Workshop on project preparation process
with reference to EU and WBIF requirements

Scoping of Pre-feasibility Studies

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Purpose of Pre-feasibility Studies

- To provide a **preliminary assessment of project's viability**
- To ensure a solid basis for undertaking a **feasibility study**
- To **define a corridor** for developing the project based on its objectives and the major constraints identified

Scope of Pre-feasibility Studies

Tasks to be specified in the Terms of Reference

- PFS-1 Project identification
- PFS-2 Data collection
- PFS-3 Definition of alternatives
- PFS-4 Involvement of stakeholders
- PFS-5 Environmental study
- PFS-6 Traffic studies
- PFS-7 Technical studies
- PFS-8 Simplified economic analysis
- PFS-9 Selection of preferred alternative

PFS-x Task name

Definition of tasks in the Terms of Reference

Purpose

A short description of what we wish to achieve with the task

Scope

Specification of the activities that form the task

Inputs

Specification of the items of data that need to be collected in order to execute the task

Outputs

Specification of the items of data that will become available as a result of the task

Timing

Comments on when the conditions for the task to start and end

PFS-1 Project identification

Purpose

- To help understand the **project context**
- To formulate **project objectives**
- To formulate **criteria for contributing to the objectives**

PFS-1 Project identification

Scope – questions to be answered at project identification stage

- What is the **existing situation**? What are the **problems to be solved**?
- What are the **objectives** of the proposed project?
- Have **alternative modes** of transport been considered?
- What is the existing **environmental situation**?
- What is the **role and functionality** of the proposed project in the road network as a whole to be?
- Is there an effective **demand** for the project?
- Have any **previous studies** been done for the project or in the project area?
- Does **interaction/compatibility with other interventions** need to be assessed?
- …

Example

Typical **objectives** of transport infrastructure projects

- Improving transport efficiency through **reduced travel times**
- Reducing **operating and maintenance costs**
- Improving **traffic safety**
- Minimising **environmental impact**, and
- Improving **accessibility**

PFS-2 Data collection

Purpose

- To collect **sufficiently detailed data** for the **preparation of the PFS,** and
- To serve as basis for the **preparation of the FS**

PFS-2 Data collection

Scope and inputs – items of data to be collected

- Relevant **strategies and plans**
- **Previous studies** and their recommendations
- **Existing transport infrastructure**
- Current and expected future **traffic volumes** and main traffic generators
- **Topographic and hydro-geological conditions** in the project area
- **Land use** (forests, localities, agricultural areas, etc.)
- **Spatial and urban development plans** in the project area
- Location of **environmental sensitive areas** (protected areas, parks and reserves, archaeological sites and surface and underground water bodies);
- **Localities and population** concerned
- **Flood hazard and risk maps**
- **Utilities**

PFS-3 Definition of alternatives

Purpose

- To formulate solutions (i.e. **alternatives**) that are expected to **contribute to the objectives** of the project

PFS-3 Definition of alternatives

Scope

- Prepare a comprehensive **review of the existing situation**
- Review the available information about **previously developed alternatives**
- Comment on the extent to which the existing alternatives **suffice the objectives**
- **Identify new alternatives**, as appropriate

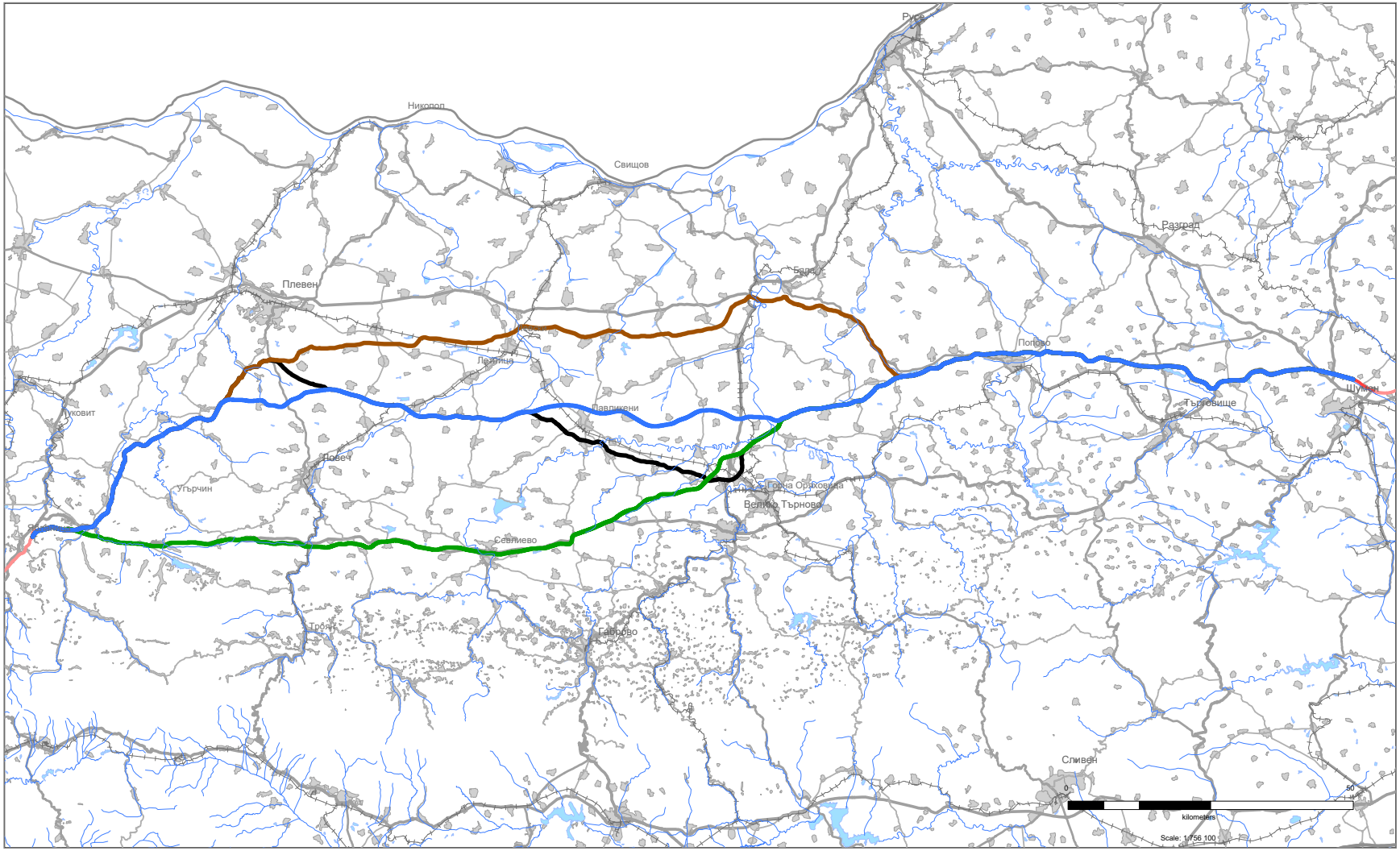
PFS-3 Definition of alternatives

Criteria for the alternatives

- The alternatives shall be **qualitatively different**
- They shall be designed to **maximise the performance under different objectives** (e.g. economic performance trough time savings, low construction costs, low impact on health and safety, low environmental impact, etc.)
- If possible and practical, the alternatives in the different sections shall have **common starting and ending locations**, to allow them being compared section by section
- Within project sections as many **feasible alternatives** as necessary shall be developed, considering the constraints and the objectives.

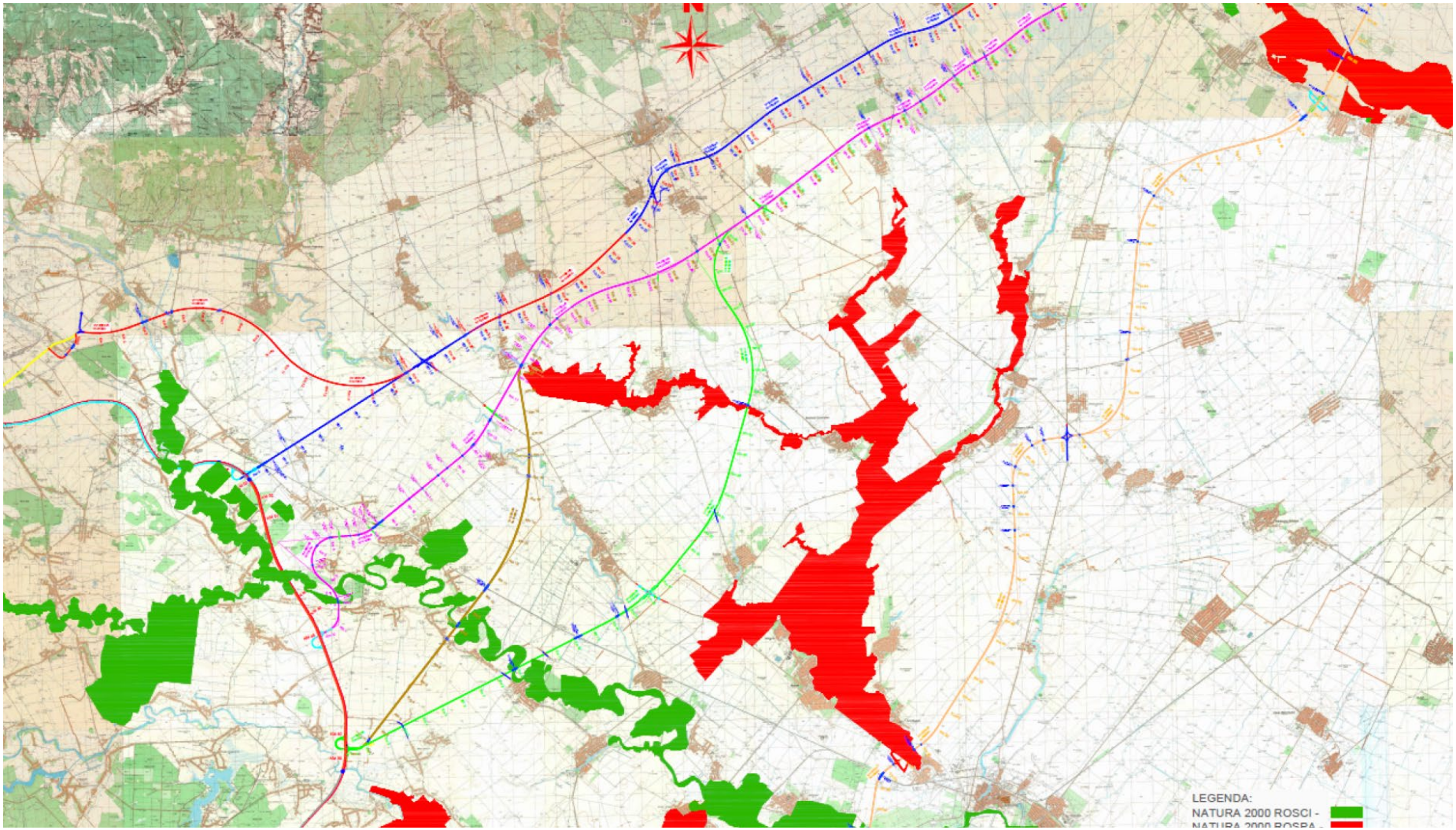
Example

Strategic alternatives with different objectives



Example

Too similar alternatives



PFS-4 Involvement of Stakeholders

Purpose

- To inform the stakeholders about the project, so that:
  - they **can express their preferences** towards the objectives and alternatives, and
  - **provide information about constraints** in the project area
- To **resolve issues** as early as possible and ensure **public support** for the project
- To fulfill **legal obligations** for public consultations

PFS-4 Involvement of Stakeholders

Scope

- Identify **all** stakeholders

  Stakeholder is any group or individual who **can affect or is affected by** the project.

- Compile relevant **information** about the project to be presented to the stakeholders
- Present the information to the stakeholders
- Ensure **feedback** is received (in writing and/or minuted discussions)

Timing

- Initiate consultations as early, as the project alternatives start to take shape – then **repeat**

PFS-4 Involvement of Stakeholders

Inputs

- Information about the project area
- Identification of the **problems to be solved** and definition of **project's objectives**, opportunities and threats to be considered
- Preliminary ideas for **alternatives**

Outputs

- **Mapping of the project area** showing all alternatives, including topographical features and land use patterns
- Specification of the most significant **technical aspects and negative impacts**
- Presentation of the material used and the main conclusions concerning the alternatives
- Collecting stakeholders' **feedback**, its review and analysis and incorporation into further developments stages

PFS-5 Environmental study

Purpose

- To identify as early as possible the main **environmental constraints** and sensitivities in the project area
- To provide an **initial assessment** of the environmental feasibility of the alternatives

PFS-5 Environmental study

Scope

- Examination of the **baseline and alternatives** using an initial analysis of environmental conditions and criteria
- This preliminary environmental study shall take into consideration all the **environmental factors** from the EIA Directive:

  "(a) population and human health;

  (b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;

  (c) land, soil, water, air and climate;

  (d) material assets, cultural heritage and the landscape."
- Mapping of **environmental impacts and constraints** (e.g. protected areas)

PFS-5 Environmental study

Inputs

- **Environmental data** from environmental authorities
- **Aerial photographs** or satellite images
- Existing **settlements**, their population size, land use and infrastructure
- Known **archaeological sites** and other valuable historical sites
- **Sensitive areas** (e.g. areas of scenic beauty and sites of specific scientific interest)
- **Agricultural and land use** mapping

Outputs

- Preliminary identification of **environmental constraints** (based on baseline conditions)
- Description of the **impacts of the alternatives**

PFS-6 Traffic study

Purpose

- To establish **existing and expected traffic patterns** and provide an initial estimate of the amount of traffic, which would be diverted to each section of a new facility
- To **inform definition of alternatives** and their assessment

PFS-6 Traffic study

Scope

- To analyse the **existing traffic data**, existing national road transport models, etc. (A project-specific transport model will be developed in the next phase.)
- To appraise the demand **with and without the project**, in order to allow the correct
- To separate traffic into **existing, diverted and generated**

Example

Regression model for generated trips (municipality)

$$CarTrips = -1{,}34 + 0{,}69 \ln GDP + 0{,}39 \ln Pop$$
$$LGV = 0{,}72 + 0{,}78 \ln GDP$$
$$HGV = 1{,}03 + 0{,}78 \ln GDP$$

where:

- $CarTrips$, LGV and HGV are the number of trips by private car, LGV and HGV per year
- GDP is the annual GDP of the municipality in RON
- Pop is the population of the municipality

Source: National road transport model Romania (CESTRIN, 2019)

PFS-6 Traffic study

Inputs

- Recent **traffic count data** for the surrounding network
- Traffic **growth rates**
- **Macro-economic data** such as GDP, population growth estimates, employment growth and other indicators to be used in estimating traffic growth
- Relevant outputs from the **existing transport models**

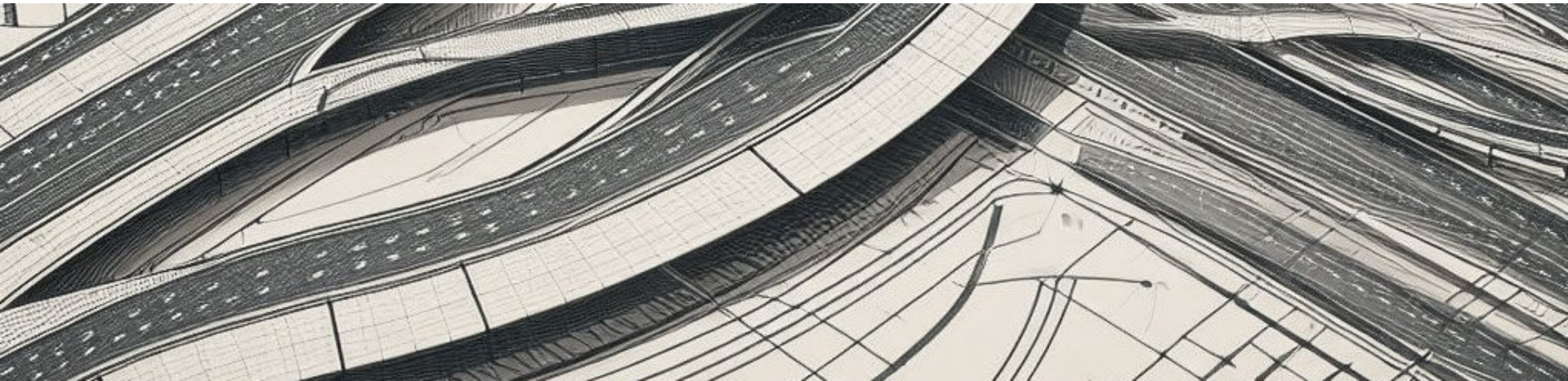
Outputs

- **With and without project traffic forecasts for each link in the network** based on recent traffic data for each type of vehicle, and taking into account various macro-economic forecasts over project's reference period

PFS-7 Technical studies

Purpose and scope

- To prepare **concept designs of the alternatives** to identify their main technical elements
- To provide preliminary **cost estimates**



PFS-7 Technical studies

Inputs

- All the data collected so far

Outputs

- **Layout plans** for each alternative reflecting the main data
- Geometrical characteristics of the alternatives – horizontal and vertical alignments, design parameters and cross-sections, locations, types and functional space solutions for interchanges
- Layouts and overview drawings of the **larger structures**
- Preliminary **works quantities and costs estimates** for the alternatives

Timing

- In reality, this is an **iterative process**

PFS-8 Simplified economic analysis

Purpose

- To assess the **economic viability** of the alternatives

PFS-8 Simplified economic analysis

Scope

The main economic benefits to be considered for all alternatives are:

- reduction in **generalised costs** for movement of goods/people, i.e. **timesavings** and reduction of **vehicle operating costs**
- **accident** savings
- reduction of **GHG emissions**
- reduction of **non-GHG emissions and exposure to the emissions** (i.e. local air pollution impacts)
- reduction of **noise emissions**

PFS-8 Simplified economic analysis

Inputs

- Estimates of **investment and operating costs** broken down by years over the reference period
- The **residual value** of the investment (i.e. at the end of the reference period)
- Estimates of **demand** based on which the main economic benefits are estimated.

Outputs

- Main **economic costs and benefits** of the alternatives
- **Economic performance indicators**:
  - Economic net present value (ENPV)
  - Economic internal rate of return (ERR)
  - Benefit to cost ratio (B/C)

PFS-9 Comparison of alternatives

Purpose

- To select an alternative (corridor), which best fulfils the **project objectives**, and is expected to be:
  - economically and financially viable
  - environmentally sustainable
  - feasible (implementable)

PFS-9 Comparison of alternatives

Scope

- To combine the results of technical, CBA and preliminary environmental impact studies as well as stakeholders' feedback
- The scope of work will include:
  - the initial sifting of alternatives
  - further development of remaining ones
  - definition of **evaluation criteria and framework** (weights and scores)
  - **sensitivity analysis**
- Ideally, **one corridor** is selected for further study, but in the case of a particularly complex network, more than one corridor option may be selected

PFS-9 Comparison of alternatives

Inputs

- Present value of the **economic costs and benefits** of the project alternatives
- **Environmental impact ratings** in tabular format for each alternative
- Performance of the alternatives contributing to **other objectives**

Outputs

- **Multi criteria analysis**, combining the economic indicators with the environmental impact ratings for each alternative
- **Sensitivity analysis** to assess the robustness of MCA

Deliverables

- Inception Report
- Proposed Multi-Criteria Analysis Framework
- Traffic Study Report
- Environmental Study Report
- Multi-Criteria Analysis Report
- Final Report

Discussion