Feasibility studies in Sweden
The publication describes the prerequisites for feasibility studies and the requirements associated with them, and the general required content of feasibility study documents.
Foreword

The Swedish Road Administration's vision "We make the good journey possible" is an expression of the direction of work of the Swedish Road Administration. What we do is intended to develop and maintain economic efficiency and a long-term sustainable road transport system for citizens and the business community. This, to be accomplished through an open, creative and dependable method of working, allowing participation.

The Swedish Road Administration works actively to develop customer information. Citizens and the business community shall have greater opportunities of influencing planning, and the Swedish Road Administration shall ensure that the best possible overall solutions for all groups are implemented.

This publication describes what a feasibility study is, its processes, and requirements made as regards the work.

See the website of the Swedish Road Administration, www.vv.se for more publications on related subjects.

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1 About feasibility studies

According to the Swedish Road Act, a feasibility study shall be carried out when it has been established that there is more than one alternative for the location of a road segment.

1.1. WHAT IS A FEASIBILITY STUDY?

A feasibility study is a process of investigating and giving an account of the possibilities of alternative solutions, including assessing their impacts and goal fulfillments.

The feasibility study shall result in information for selection of a road corridor, and normally also for selection of road engineering standards. This information, in the form of a document, upon which to base the decision making, is also called the feasibility study. In the process, versions of the feasibility study can be designated consultation document, exhibition document, etc. The feasibility study shall deal with all questions of importance as regards selection of corridor, answer important questions, and deal with all aspects that affect the decision.

The national interest and environmental questions, together with other general interests, shall be clarified and evaluated in the road inquiry. It shall contain economic calculations and impact assessments, including an environmental impact assessment, EIA. These shall constitute the basic information for enabling the road management authority to reach a standpoint as to whether the project shall continue or not.

The feasibility study also constitutes information for a permission assessment by the Government in those cases where this is required.

The figure shows the stages of the planning and design process.
1.2 CONDITIONS FOR COMMENCEMENT

Selection of a type of measure or a combination of types of measure, must be well based. Examples of types of measure are a road measure with or without new land being required, measures in respect of traffic, etc. The choice shall be based on a study, in which the four-stage principle is applied fully, by all means for a longer section of highway or a larger network. The four-stage principle, see chapter 2.2.

In the initial study documents and in the feasibility study documents, reference shall be made as to how the selection of type of measure was made, and how impacts have been taken into consideration.

According to the Roads Act, a feasibility study is required when it has been shown in the initial study that alternative sections of road (corridors) need to be studied. (The Roads Act requires an initial study when the construction of a road is planned.)

Prior to the commencement of a feasibility study, the following shall have been carried out:

● The initial study, including consultation, shall have been completed.
● It is considered that there is an urgent need to implement the project.
● It is established that it is a road measure that is required (stage 3 or 4 of the four-stage principle) possibly in combination with other types of measure.
● Information on what other projects and road segments are affected.
● The decision of the County Administrative Board if the project can be expected to involve significant environmental impact, SEI.

1.3 WHAT SHALL A FEASIBILITY STUDY INVOLVE?

The feasibility study shall clarify how different alternatives fulfil or contribute to the transport policy goals, and what impacts are expected to occur in identified conditions. The feasibility study shall also deal with the ways in which the needs of various users and customer groups can be satisfied.

It shall be possible to implement a design plan within whatever road corridor is finally selected. The design plan shall satisfy the road engineering requirements, and make possible good design. In it, consideration shall be given to those who live in the vicinity, and various user groups, and local environmental interests, and it shall take into account technical and economic factors.

Work with the feasibility study should also answer questions concerning ...

● ... which areas are not relevant for road measures for various reasons, and why
● ... which road corridors have been studied
● ... there are stretches which it is suggested shall go through large cuttings, on large banks, over a bridge or in a tunnel.
● ... which alternative sections with functional differences are possible (see the national document for road and street designing “Vägars och gators utformning, VGU”.)
● ... the alternatives cause redistribution of traffic in the rest of the road and street network, and the impacts of this
● ... the alternatives involve eliminating the possibility of future change, or involve making future change possible.
● ... the alternative involves re-routing traffic

During the feasibility study, alternative road or street corridors are studied; the existing one and new ones. These are compared one with another, and also with a zero alternative, i.e., that nothing more should be done than normal maintenance measures. According to the Roads Act, the feasibility study shall always contain a zero alternative. Unless there are particular reasons, there shall also be an improvement or development alternative for the existing road or street, which shall be compared with other alternatives.

The environmental impact assessment, EIA, and other assessments and analyses of substantial impacts are important in a feasibility study. The EIA shall normally be documented as a clear but separable part of the feasibility study. In exceptional cases, the EIA can constitute an annex to the feasibility study.

During the feasibility study stage, a general design programme is developed or drawn up in which guidelines regarding the aesthetic location and design of the road are put together and documented. The design programme shall function as an aid for creating continuity and entirety in the formulation of a road project.

**Design in principle of each corridor shall take the following into account:**

● The road and countryside seen from the countryside – from the perspective of the viewer.
● The road and countryside seen from the road – from the perspective of the road user.

The design programme shall include identifying the existing architectonic values of the landscape and built-up environment, and shall describe the prerequisites for creating new values.

### 1.4 CONTROLLING AND SUPPORTING DOCUMENTS

There are also the Roads Proclamation SFS 1971:954, the Swedish Road Administration's regulations on consultation and environmental impact assessments, etc., in initial studies, feasibility studies and design plans, VVFS 2001:18, and the Swedish Road Administration’s internal policy documents.

Below are listed some related documents that are also available in English. More documents on various subjects can be found on the Swedish Road Administration's website www.vv.se/publikationer.

Handbook Initial study, the Swedish Road Administration, publication 2002:46E

Analysis Measures According to the Four Stage Principle, the Swedish Road Administration publication 2002:72

The Series on Environmental Impact Assessment, EIA, the Swedish Road Administration, publications 2002:40E, 42E. (41 and 43 only in swedish)
2 The demands and expectations of society

2.1 NATIONAL GOALS

Regional and local goals are often connected to national goals. The national goals regulate regional and local goals. The goals of a road project, the project goals, shall be formulated on the basis of identified needs, and as far as possible, shall contribute to general goals. Project goals must not conflict with general goals.

Citizens and the business community

It is important that in all phases a road project shall take into account deficiencies and needs experienced by various groups of road users and those affected by the road, and which are the reason for commencing improvement work. This is the best way of ensuring that the road project gives the required benefit.

The Swedish Road Administration divides society’s users of roads and streets into two main customer groups: citizens and the business community.

In this context should be mentioned the UN Convention on the Rights of the Child and the UN Standard Rules on the Equalisation of Opportunities for Persons with Disabilities.

User groups

Citizens: children and young people (0-18 years of age), young adults (18-24 years of age), those in work, the disabled, the elderly.

The business community: basic and process industry, consumer goods and food industry, private service, public service, transport of goods, transport of people.

(See page 22 for more information.)
2.1.1 Transport policy goals
The Swedish Parliament makes decisions on national goals for transport policy.

The Government has given the Swedish Road Administration the assignment of administring the State road network, and taking general responsibility for road traffic. The direction of this work has been established in a general transport policy goal and six subsidiary goals.

Goal formulations
The general transport policy goal in Sweden is “to ensure economic, efficient, long-term sustainable provision of transport for citizens and the business community throughout the country”. By “long-term sustainable” is meant ecologically and economically sustainable and socially and culturally sustainable.

The general goal is defined in six subsidiary goals, connected to goals within other policy areas:

- An accessible transport system
- High transport quality
- Safe traffic
- Good environment
- Positive regional development
- A transport system with gender equality

There may also be regional and local goals to take into consideration. These emanate from the general goals.

2.1.2 National environmental quality goals
There is good consensus between environmental quality goals and the transport policy goals, especially the subsidiary goal of good environment.

Transport policy goals and environment goals are often given precision in regional and local goals.

2.1.3 Architecture policy goal
The Government has an architecture policy goal, described in the “Guidance programme for architecture and design”. In the Government Bill, the Government emphasises the importance of the public environment and indicates the considerable responsibility of the departments responsible for traffic acting in an exemplary way within the area.
The subsidiary goals which have been established for architecture policy also apply to the transport system:

- Architecture and design shall be given good development prerequisites
- Aspects of quality and beauty shall not be subsidiary to short-term economic considerations
- Aspects of cultural history and aesthetic values in existing environments shall be conserved and strengthened
- Interest in a high level of quality of architecture, design and public environment shall be strengthened and broadened
- Public building and publicly supported building, equipping, furnishing and procuring shall be models as regards their quality requirements

2.2 GOAL FULFILMENT AND ECONOMICS

Swedish transport policy has for many years been characterised by an economic approach. During recent years, the input of quantified goals has increased, primarily within the areas of environment and road safety. Other subsidiary transport policy goals have also been developed.

There is increasing demand for a life cycle perspective for roads, with functionality and total economy included in the totality.

A feasibility study provides the answers to appropriate location and road standards, for solving defined problems and setting goals. One form of support for this work is clear precision of project goals.

The purpose of a road project is to solve certain problems. The goals of the road project shall be achieved with satisfactory quality at the lowest possible cost. It is therefore important to select the type of measure or the combined types of measure and design that give the best overall solution. Information and experience in road planning, and effects and impacts, are obviously important. As a reminder and checklist there is the “Four-Stage Principle” (see the box), which shall be taken under consideration within all planning in the road sector.

A feasibility study shall refer to previous general planning work, in which a type of measure or strategy has been selected, with consideration given to all possibilities of solving the problem in question, i.e., in accordance with the Four-Stage Principle. In a feasibility study, road solutions can be combined with such things as traffic-regulating measures, and means of financial control can be studied.

2.3 INVESTMENT AND OPERATING COSTS

Costs stated for projects in connection with long-term planning, shall be precise. Only small deviations are accepted at later stages. In a feasibility study, investment costs can vary depending on such things as where the road line is placed and what technical solution is selected. A feasibility study must therefore establish the extent of the
cost-driving components within the corridor.

All costs for implementing a road project shall be calculated. This should be done in such a way that the calculation can be given precision at a later planning stage. If the costs of the road project have been calculated or estimated previously, this information shall also be given. If the project is included in a long-term plan, the stage the cost information originates from shall be stated, and when it is intended that the project shall be implemented.

In investment, the investment costs for various types of measure shall be weighed against operating costs in a life cycle perspective.

### 2.4 ROAD AND LAND USE PLANNING

Municipal planning is regulated in the Planning and Building Act, PBL, which, as with the Roads Act, has connections with the Environmental Code. Planning is made through general plans which can be gone into in more depth in parts of the municipality, area regulations and detailed development plans. The Planning and Building Act also gives the opportunity of drawing up a regional plan in order to coordinate the overall planning of several municipalities. The Government can also decide regarding setting up a regional planning organ if coordination does not come about otherwise.

The comprehensive municipal planning can be seen as a continual ongoing process in which new information is continually compiled. The up-to-datedness of the overall plan is reviewed each mandate period by the municipal council. When plans and programmes are drawn up or changed, an environmental assessment and environmental impact assessment shall be made, if significant environmental impact can be anticipated. (Environmental Code, Chap. 6, §§ 11, 12)

#### 2.4.1 Municipal planning

Normally, initial road planning should be coordinated with the overall municipal planning. In normal circumstances, a continual debate is conducted between any regional coordination organ, the municipality’s planners and Swedish Road Administration staff regarding road matters. Coordination between the municipalities and the Swedish Road Administration is conducted right from the strategic planning stages and in the initial study work. The Swedish Road Administration and the municipalities involved should be in agreement regarding the need to implement a feasibility study. Despite well-coordinated planning work, it may be necessary to revise the municipality’s general plan or the deepening of it, as a result of what emerges in the feasibility study.

In those cases in which land use issues are important, it can be appropriate to set up a feasibility study as a part of an in-depth overall plan in accordance with the Planning and Building Act. The feasibility study should then also satisfy the requirements of the Roads Act. If necessary, the municipality can guide land use in the vicinity of the road, for example, by drawing up a detailed development plan.

Planning of roads is one part of community planning, and has a close connection with municipalities’ planning at general and de-
tailed planning levels. The general location and design of the road network is of great importance as regards building development possibilities for municipalities, both in population centres and in the sparsely populated areas. The location and design of roads also affects the ability of municipalities to conserve and develop qualities that are worth protecting, such as natural and cultural environments.

A change in the road network perhaps also involves impacts on established activities, movement patterns and social relations that can be negative or can give new opportunities for development.

A design plan should not conflict with a valid detailed development plan.

In some cases in connection with the planning of larger infrastructure projects, the municipalities and the Swedish Road Administration (and sometimes also county organs and the County Administrative Boards) draw up programmes that are the basis of planning of the areas close to the road system. There, one can assess how agreements and standpoints as regards planning, design, etc. of land within the area of influence and vicinity, of a road system shall be treated. The programme can contain goals, restrictions, organisation of planning work, procedure of consultation, etc.

**Municipal handling of traffic matters**

Municipal handling of traffic matters can function in various ways on the basis of local conditions and decisions. Traffic matters can be handled at several planning stages and constitutes the basis of the municipality’s general planning, and planning for concrete measures. The relevant information in the form of analyses, objectives, traffic data, etc., for a feasibility study can therefore be found in documents other than in general plans. Traffic strategies or traffic plans are usually presented separately, but often constitute the basis of the general plan’s guidance for decisions on land use. Planning for population centres requires transport and traffic issues to be part of the development of attractive urban environments with long-term sustainable development.

**2.4.2 Transport infrastructure planning**

The Swedish Road Administration carries out strategic planning of the road transport system at national level, while the County Administrative Boards or regional coordination organs are responsible at the regional level.

The national plan for the road transport system is drawn up by the Swedish Road Administration and set by the Government. It contains infrastructure measures for the form of operation and maintenance, bearing capacity and environment measures on the entire state road network, and investment in general in the national basic road network, and also covers sector responsibilities and exercise of public authority. The county plans for regional transport infrastructure are drawn up and set by the County Administrative Boards or by the regional coordination organs. They contain such things as investment
figures for the regional road network and Government subsidies for public transport facilities, environment and road safety measures for the municipal road network.

The Swedish Road Administration has responsibility for implementation both of the national plan and the county plans.

These planning documents are decisive for when the physical planning is implemented. Feasibility studies shall be implemented on a time basis so that subsequent scrutiny and permits have been dealt with by the time the measures are implemented in accordance with the national plan and the county plans respectively.

2.4.3 Other infrastructure planning

Coordination with other infrastructure investment should be taken into consideration. Apart from municipal work, roads or railways, other types of infrastructure projects can be current in the area. It can be a matter of such things as the laying of electrical cables, gas mains, or fibre-optic cables.

2.4.4 County administrative boards and regional organs

The County Administrative Board

The role of the County Administrative Board is to monitor and coordinate national interests. Among other things, the County Administrative Boards shall supervise environmentally hazardous activities and hydrological activities.

In many parts of the country, regional planning organs have been established as well. These are being given increasingly important roles as coordinators of the general long-term planning of such things as land and water issues between the municipalities within the region. The result of the long-term planning is called in English the Regional Development Programme, RUP (in Swedish).

When the comprehensive or detailed development plans are drawn up, the County Administrative Board also has the responsibility of ensuring that the interests of the State are taken into consideration. The purpose of this is that the various Government authorities shall not put forward their standpoints individually but that the County Administrative Board shall collect and weigh up the various interests one against the other. It is the collective decision of the County Administrative Board and not the opinions of the respective sectors that are decisive in road matters.

The County Administrative Board has several important formal assignments in road planning. In the general road planning (initial study and feasibility study), the County Administrative Board is an important consultation party. The County Administrative Board can contribute with such things as information, which is important for the location of a road and design being carried out in the best way. Additionally, the County Administrative Board monitors to ensure that the national interests and other important general interests are satisfied, such as health and safety and inter-municipal interests.

The County Administrative Board also has the role of approving the
environmental impact assessment that is to be included in a feasibility study. The County Administrative Board determines whether the EIA constitutes a satisfactory basis for a collected assessment of the project’s direct and indirect effects on environment, health and economic management of natural resources.

According to the Roads Act, the continued feasibility study design process, after the feasibility study, requires that the road maintenance body shall be in agreement with the County Administrative Board regarding the design plan. If the road maintenance body and the County Administrative Board have differing opinions, the design plan is reviewed by the Government. The County Administrative Board has considerable competence and experience within several different areas, and it is in the interests of the road management authority to take advantage of the opinions of the County Administrative Board as much as possible. The role of the County Administrative Board is to be a discussion and consultation party more than its role as scrutiniser and approval body.

Planning documents with the County Administrative Board

According to the Environmental Code, the County Administrative Board is under duty, to compile reports, programmes and other planning documents that are lodged with Government authorities (Environmental Code, Chap. 6, §20).

3 Road planning and road design

Prior to planning at design level, the type of measure shall have been chosen on the basis of travel and transport requirements. The choice shall be made on the basis of the current transport policy (with transport policy goals). Other measures than road measures shall have been considered in accordance with the four-stage principle.

The planning and design process shall lead to a document which states how the road is to be built. In those cases in which a feasibility study is required, the total process takes between five and ten years. If the design is to be subject to permissibility assessment or other special assessments are to be carried out, the process can take over ten years. A feasibility study of good quality facilitates and shortens the decision-making process.

Other factors and interests have varying weights in different stages of the planning and design process.

Road planning involves an initial study and feasibility study. Road design involves a design plan and building document.

In road planning, in which the public interest is of greatest importance, traffic function shall be balanced against other quality requirements, for example, urban environment. The road or traffic solution
shall contribute to a whole that people experience as appropriate.

**Therefore, to the greatest possible extent, the road solution must also fulfil the following requirements:**

- The function of the road in the general road system shall be satisfied.
- The road shall be adapted to the character of the countryside and the population centres it goes through.
- Near towns and cities, and when going through them, the road shall not be a functional or social barrier.
- Road users shall have a positive experience of their journey, and a clear experience of the surroundings through which the road passes.
- The road shall not be experienced as disturbing by those who live, work or indulge in outdoor activities in its vicinity. Alternatively use of the surrounding land shall be changed if that is most appropriate.
- Consideration shall be given to large existing and potential water catchment areas
- The road shall not destroy the ecological and cultural environments.
- The road shall not contribute to environmental quality standards being exceeded.
- The road shall contribute positively to the development of the business sector in the region.
- Travel and communication opportunities for those who are disabled shall be satisfied in the best way.
- Travel by children and children’s special requirements shall be given attention, including sensitivity to vehicle emissions as regards child development.
- The road shall be reliable for the business sector’s transport.
- It shall be possible to implement the road design at reasonable cost.

**In the road design**, there are a multitude of structural engineering problems to be solved. The superstructure shall be given dimension, and junctions, bridges and side areas shall be planned in detail, lighting and traffic arrangements shall be project-planned in detail, environmental protection measures shall be planned in detail. During the period in which the design plan is worked out, and during negotiations to solve land matters, private and local interests are given the opportunity of influence. The construction document specifies the way in which the structure shall be built, and constitutes part of the information for procurement of contractors, when contractors are selected for the work. In the case of total contracts and functional contracts, the procurement is based on such things as the design plan.
3.1 THE FEASIBILITY STUDY PROCESS

Work methodology

The aspiration of a feasibility study is to create a good basis for taking a position regarding location and the choice of road engineering standards. In certain cases, the project shall also be scrutinised for its acceptability by the Government. Irrespective of scrutiny for acceptability being carried out or not, work shall be carried out with the same ambition, in which the right quality and right quantity in the decision base are sought. The work shall show that it is possible and appropriate to locate and design a road structure within some “corridor”. The content of the work and presentation, and their extent, shall be scoped on the basis of this, with consideration given to each individual case and certain principal requirements contained in laws and regulations.

While unnecessary work shall be avoided, it is necessary that studies of such things as prerequisites regarding location are shall be of sufficient extent. Otherwise, possible locations or solutions may be missed, with the risk of having to carry out supplementary measures at a later stage or to be hit by extra costs in production as a result of uncertain information. Cost calculations must reveal uncertainties. Important aspects and solutions which are discovered, but which belong in detailed planning (design plans and building documents) should be labelled and carried over until the next planning stage.

The same applies as regards proposals for in-depth work which should be able to reduce uncertainty as regards each respective alternative.
Methods of approach

The person with the road management authority or with the municipality who is most immediately responsible for work with a feasibility study is the project manager. It is important that the project manager responsible with the Swedish Road Administration sees his/her role as being an open, trustworthy and creative planner in a planning process in which many parties are involved, including municipalities, a County Administrative Board, representatives of organisations and citizens. These views shall permeate the entire project organisation, including consultants.

Efficient planning work requires that all participating parties experience a situation in which they are informed about what is happening in the investigation and decision-making work, and that the planner listens to their points of view and takes them into consideration. It is easier to respect points of view which are opposed to one's own interests if one perceives that the planner listened and analysed points of view put forward and that explanatory statements are given openly.

Consultation and establishment

The purpose of consultation is to find the best road solution using good dialogue, in which property owners and other parties concerned, representatives of interest groups and other affected parties participate. It is important to have firmly based arguments and discussions with those affected on a continual basis to ensure quality of decisions and sustainable solutions. Note that consultation can also be carried out with representatives of groups such as, for example, children and business people.

There are legal requirements as regards the extent of consultations, see section 2.4.

Presentation

A feasibility study and its sub-results shall function as a basis for consultation, and for information to the general public and as a good decision-making basis. It should be possible for the reader to build up a concept of the project with its alternatives, and acquire a clear picture of the important aspects of the investigation. The discussion concerning the factors that led to successive or final intentions and standpoints should be clearly presented.

Each appropriate alternative shall be investigated and presented on equal terms.

With both verbal and written presentations, the reader or listener is often a layman. This means that the language used in the information material and documentation must be made easy to understand, and that technical terms must be explained when they are used. The completed feasibility study document is a product of the road management authority, which has paramount responsibility for the objectivity and quality in general. At the same time, consultants who have contributed, have responsibility, and are expected to declare any uncertainties and to apply rules of professional ethics.

The presentation shall contain text, tables, maps, sketches, illustrations and photographs, etc.
**Activities and stages**

### Programme and goal work
- Need for, and purpose of, road project described. Project goals are developed, the design work is started. The project is scoped and facts are collected.

### Generation of alternatives
- Conditions are studied and EIA work is commenced. The location prerequisites are mapped. Combinations of measures and alternatives are amalgamated.

### Comparisons of alternatives
- Costs, effects and impacts are analysed and described after further studies of conditions. EIA and other material in the feasibility study are shown in a preliminary form prior to approval by the County Administrative Board.

### Collected assessment
- The alternatives are evaluated against the goals, based on impact assessments and costs. An economic cost estimate is considered. Conclusions are arrived at.

### Approval of EIA by County Administrative Board

### Exhibition and report for comment
- The Road Management Authority decides regarding form of exhibition and referral for consideration. The feasibility study is exhibited and the report for comment is sent out.

### Consultation Statement and Opinion
- Consultation, contacts, replies to referrals and comments are combined. The Road Management Authority compiles an opinion and explanation of intentions.

### Adjustments/Supplementations
- Adjustments and supplementations are made prior to final statement of the feasibility study.

### Making a standpoint
- Standpoint with explanations is documented and the extent of the decision-making data is presented. Calculations and information on such things as geotechnology, archaeology and hydrological aspects are covered. Requirements prior to continued work are stipulated. Receipt of standpoints and comments to referral replies are sent out. The Road Management Authority announces its standpoint and whether permissibility assessment can take place.

### Permissibility assessment
- The Swedish Road Administration refers the matter on to an appropriate extent. The material, referral replies and opinion from the Swedish Road Administration are presented to the Government.

### Government decision

### External contacts

### External contacts before, during and after generation of alternatives

### Consultation

### EIA sent to County Administrative Board together with the other information

### Exhibition
- Referral to interested parties and to the County Administrative Board.

### The County Administrative Board’s final opinion

### Consultation Statement

### Final feasibility study

### Standpoint

### Decision document

### The report is sent to those responsible for drafting.
3.1.1 Programme and goalwork
During programme work, the conditions and goals which are to apply are clarified. Discussions commence. The road engineering standards in the form of reference speeds and degrees of separation are proposed in preliminary form, on the basis of the required function stipulated in the initial study. Supplementary facts are collected. This is done after scoping the size of the project.

The basic data can be used for the design programme, such as the EIA and technical assessments, see for example, Gestaltningprogram – en vägledning, the Swedish Road Administration, publication 2004:41, and the EIA series of publications, The Swedish Road Administration, publications 2002:40-43.

The need for updating and greater depth of the basic data in the initial study shall be assessed on the basis of the problems which are to be solved, and the goals which are to be achieved. The municipal general plan and municipal road planning are obvious starting points. Collected information and analyses shall be saved so that they can be transferred to the detailed planning stage. The need for general separate inventories and studies of conservation interests should be clarified in consultation with the County Administrative Board and municipality.

The purpose of a new, rebuilt or improved road or cycle path with associated traffic control can be to ...

- improve accessibility and safety for pedestrians and cyclists so that the proportion of those walking and cycling between population centres and X community can be increased threefold,
- improve environmental quality in urban areas, reduce perception of barriers and create a more attractive urban environment in a wide context,
- increase transport quality and accessibility by car and bus between A and B population centres so that more people can reach a larger number of activities through daily commuting.

Examples of project goals:
- Children can go to school on their own.
- Unprotected road users can go between home and important destinations in the community in a safe, secure way.
- The hydrological conditions for wetland area X are unchanged.
- The frog population can continue to exist.
- The locality and design of the road shall permit high accessibility to stopping places for public transport so that destinations can be reached equally well, irrespective of type of transport. Average travel time in the road and street network may deviate by not more than 30% between car and bus. Travel time on any section of the network should deviate by no more than 60% between car and bus.
- The worn, unstructured road and street environment shall be improved to become a well-designed environment, with interaction between the environments and businesses in the immediate vicinity.
Scoping
The content and extent of work input and future feasibility study document should be set out (including consideration given to consultation results). Investigatory work and final documentation shall be of correct quality and correct quantity. For example, the number of aspects in impact assessments shall be limited to only what is relevant and important. Of course, the enquiry information can be extensive, but it is of extreme importance that the central part of the enquiry shall be presented clearly, and that it can be overviewed well in the final documentation.

The scopings shall be explained and anchored with the consultation parties. (Compare also EIA handbook part 2 - Methodology, section 7, Scoping of EIA).

Geographic scoping
As regards geographic scoping, one usually speaks of the study area and area of influence. The study area is the area within which solutions are sought. The area of influence is often a wider area which will be affected by the proposed measures, for example, through environmental impact, through road users changing their choice of road, through industries and companies encountering altered circumstances in their establishment prerequisites.

Time-limited traffic information
For a road project, the way in which traffic develops over time is absolutely basic for finding the most appropriate and profitable measures.

Degree of detail and uncertainties
For road projects, the starting point for the degree of detail of work and compilation, is of course the formal requirements concerning content and extent of feasibility studies. Over and above this, the level of investigation must be adapted with consideration to the nature and circumstances of the project, in order to be able to achieve a standpoint based on correct quality and correct quantity in the report.

It may be necessary to study difficult aspects more closely than the feasibility study original required. For example, relatively detailed geo-technical surveys and designs or design studies may be necessary for cost calculation of a road project as a basis for selecting alternatives. In-depth work may be necessary to investigate whether it is possible to satisfy certain requirements of environmental quality and to prevent damage.

Uncertainty as regards where a final road line may go within a road corridor means that one needs to make assumptions and present uncertainties in the assessment and in the assessment of impacts, such as noise disturbance in sensitive environments. The same applies to cost calculations.

The width of the road corridor varies within a project because of such things as the density of building, topographical and environmental interests, and must therefore be assessed for each separate
Collecting facts and analysing conditions
Material from previous studies is used as the starting point for the analysis. The material may need to be updated if prerequisites for the project have changed. In work with the feasibility study, information shall be updated, supplemented and deepened. Analyses of existing conditions and the ways in which conditions have changed over time must be sufficiently detailed to identify possible alternatives that solve the problems and lead towards the goals. It is also the basis for assessing the zero alternative, assessing impacts, and comparing and evaluating the project alternatives.

The information and analyses also form the basis of a preliminary road design with profile drawings of a road line in each corridor. With this, the possibilities of mass balance and possible locations of bridges, interchanges, etc., are investigated as a basis for cost calculations. Important conclusions on impacts can be drawn from cost-driving factors, such as geological conditions for building, the need for tunnels, bridges or land strengthening, archaeological excavations, etc.

Consultation or informal contact with interested parties, user groups, others affected and representatives of public interests should be held sufficiently early for information from them and their requirements to be put to use and perhaps influence the feasibility study.

Factual material in a feasibility study can be extensive. Often only part of it is of current interest. The factors that do subsequently determine location are given in the feasibility study, (under prerequisites for location.)

Geographic information
General maps and databases with height information, orthophotos, and aerial photographs always give important information about the land. If new or more detailed information needs to be gathered, one should also consider the need for supplementary design. Assessing height conditions is often important.

Town and countryside analysis
Assessing and understanding the countryside or the unique character of built-up environments is an important starting point for all physical planning. Analysis of countryside or urban areas shall be the basis of project goals, design guidelines and environmental impact assessments.

Countryside and urban area analyses deal with such things as different properties, relationships, scale, structures and character, and are used in connection with change as a basis of location and design.
Population, buildings, the business community and the labour market

The present population, the expected future population, the composition of the population, the structure of the built-up environment, the situation of the business community and the labour market situation all need to be explained.

Health aspects are connected to where people are. It may be necessary to give particular attention to certain groups of citizens and the distribution of effects. Are there particularly strong interests that apply, for example, to children, the elderly or disabled? Schools, child-care centres, hospitals and accommodation for the elderly often involve particular needs. It may be necessary to have information for a particular analysis as regards children. It can also be of interest to raise the question of how the current situation promotes or counteracts a more gender equal society.

The existing role of the road network in question as regards the business community’s transport and as regards access by citizens to local and regional labour markets should be clarified. Tourism and the visitor economy in general can be an important factor, giving seasonal variations of population.

User groups and those affected

Citizens
- Children and young people (0-17 years of age)
- Young adults (18-24 years of age)
- Those in gainful occupation
- The elderly
- The disabled
- Unprotected road users: Pedestrians, cyclists, moped-riders, etc.
- Public transport users
- Motorists
- Those living in the neighbourhood
- Others affected

Business community
- Transport purchasers & owners of goods
  - Basic and processing industry
  - Consumer goods and food industry
  - Public service
  - Private service
- Transport sellers
  - Goods transporters
  - Conveyance of people

Road and street networks, and their traffic

Use of the present road system is analysed with regard to the current traffic volume, the proportion of heavy traffic, dangerous goods, public transport, pedestrians and cyclists, and the function of the road link in the network, road design – technical standards. Traffic data is collected from the Swedish Road Administration and from municipalities.

The need for traffic surveys and forecasts is reviewed when the expected development and extent of transport are included. One should also investigate the particular deficiencies and demands of certain groups of users. In those cases in which it is relevant to survey movements of children, this constitutes part of a child impact assessment process (which it may be necessary to present separately).
Accessibility and transport quality

Good accessibility is of fundamental importance for social life and for social functions. The road transport system shall facilitate these but, of course, supply and planning of land use is at least as important. The requirements of citizens and the business community should be given attention. The concept of accessibility can involve accessibility to the system, and accessibility to destinations as well.

The properties of the road surface and winter road standard are of importance for transport quality, and they are also of importance for vehicle costs and goods transport costs. As regards public transport, shelter at stopping places and facilities for storing cycles at stopping places are of importance.

Road safety

The safety philosophy of the zero vision, which is about eliminating the number of killed and seriously injured, is based on the prevention of accidents as far as reasonably possible, and the system being designed on the basis of accidents not occurring. If there is an accident, the road system shall not be the culprit.

Responsible preventative working methods involve theoretical risk analysis with a statement of impacts being drawn up. The basis of the theoretical risk analysis consists of general experience-based information on various type solutions of accident risk.

The results are subsequently checked against what happened in reality out on the actual road network. But all the time, accidents which do occur are seen to complement the risk analysis.
Environmental conditions and natural resources

The area covers a number of sub-areas that are described in more detail below.

The environmental impact assessment of the feasibility study shall show, among other things, the existing environmental quality and the environmental values, especially national interests and Natura 2000 areas, and circumstances affecting the fulfilment of environmental quality standards. With this, important potential conflicts or coordination possibilities can affect the production of alternatives.

The natural environment and the cultural environment

It shall be possible to enjoy a natural and cultural environment as an asset for people and society, and as one of the basic starting points for various planned changes to the landscape.

When a new road is created, there is the opportunity of preserving and developing the natural and cultural environments. A new road shall be built in harmony with the natural and cultural environments.

Outdoor activities and recreation

Considerable interest in outdoor activities is often connected with an attractive natural and cultural landscape. Therefore, it can sometimes be appropriate to analyse and assess outdoor activity interests together with natural and cultural environment interests.

Natural resources

The following natural resource issues normally need to be studied for influencing the production of alternatives, and to form the basis for assessment of impacts:

- Land of considerable importance for agriculture or forestry
- Access to water and fish
- Drainage areas and ground water resources are given particular attention in the EU’s framework water directive. The feasibility study’s EIA should give a general picture of how the general drainage area looks in the study area, it should show the ground water situation, lakes and water courses and show where existing, future and protected drinking water resources are. The value of water resources and their vulnerability are important factors for location of corridors and for assessment of impacts and the need for protective measures.
- Areas of importance for reindeer husbandry
  If the study area is in an area in which reindeer husbandry is pursued, certain considerations must be given. Then the feasibility study shall assess and take into account factors of importance for reindeer husbandry, for example, trails, collecting places and undisturbed grazing land.
- Material and energy management
  Factors of importance for the location of alternatives and for assessment of impacts include use of natural gravel, transport of material, mass balance and gravel and rock formations with geological and scientific values. Energy use for construction and operation can also
be important and be the basis of the separation of alternatives.

- Housing environment, health aspects

Environmental disturbance will cause varying degrees of change depending on what alternative road corridor is selected. Information on buildings and population is usually important.

The most common aspects are noise, vibration, barrier conditions for residents, access to recreational facilities, visual conditions, and collective experience of the urban environment or the place which is the object of an exception.

**Building and operational-technical prerequisites**

It is important to investigate and assess geological and geo-technical conditions at an early stage, when it is still possible to influence the location of the road in the landscape.

**Other objects that need protection or objects at risk**

An inventory shall be made of major power and utility lines of various types, other lines and pipes, or other structures that exist in the area or are planned. Also, investigate whether the owners of the lines, cables, pipes, etc., plan to change existing structures that might affect the location of road corridors.

### 3.1.2 Generation of alternatives

Work is now undertaken to study and analyse the information that has been collected and the prerequisites, depending on the countryside, urban areas, population, municipal plans, travel and transport, environment, geology, etc. Corridors and alternatives are formulated. It may be necessary to supplement information and analyses, which means that the process is repetitive.

The investigation material shall be compiled to form a basis for formal consultation.

**Measures, combinations of measures and the search for alternatives**

Work to find appropriate measures, combinations of measures and alternatives begins with producing and updating earlier work and standpoints in accordance with the Four-Stage Principle. Previous intentions must be considered, assessed and refined in the investigatory stage.

After conditions have been defined and classified, one can identify areas that should not be affected by the proposed measures. This is done in consultation with the authorities and organisations that have information about, and responsibility for, the areas of interest which are relevant in the project. Site visits, Internet meetings and dialogue are important elements during the initial part of this work. The collected survey material forms the basis of a holistic assessment of possible and impossible locations for a road or street, and identifies possible road corridors or other alternative measures which should be studied.

The next step is to arrive at conceivable measures, i.e., those solutions in principle, and road engineering standards which may be relevant for solving defined problems and achieving desired goals.
The measures can consist solely of road measures or a combination of road measures and measures according to steps 1 and 2 of the Four-Stage Principle, for example, guidance for vehicular traffic on a main street, while the prerequisites for public transport and cyclists are improved. The proposals shall be founded on the knowledge that exists of the effects of various measures and their applicability in various situations.

New construction can also involve measures for adaptation of existing roads to new functions. If the new road entails an existing thoroughfare being relieved of some of its traffic, measures must be proposed so that the relieving of traffic gives the greatest possible benefit. The old thoroughfare can be converted to a so-called environmentally prioritised thoroughfare. This can involve, among other things, a reduced road section for vehicular traffic and increased consideration given to the needs of unprotected road users.

Road engineering standards are selected on the basis of the transport policy subsidiary goals, general strategies, possible road network studies, the traffic (all user groups) and the function of the road. By road engineering standards is meant reference speeds, type and width of road or street, separation, design of the roadside areas and standard levels for alignment and intersections. The national road investment plan stipulates the sections of the national main roads that shall be one-way. The county plans for regional transport infrastructure give the widths and speed limits that are desirable. The goal description of both plans is weighed against more comprehensive information that has emerged so far in the feasibility study. Several alternatives may be proposed with different road engineering standards, with assessment of their impacts. The study information shall be amalgamated to form a basis for consultation.

With the production of proposed measures, one shall also deal with the need for road user services such as lay-bys, parking spaces, etc.

The final stage involves the production of alternatives. The corridors which are reasonable for conceivable measures are sketched in. In urban areas, those streets which may need to be changed are identified, together with those areas which may need to be provided with new streets. The prerequisites which have been studied, clarified and presented in map form are the basis for the work of finding alternatives. Different areas of competence should cooperate in generating alternatives.
Work with the design programme
The design programme which is developed during the feasibility study is primarily intended to show what road corridors a road can be positioned in from an architectural point of view, and giving prerequisites for more precise location within them. Work can also involve suggesting what type of measure is possible with a rebuilding project. Analysis of landscape and guidelines for design from previous planning stages form the basis of the programme. Initially, scoping is made with EIA and other subsidiary investigations, which tangent with the design work surveys and analyses.

The interactions between the future road and its surrounding natural and cultural values constitute an important starting point if one wishes to achieve a beautiful, functional and well-designed road environment. Work with road architecture requires a holistic view and insight into the short-term and long-term effects of the road project on social development.

The width of the corridor
The corridor shall be wide enough to minimise the risk of any part of the road area in the design plan stage being located outside the corridor border. If a route is narrow, the width of the corridor must be just as wide as possible.

Design and adaptation
At the feasibility study stage, it is important to consider the prerequisites in order to design the road well and adapt it to the surrounding area, as seen both from the countryside (adaptation to the landscape) and from the road (experienced by the road user). Important design principles – such as whether the road shall dominate, interact with or be subordinate to the surrounding area - should be clarified. In the feasibility study, guidelines can also be set up for all or parts of the project. This can be particularly relevant in urban areas or close to them.

The search for alternatives
The various alternatives that shall be worked out shall include the description of a “zero alternative”.

The zero alternative shall elucidate the situation as it exists in the planning year if no measures other than operational measures are put into effect. (Road and traffic remain as they are.) This alternative functions as a reference for calculating and assessing the effects and impacts of the project alternatives. The “project alternatives” include the description of an “improvement alternative”, which can constitute a proposal for improvements such as road surfacing, central safety barriers and side guard rails, work with ditches, supplementation with pavements (sidewalks), lighting in intersections and other localised measures to improve road safety. An improvement alternative shall always be assessed if there are not particular reasons for not doing so. Such reasons shall be documented.

Other project alternatives can be rebuilding alternatives that give another function or impacts compared with the existing road, or alternatives involving the use of land for other purposes. The number of alternatives can be greater than the number of corridors as there
can be alternatives with differing road engineering standards for each corridor.

Some of the alternatives can lead to the desire for changes in the existing road network. For example, in many cases a traffic bypass can lead to traffic significantly declining in volume in an existing thoroughfare. This can give the opportunity to reduce sections, giving a more environmentally sound road or street on an existing route.

Such a measure can be included as a part of the project as regards costing and impacts etc., or be handled within a separate project.

Examples of possible corridors

**Grading of alternatives**

If an alternative involves low goal fulfilment, or if the negative consequences are unreasonably heavy, this alternative can be removed from continued processing. Reasons for removing an alternative shall be documented, and shall be included in the project report and for meeting standpoints later in the process.

During the production of alternatives, the choice of a type of measure and road engineering standard may be questioned and re-evaluated. The process may therefore need to be repeated and an alternative previously discarded may need to be updated.
Solutions in stages
Additional alternatives and variants can be generated when it is possible to implement solutions in steps and thus give altered impacts and effects over time.

3.1.3 Alternative comparisons
During these activities, the effects, impacts and costs of the alternatives are studied and compared. The comparison should lead to the assessment and ranking of alternatives for groups of impacts.

Junctions shall be studied in a way that is easy to grasp, so that differences between alternatives can be established. The differences can consist of such things as differing investment costs or various possibilities of connecting to the local hub.

The analysis of environmental impacts also includes the assessment of various types of measure (from the point of view of effect and cost) that can be included in the alternatives for preventing or mitigating negative environmental effects and raising environmental quality. This shall be carried out in parallel with preliminary formulation of the alternatives, and taken into account in connection with it. Assessment of impacts shall be anchored primarily with the County Administrative Boards and municipalities, where there is expertise representing current interests.

The completed EIA is sent to the County Administrative Board which has the assignment of approving quality. Completed feasibility study information can advantageously be appended to the EIA.

Impact assessment – analysis and assessment of alternatives

Mapping of conditions shall apply both to the search for alternatives and the impact assessment process. The impact assessment process can give important information for the search for alternatives. Of common interest for several types of impact are:

- traffic data (flows, distribution within the network and in time, distribution between means of conveyance, speed, types of vehicle, types of transport, for example, dangerous goods),
● information on the landscape in general (broad analyses which include terrain conditions, hydrography, local climate, micro-climate, etc.)
● information on population, people’s living conditions
● land use.

Influences, effects and impacts are analysed and described both for those who use the transport system or are dependent upon it, and for interests in the surrounding area. Because a decision on the location of a new road primarily applies to an adjustment balance between public interests, the information on which the decision is based shall also deal with public interests and not with private interests. In order to aid decision-making, the impact assessments need to focus on those impacts that are important and which differ between the alternatives or which in some other way can be decisive.

The borderline between the various main groups of impacts is not self-evident. Grouping of impacts can vary somewhat from case to case. The main thing is that nothing of importance shall be forgotten. Early consultation standpoints shall be considered with scoping of what the impact assessments shall comprise in each individual case.

**Impacts for traffic and user groups**

**Traffic impacts**
Changes of flows, speed, means of conveyance, proportion of heavy vehicles and the occurrence of dangerous goods need to be investigated, and an impact assessment compiled as regards existing, altered and new road sections.
● Accessibility
Changes in accessibility and travel time between destinations for various user groups, impact assessment compiled.

● Transport quality and road user experience
Aspects, for example, the evenness of road surface, road condition, service level, reliability, comfort and security are assessed.

● Road safety
Road safety aspects shall be assessed with respect to user groups and means of conveyance. Can new problems be expected? How shall we take them into consideration?

● Health aspects and particular risks for road users
It is important to elucidate health aspects, especially in crowded conditions and in tunnels.

● Gender equality
Aspects of equality regarding accessibility, security and transport quality may need to be assessed.

Environmental Impact Assessment, EIA
Environment impacts refer to the effects of the road and the traffic on the surrounding area, the changes (effects) that the project gives rise to and their importance as regards various environmental interests. Work with an environmental impact assessment, which is regulated in the Environmental Code, is integrated within the feasibility study.

If a permit enquiry for encroachment into a Natura 2000 area can be expected, the feasibility study with EIA must deal with the Natura 2000 issue in a satisfactory way, even if the actual assessment is later than in the feasibility study stage. Apart from the assessment as to whether a permit is required, a basis for subsequent assessment shall be provided.

The following aspects and interests often occur in an EIA and shall be analysed or delimited out after an explanatory statement.

● Exhaust emissions from traffic and the impacts of the emissions
● People’s housing environment and health aspects
  - noise
  - vibrations
  - air quality
  - physical encroachment on living environment and barrier effects
● Visual impacts for residents, etc., in the area surrounding the road
● Cultural environment (with noise aspects, ancient remains and visual aspects, the value for the user, information, experience, etc.)
● Outdoor activities (with noise aspects, visual aspects, etc.)
● Natural environment (with noise aspects, etc.)
● Natural resources – management
  - agriculture and forestry management (land as a resource for biological production, etc.)
  - reindeer husbandry (land as a resource)
- water resources
- material provision

● Safety, assessments of risks and impacts of these for the surrounding area

● Disruption and effects during the construction period
  (construction transport, temporary roads, long-term work involving blasting and pile-driving etc.)

● Indirect and cumulative effects, for example, secondary development and new local roads

Particular clarity and a firm basis is needed in the assessment of risks as regards impacts, effects and damage affecting national interests and such things as Natura 2000 areas. The same applies when it may happen that environmental quality standards are exceeded or have already been exceeded prior to the planned measures.

Some of the things looked at in an EIA can have connections to social impacts and to health aspects in a wide context. An EIA can refer to other impact assessments, for example, as regards impacts on society and road users respectively. In the assessment of health aspects within the EIA, it should be elucidated in brief how the general risk of accidents has changed. Apart from that, one can refer to the impact assessment regarding road users or road safety.

As regards the EIA in the feasibility study, the Swedish Road Administration’s regulations, VVFS 2001:18 apply. Recommendations for work with EIA are also given in the Handbook of Environmental Impact Assessment within the road sector (the Swedish Road Administration, publication 2002:40-43). See www.vv.se.

Impacts for local communities and regional development

Positive regional and local social development is often included in the concept of sustainable development. It is a matter of a combination of economic, social and environmental conditions which support one another. A closely associated principle which has been incorporated in Swedish legislation for a long time is good economizing, i.e., economizing of land and water as regards decisions concerning land use.

Effects on local communities should be taken into account in the feasibility study, but at the same time one should have a regional perspective and be aware of the question of allocation through one community benefiting more than another.

Accessibility for various groups of road users is dealt with under Traffic and Road Users, while the importance of changes in accessibility in a larger perspective, and together with other effects, is suitably dealt with under Social Impacts, (socio-economic impacts, which cover various types of distribution effects).

Impacts can be about ...

● ... access to the labour market, training, social services
● ... the development of the business community and changes in population
● ... gender equality aspects, children, the living conditions of the elderly (security, safety, good environment)
Feasibility studies in Sweden

- accessibility to daily destinations within urban areas by public traffic or for pedestrians and cyclists, promotion of mixed use of land
- the structure of urban areas within the region, other development of land use
- the opportunity of goods transport.

Despite good planning coordination between the Swedish Road Administration and municipalities, a location can involve other plans (according to the Planning and Building Act) not coming to fruition or being affected in some other way, so that they have to be revised. In such cases, the municipality should participate through drawing up proposals for future use of land around the alternative corridors. Land-use planning may need to be initiated for areas adjacent to future roads, if this has not already been studied together with the feasibility study.

Reduced transport and travelling times and costs, and increased reliability, are important prerequisites for positive regional development, together with good life environments and a good business climate. So-called regional enlargement through more frequent and faster communications is one way of improving conditions in this respect. It leads to a better balance between supply and demand on the labour market.

A road project seldom leads to positive regional development by itself, but if measures are anchored and coordinated with other sectors, there is a greater probability of this leading to positive impacts for regional development.

A form of impact which is often desired or intended, is to do with the use of land in urban areas, and particularly in city areas in which the shortage of centrally located land which can built on is considerable. This can involve building developments which become possible only if an existing road is relieved of a considerable proportion of its traffic through re-allocation or through a traffic route being rebuilt and located underground. Both positive and negative impacts of development or other land use developments according to municipal plans should be assessed.

Impacts on traffic and those living in the vicinity during the construction stage

The construction period can involve a considerable impact both on traffic and on people living close by. It is important to commence with, or plan for, good dialogue with those affected as early as during the feasibility study. This can involve such things as diversion of traffic, evacuation of residents or the deposit of surplus spoil.

Impacts on the road maintenance body – costs and responsibility

Investment and operating costs shall be considered for various alternatives in order to assess the total cost of a road project during the life of a road section. Within one alternative, the costs can vary depending upon the alignment and choice of type solutions. An account must be given of this. The road maintenance responsibility as between, for example, the state and a municipality, must be clarified.
Risks – analysis and assessment
Risk analysis comprises identifying and making assessments of risks and proposals for risk-reduction measures. In the feasibility study, all substantial risks and required risk-reducing measures shall be assessed. As a basis for the selection of alternatives, a comparison is made between alternatives on the basis of types of impacts; this can involve personal injury, damage to property, environmental damage and financial damage, divided between the road transport system and the surrounding area. Risks in both the construction and the operational phase shall be considered. Events that are normally dealt with are landslips, high level of water flow, salting of roads and the emission of polluting, explosive and inflammable substances from accidents with dangerous goods.

As regards risks in tunnels, apart from those risks which are connected to the physical structure, personal safety must particularly be taken into account, for example, how the evacuation routes from a tunnel are located so that efficient evacuation can come about with unwanted events.

Economic calculation
Cost efficiency is an important aspect in formulating alternatives, and constitutes part of the collected assessment of the alternatives. What do we get for the money? Does the benefit exceed the effects, or in terms of money, does it exceed the costs?

A net value ratio that exceeds zero (0) indicates good theoretical cost efficiency on the basis of set parameters. One shall, however, remember that these parameters in this context are not always the only ones that are relevant. Values and qualities that cannot be assessed in the form of money must also be taken into account in the collected assessment.

3.1.4 Collected assessment
On the basis of an approved EIA, other impact assessments and economic calculations, a collected assessment is drawn up with conclusions that elucidate differences and decisive factors. Subsequently, the documents are then merged. The collected assessment shall be a support for the decision-makers but it shall also enable authorities, residents and others affected to understand the implications of different choices and decisions.

The feasibility study shall be finalised with a collected assessment of the alternatives, in which all analyses and factors are taken into account. Such a view should consist of a:

- comprehensive assessment of the impacts of respective alternatives
- comparative goal fulfilment analysis
- assessed cost-efficiency
- assessment of other important factors
- any conclusions that can give support to a standpoint
3.1.5 Exhibition of feasibility studies
All projects which are considered to involve significant environmental impact shall, by law, be exhibited for review by the general public. It is also practice to exhibit other feasibility studies as well. The exhibition period for large projects should not be less than two months. During the exhibition period, the feasibility study is sent to the County Administrative Board with request that an opinion shall form the basis of the standpoint, and assessment of questions regarding protected areas and similar. At the same time, the feasibility study is referred for consideration to other interested parties. Especially as regards matters of permissibility, the County Administrative Board may need to have access to the opinions of other interested parties before a final statement is given.

The standpoints and possible proposals for change which come in during the exhibition are amalgamated into a report. The report shall also contain comments on the proposals, and whether they are being taken into account or not.

If the changes that are proposed in the report are major, a new exhibition must be held.

When the consultation statement is compiled it usually contains material from the preparatory consultations. In certain cases, consultations from the exhibition and consideration can be included. The consultation statement can vary in extent, depending upon the compilation or sensitivity of the project, but normally constitutes one annex to both the feasibility study document and the standpoint.

3.1.6 Standpoints
The basis for the standpoint consists of the final feasibility study document, the consultation statement and comments from exhibition and referral.

In the alternative which is selected, the standpoint can involve certain measures being implemented while others are deferred into the future. In choosing between alternatives, considerable consideration should be given to the comments from the municipality and the County Administrative Board. Included in the standpoint shall be the environmental aspects that are taken into the account in the decision.

The road management authority shall present its standpoint and acknowledge it.

Assessment for permissibility for planned motorways and major highways and for other planned roads of at least four lanes and a segment of at least ten kilometres shall be subject to assessment for permissibility. In other particular cases, the Government can also consider a road project for permissibility.

If permissibility assessment is to be made, all documents are sent to the head office of the appointed function, which refers the proposal onwards to an appropriate extent for consideration by central authorities. After comments are received from these regarding the proposal, the Swedish Road Administration delivers all documents and its own final statement to the Government for a decision.