Mims
Ministero delle infrastrutture
e della mobilità sostenibili

Consiglio Superiore dei Lavori Pubblici

Guidelines

for designing a technical and economic feasibility project as a basis for awarding public works contracts under the National Recovery and Resilience Plan (NRRP) and the National Plan for Complementary Investments (CNP)

(Art. 48, paragraph 7 of Decree Law no. 77, dated 31 May 2021, converted into Law no. 108 on 29 July 2021,)

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CONTENT

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(Appointment no. 5694 dated 04.06.2021 issued by the President of the Higher Council for Public Works, Ing. Massimo Sessa)

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Notes

The guidelines were submitted to a public consultation, part of the remit for the *Sustainable Infrastructure and Mobility Committee* established by the Ministry with Ministerial Decree no. 167 in 2021. As part of the above-mentioned consultation, a preliminary version of the guidelines was sent to the Committee members, discussed during an ad hoc meeting convened on 22 July 2021, and was then completed after discussions took place and documents were drafted by the Committee members.

During the meeting held on 29 July 2021 and, pursuant to vote no. 66, the General Assembly of the Higher Council of Public Works expressed a favourable and unanimous opinion on these Guidelines.

1. INTRODUCTION

a.1 National Recovery and Resilience Plan Investments: challenges and opportunities

Articles 44 and 48 of Decree Law no. 77 dated 31 May 2021, converted into Law no. 108 on 29 July 2021, respectively establish an accelerated process for "large-scale works"[1] on the basis of a technical and economic feasibility project (hereinafter TEFP) and the option for contracting authorities to award both the design and the execution of such works on the basis of the TEFP in connection with awards financed[2] by the National Recovery and Resilience Plan and the National Plan for Complementary.

The amount of allocated funds and scheduling foreseen for the use of the *Resilience and Recovery Facility* funds and of the *National Complementary Fund* entail the need for simplified procedures to speed up the execution of the works, and, at the same time, impose choices aimed at ensuring the quality of the investment.

The NRRP acknowledges that infrastructure investments have a key role in terms of development and cohesion as fresh resources are allocated to transform the country's infrastructure. At the same time, in line with guidelines and strategies adopted at the European level, the Plan promotes an integrated development seeking a synergic balancing between the economic, social, and environmental dimensions and the technical execution.

As stated in the EU recommendations to Italy, "*public procurement*" is intended as a formidable innovative instrument for the production model, both in terms of **planning** to identify early the infrastructure relevant to the needs of the Country ("WHAT?"), and in terms of how to achieve **adequate design** and **execution** of **efficient** and **sustainable** infrastructure ("HOW?"). **Efficient** infrastructure from a technical and economic standpoint that is also **sustainable** from an environmental and social perspective.

[1] Construction of the Palermo-Catania-Messina rail link; Development of the Verona-Brennero railway line; Construction of the Salerno Reggio Calabria railway line; Construction of the Battipaglia-Potenza-Taranto and the Roma-Pescara railway lines; Development of the Orte-Falconara rail link; Deviation work for the Campolattaro dam; Improved safety and modernising the Peschiera water system; Upgrading the infrastructure of the port in Trieste; Construction of the Genoa breakwater.

[2] Public works falling within the remit of the State, or in any event financed by at least 50% by the State, for an amount equal to or above 100 million euro.

In this context, access to available financial resources for each NRRP project is conditional, amongst other things, to a strict assessment of the potential impact on environmental goals (the principle of "not significantly damaging the environment") which is a priority for the EU and is set out in Regulation (EU) no. 2020/852 ("Taxonomy Regulation" for sustainable investments), also mentioned in Regulation (EU) no. 2021/241 that establishes the recovery and resilience mechanisms.

The European framework on environmental change (concerning two out of the six macro-objectives in Regulation (EU) no. 2020/852) is supplemented by the EC (2021) 550 Communication, known as "*Fit for 55: delivering the EU's 2030 Climate Target on the way to climate neutrality*".

The NRRP fosters a new approach in terms of designing, executing and managing an infrastructure, placing sustainability and innovation at the heart of all core values. This principle and focus also extends to the efficiency of transport and logistics processes inherent to the different phases of a construction project and ordinary maintenance of the works, even though it does not fall under the competence of the contracting authorities (albeit they qualify in terms of the sustainable impact of the project, finding a balance between the area, businesses, public contracting, and the authorization system).

With infrastructure innovation and development, it is possible to reach environmental goals and at the same time reduce operating costs, increase productivity, efficiency, safety at work, inclusion and accessibility.

The two-fold challenge is therefore to identify the projects that from a technical and qualitative standpoint can satisfy these criteria, also helping the contracting authorities to select businesses that foster sustainability and innovation and, at the same time, ensure that the approval process will be more efficient thanks to simplification tools.

At the same time, advance information provided by the TEFP on opinions, authorizations and permits by the different Entities involved in the authorization process for the works implies the unavoidable need to establish as much as possible the characterising elements and the impact of the work in this design phase, leaving only the definition of technical characteristics that do not affect the content of the infrastructure project to subsequent phases.

Thus, the resulting subsequent engineering of the final executed project will not modify the relationship between the infrastructure and the region in which it is situated, also in terms of the geological, geotechnical, hydrological, hydraulic,

hydrogeological, and seismic characteristics.

To this end, the possible digitisation of commissioning and project planning activities (as described in art. 23 of Decree Law no. 50/2016 and subsequent amendments and additions, as well as Ministerial Decree no. 560/2017 and Decree Law no. 77/2021) must be able to support greater efficiency in managing the project authorisation procedures, execution and reporting of works carried out, with a further view to managing the life cycle of infrastructure assets.

Similarly, the public debate with the stakeholders and the regions will be based on a much deeper level of knowledge of the works and its ramifications, thus becoming more productive and efficient.

Within the framework of the regulatory and procedural innovation introduced by the aforementioned Decree Law no. 77 of 31 May 2021, these Guidelines are therefore aimed at defining the essential content of the documents, of the digital information templates, if any, and of the drawings required by the Contracting Authorities for awarding the contract on the basis of the TEFP, in accordance with the provisions of Article 48, paragraph 7, third sentence:

An order issued by the President of the Higher Council for Public Works, adopted within sixty days of this provision coming into force, shall specify the procedure for submitting any request for opinion referred to in this paragraph. It will also state the crucial content of documents and drawings referred to in Article 23 (5) and (6) of Decree Law no. 50 dated 2016, necessary for expressing an opinion, and without prejudice to the provisions of Article 44 of this decree. This will govern any simplified procedure for the verification of the completeness of the documentation that has been submitted and, in the event of a positive outcome, also the subsequent rapid setting out of the process.

Therefore, the essential content of the TEFP is outlined by these Guidelines with reference to the provisions of Article 23, paragraphs 5 and 6, of the Italian Public Contract Code (Decree Law no. 50/2016 and subsequent amendments and additions, hereinafter the "Code") and, on an option basis, of paragraph 13 of the aforementioned article ("*electronic methods and tools*"), as well as the simplification and acceleration provisions introduced by the aforementioned Decree Law no 77, dated 31 May 2016, with a specific reference to the link between the procedure for awarding works based on the TEFP and the authorisation process for the works.

The **general principles** guiding the TEFP content are as follows**:**

1. simplification of the process for investing in green and digital technologies, as well as in innovation and research, also with a view to achieving the

Sustainable Development Goals (SDGs) adopted by the United Nations General Assembly on 25 September 2015, to increase the degree of environmental sustainability of public investments and economic activities in accordance with the criteria set out in Regulation (EU) 2020/852 of the European Parliament and of the Council dated 18 June 2020;

2. provision of measures to ensure compliance with energy and environmental responsibility criteria when awarding public contracts and concession contracts, in particular through the definition of minimum environmental criteria (MEC);
3. provision of national and regional collective agreements concluded by the most representative employers' and employees' organizations at national level;
4. provision of measures to encourage the inclusion of micro, small and medium-sized enterprises in the construction phase (Article 30, paragraph 7 and Article 51 of the Code);
5. introduction of digitisation for the public investment process envisaged in the NRRP and the National Plan for Complementary Investments, taking into account the reform and the reorganization of the contracting authorities.

1.2 Framework for the technical and economic feasibility project for the planning and design process

Two macro-phases make it possible to prepare the technical and economic feasibility project accompanied by detailed and complete drawings showing the relationship between the geometric-spatial layout of the infrastructure, the environmental components, and the spatial matrix.

These macro-phases, consistent with the current regulatory framework of the sector, albeit rather innovative, concerning the methodological framework of reference, fulfil two distinct objectives, already introduced previously (Figure 1):

- description of "**WHAT?**" should be designed within a more general framework to promote sustainable development:
- description of "**HOW?**" to achieve an **efficient** design of the project, as identified in the first macro-phase, taking into consideration the qualifying elements for the **sustainability** of the project throughout its life cycle.

In other words, from the "**WHAT project**" in Phase 1 to the "**HOW project**" in Phase 2, following a coherent line of thought.

Phase 1 WHAT?

Because of this new methodology and concept framework, the **requirement prediction** is highlighted during the **first phase** in terms of the requirements for the economic and social context, related objectives, and performance indicators. This will also be the guidelines document for the subsequent phase.

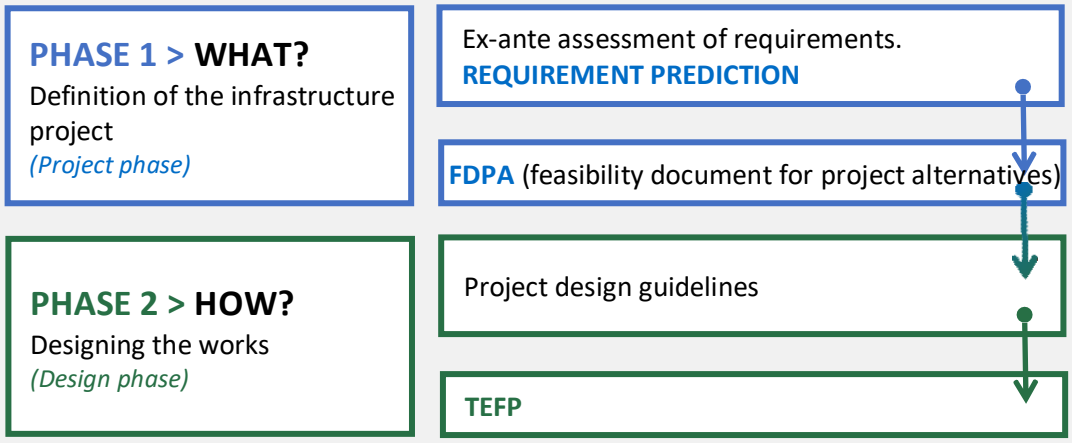

Figure 1

As a general rule, the requirement prediction shall contain:

a) the general goals to be achieved with the execution of the works, as mentioned in article 23, paragraph 1 of the Code. Alongside the general goals, specific performance indicators will be outlined (showing the verification sources);

b) community needs, or the requirements of the specific utility in receipt of the investment, will be the basis for the project;

c) the qualitative and quantitative requirements of the contracting authority and the specific utility that will need to be satisfied by the execution;

d) a possible indication of design alternatives, if deemed necessary for the type of work or project to be executed, to be identified and analysed in the feasibility document for project alternatives.

Bases on the requirements, the **feasibility document for project alternatives**

(FDPA) compares the alternatives that pursue the long-term objectives.

The design alternatives to be considered and analysed can be, but are not limited to:

- the location for new construction projects;
- modal choices and route alternatives for the transport infrastructure;
- the alternative between a new construction or the refurbishment of an existing building, i.e., the reuse of brownfield or urban or degraded sites, thus limiting the use of more land;
- water supply alternatives and/or improvement of the water distribution system.

The cost-benefit analysis is the main methodological tool to help chose between project alternatives.

More expeditious methodological tools (such as multi-criteria analysis and cost-effectiveness analysis) can only be used where the conditions are met, in the light of an objective conceptual simplicity in comparing alternatives. In this case, the alternative selected after the comparison will also be subject to a cost-benefit analysis.

Another decision-making tool to be considered, as an option, will be the socio-economic and employment impact analysis, which "simulates" the construction phase and the sectors "mobilised" by the infrastructure investment.

For drafting the FDPA (feasibility document for project alternatives) it will be useful to refer to:

- the “Guidelines for the assessment of investments in public works" under the Ministry's responsibility (November 2016), adopted in implementing art. 9 of Decree Law no. 228 of 29 December 2011;
- the “Guide to Cost-Benefit Analysis of Investment Projects, Economic appraisal tool for Cohesion Policy 2014-2020, European Commission, DG REGIO” (2014).

The "*post operam*" monitoring of performance indicators (with the corresponding verification sources) is the tool for assessing/measuring the efficiency and effectiveness of the infrastructure work (this is the "ex-post assessment of the works" referred to in the above mentioned "Guidelines"). The Organization Information Requirements (OIR) and the Asset Information Requirements (AIR), provided for by the UNI EN ISO 19650 standard series, concerning the structuring

and organisation of digital information modelling and management, can be used to support the FDPA.

Phase 2 HOW?

Once the overall "preferable" design alternative has been identified, during the **second phase** the design guidelines document governs the drafting of the technical and economic feasibility project (TEFP). The design guidelines set out the performance requirements to be pursued by the design strategies.

In the TEFP, a comparison of different types of foundations, structures (elevation) and functionality can be carried out on the chosen design alternative.

Multi-criteria analysis can be used as a methodological tool for this comparison.

Alternatively, expeditious qualitative and quantitative analyses may be used, provided they are recognised by the current technical literature.

It is recommended that the cost-benefit analysis in the FDPA (project alternatives Document) be updated, following the precise definition of the construction and functional types, as well as a more accurate estimate of the overall costs of the works.

The verification of the design for the TEFP, conducted pursuant to art. 26 of Decree Law no. 50/2016 and subsequent modifications, also includes the confirmation of the timely pursuit of the performance requirements (indicated in the Guidelines) based on the approved design strategies.

Considering the relevance of this innovative methodological framework, Figure 2 highlights the "conceptual symmetry" between the first and second macro-phases.

In fact, as already pointed out, the objectives-strategies correlation of "WHAT?" is flanked by the objectives-strategies correlation of "HOW?".

The resulting technical and economic feasibility project will be inherently 'robust' because it is the result of a rigorous and traceable methodological process.

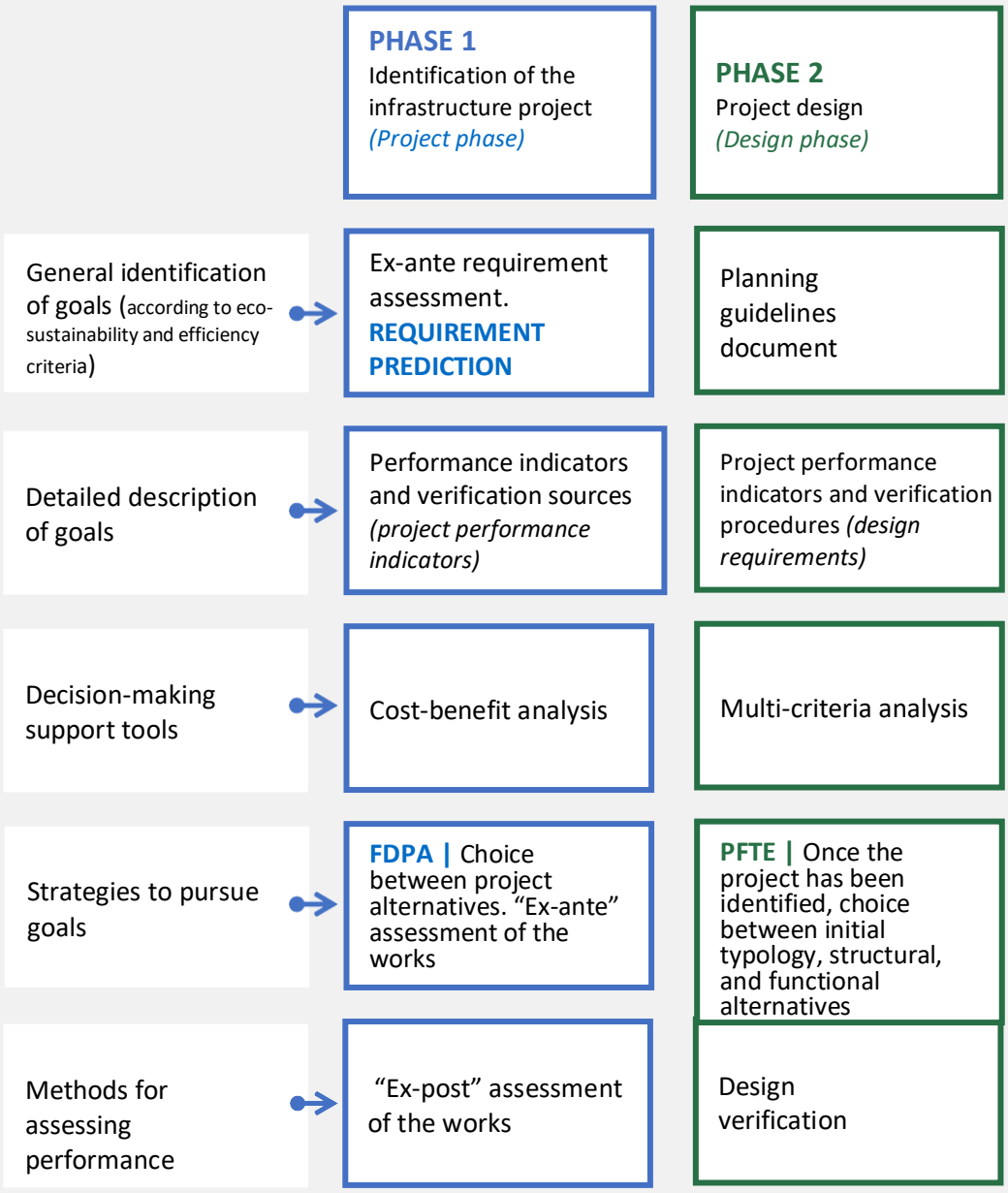
PHASE 1
Identification of the infrastructure project
(Project phase)
PHASE 2
Project design
(Design phase)
General identification of goals (according to eco-sustainability and efficiency criteria)
Ex-ante requirement assessment.
REQUIREMENT PREDICTION
Planning guidelines document
Detailed description of goals
Performance indicators and verification sources (project performance indicators)
Project performance indicators and verification procedures (design requirements)
Decision-making support tools
Cost-benefit analysis
Multi-criteria analysis
Strategies to pursue goals
FDPA | Choice between project alternatives. "Ex-ante" assessment of the works
PFTE | Once the project has been identified, choice between initial typology, structural, and functional alternatives
Methods for assessing performance
"Ex-post" assessment of the works
Design verification

Figure 2

2. PROJECT DESIGN GUIDELINES DOCUMENT

The document containing the project design guidelines will be drafted by the contracting authority manager who is solely responsible for the process before the technical and economic feasibility project is drawn up, both in the case of an internal or outsourced project design, pursuant to article 24 of the Code.

In the case of an outsourced design, the guidelines document will be part of the tender documentation for awarding a public service contract, as it is an integral part of the “design service specifications”.

The document containing the project design guidelines, in addition to the specified content, may contain further references to the execution phase, in terms of digitisation processes and information modelling, as well as Project Management planning and scheduling provided for by the UNI ISO 21502:2021 standard.

The design guidelines document states the goals, the technical (prescriptive and performance) requirements and the list of drawings necessary for outlining each level of the design, in relation to size, specific type and category of the project to be carried out, in compliance with provisions in Article 23, paragraph 4 of the Code,

Having consulted the Administration responsible for managing the works (i.e., the "Contractor "), the guidelines document shall contain, as a minimum, the following information:

1. the state of the site with the relevant land registry information;
2. objectives to be pursued through the execution of the project, tasks to be performed, requirements to be met, and, where relevant, service levels to be attained;
3. technical design requirements to be met by the project in relation to the current technical legislation and the objectives set out in point 2 above;
4. the level of design to be developed and the relevant timeframe, in relation to the specific type and size of the project. As a general rule, we recall that, pursuant to Article 23, paragraph 4 of the Code, "*it is permitted ... to omit both the first and second level of the design, provided the next level contains all the elements envisaged for the omitted level(s), thus safeguarding the quality of the design*";
5. the graphic and descriptive designs to be drawn-up;
6. any recommendations for the design, also in relation to current urban, territorial and landscape planning and to the relevant requirements or

guidelines of the applicable strategic environmental assessments (SEA), as well as any design codes of practice, supplementary technical procedures or specific technical standards that the administration intends to use as a basis for the design, without prejudice to the applicable rules and technical standards;

7. compliance with financial limits;
8. the system for executing the project, pursuant to Part I, Title IV, Part II, Title VI, Chapter I and Chapter VI, Part III and Part IV of the Code;
9. the process for selecting the contractor, in accordance with Part II, Title III, Chapter II, Title IV and Title VI, Chapter I and Chapter VI, Part III and Part IV of the Code;
10. the award criteria;
11. the type of contract identified for the project and in particular whether the contract will be on a lump sum basis or on a time and materials basis, or partly on a lump sum basis and partly on a time and materials basis;
12. the technical specifications contained in the minimum environmental criteria referred to in Article 34 of Decree Law No. 50 dated 2016, issued by the Ministry for the Environment and the Protection of Land and Sea (now called the Ministry for Ecological Transition), insofar as applicable;
13. wherever possible, the detection of functional and/or performance models;
14. general guidelines for the design of environmental, geotechnical and structural monitoring with appropriate devices and sensors, also in the light of trusted technological innovation in this field;
15. technical specifications for using materials, items and components to attain:
    - **a.** works durability, ductility, strength and resilience requirements;
    - **b.** energy efficiency and the safety and functionality of installations.

Finally, the guidelines document may include the Information Specifications (IS), in accordance with UNI 11337 and/or UNI EN ISO 19650, as provided for in Ministerial Decree 560/2017, concerning electronic methods and tools.

The presence of the IS within the guidelines document will encourage a better correlation between the project content, as requested by the contracting authority to the designer, and the greater efficiency and effectiveness conveyed through the information generated with information modelling.
Finally, following the drafting of the TEFP, it is recommended to update the

guidelines document to include the project construction and performance requirements.
This update may constitute a guideline for the subsequent phases of the project and, consequently, may provide elements for drafting the tender specifications in case the awarding procedure is based on the TEFP using the criterion of the most advantageous offer.

3. TECHNICAL AND ECONOMIC FEASIBLITY PROJECT

3.1. General considerations

As already pointed out, for the intended objectives, the main purpose of the technical and economic feasibility project (TEFP) is to design a solution that offers, among all the possible alternatives, the best ratio between total costs to be incurred and expected benefits for the community.
It should be noted that the comparison between the design alternatives will have been previously described in the FDPA (project alternatives document), attached to the TEFP, providing evidence and traceability of the design process and the methodological tools used.

In this regard, paragraphs 5 and 6 of Article 23 of the Code, reproduced below describe the **purpose** of the TEFP:

*"5. **The technical and economic feasibility project identifies, among several solutions, the one that offers the best costs-benefit ratio for the community, in relation to the specific requirements and the services to be provided**. For public works with a value equal to or greater than the threshold referred to in article 35, also for the purposes of the planning referred to in article 21, paragraph 3, and for the public debate process referred to in article 22 and for design and ideas competitions referred to in article 152, the feasibility project shall be preceded by the feasibility document for project alternatives referred to in article 3, paragraph 1, letter ggggg-quater), in compliance with the content of the regulation referred to in paragraph 3 of this article. The contracting authority has the right to request the drafting of the feasibility document for project alternatives also for public works with a value lower than the threshold stated in article 35. In the technical and economic feasibility project, the designer will undertake, in compliance with the requirements, all the surveys and studies necessary to describe the situations referred to in paragraph 1, as well as the graphic drawings, to identify the dimensional, volumetric, typological, functional and technological characteristics of the work to be carried out and the relevant cost estimates, according to the procedures provided for in the regulations referred to in paragraph 3, including the choice of a possible subdivision into functional lots. The technical and economic feasibility project will allow, where necessary, the commencement of the compulsory purchase procedure."*

"6. The feasibility project will be drawn up on the basis of geological, hydrogeological, hydrological, hydraulic, geotechnical, seismic, historical, landscape and urban planning investigations, checks on the possibility of reusing existing buildings and regenerating disused areas, prior checks on archaeological sites, environmental and landscape feasibility studies and will show, by means of appropriate maps, the areas involved, any relevant buffer zones and the necessary safeguard measures; it will also include the assessments or any energy analyses of the planned works, in terms of containment of energy consumption and any measures for the production and recycling of energy, also with reference to the impact on the

Art. 48, paragraph 7, of Decree Law no. 77 dated 31 May 2021, converted into Law no. 108 on 29 July 2021,)

economic-financial plan for the works; it will also indicate the performance characteristics, tasks specifications, the description of compensation and mitigation measures for environmental impact, as well as maximum cost, calculated according to the methods stated in paragraph 3 of the decree, for the infrastructure to be built so to allow, at the time the project is approved, except in unforeseeable circumstances, the identification of the location or route of the infrastructure as well as the necessary compensation or mitigation of the environmental and social impact."

Here below the **general criteria** applicable to the TEFP content: quality of the process and the project, with regard to aspects linked to technical regulations, safety principles, and economic, territorial and environmental sustainability, particularly with reference to local compatibility in terms of public and private safety, as well as protecting the national historical and archaeological heritage and achieving the best ratio between benefits and the overall cost of construction, maintenance and management, as well as, where provided for, the costs over the project's life cycle, pursuant to Article 96 of the Code;

1. Quality of the process, , as regards the aspect related to the technical rules and the security and safety principles and the economical, territorial and environmental sustainability, with special reference to the territorial compliance in terms of public and private safety and security, as well as the respect of the protection of State historical and archaeological heritage and the best relation between benefits and overall costs of construction, maintenance and management, as well as, if envisaged, of the costs of the life-cycle of the project, as provided for by art. 96 of the Civil Code;

2. reduction of risks from natural and anthropic hazards, energy efficiency, also in line with provisions of Article 34 of the Code, durability of materials and components, ease of maintenance and management, replaceability of technical components, technical and environmental compatibility of materials and easy monitoring of performance over time, minimal use of non-renewable material and maximum re-use of natural resources for the project and materials employed, prevention of waste production and increased re-use, recycling and other ways of recovering waste produced by the project, and, where appropriate, reduction in land consumption and urban regeneration. The projects will take into account the context for the works, so not to affect accessibility, use and maintenance of existing works, facilities and services;

3. compliance of dimensional standards, where applicable, so as to ensure maximum compliance and full compatibility with the local characteristics and environmental context in which the project is located, both in the construction and in the management phase;

4. compliance with technical rules and regulations laid down by the applicable law at the time of drafting;
5. minimisation of risks to workers during project construction and when the works become operational; to users during the operational phase; and to the population living in the area in terms of safety and health protection.

In view of the above, it is therefore particularly important **to carefully assess the technical, natural and anthropic characteristics of the land and the area where the new project is to be located, and consideration given to pre-existing characteristics** (including environmental, landscape and archaeological characteristics).

To this end, it is conceivable to make use of a digital information model to obtain the state of the site, as mentioned in Ministerial Decree 560/2017, possibly also in geo-spatial terms (Geographical Information System - GIS).

Therefore, during the technical and economic feasibility phase, **adequate analyses and studies** should be carried out (morphology, geology, geotechnics, hydrology, hydraulics, seismic, ecosystem units, historical evolution, land use, urban purpose, landscape, architectural, historical and cultural values, preventive archaeology, regulatory constraints, etc.), making use of the most recent and innovative digital surveying technologies. The aim is to achieve a truly "knowledge-based project".

This prior diagnosis of the terrain, together with the survey and a full understanding of the area, will enable the assessment of:

1. the geo-spatial layout of the works (location in the region);
2. the works foundational, structural (elevation) and functional typologies;
3. possible interference with the national archaeological and cultural heritage;
4. measures to mitigate and compensate the impact on the environment and on archaeological finds, with a view to enhance them for the benefit of the local community through conservation or relocation;
5. a reliable, rather than an approximate, cost estimate (as was often the case with the "old" preliminary projects).

The TEFP will take into account, as far as possible, the orographic and morphological characteristics, limiting changes to the natural terrain (and consequently the use of soil and earth movements) while also safeguarding the hydraulic capacity of watercourses (natural and artificial) affected by the works, the hydrogeology of the subsoil and the geotechnical stability of the surrounding natural and artificial

embankments.

Careful attention shall be given to the following:

1. ecological compatibility of the project, favouring the use of techniques, materials, elements and components with low environmental impact;
2. measures that, in line with the project proposal, help protect and enhance the cultural heritage, thus preserving the memory of the national community and of the area, using the cultural heritage to drive economic development;
3. adoption of bioclimatic design principles and "passive systems" to reduce the use of "energy-consuming" mechanical systems and equipment;
4. suitable reuse of excavated materials (like by-products and/or for naturalistic engineering work), minimising landfill use;
5. assessment of overall life cycle costs, including "end of life" costs;
6. inspection and maintenance, possibly making use of digital information models, namely Asset Information Model (AIM) as specified by the ISO 19659 standard, resulting from the development of the As Built model, that have to be interoperable with AINOP;
7. adaptability and flexibility of the work with respect to possible future technological developments, especially regarding issues of resilience and environmental and social sustainability;
8. use of the best guidelines for processing, transport and storage of goods, capital goods and personnel, suitable for the start-up, construction and maintenance phases. Favouring models, processes and organisations whose performance and impact on external costs are certified.

Ultimately, the TEFP will have to pursue general objectives of eco-systemic quality for the infrastructure, compliant with the historical-archaeological, geological, geotechnical, hydraulic, hydrogeological, seismic, environmental, landscape and forestry characteristics and constraints, together with the identification and preventive solution of impediments (networks, utilities, etc.) that are a critical factor both in terms of increased costs and delays in the originally foreseen scheduling for the execution.

The TEFP represents a first level of renewed design in terms of content and methodology, using appropriate decision-making tools. The challenge inherent to

this new first level of design (which evaluates the various design alternatives, identifies the economic-social-environmental impact of the work, develops an organic and comprehensive knowledge-based project, captures the geometric-spatial structure of the works, the selected structural and functional characteristics, impediments due to networks and utilities) aims at establishing the procedural and authorisation process based on the TEFP, with undeniable benefits in terms of an efficient execution of the works.

It should also be borne in mind that, for 'major works' listed in Annex IV to the aforementioned Decree Law No 77 of 31 May 2021, the TEFP hinges on an **entirely innovative integrated procedural model** (opinion of the Special Committee of the Higher Council for Public Works + public debate, if any, + EIA procedure + prior checking of archaeological sites + local administrations and bodies), with the aim of achieving a rigorous verification of compliance with instructions issued for the project prior to the commencement of the award phase, in order to ensure the work can actually be executed.

The information specifications, that may be contained in the guidelines document, will state how digital information models are to be used for the project to reduce the time to authorise the process.

3.2 Content and drawings for the technical and economic feasibility project

In terms of the size, type and category of the works (except for any different provision regularly adopted by the manager in charge, on the basis of a "tailor-made" approach for the case in question), the technical and economic feasibility project will generally contain the following documents, also with reference to their grouping:

1. overall report;
2. technical report, accompanied by surveys, investigations and specialist studies;
3. report assessing archaeological finds (art. 28 paragraph 4 of Decree Law 42/2004, and Decree Law 50/2016 art. 25, c. 1 for the process) and any direct site surveys, as stated in art. 25, c. 8 of Decree Law 50/2016;
4. environmental impact study, for works subject to EIA;
5. sustainability report of the works;
6. scheduling of plan altimetric surveys and state of existing works and any interfering works in the immediate surroundings of the project;
7. graphical drawings of the works, accurately to scale;

8. estimate of the work, pursuant to Article 32, paragraph 14 bis, of the Code;
9. economic framework for the project;
10. outline of the economic and financial plan for works to be carried out through Public-Private Partnerships;
11. contract outline;
12. tender specifications;
13. schedule;
14. safety and coordination plan, aimed at protecting workers' health and safety on construction sites, pursuant to Decree Law no. 81 of 9 April 2008 and subsequent amendments and additions, as well as the enforcement of current trade union agreements. Safety costs estimate;
15. information specifications (optional);
16. preliminary maintenance plan for the works and its parts;
17. preliminary geotechnical and structural monitoring plan;
18. for works subject to EIA, and whenever required, preliminary environmental monitoring plan;
19. plan for the areas to be compulsory purchased or acquired, where relevant.

As already mentioned, the FDPA (project alternatives document) will be attached to the technical and economic feasibility project to provide evidence and traceability of the design process and the methodological tools used. Should the FDPA be missing, the general report will in any case contain a report on the results of the design process so far, even in a summary form, with a reference to the comparison between different alternatives, highlighting the criteria and methodological tools that led to the choice. The design guidelines document will also be enclosed.

The methodological process consists of:
- requirements framework;

- feasibility document of design alternatives;

- design guidelines document,

as well as the methodology and the chosen decision-making tools, allowing a more suitable and careful assessment of the technical and economic feasibility project, within an appropriate decision-making framework.

Furthermore, the documentation relating to the **initial due diligence of the technical and economic feasibility project** will also be enclosed.

The above-mentioned thorough due diligence is essentially aimed at ascertaining:

1. consistency of design choices with the content of the design guidelines document;
2. approved completeness of the design drawings;
3. consistency of the design drawings;
4. consistency in relation to applicable technical standards;
5. a review of the estimate, also in terms of consistency with graphic drawings and pricing;
6. a review of amounts available within the economic expenditure framework, also in order to ascertain the presence of adequate supporting elements to assess the congruity of amounts contained in the economic framework;
7. the effective readability of the project content by theme, also by means of possible synthesis/reconciliation reports that "systematise" project content pertaining to the same theme, albeit "dispersed" in the numerous project documents. The intention is to facilitate examination of the project by the expert members of the Advisory Body in terms of the main technical characteristics of the project.

This will also streamline, in terms of methodology and timing, the preliminary examination by the Advisory Body, pre-empting unexpected requests for supplementary documents and/or clarifications on formal characteristics of the design.

Initial due diligence can be implemented with the enabling support of digital information models, subject to scrutiny by means of special assessment procedures using Model and Code Checking methods and tools, depending on requirements contained in the information specifications and the performance agreed in the information management plan

At the same time, all digital procedures required in the information specifications and/or agreed in the information management plan may also be checked.

For the sole purpose of the authorisation procedure hinging on the TEFP, the following project documents may be omitted:

1. estimate of the works (replaced by an appropriate cost estimate, in order to justify the appropriateness of the expenditure);
2. current cross-sections of the works (calculation sections);
3. outline of the contract;
4. special contract specifications (replaced by descriptive and performance specifications for the technical elements);
5. preliminary maintenance plan for the works and components thereof (replaced

by initial indications in the above-mentioned plan);

6. safety and coordination plan (replaced by initial indications in the above-mentioned plan).

The absence of the above-mentioned documents cannot, in any way, result in a lower level of design classification for the works compared to a comprehensive TEFP.

Therefore, should the estimate be missing, the **initial due diligence** of the technical and economic feasibility project will not include the "*review of the estimate, in relation to its consistency with graphic drawings and pricing*" but will include a review of the methods by which the designer has arrived at the cost estimate for the works, to ascertain its adequacy and congruity.

Upon completion of the authorisation procedure for the TEFP, the project is then:

- **amended and supplemented** in the light of **requirements** issued by the competent bodies during the process itself;
- **possibly supplemented** with the above-mentioned project documents (1. to 6.), should they be missing in whole or in part.

Later, the TEFP will be subject to:

- a formal **initial due diligence pursuant to Art. 26 of the Code** (to include checking compliance with requirements);
- a **validation**, pursuant to paragraph 8 of Article 26 of the Code.

During the tender process (or even at the guidelines document stage), in the case of an award based on the criterion of the most financially advantageous offer, the Contracting Authorities may consider the possibility of resorting to the provisions in Art. 23 paragraph 4 of the Code, i.e., **merge the finalised and execution designs** ("*It is also permitted to omit both the first and second level of the design, provided that the next level contains all the elements envisaged for the omitted level(s), safeguarding the quality of the design*").

This is in view of the relatively advanced level of technical clarity in the TEFP underlying the procurement procedure, with undeniable benefits in terms of simplification of the whole project process.
If this is the case, the contractual performance of the contractor to whom the contract was awarded would consist of:

- the **drafting of the execution document** (including all content and elements foreseen for the final project);

- the **execution of the works**.

3.2.1. General report

The general report, in terms of type, category and size of the works, will be subdivided into the following points:

1. description of the justification for the works, in relation to the general objectives identified by the administration in the requirements prediction. Indication of the levels of performance to be achieved and, where applicable, of the relevant performance indicators that enable to assess the achievement of envisaged goals, once work is completed;
2. identification of the goals on which the design is based, in relation to the content of the design guidelines document, as well as the specific technical requirements to be met.
3. detailed description, by means of informative and graphic drawings, of the typological, functional, technical, managerial and economic-financial characteristics of the chosen design solution;
4. summary in descriptive and graphic form of design alternatives analysed in the FDPA (project alternatives document), the document attached to the technical and economic feasibility project, together with the relative decision by the Contracting Authority to adopt the FDPA for the purposes of verifying the consistency of the design process;
5. list of the relevant regulations, with explicit reference to the performance or prescriptive parameters adopted for the technical and economic feasibility project, in relation to various mandatory or relevant regulations, such as actions or combined actions, payback period, exposure classes, event scenarios;
6. summary of the economic and financial characteristics of the project (estimate for the work; economic expenditure framework; possible splitting of the project in functional and/or performance segments, or in functional and usable sections for network works; summary of forms and sources of financing to fund the expenditure; an economic and financial plan, where envisaged; summary indications on the employment impact both in the construction and operational phase, where required; general indications of the impact in terms of involvement of micro and small enterprises, both in the construction phase and in the planned and extraordinary maintenance

phases);

7. contractual issues.

The **description of the chosen design solution** will comprise:

1. an explanation of the design solution and design process that led to the formulation of the solution on the basis of the results of specialist studies and investigations referred to in point 3) below;

2. functional, technical and interrelation characteristics between the various elements of the project: architectural, structural, functional, plant-engineering, also taking into account the content of the guidelines document;

3. Documented project feasibility, also based on the results of the environmental impact study, where envisaged, as well as the results of the investigation described below and a subsequent assessment of the project feasibility:

    a. results of geological, hydrogeological, hydrological, hydraulic, geotechnical, seismic, environmental and archaeological studies and surveys;
    b. investigations regarding any environmental, hydraulic, historical, artistic, archaeological, landscape or any other constraints affecting the areas or works concerned;
    c. assessment of the level of quality of the environment affected by the project and its possible further development, whether the project will go ahead or not, as well as during execution;
    d. considerations and assessments of the project compatibility with the local environmental context;

4. assessment of the obstacles for the work to be carried out due to pre-existing works or public services along the route, proposals for resolving the impediments and an estimate of foreseeable costs, in accordance with Article 27, paragraphs 3, 4, 5 and 6 of the Code;

5. survey of the areas and buildings on which work is to be carried out, methods of acquisition and foreseeable cost;

6. indication of how to achieve efficient transport and logistic processes with technologies and logistic sustainability models widely used at international level;

7. description of the worksite decommissioning phase and environmental restoration of the site;

8. indications of accessibility, use and level of maintenance of existing works, facilities and services.

The information modelling, corresponding to the development of design levels, shall ensure continuity in the improvement of the information content, up to the execution phase, works management, safety coordination during the execution phase and technical-administrative testing phases, and shall always be suited to the reporting requirements for the NRRP and the Complementary Investment Plan.

In the case of work done on existing installations, the report will describe the required consistency, the level of knowledge, typological characteristics, structural and plant-engineering characteristics, and the reasons that led to choosing the design solution.

3.2.2 Technical report

The Technical Report for the TEFP will be accompanied by surveys and specialised studies (annexes signed by the respective qualified technicians).

The Technical Report will contain:

1. requirements and performance levels to be met by the works, in relation to the specific needs outlined in the design guidelines document;
2. results of studies, investigations and analyses carried out, according to the type, size and importance of the works, highlighting the resulting assessments in terms of feasibility of the project reached through the characterization of the local, historical, archaeological, environmental and landscape context in which the project is situated;
3. results of the check for possible interference of the works with pre-existing buildings or infrastructure;
4. results of the study on urban setting with graphic drawings, where relevant;
5. a description and justification of the degree of the in-depth analysis of the investigation planning, according to type, size and importance of the works;
6. a description and justification of the technical choices on which the project is based, also concerning operating safety, energy efficiency, reuse and recycling of materials;
7. preliminary dimensioning elements (structural, geotechnical, plant-

engineering, hydraulic, road network, etc.) of a conceptual and, where necessary, quantitative nature. This is done to justify the design choice and ensure:

a. a regular progression in the authorisation process;
b. a coherent development of subsequent design stages;
c. consistency in forecasting the cost of the works.

Unless otherwise justified by the Contracting Authority in terms of the type and characteristics of the works to be undertaken, the Technical Report, accompanied by surveys and specialised studies, shall refer as a minimum to the following:

1. geological, hydrogeological, hydrological, hydraulic, geotechnical and seismic characteristics;
2. mobility and traffic, only for transport infrastructure and, where relevant, in relation to the characteristics of the project;
3. summary of analyses and assessments contained in the environmental impact study, when required. Environmental monitoring measures;
4. constraints on the intervention area and on the territorial and environmental surroundings, if relevant in relation to the characteristics of the project;
5. landscape characteristics;
6. archaeological characteristics, with a description of the results of the prior assessment of archaeological finds, if relevant in relation to the characteristics of the project;
7. a survey of existing impediments, pursuant to Article 27, paragraphs 3, 4, 5 and 6 of the Code, with the relevant solution assumptions, the plan for displacement and crossings, and whatever else is necessary to resolve such impediments, as well as a cost estimate, if relevant in relation to the characteristics of the project;
8. materials management plan, taking into account availability and location of recycling sites and landfills, in compliance with applicable legislation;
9. clearance of war debris;
10. architectural and operational characteristics of the works;
11. structural characteristics;
12. installation characteristics, listing specific characteristics in relation to safety requirements, continuity of service, sustainability and energy efficiency, during normal operations or malfunctioning when in operation;
13. fire safety, in terms of potential risks and accidents;
14. safety measures to protect workers' health and safety on site;

15. maintenance measures and geotechnical and structural monitoring;
16. compulsory purchases.

Unless otherwise justified by the administration, for **restoration and conservation works**, as per art. 3, paragraph 1, letter c), of Presidential Decree no. 380 of 6 June 2001 and subsequent amendments and additions, and **building renovation**, as per art. 3, paragraph 1, letter d), of the same Presidential Decree no. 380/2001, that do not entail the demolition and reconstruction of existing structures, the Technical Report shall contain the following documents:

1. a report on the knowledge of the current state of soundness, functionality and state of the works in question, divided into visual, documentary, historical-critical, geometric, material, functional, structural knowledge including foundations, plant-engineering, also describing any previous issues and work already carried out;
2. a report on investigations and tests carried out, relating to the archaeological, historical, architectural, structural and technological characteristics of the work to be undertaken and the site on which it is located, identified by the designer as stated in Article 1, paragraph 1, letter h), of Presidential Decree no. 380/2001, in compliance with applicable regulations. Relevant test certificates according to the type of work, investigations and tests to assess stability, also applicable to underground work, will have to be enclosed alongside a report on the results;
3. a report on the historical, typological and constructive characteristics of the work to be carried out, specifically highlighting any parts or elements that need to be safeguarded in relation to the type of work to be carried out;
4. results of the research and surveys aimed at acquiring the elements necessary for choosing the type and method of work, as well as a summary cost estimate;
5. description of work to be carried out, including:
   - **a.** type of work;
   - **b.** scope of the works;
   - **c.** precise execution technique;
   - **d.** operational impact, if relevant for the building on which work has to be carried out, and the current use of the building;
   - **e.** where relevant, the functionality of the construction;
   - **f.** indication of the executive steps necessary to safeguard, when required, operations during construction work;
   - **g.** What will happen to any disused areas or works.

3.2.3. Environmental Impact Assessment

The drafting of the environmental impact study will have to follow the guidelines contained in the document published by the European Commission in 2017: "*Environmental Impact Assessments of Projects - Guidance on the preparation of the Environmental Impact Assessment Report*" (2011/92/EU Directive as modified by the 2014/52/EU Directive).

It will also have to include the procurement and storage of raw materials, capital goods and people, essential for the construction and ordinary maintenance of the works.

Article 5, paragraph 1, sets out the minimum content the proposer must include in the environmental impact study.

Annex IV, mentioned in article 5, paragraph 1, letter f), broadens these provisions as follows:

- ***PROJECT DESCRIPTION >*** *This is a presentation of the project including a description of the location of the project, the characteristics of the construction and operational phases, as well as estimates of expected residues, emissions and waste generated during the construction and operating phases (Article 5(1)(a) and Annex IV, point 1.*
- ***BASIC SCENARIO >*** *A description of the current state of the environment and likely future changes should the project not be implemented. This will determine the basis for the subsequent Environmental Impact Assessment and Member States will ensure that information for the baseline scenario held by authorities will be made available to the Proposer (Annex IV, point 3).*
- ***ENVIRONMENTAL FACTORS INVOLVED >*** *A description of the environmental factors affected by the project, with specific reference to climate change, biodiversity, natural resources, accidents and disasters (Article 3, Annex IV, points 4 and 8).*
- ***ENVIRONMENTAL IMPACT >*** *This section deals with any "significant impact" on the environment and the importance of cumulative consequences (Article 5.1, (b) and Annex IV, point 5).*
- ***ASSESSMENTE OF ALTERNATIVES >*** *The project alternatives (as set out in the design alternatives document) must be described and compared,*

indicating the main reasons for the chosen alternative (Article 5.1 (d) and Annex IV, point 2).

- ***MITIGATION OR COMPENSATION MEASURES >*** *The characteristics or measures envisaged to avoid, prevent, or reduce, and offset adverse effects should also be considered (Article 5.1, (c) and Annex IV, point 7).*
- ***MONITORING >*** *Proposed monitoring measures should be included in the EIA where significant adverse effects have been identified. Monitoring should be carried out during the construction and operating phases of the Project (Annex IV, Section 7).*
- ***NON-TECHNICAL SUMMARY >*** *A summary of the content of the EIA that is easily accessible, drafted in a non-technical language, and therefore understandable by anyone, even with no knowledge of the environment or the Project (Article 5.1, (e) and Annex IV, point 9)".*

Furthermore, insofar as there is no conflict with the aforementioned European Commission Guidelines, useful reference may also be made to the document entitled "Environmental Impact Assessment - Technical standards for the preparation of environmental impact studies (art. 22 of Decree Law 152/2006 and subsequent modifications)", approved by the Council of the National Agency for Environmental Protection during an ordinary meeting held on 09.07.2019.

The environmental impact study will also examine the following points:

1. installation of the worksite and access roads, including temporary ones, in order to avoid hazards to people and the environment and to limit interference with local traffic;
2. description of measures and actions necessary to avoid any form of pollution: soil, surface and ground water, air, noise and vibrations;
3. the location of any quarries that might be needed, an assessment of the type and quantity of materials to be removed, and any necessary environmental restoration;
4. description of how the excavated earth and rocks will be managed;
5. identifying measures and actions aimed at limiting the production of waste, a quantitative estimate of waste that will be produced, and subsequent operations for waste disposal;
6. procedures for worksite decommissioning and site restoration, including

environmental restoration;

7. transport of goods and people necessary to run the site;
8. cost estimate for financing the conservation, protection and restoration work aimed at protecting and safeguarding the artistic, historical and archaeological heritage, as well as rearranging the external area.

3.2.4 Sustainability report

The project sustainability report, the content of which will depend on the specific type of infrastructure work, will contain:

1. a description of the primary objectives of the work in terms of "outcome" for local communities and the region concerned, with a description of long-term benefits, which ones and how many, such as growth, development and productivity, can actually be produced, whilst at the same time minimizing negative impact. Identification of the main stakeholders and an outline of models and tools for stakeholder involvement during the design, authorisation and construction phases, in line with the results of a public debate.
2. certification of compliance with the "Do No Significant Harm" (DNSH) principle, as set out in EU Regulation 852/2020, Regulation (EU) 2021/241 and in the European Commission Communication COM (2021) 1054 (Technical guidance on the application of the principle found in the NRRP Regulation);
3. verification of any significant contribution to at least one or more of the following environmental goals, as defined in said regulations, taking into account the life cycle of the works (Figure 3):
    - **a.** climate change mitigation;
    - **b.** adapting to climate change;
    - **c.** sustainable use and protection of marine waters and resources;
    - **d.** transition to a circular economy;
    - **e.** pollution prevention and reduction;
    - **f.** biodiversity and ecosystem protection and restoration;

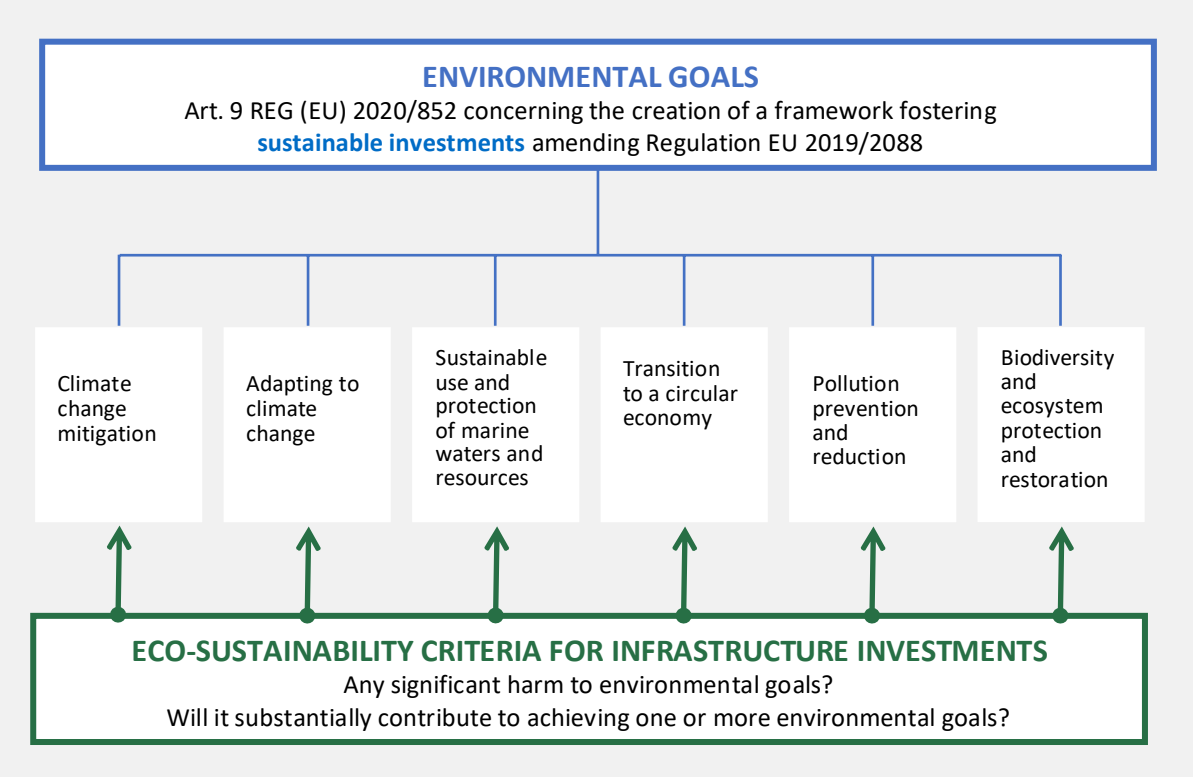

Figure 3

4. a carbon footprint estimate for the works life cycle and contribution to attaining environmental goals;
5. an estimate of the works life cycle in terms of a circular economy, compliance with international methodology and standards (Life Cycle Assessment – LCA), with special reference to the decision and use of construction materials, that is identifying the processes that favour the reuse of raw and secondary materials that reduce the impact in terms of the generated waste;
6. an analysis of the overall energy consumption with an indication of the sources used to satisfy energy requirements, also taking into account bioclimatic design criteria;
7. an indication of measures to reduce the quantity of external supplies (internal reuse within the works) and the choice of more sustainable modes of transport for materials to/from the production site to the construction site;
8. an estimate of the socio-economic impact of the project, with specific reference to promoting social inclusion, reducing inequalities and regional gaps, and improving citizens' quality of life;

9. measures for protecting decent jobs, along the whole contractual chain (subcontracting); the description of national and local collective bargaining for the sector and applicable to the works, negotiated by the most representative employers and workers organizations at the national level;

10. the use of innovative technological solutions, including sensor applications for predictive systems (structure, geotechnics, hydraulics, environmental parameters);

11. resilience analysis, i.e. the ability of the infrastructure to resist and adapt relatively quickly to changing conditions that may occur in both the short and long term due to climatic, economic and social changes. All possible risks should be considered in advance, alongside the likelihood of their occurrence, and include not only environmental and climatic risks but also social and economic risks, thus enabling the least vulnerable solution to be adopted and ensure longer useful life and better fulfilment of the future needs of the local communities.

3.2.5. Graphic drawings

The graphic drawings for the feasibility project, to scale and duly estimated, taking into account the need to include any environmental mitigation and compensation measures and interventions with an estimate of costs, unless otherwise determined by the administration, are made up as specified below.
In case the methods and tools referred to in Article 23, paragraph 13 of the Code, are used, they must be unambiguously derived from the specified aggregated digital information models.

Should the administration not consider the preparation of one or more graphic drawings listed below relevant in relation to the size, category and type of work, it shall motivate the necessary differentiation and reduction or integration of the list and will state the specific content of the feasibility project documents for each piece of work.

FOR AD HOC WORKS

1. documentary extracts of the territorial planning instruments and the environmental and landscape protection, as well as the general urban

planning instruments and current implementations, showing the location of the work to be carried out and any other location examined; such elements are also reported in a chorography on a suitable scale, covering a substantial area, with reference to the national mapping systems, showing the works perimeter;

2. suitable scale mapping of the contour lines on which the works and any other project assumptions are shown separately;

3. preliminary studies and surveys, on a scale appropriate to the dimensions of the project:

   a. map showing where the investigations were done;

   b. geological, geomorphological and hydrogeological maps, with the location of the works, covering a substantial area;

   c. geological, geomorphological and hydrogeological sections, showing the location of the works, as well as the litho-structural, geomorphological and hydrogeological structures;

   d. map of the hydrographic network;

   e. map of the archaeological potential;

   f. map of the ordered and super-ordered constraints, on an appropriate scale and with the location of the works;

   g. seismic microzonation map, if available, on an appropriate scale, covering a substantial area;

   h. map of impediments in accordance with paragraph 3 and 4 of article 27 of the Code;

   i. land registry maps;

   j. map showing the location of active quarries, recycling plants, temporary storage sites and authorised and operating landfills to be used for discharging waste resulting from the execution of the project;

4. adequate number of diagrams and model sections, to scale, to enable the general identification of all geometric-spatial, typological, functional and technological characteristics of the work to be undertaken, accompanied by tables showing the required parameters;

FOR NETWORK INFRASTRUCTURE

1. general chorography of the work on an appropriate scale, covering a substantial area, with reference to the national cartographic systems;
2. chorography indicating the planimetric layout of the routes with reference to the orography of the area, the integrated mobility and transport system and other existing services, the hydrographic network, on an appropriate scale, covering a substantial area, with reference to the national cartographic systems;
3. outline of the spatial planning and environmental and landscape protection instruments, as well as of existing general urban planning and implementation instruments, showing all alternative routes examined.
4. plans with an indication of the contour lines and/or elevated points, on an appropriate scale, showing all alternative routes examined;
5. photomosaic plans, on an appropriate scale, showing the alternative routes examined;
6. longitudinal altimetric profiles of the alternative routes examined on an appropriate scale;
7. documents relating to preliminary investigations and studies, in particular:
    - **a.** plans showing undertaken surveys;
    - **b.** geological, geomorphological and hydrogeological maps, with location of the works, covering a substantial area;
    - **c.** geological, geomorphological and hydrogeological sections, with location of the works, showing the lithostructural, geomorphological and hydrogeological assets;
    - **d.** lithostratigraphic, hydrogeological and geotechnical profiles with physical-mechanical characterisation of the main lithotypes and showing the position of the water tables;
    - **e.** map of the hydrographical network, on an appropriate scale;
    - **f.** map of the ordered and over-ordered constraints, on an appropriate scale and showing the location of the works;
    - **g.** map of the archaeological potential, on an appropriate scale, covering a substantial area, with reference to the national cartographic systems;

h. seismic microzonation map, where available, on an appropriate scale, covering a substantial area, with reference to the national cartographic systems;

i. any plans with the result of traffic surveys and simulations on an appropriate scale, where relevant;

j. plans of impediments due to existing buildings and/or infrastructure networks, on an appropriate scale, covering a substantial area, with a reference to the national cartographic systems;

k. chorography on an appropriate scale, covering a substantial area, referred to the national cartographic systems, showing the location of active quarries, recycling plants, temporary storage sites and authorized and operating landfills to be used for the transfer of waste resulting from the execution of the works;

l. standard layout for the yards or environmental regeneration areas;

m. adequate graphic drawings and schematic sections to scale to enable the general identification of the location, as well as spatial, functional and technological characteristics of the worksite areas necessary for executing the work;

8. plans showing the contour lines, on a scale of not less than 1:5,000, for the selected route; the scale shall not be less than 1:2,000 for sections in urban areas. The planimetry contains a representation of the road or railway and of the hydraulic works along all the project axes, according to the assumed geometrical characteristics. The geometry of the works is represented in all its parts (slopes, retaining works, hydraulic works, buffer strips and urban interest strips), to determine the overall size of the infrastructure and its relationship with the area, as well as any interference with existing buildings and infrastructure. The geometrical characteristics of the route and the main structures must also be shown;

9. photomosaic plans, on a scale of not less than 1:5,000, for the selected route;

10. longitudinal elevation profiles of the works to be constructed on a scale of not less than 1:5000/500, showing all the planned work, the intersections with transport, service and/or hydrographic networks, geometrical characteristics of the route. For sections in urban areas the scale cannot be less than 1:2000/200;

11. standard sections of the works on an appropriate scale;
12. adequate number of current cross-sections for a correct preliminary assessment of quantities to be used in calculating the cost of the works;
13. drawings that will enable, with the use of plans, elevations and sections on an appropriate scale, the typological definition of all special structures and all ordinary and minor works that are required;
14. drawings that will enable, by means of diagrams, plans and sections on an appropriate scale, the description of the system components required for the project, including active and passive firefighting systems, and their technical-functional characteristics.

Plans and graphics will also show the subdivision of the project into functional and usable lots, where required.

On the basis of all the drawings, an estimate will be prepared to enable an overall calculation of costs for the project and to budget for the expenditure.

For both ad hoc works and a network infrastructure, the technical and economic feasibility project will specify the drawings and the relative scales to be used in the final and executive project, without prejudice to the minimum scale, where provided for, which may be changed only by the administration, pursuant to article 23, paragraph 4 of the Code.

3.2.6. Cost calculation, economic framework and outline for a financial and economic plan

To set the TEFP as the basis for the awarding procedure, the cost calculation for the project is drawn up by applying costs derived from:

- the use of the official reference price lists, as stated in Article 23 paragraph 7 of the Code;
- market analyses supported by price analyses

and by preparing an estimate consistent with the level of detail applicable to the project and the various specialist parts.

In addition, at least in terms of the most significant technical elements and/or units of work for the purpose of identifying the overall quality of the project, the first elements of "value analysis" may be applied, in line with the typical criteria used for an economic assessment, or other similar methodological tool.

The economic framework is described in detail in section 3.2.12. It is broken down in relation to the specific type and category of work and the precise award methods, pursuant to the Code, and will include, in addition to the total cost for the works based on the summary calculation of expenses, safety charges not subject to discount, the amount relating to the implementation of measures aimed at preventing and repressing crime and mafia infiltration attempts, expenses for the final design and its execution, sums available to the Contracting Authority, in compliance with applicable trade union agreements, determined through assessments carried out during the preliminary investigations, as well as, in the case of concessions or an award to general contractors, charges due to the concessionaire or general contractor respectively, whenever applicable.

The economic framework will also show, as part of funds available to the administration, where envisaged, amounts for environmental mitigation and compensation works, amounts for geotechnical, structural, and environmental monitoring, as well as sums for any conservation and/or relocation work and the enhancement of the historical-archaeological heritage.

Should the work be carried out by means of a Public-Private Partnership, the economic framework shall be accompanied by a specific annex concerning the general economic and financial spending plan and its management. Apart from the recognition and explanation of operational risks referred to in Article 3, paragraph 1, letter zz), of the Code to be borne by the concessionaire, the plan will include the following items:

- chosen time frame;
- price that the administration might expect to pay to allow the concessionaire to pursue economic and financial equilibrium;
- any transfer in ownership, or by way of enjoyment or by way of price, of the goods;
- costs to be borne by the concessionaire, to be put to tender;
- safety costs derived from the safety plan.

The outline business plan is divided into:

- profit and loss account
- - cash flow.

3.2.7. Contract framework

The contract outline, drawn up by the Contracting Authority, with the support of

the designer where required, will contain the clauses aimed at regulating the relationship between the Contracting Authority and the contractor in connection with the characteristics of the works, with particular reference to:

- terms of execution and penalties;
- work execution schedule;
- work suspension or resumption;
- regulation of contractual amendments pursuant to Article 106 of the Code
- charges to be borne by the contractor;
- accounting for works on a on a lump sum basis and on a time & materials basis;
- settlement of fees;
- quantification and terms of technical, accounting and administrative checks;
- specific acceptance procedures and deadlines;
- disputes and reservations;
- dispute resolution procedures;
- applicable national collective labour agreements, signed by the most representative trade unions and employers' organisations;
- in the case of digital information modelling, any indication of the contractual prevalence of the digital information model in accordance with Article 7, paragraphs 4-5, of Ministerial Decree no. 560/2017.

In the case of works for which payment will be a lump sum, that is a lump sum for which payment will be partly on a lump sum basis and partly on a time and materials basis, the contract schedule will indicate, for each group of categories deemed to be homogeneous, the relevant amount and the percentage rate in relation to the overall amount of the work.

These amounts and associated rates are deducted from the estimate for the work. For payments whilst work is in progress, the above amounts and rates may also be shown broken down into their main components (Work Breakout Elements - WBE).

Lump sum payments whilst work is in progress are calculated on the percentage rates thus defined, and the actually executed portion is accounted for each one.

For work on a time and materials basis, the contract will state the amount for each of the groups of categories deemed to be homogeneous, obtained from the estimated cost.

For work partly on a lump sum basis and partly on a time and materials basis, the part that can be settled on a time and materials basis will concern work for which, at the design stage, it is excessively onerous to identify exact final

quantities.

The use of standard contracts is recommended.

3.2.8 Special Tender Specifications

The special tender specifications will be annexed to the contract outline and contain the technical requirements to be applied to the subject of the individual contract.

The special tender specifications are divided into two parts, one containing the description of the works and the other specifying technical requirements and services.

It will set out in detail:

a) in the first part, all the elements necessary for a complete technical and economic definition of the tender subject-matter, including aspects that cannot be fully inferred from the graphic drawings of the executive project;

b) in the second part, the execution methods and the rules for measuring each operation, the acceptance requirements for materials and components, the performance specifications, testing methods and, where necessary, depending on the characteristics of the works, the order to be followed in carrying out specific works. If the project envisages the use of prefabricated components, the main descriptive and performance characteristics must be pointed out. The documentation submitted for approval and the results of laboratory testing will also be included, together with the approval procedure used by the project manager, after consulting the designer, to ensure compliance with the design choices.

In the case of complex projects referred to in Article 3, paragraph 1, letter oo), of the Code, the special tender specifications also provide for:

- a plan for site checks during the various phases of execution of the work, to ensure it is carried out correctly in all its parts. In particular, the plan for site checks will set out a programme including, where necessary, geodetic, topographical and photogrammetric checks, to enable monitoring of the qualitative and quantitative performance level;
- the obligation for the executor to draw up a plan indicating the quality of construction and installation, to be submitted for approval, and which will foresee and schedule the conditions, the sequence, methods, instruments, means of work and scheduling of the checking activities during the execution phase. The plan sets out the criteria for assessing

materials and installed products, as well as the criteria for assessing and resolving any non-compliance.

The special tender specifications oblige the Contractor to submit, prior to the start of the work, a detailed executive programme to be approved by the Contracting Authority, which may be independent of the time schedule, and will contain, for each stage of the work, the forecast of the execution period, as well as an estimated partial and progressive workflow at the contractually established deadlines to enable the settlement of payment certificates. The special tender specifications may set different deadlines for the various pieces of work to meet specific requirements.

Without prejudice to provisions in Article 107 of the Code, should the work be suspended or delayed for causes attributable to the executor, the execution schedule shall remain unchanged.

3.2.9 Time schedule

In accordance with provisions in the planning document, the time schedule will represent, with a linear diagram, the development over time of the design, the award and execution of the project (divided into macro-categories). For each activity, the time schedule indicates the maximum timeframe envisaged.

The Contracting Authority has the right to request, as part of the information specifications, a "4D" and "5D" digital information modelling taking into account the chronological and accounting issues for the works, in line with provisions in Article 15 of Ministerial Decree no. 49/2018.

3.2.10 Safety and Coordination Plan

The Safety and Coordination Plan (SCP) is a document used to forecast the most suitable workflow to prevent or reduce risks to workers' health and safety, through the identification of possible critical phases in the construction process, and the definition of operational requirements, if identifiable in relation to this project.

The Safety and Coordination Plan and the Operational Safety Plan (OSP), drawn up by the Contractor, are complementary documents to the Safety and Coordination Plan drawn up by the Contracting Authority. They refer to the content of the sequential design levels developed by the contractor and to the specific technological and organisational choices for executing the work.

The plan will contain measures of practical feasibility, specific to each temporary or

mobile worksite, drawn up in accordance with provisions in Annex XV of Decree Law no. 81 of 9 April 2008.

The safety costs estimate arising from the implementation of identified measures represents the share referred to in Article 15, paragraph 1, letter b), of the above-mentioned Decree Law.

The content of the Safety and Coordination Plan is the result of design and organisational choices that comply with the general protection measures set out in Article 15 of Decree Law no. 81 of 2008, as stated in Annex XV to the same Decree Law in terms of minimum content.

In particular, the technical report, accompanied by the project explanatory tables, will contain a risk identification, analysis and assessment concerning the area and the organisation of a specific site, any impediment to the work and additional risks for individual contractors or self-employed workers.

Whenever necessary, the safety and coordination plan will also contain information on elements/devices foreseen for testing under safe conditions.

The Contracting Authority has the right to request, as part of the information specifications, a "4D" and "5D" digital information modelling for the Safety and Coordination Plan (SCP) and the Operational Safety Plan (OSP).

3.2.11 Information specifications

In case the digital information modelling is used, the information specifications (according to UNI 11337 and/or UNI EN ISO 19650), as provided for in the Ministerial Decree no. 560/2017 on using electronic methods and tools, may be included. This document will integrate the in-depth information specifications contained in the Guidelines and will regulate digital processes, digital information modelling, technological and management choices, also regarding the Data Sharing Environment for the subsequent phases of the process, both in the design and construction phase, using digital management for the maintenance work.

The Information Specifications may also regulate the configuration of the information management offer devised by the participants during the tender award procedure.

The Information Specifications will specify the content demanded of the contractor and their supply chain not only for the design phase, but also for the investment phase and the execution of the work.

Finally, the Information Specifications will describe the structuring of the data sharing environment (accompanied by reference sources and metadata), as provided for by

Ministerial Decree 560/2017 and the UNI 11337 standard and/or the UNI EN ISO 19650 standard: this environment, contractually relevant, is functional for the monitoring and control activities, as well as reporting, as provided by the governance of the NRRP and of the CNP. Interoperability with the planned information system will be required.

3.2.12 Preliminary maintenance plan for the works and all its parts

The preliminary maintenance plan for the works and all its parts is a document that foresees, plans and schedules the maintenance activity for the works and all its parts, taking into account the design drawings, and ensures functionality, quality characteristics, efficiency and economic value over time.

Attached to the preliminary maintenance plan are measures aimed at ensuring the preservation and protection of important archaeological finds in the area. These measures are established by the competent superintendency, pursuant to Article 25, paragraph 11 of the Code, whenever such provisions have been issued, in connection with specific works.

The preliminary maintenance plan will have a different content depending on the importance and specificity of the project, and will consist of the following preliminary operational documents, unless otherwise decided by the administration:

1. user manual;
2. maintenance manual;
3. maintenance programme.

The content of these preliminary documents will be subdivided according to the current level of design definition.

The **user manual** will refer to the use of the larger parts of the works, especially technological plants. The manual will contain all the information needed to allow the contractor administration to make the best use of the asset, as well as all the elements needed to limit as much as possible the damage caused by improper use, to allow all operations required for its conservation, that do not require specialist knowledge, and will help to promptly recognise anomalous deterioration and prompt specialist actions.

In terms of the current level of design definition, the user manual will contain, as far as possible, the following information:

1. positioning of the mentioned parts within the works;
2. a graphic representation;
3. a description;
4. correct mode of use.

The **maintenance manual** will refer to the maintenance of the important parts of the asset and, in particular, to the technological installations. In relation to the different technological units, materials, or components characteristics, it will provide the necessary instructions for a correct maintenance, as well as information on how to contact the assistance or service centres.

As far as possible given the degree of design definition, the maintenance manual will contain the following information:

1. positioning of the mentioned parts;
2. a graphic representation;
3. a description of the necessary resources for assuring maintenance;
4. minimum performance level;
5. potential anomalies;
6. maintenance that can be executed directly by the contractor;
7. maintenance to be carried out by specialized personnel.

The **maintenance programme** is to be carried out at fixed time intervals or otherwise, to ensure the proper management of the asset and parts thereof over the years.

Divided into three sub-programmes, the maintenance programme will contain the following information, as far as possible given the current level of project definition:

1. performance sub-programme, which considers the performance, per class of requirement, of the asset and parts thereof during the life cycle;
2. the sub-programme of checks, describing the programme of checks to detect the (qualitative and quantitative) performance level in the sequential moments of the asset life, identifying the dynamics of reduced performance, with extremes being the test value and the minimum standard value;
3. the maintenance sub-programme, setting out, in chronological order, the different maintenance operations to provide information on the proper conservation of the asset.

The Contracting Authority may request, as part of the information specifications, a digital information modelling to support the drafting of the preliminary maintenance plan.

3.2.13 Economic framework for the works

The economic framework, in terms of the overall cost of the works, will normally be subdivided as follows:

1. Lump sum and time & materials work;
2. Safety costs not subject to discount;
3. Costs relating to the final design and execution, in case the award procedure is based on the technical and economic feasibility project;
4. amount relating to the rate for implementing measures aimed at preventing and repressing crime and mafia infiltration attempts, as per Article 194, paragraph 20, of the Code, not subject to discount;
5. specific amount relating to the cost of labour and the percentage rate of the total amount of the works, with relevant supporting documents;
6. **sums available** to the Contracting Authority to undertake:
   - **a)** direct management work foreseen in the project but excluded from the tender, including reimbursement upon invoice;
   - **b)** surveys, inspections and investigations to be carried out by the contracting authority and/or the designer;
   - **c)** connections to public utilities and overcoming impediments, pursuant to Article 27 paragraphs 3, 4, 5 and 6 of the Code;
   - **d)** any compensation or mitigation work on the environmental and social impact, not foreseen by the project, up to an amount of 2% of the total cost of the works;
   - **e)** unforeseen circumstances;
   - **f)** provisions for possible changes referred to in article 106, para 1, letter a), of the Code;
   - **g)** acquisition of land or buildings, compensation for compulsory purchases and easements;
   - **h)** technical expenses relating to the design and preliminary activities, including the monitoring of parameters necessary for the design, where relevant, safety coordination at the design stage, local administration and bodies requirements, workflow management

and safety coordination at the execution stage, daily assistance and accounting, the incentive referred to in Article 113(2) of the Code, for the corresponding services to be performed by independent personnel;

i) expenses for technical-administrative and instrumental activities related to the design, support to staff in charge of the procedure should they be self-employed workers, insurance for the designers should they be employees of the administration, pursuant to Article 24 paragraph 4 of the code, as well as the ex-ante assessment of the design pursuant to Article 26 of the Code;

j) expenditure as describe in article 113, paragraph 4 of the Code;

k) possible expenditure for selection boards;

l) advertising expenditure;

m) expenditure for laboratory testing, inspections and technical checks that are compulsory or specifically provided for in the Special Tender Specifications, when required, as referred to in Article 111, paragraph 1 bis, of the Code, as well as any monitoring after work is completed;

n) expenditure for technical and administrative testing, static tests and other possible specialized testing;

o) expenditure for prior checking of archaeological finds, as stated in article 25, paragraph 12 of the Code;

p) expenditure for activities described in Part VI - Title I – heading II of the Code “Alternative remedies to judicial protection", including therefore costs relating to the work of the technical advisory board, pursuant to Article 6 of Law no. 120/2020;

q) Possible expenditure for a management officer, pursuant to applicable law;

r) Whenever foreseen, expenditure for artistic works pursuant to Law No 717 of 20 July 1949, as subsequently amended and supplemented;

s) VAT and any other taxes, when applicable.

Items in the economic framework relating to contingencies and any direct-labour works cannot exceed ten per cent of the value of works subject to tender, including safety costs.

4. ARRANGEMENTS FOR SUBMITTING THE TECHNICAL AND ECONOMIC FEASIBILTY PROJECT TO THE HIGHER COUNCIL FOR PUBLIC WORKS

The Contracting Authority will send to the Higher Council for Public Works, by certified email, the technical and economic feasibility project accompanied by:

- a **formal letter** bearing the electronic signature of the Contracting Authority representative, pursuant to Decree Law no. 82 of 7 March 2005, containing:
  - the name of the project;
  - the legal references under which the opinion is sought;
  - the name and useful contact details for the contact persons in the Contracting Authority, the Sole Project Manager and the Design Coordinator (email/tel.);
  - a declaration that the documents submitted are compliant with these guidelines, and are the result of a **first level due diligence** on the TEFP;
- an **assessment report** signed by the sole manager in charge of the process, containing, as a minimum, the following elements:
  - project unique code (PUC);
  - planning and programming for the project;
  - description of the design process: requirements framework – FDPA (feasibility document for project alternatives) – Guidelines Document;
  - summary description of the project;
  - sources and forms of financing for the project;
  - authorisation process for the execution of the project and any authorisation already acquired or requested;
  - applicable regulatory framework;
  - schedule for the foreseen execution of the project;
  - economic framework;
  - process for choosing the contractor;

- result of the **first level due diligence** on the TEFP. Pursuant to Article 48, paragraph 7 of Decree-Law no. 77 of 31 May 2021, this is a simplified procedure "*for checking the completeness of the documentation and, if positive, for the subsequent accelerated procedure*". To this end, the use of checklists, summarising the checks that have been carried out, is recommended*;*
- any other information deemed useful for a full description of the project;

- evidence of the payment of fee as per Decree Law no. 245 dated 30/11/2005, converted into Law no. 21 on 27/01/2006;

The project, including the documentation foreseen by these Guidelines for the first level of design, must be submitted in electronic format, digitally signed by the design coordinator (on all deliverables) and by the designers responsible for the specific deliverables, each one to the extent of their competences.

In any event, it must always be ensured that the project documents are also submitted in a certified digital copy (pdf format) for easy consultation.

The Contracting Authority may also send a hard copy of the project (can be in A3 format) or of important parts thereof, to enable an easier examination.

Transmission in editable format is also recommended for:

- the assessment report by the Sole Manager;
- the general report;
- the documentation list;
- the expenditure framework;
- any subsequent submission of supplementary documents (with annexes).

It is also recommended to provide electronic "slides" in a PowerPoint presentation for the main content of the project.

The list of deliverables should contain hyperlinks to the files for all project deliverables.

Each document must be clearly and unambiguously identified, also on the deliverables list. This should be done by referring to the content of the deliverables, thus an alphanumeric identification code will not suffice.

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