**ANNEX NO 1: TECHNICAL SPECIFICATION**

for Open competition

“Detailed Technical Design Review and Design Expertise Services for Rail Baltica in LATVIA”

(Identification No RBR 2019/16)



Riga, 2019

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# **Abbreviations and Terms**

* 1. All abbreviations, designations, definitions and terms defined in the applicable laws, legislation, regulations, directives, Technical Specifications for interoperability (TSI), standards, rules, Design Guidelines (DG), other guidelines and documents of RBR/Client are used in this Technical Specification without modifications if not defined otherwise further. In this document where the context admits, the following words shall have the meaning assigned to them hereafter:

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| * + 1. Global administrative terminology
 |
| Administrative review | Review which shall be carried out just after receiving deliverable to check whether the deliverable provided is complete. |
| Affected parties  | State institutions, local government bodies, public and/or private enterprises, legal or private entities (persons) representing the owners and/or managers of the assets (networks and/or objects of power supply, gas, oil, water, drainage etc.) that are linked to the designed layout of Rail Baltica railway line and shall be considered during the provision of Design Services and Design Expertise services.  |
| Affected party Technical Conditions | Technical, connection conditions and requirements issued by an Affected party forming to be implemented by the Consultant as a part of the scope of the Design Services and by the Expert Service Provider as a part of the scope of the Design Expertise Services. |
| Client | RB Rail AS (the principal in the Contract). |
| Consultant | Master Design’s and Detailed Technical Design’s Designer. |
| Contract | The contract for provision of Design Review and Design Expertise Services concluded between the Client and the ESP. The Technical Specifications are annex to the Contract. |
| Deliverable | Set of design documents for one or more designed Construction objects. |
| Design Expertise | Professional inspection with the purpose to provide evaluation regarding conformity of the technical solutions of the Building Design with the requirements of the laws and regulations and technical conditions. In terms of Country’s Construction legislation Design Expertise corresponds to Expert-Examination of a Building Design (“Būvprojekta ekspertīze” in Latvian). |
| Design Guidelines (DG) | Set of predefined and standardized technically and economically justified engineering and design solutions for Rail Baltica infrastructure to be applied at design, Construction and operation phases of Rail Baltica Railway. |
| Design Review | Activities required to check design deliverables conformity according to requirements specified in Chapter 4 and Chapter 5 in this document and to checklists in Annex 2.  |
| Detailed Technical Design (DTD) | Final stage of the design process in accordance with Country’s Construction legislation and it gives right to start Construction works.In terms of Country’s Construction legislation, Detailed Technical Design corresponds to Building Design (“Būvprojekts” in Latvian) together with all additional requirements specified in Technical Specification for the Detailed Technical Design. |
| DTD1 | Design and design supervision services for the Construction of the mainline section Upeslejas – Misa through Riga. |
| DTD2 | Design and design supervision services for the Construction of the new line on the section Vangaži – Salaspils – Misa. |
| DTD3 | Design and design supervision services for the Construction of the new line on the section Estonian/Latvian state border to Vangaži |
| DTD4 | Design and design supervision services for the Construction of the new line on the section Misa – Latvian/Lithuanian state border. |
| DTD technical specification | Technical specification for Design and design supervision services with all associated Annexes. |
| Expert | Natural person, engineering professional with appropriate experience who is providing Design Review and Design Expertise services. |
| Expert service provider (ESP) | Service provider appointed to implement the Design Review and Design Expertise services |
| Global project (GP) | All the activities undertaken by the Rail Baltica railway implementing parties in order to build, render operational and commercialize the Rail Baltica railway and related railway infrastructure in accordance with the agreed route, technical parameters and time schedule. |
| Master Design(MD) | Consolidated approach of full design documentation package aimed towards detailed technical design by considering all legal requirements set out in national Construction legislation and following the established design guidelines for the railway. The result of master design is a set of documents (incl. drawings in 3D model, BIM model) which clearly shows the scope of the project, includes a situation plan with an accurate placement of the railway line, detailed track layout, main signaling, catenary, electrical network details, etc. The scope of this set has to be wide and precise enough so that the main details and the main requirements for further elaboration of detailed technical design are clear.In terms of Country’s Construction legislation, Master Design (“Būvprojekta pamatrisinājumi” in Latvian) is not applicable in Country’s Construction legislation, however required by RBR as separate stage during provision of the Design Services to align Global project solutions and at the early level of Detailed technical design preparation together with all requirements specified in Technical Specification for the Master Design. |
| Preliminary design (PD) | Completed pre-design stage, including spatial planning and environmental impact assessment studies, of Rail Baltica railway prepared in accordance with Country’s national Construction legislation and approved at the State level.  |
| Rail Baltica railway | A new fast conventional double track electrified European standard gauge (1435 mm) railway line on the route from Tallinn through Pärnu - Riga -Panevėžys - Kaunas to Lithuanian - Polish border, with the connection of Kaunas - Vilnius. |
| Railway infrastructure | Has the same meaning as an identical term in the Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area (recast), as well as it includes freight and passenger terminals and infrastructure and rolling stock maintenance facilities and the ground underneath them and the airspace above them to the extent that the national legislation permits the ownership of the ground and the airspace. |
| Technical Specification (TS) | This document with all its Annexes. |

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| * + 1. Service specific terminology
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| Bill of Quantities (BoQ) | An itemized list of materials, parts, and labor together with their unit cost and description what is basis for cost calculation, required to construct, install, maintain, and/or repair the infrastructure. Classification system is described in the Detailed BIM Strategy. |
| BIM | Building Information Management and Asset Information Management. |
| Building permit | Construction permit issued by state authorities based on Country’s Construction legislation. |
| Common Data Environment (CDE) | It is a central repository where construction project information is housed. The contents of the CDE are not limited to assets created in a “BIM environment” and it will therefore include data, documentation, graphical model and non-graphical assets. |
| Construction object  | Part of overall Construction falling under the scope of Agreement that is defined as separate object for which an individual design package (covering all required documentation and approvals to receive a Building permit) is prepared allowing to have a separate Construction (including Construction tendering) and taking-over process in accordance with Country’s Construction legislation. |
| Country | Republic of Latvia. |
| Design Section (DS) | Section of overall Rail Baltica railway line falling under the scope of the Services. |
| Design Priority Section (DPS) | Part of Design Section identified as separate Rail Baltica railway line section for planning of the Design Services and management purposes. |
| EIA | Environmental Impact Assessment. |
| Notified Body (NoBo) | A body responsible for assessing the conformity or suitability for use of the interoperability constituents or for appraising the ‘EC’ procedure for verification of the subsystems. |

# **Introduction to Rail Baltica**

The Baltic countries Estonia, Latvia and Lithuania have historically been linked to the east-west railway transport axis using the 1520mm gauge railway system. Because of the existing historical and technical constraints, the existing rail system is incompatible with mainland European standards, thus there is a consensus that Estonia, Latvia and Lithuania need to be fully integrated into the wider European rail transport system. Currently there is no efficient 1435 mm railway connection along the Warsaw-Kaunas-Riga-Tallinn axis, i.e. there are missing links or significant bottlenecks. Thus, there are no direct passenger or freight services along the railway axis as the existing infrastructure does not allow for competitive services compared to alternative modes of transport. Thus, the clear majority of the North-South freight is being transported by road transport and the overall accessibility in the region is low.

The ambitions of the Rail Baltica Global project (Global Project) are:

* to become a powerful catalyst for sustainable economic growth in the Baltic States;
* to set a new standard of passenger and freight mobility;
* to ensure a new economic corridor will emerge;
* sustainable employment and educational opportunities;
* an environmentally sustainable infrastructure;
* new opportunities for multimodal freight logistics development;
* new intermodal transport solutions for passengers;
* safety and performance improvements;
* a new value platform for digitalization and innovation;
* completion of Baltic integration in the European Union transport ecosystem.

Rail Baltica is already designed to become a part of the EU TEN-T North Sea – Baltic Core Network Corridor, which links Europe’s largest ports of Rotterdam, Hamburg and Antwerp – through the Netherlands, Belgium, Germany and Poland – with the three Baltic States, further connecting to Finland via the Gulf of Finland short sea shipping connections with a future fixed link possibility between Tallinn and Helsinki. Further northbound extension of this corridor shall pave the way for future connectivity also with the emerging Arctic corridor, especially in light of the lucrative prospects of the alternative Northern Circle maritime route development between Europe and Asia. Furthermore, the North Sea – Baltic Corridor crosses with the Baltic-Adriatic Corridor in Warsaw, paving the way for new supply chain development between the Baltic and Adriatic seas, connecting the Baltics with the hitherto inadequately accessible Southern European markets. In a similar fashion, Rail Baltica shall strengthen the synergies between North-South and West-East freight flows, creating new trans-shipment and logistics development opportunities along the Europe and Asia overland trade routes. The new Rail Baltica infrastructure would, therefore, not only put the Baltics firmly on the European rail logistics map, but also create massive opportunities for value creation along this infrastructure with such secondary economic benefits as commercial property development, revitalization of dilapidated urban areas, private spin-off investment, new business formation, technology transfer and innovation, tourism development and other catalytic effects. Rail Baltica aims to promote these effects from the early stages of the Global Project, learning from the key global success stories and benchmarks in this regard.

The Contracting authority RB Rail AS (RBR) was established by the Republics of Estonia, Latvia and Lithuania, via state-owned holding companies, to coordinate the development and Construction of the fast-conventional standard gauge railway line on the North Sea – Baltic TEN-T Core Network Corridor (Rail Baltica II) linking three Baltic states with Poland and the rest of the EU.

The diagram below illustrates the shareholder and project governance structure of the Rail Baltica project.



RBR together with governments of Estonia, Latvia and Lithuania (represented by the ministries in charge of transport policy) have applied for the CEF co-financing in 2015, 2016 and 2017 (three applications in total). The applications were successful and INEA grants are available to support the Global Project expenses.

Rail Baltica is a joint project of three EU Member States – Estonia, Latvia and Lithuania – and concerns the building of a fast conventional double-track 1435 mm gauge electrified and ERTMS equipped mixed use railway line on the route from Tallinn through Pärnu (EE), Riga (LV), Panevėžys (LT), Kaunas (LT) to the Lithuania/Poland state border (including a Kaunas – Vilnius spur) with a design speed of 249km/h. In the longer term, the railway line could potentially be extended to include a fixed link between Helsinki and Tallinn, as well as integrate the railway link to Warsaw and beyond.

The expected core outcome of the Rail Baltica Global Project is a European gauge (1435mm) double-track railway line of almost 900 km in length meant for both passenger and freight transport and the required additional infrastructure (to ensure full operability of the railway). It will be interoperable with the TEN-T Network in the rest of Europe and competitive in terms of quality with other modes of transport in the region. The indicative timeline and phasing of the project implementation can be found here: <http://www.railbaltica.org/about-rail-baltica/project-timeline/>.

# **Technical Requirements for Design Review and Design Expertise**

* 1. Legal references

The ESP shall follow EU directives, all Country’s Construction and other national legislation, EU standards, Country-specific legislation/standards/rules and other legal acts applicable for the provision of the Design Review and Design Expertise Services. ESP should also act as an Independent consultant to Client/Consultant to assist in achieving optimum design solutions both in terms of construction and further maintenance of the railway during operations.

 Main applicable legal acts (non-exhaustive list) are shown below in the chapter:

|  |  |  |
| --- | --- | --- |
| **No.** | **Title** | **Proposed resource[[1]](#footnote-2)** |
| * + 1. j
 | Country’s register of legal Construction acts and other legal acts related with the implementation of the Services | <https://em.gov.lv/lv>https://em.gov.lv/lv/nozares\_politika/buvnieciba/normativie\_akti/normativo\_aktu\_saraksts/ <http://www.vzd.gov.lv/lv/normativie-akti/normativie-akti/><http://www.lgia.gov.lv/LGIA/Normativie_akti/Noteikumi.aspx> |
| * + 1.
 | Country’s register of legal acts | <https://likumi.lv/>  |
| * + 1.
 | National environmental and spatial planning legislation | <http://www.varam.gov.lv/lat/><http://www.varam.gov.lv/lat/likumdosana/><https://www.daba.gov.lv/public/> |

* 1. General Information and scope of work
		1. According to the preliminary design solutions 261 km of Railway in Latvia includes 75 railway bridges/overpasses, 1 railway tunnel, 10 animal crossings, 78 road crossings, 5 pedestrian crossings and other structures. This amount of construction objects is indicative and shall not be treated as limiting and/or restricting the scope of Services. Tenderer shall take into account that actual number of total construction objects and structures may change during the Design process of Rail Baltica.
		2. Design Review and Design Expertise services shall be carried out for the following design stages:
* Master Design (MD) – Design Review;
* Detailed Technical Design (DTD) – Design Review and Design Expertise.
	+ 1. Design Review
* ESP shall carry out the Design Review services for each Construction object Deliverable during the Master Design and Detailed Technical Design which are provided to ESP by Client;
* ESP shall use most recent in force version of legal acts or applicable standards;
* Design Review services minimum scope of work for each deliverable shall be provided according to Chapter 4 and Chapter 5 in this document;
* Design review services shall be done in English;
* Indicative list and amounts of Construction objects based on Rail Baltica Preliminary Design solutions are showed in DTD technical specifications (Annex 3);
* Client has a right to decide whether Design Review remarks provided by ESP shall be implemented or not;
* ESP shall use Design Review as input basis for Design Expertise.
	+ 1. Design Expertise
* Design Expertise services for each DTDs Construction object and its deliverable shall be carried out according to Country’s legislation;
* Indicative list and amounts of Construction objects based on Rail Baltica Preliminary Design solutions are showed in DTD technical specifications (Annex 3);
* Design Expertise services shall be done in English. Design Expertise final legal report (‘’Opinion of the Expert-Examination of the Building Design’’/’’Būvprojekta ekspertīzes atzinums” (in Latvian) according to Annex 3 in Cabinet Regulation No.500 ‘’General Construction Regulations’’) shall be done also in Country’s language.
	+ 1. Period for the provision of the Design Review Services and Design Expertise Services is envisaged to last twenty seven (27) months starting from the Signing Date, however, the Services shall be furnished till the end of the design works (positive ‘’Opinion of the Expert-Examination of the Building Design’’/’’Būvprojekta ekspertīzes atzinums” (in Latvian) according to Annex 3 in Cabinet Regulation No.500 ‘’General Construction Regulations’’ and note on fulfilling the design conditions in Construction permit has been made) for each design section. Please note that Contracting Authority has the right to extend the contract if any Design works in any of Design sections lasts longer. In this case Contracting authority will send the notice to the Service Provider 45 days prior the deadline, informing that the contract will be extended (extension shall be no longer than for thirty (30) months).
		2. If the DTD before the commencement of Construction works or during the Construction works design solutions will be changed the Consultant together with the Client shall submit the relevant part of the revised design for additional expertise. These possible works shall not be part of this financial proposal.
		3. BIM deliverables is not part of work of scope for these services.
		4. Required Key-Experts and Additional experts for ESP are stated in Chapter 7 of this document.
		5. ESP shall coordinate works with respective NoBo services provider through Client. Reports developed by ESP shall be provided to NoBo services provider from Client.
		6. Following requirements stated in  TSI regulations shall not be a part of this Design Review and Design Expertise scope of work:
* Commission Regulation (EU) No 1299/2014;
* Commission Regulation (EU) No 1300/2014;
* Commission Regulation (EU) No 1303/2014;
* Commission Regulation (EU) No 1301/2014;
* Commission Regulation (EU) 2016/919.
	1. Design sections
		1. To ensure proper planning and management of designs deliverables, Rail Baltica in Latvia has been divided into four Design Sections. Each Design Section in turn is divided into Design Priority Section that are prioritized for the design process and Construction implementation perspective. All MD and DTD Design Sections and Design Priority Sections with indicative dates for deliverables are listed in Table 1 Design Sections and Design Priority Sections.
		2. Design Priority Sections are divided into Construction objects which are based on possible issuance of building permit. Indicative list and amounts of Construction objects in each design priority section, based on Preliminary Design solutions (Annex 4), are showed in DTD technical specifications (Annex 3). This amount of construction objects is indicative and shall not be treated as limiting and/or restricting the scope of Services. Tenderer shall take into account that actual number of total construction objects and structures may change during the Design process of Rail Baltica.

Table 1: Design Sections and Design Priority Sections

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Design Section** | **Design priority section** | **Title** | **Length (Preliminary design)** | **Indicative dates of deliverables submission** |
| **Master Design** | **Detailed Technical Design** |
| DTD1(Mainline through Riga) | I | Torņakalns - Imanta | 7.874 km | 05.09.2020  | 05.06.2021  |
| II | Upeslejas - Rīga central station | 15.583 km | 05.10.2020  | 05.06.2021  |
| III | Rīga airport - Misa | 32.090 km | 05.11.2020  | 05.06.2021  |
| DTD2(Vangaži - Salaspils – Misa) | I | Vangaži maintenance facilities - Nāgelmuiža | 21.300 km | 26.09.2020  | 19.05.2021  |
| II | Nāgelmuiža - Salaspils | 8.500 km | 26.09.2020  | 19.05.2021  |
| III | Daugava river bridge | 13.800 km | 26.09.2020  | 19.05.2021  |
| IV | Bērzene - Misa | 22.750 km | 22.09.2020  | 19.05.2021  |
| DTD3(Estonian/Latvian border – Vangaži) | I | EE/LV border – Vitrupe | 25.800 km | 14 months from DTD agreement commencement day | 24 months from DTD agreement commencement day |
| II | Vitrupe - Skulte | 39.900 km | 16 months from DTD agreement commencement day | 26 months from DTD agreement commencement day |
| III | Skulte - Vangaži maintenance facilities | 28.300 km | 19 months from DTD agreement commencement day | 28 months from DTD agreement commencement day |
| DTD4(Misa - Latvian/Lithuanian Border) | I | Iecava municipality | 17.600 km | 14 months from DTD agreement commencement day | 22 months from DTD agreement commencement day |
| II | Iecava river bridge | 1.000 km | 12 months from DTD agreement commencement day | 20 months from DTD agreement commencement day |
| III | Bauska municipality | 21.700 km | 16 months from DTD agreement commencement day | 22 months from DTD agreement commencement day |
| IV | Mēmele river bridge | 1.300 km | 13 months from DTD agreement commencement day | 20 months from DTD agreement commencement day |
| V | Grenctāle | 3.615 | 15 months from DTD agreement commencement day | 22 months from DTD agreement commencement day |

# **Sequence and description of work procedure**

* 1. Communication between the Client and ESP shall be carried out in English.
	2. ESP shall allocate financial resources for obtaining necessary number of licenses (at least 1) for accessing Clients Common Data Environment system. Approximit cost for 1 license is in the range of (150-300 EUR).
	3. As specified in the Contract, after signing date of Design Review and Design Expertise agreement, ESP shall prepare and deliver to the Client inception report, including, but not limited to:
		+ - Design Review and Design Expertise services organization chart with Key-experts and additional Experts with names and surnames, CV’s and supporting information proving their compliance with the qualification, other requirements stipulated in the Design Review and Design Expertise Technical Specification and their roles and responsibilities;
			- Project Work Breakdown Structure;
			- Service provision general methodology, level of detail equivalent to AACE International Level 4 (detailed level);
			- Evaluation and proposals or additional improvements for provided checklist for Design Review services;
			- The risk assessment of the service provision and the risk prevention plan.
	4. With the respect to each deliverable, the Client shall inform the ESP at least 10 days before the design deliverables will be issued to the ESP for the Design Review and Design Expertise services execution. If available, Client will provide a draft of deliverable to ESP before services execution. Client is not obligated to provide draft of deliverable. Draft of deliverable has not to be assessed. Draft of deliverable is only for informative purpose for upcoming scope of work.
	5. Design Review Services shall be provided to the Client for those Design deliverables for each Construction object that will be handed over to the ESP from the Client during MD and DTD stages. Design Expertise services shall be provided for those DTD deliverables, that is required according to Country’s legislation.
	6. During the Design Review and Design Expertise services ESP has 5 days to carry out administrative review. The aim of the administrative review is to check whether provided deliverable is complete. In case of missing documents/data in deliverable package for Design Review and Design Expertise the ESP shall as soon as possible inform the Client and Consultant. In case of incomplete deliverable it is up to the Client to decide if ESP Service provided shall carry out Design Review Services.
	7. Design Review and Design Expertise first examination for each deliverable unless otherwise agreed with the Client shall be carried out in 30 days. ESP is obliged to submit Design Review and Design Expertise reports to the client after the work completion but not later than 30 days after receiving the deliverable package.
	8. After Client receives a report from ESP, Client and Consultant has 10 days to evaluate non-conformities/remarks, if any indicated.
	9. Client will arrange the coordination meeting after Client and Consultant has evaluated non-conformities/remarks. Coordination meeting will be arranged at Client premises and shall be notified at least 5 days in advance. ESP shall present Design Review or Design Expertise results. Requested Key-Experts and, if required, additional Experts are obligated to participate in the coordination meeting at Client’s premises. Exact list of participants shall be agreed before the meeting.
	10. The minutes of the meetings shall be done by ESP in English language. The minutes of the meeting shall be sent to the meeting participants within 5 working days. ESP shall organize signing minutes of meetings.
	11. If any indicated, Consultant shall implement the non-conformities (correct/improve the design document according to remarks) received from ESP and approved by Client. Deadline for Consultant to implement comments will be set during the coordination meeting.
	12. After the Consultant has implemented all non-conformities the Consultant shall submit the design for repeated examination by ESP:
		1. For Design Review only the specified part or section of the design shall be evaluated. If repeated Design Review is carried out by another Key-expert or Additional Expert, then full Design Review is required.
		2. For Design expertise only the specified part or section of the design shall be evaluated and other related parts of the Design expertise, if impacted. If substantial modifications are made by the Consultant full Design expertise shall be carried out. If repeated Design Expertise is carried out by another Key-expert or Additional Expert, then full Design Expertise is required.
	13. Every following Design Review and Design Expertise iteration for each deliverable shall be carried out in 7 days. The Expert is obliged to submit Design Review and Design Expertise reports to the Client after the work completion, but not later than 7 days after receiving the deliverable package.
	14. On completion of the Design Review and Design Expertise for a particular Service Module, the ESP shall submit to Client following deliverables:
		1. Report (for each iteration) of Design Review by providing separate word or excel documents with all non-conformities/remarks (if any generated) according to each item in checklists of Annex 2;
		2. Legal report (for each iteration) of Design Expertise by providing ‘’Opinion of the Expert-Examination of the Building Design’’ according to Annex 3 in Cabinet Regulation No.500 ‘’General Construction Regulations’’.
		3. Design Review services deliverables ESP shall submit to Client in 1 (one) digital data carrier. Design Expertise services deliverables ESP shall submit to Client in 3 (three) printed copies and 1 (one) digital data carrier. All ESP deliverables shall be signed by responsible Experts.
	15. ESP are fully responsible for the content of the Expert’s opinion and the validity of the conclusions contained therein.
	16. ESP shall participate in meetings upon the Client request as mentioned in Table 2 (Meetings).

Table 2:

 Meetings

| **Title** | **Responsible party organizing the meeting** | **Scheduling** | **Participating parties (from both parties of the Contract)** |
| --- | --- | --- | --- |
| Kick-off meeting | Client | 7 days after commencement date of the Agreement | ESP and Client |
| Inception meeting | Client | 19 days after commencement date of the Agreement | ESP and Client and other experts appointed by contract parties |
| Co-ordination meetings | Client | 5 days after completion of remarks evaluation of design priority section by Client and Consultant  | ESP Key-Experts, if required Additional Experts, Client and Consultant |

# **Scope of Work for the Design Review**

* 1. Master Design
		1. Design Review services shall be provided to the Client for those design deliverables that will be handed over to the ESP from the Client during Master Design stage.
		2. ESP shall use most recent in force version of legal acts or applicable standards;
		3. Deliverable from Client at commencement can be a whole Design Priority Section, part of Design Priority section, single construction object or a package of different construction objects.
		4. During Design Review ESP is not obliged to provide any legal Design Expertise conclusion/opinion.
		5. ESP shall use Design Review as input basis for Design Expertise services.
		6. For Design review the maximum number of examinations is two. Second examination shall be done only if there are non-conformities in first examination.
		7. Indicative list and amounts of Construction objects based on Rail Baltica Preliminary Design solutions are showed in DTD technical specification (Annex 3).
		8. ESP shall evaluate and determine the compliance of the design, its content, volume and technical solutions with the requirements of the Detailed Technical Design Technical Specification, building permit, affected party technical conditions, complicity of the design, consequences of non-conformities, accuracy and detalization of design and calculations, most up to date legislation acts, technical regulations and other applicable standards.
		9. ESP as qualified, skilled and experienced professional shall carry out other works of services which are not directly indicated in the scope of work but are resulting from purpose and substance of the services and which are reasonably and substantially required for efficient and successful implementation of the services.
		10. Design Review process shall be carried out based on the provided Checklist templates in Annex 2. Checklist contains minimum information what shall be checked according to which standard, legislation act, regulation or any other applicable act. ESP shall review provided templates and if necessary, provide the feedback and propose additional modification according to ESP best professional practice.
		11. ESP shall do the Administrative review. The aim of the administrative review is to check whether provided deliverable is complete according to DTD technical specification and to check if all parts of the required Design Deliverable complies with the provided table of contents.
		12. ESP shall evaluate BoQ calculation models for volumes (if provided) to determine whether calculation model is applicable and accurate. Report provided by ESP shall include re-calculations with the same calculation model provided by Consultant. If Consultant has not provided calculation model ESP shall find another most accurate and applicable method to re-calculate BoQ volumes. ESP shall assess whether all items of designed Construction works are included in BoQ. ESP shall assess whether all items of BoQ are clearly and unambiguously identifiable. ESP shall assess mutual compliance between BoQ and Cost estimate. ESP shall assess Cost estimate compliance with Latvian Construction regulation LBN 501-17 ‘’Būvizmaksu noteikšanas kārtība”. ESP shall assess conformity of the materials, prices, wages and mechanisms used with the most recent market prices.
		13. For Utilities parts checklist includes references to affected party technical conditions requirements. For Design Review services those requirements shall be used as the base requirement;
		14. Particular attention shall be turned to:
			+ Conformity regarding essential requirements set for structures according to Construction law Section 9. ‘’Essential Requirements to be Set for a Structure’’;
			+ Mutual compliance between design parts (especially for crossings between utilities and constructions of structures);
			+ Mutual compliance between text (explanatory note, lists, tables etc.) and graphical documents (drawings, sketches, plans, schemes, etc.);
			+ Sufficiency (detalization) and quality of technical solutions for qualitative performance of Construction works without additional designing;
			+ Compatibility of neighboring design section solutions (including work organization part). Output data of neighbor design sections will be provided from Client;
			+ Conformity of the design solutions and materials selected in the design with the requirements of the functionality and longevity of the designed solutions;
			+ Conformity of MD solutions with the applicable safety (fire safety, civil protection, etc.) legislation acts and standards;
			+ Compliance of the design solutions with the environmental requirements. ESP shall assess proposed solutions of work organization part regarding lowering impact during Construction period;
			+ Calculations for structures.
		15. Design review for structures:
			+ Design review for different structures shall be done according to Checklist and level of calculation for every structure in provided deliverable;
			+ Level of calculation is defined by the characteristics of the structures like span and length (Table 1) and other aspects mentioned in Table 2;
			+ Client will define the level of calculation for each structure in deliverable depending of the structure complexity, specific requirements (loads, geotechnical and hydrotechnical conditions etc.) and according to current design phase (MD or DTD).
			+ For Mūsa river bridge structure ESP shall receive Design Review report from Client which was done from ESP in Lithuania. ESP shall check its compliance and compatibility in order to be able to carry out Design Expertise services for Mūsa River Bridge structure in Latvia.

# Table 1: Example - Levels of calculation for typical reinforced/prestressed concrete structure

|  |  |  |
| --- | --- | --- |
| Level of calculation | Structure complexity | Structure characteristics |
| Span (m) | Length (m) |
| Level 1 | Simple | 2 to 10 | less than 30 |
| Level 2 | Low complexity | 10 to 20 | from 30 to 50 |
| Level 3 | Average complexity | 20 to 30 | from 50 to 150 |
| Level 4 | High complexity | above 30 | above 150 |

* + - * Scope of work for each level of calculation is provided in Table 2.

Table 2: Level of calculation minimum scope of work

|  |  |  |  |
| --- | --- | --- | --- |
| Level of calculation | Structure complexity | Other aspects | Review of Designer calculations |
|
| Level 1 | Simple | Construction scheme complexity;Materials (concrete, steel, composite, timber);Dynamic behavior;Interaction with other structures;Track-structure behavior;Fatigue behavior;Foundation conditions | Expert's review should answer the following questions:* All relevant loads were considered in Design?
* All loads used in calculations are well defined?
* All relevant load combinations have been considered in Design?
* All combinations used are well defined?
* The used calculation methodology is appropriate regarding:
	+ Structural software
	+ Structural models
	+ Methods of analysis
	+ Structural verifications (SLS, ULS, dynamic, fatigue, train-track considerations, foundations, etc.)
* Any relevant verification missing?
* Results from calculations are reasonable?
* Does element’s geometrical parameters in calculation reports matches with information presented in the drawings?

Expert is not expected to provide calculations, Design Review will be based on Expert experience, knowledge and benchmark with similar situations. |
| Level 2 | Low complexity | In addition to Calculation Design Review Level 1 requirements Expert shall provide:* Confirmation of the results provided by the Designer by providing their own calculations
* Calculations shall present the effects (forces, stresses, deformations, etc.) as well as the respective verifications according to relevant standards and calculation methodologies
* Calculation shall be provided for the critical sections of the structures for service and also for critical construction situations if applicable
* Critical sections shall include verification of distribution of large concentrated forces into the structure (bearing supports, prestress anchorages, connection sections)
* The minimum verification set shall include but it is not limited to:
	+ SLS (Stress limitation, crack control, deflection control, web breathing, etc.)
	+ ULS (resistance of cross sections, buckling of members, shear connection, punching, fatigue, etc.)
	+ Accidental actions
	+ Minimum reinforcement
	+ Nominal cover requirements
	+ Possible structural instabilities

Only static calculations are required |
| Level 3 | Average complexity | In addition to Calculation Design Review Level 2 requirements Expert shall provide calculation to assess designer results in more specific topics. If applicable the illustrated topics here and other relevant aspects shall be investigated through independent calculations focus only on the main parameter necessary to verify safety of design:* Track-structure interaction calculation
* Fatigue calculations
* Buckling Analysis
* Dynamic behavior of the structure
* Vehicle-structure interaction
* Soil-Structure Interaction
* Joint connections
* Construction stage analysis
 |
| Level 4 | High complexity | In addition to Calculation Design Review Level 3 requirements Expert shall provide full independent design check calculations to at least the extent and level of detail provided by the designer |

* + 1. ESP shall generate report (signed by responsible Key-Experts and Additional Experts) of Design Review by providing separate word or excel documents with all remarks (if any generated) according to each item in checklists of Annex 1.
		2. Design Review services for particular deliverable is considered as completed after approval by Client.
	1. Detailed Technical Design stage

As input basis for legal Design expertise services, during DTD stage ESP shall carry out Design Review services listed below in 5.2. paragraph.

* + 1. Design Review services shall be provided to the Client for those design deliverables that will be handed over to the ESP from the Client during DTD stage.
		2. ESP shall use most recent in force version of legal acts or applicable standards;
		3. Deliverable from Client at commencement can be a whole Design Priority Section, part of Design Priority section, single construction object or a package of different construction objects.
		4. During Design Review ESP is not obliged to provide any legal Design Expertise conclusion/opinion.
		5. ESP shall use Design Review as input basis for Design Expertise services.
		6. For Design review the maximum number of examinations is two. Second examination shall be done only if there are non-conformities in first examination.
		7. ESP shall evaluate and determine the compliance of the design, its content, volume and technical solutions with the requirements of the Detailed Technical Design Technical Specification, building permit, affected party technical conditions, complicity of the design, consequences of non-conformities, accuracy and detalization of design and calculations, most up to date legislation acts, technical regulations and other applicable standards.
		8. ESP as qualified, skilled and experienced professional shall carry out other works of services which are not directly indicated in the scope of work but are resulting from purpose and substance of the services and which are reasonably and substantially required for efficient and successful implementation of the services.
		9. Design Review process shall be carried out based on the provided Checklist templates in Annex 2. ESP shall review provided templates and if necessary, provide the feedback and propose additional modification according to ESP best professional practice. Checklist contains minimum information what shall be checked and according to which standard, legislation act, regulation or any other applicable act.
		10. ESP shall do the Administrative review. The aim of the administrative review is to check whether provided deliverable is complete according to DTD technical specification and to check if all parts of the required Design Deliverable complies with the provided table of contents and formatting of deliverable conforms requirements of Country Construction regulations LBN 202-18 “Būvniecības ieceres dokumentācijas noformēšana”.
		11. ESP shall evaluate BoQ calculation models for volumes (if provided) to determine whether calculation model is applicable and accurate. Report provided by ESP shall include re-calculations with the same calculation model provided by Consultant. If Consultant has not provided calculation model ESP shall find another most accurate and applicable method to re-calculate BoQ volumes. ESP shall assess whether all items of designed Construction works are included in BoQ. ESP shall assess whether all items of BoQ are clearly and unambiguously identifiable. ESP shall assess mutual compliance between BoQ and Cost estimate. ESP shall carry out recalculations for every item which may affect more than 1.5% of construction object total CAPEX according to Consultant cost estimate. ESP shall assess Cost estimate compliance with Latvian Construction regulation LBN 501-17 ‘’Būvizmaksu noteikšanas kārtība”. ESP shall assess conformity of the materials, prices, wages and mechanisms used with the most recent market prices.
		12. For Utilities parts checklist includes references to affected party technical conditions requirements. For Design Review services those requirements shall be used as the base requirement;
		13. Particular attention shall be turned to:
			- Conformity regarding essential requirements set for structures according to Construction law Section 9. ‘’Essential Requirements to be Set for a Structure’’;
			- Mutual compliance between design parts (especially for crossings between utilities and Constructions of structures);
			- Mutual compliance between text (explanatory note, lists, tables etc.) and graphical documents (drawings, sketches, plans, schemes, etc.);
			- Sufficiency (detalization) and quality of technical solutions for qualitative performance of Construction works without additional designing;
			- Compatibility of neighboring design section solutions (including work organization part). Output data of neighbor design sections will be provided from Client;
			- Conformity of the design solutions and materials selected in the design with the requirements of the functionality and longevity of the designed solutions;
			- Conformity of DTD solutions with the applicable safety (fire safety, civil protection, etc.) legislation acts and standards;
			- Compliance of the design solutions with the environmental requirements. ESP shall assess proposed solutions of work organization part regarding lowering impact during Construction period;
			- Calculations for structures.
		14. Design review for structures:
			- Design review for different structures shall be done according to Checklist and level of calculation for every structure in provided deliverable.
			- Level of calculation is defined by the characteristics of the structures like span and length (Table 1) and other aspects mentioned in Table 2.
			- Client will define the level of calculation for each structure in deliverable depending of the structure complexity, specific requirements (loads, geotechnical and hydrotechnical conditions etc.) and according to current design phase (MD or DTD)

# Table 3: Example - Levels of calculation for typical reinforced/prestressed concrete structure

|  |  |  |
| --- | --- | --- |
| Level of calculation | Structure complexity | Structure characteristics |
| Span (m) | Length (m) |
| Level 1 | Simple | 2 to 10 | less than 30 |
| Level 2 | Low complexity | 10 to 20 | from 30 to 50 |
| Level 3 | Average complexity | 20 to 30 | from 50 to 150 |
| Level 4 | High complexity | above 30 | above 150 |

* + - * Scope of work for each level of calculation is provided in Table 2.

Table 4: Level of calculation minimum scope of work

|  |  |  |  |
| --- | --- | --- | --- |
| Level of calculation | Structure complexity | Other aspects | Review of Designer calculations |
|
| Level 1 | Simple | Construction scheme complexity;Materials (concrete, steel, composite, timber);Dynamic behavior;Interaction with other structures;Track-structure behavior;Fatigue behavior;Foundation conditions | Expert's review should answer the following questions:* All relevant loads were considered in Design?
* All loads used in calculations are well defined?
* All relevant load combinations have been considered in Design?
* All combinations used are well defined?
* The used calculation methodology is appropriate regarding:
	+ Structural software
	+ Structural models
	+ Methods of analysis
	+ Structural verifications (SLS, ULS, dynamic, fatigue, train-track considerations, foundations, etc.)
* Any relevant verification missing?
* Results from calculations are reasonable?
* Does element’s geometrical parameters in calculation reports matches with information presented in the drawings?

Expert is not expected to provide calculations, Design Review will be based on Expert experience, knowledge and benchmark with similar situations. |
| Level 2 | Low complexity | In addition to Calculation Design Review Level 1 requirements Expert shall provide:* Confirmation of the results provided by the Designer by providing their own calculations
* Calculations shall present the effects (forces, stresses, deformations, etc.) as well as the respective verifications according to relevant standards and calculation methodologies
* Calculation shall be provided for the critical sections of the structures for service and also for critical construction situations if applicable
* Critical sections shall include verification of distribution of large concentrated forces into the structure (bearing supports, prestress anchorages, connection sections)
* The minimum verification set shall include but it is not limited to:
	+ SLS (Stress limitation, crack control, deflection control, web breathing, etc.)
	+ ULS (resistance of cross sections, buckling of members, shear connection, punching, fatigue, etc.)
	+ Accidental actions
	+ Minimum reinforcement
	+ Nominal cover requirements
	+ Possible structural instabilities

Only static calculations are required |
| Level 3 | Average complexity | In addition to Calculation Design Review Level 2 requirements Expert shall provide calculation to assess designer results in more specific topics. If applicable the illustrated topics here and other relevant aspects shall be investigated through independent calculations focus only on the main parameter necessary to verify safety of design:* Track-structure interaction calculation
* Fatigue calculations
* Buckling Analysis
* Dynamic behavior of the structure
* Vehicle-structure interaction
* Soil-Structure Interaction
* Joint connections
* Construction stage analysis
 |
| Level 4 | High complexity | In addition to Calculation Design Review Level 3 requirements Expert shall provide full independent design check calculations to at least the extent and level of detail provided by the designer |

* + 1. ESP shall generate report (signed by responsible Key-Experts and Additional Experts) of Design Review by providing separate word or excel documents with all remarks (if any generated) according to each item in checklists of Annex 2. Report shall include BoQ re-calculations.
		2. Design Review services for particular deliverable is considered as completed after approval by Client.

# **Scope of Work for the Design Expertise**

* 1. Design Expertise services for each DTDs Construction object and its deliverable shall be carried out according to Country’s legislation
	2. ESP shall provide DTD’s evaluation regarding conformity of the technical solution if the building design with the requirements of the laws and regulations and technical specifications.
	3. EPS shall generate legal report (signed by responsible Key-Experts and Additional experts) of Design Expertise by providing ‘’Opinion of the Expert-Examination of the Building Design’’ according to Annex 3 in Cabinet Regulation No.500 ‘’General Construction Regulations’’. ESP shall give opinion (positive or negative) if design conforms with the requirements of the laws and regulations and technical conditions.
	4. Design Expertise services for particular deliverable is considered as completed after positive ‘’Opinion of the Expert-Examination of the Building Design’’ according to Annex 3 in Cabinet Regulation No.500 ‘’General Construction Regulations’’ and note on fulfilling the design conditions in Construction permit has been made.
	5. ESP are fully responsible for the content of the Key-Expert’s and Additional Expert’s opinion and the validity of the conclusions contained therein.
	6. All documentations which is base of decision of the ESP’s opinion shall be kept for at least 10 years.
	7. If the DTD before the commencement of Construction works or during the Construction works design solutions will be changed the Consultant together with the Client shall submit the relevant part of the revised design for additional expertise. These possible works shall not be part of this financial proposal.

# **Experts**

* 1. Required ESP Key-Experts for Design Review and Design Expertise services are stated in Table 5 of this document. Required additional Experts are stated in Table 6 of this document.
	2. ESP shall be responsible for ensuring, that the proposed Key-Experts and additional Experts would have necessary certificates or/and other legal recognition documents in accordance to the Country’s legislation.
	3. ESP and all involved Key-Experts and additional Experts shall not have any relation or connection to the designated Consultant for the respective design sections in Country. A performer (Expert) of Design Expertise shall certify in the opinion of the expert-examination that personal or material interests of neither expert, nor his or her relatives or transaction partners will affect the opinion of the expert-examination. Within the meaning of Cabinet Regulation No.500 ‘’General Construction Regulations’’, the following persons shall be regarded as relatives - father, mother, grandmother, grandfather, child, grandchild, adoptee, brother, sister, step-sister, step-brother, spouse.
	4. Only in exceptional cases ESP Experts included in the Agreement can be replaced. ESP has no right to change the Expert without the approval of the Client. For each Expert change, the ESP shall obtain Client approval. To change the Key-Expert or additional Expert, ESP shall submit a request with all documents necessary for the Client to make sure that the proposed Key-Expert or additional Expert satisfies the qualification requirements set for relevant Key-expert or additional Expert in the procurement Regulation.
	5. The qualification of Key-Experts and additional Experts must comply with the requirements of Country’s legislation (if applicable). Cases when The Client is requiring additional qualification are in the Table 5.
	6. The proposed Expert’s English language level should be at least B2[[2]](#footnote-3).
	7. The Client reserves the right to request the ESP to replace any Key-Expert or additional Expert in case of any of the following reasons:
		+ - Non-timely performance of the duties;
			- Repeated careless performance of duties;
			- Incompetence or negligence;
			- Non-fulfilment of obligations or duties stipulated in the Agreement;
			- Poor knowledge of English language;
			- Termination of employment relations with the ESP;
			- Design Expertise rights no longer exist or certificate or/and other legal recognition documents in accordance to the Country’s legislation expired during services execution process;
			- Expert motivation or qualification is questionable.
	8. Failing of the ESP to propose another Key-Expert or additional Expert with equivalent or better qualifications within 10 (ten) days, the ESP is considered to be under Delay of obligations pursuant to the Agreement.
	9. The Client shall approve or reject the replacement, by specifying the reasons for rejection, of a Key-Expert or additional Expert as soon as possible, but not later than within 10 (ten) days after the receipt of all information and documents necessary for a decision and approval in accordance with the provisions in this Design Review and Design Expertise Agreement.
	10. ESP shall propose a team consisting of the following qualified Key-experts meeting all the qualification requirements established for the Key-experts in Clause 7.5. of the Regulation document for this open competition “Detailed Technical Design Review and Design Expertise Services for Rail Baltica in Latvia”, id. No RBR 2019/16, and in addition, meeting the following general criteria regarding Key-expert`s professional competence (qualification), if applicable:

# Table 5 Key experts

|  |  |  |
| --- | --- | --- |
| **No** | **Specialist Designation** | **Professional competence (qualification)** |
| 1 | Project Manager of Design Expertise  | Qualified as railway track design expert (or equivalent certification/license) to provide Design Expertise Services in accordance with European Qualification Framework |
| 2 | Structural Design Expert for Transport Structures  | Qualified in relevant area (or equivalent certification/license) to provide Design Expertise Services in accordance with European Qualification Framework |
| 3 | Railway Track Design Expert  | Qualified in relevant area (or equivalent certification/license) to provide Design Expertise Services in accordance with European Qualification Framework |
| 4 | Geotechnical Engineer or Engineering Geologist | Qualified in relevant area (or equivalent certification/license) to provide Design Expertise Services in accordance with European Qualification Framework |

* 1. Professional competence (qualification) indicated in Table 5 shall be obtained for the provision of the Design Expertise Services during the fulfilment of the contract.
	2. The following non-exhaustive list of additional qualified experts according to the European Qualification Framework are required at least in this project:

Table 6 Required non-exhaustive additional Experts

|  |  |  |
| --- | --- | --- |
| No | Specialist Designation | Professional competence (qualification) |
| 1 | Road Design Expert | Qualified in relevant area (or equivalent certification/license) to provide Design Expertise Services in accordance with European Qualification Framework |
| 2 | Structural Design Expert for road viaducts | Qualified in relevant area (or equivalent certification/license) to provide Design Expertise Services in accordance with European Qualification Framework |
| 3 | Railway Track, Signaling and Electrification Design Expert for 1520 mm railway | Qualified in relevant area (or equivalent certification/license) to provide Design Expertise Services in accordance with European Qualification Framework |
| 4 | Water, Stormwater and Drainage and sewage Design Expert | Qualified in relevant area (or equivalent certification/license) to provide Design Expertise Services in accordance with European Qualification Framework |
| 5 | Land melioration systems design Expert | Qualified in relevant area (or equivalent certification/license) to provide Design Expertise Services in accordance with European Qualification Framework |
| 6 | Hydrotechnical structures design Expert | Qualified in relevant area (or equivalent certification/license) to provide Design Expertise Services in accordance with European Qualification Framework |
| 7 | High voltage (110 and more kV) power supply design Expert | Qualified in relevant area (or equivalent certification/license) to provide Design Expertise Services in accordance with European Qualification Framework |
| 8 | Network and Telecommunications Design Expert | Qualified in relevant area (or equivalent certification/license) to provide Design Expertise Services in accordance with European Qualification Framework |
| 9 | High pressure Gas supply network design Expert | Qualified in relevant area (or equivalent certification/license) to provide Design Expertise Services in accordance with European Qualification Framework |
| 10 | Cultural Heritage Expert | Qualified in relevant area (or equivalent certification/license) to provide Design Expertise Services in accordance with European Qualification Framework |
| 11 | Environmental Expert | Qualified in relevant area (or equivalent certification/license) to provide Design Expertise Services in accordance with European Qualification Framework |
| 12 | Construction works preparation and organization expert | Qualified in relevant area with previous experience for construction works preparation and organization for highspeed railway.  |

* 1. Professional competence (qualification) indicated in Table 6 shall be obtained for the provision of the Design Expertise Services during the fulfilment of the contract.
1. Client shall not be responsible for the availability and content of the information available online (except for [www.railbaltica.org](http://www.railbaltica.org) website). [↑](#footnote-ref-2)
2. Language level is based on Common European Framework of Reference for Languages (see <http://europass.cedefop.europa.eu/resources/european-language-levels-cefr>) [↑](#footnote-ref-3)