპი	საცნობარო მნიშვნელობა	ანგარიშში გამოყენებ.		აღრიცხვა	ინტერპ.
0301	აზოტის (IV) ოქსიდი (აზოტის დიოქსიდი)	მაქს. ერთ.	0.2000000	0.2000000	1	არა	არა
0304	აზოტის (II) ოქსიდი (აზოტის ოქსიდი)	მაქს. ერთ.	0.4000000	0.4000000	1	არა	არა
0328	შავი ნახშირბადი (ჰვარტლი)	მაქს. ერთ.	0.1500000	0.1500000	1	არა	არა
0330	გოგირდის დიოქსიდი	მაქს. ერთ.	0.5000000	0.5000000	1	არა	არა
0337	ნახშირბადის ოქსიდი	მაქს. ერთ.	5.0000000	5.0000000	1	არა	არა
0703	ბენზ(ა)პირენი (3,4-ბენზპირენი)	ზღვ საშ. დ/დ	0.0000010	0.0000100	1	არა	არა
1325	ფორმალდეჰიდი	მაქს. ერთ.	0.0350000	0.0350000	1	არა	არა
2704	ბენზინის ფრაქცია	მაქს. ერთ.	5.0000000	5.0000000	1	არა	არა
2732	ნავთის ფრაქცია	საორ. უსაფრ. ზემოქ. დონე	1.2000000	1.2000000	1	არა	არა
6009	არასრული ჯამური ზემოქმედების ჯგუფი, კოეფიციენტი "1.6": ჯამური ზემოქმედების ჯგუფი (2) 301 330	ჯგუფი	-	-	1	არა	არა

*გამოიყენება განსაკუთრებული ნორმატიული მოთხოვნების გამოყენების საჭიროების შემთხვევაში. პარამეტრის "შესწორების კოეფიციენტი/საორ. უსაფრ. ზემოქ. დონე", მნიშვნელობის ცვლილების შემტხვევაში, რომელის სტანდარტული მნიშვნელობა 1-ია, მაქსიმალური კონცენტრაციის განგარიშებული სიდიდეები შედარებული უნდა იქნას არა კოეფიციენტის მნიშვნელობას, არამედ 1-ს.

საანგარიშო მეტეოპარამეტრების გადარჩევა
ავტომატური გადარჩევა

ქარის სიჩქარეთა გადარჩევა სრულდება ავტომატურად

ქარის მიმართულება

სექტორის დასაწისი	სექტორის დასასრული	ქარის გადარჩევის ბიჯი
0	360	1

საანგარიშო არეალი

საანგარიშო მოედნები

№	ტიპი	მოედნის სრული აღწერა				სიგანე (მ)	ბიჯი (მ)		სიმაღლ. (მ)	კომენტარი
		შუა წერტილის კოორდინატები, I მხარე (მ)		შუა წერტილის კოორდინატები, II მხარე (მ)			X	Y		
		X	Y	X	Y					
1	მოცემული	-500	-700	700	-700	3000	50	50	2	

საანგარიშო წერტილები

№	წერტილის კოორდინატები (მ)		სიმაღლ. (მ)	წერტილ. ტიპი	კომენტარი
	X	Y			
4	-69,00	488,00	2	500 მ-ნი ზონის საზღვარზე	ჩრდ
5	756,00	-560,00	2	500 მ-ნი ზონის საზღვარზე	აღმ
6	193,00	-1938,00	2	500 მ-ნი ზონის საზღვარზე	სამხრ
7	-276,00	-708,00	2	500 მ-ნი ზონის საზღვარზე	დას
1	86,00	-475,00	2	წერტილი დასახლებული ზონის საზღვარზე	
2	363,00	-676,00	2	წერტილი დასახლებული ზონის საზღვარზე	
3	139,00	-736,00	2	წერტილი დასახლებული ზონის საზღვარზე	

გაანგარიშების შედეგები ნივთიერებების მიხედვით
(საანგარიშო წერტილები)

წერტილთა ტიპები:

- 0 - მომხმარებლის საანგარიშო წერტილი
- 1 - წერტილი დაცვის ზონის საზღვარზე
- 2 - წერტილი საწარმო ზონის საზღვარზე
- 3 - წერტილი სანიტარულ-დაცვითი ზონის საზღვარზე
- 4 - წერტილი დასახლებული ზონის საზღვარზე
- 5 - განაშენიანების საზღვარზე

№	კოორდ X(მ)	კოორდ Y(მ)	სიმაღლ. (მ)	კონცენტრ. (ზღკ-ს)	ქარის მიმართ.	ქარის სიჩქ.	ფონი (ზღკ-ს)	ფონი გამორი-	წერტილ. ტიპი
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				წილი)			წილი)	ცხვამდე	
ნივთიერება: 0301 აზოტის (IV) ოქსიდი (აზოტის დიოქსიდი)									
2	363	-676	2	0.45	328	13,00	0.000	0.000	4
3	139	-736	2	0.45	35	0,50	0.000	0.000	4
1	86	-475	2	0.40	145	0,50	0.000	0.000	4
4	-69	488	2	0.34	168	13,00	0.000	0.000	3
6	193	-1938	2	0.33	0	13,00	0.000	0.000	3
5	756	-560	2	0.18	237	0,50	0.000	0.000	3
7	-276	-708	2	0.16	115	0,50	0.000	0.000	3
ნივთიერება: 0304 აზოტის (II) ოქსიდი (აზოტის ოქსიდი)									
2	363	-676	2	0.04	328	13,00	0.000	0.000	4
3	139	-736	2	0.04	35	0,50	0.000	0.000	4
1	86	-475	2	0.03	145	0,50	0.000	0.000	4
4	-69	488	2	0.03	168	13,00	0.000	0.000	3
6	193	-1938	2	0.03	0	13,00	0.000	0.000	3
5	756	-560	2	0.01	237	0,50	0.000	0.000	3
7	-276	-708	2	0.01	115	0,50	0.000	0.000	3
ნივთიერება: 0328 შავი ნახშირბადი (კვარტლი)									
2	363	-676	2	0.02	328	13,00	0.000	0.000	4
3	139	-736	2	0.02	35	0,50	0.000	0.000	4
1	86	-475	2	0.02	145	0,50	0.000	0.000	4
4	-69	488	2	0.01	168	13,00	0.000	0.000	3
6	193	-1938	2	0.01	0	13,00	0.000	0.000	3
5	756	-560	2	6.7e-3	237	0,50	0.000	0.000	3
7	-276	-708	2	6.2e-3	115	0,50	0.000	0.000	3
ნივთიერება: 0330 გოგირდის დიოქსიდი									
2	363	-676	2	1.2e-3	328	13,00	0.000	0.000	4
3	139	-736	2	1.2e-3	35	0,50	0.000	0.000	4
1	86	-475	2	1.0e-3	145	0,50	0.000	0.000	4
4	-69	488	2	8.7e-4	168	13,00	0.000	0.000	3
6	193	-1938	2	8.6e-4	0	13,00	0.000	0.000	3
5	756	-560	2	4.5e-4	237	0,50	0.000	0.000	3
7	-276	-708	2	4.2e-4	115	0,50	0.000	0.000	3
ნივთიერება: 0337 ნახშირბადის ოქსიდი									
2	363	-676	2	0.03	328	13,00	0.000	0.000	4
3	139	-736	2	0.03	35	0,50	0.000	0.000	4
1	86	-475	2	0.02	145	0,50	0.000	0.000	4
4	-69	488	2	0.02	168	13,00	0.000	0.000	3
6	193	-1938	2	0.02	0	13,00	0.000	0.000	3
5	756	-560	2	0.01	237	0,50	0.000	0.000	3
7	-276	-708	2	9.3e-3	115	0,50	0.000	0.000	3
ნივთიერება: 0703 ბენზ(ა)პირენი (3,4-ბენზპირენი)									
2	363	-676	2	1.9e-3	328	13,00	0.000	0.000	4
3	139	-736	2	1.9e-3	35	0,50	0.000	0.000	4
1	86	-475	2	1.7e-3	145	0,50	0.000	0.000	4
4	-69	488	2	1.5e-3	168	13,00	0.000	0.000	3
6	193	-1938	2	1.4e-3	0	13,00	0.000	0.000	3
5	756	-560	2	7.6e-4	237	0,50	0.000	0.000	3
7	-276	-708	2	7.0e-4	115	0,50	0.000	0.000	3
ნივთიერება: 1325 ფორმალდეჰიდი									
2	363	-676	2	5.5e-3	328	13,00	0.000	0.000	4
3	139	-736	2	5.5e-3	35	0,50	0.000	0.000	4
1	86	-475	2	4.9e-3	145	0,50	0.000	0.000	4
4	-69	488	2	4.2e-3	168	13,00	0.000	0.000	3

6	193	-1938	2	4.1e-3	0	13,00	0.000	0.000	3
5	756	-560	2	2.2e-3	237	0,50	0.000	0.000	3
7	-276	-708	2	2.0e-3	115	0,50	0.000	0.000	3

წივთიერება: 2704 ბენზინის ფრაქცია

2	363	-676	2	4.2e-3	328	13,00	0.000	0.000	4
3	139	-736	2	4.2e-3	35	0,50	0.000	0.000	4
1	86	-475	2	3.7e-3	145	0,50	0.000	0.000	4
4	-69	488	2	3.1e-3	168	13,00	0.000	0.000	3
6	193	-1938	2	3.1e-3	0	13,00	0.000	0.000	3
5	756	-560	2	1.6e-3	237	0,50	0.000	0.000	3
7	-276	-708	2	1.5e-3	115	0,50	0.000	0.000	3

წივთიერება: 2732 ნავთის ფრაქცია

2	363	-676	2	0.02	328	13,00	0.000	0.000	4
3	139	-736	2	0.02	35	0,50	0.000	0.000	4
1	86	-475	2	0.02	145	0,50	0.000	0.000	4
4	-69	488	2	0.02	168	13,00	0.000	0.000	3
6	193	-1938	2	0.02	0	13,00	0.000	0.000	3
5	756	-560	2	8.4e-3	237	0,50	0.000	0.000	3
7	-276	-708	2	7.8e-3	115	0,50	0.000	0.000	3

წივთიერება: 6009 ჯამური ზემოქმედების ჯგუფი (2) 301 330

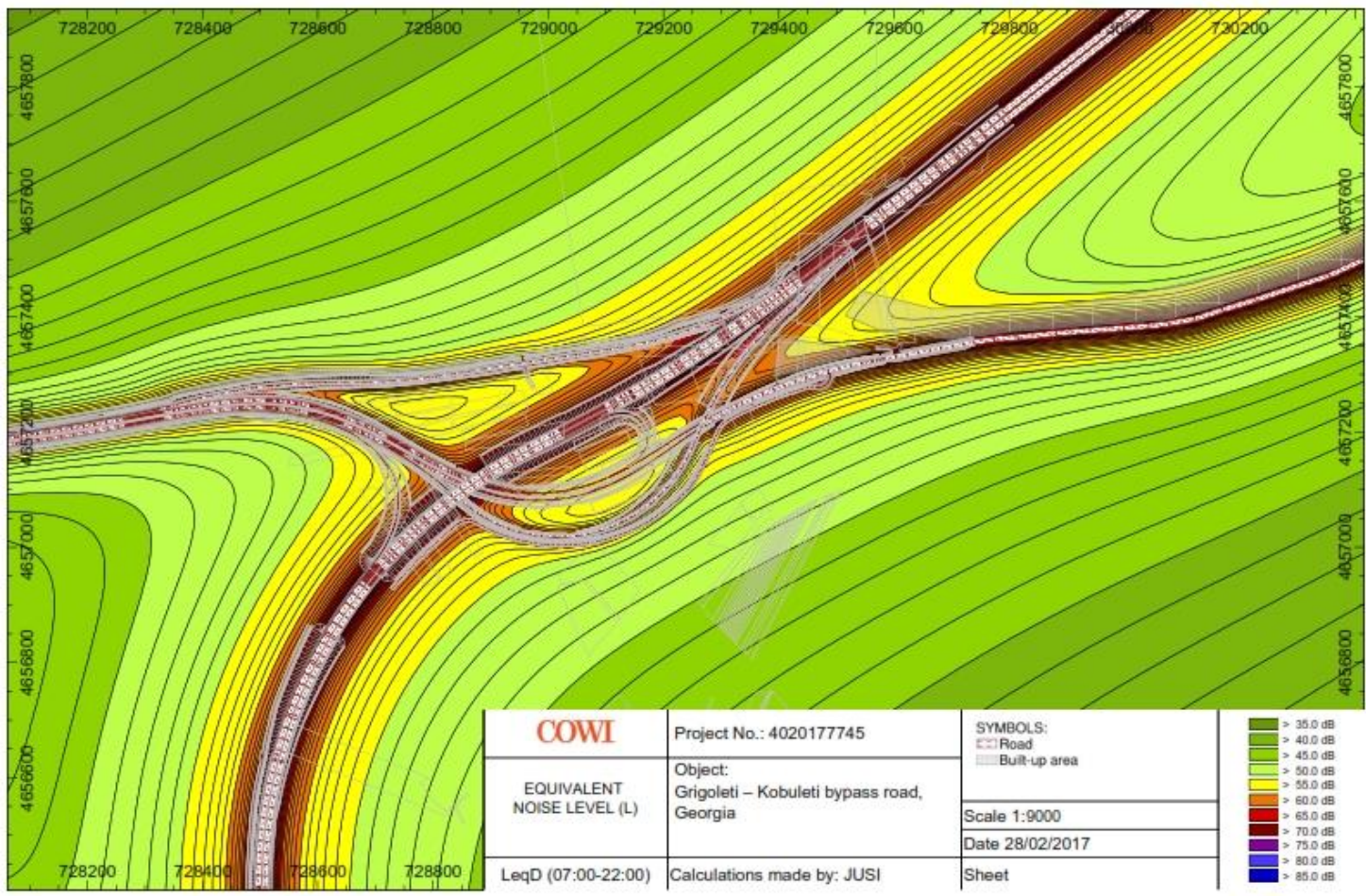
2	363	-676	2	0.28	328	13,00	0.000	0.000	4
3	139	-736	2	0.28	35	0,50	0.000	0.000	4
1	86	-475	2	0.25	145	0,50	0.000	0.000	4
4	-69	488	2	0.21	168	13,00	0.000	0.000	3
6	193	-1938	2	0.21	0	13,00	0.000	0.000	3
5	756	-560	2	0.11	237	0,50	0.000	0.000	3
7	-276	-708	2	0.10	115	0,50	0.000	0.000	3

ANNEX 4. NOISE MODELLING RESULTS

Section 4.1 presents drawings of first simple modelling. This noise modelling was developed during the first stages of the Detailed Design phase.

Detailed noise modelling results are given in Section 4.2.

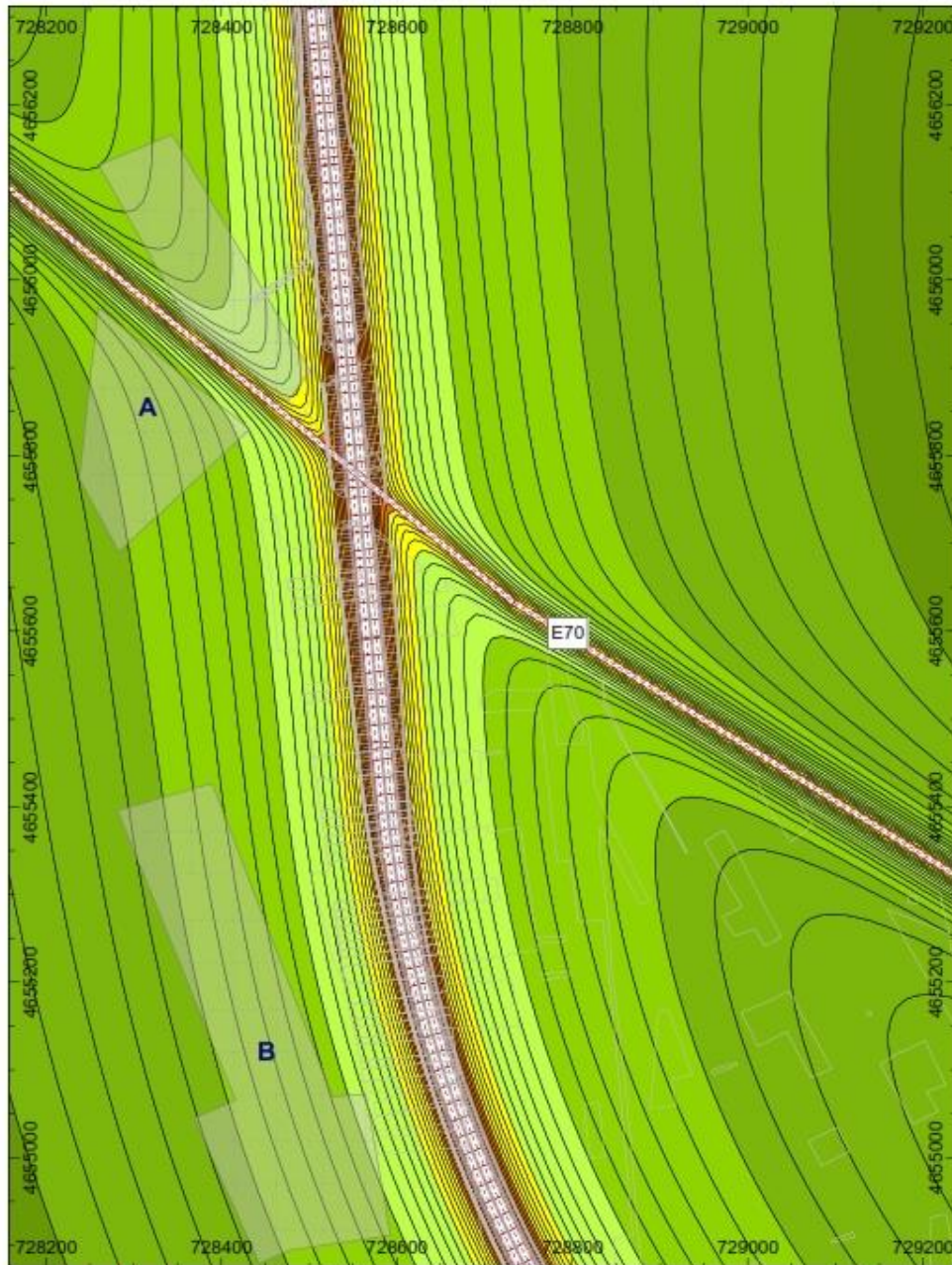
4.1 RESULTS OF FIRST SIMPLE NOISE MODELLING. DRAWINGS



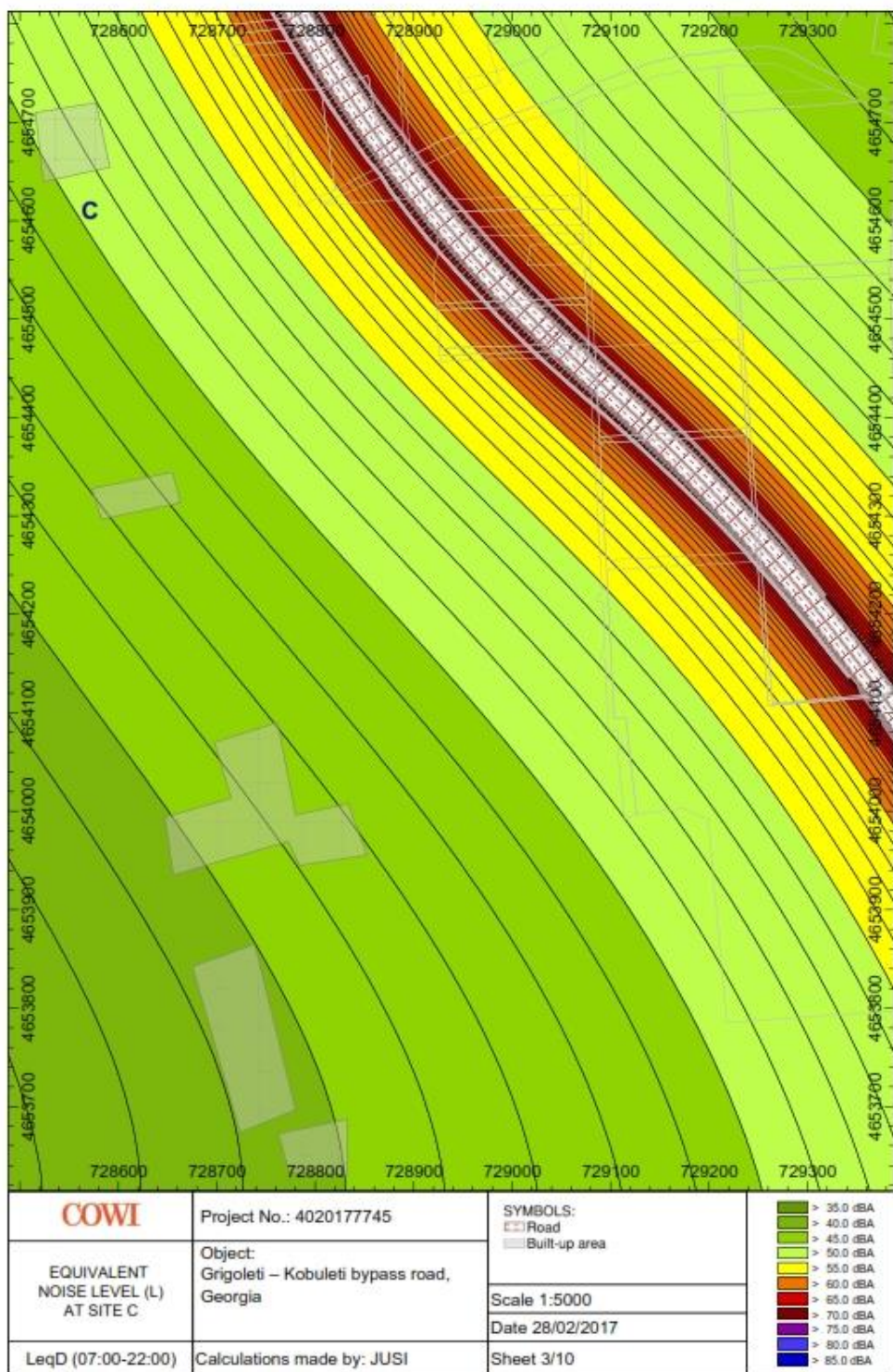


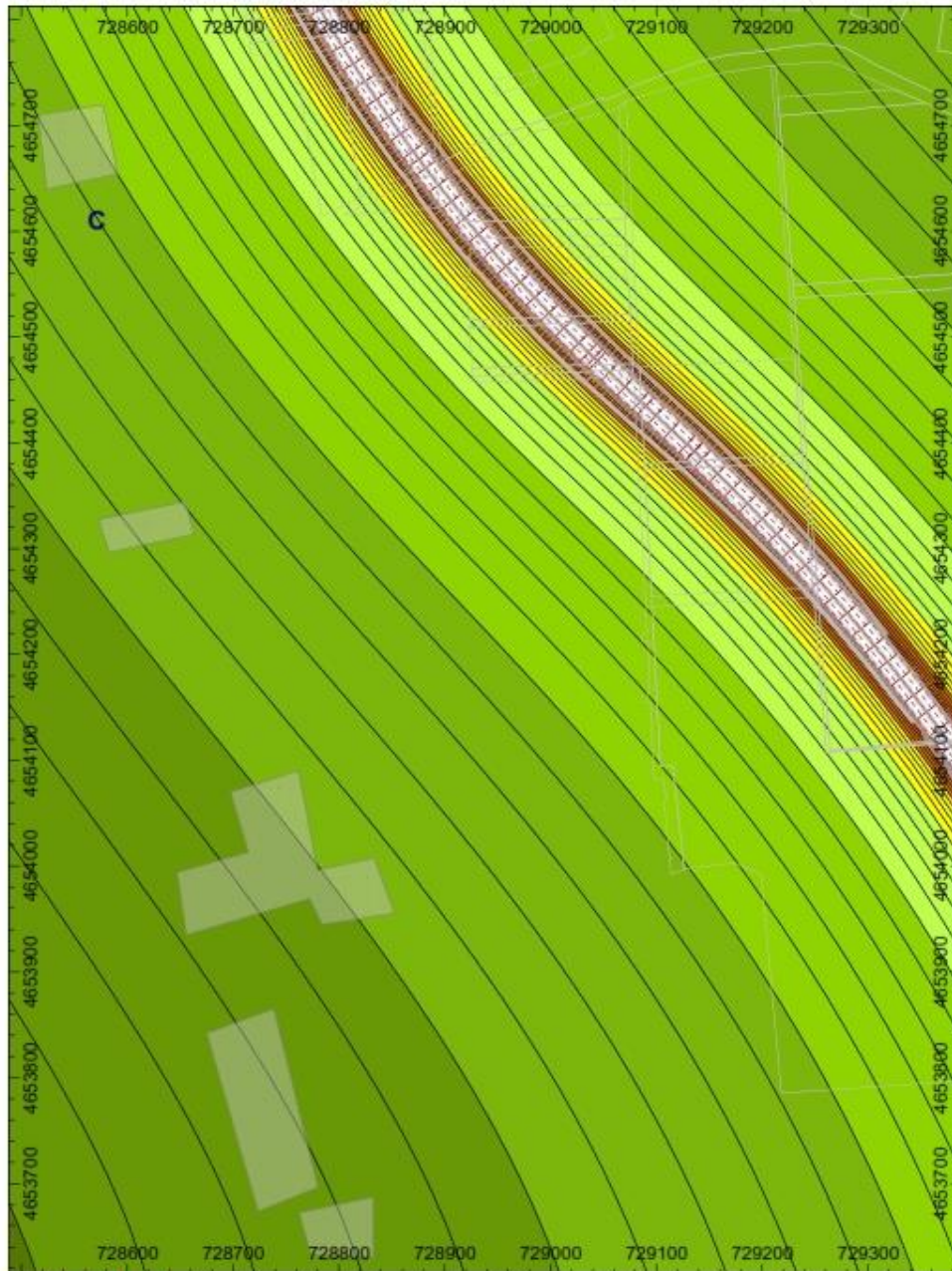


<p>COWI</p>	<p>Project No.: 4020177745</p>	<p>SYMBOLS: Road Built-up area</p>	<p>> 35.0 dBA > 40.0 dBA > 45.0 dBA > 50.0 dBA > 55.0 dBA > 60.0 dBA > 65.0 dBA > 70.0 dBA > 75.0 dBA > 80.0 dBA > 85.0 dBA</p>
	<p>EQUIVALENT NOISE LEVEL (L) AT SITES A, B</p>	<p>Object: Grigoleti – Kobuleti bypass road, Georgia</p>	<p>Scale 1:6000 Date 28/02/2017</p>
<p>LeqD (07:00-22:00)</p>	<p>Calculations made by: JUSI</p>	<p>Sheet 1/10</p>	

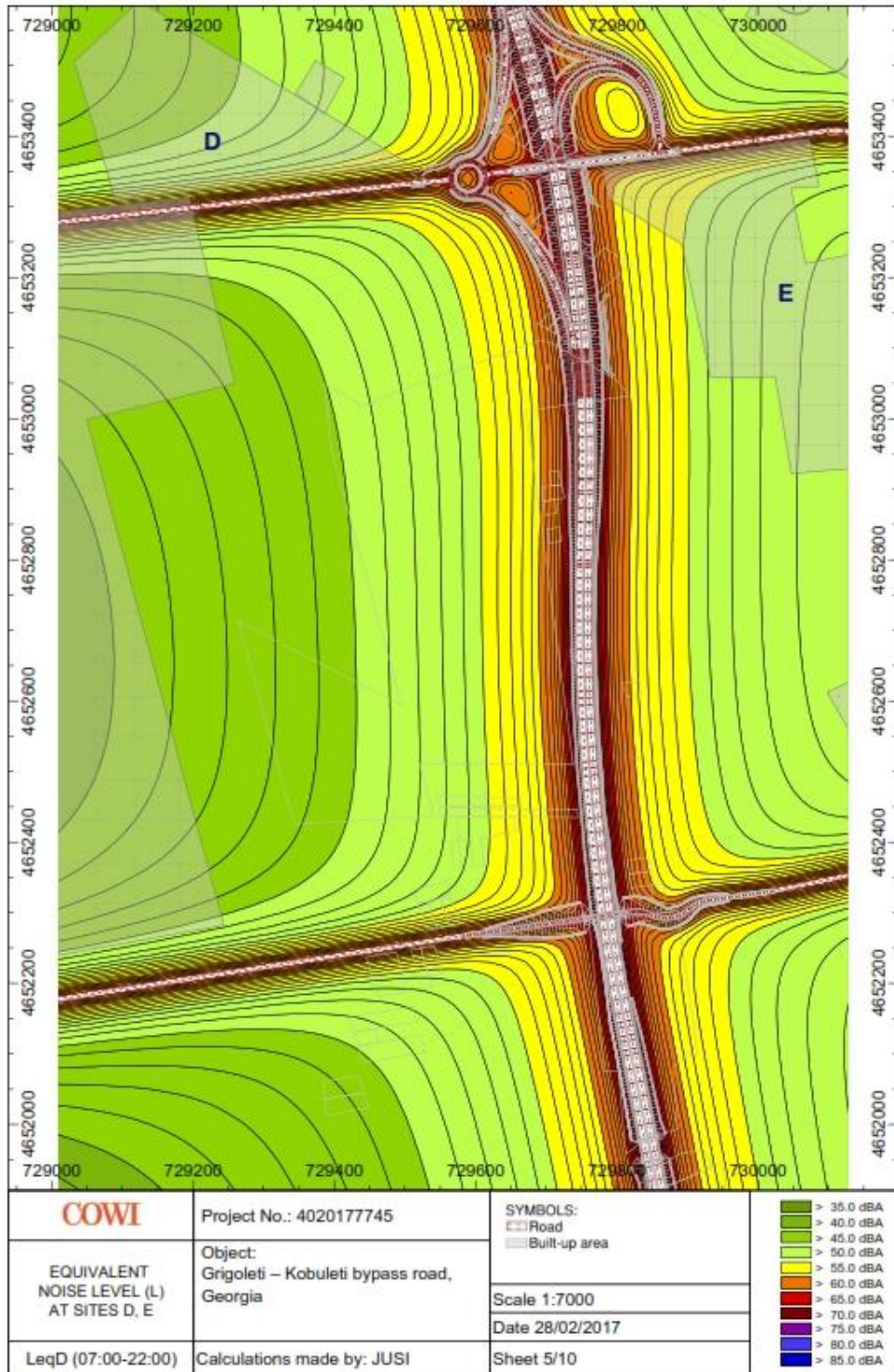


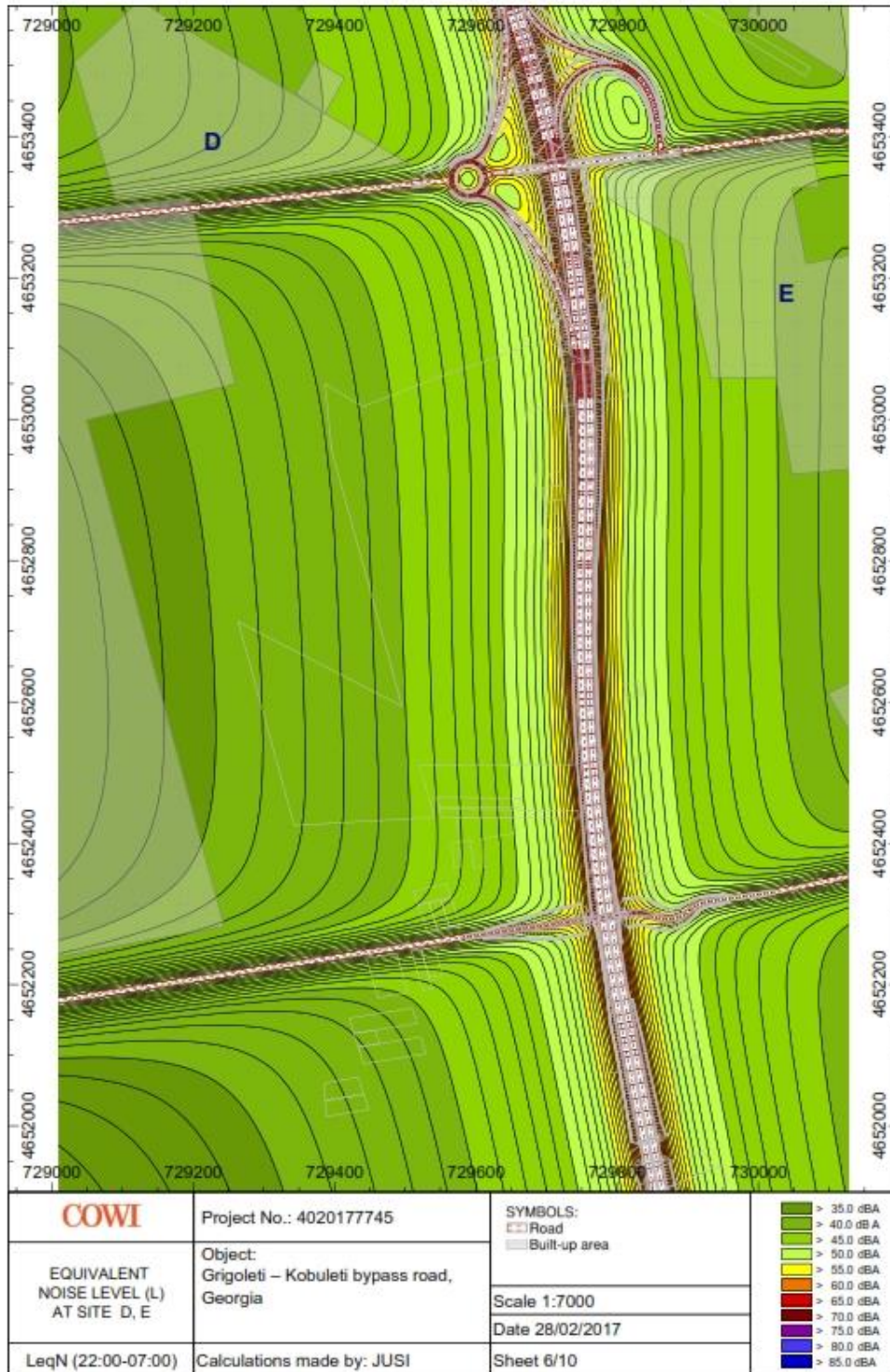
<p>COWI</p>	<p>Project No.: 4020177745</p>	<p>SYMBOLS:</p> <ul style="list-style-type: none"> Road Built-up area 	<ul style="list-style-type: none"> > 35.0 dBA > 40.0 dBA > 45.0 dBA > 50.0 dBA > 55.0 dBA > 60.0 dBA > 65.0 dBA > 70.0 dBA > 75.0 dBA > 80.0 dBA > 85.0 dBA
	<p>Object: Grigoleti – Kobuleti bypass road, Georgia</p>	<p>Scale 1:6000</p> <p>Date 28/02/2017</p>	
<p>EQUIVALENT NOISE LEVEL (L) AT SITES A, B</p>	<p>LeqN (22:00-07:00)</p>	<p>Calculations made by: JUSI</p>	<p>Sheet 2/10</p>

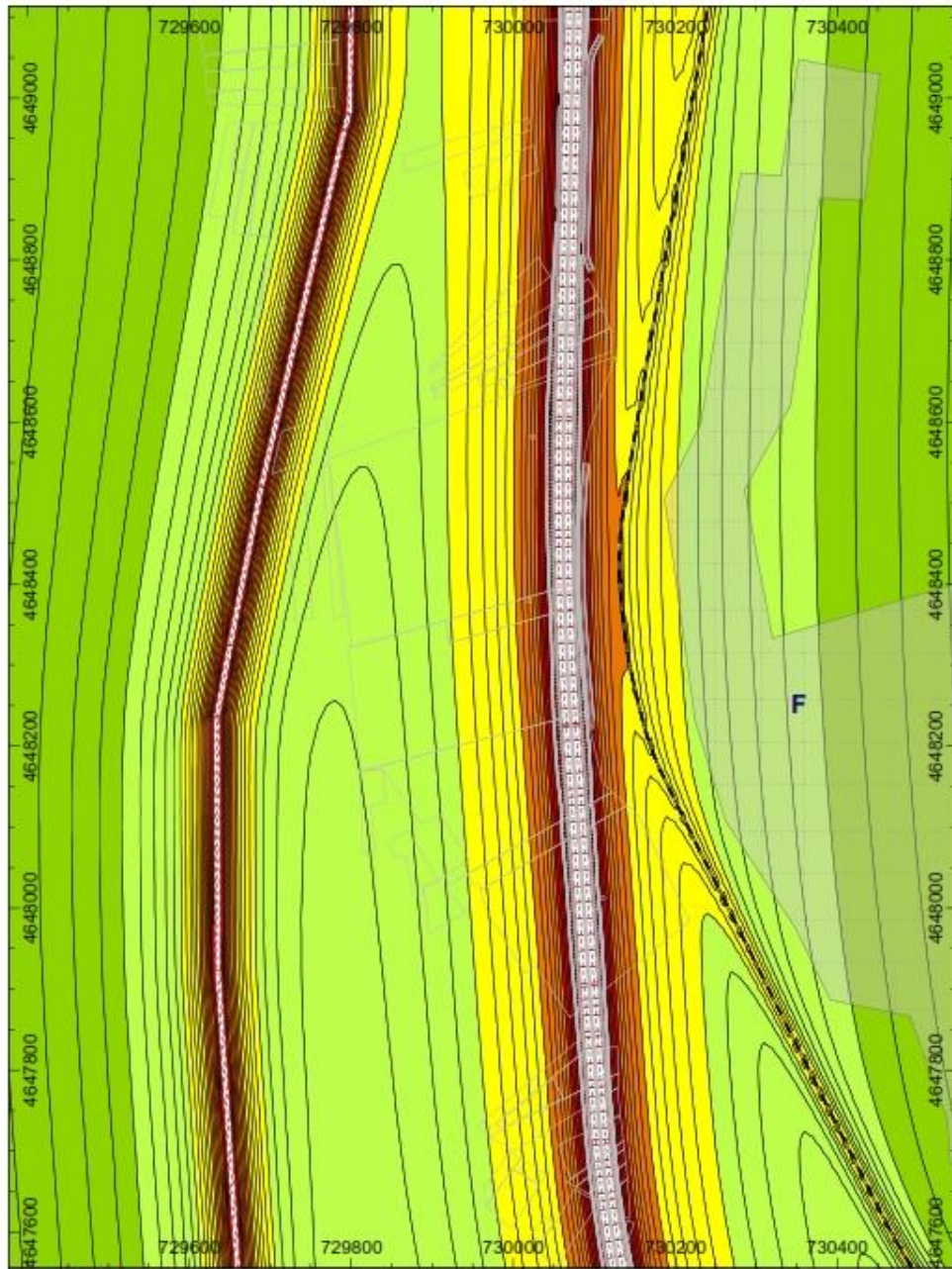




	Project No.: 4020177745	SYMBOLS: Road Built-up area	
	Object: Grigoleti – Kobuleti bypass road, Georgia	Scale 1:5000 Date 28/02/2017	
EQUIVALENT NOISE LEVEL (L) AT SITE C	LeqN (22:00-07:00)	Calculations made by: JUSI	Sheet 4/10




















	Project No.: 4020177745	SYMBOLS: Road Built-up area	
	Object: Grigoleti – Kobuleti bypass road, Georgia	Scale 1:6500 Date 28/02/2017	
EQUIVALENT NOISE LEVEL (L) AT SITE F	LeqD (07:00-22:00)	Calculations made by: JUSI	Sheet 7/10



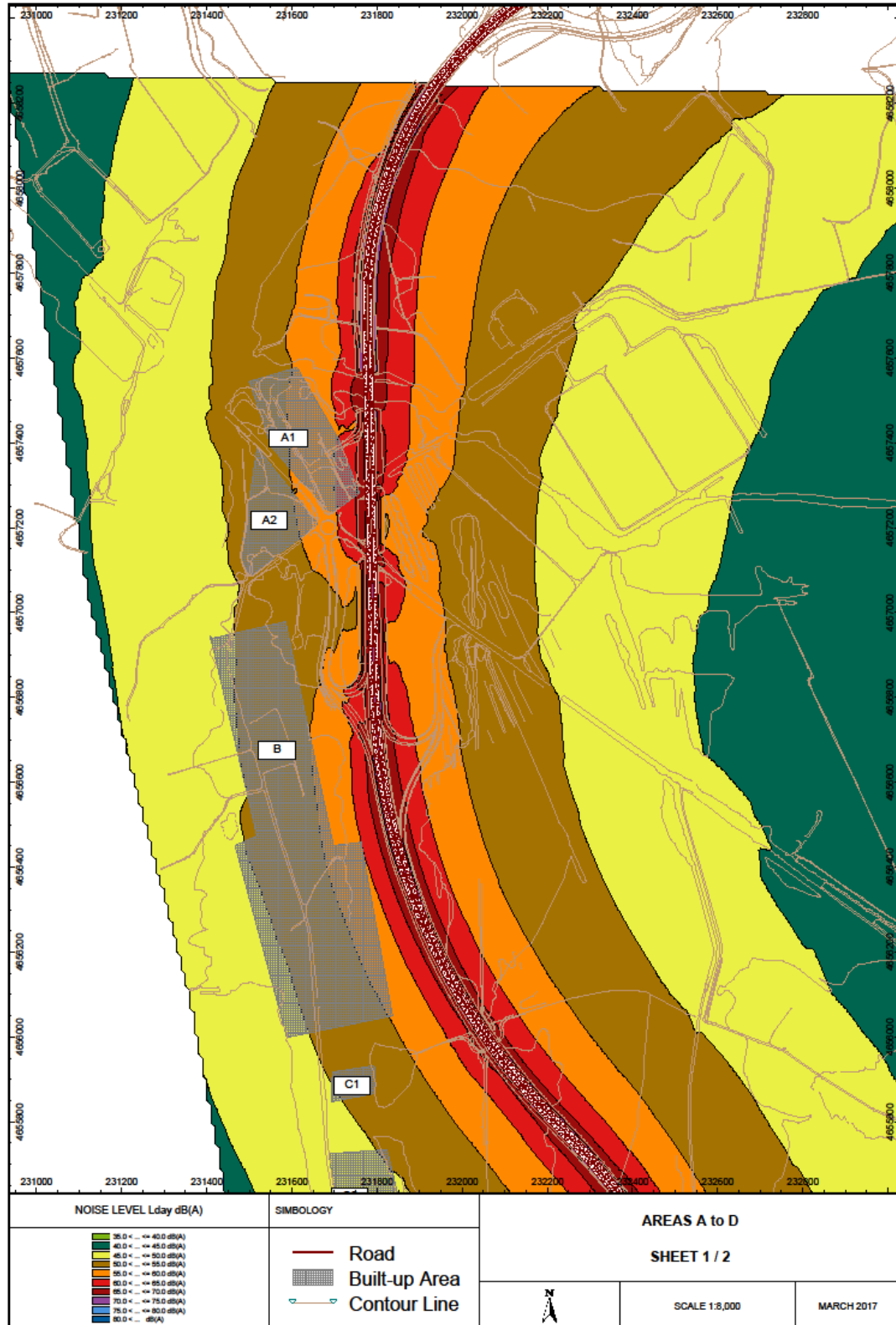
COWI	Project No.: 4020177745	SYMBOLS:  Road  Built-up area	 > 35.0 dBA  > 40.0 dBA  > 45.0 dBA  > 50.0 dBA  > 55.0 dBA  > 60.0 dBA  > 65.0 dBA  > 70.0 dBA  > 75.0 dBA  > 80.0 dBA  > 85.0 dBA
EQUIVALENT NOISE LEVEL (L) AT SITE F	Object: Grigoleti – Kobuleti bypass road, Georgia	Scale 1:6500 Date 28/02/2017	
LeqN (22:00-07:00)	Calculations made by: JUSI	Sheet 8/10	

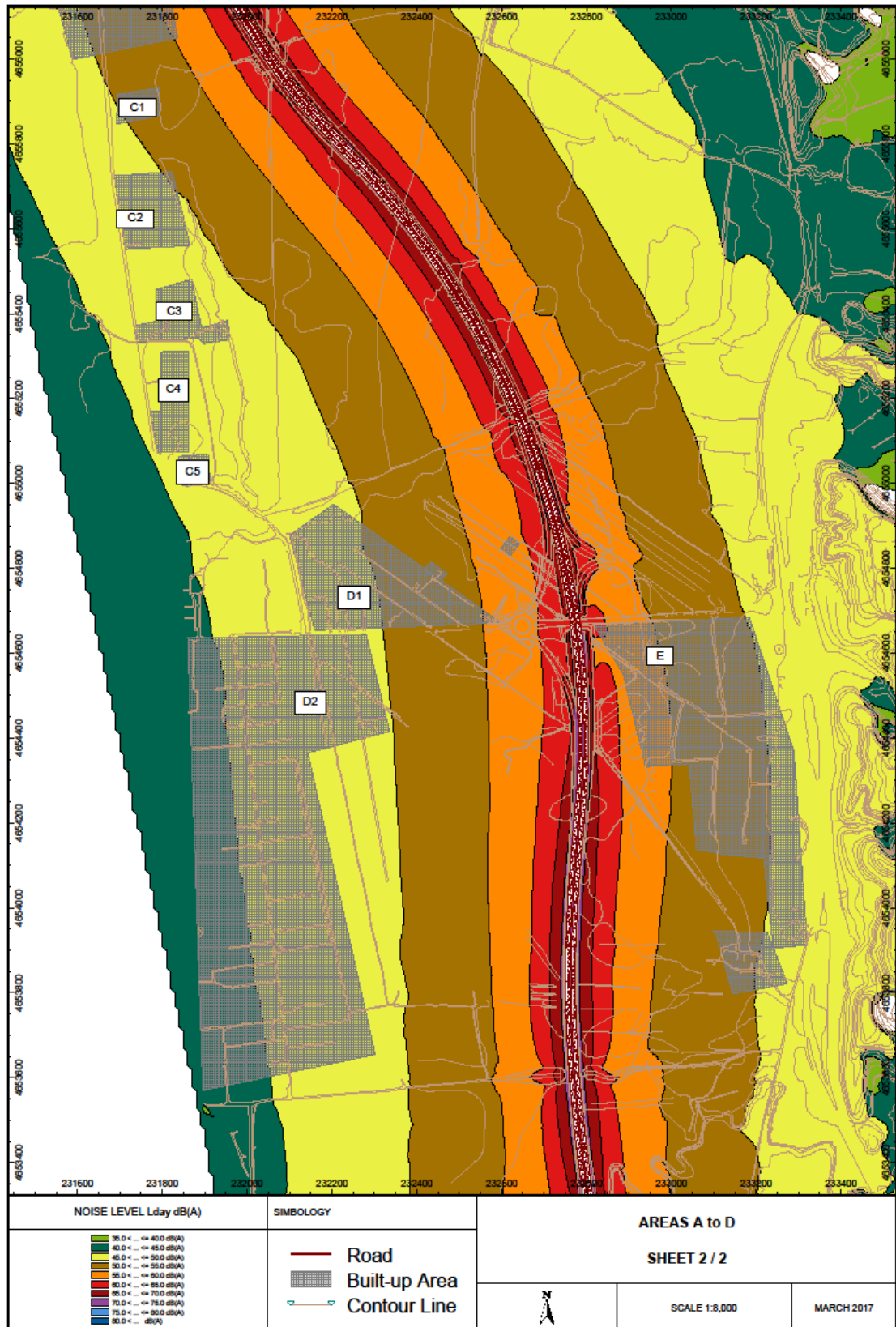


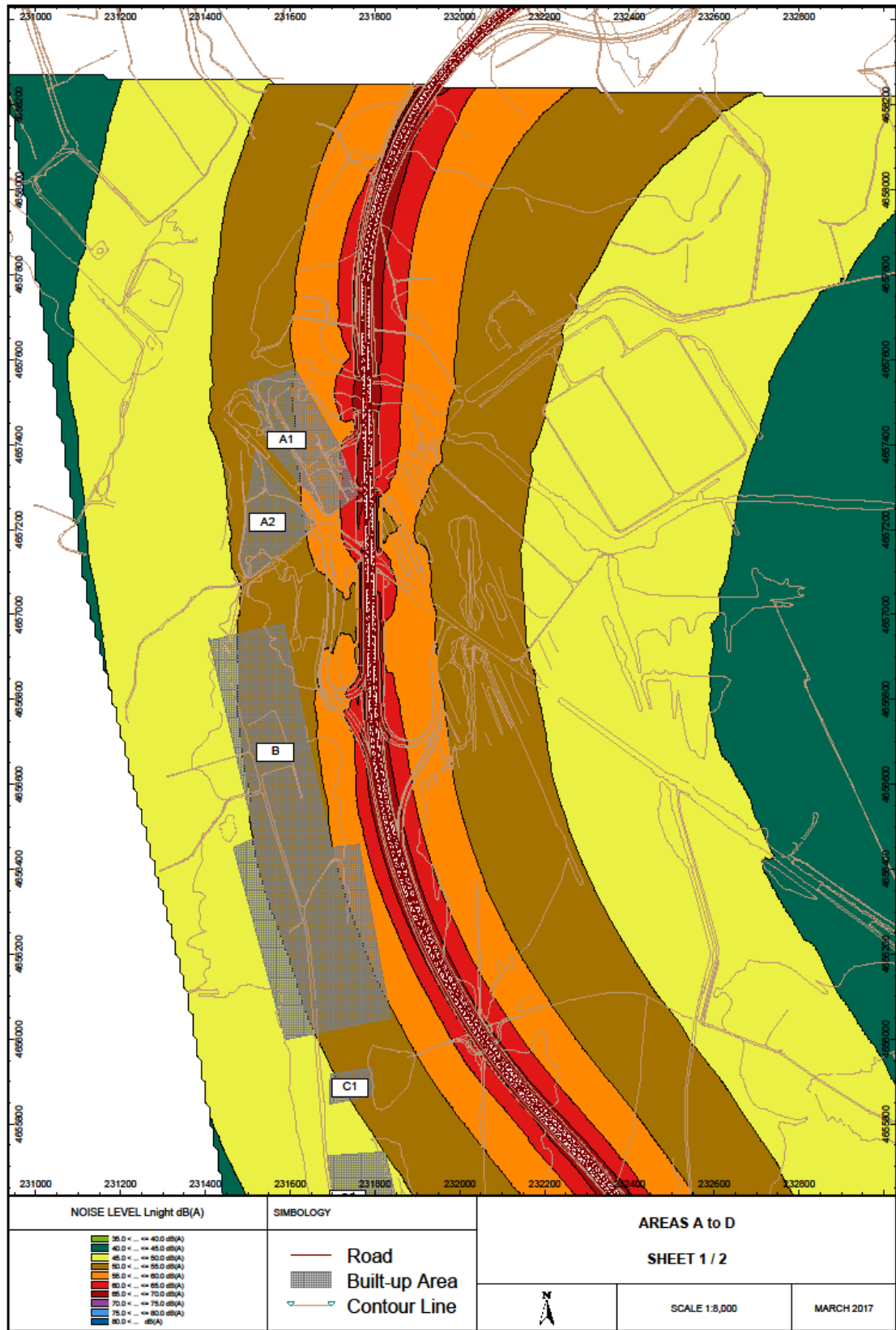
<p>COWI</p>	<p>Project No.: 4020177745</p>	<p>SYMBOLS:</p> <ul style="list-style-type: none"> Road Built-up area 	<ul style="list-style-type: none"> > 35.0 dB(A) > 40.0 dB(A) > 45.0 dB(A) > 50.0 dB(A) > 55.0 dB(A) > 60.0 dB(A) > 65.0 dB(A) > 70.0 dB(A) > 75.0 dB(A) > 80.0 dB(A) > 85.0 dB(A)
	<p>EQUIVALENT NOISE LEVEL (L) AT SITES G, H</p>	<p>Object: Grigoleti – Kobuleti bypass road, Georgia</p>	
<p>LeqD (07:00-22:00)</p>	<p>Calculations made by: JUSI</p>	<p>Sheet 9/10</p>	

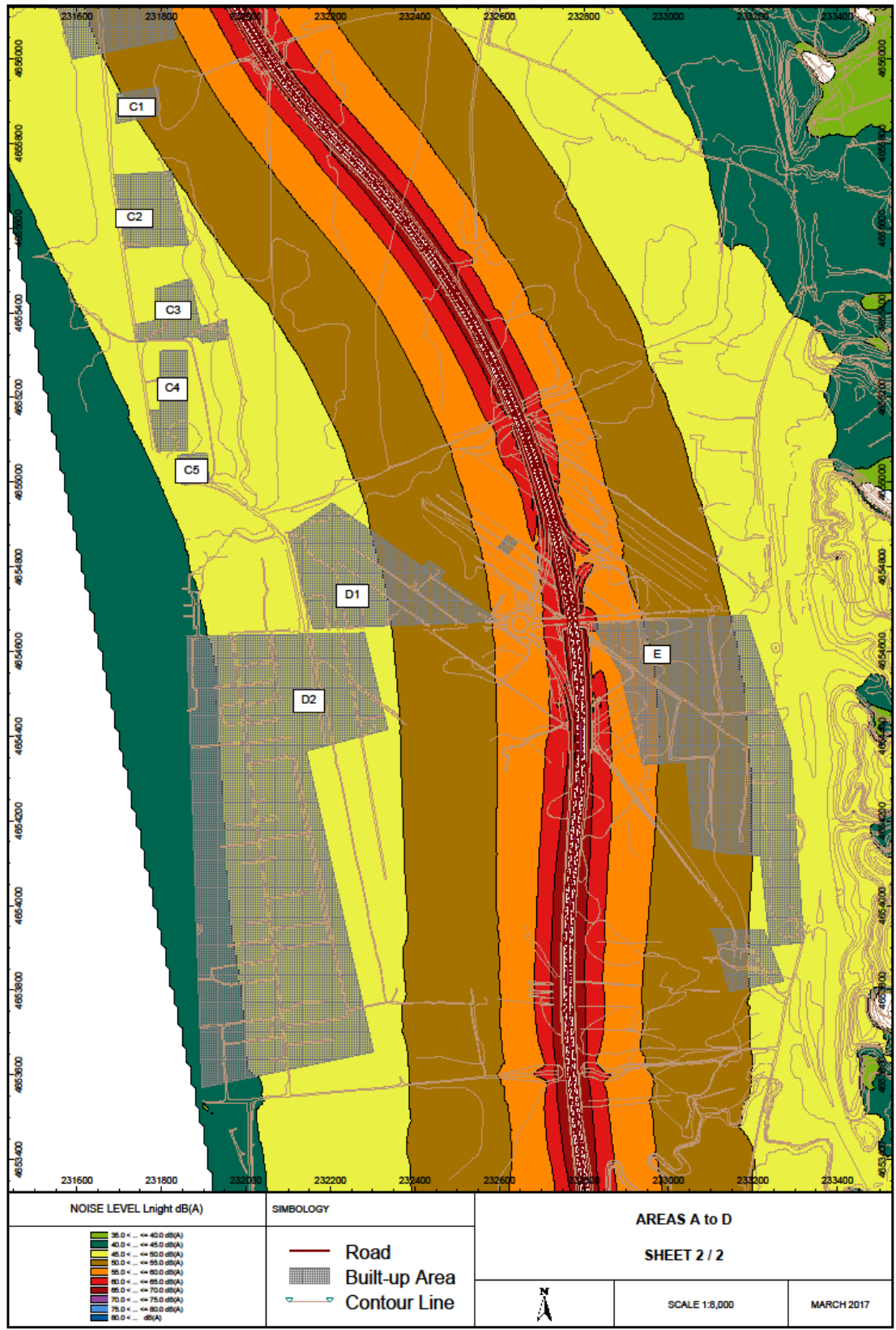


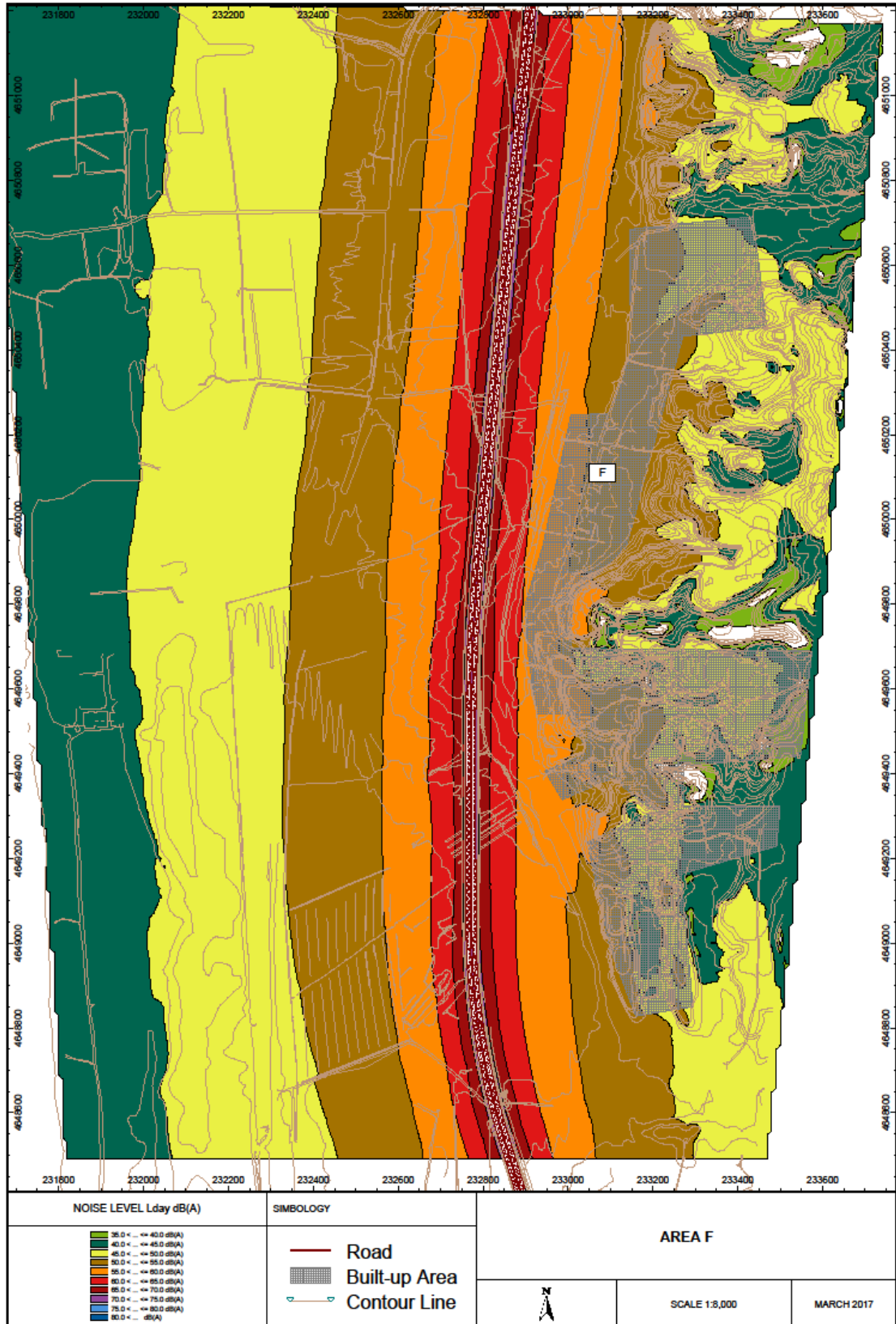
4.2 DETAILED NOISE MODELLING. DRAWINGS

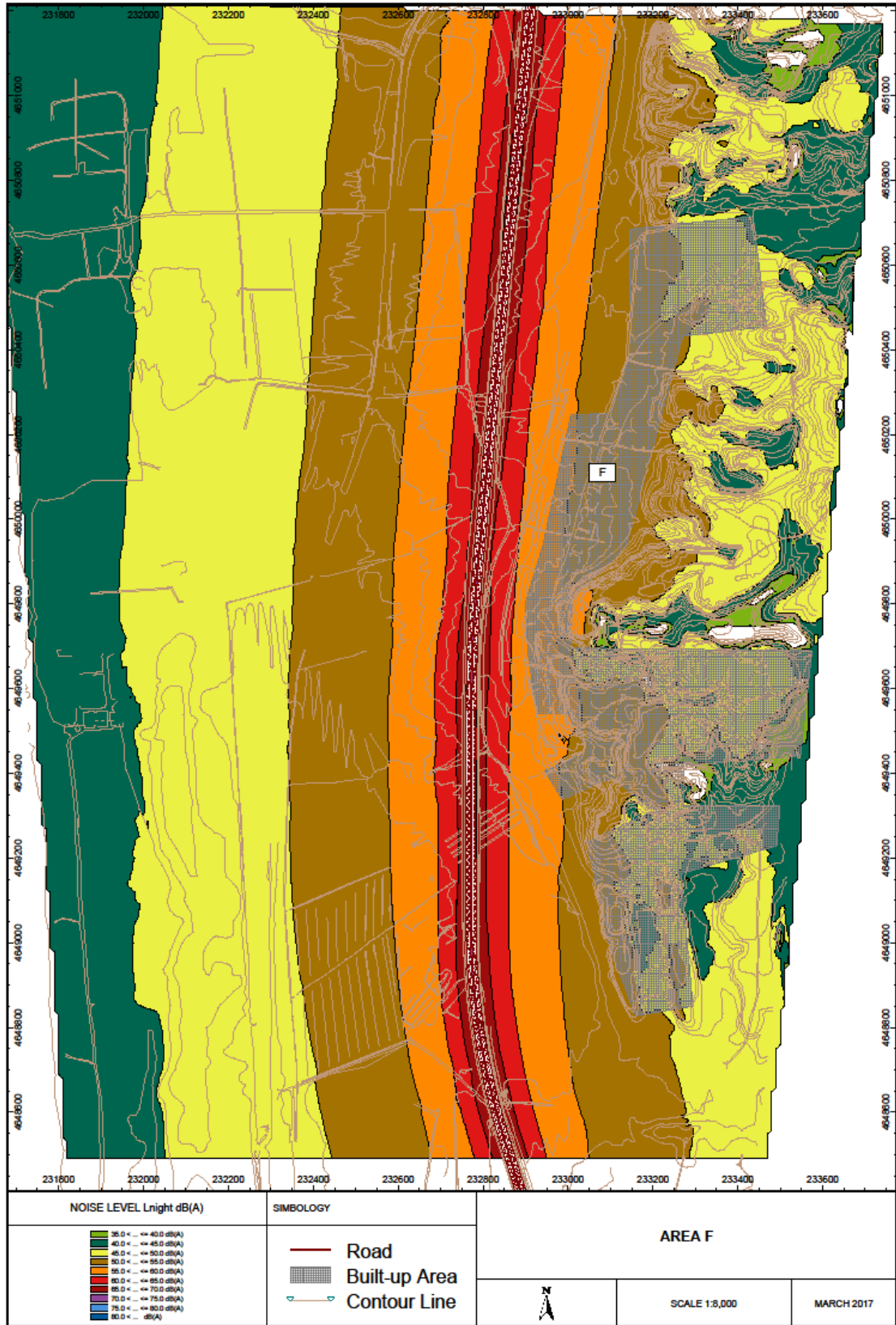


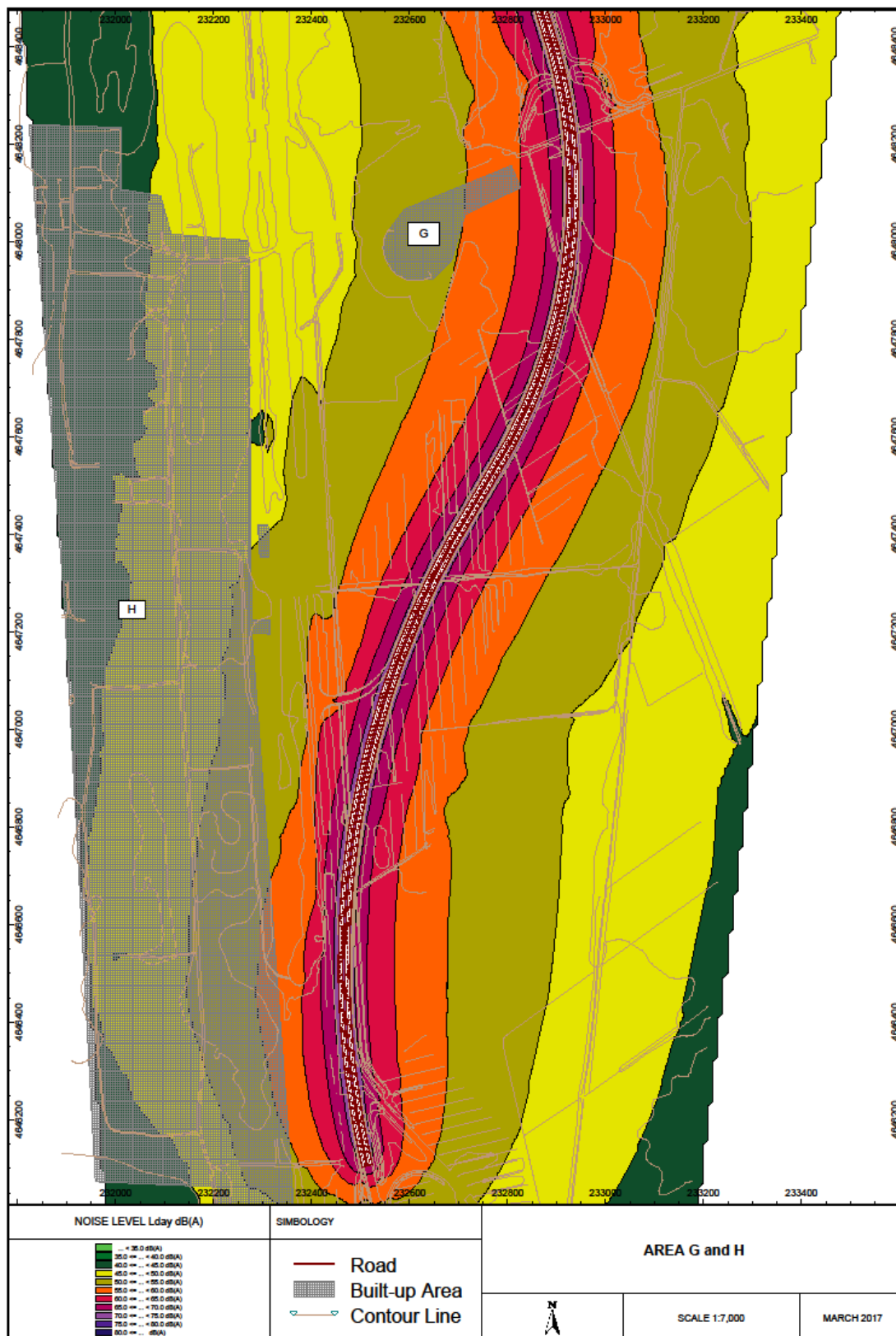


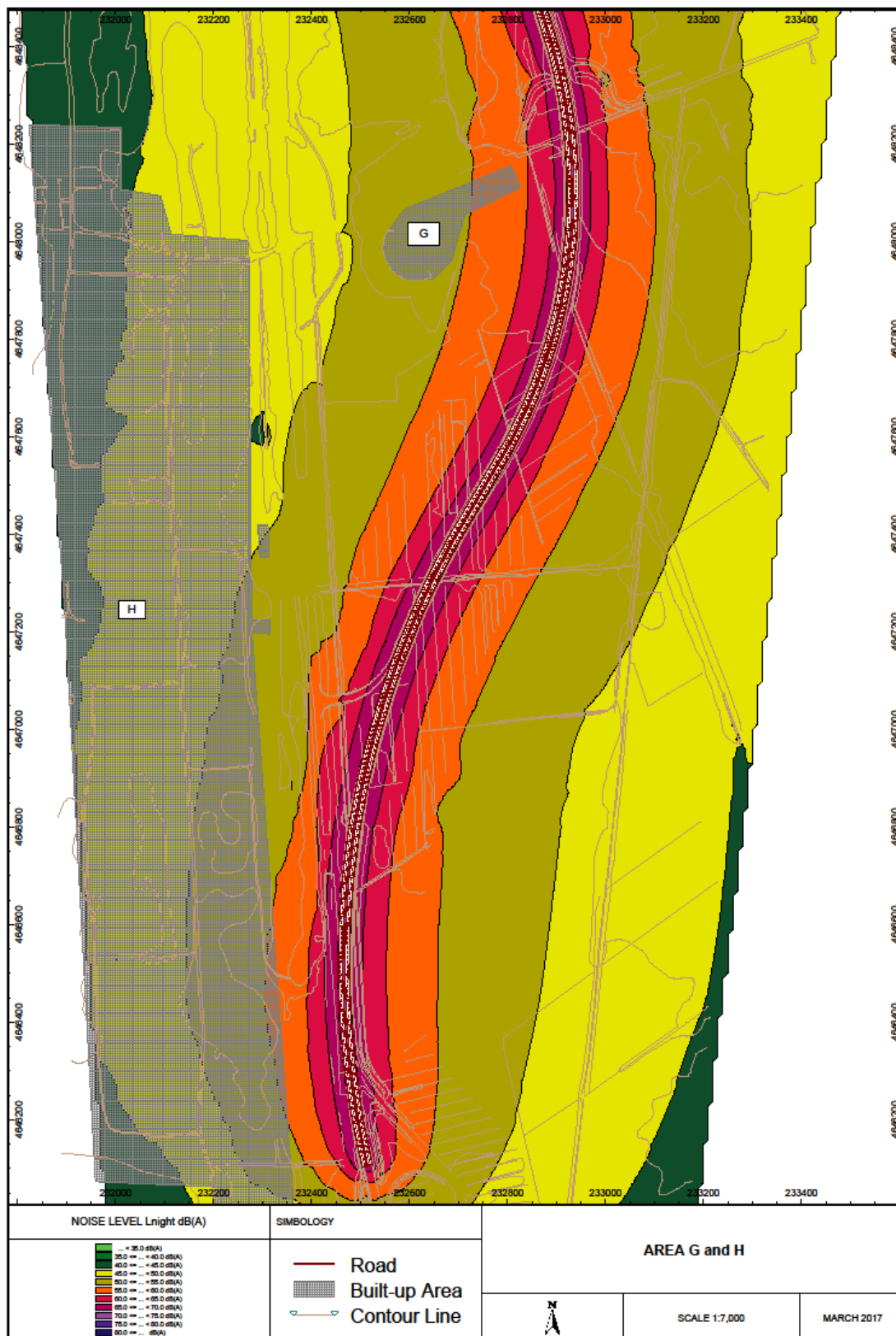












ANNEX 5. CHANCE FIND PROCEDURE

Purpose of the chance find procedure

The chance find procedure is a project-specific procedure that outlines actions required if previously unknown heritage resources, particularly archaeological resources, are encountered during project construction or operation. A Chance Find Procedure, as described in IFC Performance Standard 8 and EBRD Performance Requirement 8 and law on Cultural Heritage of Georgia, is a process that prevents chance finds from being disturbed until an assessment by a competent specialist is made and actions consistent with the requirements are implemented.

Scope of the chance find procedure

This procedure is applicable to all activities conducted by the personnel, including contractors, that have the potential to uncover a heritage item/site. The procedure details the actions to be taken when a previously unidentified and potential heritage item/site is found during construction activities. Procedure outlines the roles and responsibilities and the response times required from both project staff, and any relevant heritage authority.

Induction/Training

All personnel, especially those working on earth movements and excavations, are to be inducted on the identification of potential heritage items/sites and the relevant actions for them with regards to this procedure during the Project induction and regular toolbox talks.

Chance find procedure

If any person discovers a physical cultural resource, such as (but not limited to) archaeological sites, historical sites, remains and objects, or a cemetery and/or individual graves during excavation or construction, the following steps shall be taken:

1. Stop all works in the vicinity of the find, until a solution is found for the preservation of these artefacts, or advice from the relevant authorities is obtained;
2. Immediately notify a foreman. The foreman will then notify the Construction Manager and the Environment Officer (EO)/Environmental Manager (EM);
3. Record details in Incident Report and take photos of the find;
4. Delineate the discovered site or area; secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities take over;
5. Preliminary evaluation of the findings by archaeologists. The archaeologist must make a rapid assessment of the site or find to determine its importance. Based on this assessment the appropriate strategy can be implemented. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage such as aesthetic, historic, scientific or research, social and economic values of the find;
6. Sites of minor significance (such as isolated or unclear features, and isolated finds) should be recorded immediately by the archaeologist, thus causing a minimum disruption to the

work schedule of the Contractor. The results of all archaeological work must be reported to the Ministry/Agency, once completed.

7. In case of significant find the Agency/Ministry (Agency for Protection of National Heritage or Archaeological Research Centre, hereinafter referred to as Heritage team) should be informed immediately and in writing within 7 days from the find (ref.law on heritage protection).
8. The onsite archaeologist provides the Heritage team with photos, other information as relevant for identification and assessment of the significance of heritage items.
9. The Ministry must investigate the fact within 2 weeks from the date of notification and provide response in writing.
10. Decisions on how to handle the finding shall be taken by the responsible authorities. This could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage;
11. Construction works could resume only after permission is granted from the responsible authorities.
12. In case no response received within the 2 weeks period mentioned above, this is considered as authorisation to proceed with suspended construction works.

One of the main requirements of the procedure is record keeping. All finds must be registered. Photolog, copies of communication with decision making authorities, conclusions and recommendations/guidance, implementation reports – kept.

Additional information

Management options for archaeological site

- **Site avoidance.** If the boundaries of the site have been delineated attempt must be made to redesign the proposed development to avoid the site. (The fastest and most cost-effective management option)
- **Mitigation.** If it is not feasible to avoid the site through redesign, it will be necessary to sample it using data collection program prior to its loss. This could include surface collection and/or excavation. (The most expensive and time-consuming management option.)
- **Site Protection.** It may be possible to protect the site through the installation of barriers during the time of the development and/or possibly for a longer term. This could include the erection of high visibility fencing around the site or covering the site area with a geotextile and then capping it with fill. The exact prescription would be site- specific.

A1 Management of replicable and non-replicable heritage

Different approaches for the finds apply to replicable and non-replicable heritage.

A1_1.1 Replicable heritage

Where tangible cultural heritage that is replicable¹ and not critical is encountered, mitigation measures will be applied.

The mitigation hierarchy is as follows:

- Avoidance;
- Minimization of adverse impacts and implementation of restoration measures, in situ;
- Restoration of the functionality of the cultural heritage, in a different location;
- Permanent removal of historical and archaeological artefacts and structures ;
- Compensation of loss - where minimization of adverse impacts and restoration not feasible.

A1_1.2. Non-replicable heritage

Most cultural heritage is best protected by in situ preservation, since removal is likely to result in irreparable damage or even destruction of the cultural heritage.

Nonreplicable cultural heritage² must not be removed unless all of the following conditions are met:

- There are no technically or financially feasible alternatives to removal;
- The overall benefits of the project conclusively outweigh the anticipated cultural heritage loss from removal; and

Any removal of cultural heritage must be conducted using the best available technique advised by relevant authority and supervised by archaeologist.

A1_2 Human Remains Management Options

The handling of human remains believed to be archaeological in nature requires communication according to the same procedure described above.

There are two possible courses of action:

- **Avoid.** The development project is redesigned to completely avoid the found remains. An assessment should be made as to whether the remains may be affected by residual

¹ Replicable cultural heritage is defined as tangible forms of cultural heritage that can themselves be moved to another location or that can be replaced by a similar structure or natural features to which the cultural values can be transferred by appropriate measures. Archaeological or historical sites may be considered replicable where the particular eras and cultural values they represent are well represented by other sites and/or structures.

² Nonreplicable cultural heritage may relate to the social, economic, cultural, environmental, and climatic conditions of past peoples, their evolving ecologies, adaptive strategies, and early forms of environmental management, where the (i) cultural heritage is unique or relatively unique for the period it represents, or (ii) cultural heritage is unique or relatively unique in linking several periods in the same site. Examples of non-replicable cultural heritage may include an ancient city or temple, or a site unique in the period that it represents.

or accumulative impacts associated with the development, and properly addressed by a comprehensive management plan.

- **Exhume.** Exhumation of the remains in a manner considered appropriate by decision makers. This will involve the predetermination of a site suitable for the reburial of the remains. Certain ceremonies or procedures may need to be followed before development activities can recommence in the area of the discovery.

EMERGENCY CONTACTS

Ministry of Culture and Monument Protection

Address: 4 Sanapiro Street, 0105, Tbilisi, Georgia; Fax: 995 32 2999966, 2932235;

E-Mail: culturegovge@gmail.com

National Agency for Cultural Heritage of Georgia

27 Atoneli street, 0105 Tbilisi, Georgia: tel/fax: +(99532) 2932411

E mail: info@heritagesites.ge

Archaeological Research Centre under the Georgian National Museum

3, Rustaveli Avenue 0105 Tbilisi, Georgia

Tel: +(995 32) 2998022; Fax: +(995 32) 2982133

E-Mail: info@museum.ge

ANNEX 6. STAKEHOLDER ENGAGEMENT PLAN, GRIEVANCE MECHANISM

Stakeholder engagement (including consultation and the disclosure of information) is a key element of project planning, development and implementation. Effective stakeholder engagement assists good design, builds strong relationships with local communities and reduces the potential for delays through the early identification of issues to be addressed as a project progresses.

RD is committed to a transparent and respectful dialogue with stakeholders throughout the lifecycle of the project. The activities of engagement are guided by Good International Industry Practice for ESIA.

This SEP is designed to ensure that the RD identifies all stakeholders with an interest in the Project, and can engage these stakeholders during the development and life of the Project. This SEP therefore outlines the current consultation activities and future plans to engage with stakeholders during pre-construction, construction and operational phases of the Project.

Stakeholder engagement includes:

1. The provision of relevant, timely and accessible information to stakeholders in a culturally appropriate and understandable format; and
2. Consultation with stakeholders on their opinions, concerns, preferences and perceived gains and risks with respect to the Project planning and implementation, including the design and proposed management and mitigation measures to reduce potential impacts and to enhance possible benefits.
3. A grievance mechanism to guide RD's response and resolution process for stakeholder concerns or grievances.

This SEP therefore describes the:

- National and good international practice requirements for public consultation and disclosure that the company will conform to;
- Project stakeholders that have been identified;
- Strategy, format and timetable for consultation and information disclosure;
- RD's resources and management structure for developing and implementing the SEP;
- Grievance mechanism(s) for stakeholders, and:
- Means of reporting on consultation and disclosure activities.

1. Regulatory framework

This section describes the regulatory framework that applies to the Project. The Project's approach to stakeholder engagement considers both regulatory requirements and principles of Good International Industry Practice (GIIP).

National regulations

Public consultation is a mandatory part of the ESIA process. The competent authority for the ESIA process is the Ministry of Environment and Natural Resources Protection (MENRP).

Georgian legislation provides a general legal framework governing the public disclosure of information on environmental issues but it lacks any specific requirements related to the design and organisation of the stakeholder consultation and engagement process.

The Constitution of Georgia guarantees public access to information and states the right of an individual to obtain full, unbiased and timely information regarding his/her working and living environment.

Public participation in project development is regulated under the **Law on Environmental Impact Permit**. This Law also provides a list of activities subject to the ESIA procedure. According to paragraphs 6 and 7 of the Law, project owner prepares ESIA report and is responsible for public engagement, which includes announcing public disclosure of the document in the central and local printed media. The law states that public participation and provision of access to information are obligatory procedures of the environmental permitting process. This is conducted in the form of a public discussion of the proposed activity with participation by the investor, the Ministry of Environment Protection and Natural Resources (MENRP) and local administrative authorities.

The permit application/issuance procedure, including ESIA coordination and establishment of the timeframes for information disclosure and discussion under Georgian Law, includes the following steps:

1. Publication of information about the planned development in national and regional newspapers: the advertisement must contain information related to the title of the project, venue, date and time of public disclosure meeting(s), addresses of the offices where information about the project is available. The deadline for the feedback.
2. Within 3 days from publishing the information in the newspaper, the developer must submit an ESIA report (both as a paper copy and in electronic format) to the administrative bodies. Within 45 days after publishing the information, the developer has to review comments obtained from the public. Not earlier than within 50 days and not later than 60 days after publishing the information, the developer must organize the public consultation process. At least one meeting must be conducted in

the administrative centre of the area where the activity is planned. The developer is required to provide minutes signed by the relevant authorities present at the meeting within five days.

3. All comments received are to be reviewed and where possible considered in the final version of the ESIA report. Where it is not possible to address comments within the Final ESIA, the developer must explain the reasons for that in writing to the author(s) of the comments. These information, together with the minutes of the meeting(s) and the final ESIA report, are then submitted to the MENRP for expertise. The documents must include a location map, the volume and types of any expected emissions, a technical summary with the description of the planned development and a statement on the confidentiality of the project (if appropriate).

No public participation procedure is required during the construction and operation phases. Public consultation occurs once a draft of the ESIA has been prepared. There are no additional requirements for disseminating information, e.g. by means of leaflets, posters and other visual displays, radio/television etc. Neither are there requirements/practices for identifying possible stakeholders (including vulnerable groups) and ensuring their participation.

The national regulatory framework does not contain any specific requirements for development of SEP and/or stakeholder engagement beyond completion of the ESIA process.

International requirements related to stakeholder engagement

The standards and guidelines RD is set to comply with include:

- Performance Standards (PS) of the International Finance Corporation (IFC), in particular PS 1, regarding the assessment and management of environmental and social risks and impacts, includes guidance for stakeholder engagement.
- The Common Approaches to Environmental and Social Due Diligence developed by the Organization for Economic Cooperation and Development (OECD);
- The Equator Principles (EP) - Principle 5 sets out guidance for stakeholder engagement;
- International Conventions for Public Participation, in particular the Aarhus Convention.

International standards and regulations underscore the importance of stakeholder engagement in building constructive relationships that are essential for environmental and social issues to be managed successfully.

The main points common to all IFI requirements include: identification of stakeholders, consulting stakeholders and get their view of impacts that may affect them, disclosure and dissemination of information about environmental and social issues in timely way and in

understandable language; responding to questions and concerns; development and maintenance of SEP, including grievance redress mechanism.

International Conventions for Public Participation

Similar requirements for access to information and public involvement in decision making are also specified within the following international conventions:

- **Aarhus Convention.** The UN Economic Commission for Europe (UNECE) Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (the Aarhus Convention) guarantees the rights of access to information, public participation in decision-making, and access to justice in environmental matters, in order to protect people's rights to a healthy environment. Georgia has ratified the Aarhus Convention, and therefore it is also a legal requirement of the Government of Georgia.
- **Agenda 21.** (UN, 1992b) Article 27(9) states that the UN system should "provide access for non-governmental organizations to accurate and timely data and information to promote the effectiveness of their programs and activities and their roles in support of sustainable development".
- **Rio Declaration on Environment and Development (1992).** Annex 1 Principle 10 - "Each individual shall have appropriate access to information on hazardous materials and activities in their communities [...] States shall facilitate and encourage public awareness and participation by making information widely available".
- **UN General Assembly Resolution A/RES/S-19/2 (1997).** Paragraph 108 - "Access to information and broad public participation in decision-making are fundamental to sustainable development".
- **Dublin Declaration on Access to Environmental Information (2000)** - UNEP Infoterra
- **Directive 2003/4/EC (repeals Directive 90/313) on Public Access to Environmental Information.** It incorporates the provisions and requirements of the Aarhus Convention on public access to environmental information.

2. Project Stakeholders

The stakeholder identification has been done based on following criteria:

- **Dependence:** Stakeholders who can be directly or indirectly affected by the project implementation or company activities;
- **Influence:** Stakeholders who are able to influence the project progress and the ability of the proponent to develop the project successfully;
- **Partnership:** Stakeholders who have a potential for building mutually advantageous partnerships and long-term relationships;
- **Expressed interest:** Stakeholders who expressed an interest in the ESIA process

In addition, 'legitimate stakeholder representatives' may be identified for some of the stakeholder groups. Legitimate stakeholder representatives can include, for example '...elected officials, non-elected community leaders, leaders of informal or traditional community institutions, and elders within the affected community'.

Taking into consideration the location and scope of activities to be implemented under the planned development, a list of the stakeholders has been compiled. When identifying these potential stakeholders the Project's geographic sphere of influence was taken into account.

A broad list of the major stakeholders includes the following parties that are potentially affected, directly or indirectly:

- Local community within the Project's Area of influence – population of Ozurgeti and Lanchkhuti municipalities. Vulnerable groups within the affected communities will be specifically identified and consulted through dedicated means, as appropriate;
- NGOs and any other public initiative groups;
- Municipal government;
- Ministries and departments;
- Businesses and commercial sector;
- Contractor and sub-contractors (when identified);
- Other government institutions; and
- Employees of the HPP.

(A list with further details is given in Annex A6-1.)

Table A6-3 below details the processes for stakeholder engagement at different stages of the project.

Table A6-1. Proposed stakeholder engagement and format of information disclosure

Stakeholder	Engagement procedure/method	Format and information disclosed	Note
o Decision makers, regional governmental authorities, community	o Information	o Information on internet, emails	
o Stakeholders in the project area	o Meetings during site visit, dissemination of information o Participatory process	o Information about the planned development, location of the project sites, employment requirements, objectives of the ESIA o Leaflets	
o Governmental officials including local/regional officials, and environmental protection authorities	o Interviews o Meeting o Participatory process	o Non-technical documents o Project summary o Leaflets	Hard copies of the full ESIA available in governmental offices in the project affected municipalities, RD and Gamma Consulting offices, electronic copy – on the RD's website and webpage (if available) of Contractor
o Environmental and other NGOs and initiative groups	o e mail, phone o Public meetings o Participatory process	o Leaflets o Non-technical documents o Project summary	
o Businesses	o Interviews o Public meeting o e mail, phone	o Leaflets o Non-technical documents o Project summary	
o Affected community	o Interviews and focus group discussions o Surveys o Public meeting	o Leaflets o Non-technical documents o Project summary	
o All stakeholders invited	o Public meeting as requested under the Georgian legislation once the draft EIA/ESIA is disclosed		
o Governmental officials including environmental protection authorities and environmental NGOs	o Grievance mechanisms	o Feedback format depending on complaint	The full ESIA available electronically on the RD and Contractor's website (if available) throughout the construction phase
o NGOs, businesses, local community	o Open houses (in case deemed advisable) o Project updates o Grievance mechanisms		

3. Stakeholder Engagement Activities

Meetings with stakeholders were carried out during the surveys by Environmental and Social survey team. One to one meetings with project affected households took place in end of December 2016 and early January 2017.

Public meeting with participation of local residents, representatives of municipal authorities, RD, and businesses was held in Ureki on February 8, 2017. Information about the project, needs and scope of assessment was disclosed, information leaflets distributed (see Annex 6-3). Contract information for questions, comment and other communication - provided. The meeting was organized by RD. Environmental and Social Assessment team (Gamma Consulting Ltd) and representative RD were participating. Minutes of the meeting are given in Annex 6 of this report.

According to the national regulations, another series of meetings will be carried out after the Draft ESIA is disclosed. Information about the meeting (with indication of the date and venue) will be published in national and local coverage newspaper, stakeholders invited to provide comments. Public hearings will be carried out in administrative centres of municipalities after 50th, but not later than 60th day from information disclosure. Results of assessment presented to the stakeholders. Community will be given floor for discussion.

Engagement method and format of information disclosed tailored to the category of stakeholders have been developed (see Table A6-3).

After construction company is identified the latter will be encouraged to disclose information about the status of the project and notifications (if any) on its webpage. Information provided to stakeholders during construction will include:

- A description of the construction works with indication of scheduled start and finish dates for each type of the works;
- A drawing indicating the areas affected by the works and information on:
 - The type and duration of anticipated impacts;
 - Mitigation measures for each type of impact;
- Studies and documentation related to or affecting residents of adjacent area
- Progress photos of the worksite.

5. Disclosure of documentation

This Stakeholder Engagement Plan together with Non-Technical Summary and ESIA reports will be published on the RD's website and webpage of the lender (if deemed advisable by the latter).

Copies of Non-Technical Summary, the full ESIA report including Environmental and Social Management plan and Stakeholder Engagement Plan will also be made available for review by the general public at the following locations:

- as a hard copy in RD office – Kazbegi 12, Tbilisi, Georgia
- as a hard copy in administration offices in the project area
- as a hard copy in Gamma Consulting’s office – 17a David Guramishvili avenue, Tbilisi, Georgia.

The public consultation process will be open for review and comment and revised as appropriate throughout the course of the project. This will include making publicly available the findings and analyses of the environmental and social studies as they emerge at critical milestones throughout the ESIA.

The electronic copies of the mentioned reports will remain in the public domain up to completion of the construction phase.

6. Public notification

In the course of the ESIA process the mechanisms for facilitating input from stakeholder include notifications to local and regional NGOs, distribution of the ESIA documentation (including MENRP and local municipality offices).

Community will be informed about feedback and grievance mechanisms (see below).

Throughout construction period local municipalities will act as focal point for the feedback from community. Contractor’s representative charged with responsibility to deal with community liaison will be in permanent contact with local authorities and community representatives on the ground.

During operation information about any maintenance (location, type of maintenance required, etc.) will be communicated to the stakeholders by RD through established procedure,

7. Resources and Responsibilities

RD will take overall responsibility for consultation with all stakeholders in relation to the Project and will use available resources to ensure that all consultation activities are conducted to the appropriate standard.

Environmental and Social team will be responsible for 1) communication with stakeholders, within the scope of its field of competence, throughout the ESIA process and 2) consideration of the comments received from the stakeholders in the final version of the ESIA report. Responsibility of environmental and social consultant will end on submission of the final ESIA and related final versions of the documents to the state ecological examination.

Construction company (Contractor) will be responsible for nomination of Community Liaison Officer (CLO) and implementation of grievance procedure. During the project implementation phase, the Contractor's staff responsible for community liaison will be charged with responsibilities to communicate with the local community and to handle grievances. RD will be informed (copy of the grievances, if any, will be sent to the RD), closely monitor and involved in the grievance resolution. The scale of RD's involvement will depend on the scale and subject of the grievance raised.

8. Grievance Mechanism

Grievances related to environmental and resettlement issued during ESIA/RAP stage will be logged by phone, e mail, during the public meetings and/or in writing, recorded and responded by environmental and social survey team.

Grievances during construction can be lodged using the grievance form (see Annex 6-2). The leaflets for community and grievance forms will be posted on Contractor's website (if available) and/or made available at the local government offices, and contractors onsite office. Copies of the grievance will be sent to RD.

When any public grievances are received, these will be managed through a series of steps. In summary, requests for information/complaints will be acknowledged within 5-10 days and, where possible, the information requested will be provided within 10-20 days depending on the complexity of information requested/complaints received.

All grievances will be reflected in a grievance log to ensure that each grievance is assigned an individual number and that consistent tracking and corrective actions are carried out. The log will be used to analyse the frequency, as well as for prevailing subjects and any recurrent trend of grievances. The log will contain:

- Date when the grievance was received;
- The reference number;
- Content of the grievance;
- Identification of parties responsible for the resolution;
- Dates when the investigation was initiated and completed;
- Findings of the investigation;
- Information on proposed corrective action sent to the person who lodged the grievance (unless it was anonymous) and the date of the response sent; the date when the grievance was closed out;
- Statement of satisfaction of the person who lodged the grievance, or a reason for non-resolution of the grievance.
- Any outstanding actions for non-closed grievances.

All complaint documentation will be kept on a file for a period defined by the RD. Levels and types of complaints will be monitored by RD. Where a resolution to the grievance cannot be provided within the timescales specified above, Contractor and/or RD will inform complainant about that and once investigations have been completed, contact the person making the grievance to discuss and agree on the resolution. Contractor and RD may undertake follow-up monitoring to check that the problem does not recur.

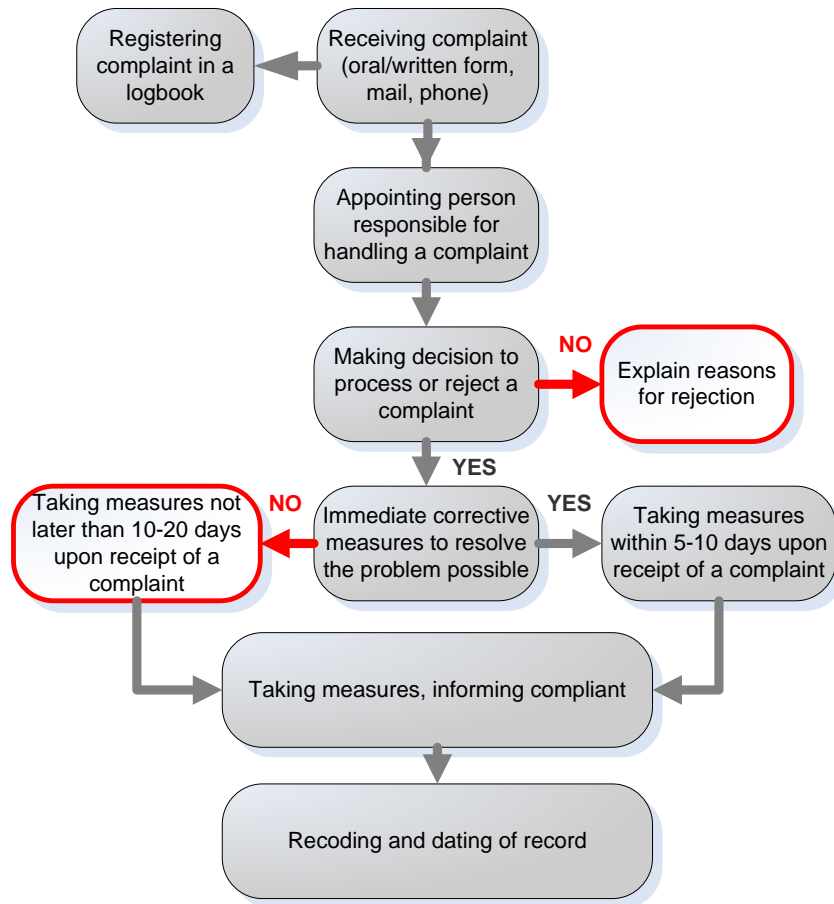


Figure A6-1. Grievance procedure

(The complainant will be informed if it has been decided to extend the complaint investigation period)

Management and resolution of any grievances will be subject to monitoring by the lender.

Persons lodging grievances will have an opportunity to maintain their confidentiality (see Annex 6-2 for details). Contractor/RD will ensure that the name and contact details of the person are not disclosed without their consent and only the team directly working on the investigation of the grievance will be aware of them.

In cases when an investigation necessitates passing some of the information on to third parties for the purposes of resolving the situation (e.g. when it is ascertained that the grievance resulted from certain actions by a contractor company), the complainant's

agreement will be sought in a due manner. If it is not possible for the team to fully investigate the grievance without revealing the person's identity (for example if they are required to give evidence in court), the investigation team will discuss with the complainant how they wish to proceed.

The procedure also allows for anonymous complaints to be lodged. In this case the grievance will still be investigated, although Contractor/RD will not be able to provide feedback to a complainant. The procedure is shown graphically in the flow diagram below.

9. Monitoring and Reporting

It is important to monitor stakeholder engagement to ensure that consultation and disclosure efforts are effective, and in particular that stakeholders have been meaningfully consulted throughout the process. Monitoring will include:

- auditing implementation of the Stakeholder Engagement Plan;
- monitoring consultation activities conducted with government authorities and non-governmental stakeholders;
- monitoring the effectiveness of the engagement processes in managing impacts and expectations by tracking feedback received from engagement activities and recording and tracking commitments made to stakeholders;
- monitoring any grievances received and their resolution.

The Stakeholder Engagement Plan will be periodically revised and updated as appropriate during construction stage of the project.

Monthly summaries of incidents/grievances and the status of implementation of corrective/preventive actions will be referred to in Contractor's reports to RD.

Reporting to external parties such as regulatory authorities as required will be the responsibility of the RD. Reports will also be submitted to the lender in case agreed. Any record or document will remain available for examination by an authorised person.

10. Contact Details for the Public

Contact: Community Liaison Officer nominated by Contractor (construction company selected through tender)

Address: tbd

Email address: tbd

Tel/Fax: tbd

ANNEX 6-1. LIST OF STAKEHOLDERS

Governmental authorities:

- Ministry of Environment and Natural Resources Protection
- Administration of Lanchkhuti municipality
- Administration of Ozurgeti municipality

Utilities:

- Supsa Oil Terminal
- Water supply
- Power supply
- Amelioration service
- Georgian Oil and Gas Corporation

Communities:

- Tskhaltsminda
- Khidmaghala
- Supsa

Non-governmental organisations:

- Georgia Greens
- Green Alternative
- Union of Young Teachers (Ozurgeti),
- Youth centre Progress (Chokhatauri),
- Mediators association of Guria (Ozurgeti),
- Women for Development (Ozurgeti),
- Consumers Society of Ozurgeti,
- Farmers Union of the Guria Region (Ozurgeti),
- Foundation for Protection of Mothers and Children (Chokhatauri),
- Union of Hunters and Fisherman (Ozurgeti),
- Lanchkhuti Information Centre,
- Georgian Young Lawyers' Association – Ozurgeti branch;
- Youth Resource Centre of Guria;
- Student-youth consultative organisation.

ANNEX 6-2. PUBLIC GRIEVANCE LEAFLET

The RD is striving to ensure that the construction of the Grigoleti-Kobuleti bypass highway will not cause any problems for those living near to the project site and for other potentially affected stakeholders. To achieve the mentioned goal and ensure preservation of environment we would like to hear about any concerns or grievances that you have in relation to the Project's activities. The grievance will be dealt with by Contractor (construction company identified through the tendering procedure). Copy of grievance form will be sent to RD. The latter will deal with grievances outside the scope of Contractors responsibilities.

What kind of grievance can I lodge?

Anyone can lodge a grievance if they feel that project activities are negatively affecting them, their community or their local environment. Example of grievances could include, for example:

- Negative impacts to local residents (such as excessive dust, noise, impact on private property, health and safety, etc.),
- Environmental damage resulting from the project activities,
- Practices that endanger the health and safety of employees or residents,
- Failure to meet the labour rights of employees working on the project.

How can I submit a grievance?

Anyone can submit a grievance in the following ways:

- By phone to tbd – will be specified after the tender,
- By e-mail on tbd - will be specified after the tender,
- In person or by ordinary mail to the: tbd - will be specified after the tender,

How will Contractor/RD deal with my grievance?

Contractor/RD will go through the following steps to deal with your grievance:

Step 1: Acknowledgement: Community liaison officer (CLO) nominated by Contractor will contact you to acknowledge and where possible resolve within the following timescales: Requests for information/complaints will be acknowledged within 5-10 days and, where possible, the information requested will be provided within 10-20 days depending on the complexity of information requested/complaints received.

This acknowledgment will include your grievance reference number, name of the person responsible for tracking your grievance and his/her contact details, expected date for completing the investigation into your grievance (where appropriate).

Step 2: Investigation: CLO will then set up an investigation into your grievance. We may need to contact you during this investigation. CLO will aim to complete the investigation within a further twenty working days.

Step 3 Resolution: When we have investigated the grievance we will contact you with our findings and our proposed response. If our investigations find that the grievance does not relate to the Project's activities we will explain this in writing to you. Otherwise we will propose a response to address the grievance. If you consider our response and its implementation to be satisfactory we will ask you to sign a statement of satisfaction if you are happy to do so. If you are not satisfied with our response we will have further discussions with you to see if there are other steps which can be taken to resolve the grievance.

Step 4 Follow up: CLO may contact you at a later stage to check that our activities pose no further problems.

Confidentiality: If you wish your grievance to remain confidential, CLO will ensure that your name and contact details are not disclosed without your consent and only the staff directly working on the investigation of your grievance will be aware of them. If it is not possible for the team to fully investigate the grievance without revealing your identity (for example if you are required to give evidence in court) the investigation team will discuss with you how you wish to proceed.

Anonymity: If you wish to lodge a grievance anonymously you can do so using the attached form without filling in the name and contact details. The grievance will still be investigated, but it may be more difficult for CLO to conduct the investigation and we will not be able to give you feedback on our investigations.

Public Grievance Form

Grievance Reference Number [(to be filled in by CLO)]:			
Your Contact Details	Name:		
	Address:		
	Tel:		
	e-mail:		
How would you prefer to be contacted? Please tick box	By post	By phone	By e-mail
Name and the identification information (from identity card).			
Details of your grievance. Please describe the problems, who it happened to, when, where and how many times, as relevant			
What is your suggested resolution for the grievance?			
How to submit this form to Contractor/RD	By Post to: tbd		
	By hand: tbd		
	By e-mail: tbd		
Signature		Date	

ANNEX A6-4. SCHEDULE OF STAKEHOLDER CONSULTATIONS

	Stakeholder	Date and time	Venue
1	Municipality representatives, all stakeholders	8 February 2017, time: 16:00	Municipality building: Ureki
2	Municipality representatives, all stakeholders	29 September, 2017 (after 50 th but not later than 60 th day from disclosure of the draft ESIA	Municipality building: Ozurgeti

ANNEX 7. MINUTES OF MEETING**Environmental and Social Impact Assessment of Grigoleti-Kobuleti bypass construction and operation project****Minutes of meetings**

Ureki

09.02.2017

Venue:

Ureki, administrative building

Chairman of the meeting:

Gia Sopadze, Head of division for Environmental Protection, Roads Department of Georgia

Secretary of the meeting:

Elene Mgaloblishvili, Social and resettlement specialist, Gamma Consulting Ltd

Attendees:

Representatives of Roads Department of Georgia, representative of Ozurgeti municipality administration in Ureki, Ureki local government office staff, local residents, Representatives of Gamma Consulting Ltd, other stakeholders. (List of attendees in enclosed – see Annex A7-3)

Agenda:

1. General information about the project and companies/parties involved;
2. Presentation related to environmental impact assessment procedure and resettlement issues;
3. Questions and comments

Gia Sopadze, chairman of the meeting greeted the audience and described objective of the meeting and the project in general. He mentioned that construction of the new four lane, 14.4 km long section of the road bypassing residential areas as far as feasible is planned. Along with the road itself construction of bridges (over the rivers Supsa Sepa and Tskhaltsminda), three interchanges and overpasses is planned. The project is being developed by consortium of Spanish companies Getinsa Payma Eurostudios. The project is funded by European Investment Bank (EIB).

It was mentioned, that according to the national environmental legislation and international regulations the project requires assessment of impact on environment. Public participation in the process is essential component of that. Objective of the meeting is informing community/stakeholders about the project, related impacts on biophysical and socio-economic environment, assessment process/procedures, receiving feedback from the stakeholders and their engagement in the process. Importance of comments and contribution of all interested parties was stressed.

Presentation of environmental impact assessment aspects was provided by M.Stamateli, Environmental Specialist of Gamma Consulting. Presented was visualization of alignment developed by design team. Objective of this presentation was to allow community better understand where the planned alignment will be. Impact of the project on local community and major nuisances/impacts related to the projects of similar type and scale were explained.

It was mentioned that on Feasibility Stage of the project three alignment alternatives and so called no action (Zero alternative) alternative were considered. For detailed evaluation alternative having least impact on environment and community was chosen. Positive and negative sides of alternatives were described. It was mentioned, that prior to commencement construction the project must undergo evaluation process and obtain approvals and permits from decision makers, including the lender. The project will be evaluated and checked for compliance with national regulations, EIB safeguards and other international regulations. In case of positive conclusion construction will be implemented by company identified via bidding procedure.

Particular interest of the attendees was related to resettlement and compensation issues. It was mentioned that construction of the road will result in depreciation of the cost of the land and that this will negatively affect development of Ureki resort. Health risks related to impacts caused by deterioration of air quality and noise related nuisances were discussed.

Attitude of local residents towards the project is dual – both positive and negative opinions have been voiced.

Attendees actively participated in discussion. Questions and answers are given in Annex 7-1.

Closing remarks were made by Mr.Sopadze. He promised to communicated the concerns and comments voiced by the stakeholders to RD and designers. He mentioned that all these issues will be discussed and that the project will be compliant with all relevant standards.

Chairman of the meeting: G.Sopadze

Secretary of the meeting: E.Mgaloblishvili

Annex 7-1

№	Question, comment, proposal	Answer
1	Why decision to build a highway through the resort area was made?	Construction of the four lane new road is required to ‘accommodate’ increasing traffic flows. Existing road is not sufficient to ensure safe and smooth traffic. The situation will worsen in the future when the traffic increases. For selection of alignment less damaging to environment and having minimum impact on the local residents (physical and economic resettlement is meant) and infrastructure several options have been considered. The space available for construction and abovementioned constrains (proximity of residents, railway line, etc.) restricted the choice significantly. Alternative presented for consideration is the least ‘damaging’ compared to other possible options.
2	Which company won the tender?	Tender for the design of the highway was won by Spanish company consortia – Getinsa-Payma-Eurostudios. Construction company will be identified through bidding procedure. The call for proposals will be announced after approval of the design, obtaining all required permits and authorisations from the national decision makers and the lender.
3	Have built a hotel with the aid of the credit from the bank. The road will run in less than 80m from my premises. Was told that the case is not eligible for compensation. The project will negatively affect my business. Construction and operation of the road will lead to pollution of environment. Consequently the number of visitors will diminish. Strongly oppose the project and plan to appeal to the court (including Strasbourg).	Compensation issues together with eligibility criteria are described in Resettlement Action Plan. In case the property/business is not eligible for compensation (is located out of the land acquisition boundaries) to alleviate negative impact on the latter mitigation measures will be put in place. This may include preservation of vegetation, installation of noise barriers, planting vegetation barrier between the source and recipient, implement measures to reduce visual impact, etc. Consultant is not empowered to resolve this complaint. It may be advisable to address the Roads Department directly to discuss the issue.
4	What is the cost of 1m ² of land?	At this stage this information cannot be provided.
5	The property cottages have been valuated, Have no information about the	Land acquisition and resettlement procedure as well as proposal and negotiations related to the

	cost. Send a letter with information request but no answer received. Why is this information kept confidential?	scale of compensation per each affected household will be offered and negotiated according to resettlement-compensation regulations currently in force in Georgia.
6	What is allowable setback distance from the road? Are there any limits available?	There are not universal limits for setback distances. According to information provided by design team (based on international experience) for already existing houses the distance from the edge of embankment to the house must be at least 8 meters; for new houses built after highway constructions at least 50 meters from the edge of the shoulder must be kept. In addition, authorities may establish extraordinary exceptions in specific locations or sections, due to special circumstances.
7	Are there any other alternatives? Is it possible to widen exiting Ureki road instead?	<p>Three alternative alignments and zero alternative have been considered on feasibility stage of the project.</p> <p>Widening existing road is not feasible. The space is restricted by railway on one side and buildings on the other side of the road. The only possibility in this case will be to relocated population and businesses along existing road. The scale of resettlement will be significant. Therefore this alternative was considered as unadvisable.</p> <p>Of all considered alternatives selected option has the least impact.</p>
8	Our properties are not in direct impact zone of the project (there are four of us). The project will have negative impact on us, but we are not supposed to be eligible for compensation. What can we do?	<p>Compensation issues together with eligibility criteria are described in Resettlement Action Plan.</p> <p>For properties not in direct impact zone of the project mitigation measures will be provided (such as noise barrier, green barriers, traffic speed reduction, etc).</p> <p>Any indeliberate impact on property during construction works will be remediated.</p>
9	My land plot is located near the new alignment. The price of my plot will reduce. Can somebody help me in resolving this issue?	
10	What are the distances from Ureki and Shekvetili to the new alignment?	Distance from the new alignment to residential areas varies from 80m to 222m. Approximate distances are: 82m to Supsa, 135m to Tsvermaghala, 80m to Ureki, 182 m to Shekvetili, 220m to

		Black Sea Arena.
11	Why investor and Bank representatives do not meet us. Why information about the project is not transparent?	<p>According to the national regulations and requirements of International Financial Institutions informing and involvement of community/stakeholders in impact assessment process is obligatory. This meeting has been scheduled and is held in compliance with these requirements. Objective of the meeting is to inform community about the planned development, exchange of views and concerns as well as consideration of obtained information in the project and assessment of the impact.</p> <p>The 'owner' of the project is the state. Roads Department (RD) acts as representative of the state. The project is being developed under the request of the RD. All comments and opinion voiced or provided in writing will be discussed by relevant units/specialists of department, communicated to the design team and as far as feasible considered in the design.</p> <p>Information will be provided to the Bank for consideration. The project, environmental impact assessment and resettlement action plan will undergo expertise both at national and international level. The reports will be posted to internet (webpage of the RD). Grievance mechanism has been developed to receive and respond to complain and comment from stakeholders. Contact information for any questions and feedback is indicated in the leaflet handed over to the attendees.</p>
12	During construction and operation of the road pollution with lead and increase noise is expected. Are there any mitigation measures considered?	<p>During assessment of impact on environment impact on air quality and noise related impacts will be evaluated. Mitigation measures will be developed. Based on the modelling/calculations need for noise barriers or other measures will be identified and considered in the project.</p> <p>As for content of the lead and other substances in petrol, according to the Governmental Decree №229-(dated 27 May 2015) on amendment of 'Qualitative norms for petrol' from January 1, 2017 the following quality limits are set:</p> <p>Lead content – below 0.005 g/l; Benzene (volume fraction) – below 1 %; Aromatic hydrocarbons (volume fraction) – below 35%; Sulphur content – below 10 mg/kg.</p>

		Measurements carried out at petrol stations by Environmental supervision division under the Ministry of Environment and Natural Resources Protection of Georgia and L.Samkharauli forensic expertise bureau in 2016 revealed compliance of the factual values with abovementioned figures.
13	Have hotel, construction of the road will make it inaccessible. Is it possible to revise the design to resolve the problem.	The issues will be discussed with design team to identify solution of the problem.

Annex A7-2. Photolog



Annex A7-3 – List of attendees

N	გვარი, სახელი/Name	დასახლებული პუნქტი, ორგანიზაცია/ Settlement, organisation	საკონტაქტო ინფორმაცია (ტელეფონი, ელ ფოსტა)/ Contact details (phone, e mail)
1	საბუღალტრო კომპანია	ყბა	598923898
2	ჭეცხე რეკონსტრუქცია	თბილისი	593 522-201
3	საბუღალტრო კომპანია	თბილისი	555-58-56-48
4	საბუღალტრო კომპანია	თბილისი	599-11-86-62
5	საბუღალტრო კომპანია	თბილისი	555-49-59-42
6	საბუღალტრო კომპანია	თბილისი	599-39-29-76
7	საბუღალტრო კომპანია	თბილისი	599-55-58-26
8	საბუღალტრო კომპანია	თბილისი	597-10-44-65
9	საბუღალტრო კომპანია	თბილისი	591-71-71-24

N	გვარი, სახელი/Name	დასახლებული პუნქტი, ორგანიზაცია/ Settlement, organisation	საკონტაქტო ინფორმაცია (ტელეფონი, მეილი)/Contact details (Phone, e mail)
10	გვრიჭაძე მან	ჯეჯა	551-55-56-90
11	განაძიანი ჯეჯა	ჯეჯა	598-66-81-39
12	ლალა ლომიძე	ჯეჯა	577-50-22-05
13	ხაიჯი ჩინჩაძე	ჯეჯა	558-58-37-30
14	სამაგვი ჩინჩაძე	ჯეჯა	557-15-38-08
15	მამაძე მახარაშვილი	ჯეჯა	551-27-39-34
16	ხაიჯი სვამბერიძე	ჯეჯა	599-75-13-07
17	მამაძე ჩინჩაძე	ინვესტიციები	599-57-72-47
18	ლაყინაშვილი მანანა	1 ცვლილი ბილი	593-60-68-91
19	ლა მუხომბერიძე	ჯეჯა	598-70-38-72

N	გვარი, სახელი/Name	დასახლებული პუნქტი, ორგანიზაცია/ Settlement, organisation	საკონტაქტო ინფორმაცია (ტელეფონი, მეილი)/Contact details (Phone, e mail)
20	ახილბე ეპინ	თბილისი	569-10-42-58
21	ლუარსაბიძე ვასილ (მედიკი)	თბილისი	599 58 21 45
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Information leaflet for attendees of the meeting

გრიგოლეთი-ქობულეთის შემოვლითი დამაკავშირებელი გზის მშენებლობის პროექტი
საინფორმაციო ფურცელი

პროექტის გარემოზე ზემოქმედების შეფასების შესახებ
 (თებერვალი 2017)



ზოგადი ინფორმაცია

საქართველოს მთავრობამ დაიწყო ქვეყნის ძირითადი გზების მოდერნიზების პროგრამის განხორციელება. პროგრამა სრულდება საქართველოს რეგიონული განვითარებისა და ინფრასტრუქტურის სამინისტროს საგზაო დეპარტამენტის ხელმძღვანელობით საერთაშორისო საფინანსო ორგანიზაციების დახმარებით. მსოფლიო ბანკმა, იაპონიის საერთაშორისო თანამშრომლობის სააგენტო (JICA) და აზიის განვითარების ბანკმა (ADB) უკვე გამოყვეს რიგი სესხებისა საქართველოს მთავრობისათვის საგზაო ინფრასტრუქტურის მშენებლობა/რეაბილიტაციისათვის.

პროგრამის ფარგლებში, ევროპის საინვესტიციო ბანკის (EIB) დაფინანსებით, იგეგმება გრიგოლეთიდან-ქობულეთის შემოვლით გზამდე და ფოთიდან-გრიგოლეთამდე მაგისტრალის მშენებლობა.

შემსრულებლები

პროექტი მუშავდება ესპანური კომპანიების ხეტინსა - პაიმა - ევროსტუდიოს (Getinsa-Payma-Euroestudios) კონსორციუმის მიერ. საპროექტო სამუშაოების პარალელურად კომპანია „გამა კონსალტინგი“-ს მიერ მიმდინარეობს პროექტის გარემოზე ზემოქმედების შეფასება.

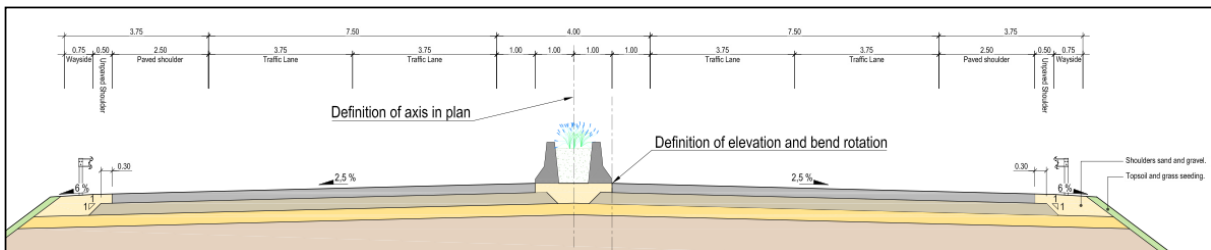
პროექტის აღწერა

პროექტი გულისხმობს გრიგოლეთიდან ქობულეთის შემოვლით გზამდე ახალი 14.4კმ სიგრძის ოთხზოლიანი გზის მონაკვეთის მშენებლობას. პროექტის ფარგლებში დაგეგმილია ხიდების (მდინარეებზე სუფსა, სეფა, ხხხხხ), სამი კვანძის და გასასვლელების მოწყობა.



პროექტის სქემა- ალტერნატიული მარშრუტების ჩვენებით

გზის სიგანე	26.5 მ
ზოლების რაოდენობა:	4 (2 ზოლი თითოეული მიმართულებით)
სავალი ნაწილის სიგანე:	2x7.5 მ
ზოლის სიგანე:	3.75 მ
ცენტრალური სარეზერვო სიგანე:	4.0 მ (შუა ზოლი 2მ ქართული სტანდარტების მიხედვით)
გვერდულის სიგანე:	3.0 მ
მოკირწყლული გვერდულის სიგანე:	2.5 მ
ტროტუარის სიგანე:	0.75 მ



ტიპური ჭრილი

კომპონენტს საზოგადოების ინფორმირება და მასთან კონსულტა-ციები წარმოადგენს

საჯარო განხილვები

მოსახლეობასთან საინფორმაციო შეხვედრის და, შემდგომ ეტაპზე, შეფასების შედეგების საჯარო განხილვის მიზანია მოსახლეობის ინფორმირება

პროექტის, სამუშაო პროცესის და პროცედურების, მშენებლობის და ფუნქციონირების დროს მოსალოდნელი დადებითი და უარყოფითი ზემოქმედების შესახებ, საზოგადოების ჩართვა შეფასების პროცესში, მასთან კონსულტაცია, მოსაზრებების, შენიშვნების მიღება, განხილვა და გათვალისწინება-რეაგირება.

რა გავლენა შეიძლება იქონიოს პროექტმა ბუნებრივ გარემოზე და ადგილობრივ მოსახლეობაზე?

მშენებლობის დროს მოსალოდნელი ზემოქმედება ბუნებრივ გარემოზე და მოსახლეობაზე:

ზემოქმედების აღწერა	სავარაუდო ზემოქმედების ხასიათი
❖ ემისიები - მტვერი და გამონახობა	უარყოფითი
❖ ხმაური და ვიბრაცია - სამშენებლო სამუშაოების, ტრანსპორტის მოძრაობის დროს	უარყოფითი
❖ ნიადაგის და წყლის დაბინძურება	უარყოფითი
❖ ზემოქმედება მცენარეულ საფარზე და ცხოველთა სამყაროზე	უარყოფითი
❖ ლანდშაფტის - ვიზუალური ცვლილებები	უარყოფითი
❖ ზემოქმედება კულტურულ მემკვიდრეობაზე	მოსალოდნელი არ არის
❖ ზემოქმედება დაცულ ტერიტორიებზე	მოსალოდნელი არ არის
❖ დროებითი გზების, ბანაკის, სამუშაო მოედნების მოსაწყობად კერძო/სახელმწიფოს საკუთრებაში მყოფი მიწის ნაკვეთების გამოყენების საჭიროება (ეკონომიკური/ფიზიკური განსახლება)	უარყოფითი
❖ სასოფლო სამეურნეო ნაკვეთების მშენებლობისთვის დროებითი გამოყენების შემთხვევაში მოსავლის დაკარგვა	უარყოფითი
❖ მაგისტრალის მშენებლობისთვის გამოყენებული მიწის ზოლის სტატუსის შეცვლა/სასოფლო-სამეურნეო მიწის კატეგორიიდან ამოღება	უარყოფითი
❖ ახალი სამუშაო ადგილების შექმნა და ადგილობრივი მოსახლეობის დასაქმების შესაძლებლობა	დადებითი
❖ ინფრასტრუქტურის გაუმჯობესება	დადებითი



გარემოსდაცვითი მართვის გეგმა

პროექტის გარემოზე ზემოქმედების შეფასების საფუძველზე მუშავდება გარემოსდაცვითი მართვის გეგმა. გეგმის მიზანია უარყოფითი ზემოქმედების შემარბილებელი ღონისძიებების განსაზღვრა, ამ ღონისძიებების გატარების, მათი ეფექტურობის მონიტორინგის და შესრულებაზე/კონტროლზე პასუხისმგებელი პირების განსაზღვრა.

პროექტის გარემოზე ზემოქმედებასთან დაკავშირებული ინფორმაციის მისაღებად შეგიძლიათ მიმართოთ:

ლიკა ბუბაშვილს
 საქართველოს რეგიონალური განვითარების და ინფრასტრუქტურის სამინისტროს გზის დეპარტამენტი
 მისამართზე: ყაზბეგის გამზირი 12, თბილისი, +995 219 141/598 575 597
 ელექტრონული ფოსტა: likabubashvili@yahoo.com
 ან

მაია სტამატელს
 „გამა კონსალტინგი“. მისამართზე: დავით გურამიშვილის გამზირი 17ა, თბილისი
 ტელ: 26 015 26, ელექტრონული ფოსტა: mszgc@access.sanet.ge

პროექტთან და გზშ-თან დაკავშირებული დოკუმენტაცია ინფორმაცია განთავსდება გზის დეპარტამენტის ვებგვერდზე: <http://www.georoad.ge>

Environmental and Social Impact Assessment of Grigoleti-Kobuleti bypass construction and operation project

Minutes of meetings

Ozurgeti

29.08.2017

Chairman of the meeting: Zurab Mgaloblishvili, Director Gamma Consulting Ltd

Secretary of the meeting: Maia Stamatelii, Environmental specialist, Gamma Consulting Ltd

Attendees: Representatives of Roads Department of Georgia, representatives of Ozurgeti municipality administration, representative of the Ministry of Environment and Natural Resources Protection, Gamma Consulting Ltd (List of attendees in enclosed – see Annex A7-4).

Agenda:

1. Information on environmental impact assessment and findings of assessment;
3. Discussion

Mr.Gia Sopadze, Head of Environmental Protection Department greeted the audience and described objectives, importance and need of the project. He mentioned that the project is being implemented with financial assistance from EIB . The fact that Poti-Kobuleti section is a part of East West Highway was mentioned. Presenter explained that the Grigoleti-Kobuleti section under consideration is a part of the mentioned corridor and that objective of the planned project is to improve the infrastructure so to accommodate growing traffic flow through the area. H ementioned that the project has been split into several lots for tendering purposes and that the meeting has been organised to present the findings of assessment implemented for the section between Grigoleti and Kobuleti bypass.

It was mentioned that the project envisages construction of road and bridges and that, according to the national environmental legislation and EIB safeguards environmental and social impact assessment of the project is obligatory. Mr.Sopadze mentioned that the design of the road has been developed by consortium of Spanish companies – Getinsa-Payma Eurostudios, whereas Gamma Consulting was responsible for environmental impact assessment of the planned project.

Representative of Gamma Consulting greeted the audience and presented information about the scope of works, objectives of assessment, activities/surveys carried out by the team and

findings of assessment. She mentioned that throughout the study a range of meetings with population and experts has been organised, social survey that included census of the project affected population/households was implemented by the team. Maia Stamateli explained the stages of assessment such as identification of sensitive recipients, possibilities/risk of indirect and direct impact during pre-construction, construction and operation stages of the project., ranking/assessment of impacts. It was mentioned that the works were carried out in tight cooperation with technical (design) team to enable consideration of recommendations in design in order to avoid, reduce or minimise possible impact as far as feasible.

Presenter explained that based on the baseline data gathering and assessment of impacts mitigation measures have been defined, residual impact evaluated, environmental management and monitoring plans – put together. Findings of assessment and conclusions were presented to attendees.

It was stressed that in compliance with the national and IFI safeguards the reports were disclosed and available for comments of stakeholders.

Floor was given to attendees. Mr.Guram Kaplanashvili, representative of the Ministry of Environment and Natural Resources Protection presented comments of the ministry on the draft version of the report.

The questions/comments and answers are enclosed.

Chairman of the meeting:

Z.Mgaloblishvili, Director, Gamma Consulting Ltd

Secretary of the meeting:

M.Stamateli, Environmental specialist

Senior specialist of Environmental Impact Permit Department of the Ministry of Environment and Natural Resources Protection

G.Kaplanashvili

№	Question/comment	Answer
1	According to the current legislation the document submitted to ecological examination should be named 'Environmental Impact Assessment' not 'Environmental and Social Impact Assessment'.	Comment is considered, relevant revision - made
2	EIA report needs editing, typos that make some sections hard to understand must be corrected	Comment is considered.
3	<p>Would like to inform you that the project area is located close to Kolkheti National Park, which 'coincide' with the boundaries of the candidate site (GE0000006) of Emerald network established under the Bern Convention and Ramsar site area. Therefore the EIA report must provide information on possible impact assessment on these protected areas and species and habitats therein (so called advisability assessment). Impact avoidance and, if necessary, compensation measures. Impact of each planned activity with adequate justification, mitigation measures and impact avoidance actions must be provided; conservation plan based on results of the survey must be presented.</p>	<p>The starting section of the design alignment is located at 2km distance from protected area (Kolkheti National Park=Ramsar site = Emerald network candidate site).</p> <p>Description of protected area and species therein is given in Section 5.2.1 of the report. The project area do not represent habitat similar to protected one. The area is developed and modified by human activities and can not be considered as valuable habitat for dwellers of protected area.</p> <p>Any specific mitigation measures different from those described in the report are not required. The project envisaged monitoring activities. Based on results of the mentioned observation additional mitigation measures can be worked out. However, according to the specialist this is not likely to be required.</p>
4	The titles of some regulations listed in section 2.3: Environmental regulations and Standards are not correct and must be revised. Several expired acts must be removed from the list. Therefore – updated codified versions of these legal and bylaw normative acts	Comment is considered.

	with consideration of all changes should be indicated	
5	On pages 22-28 of the report information on alternatives is presented, however it is not clear which option has been considered as preferable and why. This information needs to be specified (based on the sub-section 3.3 alternative 1 seems to be chosen as preferable);	In the beginning of the document general description of alternatives is presented. Comparison of alternatives and information of selected option is given in Section 7.
6	The report sais (page 23) that the road crosses old cemeteru (200m). Technical, sanitary and approval documents for relocation of cemenetry must be presented to the state ecological examination together with the EIA report.	During the field surveys the area was studied thoroughly. Each tomb within the boundaries of the mentioned abandoned cemetery was registered. According to the project none of the bridge piers are to be located in cemetery area. Construction works in this boundaries of the site are not planned. Prior to commencement of works cemetery area will be fenced to avoid any undeliberate damage.
7	Page 33 of the report provides information on 43 culverts located along the design alignment. The report must provide information on maximum permeability and intensity with calculation of rainfall permeability.	Comment is considered – see page 34
8	The report (page 48) presents information on possible areas for camps. The report must include the layout of the site and explication with indication of GIS coordinates.	The camp area will be chosen by contractor identified via tender. The report provides recommendation – to hire accommodation in the settlements located close to the project area. This, along with possibility to reduce additional impact related to organization of camp on environment will provide additional income to local residents.
9	The report must include hydrological calculation for 3 river crossing bridges. For these sections maximum design flow, water levels and riverbed scouring depth must be provided (design flow is defined only for the Supsa river)	The project crosses Supsa, Sepa, Tskaltsminda and their tributaries. The only river where construction of piers in the riverbed is planned is the Supsa river. Therefore information for Supsa is presented in more details. Hydraulic calculations have been carried out for the stream crossed by the river using

		<p>HEC-RAS software. Scouring depth has been analysed and considered in the design of the bridge piers. Results of hydraulic calculations and design decisions made based on the results thereof are given in report 'Hydraulics and drainage' (Annex 5, volume 6 of the Technical report). In response to this comment the mentioned report has been added to the EIA report as a separate volume (Annexes, volume 2).</p>
10	<p>The figures (maps), Google maps with indication of various communications (rivers, gorges, wetlands, etc) are poorly visible. The issues must be specified and corrected.</p>	<p>Maps are substituted by better quality drawings wherever possible.</p>
11	<p>The EIA report must consider possible flooding of the road during construction. For this purpose forecasted height of the surface runoff layer must be calculated.</p>	<p>The landform of the area is flat. Therefore any directed from from upper sited areas will not be the observed. The project envisaged arrangement of drainage network and culverts. This will allow free flow of surface runoff (similar to that without the project). Keeping the mentioned above in consideration, according to opinion of the design team requested calculations are not feasible and necessary.</p>
12	<p>Criterial of geological impact assessment must be clearly defined. Those, presented in the report are general and are related only to development of erosion processes along the embankment. United scale of criteria for assessment of impact on geology and respective mitigation measures, Natural and technogenic factors (morphology of slopes, geological composition, climate, hydrogeological and hydrological conditions, excavation, vibration during construction of bridges and other structures) that predefine sensitivity of sections must be presented.</p>	<p>With consideration of the fact that the project is not expected to have impact on geology of the project area, the section was removed from the report.</p>
13	<p>The EIA must contain information about the impact of bridge construction on side and depth erosion in river crossings (bridge</p>	<p>Description is given in report – 'Hydraulics and drainage' (Annex 5 of volume 6 of the technical report). The volume is enclosed to the EIA</p>

	areas). The parameters and their change/variation must be considered to enable prediction of erosion processes and implementation of relevant mitigation measures.	report – see Annexes volume 2
14	In the report various measures for protection of slope in cuts are mentioned. However the most important is not mentioned. In this locations natural slope should be preserved. Therefore important is natural inclination of slopes and methods by which this can be achieved – frading, terracing or artificial structures.	The slopes mentions in the text refer to the slope of embankment. No cuts are planned. Technical project envisages construction of drainage system and culverts. Embankment is planned with consideration of applicable technical standards.
15	In Annex 3 of the report complete information on meteorological conditions of dispersion of air pollutants must be presented. In particular parameters indicated on page 324 does not match with values given in section 5.1.1. (climate and meteorology). Discrepancy should be corrected.	Comment is considered, The values revised.
16	Hydrological data for the Supsa River (Table 27) are old (60-es of the last century). The dqata must be revised.	Calculations were made based on information provided by Saqtskalproeqti. Information of hydrology, hydraulics and drainage is presented in Annexes volume 2.
17	In the report the scale of impact on air quality (6.2.1, p.145), noise (6.3.1, p.159), water resources (6.4.1, p;164), on pre-construction and construction stage is ranked qualitatively (as low, medium and high), no calculations are given, This should be revised.	Impact on air quality is described in section 6.2.1. Assessment is made nased on qualitatibe basis. Information on noise with respective calculations is given in Section 6.3.1.
18	The titles of the tables (p.321-322) in Annex 3 are same, units are not indicated.	Information is given by the type of vehicle, the title is the same – type of vehicles differs. In response to the comment units have been added.
19	In Table 50 – MPC must be replace with Georgian acronym. In the title (p148-152) maximum concentration must be substituted with MPC share.	Comment is considered.
20	In the title of the table (page 325) foreign (Russian) language is	Russian text was substiruted with Georgian. As for the units the values

	used, This must be corrected. Besides units should be given.	are non-dimensional. Values are given for various speeds (from 10 km/h to 120 km/h). .See Annexes volume 1 – Annex #3.
21	Geotechnical description by chainage must be included in the EIA report. Geotechnical sections – added to the report.	For additional information please see volume 3 – Geology and Geotechnics.
22	In the EIA report (pages 76, section 1.9 – ‘Geological risks’)flooding is mentioned as geological risk. The statement needs revision – flooding is hydrological process.	Comment is considered.
23	According to the EIA geotechnical studies have been implemented under the project. Information about these surveys with indication of coordinates of boreholes and pit in particular for the sites where piers of the bridges will be located must be included. Legends on the drawings must be in Georgian.	Annex 2 of the annex volume 1 presents geological survey maps with indication of the surveyed sites. In response to the comment, tables with the list of the sites with respective coordinates has been added. In addition – volume 3 ‘Geology and Geotechnics’ has been attached to the main report,
24	As indicated in the EIA operation of various sources of air pollution is planned (asphalt plant, concrete mixer, etc. location of which is not yet decided by construction company), the report submitted for ecological examination must include air protection documents dealing with the mentioned issues,	Location of asphalt, concrete mixer and other infrastructure will be specified by construction company. Documents requested by the law will be developed after the type and location of these facilities will be developed.
25	In the report information about potential location of camp sites and other infrastructure objects is mentioned. Distances from the river banks and method of camp waste water management must be indicated. Keeping in mind that around 200 persons will be employed.	Location of camps and operation ground will be defined by contractor (construction company). While selection of the site recommendations listed in EIA will be considered. Waste water management issues will be resolved with consideration of location of selected site. One of alternatives of the camp as indicated in the EIA is hiring accommodation in the settlement.
26	As mentioned in the report (page 47) in case discharge of waste water to surface water body will happen, requirements and	Discharge of waste water into the surface water body is not planned. The issues will be specified after the need for arrangement and location (if

	standards set under environmental legislation of Georgia, in particular, limits of pollutants discharged into the surface water body together with effluents - approved by decree #414 of the government of Georgia, dated 31 December 2013 must be complied with.	required) of construction camp will be decided by contractor. See answer to question 25. In case the need for discharge of waste water into the river occurs, limits of discharge (limits of pollutants discharged into the surface water body together with effluents) will be calculated, the project – agreed with the Ministry of Environment and Natural Resources.
27	It is mentioned that various pollutants (cement concrete mix, etc) is planned. Information about the source water required for concrete production must be included. (Will concrete mix be prepared onsite or carried in from somewhere)	The issue will be resolved by construction company, at this stage the need and location of concrete facility on site is not available so far.
28	The EIA report (page 171) mentions requirements toward a wheel washing facility that must be equipped with water collecting and settling unit, and that the latter should be cleaned after 75% is filled up. It should be mentioned where the waste removed from the settling basin will be disposed and cleaned.	Wheel washing ground uses to be used at the exit of construction site. With consideration of peculiarities of the road construction process no entrance –exit points are available. Therefore arrangement of wheel washing facility at any location is not possible. Therefore this statement has been removed.
29	Non-technical summary (page 10) mentions that area near the Supsa crossing and crossing area where construction of piers is planned can be considered as sensitive receptor. The report must include information about technical measures planned for prevention of the Supda river pollution.	<p>Information about the planned measures is given in the section describing mitigation measures for water, soil and biodiversity protection. As for the technical measures – the issues are described in technical reports that, in response to the comment have been added to the EIA report:</p> <p>volume 2 – Hydraulics and Drainage volume 3 – Geology and Geotechnics</p>
30	In the EIA report it is mentioned that the topsoil stratum is 0.3m (average value) and the volume of topsoil to be removed along the alignment totals 262677.6 m ³ . With consideration of these values the length of design alignment should be 33544 m. The values must be verified or additional information is to be provided.	Mistake is corrected.

31	The report must include information on removal of topsoil, stockpiling and subsequent use with indication of the GIS coordinates. The report must comply with requirements of the technical regulation on topsoil removal, storage use and recultivation approved by governmental decree #424, dated 31 December 2013.	Areas for stockpiling of topsoil are indicated on the map, see Figure 47 and the project corridor
32	The EIA report must mention obligation to train/instruct staff in protection of vegetation adjacent to the project corridor.	This obligation is mentioned in Section 6.5.3
33	The report submitted to exological examination must include information on species and quantity of trees subject to removal.	Information of species and quantities of trees/plants subject to removal is given in section 6.5. Alder trees, bushes (Rubus, Smilax, Amorpha, Juncus, Typha). None of these species is protected. These plants are widely present in Kolkheti lowland. Impact/removal of these species will not affect biodiversity.
34	The EIA report, sections dedicated to flora and fauna, must include information on plan, animals, birds and habitats, based on the survey. Particular attention is to be paid to migrant species protected under international agreements and Georgoan Red List, bird migration routes, wetlands, impacts on them as well as measures to avoid and in case compensate the impact.	Information is given in Sections 5.2. and 6.5. Information include – information on habitats, plants in the project area as well as animals (terrestrial, aquatic) that may occur in the project corridor. The mitigation measures include monitoring of avian and water related fauna.
35	According to the EIA report the project corrisor crosses rivers (Supsa, Sepa, Tskaltsminda) where construction of bridges is planned. The report must include information, based on relevant studies, regarding the impact on aquatic and water related species, ways of impact avoidance and in case of necessity - compensation measures.	In order to control impact on water and water-related species short term monitoring will be carried out (during construction). In case of strict compliance with work plan and mitigation measures suggested in the report, impct on aquatic biodiversity will be short term and low. Compensation measures are notrequired. Within the direct impact zone of the project no burrows of water-related species were found.

36	Monitoring during construction must consider the need for monitoring of avian and ichthyofauna.	Comment is considered.
37	EIA report presents information on waste streams generated during implementation of the project. But no information about the quantity and physical status of waste is provided. Inert waste management issue is not resolved. It is mentioned that inert materials will be used during construction and partly removed to the landfill. The report must provide information about location of the disposal sites, conditions for arrangement of the mentioned sites with consideration of all risk factors.	<p>The design team has identifies several locations within the project buffer zone where temporarily removed topsoil and material to be used for arrangement of embankment can be located (see Fihure 47). These materials will be stored separately to avoid mixig. None of these materials can be considered as waste.</p> <p>Importation of material will be done on stage by stage basis to avoid accumulation of a bulk volume on the site. Part of material will be stored along the corridor. Negligible amount of sub-soil that may be moved while grading of the area will be reused onsite. Other inert waste will be removed to the nearest landfill, under agreement with Solid Waste Management Company of Georgia.</p>
38	The report says that waste management will be done according to the Waste Management Plan developed by contractor, and that this plan will be a part of EMP. In this regard would like to inform you that the Waste Management Plan must be in line with Waste ManagementCode and regulations on Review and Approval of Waste Management Plan approved by order #221 of the Minister of Environment and Natural Resources Protected (dated August 4, 2015).	In response to this comment this information was added as a footnote – see section dedicated to the waste management of the EIA report.
39	There are some inaccuracies in the report that shoue be corrected, Fir instance: ‘dlope gradient’ should be replaced by ‘slope inclination; ‘sediments’ and ‘compression’ should be replaced with another Georgian term; It is not clear what the bottom sediments	Comment is considered

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სენაკი-გრიგოლეთი-სარპი E-70 მავნიტრალის გზით - გრიგოლეთი-ქობულეთის შემოღობვის გზის მშენებლობის დეტალური პროექტირება
 DETAILED DESIGN FOR THE CONSTRUCTION OF POTI-GRIGOLETI-KOBULETI BYPASS
 SECTION OF INTERNATIONAL E-70 SENAKI-POTI- SARPI ROAD
 LOT 1 - GRIGOLETI-KOBULETI SECTION/ლოტი 1 - გრიგოლეთიდან ქობულეთის მანაკვეთი
 მსახურისაზიან მუხრევერა List of Attendees

29.08.2017

N	აგწრა სუბიეტი	დასახელება	სახელმწიფო	ტელეფონის ნომერი
1	სენაკის მუნიციპალიტეტი	ს. ბ. რ.		595 21 91 41
2	სენაკის მუნიციპალიტეტის სამსახურის დირექტორი		ს. ბ. რ.	555 42 66 24
3	სენაკის მუნიციპალიტეტი			555 51 68 83
4	სენაკის მუნიციპალიტეტი	მსახურის სამსახურის დირექტორი	სენაკის მუნიციპალიტეტის სამსახურის დირექტორი	555 37 07 27
5	სენაკის მუნიციპალიტეტი	მსახურის	სენაკის მუნიციპალიტეტის სამსახურის დირექტორი	191 91 91 02
6	სენაკის მუნიციპალიტეტი	მსახურის	სენაკის მუნიციპალიტეტის სამსახურის დირექტორი	599 17 05 65
7	სენაკის მუნიციპალიტეტი	მსახურის	სენაკის მუნიციპალიტეტის სამსახურის დირექტორი	597 643 642
8	სენაკის მუნიციპალიტეტი	მსახურის	სენაკის მუნიციპალიტეტის სამსახურის დირექტორი	595 91 01 73

N	გვარის სახელი	დასახელება	სახელის ადრესი	დარეგისტრირებული ნომერი
9	მამია მამიაშვილი	მამიაშვილი	მ. ბ. ბაქრაძის ქუჩა ს. ბ. ბაქრაძის ქუჩა	599 795271
10	სურია გომიანიძე	მამიაშვილი	მ. ბ. ბაქრაძის ქუჩა ს. ბ. ბაქრაძის ქუჩა	551182244
11	ზაზა ზაზაძე		საქ. ს. ბ. ბაქრაძის ქუჩა ს. ბ. ბაქრაძის ქუჩა	599 959209
12	მამია მამიაშვილი	მამიაშვილი	ს. ბ. ბაქრაძის ქუჩა	599 577244
13	მამია მამიაშვილი		საქ. ს. ბ. ბაქრაძის ქუჩა ს. ბ. ბაქრაძის ქუჩა	599 101987
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