



NET4GAS, s.r.o

HP PIPELINE DN1400, NODE KP – NODE PŘIMDA

Scope of Work for General Contractor – LOT II

06.03.2019

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REVISION HISTORY

002	06.03.19	Re-Approved	Hoz	Team	Schorling
001	18.12.18	Re-Approved	Hoz	Team	Schorling
000	06.12.18	Approved	Hoz	Team	Schorling
B02	28.11.18	Re-Issue for Review	Hoz	Team	Schorling
B01	09.11.18	Issue for Review	Hoz	Team	Schorling
A01	01.10.18	Issue for IDC	Hoz	Team	Schorling
Rev.	Date	Issue, Purpose	Prepared	Checked	Approved

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1 GENERAL

1.1 Scope of the Document

The purpose of the present document is to define the scope of work for the General Contractor of LOT II.

This document shall be read in conjunction with the General Technical Requirements (C4G-HPPL-ILF-GENER-GEN-MAN-800) and with the Interface Report (C4G-HPPL-ILF-GENER-GEN-TZP-010).

1.2 Definitions

Term	Explanation
Project	HP Pipeline DN1400, Node Kateřinský potok – Node Přimda
Employer	NET4GAS
Employer service company	Service organisation performing work on behalf of NET4GAS fibre optic and IT departments
Consultant	ILF Consulting Engineers
General Contractor	The entity entrusted by the Employer with Engineering, Procurement and Construction of the project.
Independent Third Party	Any legal entity except Employer, Consultant and General Contractor

1.3 Abbreviations

Term	Explanation
AC	Alternating Current
CCTV	Closed Circuit Television
CP	Cathodic Protection
DC	Direct Current

Term	Explanation
DCC	Document Control Centre
EPC	Engineering, Procurement and Construction
EPC Contract / Contractor	Means the contract, contractor constructing the station
ICS	Instrumentation and Control System
ICT	Instrumentation, Control, Telecommunication and Security Systems
INW	Inspection works
FOC	Fibre Optic Cable
HDPE	High density polyethylene
HSE	Health safety and environment
MV	Medium Voltage
NDT	Non-destructive testing
LAN	Local area network
LLI	Long Lead Item
LV	Low Voltage
ODF	Optical Distribution Frame
PZTS	Alarm and emergency alarm system (poplachový zabezpečovací a tísňový systém)
QA/QC	Quality assurance / quality control
ROW	Right of Way
SKAO	Cathodic protection station (stanice katodové ochrany)
SKV	Access control system (systém kontroly vstupu)
UPS	Uninterruptible Power Supply
TIČR	Technical inspection (Technická inspekce ČR)

Term	Explanation
TU	Line valve station (trasový uzávěr)

1.4 References

No.	Number	Title
1	C4G-HPPL-ILF-GENER-GEN-TZP-010	Interface Report
2	C4G-HPPL-ILF-GENER-GEN-MAN-800	General Technical Requirements
3	C4G-HPPL-ILF-GENER-GEN-SEZ-851	List of Required Engineering Documents for General Contractor
4	C4G-HPPL-ILF-GENER-LIN-DIA-800	Technical Scheme
5	C4G-HPPL-ILF-GENER-LIN-SPC-801	Pipeline - Welding Specification
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2 SCOPE OF WORK

The project of HP Pipeline DN1400 consists of two sections (lots). This document describes the scope of work of the General Contractor and his scope of deliveries for the Lot 2.

The Scope of Work of the Project consists of the complete engineering, procurement and construction, inspection, testing, commissioning and start-up of a fully ready for commercial operation pipeline within the limits defined in document C4G-HPPL-ILF-GENER-GEN-TZP-010 Interface Report.

Any required task including any temporarily required task to realise this fully ready for commercial operation pipeline is included in General Contractor's Scope of Work with the exception of:

- a) Tasks explicitly assigned to the Employer
- b) Tasks explicitly assigned to a Third Party

It is explicitly stated that any task resulting from any authority requirement is included in the scope of work.

The scope of work includes base items and optional items. The Employer may decide to realise, or not to realise the optional items. The following options are foreseen:

- 1) Pipe yards (construction, security before operation, security during operation, reinstatement)
- 2) FOC supply and installation
- 3) Relocation of power supply cables in TU Mladotice (N4G, Innogy)
- 4) Noise protection measures for TU Mladotice – In case of exceedance of noise limits during trial operation protection measures in form of noise protection hub for valves shall be applied.
- 5) Noise protection measures for TU Přimda – In case of exceedance of noise limits during trial operation protection measures in form of noise protection hub for valves shall be applied.

3 GAS PIPELINE SECTIONS AND STATIONS WITHIN LOT I

The following gas pipeline sections and stations belong to LOT I:

UP517	The gas pipeline part between TU53S and TU40S
UP518	The gas pipeline part between TU40S and TU41S
UP519	The gas pipeline part between TU41S and TU42S
UP520	The gas pipeline part between TU42S and TU48S
UP530	The gas pipeline part between TU48S and RU005
TU40S	TU 40S Mladotice
TU41S	TU 41S Hubenov
TU42S	TU 42S Sviňomazy
TU48S	TU 48S Bor
RU005	RU 05 Přimda
SK144	SKAO 144 Dražeň
SK310	SKAO 310 Sviňomazy
SK311	SKAO 311 Přimda
	Pipe yard – Malměřice *
	Pipe yard – Pastuchovice *
	Pipe yard - Dražeň I *
	Pipe yard - Úněšov I *
	Pipe yard - Těchlovice u Stříbra I *
	Pipe yard - Holostřevy II *
	Pipe yard - Souměr I *

* Pipe yards are optional.

4 SYSTEMS AND OBJECTS TO BE REALISED WITHIN THE CONTRACT

The scope of work of the Project includes, but is not limited to full supply, installation and commissioning of systems and equipment enumerated below.

Note: Delivery of some of equipment is excluded from the General Contractor's scope, see section 9 .

For explicit extent of the Scope see project documentation, especially:

- General technical requirements
- Interface report
- Technical reports
- Specifications
- Coordination layouts
- P&IDs and other diagrams
- Guide and typical drawings
- Piping and other equipment arrangements and layouts
- Etc.

For delivery limits see Interface Report.

4.1 Pipeline

All related works necessary for complete installation, testing, commissioning, etc. of the systems/objects enumerated below, such as earthworks, welding, coating, protection, buoyancy control, marking, reinstatement, etc., are part of the Scope, if not otherwise excluded.

4.1.1 Pipeline systems/objects:

- a) Gas transportation system (incl. FOC conduits and cathodic protection system)
- b) Crossings (road, railway, river, underground and overhead lines, steep slopes, etc.)

4.1.2 Related systems/objects:

- a) Construction roads
- b) Temporary and permanent access roads to the working strip
- c) Temporary site facilities
- d) Drainage reparations / relocations

- e) Demolitions of a Third party (or Employer's) systems/objects which are in collision with the pipeline (as designed)
- f) Reconstructions of systems/objects demolished during construction
- g) Relocations of a Third party (or Employer's) systems/objects which are in collision with the pipeline or any other system/object
- h) Technical and biological re-cultivation including planting and seeding

4.2 Typical Line Valve Stations

4.2.1 Civil systems and objects

All related works necessary for complete construction of the systems/objects enumerated below, such as earthworks, concrete works, formworks, coating, painting, etc., are part of the Scope, if not otherwise excluded:

- a) Temporary facilities and installations (roads, fencing, drainage, etc.)
- b) Demolitions and relocations of existing systems/objects (e.g. paved areas, foundations, etc.), which are in collision with systems/objects being constructed/installed.
- c) Pipe sleepers, valve supports and foundation for other mechanical equipment
- d) Foundations and supporting structures for outdoor lighting, CCTV and other electric equipment and instrumentation
- e) Pits and shafts for piping, valves and instrumentation
- f) Trenches for pipes, cables, earthing, etc. (incl. backfilling, compaction, marking and protection if applicable)
- g) Cable routes, shafts, ducts, conduits, trays and trenches
- h) Access and service platforms, stairs and crossovers
- i) Fences and gates
- j) Roads and paved surfaces
- k) Walkways and sidewalks
- l) Gravel areas and grass areas
- m) Stormwater system (incl. renovation/upgrade of existing channels, drainages, culverts, etc. in an extend necessary to avoid flooding of the station or third party properties/structures)
- n) Health and safety signs
- o) Technical and biological re-cultivation including planting and seeding

- p) Etc.

4.2.2 Mechanical systems and objects

All related works necessary for proper installation, testing and commissioning of the systems/objects enumerated below, such as earthworks, bedding, welding, coating, painting, etc., are part of the Scope, if not otherwise excluded.

For a common line valve station the following mechanical systems and objects shall apply

- a) Gas transportation system consisting of pipeline section, line valve and its by-pass
- b) Venting system mounted on the line valve by-pass
- c) Etc.

Note: New line valve shall not be installed in RU Kateřinský potok (line valve is existing)

4.2.3 Electrical systems and objects

All related works necessary for complete installation, testing and commissioning of the systems/objects enumerated below are part of the Scope, if not otherwise excluded.

- a) The power supply system including distribution cabinets, junction boxes and cabling
- b) Modifications in existing electrical container and switchgears
- c) Extension of station lighting system
- d) Extension of station earthing and lightning protection system
- e) Cable trays and ladders or other transport systems (incl. supports, hangers, edge protection, penetration sealing, filling blocks for modular cable transits, etc.)
- f) Etc.

4.2.4 Instrumentation and control system

All related works necessary for complete installation, testing and commissioning of the systems/objects enumerated below are part of the Scope, if not otherwise excluded.

- a) Extension of existing station control
- b) Instrumentation
- c) Cabling
- d) Etc.

4.2.5 Telecommunication system

Active telco components are excluded from the Scope (see section 9.2).

All works necessary for complete installation, testing and commissioning of the systems/objects enumerated below are part of the Scope, if not otherwise excluded.

- a) FOC HDPE cable conduits calibrated and pressure tested, FOC HDPE cable conduit ready for installation of FOC incl. NYY signal cables measured according to TP_D02_00_01_01 and marking tapes, etc.
- b) FOC HDPE entries into buildings/containers (incl. sealing)
- c) Support to Employers service companies for installation of FOC
- d) FOC supply and installation - option
- e) Etc.

4.2.6 Integrated Security System

The following existing stations shall be equipped with new security systems:

- TU Hubenov
- TU Sviňomazy
- TU Bor

Newly installed security systems shall consist of:

- a) Alarm and emergency alarm system (PZTS)
- b) Access control system (SKV)
- c) CCTV
- d) Perimeter intrusion detection system (PERIDECT+)
- e) Intercom system
- f) Security system cabinets (only for stations with a new security system)
- g) Cabling
- h) Etc.

4.3 Specifics for Line Valve Stations

4.3.1 Civil systems and objects

- a) Relocation of part of existing fence at stations:

- TU Hubenov
- TU Bor
- b) TU Mladotice
 - Noise protection hub – Option
- c) RU Přimda
 - Noise protection hub – Option

4.3.2 Mechanical systems and objects

- a) TU Mladotice
 - Tie-in to existing piping
- b) RU Sviňomazy
 - Insulation joints
- c) RU Přimda
 - Pig trap, and related piping
 - Tie-in to existing piping
 - Insulation joint

4.3.3 Electrical systems and objects

- a) TU Mladotice
 - Relocation of power supply cables – Option
 - Relocation of three lighting poles
- b) TU Hubenov
 - Relocation of a lighting pole

4.3.4 Integrated Security System

- a) TU Sviňomazy
 - Existing security system shall be dismantled and replaced with a new system

4.4 Cathodic protection stations

4.4.1 Civil systems and objects

- a) Earthworks
- b) Demolitions and relocations

- c) Foundations for new cathodic protection installations
- d) Ditches for cables/anodes including backfill
- e) Temporary site facilities
- f) Etc.

4.4.2 Electrical systems and objects

- a) DC cables
- b) Cables for electrical connections
- c) Electric mounting boxes
- d) Electrodes
- e) Anodes
- f) Cathodic protection stations / Rectifiers
- g) New cathodic protection kiosk
- h) Modifications of existing cathodic protection installations
- i) Etc.

4.5 Pipe yards

Pipe yards are contractual options. The Employer will decide whether he will entrust the General Contractor with construction, security before and during operation and reinstatement of the pipe yards.

Operation of pipe yards incl. material handling, welding, bending, etc. is in any case in scope of General Contractor.

In case that the General Contractor will be entrusted also with preparation of pipe yards, the following systems and objects, but not limited, are fully in his Scope:

4.5.1 Civil systems and objects

- a) Temporary site facilities
- b) Access roads
- c) Fencing
- d) Paved surfaces
- e) Pipes support and storage system
- l)** Etc.

5 WORKS TO BE EXECUTED

5.1 General

The General Contractor shall execute the complete surveys, permitting process, detail design documentation, procure, construct, test and commission the systems and objects in his scope of work.

The extent of works and supplies are not limited by lists in this document. All works and supplies necessary for complete construction, testing, commissioning of the Project are included in the General Contractor's scope, if not explicitly excluded.

For the purpose of description, the term "construction" also includes the necessary engineering and design work, shop drawings, supplies, tests, commissioning, permits, etc. required for the complete construction unless specifically exempted.

Fulfilment and compliance with all requirements imposed by authorities or third parties resulting from permitting process are also included in the General Contractor's scope.

In addition, the General Contractor shall follow all obligations resulting from the contracts with landowners (e.g. regarding final landscaping, ground works, handover of the construction site, etc.).

5.2 Scope of Early and Preparatory Works

The scope of the general works includes, but is not limited to the following services:

- a) Geotechnical investigation (if needed by the General Contractor)
- b) Topographical survey (if needed by the General Contractor)
- c) Stake out according to the Project documentation and Employer's specification MP_T01_05_01_01
- d) As-built survey according to the Project documentation and Employer's specification MP_T01_05_01_01 , incl. photo/video documentation
- e) Photo/video documentation of traffic infrastructure which will be used during construction
- f) Passports - obtaining photo/video documentation of given area including access routes, trees, and non-forest vegetation. For detailed requirements see section 8.
- g) All other surveys which are necessary for the Project and are not provided by the Employer
- h) Surveys required by Authorities before/during commencement of earthworks, such as archaeological, pyrotechnical, etc.

- i) Mobilisation, demobilisation, supply of materials, machinery, personal incl. necessary permits
- j) Provision of temporary fencing, roads, storage areas, drainage systems
- k) Working strip setting out
- l) Access roads/ road slips improvement/ construction incl. bridges and crossings
- m) ROW and third party facilities marking
- n) Site clearing and trees cutting (incl. processing, handover to land owners as required and disposal)
- o) Dewatering works, lowering of underground water table if required (incl. negotiation with Third Parties and Authorities if required for permit of discharge of water)
- p) Site installations (incl. waste storage facility, sanitary installations, etc.)
- q) Provision of water and energy for the needs of the General Contractor, Employer, or Third Party (NDT Contractor, Inspection Contractor, etc.)
- r) Provision of temporary office and site facilities for the needs of the General Contractor, Employer, or Third Party (NDT Contractor, Inspection Contractor, etc.)
- s) Provision of stock yards and pipe yards (option) for the needs of the General Contractor, Employer, or Third Party (NDT Contractor, Inspection Contractor, etc.)
- t) Improvement of the field road on the land plot no. 1905 near pipe yard Pastuchovice (app. 300 m²).
- u) etc.

5.3 Scope of Construction Works

- a) Top soil stripping (handling with top soil as per authority requirements)
- b) Site grading, which includes, but is not limited to excavation, filling, compaction, temporary surface drainage system, embankments, sheeting, retaining walls if necessary
- c) Earthworks (incl. excavation, filling, padding, bedding, compaction, soil replacement, surplus soil disposal, soil improvements, sheeting, bracing, shoring, sheet piling, etc.)
- d) Foundation works
- e) Supply of all materials required to completely construct the systems and facilities within the Contract limits with the exception of those materials which are explicitly included in the Employer's services (see Interface Report)
- f) Complete construction and/ or installation of all objects, systems and facilities within their limits

- g) Welding
- h) Field coating and painting
- i) Pipe laying
- j) FOC conduits and chambers installation
- k) Cathodic protection system installation
- l) Demolitions and disposal/ liquidation of existing systems, objects, networks, etc. if required by the Project
- m) Relocations of existing systems, objects, networks, etc. if required for the Project
- n) Installation of the Pipeline and FOC conduits protection and marking
- o) Restoration of systems/objects demolished during construction if required for the Project
- p) Temporary and permanent protection of existing objects, networks and facilities.
- q) Reconstruction/relocation of existing drainages influenced by the Project.
- r) Storage and maintenance of equipment and materials supplied by the Employer or a Third Party including guarding
- s) Coordination and cooperation with other Suppliers and Contractors
- a) Painting and corrosion protection
- b) Installation of casing pipes seals
- c) Backfilling and compaction
- d) etc.

5.4 Scope of Finishing Works, Testing, Commissioning, Trial Operation

- a) Tagging/Labelling of all equipment
- b) Mechanical and EICT completion
- c) Inspection and testing of all systems and facilities, incl. hydro tests, stress tests, cleaning and drying, gauging pig run and calliper pig run, etc.
- d) Provision of health and safety signs
- e) Pre-commissioning and commissioning activities
- f) Trial operation
- g) Noise measurement for TU Mladotice and RU Přimda during trial operation

5.5 Site Cleaning, Demobilization and Reinstatement

- a) Complete clean-up of the construction site
- b) Complete technical re-instatement of all facilities damaged by the General Contractor (for instance roads)
- c) Storage areas disposal, landscaping to restore to the original condition, including technical and biological reinstatement
- d) Disposal of surplus soil (as per authority requirement)
- e) Management and handling of surplus material and disposal of waste material
- f) Complete demobilization of Contractors installations and temporary facilities
- g) Complete technical and biological re-instatement, incl. top soil spreading and seeding and planting of trees
- h) Pipeline and FOC marking

5.6 Training

- a) Training of the Employer's personnel for the operation and the maintenance of all items supplied by the General Contractor.

5.7 Scope of General Works, Reporting and DCC

- a) All activities required to be in conformity with the Employer's procedures (such as document numbering, correspondence numbering, document handling procedures, etc.) are part of the Scope of Work
- b) Weekly and monthly reporting and participation in monthly/weekly progress and site meetings with Employer and Third Parties
- c) Following all applicable standards, codes, regulations and design documentation. In case of discrepancy the General Contractor is responsible to inform the Employer before works commencement

5.8 Scope of Design and Detail Design Works

The Tender Design shall be endorsed by the General Contractor.

Required updates of the documentation during execution of the project shall be provided by the General Contractor. The General Contractor shall then develop the tender design into a constructible design. The General Contractor shall supply all design and detail design documents related to his scope of work. This holds also true for any temporary work.

The following documentation packages are required from the General Contractor:

- 1) Material packages <DN 300 tendered by the General Contractor
- 2) Construction documentation package
- 3) Mechanical completion dossier
- 4) Pre-commissioning dossier
- 5) Commissioning dossier
- 6) Trial operation dossier
- 7) As-built documentation package

All documentation packages shall be supplied in:

- 1) Hard copy
- 2) Pdf format
- 3) Editable/native files

All design documentation shall follow decree no. 499/2006 Sb. with all relevant amendments, further all internal procedures and guidelines of the Employer and provided tender documentation.

The General Contractor shall submit his design and detail design documents for Employer's Review.

The General Contractor shall provide a list of deliverables for Employer's Review.

Obtaining Employer's Review/Approval for the design and detail design documents is part of General Contractor's scope of work.

The documentation provided by the General Contractor shall be authorized as per legislative requirements.

For minimum list of deliverables see document no. C4G-HPPL-ILF-GENER-GEN-SEZ-851 List of Required Engineering Documents for General Contractor.

Relevant documentation by Employer's service companies and Vendors of Long Lead Items shall be incorporated by General Contractor into the as-built documentation.

6 HSE, QA/QC AND QUALIFICATION REQUIREMENTS

a) HSE Requirements

- An approved Safety Management System shall be employed, accredited and in accordance with:
 - OHSAS 18001:1999 — Amendment 1:2002: Occupational Health and Safety Management Systems
 - ISO 14001:2004: Environmental Management Systems
- A project specific HSE Management Plan shall be developed relevant to the scope of work described under this specification.
- All construction equipment used for the execution of the project works shall be fit for purpose and carry valid inspection certificates and insurance required under state law

b) QA/QC Requirements

- A Quality Management System shall be employed, that has been accredited in accordance with ISO 9001
- The Quality Management System shall include supporting procedures and processes as described by ISO 9004-1
- A project specific Quality Plan shall be developed that is relevant to the scope of work described under the specifications

c) Welding procedure qualification and welder qualification as per C4G-HPPL-ILF-GENER-LIN-SPC-801 Pipeline - Welding Specification

7 PERMITS, APPROVALS, MANAGEMENT AND COORDINATION

- a) The General Contractor shall provide permits, management and coordination of all activities related to the Project except those, which are excluded in this document.
- b) The Employer will provide the construction permit as required by the law.
- c) The Employer will also provide technical requirements of land owners to be respected during the construction activities.
- d) The Employer will further provide all statements and requirements from the authorities resulting from the permitting process.
- e) The General Contractor has to respect all conditions and requirements written in the provided contracts/agreements with land plot owners, as well as all requirements from authorities.
- f) Any other permits/approvals have to be acquired by the General Contractor. This especially includes:
 - access permits
 - permit for trial operation
 - permit for intake/discharge of the water for/from hydro test
 - temporary closure of roads (if applicable)
 - permit for temporary pipe yards/stock yards (others then enumerated in section 3)
 - permit for temporary power and potable water supply lines if required
 - approval from Notified Body (e.g. TIČR) on gas and electrical installations
 - permit for final operation
 - etc.
- g) The General Contractor also needs to coordinate the works with the owners of Third Party facilities, as well as with the land owners or authorities.

8 PASSPORTS

Obtaining photographic/video documentation of given area including access routes, trees, and non-forest vegetation.

Details shall be provided at problematic areas.

All in logical arrangement of tree structure, with photograph description and date of acquisition directly in the photograph.

Chainage shall be used for any line photographs.

Video documentation of the condition of access roads and ways, including details of road condition and its nearest vicinity.

The purpose of the photographic documentation shall be to record existing, continuous, and final condition and situation within the landscape, mainly at more complicated locations with regard to local conditions and with regard to proposed technical solutions.

Quality of photographs must be sufficient for high quality printing in A4 format.

Photographic documentation shall contain mainly:

- clear identification of location of each photograph + for example using the gas pipeline route and GPS coordinates in *.kmz, - see "Google Route"
- all crossings with water courses, roads, and railways
- all N4G facilities
- electrical connections
- locations requiring more complicated technical solutions or posing increased demands on construction (such as slopes, confined spaces, reduced distances from buildings and structures)
- access sites and roads for heavy equipment
- continuous monitoring of conditions at given site from the situation before the construction up to final landscaping
- etc.

Utilization of aerial photography (drone) is also envisaged.

9 SERVICES PROVIDED BY THE EMPLOYER

For battery limits of supplies/works see document no. C4G-HPPL-ILF-GENER-GEN-TZP-010 Interface Report

9.1 Equipment and Materials Supplied by the Employer/Third Party to be Installed by the General Contractor

- 1) Line pipes DN 1400
- 2) Station pipes \geq DN 300
- 3) Ball valves with combined sealing \geq DN300
- 4) Induction bends \geq 3D
- 5) Hot pressed bends \geq 1.5D, \geq DN 300
- 6) Fittings \geq DN300 (Tees, reducers, caps, etc.)
- 7) Flanges \geq DN 300
- 8) Gate valves \geq DN 300
- 9) Insulation joints \geq DN 300
- 10) Pig signallers
- 11) Pig traps (with pig signallers)
- 12) Pressure control and safety shut-off valves

9.2 Other Works Provided by Third Parties

- a) Provisioning of new ODF by Employer's service company
Note: this is a contractual option
- b) Provisioning of FOC (blowing in) and establishing the connections to new/existing ODFs in the Stations by Employer's service company –
Note: this is a contractual option
- c) Provisioning of active telecommunication equipment (routers, switches, firewalls, WIFI access points, etc.) by Employer's service company.
- d) Configuration and network setup for the active components (routers, switches, firewalls, WIFI access points, etc.) by Employer's service company.
- e) Provisioning of telecommunication equipment – IP phones by Employer's service company.
- f) Configuration and network setup for IP phones by Employer's service company.

- g) Provisioning of telecommunication equipment, personal computers and printers for Office LAN by Employer's service company.
- h) Configuration and network personal computers and printers for Office LAN by Employer's service company.
- i) NDT works (NDT)
- j) Inspection Works (INW)

General Contractor is aware and shall accommodate, that Third Parties construction and installation works will take place during the construction works of General Contractor. Site coordination activities and HSE supervision of these activities is in Scope of Work of General Contractor.

9.3 Design Works Delivered by the Employer or Third Parties

On the General Contractor's request, the Employer will provide available as-built documentation of existing facilities influenced by the Project, further internal guidelines, procedures and specifications (available mainly in Czech language).

Beside tender documentation, the Employer will provide documentation for construction permit, on which basis the building permit was/will be obtained.

On the General Contractor's request, the Employer will provide available vendor documents of equipment/material supplied by the Employer/Third Party.