Third Party Review – Final Report

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KGG
TPR 202311142

Third Party Review

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Acronyms and Definitions

Acronym / definition	Full Name
AACEI	Association for the Advancement of Cost Engineering International
AE	Architect Engineer
ALARA	As Low As Reasonably Achievable
ANVS	Autoriteit Nucleaire Veiligheid en Stralingsbescherming (Authority for Nuclear Safety and Radiation Protection)
ARM	Active Risk Manager
Barakah NPP	4-unit APR-1400 Barakah nuclear power project in the UAE
BIS	Bid Invitation Specification
BNPP	BNP Paribas
BNPP Report	A document titled "*Dutch Nuclear Newbuild Program - Private Financing Options and Feedback from Interviews with Selected Investors*" issued by BNPP dated September 2024
BOP	Balance of Plant
BWO	Bewindsliedenoverleg (ministerial consultation)
CapEx	Capital Expenditure
CBS	Cost Breakdown Structure
CDE	Common Data Environment
CfD	Contract for Difference
CRAV	Check Review Approve Verify
CMP	Conflict Management Plan
COD	Commercial Operation Date
COVRA	Centrale Organisatie voor Radioactief Afval (Central Organisation for Radioactive Waste)
CWS	Cooling Water System
DBFL	Design Basis Flood Level
DCD	Design Control Document
DoR	Division of Responsibility
DSR	Dutch Safety Requirement

Acronym / definition	Full Name
ECA	Export Credit Agency
EDF	Électricité de France
EIA	Environmental Impact Assessment
EIR	Employer Information Requirements
E&P	Engineering and Procurement
EPC	Engineering Procurement Construction
EPCM	Engineering Procurement Construction Management
EPR	European Pressurized Water Reactor
EPZ	Elektriciteits Produktiemaatschappij Zuid-Nederland (operator of the existing Borssele NPP)
ESG	Environmental, Social and Governance
EU	European Union
EUR	European Utility Requirement
EY	Ernst & Young
EY Report	A document titled "*Dutch Nuclear New Build Program: Remuneration Models & Financing Structures*" issued by EY dated 9 July 2024
FC	Financial Close
FEED	Front End Engineering Design
FTEs	Full Time Equivalents
FNC	First Nuclear Concrete
FOAK	First Of A Kind
FSAR	Final Safety Analysis Report
GWe	Gigawatt electric
GMP	Guaranteed Maximum Price
GSP	Government Support Package
HVAC	Heating Ventilation Air Conditioning
IAEA	International Atomic Energy Authority

Acronym / definition	Full Name
I&C	Instrumentation & Controls
IMS	Integration Management System
IP	Intellectual Property
IT	Information Technology
KHNP	Korea Hydro and Nuclear Power
KCB	Kerncentrale Borssele
KGG	Ministerie van Klimaat en Groene Groei (Ministry of Climate Policy and Green Growth)
LCOE	Levelized Cost of Electricity
LLI	Long Lead Item
LNG	Liquefied Natural Gas
LNTP	Limited Notice to Proceed
MEH	Mechanical, Electrical and HVAC
MC	Market Consultation
MOLF	Marine Off-Loading Facility
NAP	Normaal Amsterdams Peil (Amsterdam Ordnance Datum)
NDA	Non-Disclosure Agreement
NEO NL	Nuclear Energy Organisation NL
NI	Nuclear Island
NOAK	Next Of A Kind
NPP	Nuclear Power Plant
NRC	Nuclear Regulatory Commission
OBS	Organisational Breakdown Structure
OpEx	Operating Expenditure
OE	Owner's Engineer
OECD	Organisation for Economic Co-operation and Development
Owner	Owner of the Dutch NPP

Acronym / definition	Full Name
PEP	Project Execution Plan
PM	Project Manager
PMC	Project Management Consultant (Contractor)
PMO	Project Management Office
PSA	Probabilistic Safety Assessment
PSAR	Preliminary Safety Analysis Report
RBS	Risk Breakdown Structure
RAG	RED, AMBER or GREEN
RASCI	Responsible / Accountable / Supportive / Consulted / Informed
SIP	Site Information Pack
SPC	Special Purpose Company
SME	Subject Matter Expert
STUK	Säteilyturvakeskus (Finland's Radiation and Nuclear Safety Authority)
Technology Vendor or Vendor	EDF, WEC and/or KHNP
TI	Turbine Island
TFS	Technical Feasibility Studies
TOM	Target Operating Model
TPR	Third Party Review
TVO	Teollisuuden Voima Oyj (Finnish nuclear power company)
UXO	Unexploded ordnance
VOBK	Veilig Ontwerp en het veilig Bedrijven van Kernreactoren (Dutch Safety Guidelines' for water cooled reactors)
WBS	Work Breakdown Structure
WEC	Westinghouse Electric Company
WP	Work Package

Acronym / definition	Full Name
WS	Workstream

1 Executive Summary

1.1 TPR Context, Methodology and Delivery Approach

Amentum has been appointed by the Dutch Ministry of Climate Policy and Green Growth (*Ministerie van Klimaat en Groene Groei*) (KGG) as an independent Third-Party Review (TPR) firm to provide advice on the results of the Technical Feasibility Studies (TFS) and Market Consultations (MC) undertaken by KGG in conjunction with three selected Technology Vendors: Korea Hydro and Nuclear Power (KHNP), Électricité de France (EDF) and Westinghouse Electric Company (WEC) (collectively referred to as the Technology Vendors).

The advice to be provided by the Amentum TPR Team ultimately assesses and confirms the technical and market viabilities of constructing new Gigawatt electric (GWe) scale Nuclear Power Plant (NPP) in the Netherlands. The Amentum TPR Team advising KGG, includes support from Subject Matter Experts (SMEs) with specialist knowledge and experience relevant to the Dutch context. This support is being provided by Amentum and its sub-consultants: CMS Cameron McKenna Nabarro Olswang, PA Consulting and ENCO.

A Special Purpose Company (SPC), Nuclear Energy Organisation NL (NEO NL), shall be formally established in The Netherlands at a later point in time to act as the Owner organisation for the NPP Project. Representatives of the proposed SPC have participated with KGG in the TPR process.

The overarching objective of the TPR is to deliver a comprehensive, independent analysis which assesses the feasibility of the proposals that the Technology Vendors can supply two NPPs in compliance with KGG's requirements and Dutch laws and regulations, underpinned by a technical, socioeconomic (e.g. construction headcount), and programmatic evaluation of the TFS and MC in the context of the Netherlands' energy and climate strategy.

The TPR assignment comprises an evaluation by SMEs of the methodologies and findings of both the TFS and MC and the combining of all results of the evaluation into a comprehensive report that guides and informs the decision-making process. The TPR assignment had the following key objectives:

1. Can two NPPs be supplied by two or more Technology Vendors in the Netherlands?
2. Can the proposed technologies be installed at the Borssele site?
3. What is the overall assessment of the overnight cost and schedule?
4. How can the Technology Vendor Bid Invitation Specification (BIS) be optimised to secure the optimal solution for the Netherlands?
5. What is the Amentum TPR team's advice on the spatial planning and permitting activities?
6. What is Amentum TPR team's advice on the parliamentary process to secure a Project Mandate and future key project gateway decisions?

During the initial Familiarisation Stage of the TPR, the Core Team met with each of the Technology Vendors for an introductory meeting. From the meetings, TFS submission documents and the MC, it is clear that each Technology Vendor has proposed a distinct solution for supplying two NPPs in the Netherlands. While the technologies vary, each Technology Vendor has taken a unique approach to developing their solution at the Borssele site. Additionally, their offerings in terms of delivery models; scope (e.g. proposed NPP cooling water solutions, scale of earthworks required to construct their technology solution, proposed extent of off-site construction methods, and proposed construction logistics); proposed risk allocation between the Technology Vendor and Owner and schedule and cost differ significantly.

A NPP is a complex electricity generating asset comprising of many diverse systems, each constructed within a robust civil engineering structure which are all designed to withstand a defined set of external and internal hazards, many of which are site specific. Designing and obtaining all the required authorisations (permits, consents, licenses etc.) to then construct safely, commission, operate and ultimately decommission a NPP are amongst the most complex endeavours undertaken within the energy and infrastructure sector. NPPs are safety critical facilities that require robust oversight of the design, authorisation, construction, operation, and

decommissioning activities to ensure that they generate the stated baseload electrical output and at all times maintain the highest levels of safety.

The TFS and MC process has enabled the NPP Project in The Netherlands to make good progress and give clarity to the level of risks faced and key next steps that need to be undertaken. The NPP Project is currently at the stage that the Amentum TPR Team would expect, and it has a comprehensive strategy for moving forward. The TFS and MC has enabled the proposed NPP Project to make significant progress in its planning for the next phase. The TFS has confirmed that The Netherlands is able to take optimum benefit from at least two Technology Vendors' reference plant designs, but the NPP Project will still require aspects of site-specific design to be undertaken in parallel with a competition to determine the best value technology and delivery solution.

Key to successful delivery of the next phase of the NPP Project is the confirmation of the preferred site, the development of the Owner's requirements, many of which will be site specific, and the compilation of the detailed site characteristics to enable to the Technology Vendors to progress the development of the site-specific elements of their solutions. This will allow Technology Vendors to prepare detailed time and costs estimates for their proposals and demonstrate a detailed understanding of the risks associated with the construction aspects of their technology solutions for the selected site and their plans to manage these risks effectively. The recommended BIS competitive process will result in the selection of the optimum technology and delivery solution that secures value for money for the Netherlands and will enable a contract award in accordance with Dutch and EU procurement legislation and regulations. The BIS process to select the technology and delivery solution will run in parallel with the development of the Owner organisation that will oversee the design and construction phase and take the NPP into operation. These activities run concurrently with the processes to obtain the necessary authorisations for the NPP Project that will permit construction works to start at the earliest opportunity.

Globally, there are many other projects now being considered placing increasing demands on critical nuclear skills from across the supply chain including sources of capital funding. While the NPP Project will therefore be competing with projects in other jurisdictions, the detailed work undertaken as part of the TFS, MC and TPR has placed the NPP Project in a better position to launch the next phase. Whilst there are few NPPs in Western Europe/USA that have successfully proceeded into construction with full funding, based on the work performed to date and plans for the next phase the TPR Amentum Team believes the Netherlands is best place to attract the right capabilities from within the global nuclear sector. However, timing and certainty will be critical to securing the breadth of capabilities needed.

NPP Projects are highly complex and require the early definition of a comprehensive set of Owner's requirements, delivery to rigorous quality and safety standards, the deployment of significant resources from global supply chains and effective management of multiple interfaces and risk. The investment required at the early stages of a NPP Project is large and essential to ensure that the design and construction activities and the built assets created fully address and evidence the Owner's requirements and satisfy regulators such that the Owner is permitted to load nuclear fuel and bring the NPP into operation.

With the assistance of this TPR, KGG and the proposed SPC are now well-positioned to make informed decisions and advise the Dutch Government and other key stakeholders accordingly, engage in further discussions with each Technology Vendor, and in parallel prepare for a BIS that will secure the best deal for the Netherlands.

1.2 TFS Specification

The objective of the TFS process is to provide the following:

- Confirmation of Technology Vendors ability to supply a new NPP in compliance with all applicable rules and regulations and identify, if any, all deviations to those rules and regulations.
- Confirmation of Technology Vendors ability to install a new NPP at the Borssele site in compliance with all geotechnical, licensing, environmental and stakeholders' constraints provided by the Owner.
- Framing of the overnight costs and duration of the construction of the plant respecting the above constraints.
- Inputs that will enable the preparation of a BIS enabling each Technology Vendor to participate with minimized deviations and exclusions.

- Support to permitting, licensing and stakeholder management.
- Inputs for KGG to obtain from parliament a mandate to proceed with the Nuclear New-Build Project.

The expected benefits of this TFS are the following:

- Acceleration of the tendering process (rather parallel than sequential).
- Reduction of uncertainties and risks (early change detection).
- Improvement of competition through non-exclusionary specifications.
- Enabling political decision-making and stakeholder engagement.

The TFS is compiled as a series of Work Packages aligned to one of three Workstreams:

- Workstream 1 (WS01) – Technology and Licensing, focuses on nuclear licensing, regulation and conformance.
- WS02 - Site Specifics, focuses on options for the NPP layout in relation to the Borssele site, site specific aspects of the NPP Project including studies related to design, permits constructability, earthworks, foundations, cooling water solutions and mobilisation and early works activities.
- WS03 – NPP Delivery and Economics, examines the Technology Vendors' proposed execution strategy, the cost, schedule and risk elements applicable to the NPP Project, lessons learned from other NPP projects and the Technology Vendors' proposals for potential subcontractors and local content.

The primary purpose of the TFS is to create an understanding of feasibility, rather than to compare the technology or delivery models as the Technology Vendors are not in competition at this stage.

The first activity of the TPR was to review the TFS specification that was issued to the Technology Vendors to respond to. The TFS specification is typical of what would be expected during an early market engagement process by a country considering options for GWe nuclear build with the primary considerations on technical licensing and compatibility with a suitable site. The TFS process is consistent with the relevant International Atomic Energy Authority (IAEA) guidelines. As feasibility is confirmed and the project's maturity progresses the level of interrogation via a BIS process will require greater scrutiny of many subjects, some of which have been identified in this TPR Report. KGG should consider the output of the TPR as a "bridge" to help inform its policy and strategic direction to inform the next phase of the procurement cycle.

WS01 - Technology focuses on nuclear licensing, regulation and conformance. It is comprehensive and very few observations on the TFS Specification were made on these topics by the Amentum TPR Team. Much of the scope of the submission required for WS01 is the provision of information from the Technology Vendors to confirm the compliance of their technology solutions with the requirements of the Dutch Safety Guidelines for water cooled reactors: Veilig Ontwerp en het veilig Bedrijven van Kernreactoren (VOBK), prepared by the Dutch regulator Authority for Nuclear Safety and Radiation Protection (*Autoriteit Nucleaire Veiligheid en Stralingsbescherming*) (ANVS).

The TPR review of the TFS Specification for WS02 - Site Specifics highlighted the need for additional detail from each of the Technology Vendors in areas related to scheduling of early site works, mobilisation and the implications of timescales for design, spatial planning and authorisations (licenses, consents and permits). The Amentum TPR Team advised that additional detail is required with regard to these aspects in order to fully inform KGG of the potential project implications of each Technology Vendors' TFS solution.

During the TFS process alternate Site boundary options were able to be considered and presented by the Technology Vendors. Technology specific construction site layout options including additional areas for temporary construction purposes were also discussed with each of the Technology Vendors. Each of Technology Vendor NPP Layout solution and their land requirements for construction at the Borssele site is different.

For WS03 (NPP Delivery) the TPR review of the TFS recommended that KGG seek additional information or clarification of the Technology Vendors' TFS submissions in relation to their cost and schedule submissions. Key

areas of focus identified by the Amentum TPR Team being the cost and schedule estimates for the preparation of a Concept Design and for the Licensing of their technology solution as part of the third and final update of their TFS submissions. Other aspects identified for TPR focus were the maturity of the Technology Vendors' proposed supply chain and their proposals for localisation.

Overall, the TFS Specification provides a comprehensive list of information and criteria required by KGG, for the purposes of understanding further the individual Technology Vendor technology solutions and proposed delivery models for a NPP Project in The Netherlands.

During the BIS phase, the Owner must maintain a level playing field and comply with all applicable procurement rules and regulations, or it risks the potential for a procurement challenge. The Owner should minimise the opportunity for a Technology Vendor to change the nature and detail of the required BIS deliverables during the BIS process to ensure that all Technology Vendors are treated equally, and that no unfair competitive advantage is gained by any party during the BIS process.

1.3 Technology Vendor TFS Submissions

The output of the Amentum TPR Team's assessment of the TFS submissions was a series of Red, Amber and Green flagged findings that were issued to KGG. KGG reviewed the findings and in discussion with the Amentum TPR Team selected Red and a proportion of Amber findings that were issued to the relevant Technology Vendor for clarification prior to conclusion of their final issue of TFS documentation. The process to close out Red flagged items (downgraded to Amber or Green by the Amentum TPR Team) occurred as a result of the Technology Vendor issuing a revision of their TFS submission, written clarification response or verbal response recorded in meeting minutes of a TPR close-out meeting with the Technology Vendor, KGG and the Amentum TPR Team.

On conclusion of the TPR process, a relatively small number of unresolved Red flagged findings and the unresolved Amber flagged findings remain to be addressed by each of the Technology Vendors as part of the next phase of the NPP Project. Many of these are site-specific and it is assessed that it will not be possible to resolve these until the most suitable site for the NPP Project is identified.

TFS accomplishments

It is the assessment of the Amentum TPR Team that the TFS has accomplished the following for the NPP Project:

- Provided confidence that all three Technology Vendors can supply two NPPs in compliance with KGG's requirements and the Dutch laws and regulations, subject to some work to close the gaps against ANVS' requirements. ANVS is undertaking a review of the VOBK regulations. Licensable technology can only be achieved through a willingness and capability to demonstrate full compliance by the Technology Vendors.
- Identified some of the major constraints that will impact the construction of a NPP by the three Technology Vendors on the Borssele site.
- Provided a high-level understanding of the construction activities and space requirements required by each of the Technology Vendors that will be applicable to other sites being considered by the site selection process.
- Provided clearer understanding of the delivery models proposed by each of the three Technology Vendors.
- Achieved deeper understanding of the proposed Tier 1 supply chain for each Technology Vendor and the potential gaps and pressures.
- Provided an initial assessment of the potential extent of localisation proposed by each of the three Technology Vendors.

1.4 TFS Submissions - Common Themes and Interdependencies

The findings of TPR process resulted in a set of common themes and interdependencies that were identified across the three Technology Vendors TFS submissions, which are outlined below.

WS 01 - Technology

- **Licensability of technologies against ANVS' VOBK Requirements** – Based on the Technology Vendor's self-assessments provided as part of the TFS submissions, the ANVS has confirmed in March 2025 that "there is no reason at this time to assume that any of these designs could not be licensed in the Netherlands" (ANVS - beeld uitkomsten technische haalbaarheidsstudies kerncentrales 24-03-2025). There are a small number of elements of each of the Technology Vendor's designs (different for each Technology Vendor) that do not align with current requirements of the Dutch Safety Guidelines for water cooled reactors (VOBK). Following recommendations from the International Atomic Energy Agency, the recent evaluation of the Nuclear Energy Act and the results of this self-evaluation, the ANVS has decided to revise the VOBK to better align it with the international state-of-the-art, to harmonise it more internationally and to make it less technology dependent. Consequently, some work may be required to close the gaps against the updated VOBK requirements when these become available. Elements of the design that do not align will require the Owner to engage with the regulator to close these out as part of the licensing process. Licensable technology can only be achieved through a willingness and capability to demonstrate full compliance by the Technology Vendors.

- **Codes and Standards** – During the TFS process two of the Technology Vendors expressed a preference to use US codes and standards. Beyond the applicable Regulation, Codes and Standards for the technology, legislative requirements which are EU or Netherlands-specific linked to the design, manufacture and construction of the NPP within a Technology Vendors scope are worthy of consideration and will require to be explored and addressed by the Technology Vendors during the BIS phase.

WS02 - Site Specifics

The proposed site for the NPP Project at Borssele is located along the north bank of the Westerschelde and south of the Van Cittershaven in the Vlissingen-Oost harbour area.

The proposed Site is situated in the industrial area Sloegebied Vlissingen-Oost near the existing Borssele NPP (Borssele 1) at about 500 metres from the Westerschelde. It is located in the Vlissingen-Oost harbour area north of Europaweg-Zuid, west of Europaweg-Oost and railroad track, and east of the Westerschelde. The railroad track is also used for the transportating anhydrous ammonia by Railway Tank Cars. The Vlissingen-Oost harbour area (Havengebied Vlissingen-Oost) is managed and controlled by the port authority N.V. Zeeland Seaports.

The site centre point is located 1.9 km northwest of the village of Borssele in the municipality of Borsele and 1 km from the southeast border of the municipality of Vlissingen. A number of harbours such as the Van Cittershaven, are located in the Vlissingen-Oost harbour area. Industrial facilities in the immediate area include shipping facilities along the waterways, sea defences (dikes, etc.), warehouses, railroads and rail yards, a petroleum refinery (Zeeland Refinery [ZR]), LPG storage, chemical plants, radioactive waste storage and wind turbines. The area surrounding the industrial area is used for agriculture, residential areas, and recreation as the most significant uses.

The Westerschelde is the seawater estuary connection from Antwerp to the North Sea and opens to the North Sea at Vlissingen approximately 12 km to the west of the site and extends upstream to Antwerp, Belgium, 40 km to the southeast.

A 48-inch (1.22-m) high pressure natural gas pipeline is located directly adjacent to the road along the southern border of the Site and curves northward along the western border of the Site.

The predevelopment of the elevation of the site is approximately 5m NAP.

- **Interface with existing dike structure and other existing infrastructure on the Borssele Site** – potential delays to the NPP Project have been identified should the dike require to be altered. The preferred layouts presented by two of the Technology Vendors both have an impact on the existing protective dike around the existing Borssele NPP. The third Technology Vendor's design as presented does not site any facilities directly upon this protective dike. In their Wrap Up meeting presentations of early Sept 2024 one of the Technology Vendors set out in detail their understanding of the timeline to achieve the various consents

and permits to allow early works to progress including the site clearance activities and the alterations to the existing Dike. In several cases this may require multiple years to achieve the permits and the precursor to this process would be the design of the cut off wall and the dewatering solution plus the earthwork activities. The need for any alteration to the dike and the required changes to existing railroads, roads, drainage, high-voltage lines, underground cables including gas lines, and other services and the associated impacts to the NPP Project should be examined in detail as part of the Site Selection process.

- **Cooling Water solutions** – Cooling Towers are not proposed for the Borssele site. Various other options to provide NPP cooling water have been considered by the Technology Vendors including several forms of intake and outfall tunnels and shoreline abstraction and outfall. Cooling water proposals have not been discussed in detail with all of the relevant stakeholders to confirm formal agreement to the various options proposed by the Technology Vendors. In the next phase, detailed discussions will need to take place, in particular with the operator of Borssele 1.

- **Borssele Kaloot** – Each of the Technology Vendors have developed options that preserve the beach in front of the existing nuclear power plant, but the NPP Project will likely cost more (many tens of € millions) to accommodate this requirement. During the construction of the NPP, public access may require to be restricted to the beach area for periods of time to allow construction activities in the vicinity of the beach area to be undertaken safely. The extent of any restrictions will not be fully known until site selection is confirmed and site-specific detailed design activities are undertaken by the Technology Vendors.

- **Platform Level** – The selection of the Platform Level for the NPP is undertaken with cognisance of current and predicted future sea level and flooding assessments specific to the site, including addressing the impact of climate change. It has an impact on the design, construction and operation of the nuclear asset. All three Technology Vendors are recommending adopting the principle of a "dry site" (i.e. a platform that sits above flood level compared to a "tanked" solution utilised for Borssele 1 which incorporated barriers and systems when it was designed and constructed to prevent flood water entering into the NPP). It is the assessment of the Amentum TPR Team that the cost and time implications of a tanked solution for the three proposed technologies mean that this option is not viable because it would require significant redesign of the Reference Plant solutions that would potentially add years to the NPP Project and additional costs that it is assessed would be measured in €Billions. The determination of the platform level will be part of the Preliminary Safety Analysis Report safety case. The Owner will require to set the basis for design by the Technology Vendors during the BIS phase by defining the Design Basis Flood Level (DBFL) for the selected site. The setting of the DBFL determines the platform level for a dry site concept.

- **Deep Foundation Design** – All three Technology Vendors are proposing a foundation design utilising rigid inclusions comprising piles inserted into the ground to improve the soil density and strength, but the piles are not connected to the building structures. This removes significant structural design and construction requirements related to seismic hazards by separating the buildings form the piles. The building structures sit on an engineered platform constructed over the piled ground. There are precedent examples for using a soil consolidation solution on a soft ground site for a nuclear facility in France (e.g. ICEDA Nuclear activated waste conditioning and storage facility at the Bugey NPP). A soil consolidation solution is also being proposed for the Gravelines EPR2 project in France where two EPR2 units are proposed. It is understood that ANVS has already been approached by the Technology Vendors during the clarification meetings (compliance with VOBK requirements) and this proposed foundation solution was acknowledged by ANVS. The proposed solution is novel, and the Owner should hold early discussions with ANVS to establish the quality assurance requirements that will apply to the design, contractor selection, any trials of the proposed techniques prior to construction start to confirm the suitability of the proposed design, and the oversight of foundation installation and the monitoring of foundation performance through the construction phase.

- **Risk to and from Adjacent Structures and Activities (Borssele 1, COVRA, Oil Refinery, gas pipeline, LNG Tankers)** – The proposed site for the new NPP is adjacent to the existing operational nuclear assets (Borssele 1 / COVRA). It is understood that operations at Borssele 1 will continue until 2033, with lifetime

extension being considered up to 2054. Operations and activities to defuel, decommission and transition to long-term safe enclosure of Borssele 1 will take place over the operational lifetime of a proposed new NPP. Given the adjacent facilities and the requirements of ANVS, considerations to protect adjacent assets from potential failures need to be considered further. These include turbine orientation and potential land features or plant design to limit event consequences. External hazards and emergency planning between adjacent facilities and the proposed new NPP during both construction and operation of the new NPP also need to be clarified as part of the Site Selection process. The existing NPP at Borssele has management arrangements and detection systems in place to manage the potential impact due to the explosive gas hazards from the existing gas line at the site or Liquefied Natural Gas (LNG) tankers passing in the Westerschelde. The design of the new NPP at the Borssele site will need to consider the impact of these potential hazards and shall be further determined in the next phase with the Technology Vendors.

- **Construction Site Land Requirement Risks** - A time-phased plot plan is required during the BIS phase which details land use during construction required for each of the Technology Vendor solutions at the selected site. An early Site Construction Logistics Scoping Study undertaken by the Owner will enable a better understanding of how the construction logistics may be undertaken efficiently and effectively, potential constraints, potential solutions for the Borssele site and other sites being considered and the implications for the NPP Project's land requirements. Significant areas of land close to the site are required for temporary buildings and facilities during construction. It is the experience of the Amentum TPR Team that a NPP Project of this nature will typically require 3 to 5 times the permanent NPP land area in which to perform all construction activities. Whilst some of this total land requirement (e.g. warehousing, administration offices, training facilities etc) does not need to be included within the site fence or attached to the main site there can be implications if some construction operations require to be located separate from the main site. If the location of the land parcels required for these key construction temporary facilities are distant from the site, then the project cost and schedule will be impacted, as travel time to and from the site increases and available productive time during the working day and worker productivity decreases. The NPP Project will require to make choices in relation to optimising the land available at Borssele. The site constraints will impact the options that are available in regard to construction layout and logistics. Some examples of key activities that should be within / close to the site include:
    - Vehicle routes for movement of bulk civil engineering materials.
    - Positioning of the concrete batching plant.
    - Location and land availability for set-down areas.
    - Footprint of cranes (including Heavy Lift Crane).
    - Proximity of welfare facilities to construction workfaces.
    - Worker accommodation distance from the site.

WS03 - NPP Delivery

- **Applicability of Delivery Models and Supply Chains to The Netherlands** – Each Technology Vendor is proposing a mature delivery model and supply chain solution based on previous NPP Project delivery experience. However, it remains unclear, in detail, how they will deploy their delivery models in The Netherlands, mobilise in-country and utilise support from home organisations with the necessary breadth and depth of suitably qualified and experienced resources to successfully deliver a NPP Project, given the other project commitments and NPP opportunities that each of the Technology Vendors have. This will need to be tested during the BIS competitive procurement process to help gauge how the Owner's organisation will be adapted to align with the Technology Vendor solution and to understand how requirements can be set to better assess the maturity of the proposed delivery models. It should be noted that the Owner will also have a key role in developing a nuclear supply chain in The Netherlands, and it is advised that work to establish this should be a priority for the Dutch government to ensure an enduring future in nuclear power.

- **Owner's Scope** – All of the Technology Vendors have made assumptions that would result in different but significant elements of early project scope being undertaken by the Owner. The extent to which the Division of Responsibility between the Owner and the Technology Vendor scope may vary across the three Technology Vendor delivery models is potentially significant. The Owner's Scope on the NPP Project will likely include power, other utilities, road, rail, temporary fencing, housing for workers, transport and environmental infrastructure and for some Technology Vendors it is indicated that the Owner's Scope could also include the proposed cut off wall structures, dewatering and site preparation. The Owner's Scope will likely be significant on this project. A non-detailed assessment by the Amentum TPR Team indicates this to be in the range of €3-5 Bn in cost (AACEI 115R-21 Cost Estimate Classification Matrix for the Nuclear Power Industries - Class 5: Low -20% to -50% and High +60% to +200 %). A large proportion of the Owner's Scope requires to be carried out early in the project as many of the Owner's Scope activities will lie on the critical path for the project schedule. This will require the Owner organisation to rapidly ramp up a project management, planning, procurement and engineering capability in the next year to prepare for the delivery of the Owner's Scope in parallel with the BIS for selection of a Technology Vendor.

- **Schedule** – The Technology Vendors' schedule submissions were compliant with the TFS specification but lacked detail and underpinning assumptions (i.e. no detailed Basis of Schedule) that will be supplemented in the next phase of work and more clarification is provided in the BIS. All of the Technology Vendor's schedule submissions covering the period from Contract Award to COD are informative and provide helpful detail in relation to the activities each of the Technology Vendors plan to undertake based previous NPP Projects they have undertaken. Whilst compliant with the TFS specification, schedule detail was particularly lacking in early works activities prior to the First Nuclear Concrete milestone. Two of the Technology Vendors have not considered in detail the planning and consenting process in The Netherlands. The Owner will require to prepare key project deliverables, including a NPP Project Schedule, in appropriate detail to support decision-making and stakeholder engagement in preparation for the first Project Mandate approval. A draft NPP Project Road Map has been prepared by the Amentum TPR team and issued to KGG. It includes advised milestones and activities to be carried out up to Financial Close.

- **CapEx Estimate** – The CapEx estimates provided by each Technology Vendor are understood to represent an "Overnight Cost" which in some submissions includes a provision for risk in addition to the uncertainty range associated with the class of estimate and in other submissions does not include a risk provision, Where a risk provision is included, the share of the CapEx associated with the risk provision is not identified in the TFS submissions. The original TFS specification issued by KGG required the Technology Vendors to provide the CapEx submission in the form of the IAEA TRS396 Cost component template as per Class 4 of the AACE 115R-21. For a NPP Project the AACE Class 4 estimates are -15% to -30% on the low side, and +40% to +100% on the high side. None of the three Technology Vendors' CapEx submissions included the detail and assumptions that underpins the CapEx estimate nor what is included or excluded from the estimates. On this basis the Amentum TPR Team have concluded that the TFS CapEx submissions may not be fully representative estimates of the entirety of the scope defined in the TFS Specification Battery Limits and Scope of Supply document, due to the lack of detail with regard to assumptions and exclusions identified in relation to the early works (particularly site-specific elements that cannot be confirmed at this stage). This will normally be achieved through a formal competition once a site has been selected and site-specific design has been undertaken. Where site-specific scope and Owners Scope costs have been identified in the Technology Vendor CAPEX submissions, the designs for these elements of scope are less mature, and the scope definition is not as well defined at this stage. As a consequence, the Amentum TPR team consider that these less mature elements of the CAPEX submissions should be assessed as Class 5 which has a higher range of uncertainty to Class 4. (AACEI 115R-21 Cost Estimate Classification Matrix for the Nuclear Power Industries - Class 5: Low -20% to -50% and High +60% to +200%). It is not possible to have certainty on cost at this stage in the process as the site-specific aspects of design and the project delivery solutions are not sufficiently mature. Maturity will be achieved during the BIS phase of the NPP Project.

- **NPP Project Risk Register** – The requirements for the provision of a detailed risk register were not adequately defined in the TFS Specification. The Technology Vendors did not submit comprehensive risk deliverables that adequately inform the Owner. Whilst compliant with the TFS specification the TFS submissions related to risk lack detail and none are adequately developed for a project of this scale and complexity, given the submissions were based upon a reference plant and previous project delivery experience. A consistent approach to risk will be defined as part of the next phase of the project and the requirements on Technology Vendors set out in detail as part of the Owner's requirements identified in the BIS. The Amentum TPR Team advise that the Owner will require a comprehensive risk register applicable to all aspects of the NPP Project to support decision-making and stakeholder engagement in preparation for the first Project Mandate approval.

General / TFS Process

- **Non-disclosure of Intellectual Property Rights and Export Controls** – Issues with regard to the protection of Intellectual Property delayed the start of the TPR review until the appropriate confidentiality agreements were put in place with each of the Technology Vendors, KGG and the Amentum TPR Team (including subcontractors). For one of the TFS submissions, areas of information provided to the Amentum TPR Team required to be redacted on the grounds of Export Control. Prior to starting the BIS phase, the Owner will require to address the management of IP rights with the Technology Vendors and the implications of export control regulations for nuclear items and other potential restrictions on transferring IP among different parties, especially if it entails cross-border transfer of information. This is an important lesson to be learned when planning for a smooth BIS process.

- **Consistency of Approach and Record Keeping** – The Owner will require BIS processes and procedures to be developed in accordance with all applicable procurement rules and regulations to mitigate against the risk of any legal challenges to the procurement outcomes. Additionally, the Owner will require a Common Data Environment (CDE) and supporting integrated management systems that support effective document control during the BIS and the development stage of the project. The CDE will be required to facilitate collaborative working by multiple entities and commercial confidentiality.

Lessons Learned from recent NPP projects

Learning from experience on recent NPP projects has confirmed the following root causes that have resulted in significant delay and increased costs:

- Poorly defined Owner's requirements (Technical, Management and Commercial). A phased BIS approach enables the progressive development of robust and comprehensive Owner's requirements ahead of contract award.

- Preferential engineering by the Owner and late changes in requirements have cause significant delays to the completion of design on NPP projects. Modification of the reference plant design should be minimised where possible to aspects that are essential to meeting Owner requirements and/or site-specific requirements. The Owner will implement robust configuration control and change management arrangements to ensure that the NPP Project stays as close as possible to the reference design in order to avoid the complexity managing changes that do not actually contribute to better safety.

- Lack of project management capability and capacity, including resources, systems, processes, procedures and tools etc. in the EPC organisations (typically consortia) that are delivering NPP projects. The development of the Owner organisation against a target operating model aligned to project stage gates will review and confirm the readiness of the Owner organisation at each phase of NPP Project delivery. The BIS process and the contract mechanisms will confirm that the required Technology Vendor resources will be in place when required.

- Starting construction works ahead of design completion has incurred rework, delay and cost on a number of NPP projects. The Owner's participation in construction readiness reviews will mitigate this risk.

- Due to a prolonged period of relative inactivity in nuclear in many countries, elements of many international supply chains that were involved in previous NPP programmes have downsized their operations. This has resulted in a loss of knowledge, loss of skills, capability and capacity coupled with a lack of investment in key areas such as training, quality systems and the use of modern management methods and tools to the extent that is required to deliver successful NPP projects. As a result, a number of recent NPP projects have had significant supply chain manufacturing and construction quality issues. A proactive approach to supply chain oversight by the Owner will mitigate this risk.

- Experienced new build NPP project resources of the scale and complexity being considered by The Netherlands are scarce in the marketplace and in Owner organisations that are capable of:

    - Establishing a robust and underpinned business case for investment.
    - Project managing new build NPP investments.
    - Undertaking effective governance of the NPP asset investment.
    - Determining the Employer's requirements comprehensively prior to signing contracts for the delivery of the NPP.
    - Managing the procurement process to achieve business case objectives.
    - Undertaking effective oversight of the entire supply chain, efficiently managing the approvals of the designs prepared by a range of specialist contractors.
    - Managing the interface with the Regulator to achieve a Licensable plant.
    - Intelligently monitoring the performance of the supply chain and holding the supply chain to account against their contractual obligations.

    Investment by the Owner to secure and growing long term capability early in the project lifecycle is essential to successful delivery of the NPP Project.

- Regulators have acquired breadth and depth of internal capability and gained experience from their involvement in recent NPP projects. Following the Fukushima incident in 2011, regulators around the world have shared knowledge and best practices. As a result, regulators in every country are setting even further demanding standards with regard to the licensing of operators and the approvals associated with generic and site-specific design, construction, commissioning and the bringing of NPPs into operation. The Owner will engage closely with the regulator to take the NPP project forward into the next phase, conclude, site selection the BIS phase, the licensing process and demonstrate the capability, capacity and management arrangements, systems, processes, and tools are progressively put in place to take this NPP Project through to a safe and successful conclusion and into operation.

1.5 Market Consultation

It is the assessment of the Amentum TPR Team that the MC has accomplished the following for the NPP Project:

- Greater insight and dialogue into each Technology Vendor's business constraints, aspirations and risk appetite (in outline).
- Greater understanding and clarity of the GWe nuclear new build opportunity within The Netherlands.
- Raised the importance of a Government Support Package (GSP) to facilitate and enable the project.
- Identified the challenge of potentially raising significant private sector finance for nuclear new build at the onset of the construction phase.
- Identified the different sources of private sector funding and relative degrees of appetite (including ticket size).

The MC process was designed and executed to a very high standard in terms of objectives and processes. The market engagement process and workshops were appropriately constructed with clear objectives and desired outcomes identified in advance for each stage and workshop undertaken. Both the EY Report and BNPP Report have been well researched and produced to a high standard and provide valuable information to assist the Dutch Government in developing policy decisions for the Dutch NPP.

The EY MC process was limited to three Technology Vendors and not any third-party potential funders, such as investors, financial institutions, or Export Credit Agencies (ECA). A key observation is that the preferred delivery models of the three Technology Vendors are materially different. This poses a challenge for the Owner in defining the structure of a BIS that has a degree of commonality to drive a balanced, fair, and comparable competition from the perspective of the Technology Vendors while allowing the Owner to make an accurate, weighted evaluation in its final selection. In addition, the EY Report outlined the Government Support Package (GSP) structure and its crucial role in enabling nuclear development projects. The Amentum TPR Team supports the importance of the GSP and agrees with EY's categorisation of the GSP into five elements.

Complementing the EY Report, the BNPP Report provides a thorough analysis of private financing within the nuclear power sector, emphasising the risks and challenges faced by owner/developers in securing funding from private sector sources. The BNPP Report's findings and conclusions are supported by consultations with a select group of active participants in the broader nuclear sector.

However, a key limitation of the EY Report and the BNPP Report is that while both reports provide valuable insights, they tend to adopt a broad market perspective based largely on current trends and do not identify specific differences of the Dutch nuclear development proposals. Further emphasis on the unique aspects of the Dutch programme could enhance their relevance. Progressing into the BIS, it would have been useful for KGG to understand:

- How the Dutch nuclear build program differs from other global nuclear projects that have moved into the construction phase. This could have been helpful in identifying the risks associated with the funding and finance arrangements for the Dutch programme and what the market is likely to find acceptable.
- The Technology Vendors' appetite regarding key topics, including liability structures, incentivisation mechanisms, transparency, risk allocation, and Intellectual Property (IP) rights provisions – which would form the basis of the competitively tendered contracts.
- How EY's organisational models (applicable to Barakah and UK NPP projects) would practically apply in the Dutch context and vary depending on the Technology Vendor selected. This could have been helpful in assessing the scope of work to be managed, project integration approach, and the formation and relationship of the Owner with KGG.
- How each feature of the GSP relates to specific stakeholders and how the GSP could be tailored (and simplified) according to the adopted funding model. Neither of the reports sufficiently address macro-level inhibitors such as State Aid or provide detailed commentary on the challenges or real-world practicalities of deploying revenue support models such as Contract for Difference (CfD) and Regulated Asset Base (RAB) within the Dutch context.

The Amentum TPR Team's view is that while the output generated from the MC exercise and Workstream 3 of the TFS submissions may be somewhat limited in fully informing the BIS at this stage, this is somewhat to be expected during an early project phase. Further follow-up is advised to address these gaps to enable a comprehensive BIS to be developed, which is tailored for the Dutch NPP, before launching the formal BIS competitive procurement process. Building on the findings of the TFS review (Workstreams 2 and 3), greater clarity is required regarding the selection of the site, scope, boundaries of work, commercial parameters, and the process for enacting eventual contracts.

Upon reviewing the MC documentation, it was noted that there were references to the offering of an EPC solution and EPC "wrap". The primary advantage to the Owner from an EPC model for a NPP Project is that the EPC entity takes single point responsibility for project delivery performance and plant performance. In the EPC delivery model, the Owner, through the EPC contract, seeks to maximise the risk transfer from the Owner to the Technology Vendor for achieving cost, schedule and plant performance certainty in the design and construction of the NPP. The extent to which the EPC entity will take the ultimate risk for cost overrun and delay on the NPP Project and

extent to which full back-to-back arrangements with the EPC's supply chain are possible are the aspects that are typically described as the EPC "wrap". The extent to which this risk transfer can be achieved at an affordable cost will be examined during the BIS process taking benefit from optimising the period during which the Technology Vendors remain in competition.

This requires careful consideration and further understanding by KGG before proceeding to the BIS phase. The capability to deliver such a solution, beyond the typical scope associated with nuclear Technology Vendors, and the commercial implications of such wraps in practice, need further evaluation.

While an EPC wrap solution is often seen as beneficial to shareholders and sponsors at the onset of any industrial scheme procurement, the practicalities need careful consideration, especially for GWe-scale nuclear power projects. Two international GWe-scale nuclear projects in Western Europe and the USA have been significantly impacted by the insolvency of the specific Technology Vendor in each case, which assumed the liability and commercial structures typical of an EPC agreement.

It is the Amentum TPR Team's advice that a G2G agreement as a basis to source the Technology Vendor for the Netherlands is not a substitute for running a BIS competitive procurement process fully compliant with all the necessary Dutch and European legislation for a major public procurement. However, it is recognised that once the Technology Vendor has been selected, appropriate G2G arrangements may be required, particularly for state-owned Technology Vendors.

1.6 Conclusions related to TPR Objectives

The Amentum TPR Team's conclusions in relation to the TPR Key Objectives are based on the following evaluation definitions that the Amentum TPR Team has defined for this purpose and discussed with KGG:

- **Technically Feasible** – Technically possible given no constraint on time and cost is applicable to the NPP Project.
- **Viable** – Technically feasible and the NPP Project is assessed to be achievable within acceptable timescales and cost (e.g. the target date for COD in the late 2030s (deterministic, e.g. does not consider the uncertainties involved in the estimation of time for execution of a job or an activity)) and the NPP Project is assessed as "affordable".

1. Can two NPPs be supplied by two or more Technology Vendors in the Netherlands?

- The Amentum TPR Team has assessed that each Technology Vendor has individually demonstrated through their TFS submissions that they can supply two NPP units in reasonable compliance with KGG requirements and Dutch laws and regulations. However, there is further work to be undertaken to demonstrate both willingness and capability for full compliance by the Technology Vendors, and also to assess what that might mean in cost and time to reach a set of optimal requirements.
- There are small number of elements of each of the Technology Vendor's designs (different for each Technology Vendor) that do not align with current requirements of the Dutch Safety Guidelines for water cooled reactors (VOBK). Following recommendations from the International Atomic Energy Agency, the recent evaluation of the Nuclear Energy Act and the results of this self-evaluation, the ANVS has decided to revise the VOBK to better align it with the international state-of-the-art, to harmonise it more internationally and to make it less technology dependent. Consequently, some work may be required to close the gaps against the updated VOBK requirements when these become available. The closing of such gaps may require technology adaptations which will have cost and schedule impacts. These works would include local adaptation to EU and/or NL regulations, standards and design codes. The BIS process will identify any further gaps early and reduce the potential for risk impacts.
- During engagement with ANVS at the commencement of the Amentum TPR, the Regulator confirmed it is undertaking a review of the VOBK requirements that would require future amendments to the current nuclear regulation of The Netherlands to further harmonise with current global standards. This harmonisation will potentially improve Technology Vendor compliance in specific areas, although impacts little on the work and costs which may be required by all Technology Vendors to achieve licensing.

- The BIS process must determine the gaps between the Technology Vendors' proposed solution and the VOBK requirements and the Owner's requirements. It should provide a clear picture of where the deviations exist and the technical solutions for how these will be addressed, including the time and cost implications of the work to be carried out by each Technology Vendor to achieve a compliant and licensable technology solution.

2. Can the proposed technologies be installed at the Borssele site?

- The operational layouts proposed by each of the Technology Vendors are acceptable to KGG for the purposes of the TFS. However, whilst the proposed solutions may be "Technically Feasible", the Amentum TPR team has evaluated that the Borssele site as defined in the TFS cannot viably accommodate the preferred options for two units from a minimum of two Technology Vendors without a very significant increase in land available plus adaptations to the existing site and local infrastructure which would have very large cost, schedule and risk implications.

- The currently defined Borssele site constraints impact each of the Technology Solutions differently (e.g., foundation and cooling water solutions, construction logistics) and will have variable impacts on NPP Project cost and time in relation to each technology solution consequently. Retaining the site with its current constraints will therefore make it unfeasible to run a competitive BIS process, as there will be significant advantages for some Technology Vendor solutions over others. The optimum approach would be for the constraints to be mitigated where possible to enable the Technology Vendors to construct their preferred layout for their NPP design.

- The TFS submissions have discussed the nature of the spaces required to construct the NPP and has identified the extent of land that would be required for temporary buildings, etc. based on their previous project experience. The extent of the laydown areas for excavated materials, etc. will not be fully understood until the Concept Design for the NPP at the selected site is undertaken as part of the BIS competitive procurement process.

- The land required to construct the NPP is significantly greater than the permanent footprint of the NPP - typically 3 to 5 times the permanent NPP plot plan but some of this (e.g. warehousing etc.) can be distant from the site. The lower range reflects the variation in earthworks scope and construction methodologies across the Technology Vendor solutions and the opportunity to utilise off-site manufacturing techniques during the construction phase of a NPP Project to minimise land area requirements at site. Significant areas of land close to the site are required for temporary buildings and facilities during construction.

- Removing / relocating the dike and the existing infrastructure is not enough to make the Technology Vendors' proposed solutions viable, as there is still a significant risk to the construction and operation of the proposed two-unit GWe NPP caused by the constraints related to adjacent assets, facilities and operations at the Borssele site that need to be accounted for as part of the NPP design. Additionally, there is significant risk to the ongoing operation of the existing assets, facilities operations at the Borssele site from the construction and operation of the proposed NPP that require to be addressed. Addressing these constraints and risks will also impact time and cost for the NPP Project. Usually when building additional NPP's on an adjacent site to existing generators, the Designers of the new assets need to reassure the Licensee of the existing facility that no foreseeable hazard (i.e. turbine missiles) could degrade the existing facilities' safety case. Some form of analysis would be required to reassure that the risk is significantly low as to not warrant protective measures. However, if the risk exists at a high enough probability, then it is the new asset Designer's responsibility to provide protective measures.

- Given the current constraints to the available Construction Area at the Borssele site, options have been considered to locate elements of the Technology Vendor's construction activities elsewhere in the Sloehaven area. The disaggregation of the key construction activities related to the siting of earthworks temporary storage areas and the location of concrete batching plant distant from concreting activities can have a major impact on cost and schedule. This consideration of land requirements will require trade-offs related to the benefits and disadvantages of construction facilities close or distant from the site. The project cost and schedule may be impacted as travel time to and from the site increases and available worker productive time in the day decreases and worker productivity are all impacted.

- It is understood that as part of the Site Selection process underway that KGG will investigate whether the Borssele site constraints can be mitigated or whether there are sites with similar advantages that are less constrained. The Amentum TPR Team has advised KGG that a detailed understanding of each of the Technology Vendor's land requirements during construction is required to inform the Site Selection process. A time-phased plot plan which details land use during construction is required for each of the Technology Vendor solutions. An early Site Construction Logistics Scoping Study undertaken by the Owner will enable a better understanding of how the construction logistics may be undertaken efficiently and effectively, potential constraints, potential solutions for the Borssele site and other sites being considered and the implications for the NPP Project's land requirements.

3. What is the overall assessment of the overnight cost and schedule?

- The Technology Vendors' cost and schedule submissions were generally compliant with the TFS specification, but lacked detail and underpinning assumptions, particularly in early works activities.
- None of the three Technology Vendors' CapEx submissions included the detail and assumptions that underpins the CapEx estimate nor what is included or excluded from the estimates. Based on the responses from the Technology Vendors it is apparent that each of the Technology Vendors have assessed the levels of uncertainty within their CapEx submissions differently and have included cost for different scopes in each of their CapEx submissions. To clarify this further, a series of individual meetings were held with each of the Technology Vendors that identified the following findings:
    - Elements of some of the submissions are Class 3.
    - Elements of some of the submissions are Class 5.
    - Not all the submissions have provided an estimate that covers all the scope.
    - The approach to the inclusion of a cost for the risk provision within each estimate submission varies.
    - Where a risk provision is included, the share of the CapEx estimate associated with the risk provision is not identified in the TFS submissions.
- It is the Amentum TPR Team's assessment that the TFS CapEx submissions may not be fully representative estimates of the entirety of the scope defined in the TFS Battery Limits and Scope of Supply document, due to the lack of assumptions and exclusions identified in relation to the early works (particularly site-specific elements that cannot be confirmed at this stage). Based on previous NPP project experience it is the opinion of the Amentum TPR Team that this clarity will only be achieved in the next phase of the project through a formal competition process (BIS) that includes the Front End Engineering Design (FEED) studies.
- The TFS submissions do not include complete Owners Scope costs, which will be significant. Based on the project the experience of the Amentum TPR Team, preliminary cost impacts for Owner's Scope could be in the region of €3-5Bn [*2024 costs, Class 5 of the AACE 115R-21 - Cost Estimate Classification Matrix for the Nuclear Power Industries (Table A)] for a 2-unit site. The extent of Owners Scope will be dependent on the Technology solution and the selected site. More detailed studies would be required to firm-up these estimates requiring concept design, construction logistics and other studies.
- Based on the project the experience of the Amentum TPR Team and the Technology Vendor CAPEX submissions, the preliminary cost and schedule impacts indicate that the likely total project cost (including Owners Scope costs) will be in the region of €20 to €30 billion [*2024 costs, Class 4 of the AACE 115R-21 - Cost Estimate Classification Matrix for the Nuclear Power Industries (Table A)] for a two-unit build (dependent on the technology and site selected) and that a target Commercial Operation Date (deterministic) for Unit 1 at the Borssele site in the late 2030s is achievable. The total project cost range identified above is broadly consistent with preliminary stated figures for other new build NPPs in the market (e.g. the proposed new 2-unit project in Slovenia identified a range of €9.314 billion for a 1000 MW unit, up to €15.371 billion for a 1650 MW unit, noting that these figures are based on a GEN energija estimate based on publicly available data applied to all technologies and does not take into account site-specific costs). More detailed studies would be required to firm-up these estimates requiring concept

design, construction logistics and other studies, including site specific issues which invariably impact the final project cost.

- Early indications suggest two of the Technology Vendors anticipate a similar peak in the construction workforce on site (in the order of 10,000 personnel). The other proposed Technology Vendor solution maximises modular construction methods and consequently requires a smaller peak in workforce on site.
- There is a risk that the constraints associated with the delivery of a NPP Project in a European context and in particular the delivery of a project in the Netherlands will negatively impact the delivery by Technology Vendors who have not done this before.
- There is also a risk related to each of the three Technology Vendor's ability to work with a Netherlands supply chain, particularly in relation to alignment on processes and procedures between the Technology Vendor and its Netherland's Supply Chain that may impact the delivery of the project.
- It is not possible at this stage to obtain a reliable, detailed schedule from the Technology Vendors. This aspect will be further matured in the next phase upon confirmation of the site, required design work and Owner's requirements. The Owner needs to develop its own end-to-end NPP Project Schedule, Cost Estimate and Risk Register including a Master Data and Assumptions List (MDAL) and benefits case for the NPP Project. The TFS submissions can be used to inform this. Based on previous NPP Project experience the Amentum TPR Team advise that stakeholders would typically expect that project deliverables of this mature would be available to support decision making.

4. How can the BIS be optimised to secure the optimal solution for the Netherlands?

- Up-front investment is critical for de-risking and acceleration.
- A further round of Technology Vendor consultations in advance of the BIS, will help inform the overall BIS development strategy and site selection process. This is normal practice prior to launch of any major public procurement in the EU to ensure a smooth and compliant process. Additionally, further consideration and alignment with all the Technology Vendors should be sought regarding the structure of the BIS process and the entry into long form, legally binding contracts.
- Early development of the NPP Project's high-level functional requirements to support the preparation of procurement documentation (and future management arrangements – where relevant).
- A targeted, phased approach to the BIS will maximise competition and drive optimum benefit for The Netherlands from the Technology Vendors, as well as supporting meaningful dialogue with the Technology Vendors to understand the baseline value proposition for those components which are generic and not dependent on final site selection. This allows the BIS competitive procurement process to start whilst final site selection activities are undertaken. Locking in key commercials at progressive stages will be critical. A fully developed, multi-phased bid will likely allow the Owner to drive further additional value from maximizing competition in relation to specific components of the NPP.
    - Designing a phased BIS will enable the enactment of the contract(s) in a manner that preserves the Owner's options and maintains competition until the optimum decision point when the Netherlands Government is ready to make such a decision based on all the available facts. The proposals for the phasing of the BIS require to be discussed in detail with the Technology Vendors as part of the next phase of the NPP Project and consideration given to activities being undertaken as part of the Site Selection process regarding timing of the BIS phases to ensure that the procurement phase does not run ahead of site selection.
    - An initial phase of the BIS could be designed to require the Technology Vendors to participate in a Pricing and Commercial Terms Competition for plant equipment and above ground structures scope and enable the optional selection of "Preferred" Technology Vendors to progress to the next phase, as far as the competition regulator and the Technology Vendors acknowledge, at the onset, the down selection criteria on only part of the total price of the Technology Vendors scope of works. Note that the pricing of the site-specific elements of scope cannot be priced before completion of the FEED studies.

  - A second phase of the BIS would require Technology Vendors to develop their Concept Design and enabling and ground works proposal specific to the site(s) via the FEED studies. In this way the CapEx projections will be progressively underpinned via the maturing design solutions for the site-specific aspects of the project with the ongoing benefit of competition between Technology Vendors.

- The Owner should identify and undertake early works near-critical and critical path activities in parallel with the conclusion of the BIS process to maintain progress on the project.
- A list of procurement deliverables to support the development of the project has been identified by the Amentum TPR team which shall support optimization of the BIS process.
- There is a trade-off to be made between the increased risk profile held by the Owner and the increased Owner's resource costs associated with a multi-contract delivery model and the benefits that the Technology Vendor solution offering an alternative to an EPC delivery model potentially offers.

5. What is the Amentum TPR team's advice on the spatial planning and permitting activities?

- The Amentum TPR team has provided guidance and support to the development and optimisation by KGG of the BIS. The Amentum TPR Team has concluded that the information received as part of the TFS and the MC process, whilst valuable for this early phase of the NPP Project, does not offer sufficient clarity or generate the level of understanding necessary for KGG to conclude site selection. Further work is required to understand the land requirements of each Technology Vendor during construction and the impact of the authorisations process for site enabling works (e.g. dike removal) without facing significant risks related to Technology Vendor qualifications and potential extensions to the procurement timeline. If the current Borssele site constraints remain, it is unlikely that the project would be able to have an effective competition.
- The draft project Road Map prepared by the Amentum TPR team includes advised milestones and activities to be carried out up to FC.
- Key NPP Project deliverables for 2025/26 have also been advised by the Amentum TPR team, with a focus on developing a suite of plans and strategies to underpin the Project Mandate (first stage gate).
- Specialist advice is required to allow a full assessment by the Owner of the required approvals, consents and permits, both site and project specific (including planning, state aid, EURATOM, etc.) to achieve full government approval, the submission requirements and likely durations to achieve these approvals.

6. What is Amentum TPR team's advice on the parliamentary process to secure a Project Mandate and future key project gateway decisions?

- The support and input provided by the Amentum TPR Team is aimed at fully informing KGG in evaluating all aspects of the proposed development of two NPPs in the Netherlands and ultimately obtaining the first Project Mandate to proceed with such development.
- Comprehensive guidance has been provided to ensure that KGG can thoroughly assess the technical, regulatory, environmental, and economic factors involved. This includes detailed analysis and recommendations to facilitate informed decision-making and strategic planning, thereby enhancing the likelihood of securing the necessary approvals and support from Parliament.
- Key decision gates are identified in the draft project Road Map with advised supporting decisions and required evidence to secure funding and governmental approval to proceed to the next phase.
- Guiding Principles have been advised to enable efficient yet informed decision-making, clear communication and effective stakeholder management.
- The construction of two large GWe NPP units over a circa 10-year period and their operation for circa 60 years will have an impact on the local community and the area. There will be multiple impacts from the development of a that include:

  - Positive socio-economic benefits.
  - Significant opportunities for local businesses (existing and new).
  - Long term high-quality technology and engineering jobs.
  - Education, training, and development opportunities.
  - Improvements to local infrastructure and services required for the project that also benefit the local community.
  - Funding for community projects to compensate for the negative impact of the NPP Project.
  - A well-managed mega-construction project of this nature will diligently implement mitigation measures to reduce the negative impacts of construction activities (e.g. vehicle movements, dust, noise, inflow of construction workers in the local community etc.) on the residents and business in proximity of the site, but the scale of the NPP Project and its duration will mean that those negative impacts even when mitigated will be present for many years during the construction phase.

- Through influencing of the BIS process there is an opportunity for the local community / region to maximise the benefits and mitigate the impacts on aspects of the NPP Project that include:
  - Agreeing a National-Regional Package.
  - Setting of requirements that will apply to the construction contracts.
  - Influencing the location of certain construction activities to minimise impact on communities.
  - Agreement of measures to control the extent of disruption to the community (peak levels for construction traffic, noise, dust, light etc.).
  - Agreeing a package of local impact mitigation measures (double glazing, landscaping, noise barriers, etc.).
- The industrial strategy for The Netherlands should consider the additional potential benefits of a NPP Project in relation to nuclear fuel enrichment and manufacture, building on the existing capability in the Netherlands.

1.7 Recommendations

1.7.1 Next Steps

Going forward into the next stage of the NPP Project, the Owner will apply the learning from TFS, MC and TPR to the development of the BIS. The TPR sets out a series of recommendations, based on the findings of the TPR and project experience of the Amentum TPR Team from previous NPP projects. The majority of the TPR recommendations apply to the BIS phase of the project.

1.7.2 Numbering and collation of recommendations

Recommendations for the next phase of project development are provided throughout the report pertinent to the subject matter under discussion. Each recommendation has been given a reference number. The recommendation reference number refers to the section of the TPR Report using the following nomenclature:

RX.Y, where:

R = Recommendation.

X = TPR Report section or Appendix.

Y = Consecutive numbering of recommendations within each TPR Report section or Appendix.

For clarity, recommendations have been collated by subject area.

1.7.3 Pre-BIS Dialogue

R1.1 - It is recommended that the Dutch Government consider launching the next stage of dialogue with the Technology Vendors , in parallel with preparations for the BIS, to inform the site selection process and detail the scope, boundaries of work and commercial parameters taking account of the pipeline of other upcoming nuclear projects in Europe, the UK and the Middle East and the overall procurement process, including how the eventual contracts will be enacted. This phase of further dialogue, which is not uncommon of projects of this nature, would be carried out to outline KGG's expectations in relation to specific project-level issues such as risk allocation, commercial models (including pricing and revenue structures, transparency of pricing and potential incentivisation structures), supply chain development and subcontracting, IP rights and liability structures. It will be important for KGG to work alongside organisations and personnel with recent experience of the commercial models of each of the Technology Vendors in order to develop a BIS which maximises value for money from the perspective of the Dutch Government.

Preliminary consultation is also advisable to gauge the levels of interest for the Owner's Engineer and Owner's Project Integrator packages of work, enabling these two critical procurements to commence in line with project needs. This is normal practice prior to launch of any major public procurement in the EU to ensure a smooth and compliant process.

R1.2 - It is recommended that as part of the next phase of Technology Vendor dialogue or the BIS process that the Technology Vendors provide their assumptions around decommissioning and other contingent liabilities.

R1.3 - It is recommended that KGG carefully considers what it intends to procure from the Technology Vendors and on what commercial and legal terms, for example:

- Only the Technology Vendor solution (with or without a fuel strategy).
- The complete operating NPP (with or without operations support).
- An equity partner.
- A proposal with or without direct Technology Vendor ECA funding.
- A technology supplier or project development partner.
- Two units or two units with an option for four units.

RI.1 - An early Site Construction Logistics Scoping Study undertaken by the Owner with input from the Technology Vendors will enable a better understanding of how the construction logistics may be undertaken efficiently and effectively, potential constraints, potential solutions for the Borssele site and the implications for the NPP Project's land requirements. Should more land be made available, or the constraints and risks associated with this site be mitigated this will enhance the affordability of the NPP Project. The learning from the construction logistics study at the Borssele site will also inform the Site Selection process and the NPP Project may wish to consider undertaking similar initial studies for all the candidate sites. The early Site Construction Logistics Scoping Study should examine the site layout requirements at the following key stages in the project lifecycle, as a minimum:

- Site clearance, dewatering and earthworks.
- Construction of foundations and structures.
- Unit 1 and 2 Civils construction and MEH installation on Unit 1.
- Unit 1 MEH installation and Civils construction and MEH installation on Unit 2.

RI.9 - Given the multiple NPP Project opportunities currently available to the Technology Vendors, it is recommended that the Owner maintain the attention of the Technology Vendors during 2025 in the period up to

the issue of the BIS and through the BIS process. The Owner may wish to consider whether the BIS should require a bid bond to ensure that Technology Vendors are fully committed to the competition.

1.7.4 Applying the learning from TFS, MC and TPR

R5.3 - It is recommended that the AMBER findings of the TPR are addressed either through a further phase of market engagement or as part of the BIS that may be issued to selected Technology Vendors. (An Amber finding is defined as "Minor discrepancy with TFS requirements and/or insufficient supporting information that in the opinion of the Amentum TPR Team it would be possible to resolve the issue satisfactorily during the BIS through future work without significant impact to overall time / cost / risk.")

R8.10 - It is recommended that Owner thoroughly discuss the approach to managing IP rights with the Technology Vendors, considering the implications of export control regulations for nuclear items and other potential restrictions on transferring IP among different parties, especially if it entails cross-border transfer of information. The sensitive nature of nuclear technology means that IP management is a critical aspect of the project, requiring careful planning and clear agreements considering, at the minimum, the following:

- Export Control and Regulatory Compliance: Ensure that all IP-related activities comply with relevant export control regulations and other legal requirements. This includes obtaining necessary licenses and approvals for the transfer of technology and ensuring that all parties involved are aware of and adhere to these regulations. Non-compliance can result in significant legal and financial penalties, as well as project delays.

- IP Transfer and Access: Clearly define the conditions under which IP can be transferred or accessed by different contractors. This is particularly important in scenarios where the original contractor must be replaced before the project's completion. In such cases, the new contractor will need access to the existing IP to continue the project. Establishing clear protocols and agreements for IP transfer can help mitigate the challenges associated with this process.

- Confidentiality arrangements: Address the risk that Technology Vendors may be reluctant to share their IP, given that their value largely lies in their proprietary technology, patents, and know-how. To manage this risk, it is recommended that the Owner negotiate terms that balance the Technology Vendors' need to protect their IP with the project's requirements for access and continuity. This may include: (A) licensing agreements, (B) escrow arrangements, in addition to the (C) confidentiality and non-disclosure agreements.

R10.1 - It is recommended that when entering the next phase of the Netherlands GWe NPP Project that KGG (and its advisors) should ensure that the connectivity between the requirements, constraints and understanding emerging from the TFS are aligned with the critical enabling structures (GSP, Funding/Finance, legislation, regulatory approvals) that have been scoped and tested in outline by the EY MC and BNP Paribas reports. Together with the TPR Report they create a common set of facts on which to base decision-making.

1.7.5 Site Selection / Characterisation

R1.4 - It is recommended that the Owner determines in detail the applicable hazards associated with the Borssele site, and other sites under consideration, including the operation of adjacent facilities and quantifies / considers the likely cost and time implications of these as part of finalising the site selection process.

R5.1 - It is recommended that a more extensive assessment of the grid conditions, including in particular the grid capacity for the transmission of the power generated, and the capacity and stability of the 150 kV grid for the plant's own supply is performed as part of future works.

R8.2 - Should the NPP Project wish to progress with the Borssele location then it is recommended that the schedule logic and activity durations related to the design, permits and consents for potential changes to the dike on the Borssele site are examined in detail as part of the Site Selection process to identify the potential cost and schedule impacts of the dike site constraints at the site. It is recommended that these studies are undertaken in parallel with the intake and outfall assessments and the platform level assessment.

R8.4 - It is recommended that the Design Basis Flood Level (DBFL) is confirmed by the Owner for the BIS as part of the definition of the design basis hazards applicable to the project and that this information is shared with the bidders during the BIS.

R8.6 - It is recommended that Owner engage closely the existing Borssele NPP, COVRA and refinery site operators within the Cittershaven Port to ensure that the proposed NPP layouts and local infrastructure modifications are acceptable, and emergency planning considerations are developed in harmony.

RI.2 - It is recommended that a clear set of site-specific and project-specific Rely Upon Information (e.g. Site characteristics, ground investigation data, elements of design prepared by or for the Owner, grid connection, design basis earthquake, etc.) is established by the Owner and communicated via the BIS.

RI.3 - It is recommended that the Owner compile technical specifications relevant to the proposed development site (fundamental project deliverable that is also required for the BIS) from the site characterisation studies. This should include output from engagements with the owner / operators of adjacent facilities in order to understand in detail the external hazards for the site that will be applicable to all of the Technology Vendors during construction and operation of the proposed NPP, in particular the hazards that construction and operation of the NPP may have on adjacent structures and other local infrastructure (such as existing drainage / sewage systems, electrical and water supply, roads, etc.).

1.7.6 Project Mandate

R8.7 - It is recommended that the Owner prepares the following initial key project deliverables as supporting evidence for decision-making and stakeholder engagement in preparation for the first Project Mandate approval:

- Primary project structures (Work Breakdown Structure (WBS), Cost Breakdown Structure (CBS), Organisational Breakdown Structure (OBS), Risk Breakdown Structure (RBS) etc.)
    - NPP Project Schedule
        - Level 1 Schedule (End-to-End)
        - Detailed Level 3 Schedule for the next 24 months
        - Level 0 Milestones – Milestone Definition Sheets
    - NPP Project Master Data and Assumptions List
    - NPP Project Risk Register
    - NPP Project Benefits Case
    - Procurement and Contracting Strategy
    - Project Funding and GSP options and solutions paper
    - Operator Market Consultation Report

R8.8 - It is recommended that a clear set of requirements for risk management on the NPP Project will require to be established by the Owner, communicated via the BIS and robustly enforced via the BIS process.

R8.9 - It is recommended that the Owner prepares a comprehensive NPP Project Risk Register aligned to the Owner's estimate of cost and schedule early in 2025 to support decision-making and stakeholder engagement in preparation for the first mandate approval.

1.7.7 Project Funding

R1.5 - It is recommended that KGG produces (i) outline funding options tailored to the unique circumstances of the Dutch NPP and (ii) baseline documents to inform policy decisions, including the overall procurement and contracting strategy and delivery strategy, and update these documents periodically as the approach evolves. It will be important for KGG to obtain any feedback from key stakeholders within the Dutch Government in parallel with input from financial institutions and other potential funders to develop, in conjunction with a Financial Advisor and other sector specialists, a financing plan for the project.

KGG will also need to take account of any further decisions or statements made by the European Commission in relation to revenue support mechanisms or wider Government Support Package on other new-build nuclear projects in Europe which could impact the funding models for the Dutch NPP. Additionally, KGG will need to consider the need for and project schedule impact of any legislative changes which may be necessary in The Netherlands to facilitate the implementation of the Government Support Package once this framework is further developed.

1.7.8 Owner's Scope

R1.6 - It is recommended that one of the NPP Project's deliverables for 2025 should be a plan setting out how the Owner will achieve accreditation of its integrated management systems to the following standards: ISO 9001, 14001, 18001, 27001 45001 and consider a strategy for alignment to ISO 19443 and ASME NQA-1. Experience from other NPP Project infers that regulators will take a robust position in relation to Health and Safety and Environment, Security and Quality systems accreditations ahead of works progressing on site.

R1.7 - It is recommended that the Owner identify and undertake early works near-critical and critical path activities in parallel with the conclusion of the BIS process.

R1.8 - It is recommended that specialist advice is obtained that allows a full assessment of the required approvals, consents and permits, both site and project specific (including planning, state aid, EURATOM, etc.) to achieve full government approval, the submission requirements and likely durations to achieve these approvals.

R8.3 - It is recommended that, in order to support site selection, the cooling water intake and outfall concept design be developed by the Owner, independent of the final technology solution. As part of the next phase of the NPP Project and Site Selection activities the Owner should discuss with EPZ, the current operator of the Borssele NPP the acceptability and the potential impact of the cooling water solutions proposed by the Technology Vendors including the preferred shoreline intake solution as proposed by two of the Technology Vendors.

R8.5 - It is recommended that early discussions with ANVS be undertaken to establish the quality assurance requirements that will apply to the design, contractor selection, any trials of the Technology Vendors' proposed deep foundation techniques prior to construction start to confirm the suitability of the proposed design, and the oversight of foundation installation and the monitoring of foundation performance through the construction phase. A good start has been made on this aspect as ANVS has already been approached by the Technology Vendors during the clarification meetings (compliance with VOBK requirements) and this proposed foundation solution was acknowledged by ANVS.

RI.6 - It is recommended that the Owner rapidly ramp up capability in the next year to mobilise a significant technical, commercial and management capability in preparation for the delivery of the Owner's Scope in parallel with the BIS for selection of a Technology Vendor.

1.7.9 Localisation (Netherlands)

RI.5 - It is recommended that in order to maximise the potential opportunities for the local supply chain that the Owner takes control of and leads on localisation and supply chain development activities such as supplier symposium, graduate schemes, and small to medium enterprise stimulation.

- Prior to and during the start of the BIS process, the Technology Vendors should prepare a local content plan and present this to the Owner to ensure alignment with the overarching NPP Project strategy for localisation in The Netherlands.
- The Owner needs to actively manage the risks associated with key local Tier 2 suppliers agreeing exclusive relationship with a single Technology Vendor.
- For BIS development, a detailed understanding of local construction skills, civils and MEH capability and capacity is required.
- The Owner needs to consider establishing a basis for maintaining competition within the BIS while maximising the potential for localisation and explore how Dutch / EU anti-competitive legislation will apply to this aspect of the NPP Project.

- The industrial relations strategy for the NPP Project also needs to be set by the Owner.

1.7.10 Technology Vendor Bid Invitation Specification

R1.9 - It is recommended that a BIS is constructed to enable dialogue with all the Technology Vendors to continue, while the NPP Project's wider site selection and optimisation activities are concluded. This will help identify the optimum footprint for nuclear development in The Netherlands. The Amentum TPR Team believes that the critical project development and vendor procurement activities can be orchestrated to accommodate and optimise site selection.

R1.10 - A phased approach to the BIS is recommended that locks down elements of the Technology Vendor's value proposition that are not site specific (Phase 1). Phase 2 and 3 of the BIS will look in detail at site-specific issues, following confirmation of the selected site.

R1.11 - It is recommended that for the BIS phase the Owner identify the technical and commercial criteria by which BIS evaluation / down selection will be undertaken. For each criteria the measures by which the BIS submissions from the Technology Vendors will be assessed against should be defined using an objective scoring system established prior to the issue of the BIS. (e.g. Unacceptable, Acceptable, Good and Excellent and the basis for such an evaluation).

R1.12 - It is recommended for the BIS phase that the Owner must set out a clear set of project requirements and set exacting and comprehensive requirements around the nature and content of BIS deliverables that is applicable to all bidders.

R1.13 - It is recommended that the BIS competitive procurement phase will need to test and interrogate each of the Technology Vendors' delivery and project management approach and how each Technology Vendor plans to deploy within a different delivery environment compared to their domestic environment.

R1.14 - It is recommended that as part of the BIS each of the Technology Vendors are required to undertake an assessment that identifies the degree of cultural difference and alignment that will need to take place between their organisations and a European supply chain that is heavily unionised and has different cultural, working and business practices.

R1.15 - It is recommended that Owner set out the Employer Information Requirements (EIR) including file formats and the requirements for native copy of documents (as appropriate) to be provided by Technology Vendor to the Owner.

R4.1 - It is recommended that the Owner define the requirements for the NPP in relation to Climate Change (including space weather) in order for the Technology Vendors consider these requirements in the design of the NPP.

R5.2 - It is recommended that the BIS should contain a clear requirement whereby the Technology Vendor must conduct a gap analysis comparing the offered reference design with applicable ANVS VOBK requirements, including respective mitigation measures. The Owner would need to define its operations and maintenance requirements for the plant and confirm that these are acceptable to ANVS. This can influence and affect the availability of the plant and subsequently impacts cost and schedule.

R6.1 - It is recommended that the Owner sets out the minimum requirements for plant availability within the technical and commercial elements of the BIS documentation.

R8.1 - It is recommended that during the BIS phase the Technology Vendors provide a proposed in-country baseline for all applicable Regulations, Codes and Standards that will indicate the understanding of the Technology Vendors breadth and depth of knowledge of the regulatory environment applicable to a NPP Project in The Netherlands.

R8.11 - It is recommended that the Owner put in place processes and procedures to support a phased BIS procurement that maximises competition and are fully compliant with all the necessary Dutch and European legislation for a major public procurement. This should also address the issue of perceived and actual conflicts of

interest throughout the supply chain, recognising the limited number of competent suppliers within the nuclear sector.

R8.12 - It is recommended that the Owner must determine in 2025 its strategy for establishing a Common Data Environment (CDE) that supports effective document control during the BIS and the development stage of the project. The CDE will be required to facilitate collaborative working by multiple entities and commercial confidentiality.

RI.4 - It is recommended that the Owner set out in the BIS a clear set of project requirements and set exacting and comprehensive requirements around the nature and content of BIS deliverables that is applicable to all bidders.

- BIS must set out clearly and comprehensively the Owners requirements in appropriate detail and set out the minimum level of detail that is required for Technology Vendor response.
- BIS marking scheme to identify what represents an unacceptable, acceptable, good and excellent response in the marking criteria - this will be basis for evaluation and will enable differentiation of bids based on value / benefit to Owner.
- The Owner must not allow Technology Vendors to change the nature and detail of the required BIS deliverables during the BIS process.

RI.7 - It is recommended that the Owner to test and interrogate each of the Technology Vendors' delivery, project management and construction management approaches and determine how key resources will be deployed and retained on the project.

RL.8 - It is recommended that the Owner test and interrogate each of the Technology Vendors' delivery, project management and construction management approaches and determine how their delivery model will be deployed on the project and matured over time.

1.7.11 Parliamentary Decision Making

R1.17 - It is recommended that KGG create a policy framework, guiding principles, and a working agenda, and organise alignment and support to secure the first Project Mandate, implementing the Parliamentary Decision-Making advice provided by the Amentum TPR Team to communicate key messages from the TPR Report:

- Technical feasibility is confirmed.
- Up-front investment is critical for derisking and acceleration.
- Additional project development activities required to determine all benefits.
- Government leadership is essential.
- In order to maintain progress several key decisions are required that include:
    - Site selection.
    - Site characterisation.
    - Technology selection.
    - Operator solution.
    - Owner delivery model.
    - Procurement and Contracting Strategy.
    - Project Funding / GSP.

A draft NPP Project Road Map up to Financial Close has been prepared and advice has been given by the Amentum TPR Team on how to navigate approvals via a project stage gate process expeditiously ensuring all stakeholders are adequately informed to enable timely decision making.

1.8 TPR Accomplishments

It is the assessment of the Amentum TPR Team that the TPR has accomplished the following for the NPP Project:

- Raised the profile of the importance of a Safety Culture on this NPP Project.
- Given confidence (backed by senior Subject Matter Experts) that two NPPs can feasibly be built in The Netherlands.
- Provided clarity on the challenges associated with the Borssele site.
- Identified significant gaps in each Technology Vendor's cost and schedule submissions related to clarity of assumptions and exclusions and lack of detail to support the validity of the CapEx submissions.
- The importance of Owners Scope in the overall estimate of cost and schedule for the NPP Project was identified and is advised for early development in the next phase of the NPP Project.
- Provided clarity on the scale, complexity and importance of Owners Scope, particularly in the period up to Financial Close and the indicative resource requirements through the life of the project.
- Identified key risks and proposed mitigations associated with the next phase of the project.
- Provided clearer understanding of how the Owner can align its organisation to the proposed Technology Vendor delivery models.
- Advised on the contents for a Contract and Procurement Strategy and conceptualised a phased approach to the BIS and other third-party procurements.
- Presented outline options for funding / financing the project and how the GSP will flex accordingly when considering the wider Netherlands context.
- Provided recommendations and Guiding Principles for Parliamentary Decision-Making.
- Provided advise on Government Stakeholder mapping and engagement.
- Development of a draft NPP Project Road Map diagram for the project activities in the period up to Financial Close.
- Provided detailed advice on NPP Project next steps.

1.9 Lessons Learned from the TPR

During the TPR process the following lessons were captured by the Amentum TPR Team and advice given on how to apply these lessons to the NPP Project:

- Clear, well-defined specifications and an appropriately weighted marking scheme must be set and implemented during the BIS phase to ensure that the Vendors provide all information requested and decisions made are fully compliant with Dutch and EU procurement laws.
- An effective and comprehensive requirements management process is essential throughout the life of a highly complex project of this nature. Requirements management needs to be implemented by the Owner at the project outset to support the BIS process and will be essential for evaluating Technology Vendor responses to BIS requirements.
- Comprehensive Basis of Schedule and Basis of Estimate must underpin the estimate (schedule and cost) submissions. These should include the set of assumptions, exclusions and benchmarks that inform the durations and logic of the activities and underpin the costs submitted.
- A clear set of requirements for risk management on the NPP Project will require to be established by the Owner, communicated via the BIS and robustly enforced via the BIS process.

- The Owner must prepare BIS processes and procedures that are fully compliant with Dutch and EU procurement laws, otherwise the project will be at risk to a procurement challenge and associated significant delay and cost impacts.
- Appropriate arrangements and agreements to protect Intellectual Property Rights and appropriate Export Control licenses must be dealt with by the Owner early and cover all involved parties.
- The use of suitably qualified and experienced people to prepare the BIS documentation (technical, commercial, legal and project management experts) is essential to ensure comprehensive and competent documentation is prepared efficiently and effectively ("right first time").
- Record keeping is essential, utilising appropriately designed and secure information technology/ information management systems, to ensure that important information is retained, is accessible to authorized persons and decisions evidenced.
- The site selection process should take account of the following criteria when assessing site suitability:
    - Impacts to adjacent facilities due to hazards from the proposed NPP during construction and operation.
    - Impacts of hazards from adjacent facilities on the proposed NPP during construction and operation.
    - The land requirements for NPP construction.
    - Potential cooling water solutions.

1.10 Potential Project Delays Avoided

It is the assessment of the Amentum TPR Team that several issues that had the potential to create delay to the NPP Project have been avoided by undertaking the TFS, MC and TPR activities:

- **Licensing** – The TFS and TPR has assisted in understanding the gaps to the ANVS regulations. ANVS is undertaking a review of the VOBK regulations and are considering making changes to the VOBK regulations to harmonise it with current European and global standards.
- **Prequalification phase to the NPP procurement** – Avoided the prequalification phase associated with a traditional procurement, as the feasibility of the proposed Technology Vendor delivery solutions has been confirmed via the TFS process.
- **Procurement** – The TPR has guided the pathway forward to execute in a time-efficient manner an optimised and phased BIS process that maintains competition.
- **Site Selection Process** – Gaps identified, and actions identified to close gaps related to external hazards associated with adjacent facilities and the extent of land required for NPP construction and other site logistics challenges prior to this becoming an issue that delays the project.
- **Permits, Consents and Approvals** – Gaps identified and greater understanding of the requirements for concept design to support the development of submissions for authorisations, and the potential for phasing of site investigations to support the BIS and the authorisation processes. Actions identified to close gaps and draft Road Map developed that minimises potential for delay to the project.
- **Assurance process** – Gaps identified, advice on governance structures and arrangements applicable to the NPP Project and actions identified to close gaps prior to this becoming an issue that delays the project.
- **Funding** – The TPR has informed the viable funding options for consideration minimising the potential for delay and nugatory work investigating non-viable options.

- **Government Decision Making Process** – Advice provided on how to navigate approvals via project stage gate process up to Financial Close expeditiously ensuring all stakeholders are adequately informed to enable timely decision making.

Project Mandate – The TPR has provided a draft project Road Map to Financial Close and required evidence to support securing a Project Mandate. Note, that the Amentum TPR Team has identified and advised on several deliverables that, based on previous NPP Project experience, need to be developed to support the achievement of the initial Mandate.

2 Terms of Reference

2.1 Objectives and Requirements

The overarching objective of the TPR is to confirm that the proposed Technology Vendors can supply two NPPs in compliance with KGG's requirements and Dutch laws and regulations. This is underpinned by a technical, socioeconomic (e.g. construction headcount) and programmatic evaluation of the TFS and MC in the context of the Netherlands' energy and climate strategy.

KGG's goal for the project following the TPR is to establish a common set of facts on which to base Client decision-making. To achieve this goal KGG has set the following objectives for the TPR:

- Confirm that the Technology Vendors can supply two NPPs in compliance with KGG requirements and Dutch laws and regulations.
- Evaluate if proposed technology can be installed at Borssele given the site spatial challenges and potential opposition from politicians and wider public.
- Analysis of the overnight cost and schedule envelope and how KGG can optimise Technology Vendors bids.
- Our support to the development and optimisation by KGG of the BIS.
- Our support, input and advice relating to the planning and permitting activities.
- Support to KGG in evaluating the proposed development and obtaining a Parliamentary mandate to proceed.

2.2 Delivery of the TPR

The delivery of the TPR was executed in 5 stages, set out below, which in their totality meet the objectives and requirements as set out by KGG.

Stage
Stage 1 – Familiarisation with current consultant's efforts
Stage 2 – In-depth evaluation of each TFS
Stage 3 – Evaluation of the MC results
Stage 4 – Merging the results of the analysis of the three TFS and the MC
Stage 5 – Drafting the final conclusions

This report is the main deliverable for the TPR assignment and shall be summarised into a document that is to be available for public consumption as part of Stage 5.

3 TPR Methodology and Delivery Approach

3.1 Methodology

The full methodology and delivery approach to conducting the TPR can be found in Appendix B of the TPR report.

The approach to assessment of the TFS Submissions in particular was to review the set of deliverables (as set out in the TFS specification – See Appendix H) against the specific requirements as listed in the appendices of the TFS Scope and Battery Limits. Against each requirement listed together with the compliance matrix aligned to the Dutch Safety Guidelines' for water cooled reactors (VOBK), (*Veilig Ontwerp en het veilig Bedrijven van Kernreactoren)*, the Amentum TPR Team have verified the data and its accuracy. For each item identified a RED, AMBER or Green (RAG) rating was applied to highlight compliance with the requirements set out in the TFS (Dutch legislation and regulatory guidelines, spatial, logistical, permitting, planning, etc.) associated with the Borssele site. The rating system to be used for the TPR is defined below:

RAG Status	TPR Assessment Criteria
RED	Major discrepancy / non-conformance with TFS requirements, and /or technical non-compliance and/or a lack of adequate supporting information that justifies the Technology Vendor's response that would likely require significant adaption to the reference plant with the potential to impact time / cost / risk. Red issues shall require further clarification with the Technology Vendor via KGG during the Stage 2 Review.
AMBER	Minor discrepancy with TFS requirements and/or insufficient supporting information that in the opinion of the Amentum TPR Team it would be possible to resolve the issue satisfactorily during the BIS through future work without significant impact to overall time / cost / risk.
GREEN	Technology Vendor's response compliant with TFS requirements.

The core of the TPR quality assurance process is the CRAV methodology:

- **C**heck – Core Team.
- **R**eview – SME (Red/Amber).
- **A**pprove – Core Team.
- **V**erify – Expert Peer Review panel.

This process was applied to the findings of the TPR and focused on Amber and Red topic areas where the level of compliance with requirements warrants further review before close-out or escalation to a Technology Vendor via KGG.

3.2 Wrap-up Vendor meetings and continued engagements

It should be noted for clarity, that the Amentum TPR Team recognise that various Technology Vendor meetings have been held, both with KGG and the ANVS. This includes TFS wrap-up meetings and continued Regulatory engagements to discuss the harmonisation of ANVS' VOBK requirements to international standards. The outcomes of these meetings have been captured in this TPR where minutes and supporting information was made available, although it is noted that Amentum TPR have not been privy to all Vendor dialogue at this time.

Therefore, the process of identifying and flagging Red items has been done on the basis of what was contained in each Vendor's 2nd issue of the TFS, with revisions for Technology Vendor minutes and supporting information

made available. The final TPR Report consolidates the outcomes of Technology Vendor dialogue, as part of the evidence-based close-out of RED items.

3.3 How the TPR will inform the next phase

Figure 1 below depicts how the findings will flow into the next phase of the project to be undertaken by KGG.

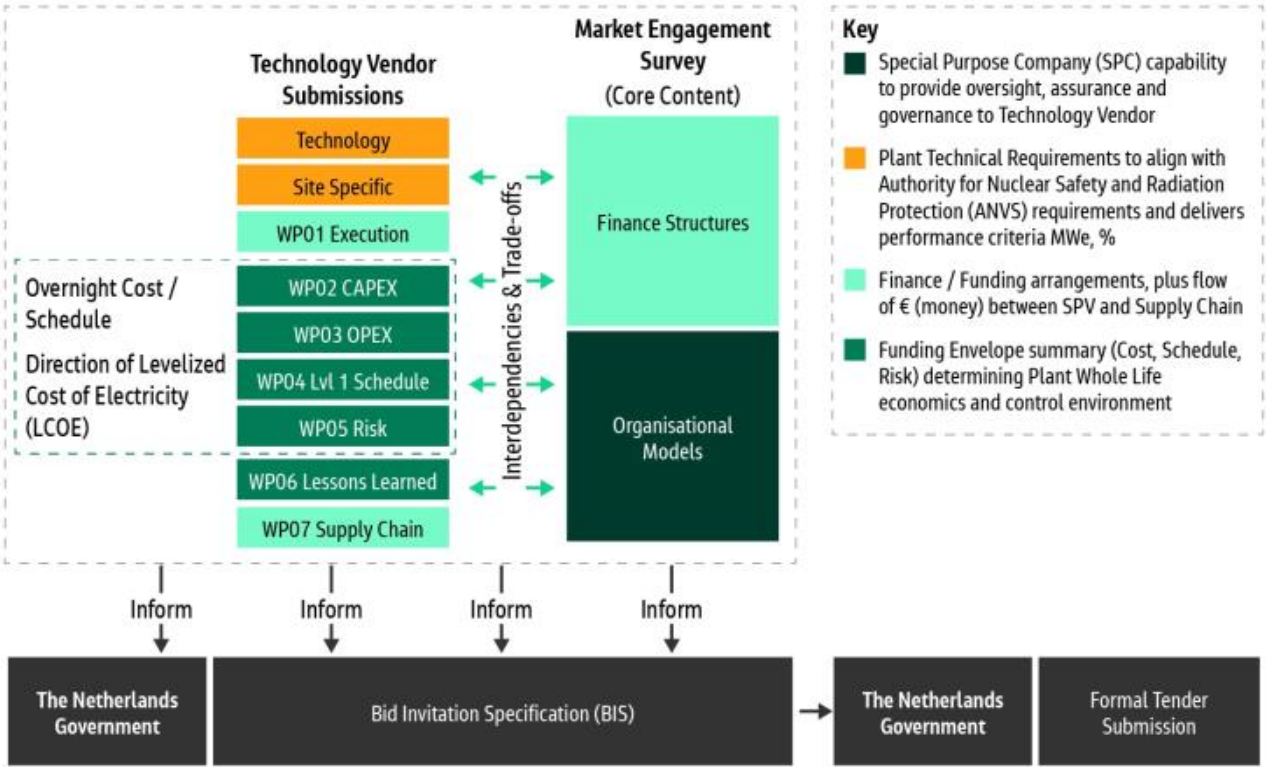


Figure 1 - Evaluation of interdependencies between the TFS submissions and MC and how they inform the next phase of the project

4 Technical Feasibility Studies – Specification Gap Analysis

The objective of the TFS process is to provide the following:

- Confirmation of Technology Vendors ability to supply a new NPP in compliance with all applicable rules and regulations and identify, if any, all deviations to those rules and regulations.
- Confirmation of Technology Vendors ability to install a new NPP at the Borssele site in compliance with all geotechnical, licensing, environmental and stakeholders' constraints provided by the Owner.
- Framing of the overnight costs and duration of the construction of the plant respecting the above constraints.
- Inputs that will enable the preparation of a BIS enabling each Technology Vendor to participate with minimized deviations and exclusions.
- Support to permitting, licensing and stakeholder management.
- Inputs for KGG to obtain from parliament a mandate to proceed with the Nuclear New-Build Project.

The expected benefits of this TFS are the following:

- Acceleration of the tendering process (rather parallel than sequential).
- Reduction of uncertainties and risks (early change detection).
- Improvement of competition through non-exclusionary specifications.
- Enabling political decision-making and stakeholder engagement.

The TFS is compiled as a series of Work Packages aligned to one of three Workstreams:

- Workstream 1 (WS01) – Technology and Licensing, focuses on nuclear licensing, regulation and conformance.
- WS02 - Site Specifics, focuses on options for the NPP layout in relation to the Borssele site, site specific aspects of the NPP Project including studies related to design, permits constructability, earthworks, foundations, cooling water solutions and mobilisation and early works activities.
- WS03 – NPP Delivery and Economics, examines the Technology Vendors' proposed execution strategy, the cost, schedule and risk elements applicable to the NPP Project, lessons learned from other NPP projects and the Technology Vendors' proposals for potential subcontractors and local content.

The primary purpose of the TFS is to create an understanding of feasibility, rather than to compare the technology or delivery models as the Technology Vendors are not in competition at this stage.

The first activity of the TPR was to review the TFS specification that was issued to the Technology Vendors to respond to. The TFS specification is typical of what would be expected during an early market engagement process by a country considering options for GWe nuclear build with the primary considerations on technical licensing and compatibility with a suitable site. The TFS process is consistent with the relevant International Atomic Energy Authority (IAEA) guidelines. As feasibility is confirmed and the project's maturity progresses the level of interrogation via a BIS process will require greater scrutiny of many subjects, some of which have been identified in this TPR Report. KGG should consider the output of the TPR as a "bridge" to help inform its policy and strategic direction to inform the next phase of the procurement cycle.

In order to assess the three TFS that have been produced by the three Technology Vendors, the specification that has been set must first be analysed in order to understand the nature of the questions that were asked, and the parameters that were set. Section 4 of this TPR Report presents an analysis of the Specification documents that were produced, identifies any key exclusions to the scope of the TFS and any changes that were made to the scope after the initial requirements were set.

4.1 TFS Gaps Review

4.1.1 General Scope of the TFS Specification

The TFS Specification provides a comprehensive list of information and criteria required by the Client, KGG, for the purposes of understanding further the individual Technology Vendor technology solutions and proposed delivery structures. The TFS specification adopted required a collaborative development (documentation issued in 3 revisions, improved through comment sheets and workshops) to ensure that the deliverables meet the expected level of quality and completeness. It is understood that the iterative process to achieve "fit for purpose" would then determine what was an acceptable or unacceptable level of detail in a deliverable or what level of substantiation of "claims" being made on technology performance is required in response from the Technology Vendors.

4.1.2 Workstream 1 – Technology

Applying the RAG criteria, for Workstream 1, only Amber points were noted as detailed below:

4.1.2.1 Protection of Adjacent Nuclear Assets

The works proposed are adjacent to the existing operational nuclear assets. Although operational at present, operations to defuel, decommission and long-term safe enclosure will take place over the operational lifetime of a proposed new nuclear facility.

During the BIS a detailed examination of the requirements for protection to adjacent assets from potential NPP failures, including turbine orientation, potential land features or plant design to limit event consequences will be undertaken. This will also examine external hazards and emergency planning between existing facilities on the selected site and the proposed new plant during both construction and operations.

4.1.2.2 Impact of Aggregated Changes from Reference Plant

To meet the requirements of the Owner, it would be expected that Technology Vendors may perform plant design changes to meet the needs of localisation, for reasons including regulatory, legislative, or environmental. Lessons learned from previous and ongoing projects should be incorporated into these design changes.

Consideration of the collective or aggregated impact of these changes would be expected to verify that no interaction between the design changes could lead to a latent deficiency in safety and operating performance, nor significantly impact on security, environment or costs. In the BIS, the Technology Vendors will be asked to set out their approach to understanding and mitigating the impact of aggregated changes based on prior learning.

4.1.2.3 Consideration of Global Warming

Given the lifecycle of modern nuclear facilities, including operational extensions, decommissioning and long-term safe enclosure, the impact of emerging environmental challenges is required to be considered to maintain safety, especially for nuclear assets sited on coastal locations.

The TFS asks the Technology Vendors to consider plant performance at current nominal conditions. The potential impact to plant performance over the lifespan of the NPP will be requested as part of the BIS. In the next phase Technology Vendors will be asked to consider the impact to their reference design applicability from rising sea levels, potential increased incidence of flooding, changes to plant performance from elevated sea temperatures and higher ambient air temperatures where the asset will be located. These aspects are site specific and would require to be dealt with in detail in the BIS phase of the NPP Project once the most suitable site is confirmed.

4.1.2.4 Safety Systems of the Design

Global nuclear events have elevated the significance of safety systems on modern nuclear assets.

Requiring Technology Vendors to indicate how the design philosophy in their reference plant with the proportional balance between Active and Passive safety systems providing protection to the nuclear asset would suitably

demonstrate the level of design evolution and regulatory safety considerations. Passive systems work by themselves through physical principles such as natural circulation. In theory, this allows a higher degree of safety to be achieved than designs where safety depends on the operation of active systems. ANVS have advised (ANVS - beeld uitkomsten technische haalbaarheidsstudies kerncentrales 24-03-2025) that as part of the licensing process, it still needs to be proven in that the passive systems and principles are also sufficiently reliable in practice to safety in all accident scenarios. ANVS have advised that this will be an extensive point of attention during the design review as part of the next phase of the NPP Project.

4.1.2.5 Consideration of Space Weather

The impact and understanding of Space Weather on nuclear assets is a growing topic area and given the lifecycle of modern nuclear facilities, will require to be considered in detail in the BIS.

It will be expected that each of the Technology Vendors understand the impact of Space Weather on their reference design, including potential maloperation or premature aging of equipment from the impacts of geomagnetically induced currents. Proportionate space weather resilience of systems linked to Loss of Off-Site Power events will require to be substantiated by the Technology Vendors as part of the BIS.

R4.1 - It is recommended that the Owner define the requirements for the NPP in relation to Climate Change (including space weather) in order for the Technology Vendors consider these requirements in the design of the NPP.

4.1.3 Workstream 2 – Site Specifics

4.1.3.1 Adjacent Facilities, Assets and Operations

The TFS Specification did not request sufficient detail from the Technology Vendors with regard to the impact of the proposed NPP on adjacent facilities, assets and operations, nor the detailed exploration of the impact of adjacent facilities, assets and operations on the construction and operation of the proposed NPP. The BIS will require a detailed analysis by the Technology Vendors of these aspects specific to the site that is selected.

4.1.3.2 Temporary Utilities

Temporary utilities, including power supplies, water and wastewater treatment and a Marine Off-Loading Facility (MOLF) are all required for the period of construction, with variable demand for usage throughout the build to address the needs of the NPP Project during individual phases. This has a significant impact on the required additional space, as well as the scope of the Owner to make these services available and of suitable duty.

The BIS must request an indicative understanding of the requirements for these services (quantities and space) so that adequate provision could be made and budgeted for.

The BIS must request sufficient detail to allow the temporary utilities requirements of each of the Technology Vendors to be adequately defined such that KGG can plan the Owner's Scope – Utilities. Specifically:

- Total Power requirement and anticipated ramp up of temporary and permanent power over time.
- Total water requirement and anticipated ramp up of temporary and permanent supplies of potable and raw water over time (including water required for Cut Off Wall construction and concrete Batching Plant).
- Total wastewater treatment requirement and anticipated ramp up of temporary and permanent wastewater quantities over time (including wastewater capacity required for Cut Off Wall construction and concrete Batching Plant).

The BIS must request details to adequately inform the Owner of the variation in requirements for temporary utilities across the life of the NPP Project and in several cases the Technology Vendor requirements are not comprehensive - the exercise will require to be repeated to obtain the necessary detail as part of the next phase of the NPP Project following confirmation of the most suitable site.

4.1.3.3 Platform Level

Platform level according to sea level and flooding assessments has an impact on the construction and operation of the nuclear asset, as well as having tangible impact on the design and operating costs of the pumping solution.

The determination of the platform level will be undertaken in the next phase of the project as part of the Preliminary Safety Analysis Report safety case. The Owner will require to set the basis for design by the Technology Vendors during the BIS phase by defining the Design Basis Flood Level (DBFL) for the selected site. The setting of the DBFL determines the platform level for a dry site concept. The assessment of the DBFL is based on data from current and predicted sea levels, historic and predicted high sea level events, (e.g. storm surges, extreme tides), and the optimal platform level derived to maintain flooding risks ALARA without being disproportionate.

4.1.3.4 Innovative Solutions

Efficiency in both project delivery and the construction of the nuclear asset, including the civil engineer works, mechanical erection, advanced inspection techniques and use of advanced materials, manufacture (including modularisation of plant and equipment in an off-site location) can all benefit the project schedule. In addition, it can allow activities with an element of risk to be performed in safer environments.

To benefit the Owner, it is important that the Technology Vendors propose innovative solutions as part of the BIS to address these issues, drawn from experience on previous nuclear asset builds. These innovations should be quantifiable in a cost-benefit assessment, to demonstrate the benefits that may be realised. Where possible, 'First of a Kind' (FOAK) engineering should be avoided to minimise risk of solutions that are not well understood.

4.1.3.5 Logistics

The importation of bulk materials and equipment, including the scheduling of their arrival and secure local storage, forms a key part of any construction project. Similarly, the export of excavated materials for processing, treatment or disposal is needed to maintain project schedule.

Given the importance of these logistics to the execution of the construction project, it is important that the BIS should include, but not be limited to, warehousing, bulk materials import and storage, storage of components, fabrication facilities and personnel logistics. Estimation of each Vendor's total construction land footprint would also help KGG to understand the greater needs beyond the footprint of the final plant in operations and any logistical challenges / risks that need addressing in outline during the early development phase of the project.

4.1.3.6 Planning / Scheduling Analysis

To allow analysis of proposed schedules from Technology Vendors, in the BIS it is important that this is supplied in Primavera P6 *.XER format or other recognised industry planning software standard. This would allow analysis of the Critical Path and Near Critical Path. It may also be beneficial to state a list of expected activities (by WBS element) in order to put boundaries on the expectations and ensure it is compatible for overall project planning.

4.1.3.7 Associated Developments

Facilities located off-site which are required for the construction of a significant NPP asset are also subject to permitting by the appropriate regulator. This would include local community governance for permitting of new roads, storage facilities, warehousing, new training facilities, worker park & ride and accommodation. If a Technology Vendor's plans include the use of railways or ships for the importation of bulk materials and equipment, that would be subject to rail infrastructure permitting and access requirements (e.g. required dimensions of jetty / quay). These intentions should also be reflected in the Environmental Impact Assessment (EIA) of the site.

4.1.3.8 Organisational RASCI Matrix

Within the Organisational and Mobilisation sections, the use of a RASCI (Responsible / Accountable / Supportive / Consulted / Informed) Matrix could be introduced to allow a widely recognised format to be used to convey the important information in this section.

4.1.4 Workstream 3 – NPP Delivery

4.1.4.1 Licensing and Permitting – Costs and Schedule

For a Technology Vendor's technology design to be considered feasible, the potential for licensability in-country with the respective nuclear regulator is required to be established. Progressing this to full licensing for construction and operation brings an identifiable cost. In addition, planning permits and consent submissions will require a concept design to enable permissioning.

The BIS must request a cost and schedule estimate for any required licensing or concept design works. Indicative ranges based on prior experiences in other territories should have been requested to quantify the likely costs involved. It should also be clearly established whether the Vendor or the Owner shall pay the Regulator fees. This would ordinarily be stated as part of an overall Licencing and Permitting Strategy.

The TFS should also include a level 1 schedule indicating significant milestones in the licensing process, including decision in principle, obtaining the construction license, construction readiness for First Nuclear Concrete (FNC) as examples, fuel on site, permission to load the core, first criticality, etc.

For the BIS, it must be clearly stated that the Technology Vendors must offer a licensable design in full compliance to Dutch regulatory requirements. In addition, a Licensing and Permitting Strategy should be provided, to include a high-level schedule to indicate significant milestones, including early commitments. This will allow full understanding of the pathway through each of the design phases.

4.1.4.2 Decommissioning Plan and Estimate

Beyond the initial construction of a nuclear asset, maintenance and decommissioning contribute significant costs and liabilities for the overall lifecycle of the asset, which are to be considered by the Owner.

Likewise for decommissioning, indications of liabilities in the form of cost should be included in the TFS to ensure they are proportionate for the nuclear asset proposed. Directional cost at this stage is also important for KGG to understand the long-term end of life cost and how these may differ depending on selected technology and construction methodology during the build phase.

The BIS must request details of Decommissioning Plans and / or Strategy, including estimates of cost and time, including assumptions around decommissioning and other contingent liabilities. This information is required to fully understand the whole life cost of the asset for business case purposes.

4.1.4.3 Execution Strategy – Owner Expectations

An Execution Strategy allows the Technology Vendor to share with the Owner their overall plan for the delivery of a project of this size, adequately demonstrating that all aspects required for the works has been considered.

It is important for the BIS to specify the expectations of the Owner for the Execution Strategy deliverables. Request for details including history of collaborative working, successful alternatives to EPC and contractual arrangements would be expected from a Technology Vendor. It would also be prudent ahead of the issue of the BIS to agree the level of delegated authority for decision making within the SPC organisation, as this is vital to minimise delays at key project milestones.

4.1.4.4 Site / Localisation Constraints

Although working within a constrained area can bring limitations on what can be achieved, it can also inspire Technology Vendors to innovate to work within the constraints provided for the delivery of the Owner's requirements.

Through early engagements with the Owner and Technology Vendors is has been noted that the Technology Vendors have indicated that utilising additional areas around the original Site, thus relaxing the constraint, would benefit their proposed outline layouts. The Amentum TPR Team also note that this would also have benefits during Operation (especially during outage and big repair works).

Clarification with the Owner on a potentially revised site boundary would significantly benefit the feasibility assessment of the Technology Vendors proposals.

4.1.4.5 Basis of Estimate

The BIS must request the Reference Date for Technology Vendor Pricing and supporting Basis of Estimate. This should entail the set of assumptions, exclusions and benchmarks that underpin the costs stated. This should also include defined escalation rates.

4.1.4.6 Maintenance & Decommissioning

In support of the operation of the plant, it is important that indicative maintenance and decommissioning schedules are included in the BIS to verify maintenance was within proportionate limits and make an initial budget assessment for decommissioning. Proven evidence from the reference plant can and should be provided.

4.1.4.7 Basis of Schedule

The BIS must include a requirement for Technology Vendors to prepare a Basis of Schedule. This should entail the set of assumptions, exclusions and benchmarks that inform the durations and logic of the activities.

4.1.4.8 Risks, Assumptions and Opportunities

The BIS must include a request for assumptions used by Technology Vendors for their submissions, including details of balancing risks linked to the assumptions and exclusions and opportunities.

4.1.4.9 Economic Localisation

The extent of localisation indicates the benefit locally and nationally during the construction of a significant nuclear asset, in the form of manufacturing, employment and skills enhancement. Furthermore, localisation, even at a national level will make operation and maintenance more economically viable for many years into the future.

For the BIS, the Technology Vendors must show the potential commitment to utilising Dutch national and European supply chains for the development of the project and what benefit would be gained from evolving supply chains for other potential projects in Europe. Additionally, indications of labour from the Technology Vendors home country versus resources from the locality, including numbers, visa requirements and durations needs to be addressed.

4.1.4.10 Supply Chain Maturity

Bringing together organisations who have successfully delivered the manufacture and construction of nuclear assets is a key element of being a mature capable Technology Vendor.

The TFS Specification does not request the Technology Vendors to indicate the maturity of their working and supply relationship of their proposed supply chain, with examples of where they have worked successfully before. In addition, indication of where new supply chains, localised in-country or across Europe, would be required, would demonstrate Technology Vendor comprehension of the commercial conditions they would be operating within.

Given the multiple NPP Project opportunities currently available to the Technology Vendors, it is essential to understand commitments for critical supply and manufacture items. Details on this aspect in relation to Long Lead Items (LLIs) or manufacturing slots for critical components needs to be addressed in the BIS.

Oversight of supply chain quality is absolutely essential. Therefore, in addition to demonstrating maturity, the BIS must clearly set the requirement for auditing and quality management plans.

4.2 Changes to TFS requirements

The below items have been noted as significant changes to the scope of the TFS requirements since the initial specification was provided to the Technology Vendors. Not all changes were captured via a revision to the TFS Specification document.

- Alternate Site boundary options were able to be considered and presented by the Technology Vendors.
- Additional areas for temporary construction purposes.
- During the TFS submission period KGG made some adjustments to the TFS specifications with regard to cost submissions. The adjustments reduced the granularity of cost information required from the Technology Vendors.

Additionally, for one of the adjustments agreed with KGG it also placed constraints on the Capital Expenditure (CapEx) information that may be released to the Amentum TPR Team: (the figures in the CapEx submission were replaced with percentages and ranges). It also required that certain elements of technical information within the TFS submission was also redacted as a consequence of an Export Control issue related to transference of information across borders, but this did not prevent the TPR assessment.

5 KHNP TFS Submission

The Amentum TPR Team conducted an in-depth review of the TFS Submission submitted by KHNP. The topics included in the table in Appendix H were reviewed and assessed. RED flag issues were raised, which the Technology Vendor responded to and provided clarifications and/or further information to alleviate the concerns as part of the TPR process. The remaining AMBER and GREEN items shall be explored and clarified in the next phase of the Vendor selection process as part of a formal BIS.

A summary of the common themes and issues that were identified across all three of the TFS submissions by the three Technology Vendors are discussed in Chapter 8.

6 WEC TFS Submission

The Amentum TPR Team conducted an in-depth review of the TFS Submission submitted by WEC. The topics included in the table in Appendix H were reviewed and assessed. RED flag issues were raised, which the Technology Vendor responded to and provided clarifications and/or further information to alleviate the concerns as part of the TPR process. The remaining AMBER and GREEN items shall be explored and clarified in the next phase of the Vendor selection process as part of a formal BIS.

A summary of the common themes and issues that were identified across all three of the TFS submissions by the three Technology Vendors are discussed in Chapter 8.

7 EDF TFS Submission

The Amentum TPR Team conducted an in-depth review of the TFS Submission submitted by EDF. The topics included in the table in Appendix H were reviewed and assessed. RED flag issues were raised, which the Technology Vendor responded to and provided clarifications and/or further information to alleviate the concerns as part of the TPR process. The remaining AMBER and GREEN items shall be explored and clarified in the next phase of the Vendor selection process as part of a formal BIS.

A summary of the common themes and issues that were identified across all three of the TFS submissions by the three Technology Vendors are discussed in Chapter 8.

8 TFS Submissions - Common Themes and Issues

8.1 Common Themes and Issues

The findings of TPR process resulted in a set of common themes and interdependencies that were identified across the three Technology Vendors TFS submissions, which are detailed in the following sections.

8.2 WS01 - Licensability of Technologies against ANVS' VOBK Requirements

At the commencement of the TPR works lead by Amentum, it was indicated during stakeholder Kick-Off meetings that current regulatory documentation issued by ANVS would potentially require revision for a proposed Nuclear New Build programme in the Netherlands.

During the course of the TPR, reviews performed by SMEs of the submissions made by the Technology Vendors positively identified the areas which were not currently aligned with the ANVS requirements.

Follow-up meetings between the Technology Vendors, KGG and the ANVS made significant in-roads to the closing out of the areas picked during both the KGG internal reviews and Amentum examination of the Technology Vendor documentation.

TFS wrap-up meetings and continued regulator engagements to discuss the potential harmonisation of ANVS' VOBK requirements to international standards further prepare all parties to be in a state of compliant readiness ahead of a future BIS process and formal regulatory submissions, including SSG61 compliance for regulatory documentation.

Various Technology Vendor meetings have been held, both with KGG and the ANVS.

Based on the Technology Vendor's self-assessments provided as part of the TFS submissions, the ANVS has confirmed in March 2025 that "there is no reason at this time to assume that any of these designs could not be licensed in the Netherlands" (ANVS - beeld uitkomsten technische haalbaarheidsstudies kerncentrales 24-03-2025).

There are small number of elements of each of the Technology Vendor's designs (different for each Technology Vendor) that do not align with current requirements of the Dutch Safety Guidelines for water cooled reactors (VOBK). Following recommendations from the International Atomic Energy Agency, the recent evaluation of the Nuclear Energy Act and the results of this self-evaluation, the ANVS has decided to revise the VOBK to better align it with the international state-of-the-art, to harmonise it more internationally and to make it less technology dependent.

Consequently, some work may be required to close the gaps against the updated VOBK requirements when these become available. Elements of the design that do not align will require the Owner to engage with the regulator to close these out as part of the licensing process.

Licensable technology can only be achieved through a willingness and capability to demonstrate full compliance by the Technology Vendors.

8.3 WS01 - Codes and Standards

Issues related to Codes and Standards appeared in varying degrees across all the Technology Vendor submissions:

- One of the Technology Vendors has legacy experience in the European Market which limits their impact to local Netherlands-specific topic areas, they also have recent experience in addressing changes for projects elsewhere in Europe.
- Another Technology Vendor has confirmed a preference for EU regulators to harmonise sufficiently to accept a design derived in another jurisdiction where different codes and standards apply.

- The third Technology Vendor has indicated their awareness of the need to be compliant from an EU perspective. During the BIS a commitment is required from this Technology Vendor with regards to the application of Dutch and EU regulations, codes and standards.

Beyond the applicable Regulation, Codes and Standards for the Nuclear Island, legislative requirements which are EU-specific linked to the construction of all the plant on the Site within a Technology Vendors scope are worthy of consideration and will require to be explored with and addressed by the Technology Vendors during the BIS phase.

- For non-EU Technology Vendors, the impact of the EU Directive 92/57/EEC (Implementation of minimum safety and health requirements at temporary or mobile construction sites) and how that is interpreted in Dutch Health and Safety Legislation needs to be considered.
- For EU Technology Vendors, this local application of the EU directive is equally important, as although its application will vary from that applied at their reference plant, where a waiver was issued for some elements of the Directive.

R8.1 - It is recommended that during the BIS phase the Technology Vendors provide a proposed in-country baseline for all applicable Regulations, Codes and Standards that will indicate the understanding of the Technology Vendors breadth and depth of knowledge of the regulatory environment applicable to a NPP Project in The Netherlands.

8.4 WS02 - Interface with Existing Dike Structure on Borssele Site

To reduce the changes from the proposed reference plant designs, all three Technology Vendors are recommending going for the principal of a “dry site”, so in the opinion of the Amentum TPR Team this would make the dike redundant at that location. (Platform is at least as high or higher than the dike).

The preferred layouts presented by two of the Technology Vendors both have an impact on the existing protective dike around the existing Borssele NPP. The third Technology Vendor’s design as presented does not site any facilities directly upon this protective dike.

Potential delays to the NPP Project have been identified should the dike require to be altered. Where the platform sits on top of the dike, it would be good practise to remove the sections of the dike or excavate any concrete (if this is present in the dike structure) to a certain depth to avoid hard spots (depending on what NPP structures will have foundations directly over the interface) or move any sensitive infrastructure away from the hard spot/soft spot interface zone.

It is expected that the NPP construction works would require to maintain the integrity of the existing dike (as a flood protection barrier for the locality) during the works to create the platform. This may require the use of temporary works solution to maintain the flood protection whilst the platform is created should areas of the dike require to be dug out to remove a hard spot.

In their Wrap Up meeting presentations of early Sept 2024 one of the Technology Vendors set out in detail their understanding of the timeline to achieve the various consents and permits to allow early works to progress including the site clearance activities and the alterations to the existing dike. In several cases this may require multiple years to achieve the permits and the precursor to this process would be the design of the cut off wall and the dewatering solution plus the earthwork activities. Further work is required in the next phase of the NPP Project to determine in detail whether the phasing of the dike relocation works can be decoupled from the rest of the works to avoid the dike relocation impacting the critical path of the NPP Project.

R8.2 - Should the NPP Project wish to progress with the Borssele location then it is recommended that the schedule logic and activity durations related to the design, permits and consents for potential changes to the dike on the Borssele site are examined in detail as part of the Site Selection process to identify the cost and schedule impacts of the dike site constraints at the site. It is recommended that these studies are undertaken in parallel with the intake and outfall assessments and the platform level assessment.

8.5 WS02 - Cooling Water Solutions

The design of any nuclear power plant requires significant volumes of cooling water to be supplied to essential process and protection systems within the NPP. Cooling Towers are not proposed for the Borssele site. Various other options to provide NPP cooling water have been considered by the Technology Vendors including several forms of intake and outfall tunnels and shoreline abstraction and outfall. Of the three technological solutions presented as part of the TFS, only one solution does not require a safety critical cooling water solution.

The TFS placed a requirement onto each of the Vendors to provide a cooling water design based upon an option type provided by KGG. The three options assessed were:

- Shoreline intake and outfall from the Westerschelde
- Subsea intake from the Westerschelde and outfall to the Cittershaven Port.
- Subsea intake and outfall from the Westerschelde.

Each of the Technology Vendors were tasked with assessing their NPP design using different cooling water options. The Technology Vendors developed and presented the following conclusions:

- Water extraction from the Cittershaven Port is deemed impractical due to the potential for impact from other industrial processes and their outfall / intakes.
- Deeper water intakes from the Westerschelde via tunnels and head structures or cut and cover tunnels / head solutions are considered practical but require further evaluation.
- All options for the outfalls (shoreline, deeper water and discharge to the Cittershaven) are considered practical.
- Intake and outfall structures for all Technology Vendor solutions will require optimisation and the assessment of site-specific environmental impacts.

The Amentum TPR Team reviewed the submissions from the Technology Vendors and made several conclusions from the submitted data:

- The proposed shoreline extraction option by proposed by one of the Technology Vendors was deemed technically challenging and needs to be examined in detail due to the proximity of the Borssele 1 outfall.
- The shoreline extraction option proposed by another Technology Vendor from the Westerschelde is deemed technically challenging as it requires significant dredging activities and construction of large breakwaters. The proposed options need to be assessed in order to fully understand the potential risks to ongoing Borssele 1 operations.

In order to support site selection that the cooling water intake and outfall concept design will require to be developed by the Owner, independent of the final technology solution. The intake and outfall design can be developed independently to the development of the main NPP. This is done by using a worst-case safety significance and oversizing of the cooling water flow requirements. By doing this the Owner can mitigate any potential for delays as a consequence of the phased BIS process that selects the technology solution at a late stage. The merits of the above option will be discussed with the Technology Vendors in the next phase of the NPP Project.

Cooling water availability is typically close to, but not on the critical path, but is essential for bringing nuclear fuel to site for two of the technology solutions. The early design of the intake and outfall allows permits and consents to progress at the earliest stage reducing schedule risk with minimal cost penalty to construction quantities.

The early design of the intake and outfall systems permit the concept to be provided to the Technology Vendors as the latter part of the BIS process for them to adopt it into their designs. Potential options for extraction from the Westerschelde to be considered include the installation of sub-surface bored tunnels or the use of subsurface cut and cover concrete channels. Exact details of each will need to be reviewed and prepared during the next phase.

R8.3 - It is recommended that, in order to support site selection, the intake and outfall concept design be developed by the Owner, independent of the final technology solution. As part of the next phase of the NPP Project and Site Selection activities the Owner should discuss further with EPZ, the current operator of the Borssele NPP the acceptability and the potential impact of the cooling water solutions proposed by the Technology Vendors including the preferred shoreline intake solution as proposed by two of the Technology Vendors.

8.6 WS02 - Borssele Kaloot

Each of the Technology Vendors have developed options that preserve the beach in front of the existing nuclear power plant, but the NPP Project will likely cost more (many tens of € millions) to accommodate this requirement. During the construction of the NPP, public access may require to be restricted to the beach area for periods of time to allow construction activities in the vicinity of the beach area to be undertaken safely. The extent of any restrictions will not be fully known until site selection is confirmed and site-specific detailed design activities are undertaken by the Technology Vendors.

8.7 WS02 - Platform Level

The selection of the Platform Level for the NPP according to sea level and flooding assessments, including addressing climate change, has an impact on the construction and operation of the nuclear asset, as well as having tangible impact on the design and operating costs of the NPP cooling water pumping solution.

All three Technology Vendors are recommending going for the principal of a “dry site” i.e. a platform that sits above flood level. KGG made available a Rizzo 2011 report that states a Design Basis Flood Level (DBFL) of 11.4m NAP Normaal Amsterdams Peil (NAP), in English, Amsterdam Ordnance Datum, but then recommends a level of 10m NAP. It is understood that KGG may also have identified a possible conservatism in the assessment of DBFL during the TFS process. The final DBFL adopted for the NPP Project will be site-specific.

Each of the Technology Vendors have assessed indicative, Borssele site-specific values for the DBFL that are different and result in proposed Platform Levels that correspond to an average level of +10 m NAP. The assessment of potential sea level increase by the Technology Vendors also varies.

It is the assessment of the Amentum TPR team that the three proposals from the Technology Vendors need to be reassessed based upon a DBFL that has been assessed by the Owner specific to the “selected site” boundaries and conditions and has been agreed with ANVS. This will allow a consistent approach to the licensing basis by the Technology Vendors and the development of associated costs and schedule estimates for the technology solutions as part of the BIS process. In addition, it will enable the Owner to substantiate any licensing basis for the proposed “dry site” solution, (i.e. a platform that sits above flood level).

The determination of the platform level will be part of the PSAR safety case, based among others on the final site data.

R8.4 - It is recommended that the Design Basis Flood Level (DBFL) is confirmed by the Owner for the BIS as part of the definition of the design basis hazards applicable to the NPP Project and that this information is shared with the bidders.

8.8 WS02 - Deep Foundation Design - Rigid Inclusions

All three Technology Vendors are proposing a foundation design utilising rigid inclusions comprising piles inserted into the ground to improve the soil density and strength, but the piles are not connected to the building structures (removes significant structural design and construction requirements related to seismic hazards by separating the buildings form the piles). The building structures sit on an engineered platform constructed over the piled ground.

There is precedent for using a soil consolidation solution on a soft ground site for a nuclear facility in France (ICEDA Nuclear activated waste conditioning and storage facility at the Bugey NPP).

A soil consolidation solution is also being proposed for the Gravelines EPR2 project in France where two EPR2 units are proposed.

There is a risk that a technically feasible option (i.e. a solution that meets DCD criteria) for Over-Excavation and Replacement is not presented and if a regulator does not allow a piled/rigid inclusion solution, there is no costed solution to fall back on.

R8.5 - It is recommended that early discussions with ANVS be undertaken to establish the quality assurance requirements that will apply to the design, contractor selection, any trials of the Technology Vendors proposed deep foundation techniques prior to construction start to confirm the suitability of the proposed design, and the oversight of foundation installation and the monitoring of foundation performance through the construction phase. A good start has been made on this aspect as ANVS has already been approached by the Technology Vendors during the clarification meetings (compliance with VOBK requirements) and this proposed foundation solution was acknowledged by ANVS.

8.9 WS02 - Risks to and from Adjacent Structures and Activities

The proposed site for the new NPP is adjacent to the existing operational nuclear assets (Borssele 1). Although operational at present, operations to defuel, decommission and long-term safe enclosure of Borssele 1 will take place over the operational lifetime of a proposed new NPP.

Given the adjacent facility and the requirements of ANVS, considerations to protect from potential failures require to be considered, including turbine orientation, potential land features or plant design to limit event consequences. External hazards and emergency planning between Borssele 1 and other adjacent facilities and the proposed new NPP during both construction and operation of the new NPP also need to be clarified as part of the Site Selection process.

There are a number of concerns related to adjacent nuclear and safety related facilities, raised by the Amentum TPR Team, these include:

- Both the existing Borssele NPP and the COVRA site's emergency planning zones may be impacted by the proposed layout of both the construction activities and the final operational layout of the proposed new NPP.

R8.6 - It is recommended that Owner engage closely the existing Borssele NPP, COVRA and refinery site operators within the Cittershaven Port to ensure that the proposed NPP layouts and local infrastructure modifications are acceptable, and emergency planning considerations are developed in harmony.

- The Dutch Safety Requirements require that the designer considers potential hazards that include the high energy impact from turbine disintegration. A quick assessment by the TPR team has identified that the Borssele 1 site sits within the ±25° turbine disintegration zone for some of the Technology Vendor's proposed plant layouts, and the COVRA facility could also be impacted.

- The TPR team has raised concerns in relation to the adequacy of the outline proposals for flood protection and surface drainage proposed by the Technology Vendors in their TFS submission and the impact that their various solutions may have on adjacent nuclear and safety related facilities and locally at the Borssele site.

The design of the NPP at the Borssele site will need to consider the potential impact due to the explosive gas hazards from the gas line at the site or Liquefied Natural Gas (LNG) tankers passing in the Westerschelde.

8.10 WS02 - Construction Site Land Requirements and Risks

8.10.1 Land use during NPP construction

A time-phased plot plan is required detailing land use for temporary activities, temporary and permanent buildings during construction for each of the Technology Vendor solutions.

Each of the Technology Vendor's proposed construction phase plot plan varies in relation to the location of temporary buildings, access routes, construction laydown and storage areas and other construction activities, as well as the proposed location of facilitates on site that are in the Owner's Scope. Several Owner's Scope facilities

that require to be located on site are either not included or inadequately defined in Battery Limits, nor identified in the Technology Vendor submissions. These "missing" facilities will require sufficient land areas on site and will require to be located in areas on site plan such that they can operate efficiently and effectively. Owner's Scope facilities that are still to be located on site plot plans include:

- Concrete batching plant for the Cut Off Wall – opportunity to combine this with the facility for NPP construction (Technology Vendor scope).
- Bentonite batching plant for the Cut Off Wall if a diaphragm wall option is used (Note that a grout batching plant would also be required for the alternative sheet pile and jet grouting solution proposed by one of the Technology Vendors).
- Sewage treatment plant if connection to local plant is not available – opportunity to combine with the effluent treatment plant.
- Temporary site power (substation(s), feeder pillars and buried / overhead line connections)
- Effluent treatment plant for:
    - Effluent from concrete batching plant for Cut Off Wall (Owner's Scope) and for the NPP Project (Technology Vendor Scope).
    - Sized for effluent from tunnel slurry dewatering if a Tunnel Boring Machine (TBM) option is used for NPP cooling water (Technology Vendor Scope).
    - Sized for effluent from grout plant for tunnelling if a TBM option is used for NPP cooling water (Technology Vendor Scope).
    - Combined Outfall for treated effluent / sewage / dewatering / site rainwater run-off to sea.

Owner's Scope not adequately defined in TFS submissions that require land areas on site include:

- Areas of land for Main Gate, Security, bus drop-off, turnstiles Main Welfare / Changing / Canteen (Site Offices above) near the Main Gate (plus a rail station if used for workforce access).
- Internal site bus / vehicle / pedestrian circulatory routes and optimised Welfare / Changing / Canteen locations (Main Gate plus local provision of these facilities in the Bulk Materials and Workshops area and further facility at Tunnels construction area to minimise workforce on site walking time (2xbreaks and Meal break /day) and optimise productivity.

Technology Vendor scope not adequately defined in TFS Submissions that will require phased use of land areas on site:

- Area for separation of excavated clay, peat and sand from earthworks prior to transfer to laydown area. (Methodology for platform construction proposed by two of the Technology Vendors.) Note these areas may be used for temporary buildings / laydown areas in later phases of construction.
- Shore line cooling water intake structures are considered technically challenging by the Amentum TPR Team – the alternative requiring tunnels constructed by tunnel boring machine (TBM) or cut-and-cover tunnels will require land areas to enable construction including lay down areas at site for pre-cast concrete tunnelling segments if TBM or pre-cast tunnel sections for cut-and-cover tunnel options are utilised.

It is assessed by the Amentum TPR Team that there will likely be significant cost and schedule risks that will impact the NPP Project if the site area at Borssele remains as currently as defined and the constraints related to the site as currently defined cannot be easily mitigated.

- Two of the Technology Vendors confirmed that it had not included an estimate of cost for the transport of suitable excavated soil to a suitable laydown area for treatment before transport back to the Main Site for use as engineered backfill material, as well as the removal of unsuitable materials from the site for disposal in their CapEx submission. They also confirmed that they had not included an estimate of cost for off-site disposal of unsuitable excavated materials arising from the site in their CapEx submission.

- One of the Technology Vendors confirmed that their CapEx submission has included for the cost of transporting bulk earthworks (excavated / imported) material between the site and a suitable laydown area on the western side of the Cittershaven Port and it has included for costs for off-site disposal of unsuitable excavated materials arising from the site.

Discussions with the Port authority about construction logistics should be undertaken at the earliest opportunity to understand the viability of the construction logistics aspects of the NPP Project at the Borssele site. Learning from previous NPP Project experience confirms that these issues that should be fully examined as part of the Site Selection process.

8.10.2 WS02 - TPR Assessment of Borssele Suitability for NPP Construction

The Amentum TPR Team's assessment of the positives and complexities related to the Borssele site are set out in Table 10.

TABLE 1 – OVERALL ANALYSIS OF BORSSELE SITE BY AMENTUM TPR TEAM

POSITIVES	COMPLEXITIES
• Site is already used by nuclear facilities. • Access to Cittershaven Port. • Coastal location does not require cooling towers. • Existing site investigation and environmental data available. • Proximity to the resources of a major city (Rotterdam) circa 1.5 hours by road. • Existing rail connection. • New grid connection for Offshore Wind may be able to accommodate new NPP.	• Significant space constraints during construction – more land will need to be acquired to facilitate the NPP Project - this can take a long time (years) and may require the relocation of existing facilities. • The operational layouts proposed by each of the Technology Vendors at Borssele are acceptable to KGG for the purposes of the TFS. However, whilst the proposed solutions may be "Technically Feasible", the Amentum TPR team has evaluated that the Borssele site as defined in the TFS cannot viably accommodate the preferred options for two units from a minimum of two Technology Vendors without a very significant increase in land available plus adaptations to the existing site and local infrastructure which would have very large cost, schedule and risk implications. • Risk to and from adjacent hazards (Borssele 1, COVRA site, oil refinery, gas pipeline). o Borssele NPP and the COVRA site's emergency planning zones o ±25° NPP turbine disintegration zone (Borssele 1, COVRA site, oil refinery). o Flood protection and surface water drainage interaction. o Explosive gas hazards from the gas line or Liquefied Natural Gas (LNG) tankers passing in the Westerschelde. • Flood levels - All three Technology Vendors are recommending going for the principal of a "dry site" (i.e. a platform that sits above flood level compared to a tanked solution utilised for Borssele 1).

TABLE 1 – OVERALL ANALYSIS OF BORSSELE SITE BY AMENTUM TPR TEAM	
POSITIVES	**COMPLEXITIES**
	• Interface with existing dike structure and potential delays should existing dike require to be altered. • Shoreline extraction for NPP cooling water from the Westerschelde is assessed by TPR team as technically challenging due to construction risks to the Borssele 1 intake and outfall and the potential for increased cooling water intake temperature due to mixing from the Borssele 1 outfall. • Ground conditions require dewatering and deep foundation solution – all three Technology Vendors are proposing a rigid inclusions foundation option that is novel for NPP rather than over-excavation and replace. (Similar ground and ground water challenges will be present at other potential sites in Netherlands)

8.11 WS03 - Applicability of Delivery Models and Supply Chains to The Netherlands

Each Technology Vendor is proposing a mature delivery model and supply chain solution. However, it remains unclear how they will deploy their delivery models in The Netherlands, mobilise in country and support from home organisations the necessary breadth and depth of suitably qualified and experienced resources to successfully deliver a NPP Project, given the other project commitments and other opportunities in each of the Technology Vendors have. This will need to be tested during the BIS competitive procurement process and to help gauge how the Owner's organisation will need to be adapted, to understand how requirements can be set to better assess the maturity of the Vendor Delivery Models proposed.

The differing Vendor Delivery Models will pose a challenge when developing the procurement process ensuring a level playing field and fair comparison between the Vendors. Each of the three Technology Vendors has a preferred delivery model which ranges from a fully wrapped EPC offering from two Technology Vendors to a split structure offered by a third Technology Vendor whereby it proposed it would partner up with a consortium construction partner to deliver the civils and balance of plant. The typical delivery models for NPP projects are explored further in Appendix J. KGG will need to give serious consideration to both its internal capabilities (as they stand now and as they can reasonably be developed in the coming years) and to its preferred SPC delivery model taking account of the commercial imperatives for The Netherlands and the risk that it the Owner is willing to bear. These commercial imperatives will need buy-in from senior ministerial stakeholders within The Netherlands such that any future BIS can be developed to encourage responses from the Technology Vendors which are appropriate for Dutch NPP while maintaining as much commercial tension as possible.

After a long period where no new NPP Projects were delivered, EDF has had to relearn the skills of major project delivery and NPP design and construction necessary to complete a new build NPP in a robust European regulatory environment. It should be noted that other Technology Vendors involved in the TFS process for The Netherlands are still to develop their supply chains for Europe and could encounter similar supplier relationship and manufacturing challenges to EDF in addition to other factors specific to NPP Project delivery in Europe.

Conversely, KHNP and WEC continued to build new NPPs during the same period, albeit these were not in Europe. Both organisations are in the process of establishing their European supply chains.

8.12 WS03 - Owner's Scope

All of the Technology Vendors have made variable assumptions that significant elements of early NPP Project scope will be undertaken by the Owner. The extent to which the Division of Responsibility between the Owner's Scope and the Technology Vendor scope varies across the three TFS submission is significant. Some of the Technology Vendor proposed NPP layouts require the existing dike, railway, road and gas main at the Borssele site to be moved to enable construction. This in itself will increase the Owner's cost, schedule and risk profile of the overall development, prior to embarking on the main works. The Owner's Scope on the NPP Project will likely include power, other utilities, road, rail, temporary fencing, housing for workers, transport and environmental infrastructure and for some Technology Vendors it is anticipated that the Owner's Scope will also include the proposed cut off wall structures, dewatering and site preparation.

The Owners Scope will likely be significant on this NPP Project (assessed by the Amentum TPR Team to be multiple €Bns in cost), most of which requires to be carried out early in the NPP Project and many of the Owner's Scope activities will lie on the critical path for the NPP Project schedule. This will require the SPC to rapidly ramp up capability in the next year to prepare for the delivery of the Owner's Scope in parallel with the BIS for selection of a Technology Vendor.

8.13 WS02 and WS03 - Schedule

8.13.1 WS02-WP06 - Integrated Schedule from Early Works till First Concrete

The Amentum TPR Team have the following observations in relation to the submitted Early Works schedule:

- The Technology Vendors submissions were compliant with the TFS specification but lack detail and underpinning (lacking a detailed Basis of Schedule).
- Although compliant with the TFS specification these deliverables do not adequately inform the Owner for the period up to Financial Close and further work will be required in the next phase of the NPP Project to create the necessary detail that will support informed decision making.
- In two of the Technology Vendor TFS schedule submissions the early works aspects of their schedules were not well developed – Cut off wall, deep excavation, platform construction, cooling water solution etc. have not considered the planning and consenting processes applicable in The Netherlands. The interaction between site investigation, design and the planning and consenting process is also not well developed.

8.13.2 WS03-WP04 - Level 1 Schedule

The Amentum TPR Team have the following observations in relation to the submitted Level 1 schedules:

- Two of the Technology Vendors have not considered the planning and consenting process in The Netherlands in any detail as part other schedule development.
- One Technology Vendor's assessment of the timeline to achieve the various consents and permits to allow early works to progress including the site clearance activities and the alteration of the existing Dike suggests it may require multiple years to achieve. Further work is required in the next phase of the NPP Project to determine in detail whether the phasing of the dike relocation works can be decoupled from the rest of the works to avoid the dike relocation impacting the critical path of the NPP Project.
- The Amentum TPR Team have identified significant gaps in each Technology Vendor's cost and schedule submissions related to clarity of assumptions and exclusions and lack of detail to support the validity of the CapEx submissions. There is a risk that the Technology Vendor's TFS schedule submissions do not fully represent the entirety of the scope defined in the TFS Battery Limits because of the assumptions and exclusions and lack of definition related to elements of site-specific specific Technology Vendor scope (earthworks, foundations, cooling water solution etc.)

- Meaningful estimates of the overall contingency (time and cost) that may be applicable to Technology Vendor scope were not explicitly provided.
- The TFS schedule submissions are assessed by the TPR team to be deterministic.
- The time from Contract Award to Commercial Operation Date in the Technology Vendor submissions ranges from c. 10 to 12 years dependent on the technology.
- The Amentum TPR Team has assessed that a target Commercial Operation Date (deterministic, e.g. does not consider the uncertainties involved in the estimation of time for execution of a job or an activity) for Unit 1 at the Borssele site in the late 2030s is achievable.

R8.7 - It is recommended that the Owner prepares the following initial key project deliverables as supporting evidence for decision-making and stakeholder engagement in preparation for the first Mandate approval:

- Primary project structures (Work Breakdown Structure (WBS), Cost Breakdown Structure (CBS), Organisational Breakdown Structure (OBS), Risk Breakdown Structure (RBS) etc.)
- NPP Project Schedule
    - Level 1 Schedule (End-to-End)
    - Detailed Level 3 Schedule for next 24 months
    - Level 0 Milestones – Milestone Definition Sheets
- NPP Project Master Data and Assumptions List
- NPP Project Risk Register
- NPP Project Benefits Case

A draft NPP Project Road Map has been prepared by the Amentum TPR team and includes advised milestones and activities to be carried out up to Financial Close.

8.14 WS 03 - CapEx Submission

8.14.1 Overview

The Technical Feasibility Studies occur at an early stage of the project lifecycle prior to the start of a competition.

The early works comprising all the site-specific details, are not well developed in any of the Technology Vendor's schedule submissions, including the proposed Owner's Scope (site clearance, cut off wall installation, de-watering excavation, planning and consenting and elements of site-specific Specific Technology Vendor scope (earthworks, foundations, cooling water solution etc.).

The Technology Vendors are not currently in competition and the costs estimates or models provided as part of the TFS submissions do not represent a binding offer. In compiling the CapEx submissions, the Technology Vendors will all have a detailed understanding of the "fixed price" elements of their process plant and high confidence in the Bills of Quantity fixity of the above ground structures but at this stage the Technology Vendors will not have been able to assess in detail the site labour productivity and local supply chain performance and costs that would be applicable in The Netherlands. It is also to be noted that for significant site-specific scope elements (e.g. earthworks, cooling water solution, cut-off wall, etc,) and the corresponding designs are not mature, these costs although captured by two of the Technology Vendors in their overall estimate as Class 4 will likely be Class 5 level of estimate maturity as limited work has been carried out at this stage by the Technology Vendors to underpin country and site-specific costs.

The original TFS specification issued by KGG required the Technology Vendors to provide the CapEx submission in the form of the IAEA TRS396 Cost component template as per Class 4 of the AACE 115R-21.

For a NPP Project the AACE Class 4 estimates are -15% to -30% on the low side, and +40% to +100% on the high side. Typical accuracy ranges for AACE Class 5 estimates are -20% to -50% on the low side, and +60% to +200% on the high side.

Where Owners Scope costs have been identified in the Technology Vendor submissions these elements of NPP Project scope are not well defined at this stage (Assessed as AACEI 115R-21 Cost Estimate Classification Matrix for the Nuclear Power Industries - Class 5 *Low -20% to -50% and High +60% to +200%*) and hence a significant level of contingency associated with these elements scope will likely apply given the level of uncertainty and risks associated with them.

In order to clarify the Class of Estimate that applied to specific elements of each of the Technology Vendor's CapEx submission and separately to determine whether specific aspects of early works scope that might typically be considered Owner's Scope was included in each of the Technology Vendors' CapEx submission a further stage of clarification was undertaken with each of the Technology Vendors in February 2025.

Based on the responses from the Technology Vendors it is apparent that each of the Technology Vendors have assessed the levels of uncertainty within their CapEx submissions differently and have included cost for different scopes in each of their CapEx submissions. To clarify this further, a series of individual meetings were held with each of the Technology Vendors that identified the following findings:

- Elements of some of the submissions are Class 3.
- Elements of some of the submissions are Class 5.
- Not all the submissions have provided an estimate that covers all the scope.
- The approach to the inclusion of a cost for the risk provision within each estimate submission varies.
- Where a risk provision is included, the share of the CapEx estimate associated with the risk provision is not identified in the TFS submissions.

Two of the Technology Vendors confirmed that their CapEx submissions are not fully representative of the entirety of the scope defined in the TFS Battery Limits, in relation to the early works (particularly site-specific elements that cannot be confirmed at this stage). Once a definitive site location is confirmed in the next phase of the project clarity on costs will be achieved through a formal competition process that includes the FEED studies.

Project Budget and LCOE comparison with other generation solutions would require significant additional work to assess the remaining absent costs (e.g. Owner's Costs for project development, construction, operation and decommissioning of the plant) in the IAEA TRS396 template.

8.15 WS03 - Project Risk Register

8.15.1 TFS Submissions

The NPP Project requires a comprehensive risk register applicable to all aspects of the NPP Project to support decision-making and stakeholder engagement in preparation for the first mandate approval.

A comprehensive NPP Project Risk Register will also inform the risk position on the project from an Owner's point of view ahead of formal and site-specific submissions related to risk by the Technology Vendors and negotiations on risk allocation as part of the BIS process.

R8.8 - It is recommended that a clear set of requirements for risk management on the NPP Project will require to be established by the Owner, communicated via the BIS and robustly enforced via the BIS process.

R8.9 - It is recommended that the Owner prepares a comprehensive NPP Project Risk Register aligned to the Owner's estimate of cost and schedule in 2025 to support decision-making and stakeholder engagement in preparation for the first mandate approval.

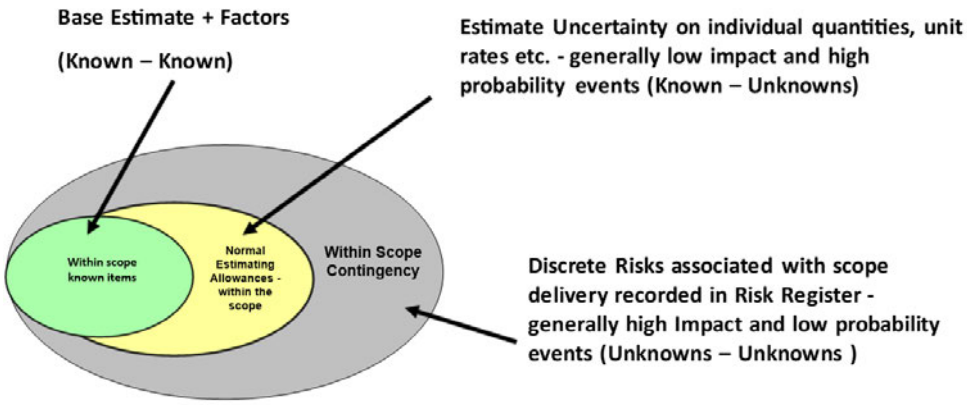
The NPP Project Risk Register will also inform the risk position on the NPP Project from an Owner's point of view ahead of formal and site-specific submissions related to risk by the Technology Vendors and negotiations on risk allocation as part of the BIS process.

8.15.2 Estimating Uncertainty and Discrete Risk

Going forward it is important to understand the difference between estimating uncertainty and discrete risk and the approach that the NPP Project will take on these matters when estimating the appropriate contingency for the NPP Project.

The Amentum TPR Team provide the following guidance:

- **Estimating Uncertainty** – Whenever an estimate is built there will be uncertainty around scope, time and unit rates which underpin the base estimate value and factors applied and discrete risks associated with the delivery of the scope. This is typically defined via the 'class' of estimate.
- **Risk** – An uncertain event or set of events which, should it occur, will influence the achievement of objectives. A discrete risk is measured by a combination of the probability of a perceived threat or opportunity occurring and the magnitude of its impact on objectives



8.16 General - Intellectual Property Rights and Export Controls

Delays occurred at the start of the TPR process until appropriate arrangements and agreements were put in place between the numerous parties to protect the intellectual property rights of the Technology Vendors and KGG.

Export control issues also required the redaction of one of the Technology Vendor's TFS submission documentation prior to issue to the TPR team.

R8.10 - It is recommended that the Owner thoroughly discuss the approach to managing IP rights with the Technology Vendors, considering the implications of export control regulations for nuclear items and other potential restrictions on transferring IP among different parties, especially if it entails cross-border transfer of information. The sensitive nature of nuclear technology means that IP management is a critical aspect of the project, requiring careful planning and clear agreements considering, at the minimum, the following:

- Export Control and Regulatory Compliance: Ensure that all IP-related activities comply with relevant export control regulations and other legal requirements. This includes obtaining necessary licenses and approvals for the transfer of technology and ensuring that all parties involved are aware of and adhere to these regulations. Non-compliance can result in significant legal and financial penalties, as well as delays to the NPP Project.

- IP Transfer and Access: Clearly define the conditions under which IP can be transferred or accessed by different contractors. This is particularly important in scenarios where the original contractor must be replaced before the project's completion. In such cases, the new contractor will need access to the existing IP to continue the project. Establishing clear protocols and agreements for IP transfer can help mitigate the challenges associated with this process.

- Risk Management: Address the risk that Technology Vendors may be reluctant to share their IP, given that their value largely lies in their proprietary technology, patents, and know-how. To manage this risk, it is recommended that the Owner negotiates terms that balance the Technology Vendors' need to protect their IP with the project's requirements for access and continuity. This may include: (A) licensing agreements, (B) escrow arrangements, in addition to the (C) confidentiality and non-disclosure agreements.

8.17 General - Consistency of Approach and Record Keeping

It was observed by the Amentum TPR team during the TPR process that:

- KGG team relied upon the Technology Vendors to capture and produce records of meetings. Good practice for the BIS will necessitate the Owner preparing and issuing the record copy of all meeting records.

- During the TFS response period clarifications were issued to the Technology Vendors related to the site boundary and to other areas available for use as temporary laydown and storage areas. In general, to ensure that all parties are treated fairly during the BIS it is essential that the Technology Vendors are provided with the same information at the same time.

- KGG has relied upon the Technology Vendors to manage the document control aspects of the TFS submissions.

R8.11 - It is recommended that the Owner put in place processes and procedures to support a phased BIS procurement that maximises competition and are fully compliant with all the necessary Dutch and European legislation for a major public procurement. This should also address the issue of perceived and actual conflicts of interest throughout the supply chain, recognising the limited number of competent suppliers within the nuclear sector.

R8.12 - It is recommended that the Owner must determine in 2025 its strategy for establishing a Common Data Environment that supports effective document control during the BIS and the development stage of the

project. The CDE will be required to facilitate collaborative working by multiple entities and commercial confidentiality.

8.18 Lessons Learned from NPP projects

Learning from experience on recent NPP projects has confirmed the following root causes that have resulted in significant delay and increased costs:

- **Poorly defined Owner's requirements** (Technical, Management and Commercial). A phased BIS approach enables the progressive development of robust and comprehensive Owner's requirements ahead of contract award.
- **Preferential engineering by the Owner and late changes in requirements** have cause significant delays to the completion of design on NPP projects. Modification of the reference plant design should be minimised where possible to aspects that are essential to meeting Owner requirements and/or site-specific requirements. The Owner will implement robust configuration control and change management arrangements to ensure that the NPP Project stays as close as possible to the reference design in order to avoid the complexity managing changes that do not actually contribute to better safety.
- **Lack of project management capability and capacity**, including resources, systems, processes, procedures and tools etc. in the EPC organisations (typically consortia) that are delivering NPP projects. The development of the Owner organisation against a target operating model aligned to project stage gates will review and confirm the readiness of the Owner organisation at each phase of NPP Project delivery. The BIS process and the contract mechanisms will confirm that the required Technology Vendor resources will be in place when required.
- **Starting construction works ahead of design completion** has incurred rework, delay and cost on a number of NPP projects. The Owner's participation in construction readiness reviews will mitigate this risk.
- Due to a prolonged period of relative inactivity in nuclear in many countries, elements of many **international supply chains that were involved in previous NPP programmes have downsized their operations**. This has resulted in a loss of knowledge, loss of skills, capability and capacity coupled with a lack of investment in key areas such as training, quality systems and the use of modern management methods and tools to the extent that is required to deliver successful NPP projects. As a result, a number of recent NPP projects have had significant supply chain manufacturing and construction quality issues. A proactive approach to supply chain oversight by the Owner will mitigate this risk.
- **Experienced new build NPP project resources of the scale and complexity being considered by The Netherlands are scarce in the marketplace** and in Owner organisations that are capable of:
    - Establishing a robust and underpinned business case for investment.
    - Project managing new build NPP investments.
    - Undertaking effective governance of the NPP asset investment.
    - Determining the Employer's requirements comprehensively prior to signing contracts for the delivery of the NPP.
    - Managing the procurement process to achieve business case objectives.
    - Undertaking effective oversight of the entire supply chain, efficiently managing the approvals of the designs prepared by a range of specialist contractors.
    - Managing the interface with the Regulator to achieve a Licensable plant.

- Intelligently monitoring the performance of the supply chain and holding the supply chain to account against their contractual obligations.

Investment by the Owner to secure and growing long term capability early in the project lifecycle is essential to successful delivery of the NPP Project.

Regulators have acquired breadth and depth of internal capability and gained experience from their involvement in recent NPP projects. Following the Fukushima incident, regulators around the world have shared knowledge and best practices. As a result, regulators in every country are setting very demanding standards with regard to the licensing of operators and the approvals associated with generic and site-specific design, construction, commissioning and the bringing of NPPs into operation. The Owner will engage closely with the regulator to take the NPP project forward into the next phase, conclude, site selection the BIS phase, the licensing process and demonstrate the capability, capacity and management arrangements, systems, processes, and tools are progressively put in place to take this NPP Project through to a safe and successful conclusion and into operation.

9 Market Consultations

Introduction and scope of review

This section of the TPR Report evaluates the outcomes of the MC, which are instrumental in determining the technical and financial conditions under which NPPs can be constructed in the Netherlands. The evaluation focuses on the feasibility of the proposed GSP and its potential implications on subsequent steps in the procurement process, such as tendering, permitting, and construction. Additionally, this section of the TPR Report evaluates the conclusions of the MC based on the data and methods used, and assesses the risks associated with the proposed structure and optionality around the GSP.

One of the key primary objectives of this TPR Report is to deliver an independent, comprehensive evaluation of the MC which comprises of the following:

- the consultation process, which was designed and undertaken with each of WEC, EDF and KHNP to gain insight into market approaches and preferences with respect to key non-technical considerations for the nuclear new build programme in the Netherlands; and
- the analysis and findings of the consultation process with a particular emphasis on their feasibility and compliance within the Dutch legal and regulatory framework which have been outlined in the EY Report and the BNPP Report.

The conclusions presented in this TPR Report, following our review of the MC, are intended to aid the political decision-makers and other applicable key stakeholders in the Netherlands in evaluating the viability of new NPP designs for the Dutch NPP, thereby facilitating the initiation of the tendering process for the construction of the proposed NPPs. Additionally, the Amentum TPR Team has sought to evaluate the key risks which have been identified together with any gaps or relevant omissions, with proposed recommendations and next steps with a view to assessing the overall suitability and implementation of the approaches adopted by the Technology Vendors. In particular, the TPR Report considers the following elements:

- A critical evaluation of the various components of the GSP and the associated professional advisory reports. In particular, the TPR Report includes (i) mapping the preferences and dependencies of each Technology Vendor concerning financial structures; (ii) reviewing the business case principles; and (iii) assessing the potential financial implications for the Dutch Government. Additionally, it will examine how the MC findings have informed the GSP and organisational models, and the potential impact on risks for the Dutch Government and other key stakeholders.
- An assessment of the effectiveness and thoroughness of the MC process, including the content prepared, questions formulated, and the analysis of the outcomes, given that the MC process is a pivotal step in ensuring that the objectives of the Dutch Government in respect of the Dutch NPP are met and that both commercial and governmental perspectives are accurately represented.
- To ensure the robustness and appropriateness of the methodologies employed in the study, the TPR Report will evaluate their compliance with relevant Dutch standards and regulations through a critical review of the EY Report and BNPP Report to ensure they adequately address prerequisites, financing, and organisational models, as well as insights from the MC and interdepartmental processes. The clarity, comprehensiveness, and suitability of the EY Report and BNPP Report for both internal and external publication will also be assessed.
- Finally, this TPR Report will verify that the results and findings are communicated effectively and transparently, ensuring that all stakeholders are adequately informed. Through this detailed analysis, this TPR Report aims to provide valuable insights and recommendations to enhance the overall effectiveness and alignment of the MC process with the project objectives and legal requirements.

Executive Summary of the TPR's findings

The MC process was designed and executed to a very high standard in terms of objectives and processes. The market engagement process and workshops were appropriately constructed with clear objectives and desired

outcomes identified in advance for each stage and workshop undertaken. Both the EY Report and BNPP Report have been well researched and produced to a high standard and provide valuable information to assist the Dutch Government in developing policy decisions for the Dutch NPP.

The EY MC process was limited to three Technology Vendors and not any third-party potential funders, such as investors, financial institutions or ECAs. A key observation is that the preferred delivery models of the three Technology Vendors are materially different. This poses a challenge for KGG in defining the structure of a BIS that has a degree of commonality to drive a balanced, fair, and comparable competition. In addition, the EY Report outlined the fundamental elements of a GSP structure and its crucial role in enabling the development and construction of new nuclear projects. The Amentum TPR Team supports the importance of the GSP and agrees with EY's categorisation of the GSP into the five stated elements, namely:

- Owner financial support: direct financial investment from the host government;
- Lender support: government guarantees provided to secure lenders against financial risk;
- Revenue support: the government ensures a stable revenue stream for the projects, shielding it from market volatility;
- NPP Project risk allocation: methodical distribution of diverse risks among stakeholders, accompanied by clear frameworks and agreements; and
- Indemnities: compensation from the government for losses incurred due to identified risks and unforeseen adverse events.

Complementing the EY Report, the BNPP Report provides a thorough analysis of private financing within the nuclear power sector, emphasising the risks and challenges faced by owner/developers in securing funding from private sector sources. The report's findings and conclusions are supported by consultations with a select group of active participants in the broader nuclear sector.

However, a key limitation of both the EY Report and the BNPP Report is that while both reports provide valuable insights, they tend to adopt a broad market perspective based largely on current trends and do not identify specific differences of the Dutch nuclear development proposals. Further emphasis on the unique aspects of the Dutch programme could enhance their relevance. Accordingly, it would have been most useful for KGG to understand:

- How the Dutch nuclear build program differs from other global nuclear projects that have moved into the construction phase. This could have been helpful in identifying the risks associated with the funding and financing arrangements for the Dutch programme and what the market is likely to find acceptable.
- The Technology Vendors' appetite regarding key topics, including: liability structures; incentivisation mechanisms; transparency on fee structure, hourly rates for both the Technology Vendors and the respective supply chains; risk allocation; and IP rights provisions – which would form the basis of the competitively tendered contracts.
- How EY's organisational models would practically apply in the Dutch context and vary depending on the Technology Vendor selected. This could have been helpful in assessing the scope of work to be managed, project integration approach, and the formation and relationship of the SPC with KGG.
- How each feature of the GSP relates to specific stakeholders and how the GSP could be tailored (and simplified) according to the adopted funding model. Neither of the reports sufficiently address macro-level inhibitors such as State Aid or provide detailed commentary on the challenges or real-world practicalities of deploying instruments like CfD and RAB within the Dutch context.

The Amentum TPR Team's view is that while the output may be somewhat limited in fully informing the BIS at this stage, this is somewhat to be expected during an early project phase. Further follow-up is advised to address these gaps to enable a comprehensive BIS to be developed, which is tailored for the Dutch NPP, before launching the formal BIS competitive procurement process. Greater clarity is required regarding the scope, boundaries of work, commercial parameters, and the process for enacting legally binding, long form contracts. In particular, the BIS

would need to be developed taking account of any commonalities and key areas of divergence between the delivery models of each of the Technology Vendors.

It is therefore advised that the Dutch Government considers further (non-competitive) dialogue with the Technology Vendors to flesh out the scope, boundaries of work and commercial parameters taking account of the pipeline of other upcoming nuclear projects in Europe, the UK and the Middle East and the process for enacting legally binding, long form contracts – this would form the basis of engagement with the eventual successful Technology Vendor. Preliminary consultation is also advisable to gauge the levels of interest for the OE and Owner's Project Integrator packages of work, enabling these two critical procurements to commence in line with project needs.

We also advise that KGG produce: (i) outline funding options tailored to the unique circumstances of the Dutch nuclear development programme and (ii) baseline documents to inform policy decisions, including the overall Procurement and Contracting Strategy and Delivery Strategy, and update these documents periodically as the approach evolves.

9.1 Context – Dutch New Nuclear Build Program

At the outset of this TPR Report, it is essential to provide context for developing the future programme of works for the Dutch GW nuclear program by examining the key characteristics and differences compared to similar projects in other jurisdictions, particularly in Europe. This aspect has not been addressed in the MC process, the EY Report, or the BNPP Report. The MC reports presented to the Amentum TPR Team, particularly the EY Report, tend to default to the structures deployed for Hinkley Point C and Sizewell C in the UK or the Barakah project in the UAE, without adequately addressing the key differences, similarities, and associated risks specific to each project or jurisdiction. We consider this aspect crucial for formulating the project development Road Map and for informing policy decisions moving forward. Therefore, we have set out below the relevant context and characteristics.

To help KGG further develop and understand these differences, table 7 below outlines some of the varying characteristics. If third-party investors and lenders are approached, they will likely use a similar approach to assess the overall level of risk, which could result in an applied premium when structuring the basis of any non-binding deal.

TABLE 2 – CHARACTERISTICS OF SIMILAR PROJECTS

Category	Netherlands	France / UK / Finland	Risk Impact *(Investor perspective – debt/equity)*
Sponsor	Government	Government	The risk assessment is positive, given the understanding that GSP structures will be developed and offered. Additionally, there is strong governmental backing at this early stage of the new-build nuclear project, which further mitigates potential risks.
Developer	New state-owned SPC with no prior nuclear development or delivery capability.	Existing utility operator with strong nuclear credentials / reputation. Utility developer had existing revenue stream to underpin funding	Primary concern will be the expertise of the "state owned new entity" to successfully navigate the pathway to FC and project completion, and to act with 'intelligent customer' capabilities to deliver the project within the approved funding envelope, including the licensing process. Mitigation: This risk can be mitigated by onboarding and retaining globally recognised nuclear development and delivery experts whose interests

TABLE 2 – CHARACTERISTICS OF SIMILAR PROJECTS			
Category	Netherlands	France / UK / Finland	Risk Impact *(Investor perspective – debt/equity)*
		contributions and debt structures.	align with those of the SPC and the Dutch state and selecting an OE.
Regulator (nuclear)	Established regulator (ANVS) but has not licensed new build projects / nuclear technology for significant period of time.	Established regulatory structures for licencing new plants, with existing capability footprint.	This is a manageable risk. Investor's will be confident that adequate measures will be implemented, shifting their focus to KGG/SPC's plans. Investors commitments will be conditional on regulatory approval and will likely require certain protections (GSP) occurring once such approvals are expected to be granted. It will be crucial to ensure that ANVS is sufficiently well staffed to be able to review and ultimately licence the preferred technology and Owner/Operator in accordance with the project schedule when developed. Any material delays will likely result in significant increased costs for project which will be borne by the Owner. Some ANVS specific requirements present risk to delivery of each of the reference plant designs. Regulator could secure services from a Technical Support Organisation. Regulator should engage in shared regulatory approval processes and engage in harmonisation projects.
Supply Chain (nuclear)	Limited focused on operations and maintenance of existing plants.	Strong capability to develop nuclear supply chain capability and, France extensive nuclear industrial established supply chain.	Investors will prefer using established, proven supply chains over the risks associated with developing new supply chains in host territories. However, their primary concern will be KGG's / SPC's ability to oversee the Technology Vendor and integration with the Owner's scope of work. Mitigation: See *Developer* and *NPP Project Delivery risks* in this table.
Operator	To be determined.	Established and integral part of the utility development company.	The primary concern will be the availability of an Operator to support the commissioning and operations phases to safeguard the "Revenue Stream." Mitigation: Ensure robust plans to onboard operator capability are in place by FC, at the latest.
Project Delivery	Strong civil infrastructure capability. No/limited	Well established capability either within the utility development	This will be a primary focus for potential investors, who will seek access to proven capabilities that align with KGG/SPC's interests.

TABLE 2 – CHARACTERISTICS OF SIMILAR PROJECTS			
Category	Netherlands	France / UK / Finland	Risk Impact *(Investor perspective – debt/equity)*
	nuclear GW mega project capability (including supply chain – professional services).	organisations or strong host region based professional service suppliers with long / foraged existing relationships.	Mitigation: See *Developer risks* in this table.

In considering the above risks and developing policies and project arrangements to mitigate them, it is advised that KGG and the applicable Dutch ministries take into account the following key points, some of which are further developed later in this TPR Report:

- While the expertise of a few experienced individuals will be crucial throughout all stages of the project for providing advice, assurance, and critical guidance, the overarching capability must be sourced from organisations with a proven track record in the nuclear sector. These organisations should have interests that are strongly aligned with those of the Dutch Government and, to the extent possible, with recent transactional experience of each of the three Technology Vendors.
- The Netherlands is among the top ten countries globally, attracting the highest AAA investment grade rating. This rating is higher than those of the other countries listed in the above table (i.e. France, UK, Finland). Additionally, the long-term government bonds at approximately 2.5% are some of the lowest currently available (in comparison to the last decade and other European states), significantly below the levels expected from private equity and other financial institutions. This metric indicates strong economic stability which in turn is likely to better facilitate investment into the project due to potentially lower borrowing costs.
- The TPR Report identifies two critical areas of capability that the project will need to secure in a timely manner, commensurate with the on-boarding of the Technology Vendor: (i) the OE and (ii) the Owner's Project Integrator. These resources are limited in their proven capability, with few having direct GW-scale project development and delivery experience. It is also essential to address conflicts of interest adequately and establish appropriate safeguards from the onset to ensure that any provider does not offer services to both the selected Technology Vendor and KGG (or the SPC). It should be recognised that the capability required during the development and financing stage, particularly if third-party finance structures are involved, differs from that needed during the execution and delivery phase.

Although some of the points noted above are of a macro-strategic nature, they are considered important for setting the context as to how the Amentum TPR Team has reviewed both the EY Report and the BNPP Report.

9.2 Evaluation of the MC Process and Methodology

9.2.1 Key Objectives of the MC Process

In the letter to Parliament dated 1 February 2024, the Minister for Economic Affairs and Climate Policy expressed support for the preparation of the NPPs and sets out a phased approach pathway to the development and construction of the NPPs, which consists of four phases:

- Phase 1 focuses on preparing for decision-making, including provisional site-selection and initiating the tender process, along with delivering a provisional package intended to outline the necessary policy measures for constructing two new NPPs.
- Phase 2 focuses on implementation of the tender process.

- Phase 3 focuses on the permitting process.
- Phase 4 encompasses the construction and commissioning of the NPPs.

A careful completion of Phase 1 is considered crucial for the informed political decisions and will also facilitate the timely and successful execution of Phase 2. Phase 1 is made up of various WSs, including the MC process. The objective of the MC is to collaborate with the Technology Vendors and financial institutions to explore the feasibility of the financing and organisational models for constructing and operating the NPPs and to outline the possibilities and limitations. The outcome is intended to guide the Dutch Government on the preferred financing structures and its role, which is crucial for the political decision to proceed to the next phase. The MC was intended to ensure the financing model aligns with the requirements of technology vendors, suppliers and financiers and to provide necessary financial details for future tenders.

9.2.2 Compliance with Dutch standards and regulation

The Ministry of Infrastructure and Water Management (as the body responsible for policy and regulation for nuclear safety and radiation protection in the Netherlands) engaged Arcadis to evaluate the existing legal framework and work procedures to determine whether any amendments are required to ensure safety in the construction of the envisaged Dutch NPPs and the criteria in permit applications. According to Arcadis's report dated 7 December 2024, there are no major legal barriers in the Nuclear Energy Act that would have a negative impact on the realisation of Dutch NPPs. Arcadis also makes the following recommendations with regard to the Nuclear Energy Act: (i) specify the possibility of compliance with (international) standards and the use of non-binding guidelines, (ii) specify how the conventional environmental aspects of nuclear activities will be regulated, (iii) specify in the regulations the prior consultation with the ANVS as a possible step in the permit procedure and develop a guideline for this consultation, and (iv) specify further requirements on the relevant applicant entity or permit holder. We agree with such recommendations – please also see our suggestions in relation to the CfD, which we recommend is to update the CfD legal framework to expressly include nuclear in its scope.

9.2.3 Our assessment of the MC process and workshops

A MC process was run with each of the three Technology Vendors, in two rounds, held in October and December 2023 respectively. An evaluation framework was designed which comprised a set of parameters (which were aligned to the identified objectives of the BIS) and associated qualitive and quantitative criteria enabling comparison between each of the three Technology Vendor's proposed revenue models.

Scope of EY MC

The EY MC process was limited to EDF, WEC, and KHNP, the Technology Vendors involved in the formal Technology Feasibility Study. EY did not consult any third-party potential funders (such as investors, financial institutions or ECAs) for the EY Report. Consequently, the findings and conclusions presented in the EY Report should be approached with caution, as they reflect the perspectives of a single stakeholder group within the nuclear supply chain, rather than the broader investment community, which has different business drivers and risk appetites.

Quality of the EY MC Process

The Amentum TPR Team believes that the MC process involving the Technology Vendors was designed and executed to a very high standard. Notwithstanding our general comments regarding the suitability and relevance of the outputs for informing the BIS development, the following observations are noted:

- Market engagement process and workshops: The market engagement process and workshops were appropriately constructed with clear objectives and desired outcomes identified in advance for each stage and workshop undertake.
- Briefing material: The briefing material developed and distributed was to a very high standard, offering a comprehensive overview of the upcoming Dutch NPP the evolving Dutch energy landscape, and the significant future role of nuclear energy.

Workshop documentation: Each workshop was thoroughly documented, and a review of the meeting minutes shows that all parties engaged in productive and meaningful discussions. This facilitated a better understanding among all participants of the upcoming opportunity, as well as the business constraints that Technology Vendors might find either appealing or unappealing in the context of the Dutch nuclear project.

9.2.4 Analysis of the Technology Vendor's feedback

Common Themes

A key observation of the MC exercise, which is reinforced by the TFS submissions is that the delivery models presented by each of the three Technology Vendors are materially different. This will pose a challenge for KGG in defining the structure of a BIS that has a degree of commonality to drive a balanced, fair and comparable competition to allow KGG to make an informed Technology Vendor recommendation to key stakeholders in the Netherlands.

At the heart of the project is the Nuclear Steam Supply System (NSSS), the primary circuit whose approach to design and overarching safety philosophy influences interactions with the nuclear regulator, the ANVS, and constructability of the whole plant. The work conducted under the TFS part of the TPR Report provides commentary on their compliance with the Dutch context but also those technical aspects impacting the design of the whole plant.

As a reference point to considering the structures to be adopted going forward, the following key points are noted regarding the NSSS/primary circuit:

a) cost represents about 12-15% (excluding associated safety systems) of the total project construction cost;

b) performance of the reactor in MWh, MWth, steam conditions (including moisture content), and availability are key foundations impacting the overall performance of each NPP; and

c) fuel strategy (particularly fabrication) is a key component to ensuring stability of the reactor during start-up / performance testing and commissioning and safeguarding long term operational security.

In establishing the BIS structure moving forward, it will be crucial for KGG to integrate the fuel fabrication and supply strategy to optimise commercial leverage with the Technology Vendors. However, careful consideration must be given to aligning contract structures and liabilities, especially during the key performance testing periods prior to formal contract completion of the construction phase. Additionally, the front-end fuel cycle strategy will also need to be developed in compliance with European anti-trust regulations and taking account of the recommendations of the Euratom Supply Agency which prioritises diversity of supply. Of note, it is more readily feasible to build in more diversity to the upstream components of the front-end fuel cycle given the range of market participants. In practice, it will be preferable for the successful Technology Vendor to procure the fuel fabrication services (via its affiliate entities) given the target MW output under the EPC Contract is inextricably linked to the quality of nuclear fuel supply.

Alignment of fuel supply will be a critical consideration for potential debt or equity funders as security of supply with uninterrupted operation (save for scheduled refuelling outages) and revenue flow will be key to gaining investor confidence. It is noted that all three Technology Vendors have capability within their wider organisational portfolios regarding the key elements of the fuel supply (including fabrication) and this is considered positive. Lenders and financing parties will be keen to understand how the fuel strategy addresses several key factors, including security of supply, fuel performance and reliability, on site fuel support services and the short, medium and long-term plans for obtaining competitive pricing. They will also want to know whether appropriate arrangements have been put in place for the management and storage of radioactive waste and spent fuel, which are subject to strict requirements. Additionally, specific lender requirements regarding the financing of any fuel-related costs will need to be considered, particularly for ECA financing, where these requirements may inform the development of the fuel supply strategy.

It is important to note that two of the three Technology Vendors, EDF and KHNP, are experienced utility nuclear plant operators. They can therefore provide a broader range of expertise beyond the construction phase to support the Dutch NPP. A key lesson from the Barakah NPP, is that a lack of operational readiness delayed commercial

operation by four years. All other new NPPs in Europe, the US, and China that have moved beyond the development phase into construction have involved existing nuclear utility operators, rather than newly formed Governmental SPCs.

In the opinion of the Amentum TPR Team, while the output may be somewhat limited in fully informing the BIS at this stage, this is somewhat to be expected during an early project phase. Further follow-up is advised to address these gaps to enable a comprehensive BIS to be developed, which is tailored for the Dutch NPP, before launching the formal BIS competitive procurement process. Greater clarity would be required regarding scope / boundaries of work, commercial parameters and process as to how the eventual contracts will be enacted. A key recommendation (**R1.1**) of the Amentum TPR Team would be to embark on a more specific focussed MC or additional dialogue with the Technology Vendors regarding the commercial structures and key terms that would form the eventual supply contract. This would cover and test the Technology Vendors appetite regarding key topics, including liability structures, incentivisation mechanisms, transparency of pricing and costs, risk allocation, and IP rights provisions. The output of these will help to inform development of the BIS. This is discussed further in Section 9.6.

As previously noted, the MC, which was conducted over two rounds and several workshops with the Technology Vendors, fostered positive dialogue and a mutual understanding of each party's organisational priorities. The TPR Report does not aim to repeat, comment on, or express opinions about what has already been clearly documented. However, we have outlined below in sections 9.5 and 9.6 the salient points that will be important when constructing the BIS, finance structures, and the associated management arrangements for how KGG, through the SPC, will deliver the project.

Comparative analysis of Technology Vendor responses

- **Equity Participation:** The Technology Vendors had mixed responses regarding equity participation. Consequently, it may be more suitable for the Dutch NPP to consider ECA financing as direct support to the Technology Vendors potentially in addition to equity funding, similar to the PPP Infrastructure contracts in other regions. This approach would ensure that the successful Technology Vendor (either itself or via the funding from ECA) retains a degree of "skin in the game" with compensation from the Owner/operator (i.e. KGG/SPC) occurring only upon successful handover of the asset. This option is explored further in the hybrid funding structure options discussed in this TPR Report.

- **Technology Vendor Delivery Model:** Each Technology Vendor's model has subtle differences that need further examination to develop a competitive BIS structure. Additional and further stress testing should be conducted to inform the key KGG Policy Decision on what it is procuring from the Technology Vendor through the competitive process.

- **Capability:** The Vendors offer a range of capabilities and expertise crucial for achieving the Dutch state's broader GW-scale nuclear ambitions. Agreement with ANVS on expectations of how the Owner becomes an Intelligent Customer and build a Design Authority will be crucial. Specifically, KHNP (KEPCO) and EDF have extensive owner-operator knowledge, with EDF also having significant experience and learning associated with the development and third-party financing of two of its European EPR projects, Hinkley Point C and Sizewell C. It is important for the Dutch Government to define the extent of capability it intends to procure beyond simply providing an operating "power block", as this could be key to securing third-party investor confidence, particularly as the plant enters the operations phase. At present, WEC and KHNP do not have extensive European footprints.

- **BIS Process:** The parties have varying views on the spectrum of options, ranging from a traditional approach similar to that deployed in the Middle East (for example, in the Kingdom of Saudi Arabia, where vendors respond to a comprehensive single BIS over an extended period), to a competitive dialogue, or a preference for sole-source negotiations. Regardless of Technology Vendor preferences, the BIS and procurement process should be designed to maintain optimal competition in full compliance with European procurement regulations until the preferred Technology Vendor is selected and core commercial principles are agreed and locked in.

9.3 EY Report – Evaluation of Key Findings

9.3.1 Overview of Key Findings

Section 1 of the EY Report summarises a compelling case for nuclear generation forming an integral part of the energy mix in the Netherlands. It highlights the critical challenges that must be addressed to transition from the current generation baseline to achieve CO2-neutral electricity production by 2035 and climate neutrality by 2050. The Netherlands' ambition and trajectory align with many other European and global countries that are also striving to decarbonise their electrical generation networks.

A key insight from the EY Report, along with the various documents and supporting literature analysed during the MC process, is that the Dutch Government will face competition from other international jurisdictions for scarce nuclear capabilities when developing its own nuclear program, which include: (i) access to capital and ensuring sufficient capital to fund large-scale new NPPs; (ii) supply chain expertise, given the limited availability of experienced nuclear supply chain expertise, particularly in vendor and project/engineering roles; and (iii) access to Suitably Qualified and Experienced Personnel (SQEPs) as the global nuclear market has a limited supply of SQEPs affecting both project owners and the ability for Technology Vendors to manage multiple projects simultaneously.

Given these scarce resources, KGG must present a sufficiently attractive commercial proposition to Technology Vendors and financiers (Funders) compared to other jurisdictions. Additionally, it must ensure that the overall nuclear value proposition is competitive with alternative forms of carbon-free electrical generation, such as renewables or green hydrogen. An 'attractive commercial proposition' not only includes favourable commercial terms for Technology Vendors but also encompasses a suitable legal and commercial framework for the project, as well as the perceived certainty and project schedule for the Dutch NPP to proceed. It is important to note that Technology Vendors are currently exploring other new market opportunities in Europe and the Middle East.

As the Dutch Government defines the next phase of its nuclear ambitions, it is crucial to consider past market failures associated with similar GW-scale projects. Identifying lessons learned from these failures is essential to avoid repeating mistakes and to optimise the value for money proposition. These failures should be examined from both a "Developer" and "Technology Vendor" perspective to ensure that similar issues do not arise in the Dutch NPP and that such risks are effectively identified and mitigated. Whilst the EY Report does not address these learnings, it is recognised that it was not part of their remit. It will however be important to learn from past market failures to help inform the next development phase of the Dutch nuclear programme.. Therefore, the Amentum TPR Team has included an analysis of some of these lessons learned in the TPR to assist KGG in determining the next steps. By incorporating these insights, the Dutch Government can better navigate the complexities of nuclear project development and enhance the likelihood of successfully implementing the Dutch NPP.

In addition to the financial mechanisms supporting the development of new NPPs, it is crucial that KGG or any SPC established as a project vehicle to consider the governmental and regulatory support needed to create and mobilise a skilled and qualified workforce. The successful execution of NPPs relies not only on financial stability but also on the availability of SQEPs capable of managing the complex and technical aspects of these projects. The following aspects highlight the necessary governmental and regulatory support for workforce development:

- Visa and Immigration Policies
    - Streamlined Visa Processes: Governments need to implement streamlined visa processes to facilitate the entry of international experts and skilled workers required for nuclear power projects. This includes fast-tracking visa applications and providing long-term work permits.
    - Specialised Visa Categories: Creating specialised visa categories for nuclear industry professionals can help attract the necessary talent from around the world.
- Housing and Transportation
    - Affordable Housing: Governments and project developers should collaborate to provide affordable housing options for the workforce, including temporary accommodations for international experts and permanent housing for local employees.

  - Transportation Infrastructure: Developing efficient transportation infrastructure, such as shuttle services and public transit options, can ensure that workers can easily commute to and from the project site.

- Development of Local Manpower Competency
  - Training Programs: Establishing comprehensive training programs in collaboration with industry experts and educational institutions can help develop the local workforce's skills and competencies. This includes on-the-job training, apprenticeships, and certification programs.
  - Technical Education: Governments should invest in technical education by enhancing the curriculum of vocational schools and technical colleges to include nuclear engineering and related fields. This is an area the successful Technology Vendor should support at all levels of education from schools to universities. Areas such as welding may require particular attention.
  - This should be developed in the local context of the employment market and appetite for projects to deliver social value.
- Fostering Bilateral Support Agreements
  - International Collaboration: Governments can foster bilateral support agreements with countries that have established nuclear industries. These agreements can facilitate knowledge transfer, technical assistance, regulatory harmonisation, the exchange of skilled personnel, align security related communications, and cover Research and Development (R&D) opportunities.
  - Joint Ventures: Encouraging joint ventures between local companies and international nuclear firms can help build local capacity and expertise.
  - There may be advantages to extending this to trilaterals for example where bilateral agreements have developed the supply chain for the EPR in the UK for example.
- Creating Partnerships with Universities and Research Centres
  - Academic Partnerships: Forming partnerships with universities and research centres can promote research and development in nuclear technology. This includes funding research projects, providing scholarships, and facilitating internships for students. As noted above this is an area that the successful Technology Vendor should support as a wider commitment to support technology transfer and skills into The Netherlands.
  - Innovation Hubs: Establishing innovation hubs and centres of excellence focused on nuclear technology can drive advancements and attract top talent to the industry.
- Regulatory Support
  - Certification and Licensing: Regulatory bodies should establish clear and efficient processes for the certification and licensing of nuclear professionals. This includes recognising international qualifications and providing pathways for local certification. Dutch Adaptation of NQA-1 for example needs a strategic approach.
  - Safety Standards: Ensuring that safety standards and regulations are in place and strictly enforced is essential for maintaining a skilled and competent workforce. Regular training and updates on safety protocols should be mandated.
  - Regulators extend support for projects through agreements with local and international suppliers.

In summary, the Amentum TPR Team generally supports the findings presented in the EY Report. These findings will help, in part, to inform and establish key policy foundations for the next phase. However, some of the principles and conclusions outlined in the EY Report are generic and, in many cases, do not fully address the practicalities of the proposed funding model options. Further consideration and detail could have been provided to better align

the findings with the unique characteristics of the proposed new NPP Project and the Dutch legal and regulatory framework. This is particularly relevant to third-party funding, GSP coverage, organisational models and the outline commercial arrangements that could potentially be adopted with the Technology Vendors, which will ultimately inform the BIS.

The EY Report heavily focuses on structures developed for Barakah and the EDF UK portfolio of projects, including Hinkley Point C and Sizewell C, without considering the uniqueness of the Dutch environment. Identifying relevant differences is crucial. For example, the UK projects were initiated by an existing private in-country utility company (owned by a third-party sovereign state) that also forms part of a larger parent group, which controls all critical aspects of the nuclear development lifecycle (developer, operator, vendor, engineer). Additionally, with respect to the Barakah project, which was developed in the Middle East, much of the supply chain and labour workforce had to be imported from South Korea and/or Asia. In contrast, the Netherlands has an established industrial network with a supply chain extending into Europe, supported by strong labour and industrial trade union arrangements. Additionally, the Barakah nuclear site was located over 50km from the nearest population centre, and the UAE, as an emerging nuclear state, had a nascent regulator (Federal Authority for Nuclear Regulation (FANR)) at the time the construction contracts were signed.

Based on the EY Report, it is advised that further work with the Technology Vendors is necessary to help KGG shape the structure of the BIS and define some of the commercial attributes that may influence the commercial landscape among Dutch stakeholders. Without this critical next stage of the MC process, developing a BIS could lead to significant risks of "in-tender" clarification meetings, as KGG would not have a clear understanding of what each party considers acceptable before starting the formal competitive process. Such "in-tender" clarification meetings could increase the risk of challenges to the procurement process (as seen in the Czech Republic) and cause delays to the project schedule. We set out in this TPR our recommendations for further dialogue with the Technology Vendors which is focused on facets of the BIS.

The EY report also contained a brief overview of Infrastructure projects (non-nuclear) involving third party finance that have been successfully delivered with The Netherlands. Whilst this demonstrates an in-country capability to finance and deliver such projects, the scale, complexity and risk profile compared to that of a GW nuclear project is different. However, these projects demonstrate the strong civil / enabling "in-country" capability within the region that will be critical to forming the early stages of the project when moving into construction.

9.3.2 Key Findings in relation to the GSP

For context, a GSP for nuclear projects is a set of financial and policy measures provided by the host government to support the development and operation of NPPs. The GSP is relevant because it helps mitigate the financial risks and uncertainties associated with nuclear projects, making them more attractive to investors and other stakeholders. It typically includes financial support, revenue guarantees, risk allocation mechanisms, and indemnities to ensure the project's viability and sustainability.

The EY Report offers a thorough overview of the significance of structuring an appropriate GSP for nuclear development projects. While the concept, aims, and objectives are clearly defined, the EY Report could have further explored how the GSP might be structured based on different financial structures that could be implemented. The Amentum TPR Team has considered various examples to outline potential funding and financing options and how the GSP would be tailored for each option, providing a foundation for a more comprehensive analysis. It is worth noting that while the BNPP Report analyses various financing alternatives for the Dutch NPP, it does not include the GSP in its analysis. The Amentum TPR Team believes that the type and comprehensiveness of the GSP cannot be accurately determined without understanding the financing structure of the Dutch NPP, and vice versa. Therefore, the Amentum TPR Team has included in its report an analysis that links the appropriate GSP to each relevant type of financing, taking into account the two reports from the MC, the different workshops, and lessons learned from various projects.

Notwithstanding our previous comment, the EY Report categorises the GSP into five key attributes which they recommend be adopted for structuring the GSP downstream. These attributes are Owner Financial Support; Lender Support; Revenue Support; Project Risk Allocation; and Indemnities.

In our view, the EY Report would have been more beneficial for the Dutch NPP if it had identified key attributes of the GSP relevant to the primary stakeholder communities such as the supply chain, equity investors, debt

providers and ECAs. This is because not all five attributes are pertinent to every stakeholder. For example, if the Dutch Government decided to fully fund the Dutch NPP during the construction phase, the project would require a straightforward GSP arrangement focused on the delivery supply chain. This GSP would primarily focus on ensuring payment guarantees and providing certain indemnities attributed to changes in law, project discontinuation and third-party nuclear liability. Any further GSP identified beyond that, such as revenue support mechanism, would not be required at this stage. A more granular analysis in the EY Report on how the GSP would vary as a function of the funding and financing structures would have been beneficial for KGG's planning and policy development.

Furthermore, based on previous experience in competitively assembling nuclear supply chains for large-scale NPPs (including for the Technology Vendors), a detailed or outline structure of the project's GSP was not necessary when preparing the procurement bid documents. In recognising the primary features affecting the risk profile, the tender outline contract documents have primarily addressed the main features affecting their risk profile, including payment guarantees, indemnities against key risks such as changes in law and third-party nuclear liability, and protections in case of project termination by the Dutch Government, for example.

However, if Vendor financing is to be included and form part of the BIS, then certain features or key principles of the GSP may be required. This is discussed further in the TPR Report. Given the recommended staged approach for the BIS, it is suggested that in the early stages, the GSP construct would not need to inform the Vendor BIS beyond ensuring payment surety, protection for third-party nuclear incidents and outlining the principles for termination.

Section 4 of the EY Report contains a high-level risk allocation model between the various stakeholders for a typical NPP. The structure and coverage of the risk matrix is considered a good articulation of the key risks and considerations. However, the matrix should be expanded to cover Vendor and the Owner's Project Integrator separately, and the risks assigned should be recalibrated. This should be undertaken once the Dutch Government has decided on the structure of its overall delivery model for their nuclear build program.

An observation of the EY Report is that recent nuclear financings do not reveal a consistent GSP to solve the funding gap. However, this is expected as virtually every project is unique to the country of build and the approach various governments adopt – and in this sense they are almost all FOAK projects. Given the uniqueness of the anticipated Dutch NPP, it is expected and recommended that the GSP should be tailor-made but, as a reference point, follow the five key themes as outlined in the EY Report.

9.3.3 Key findings in relation to the Nuclear Business Model (delivery, funding and revenue)

The EY Report introduces the concept of a 'Nuclear Business Model' and a rethink of the traditional approach that integrates project delivery considerations with financial and risk allocation solutions. The starting premise of the EY proposition is that the Technology Vendors offerings are very similar, which is not the case, and, in fact, each approach has a significant impact on the construction methodology and complexity of plant under development which is continuing to evolve. There are differences in approach to safety philosophy, active verses passive with the former requiring a greater degree of complexity inject into the designed plant. There are differences in approach between modular construction and traditional in-situ build/erection covering many skill trades.

Taking these differences into consideration the ability, unlike other consumer product development to be able to design a GW nuclear plant to a cost target without incurring significant changes to the reference design requiring lengthy legislative approvals process is limited in scope.

The Amentum TPR Team based on their cumulative direct involvement in developing GW to FC and into delivery believe that stable continuity of the reference design and core vendor/supply chain capability is of paramount importance, subject to reaching an optimal agreement with regulators. Numerous past international studies on nuclear GW demonstrate that the core to improving cost and schedule of any GW nuclear development is to have stability within the nuclear vendor's reference design. In achieving this outcome, it gives greater confidence within the overall funding cost, schedule, risk envelope thereby supporting the development of funding arrangements and ultimately revenue models and consumer pricing.

In summary the information presented to support EY's positioning of a new business model is highly theoretical and simplistic in its approach and presentation it does not help KGG in establishing the structure and approach to the BIS, their SPC, integration between Owner's and Vendor's scope together with the differences of the Dutch program compared to other countries, and ultimately the approach through the government mandate that will be presented as a basis to enter the next development phase of the project.

Furthermore, it is the opinion of the Amentum TPR Team that the MC findings will need to be further developed, adopting the "five pillar" structure proposed by EY to inform the GSP and organisational models such that the potential impact on risks for the Dutch Government and economy are understood. We set out an outline to some of the considerations to help address the identified gaps and structuring the glide path to developing the SPC and BIS. Some of the TPR's thinking has also been shared informally with KGG during a series of workshops and feedback sessions when conducting the TPR review.

9.3.4 Key findings in relation to the Revenue Support Mechanism

The development and operation of new NPPs require substantial financial investment and long-term, firm offtake commitments. To ensure the economic viability and attractiveness of these projects, various revenue support mechanisms have been established. These mechanisms help mitigate financial risks and provide stable revenue streams for investors and operators. The primary revenue support mechanisms include the RAB model, CfD, PPA, and the Mankala model. Each of these mechanisms plays a crucial role in supporting the financial framework of nuclear power projects, as they provide the necessary stability, risk mitigation, and long-term revenue certainty required for these capital-intensive and long-duration projects.

Regulated Asset Base (RAB) Model

The RAB model is a regulatory framework that allows NPP developers to recover their investment costs through regulated charges on consumers' energy bills. Under this model, the government or a regulatory body sets a fixed return on the invested capital, ensuring a stable and predictable revenue stream for the investors. The key features of the RAB model include:

a) Cost Recovery: Investors can recover their CapEx and operational costs over the plant's lifetime. Unlike other models, investors will secure a return on their investment during the construction period and before the project is operational.

b) Risk Mitigation: The model reduces financial risks by providing a guaranteed return on investment, which is particularly important for high-capital cost projects like NPPs.

c) Consumer Protection: Regulatory oversight ensures that the charges passed on to consumers are fair and reasonable.

One key advantage of the RAB model approach is to (in theory at least) lower the overall financing costs of the project as investors receive a revenue flow at the point of their investment during the construction phase as opposed to waiting until the plant is operational and a revenue stream comes online.

Whilst the RAB approach is theoretically an attractive option to lower the accumulated cost of financing nuclear projects consideration should also be given to:

a) Process and timing of developing, consulting and ensuring all the legislative structures are in place to support nuclear build. In the UK the formal process commenced in July 2019 (consultation) accumulating in the passing by Parliament of The Nuclear Energy Financing Act, in March 2022. However, it should be noted that whilst the RAB nuclear structure was developed over the 3-year period extensive project development activities proceeded funded by EDF and UK government (in part). The RAB model developed for the UK nuclear sector itself required a separate MC which, coupled with the time to assess the responses and implement the necessary legislation, took nearly 4 years to develop.

b) The regulatory environment required to set-up to provide overall oversight and administration of the RAB agreement ensuring consumer interests are fully protected.

c) A degree of cost over-run risks are shared with the consumer and in the event of a downside scenario government funding (taxpayer) will be required to build-out the project.

d) The risk premium given the unique risk profile as perceived by investors compared to government/sovereign debt available to the Dutch Government.

e) The array of providers, both debt and equity required given individual ticket sizes (as highlighted in the BNPP Report) that would be required aligned to the total cost of the project.

The nuclearised RAB model in the UK was developed to assist in lowering the overall capital cost of nuclear projects and is the revenue support mechanism for the Sizewell C project. However, the balance of risk proposed to the market in the RAB model has, to date, not been accepted by the international investment community and in consequence this project has been further delayed and is now subject to an independent spending review following the Labour Party's success in the recent general election in the UK.

Notwithstanding the challenges and complexities of introducing a RAB structure the facility is more attractive to the investor community when the project's risk profile has reduced and the operations phase with a guaranteed revenue stream is secured.

Contracts for Difference (CfD)

CfDs are long-term contracts between the government and the NPP operator that provide price stability for the electricity generated. The main components of CfDs include:

a) Strike Price: A pre-agreed price for electricity, which remains constant over the contract period.

b) Market Price: The actual market price of electricity.

c) Difference Payment: If the market price falls below the strike price, the government compensates the operator for the difference. Conversely, if the market price exceeds the strike price, the operator pays the difference to the government.

d) Revenue Certainty: CfDs offer revenue certainty and protect against market price volatility, making nuclear projects more attractive to investors.

One of the key factors of the CfD arrangement is that construction risk resides with the Developer and not consumer within the price structure agreed. Therefore, similar to the point raised above with respect to RAB investor may attribute a significant risk premium to their financing cost (WACC) given the risk profile of the Dutch NPP. This is one of the key considerations in applying a CfD structure similar to that implemented at Hinkley Point C as a basis to secure FC and the project entering the construction phase.

Power Purchase Agreements (PPA)

PPAs are long-term contracts between the NPP operator and a purchaser, typically a utility or large industrial consumer. The key aspects of PPAs include:

a) Fixed Price: The agreement sets a fixed price for the electricity supplied over the contract duration.

b) Long-Term Commitment: PPAs often span 15-25 years, providing a stable revenue stream for the operator.

c) Risk Allocation: The purchaser assumes the market risk, while the operator benefits from predictable cash flows.

d) Bankability: PPAs enhance the bankability of nuclear projects by securing long-term revenue commitments.

The key challenge of implementing such a mechanism for any GW nuclear build will be to find the quantum of off-takers willing to cover the output range of the plants (+2-3GW) at an affordable price aligned to that required to raise the quantum of capital commensurate with the risk premiums that will be required.

Mankala Model

The Mankala model is a cooperative ownership structure commonly used in Finland for nuclear power projects. The main characteristics of the Mankala model include:

a) Cost Sharing: Multiple shareholders, typically industrial companies and utilities, jointly own and finance the NPP.

b) Electricity at Cost: Shareholders receive electricity at production cost, proportional to their ownership share.

c) Risk Distribution: Financial risks and benefits are distributed among the shareholders, reducing the burden on any single entity.

d) Long-Term Stability: The model promotes long-term stability and collaboration among shareholders, ensuring the project's success.

It is unclear whether there are enough potential participants in the Netherlands to make this model tenable for the project concerned.

Our analysis of the Revenue Support Mechanism

The EY Report analyses each of these models but does not examine the legal and regulatory implications of implementing them in the Netherlands. This is crucial for assessing their feasibility and alignment with the Dutch NPP timeline. In addition, it is advised that KGG consider the wider implications of implementing each of these mechanisms, such as the need for EU State Aid approval and securing or maintaining parliamentary support for necessary changes to the regulatory framework. However, notwithstanding the previous comment it is the opinion of the Amentum TPR Team that the PPA and Mankala model, at this stage are unlikely to generate sufficient stakeholder interest (particularly energy purchases) required to support a two-unit GW project of this nature. Whilst they are both potential are options for downstream revenue security during operations investors are likely to require the more whole plant certainty the RAB and CfD structures secure.

As noted previously in paragraph 9.3.3, the concept of a Nuclear Business Model and a revised approach set out in section 2.6 of the EY Report are built on the assumption that the technical offerings of the Technology Vendors are very similar, which is not the case.. Considering these differences, the ability to design a GW nuclear plant to a cost target **without significant changes to the reference design**, which would require lengthy legislative approvals, is limited in scope compared to other consumer product developments.

Based on our extensive experience in developing GW nuclear projects to FC and delivery, the Amentum TPR Team believes that maintaining stable continuity of the reference design and core vendor/supply chain capability is of paramount importance. Numerous international studies on nuclear GW projects have shown that stability within the nuclear Vendor's reference design is key to improving cost and schedule of any GW-scale nuclear project. Achieving this stability enhances confidence in the overall funding cost, schedule, and risk envelope, thereby supporting the development of funding arrangements, revenue models, and consumer pricing.

In summary, the information presented to support EY's proposal for a new business model is highly theoretical and overly simplistic. It does not assist KGG in establishing the structure and approach to the BIS, their SPC, the integration between Owner's and Technology Vendor's scope, or in understanding the differences of the Dutch program compared to other jurisdictions and ultimately, it does not help in formulating the government mandate needed to enter the next development phase of the project. Furthermore, the Amentum TPR Team believes that the MC findings will need to be further developed, adopting the "five pillar" structure proposed by EY to inform the GSP and business models, making it difficult to understand the potential impact on the risks for the Dutch Government and economy. Sections 9.5 and 9.6 outlines some considerations to address these gaps and structure the path to developing the SPC and BIS. Some of the Amentum TPR Team's insights have also been shared informally with KGG during workshops and feedback sessions conducted as part of the TPR review.

Our analysis on the Nuclear Foundations

Section 2 of the EY Report focuses on outlining some key principles and definitions that are crucial when considering the development of a nuclear new power generation project. Section 2 is supported by a review of

past literature, which helps to define non-technical objectives, learn from past non-nuclear Dutch infrastructure projects, and set the structural framework for how governments, through an appropriate support package, will be key to enabling any nuclear development.

Within the literature reviewed as part of the EY Report, the expertise of the Amentum TPR Team has identified the two key findings listed below that should have been more prominently highlighted and explored further by EY:

a) KPMG 2021 Report: Pursuant to the KPMG 2021 Report, numerous market participants suggested that the Dutch Government should build a nuclear reactor and largely provide financing itself, with a sale considered after commissioning/start of commercial operation, after which the risk profile for private financiers will have decreased considerably; and

b) Baringa 2022 Report: In accordance with the Baringa 2022 Report, a state-owned SPC model could be a viable option for the Netherlands to encourage the timely construction of NPPs in the Netherlands, given the NPP size and risk profile.

The EY Report also covers analysis on previous non-nuclear infrastructure projects in the Netherlands and GSP arrangements for such projects. We concur with EY's conclusions that significant government support is required for a feasible and successful large-scale infrastructure project and that a nuclear project is unique and distinct from precedents which necessitates a bespoke approach to GSP in the Dutch NPP context. Further caveats should be made in using past non-nuclear infrastructure as reference points, given some key differences that were not mentioned in the EY Report:

- State participation in some of the non-nuclear projects was not optional but required by law. For example, pursuant to EU unbundling law the Dutch transmission system operator (i.e. TenneT) and the national hydrogen network operator (i.e. Gasunie) had to be 100% state owned. The Bill on Collective Heating requires local governments to have a majority stake in heat networks. Hence, the government backing for some of the projects had a primary driver (i.e. local and EU legal requirements) that is not applicable to nuclear projects.

- Tariffs/toll from some of the non-nuclear infrastructure concerned are regulated, which may have shaped the GSPs in respect of such projects. For example, the cost of usage of Betuweroute are determined in accordance with rules of the Netherlands Authority for Consumer & Market and EU law regarding access to rail infrastructure. Tariffs and toll rates in connection with TenneT and Westerschelde Tunnel are set out in Dutch legislations. With the sale of electricity, rather than tariffs/tolls, as a key source of revenue from nuclear projects, the regulatory context for revenues for nuclear is different from the kinds of revenues in some of the non-nuclear infrastructure projects, and the GSP considerations from such project do not transfer neatly to nuclear projects.

Overall, these caveats reinforce EY's view that a bespoke approach to the Dutch NPP is necessary.

Following the review of the EY Report, it is advised that the relevant wider consultation and analysis be undertaken by the relevant ministries within the Dutch Government prior to deciding on and developing the funding model, GSP arrangements including the revenue support mechanisms. To aid this process, the Amentum TPR Team has set out its key proposals and recommendations, which includes:

- Conducting a thorough analysis of past infrastructure/nuclear projects to identify successful financing models.

- Engaging with key stakeholders, including potential private financiers and Technology Vendors, to understand their risk profiles and requirements.

- Exploring the feasibility and implications of adopting a state-owned SPC model for the Dutch NPP.

- Ensuring that the financing approach aligns with the unique characteristics and needs of the Dutch NPP.

By incorporating these recommendations, the Dutch Government can develop a robust and well-informed financing strategy that supports the successful implementation of its nuclear ambitions.

9.4 BNPP Report – Evaluation of Key Findings

9.4.1 Overview of Key Findings

The BNPP Report provides a thorough analysis of private financing within the nuclear power sector, emphasising the risks and challenges faced by owner/developers in securing funding from private sector sources. The BNPP Report's findings and conclusions are often supported by informal consultations with a select group of active participants in the broader nuclear sector. It is important to note that the pool of funders consulted are all based in the Netherlands (page 24), which may limit the representativeness of the sample. This should be taken into consideration when interpreting the BNPP Report.

The BNPP Report effectively addresses many of the gaps identified in the EY Report by the Amentum TPR Team. It should be regarded by KGG and other Dutch Ministries as a valuable reference when formulating broader policy mandates.

The conclusions and next steps outlined in the BNPP Report are deemed appropriate by the Amentum TPR Team. However, to enhance these next steps, it is recommended to consider various project funding time-related options. Similar to the EY Report, there is an automatic assumption that the funding structures adopted in the UK, such as securing private finance at the FID prior to the commencement of main works, are the optimal model.

The Amentum TPR Team have presented its alternative funding options related to the injection of private sector finance, linked to the project's lifecycle maturity curve, for further discussion. These also includes options for Vendor funding to a degree ensuring they have appropriate “skin-in-the-game“ aligned to delivering project outcomes they contractually commit to deliver.

The BNPP Report is highly informative on the topic of prospective GSPs and provides valuable insights for creating a condensed stakeholder communication package. This package aims to raise awareness about the necessity of GSPs to support the Dutch Government's nuclear programme. Some of the suggested applications (Basic, Moderate, Comprehensive) are highly theoretical, and the form of the GSP can only be determined once the financing route and project delivery model are more clearly defined. Given the interdependencies among the type of funding, revenue support mechanisms, and the GSP for nuclear projects, we outline the required package for each of the proposed alternative funding structures.

9.4.2 Sources of Capital Funding

Section 1 of the BNPP Report provides a clear and concise summary of the various sources of financing available for nuclear power projects. It highlights that government financing is often a necessary component when considering such projects. The report includes a comprehensive matrix of options, along with an excellent analysis of the “pros” and “cons” of each source. This analysis offers a more thorough understanding of the project's financing approach compared to the EY Report.

Section 2 of the BNPP Report identifies four principal sources of capital funding, being the following:

a) ECAs: ECAs provide support to domestic entities engaged in international trade. The ECAs supporting the Technology Vendors on this project should be considered a core foundation of any debt package if private debt financing is considered by the Dutch Government on the basis that: (a) they are likely to be able to make available significant funding (even in the context of a GW-scale nuclear project) in the form of ‘tied’ financing, meaning financing linked to a supply of goods or services from the ECA's country; (b) they are sufficiently familiar with supporting outbound nuclear projects with a good understanding of the key risks and mitigants; and (c) their involvement in any given project provides a level of political support. Based on current nuclear projects under development in Europe, ECAs have indicated that they are willing to commit up to 70% of the total project cost in support of their technology vendor, although the levels of commitment will necessarily need to be linked to the country of origin of the exported goods and services. Most ECAs work within a regulated environment where they are obliged to comply with a set of OECD guidelines, called the Arrangement on Officially Supported Export Credits (“**OECD Arrangement**”). The OECD Arrangement is aimed at avoiding unfair competition as a result of certain ECAs offering particularly generous financing conditions and sets out:

- minimum interest rates with fixed rate loans based on the 'Commercial Interest Reference Rate' and floating rate loans usually based on a spread above a referenced benchmark such at LIBOR or EURIBOR, which means in practice that this form of funding may be more expensive than direct loans by the host government which may be made on preferential terms;
- a maximum repayment tenor, which in a nuclear context has been extended from 18 to 22 years; and
- compliance obligations associated with the Equator Principles social and environmental standards.

Additionally, ECAs typically have specific institutional requirements and in many cases will require extensive diligence to be performed in parallel with lengthy negotiations and internal processes (which can take years to finalise) before a binding commitment to fund is approved. For this reason, it is often easier to structure an ECA-backed financing with the ECAs first before then approaching commercial banks and other investors for additional funding. KGG will therefore need to assess the overall quantum and sources of funds for the project and the benefits and drawbacks of ECA funding as part of this process.

b) Commercial Banks: Commercial banks are a core component within the project financing environment for energy and infrastructure projects. With respect to nuclear projects, there is varying interest across a spectrum of providers. A key consideration for the Dutch Government will be the "ticket size" each actor is willing to bear compared to the overall quantum needed for a GW-scale NPP – i.e. most commercial banks will be unable to lend in sufficient quantum to meaningfully fund the Dutch NPP and any financing with a multitude of commercial banks would likely create intercreditor issues as well as being administratively cumbersome to negotiate.

c) Institutional Investors: While institutional investors can provide sources of capital, they often adopt a more conservative approach to the levels of risk they are willing to bear on behalf of their funds. Although "nuclear" is an emerging theme on their investment radars, they may be more attractive to refinancing opportunities once construction projects near completion and enter into operations.

d) Strategic Investors: Strategic investors represent a core group of investors that are the primary promoters of nuclear projects within the sector. The primary parties in this sector identified in the BNPP Report are state-owned government enterprises.

The BNPP Report presents a brief high-level overview of each of the principal providers and the boundaries of their likely involvement throughout the lifecycle of a NPP Project. This segmentation of the likely investor stakeholder community is carried forward into additional option analysis presented as part of this TPR Report.

9.4.3 Risk mitigation and management strategies

The "pros" and "cons" structure presented in the BNPP Report should be utilised to identify alternative management arrangements that KGG (or the SPC) could implement to mitigate potential risks, especially when a particular financing option is not selected. For example, one of the identified "cons" of public financing is the potential lack of rigorous due diligence that private finance investors typically provide. The viability of project will be potentially less challenged/assessed by the enhanced due diligence of private finance investors.

This is a valid deficit that could potentially materialise from a whole government backed project, particularly as the role of "Sponsor" and "Investor" can be conflicted between policy to deliver energy security, net zero ambitions and that of value for money for consumers and taxpayers. Independent Investors would undertake extensive due diligence, particular emphasis on the construction risk profile, adequacy of the funding envelope (cost, schedule, risk / contingency) and project delivery arrangements and readiness. Often Government projects do not deploy the same rigour compared to those of private parties.

To address this risk and ensure thorough project scrutiny, the role of the Owner's Engineer could be expanded to provide independent oversight and scrutiny of the project's arrangements. This should align with the governance and assurance structure embedded in the TOM. Additionally, implementing a clear gateway approval process,

with parties simulating the interests of independent investors, could help replicate the rigorous due diligence typically provided by private investors.

By adopting these measures, KGG and the Dutch Government (directly or through an SPC) can enhance the project's oversight and ensure that it meets the high standards of scrutiny and due diligence necessary for successful delivery.

9.4.4 Appetite for Nuclear Investment and General Market Trends

There is a growing trend of Infrastructure projects being financed via SPCs in which the project company (Project Co) is funded with third-party debt finance alongside an array of equity participants, many of whom have a strategic policy / technology alignment with the projects being undertaken. However, as noted by the BNPP Report the sheer scale of nuclear new build is significantly well above the limits required by the typical infrastructure SPC project financing arrangements, particularly when such projects have a significant period before completion and a revenue stream materialises.

In developing the financing and funding arrangements for the Dutch NPP the following key points identified in the BNPP Report should be central to informing the policy and determining at which point the opportunity to attract private finance into the Project Co is optimised:

- *"The more the risks are mitigated resulting in more predictable cash flows, the more leverage can be put on such financing structures"*
- *"Many of the risks in nuclear and infrastructure projects are common and can be linked to their megaproject status"*

It was previously noted that the introduction of private finance into nuclear projects has a key added advantage that such investors participate extensive due diligence to determine the risk profile and acceptability of the project's overall management arrangements. During such a process the adequacy of the Technology Vendor and key supply chain contractual agreements will be critical. The BNPP Report identifies five core attributes that potential investors will consider and are important considerations when formulating the BIS and Project Agreements, these are:

a) Cost Overruns;

b) Delays / Timeline;

c) High Capital Requirements / scale of investment;

d) Contractual risks; and

e) Technology risks.

These are considered in the TPR Report when recommending a further step of specific market engagement that it is recommended be undertaken to help inform the BIS development process.

Page 19 of the BNPP Report contains an excellent distillation of the key obstacles (8 themes identified) that have plagued recent nuclear developments for those projects that have been successful and proceeded beyond the development phase and into delivery / construction. This template should be used as a reference point when developing the BIS and associated Project Arrangements (TOM) to cross check how such obstacles / risk will be overcome irrespective of the source of funding (public, private, public / private partnership).

A key comment / observation made with Obstacle 4 (cost management) is that "*the cost of equipment is not the most expensive part, it is rather the man-hours on-site and all associated costs, together with the consequences of delay*". The experience of the Amentum TPR Team aligns with this key observation and that during the delivery phase the cost of equipment manufacture and installation of the core primary and secondary loops (NSSS and TG) are relatively stable and represent less than 20% of total project costs. The balance of cost related to earth works, civil structures, and ancillary / secondary safety system erection are often the causes of significant delay and cost overruns. Such impacts are often more often than not attributed to a combination of:

a) Regulatory approvals and proceeding with site works before all site-specific requirements are known;

b) Engineering delays particularly in relation to process plant / civil structure interfaces;

c) Mid-term construction delays in circumstances where construction has commenced before detailed design is developed, finalised and approved by the nuclear regulator; and

Constructability between plant, civil and secondary safety systems (passive vs. active) increasing the complexity of plant to be installed and reducing the ability to adopt modular construction as much as possible.

9.4.5 Review of Case Studies and Interviews

Three cases studies are presented with the BNPP Report illustrating how the "obstacles" experienced in delivering nuclear new builds can have an impact on the ability to successful attract private sector finance, at affordable levels to such projects. It should be noted these case studies involved established "in-country" nuclear operating utility developers sponsoring the projects, not a newly established sovereign government SPC and in two out of three resulted in the technology vendor going into some bankruptcy protection after taking excessive EPC "wrap" commercial risks. These are important considerations when structuring the financing and funding structure of the Dutch NPP considering the risk appetite of the various actors who may be involved, particularly the Technology Vendors.

These cases studies provide invaluable observations from the financial institutions that should be further crystallised when developing the overall projects arrangements including funding / finance, SPC operating model, BIS and eventually the Technology Vendor and key supply chain delivery and commercial arrangements.

Interviews with the range of investment stakeholders undertaken identified a growing interest in supporting nuclear developments attributed to the importance the technology will contribute to achieving net zero ambitions from electrical generation sources. However, an important factor emerging from the documented BNPP Report is that the likely ticket size and potential contributions from financial institutions will be small ($000m's) in comparison to the total funding requirements of a GW-scale NPP. Therefore, a significant consortium of lenders and other third-party debt providers would be required to meet the total funding shortfall not provided by the host government. Potentially, this could involve KGG (and the SPC) managing a syndicate of over 30-40 institutions. As an example of the complexities involved the privately financed NeuConnect inter connector between Germany and the UK (£2.4bn) achieved FC in July 2022 and involved a syndicate of over 20 regional and international banks.

Although nuclear financing cases studies were presented, these all attributed to re-financing existing nuclear utility entities with existing revenue sources and not related to SPC's established (like Sizewell C) for the sole purposes to deliver a new asset.

9.5 Key observations and recommendations

9.5.1 SPC Organisation Model – key observations and proposals

We set out below our commentary on the business and organisational model and approach that was presented in the EY Report. It was concluded, that in the opinion of the Amentum TPR Team that the guidance and coverage was not sufficient to enable KGG to approach establishing an SPC Nuclear Development Co, covering the key features that will be critical to enabling the selected Technology Vendor.

To assist KGG in this undertaking some guidance and conceptual models are presented further that have informed the recent establishment of similar government undertakings to develop and construct nuclear power generation assets. Whilst there are many complex considerations and interdependencies to structure an Enterprise that will transition its activities from "development" to "delivery" to "operations" the relationship and structure with the selected Vendor will be key to developing and refining the delivery model.

Figure 2 illustrates a conceptual model based on the core learning from many UK and international projects by structuring the Enterprise model along the client body (SPC) having "three lines of defence" around which the appropriate governance, assurance and safeguards are structured. Within the Enterprise model there are three

core areas of "capability" that need to be procured which are critical to ensuring KGG / SPC has access to critical nuclear capability associated with GW nuclear development projects. The relationship between these three entities is key to ensuring both their operational and commercial interests are aligned and structured to ensure the outcomes from the Technology Vendor are secured within the overall approved funding envelope (cost, schedule, risk). They are:

a) The Technology Vendor ensuring their assigned scope is within their organisational capability.

b) The OE focused on providing critical oversight and assurance of the project.

c) The Owner's Project Integrator providing the delivery integration and performance oversight between the Vendor's scope and the Owner's scope.

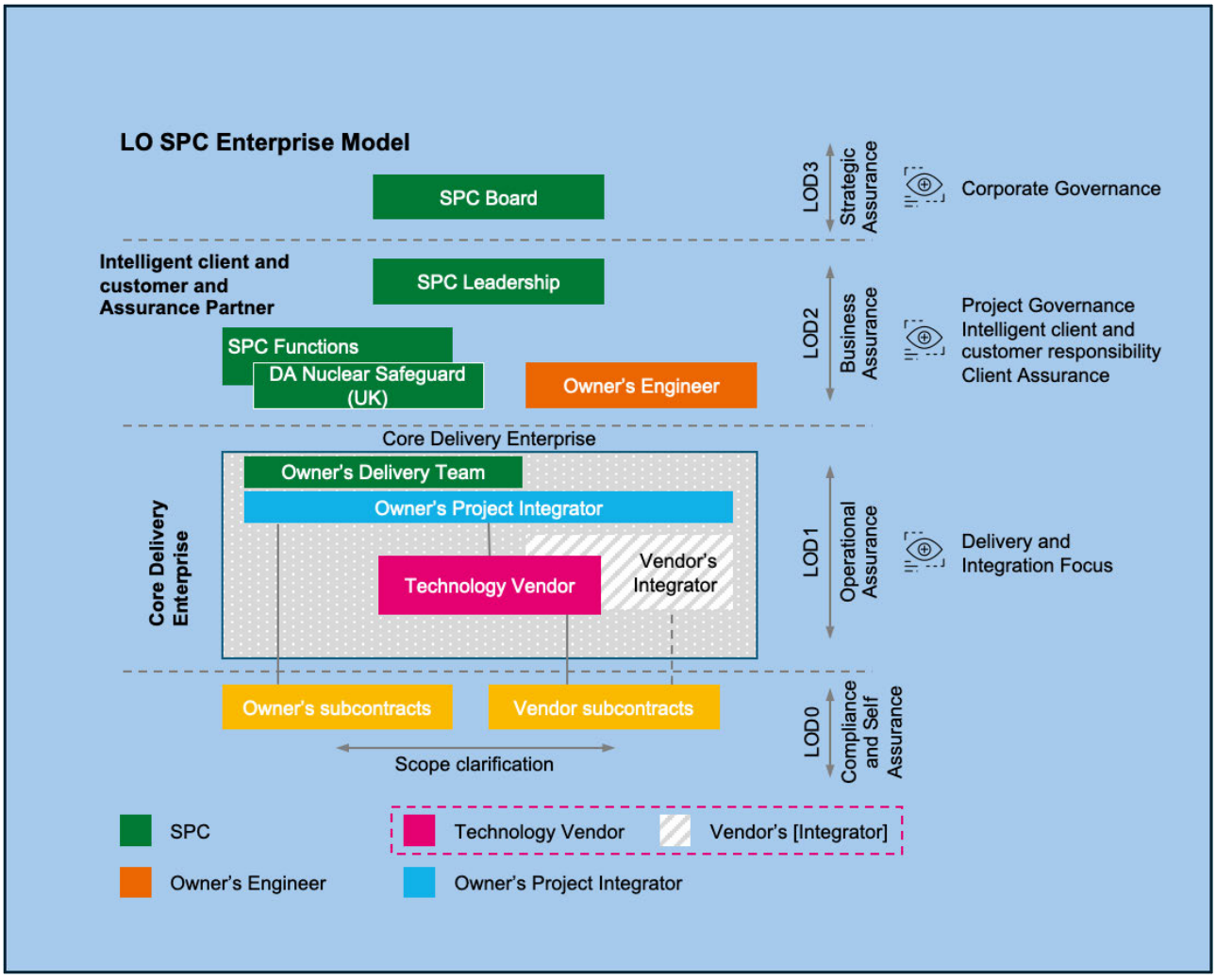


Figure 2 - LO SPC Enterprise Model

As part of the SPC operating model development, various options should be considered to ensure the scope, capability and outcomes to be procured from the Vendor are aligned and consistent with the roles, responsibilities and capability provided by the Owner's Delivery Integrator. Figure 3 conceptually illustrates the range of such models from a "turnkey EPC arrangement" to "full in-house" client delivery capability. In past GW-scale NPP (and mega) projects this has been an area of overlap resulting in the duplication of resources and inefficiency impacted by unclear and confused roles and responsibilities between various entities and components in the enterprise model. A key foundational input to establishing the delivery model, and hence the scope of the Owner's Delivery Integrator will be to understand what KGG will procure from the Vendor to deliver the power asset compared to those procurements it will undertake directly.

Ultimately the delivery model and capability procured from the Owner's Delivery Integrator will flex as the project transitions with a greater intensity during the development and early works phase. Additionally, the commercial alignment between elements of the core delivery supply chain will be critical rather than relying on traditional transactional arrangements and these are further considerations KGG should give when developing its overall Procurement and Contracting strategy for the project.

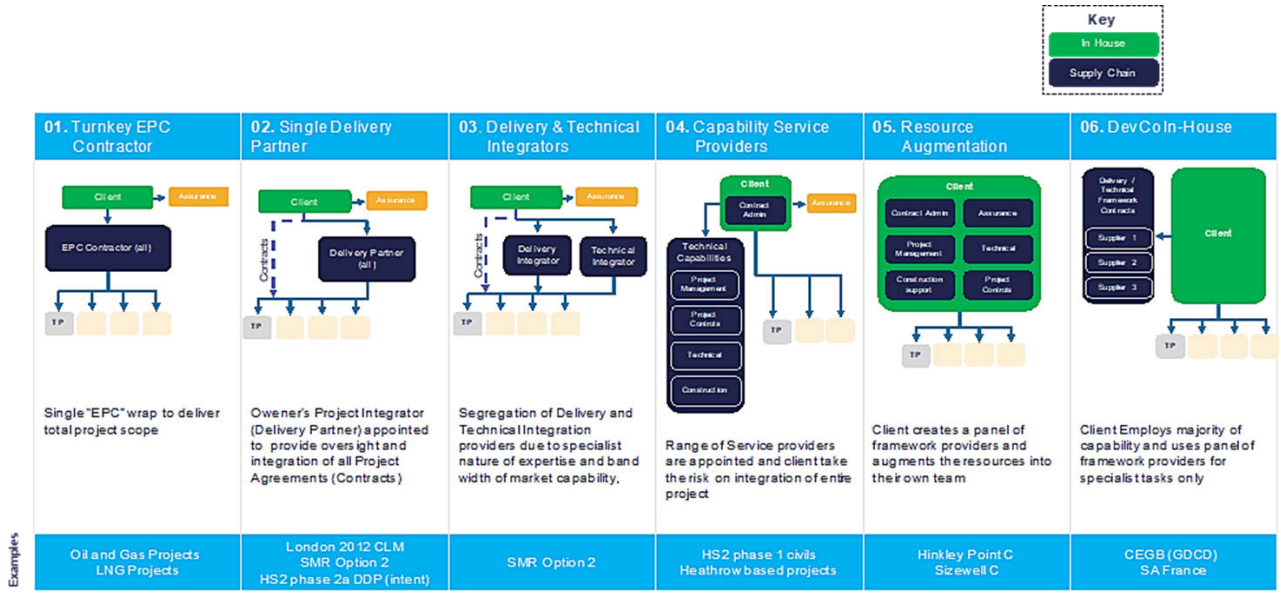


Figure 3 - Delivery model concepts

Although only briefly covered the above has tried to illustrate the importance of the relationship between the organisational enterprise approach, and the relationship between the delivery model and the core capability components that need to be procured to ensure success of the project and fully enable the selected Technology Vendor.

The range of Delivery Model options is generally influenced by "who" is best placed to manage the interface risks between the various packages of work to deliver the full scope of works for the project, ensuring such entities have the full range of organisational capabilities to manage such risks. Given the extent of scope needed for a nuclear build project, often Technology Vendors do not have "in-house" the full scale of capability to manage the full programme of works, thereby requiring the client team to have access to greater capability (i.e. the Owner's Integrator) to manage the interdependences, integration and key interfaces between the key construction WPs. A key input into developing the SPC enterprise and delivery model will be to decide what KGG will Procure from the Technology Vendors through the BIS and the degree of owner's scope to be procured directly.

This aspect of the project will be a key area of focus for any potential investor or lender to the project to gauge the level of risk associated with SPC's ability to execute the project. In this respect SPC's ability to demonstrate having access to nuclear "name plate" capability for the core elements of the project is likely to be an important feature in any due diligence process. This point reinforces the past recommendations for KGG to give due consideration to procuring and securing OE and Owner's Delivery Integrator capability on a timeframe to that of the Technology Vendor.

9.5.2 Funding Options – key observations and proposals

Funding options for the Dutch NPP program of works are presented below for consideration by KGG building on the learning and findings from the TPR of the EY and BNPP reports. The options set out below present the Amentum TPR Team's analysis of the links between the appropriate GSP and each relevant type of financing. In respect of each funding option (and also each of the Technology Vendors' delivery options), the interface between civil structural work contract arrangements and the impact on vendor on-site works will be critical and, as such, the civil structural contractor will be essential to the Vendor's success, so special attention must be given to their procurement and contract terms ensuring full alignment between the core supply chain entities and those of the

investor stakeholder community irrespective of the final adopted funding model and financing arrangements to be deployed.

FUNDING OPTION		REVENUE SUPPORT MECHANISM	PROPOSED GOVERNMENT SUPPORT PACKAGE LEVEL	PROS / CONS
A.	**The government fully funds the project without any private sector involvement.**	**Sovereign Debt:** No revenue support mechanism is required during construction. However, alternative arrangements may be necessary as the plant enters commercial operation, as the operator will require price certainty.	**Basic** • GSP would be focussed on Vendor/Supply Chain protections (payment, indemnities, termination, etc) • Full government funding for capital and operational costs.	***Pros***: • Project can proceed without funding constraints during its various phases, up to completion of the asset. Single shareholder structure. • Access to cheaper financing through Dutch Government 10-year bonds at 2.5%, compared to the higher risk premiums associated with private sector finance. • The asset remains a strategic, critical national infrastructure under sovereign ownership. • Simplifies the GSP requirements, as third-party project finance structures are not needed. • Removes the necessity for the project to achieve an investment grade rating, which might be challenging due to the project's unique risk profile, even with the selected Technology Vendor's core reference design. ***Cons***: • Potentially limits capital availability for other national projects. • Loss of private sector discipline and governance approach

FUNDING OPTION		REVENUE SUPPORT MECHANISM	PROPOSED GOVERNMENT SUPPORT PACKAGE LEVEL	PROS / CONS
				that third-party financiers will bring to the project.
B.	**The government funds the project until the FID, after which private sector investment is introduced (in full or part).**	**CfD** Or **Regulated Asset Base Model** *(will depend on investor/lender appetite)*	**Comprehensive (post FID)** • Initial government funding to reach FID limited GSP (supply chain focussed). • Post-FID, private sector investment is secured through CfD/RAB structures, providing price stability and revenue certainty would require a comprehensive GSP covering all aspects. • Equity investors in addition to extensive project debt at Project Co. • Detailed and comprehensive GSP aligned to full range of protections investor will require who will be risk adverse given the nuclear nature of the development.	***Pros***: • The government's financial commitment is limited to the development phase only. Private sector expertise is available to KGG as a shareholder to provide governance and oversight for the mega-project, although their nuclear credentials may be limited. ***Cons***: • The unique risk profile and characteristics of the Dutch NPP opportunity may not be attractive to investors due to limited in-country nuclear capability and operator utility uncertainty. This could hinder the ability to attract the necessary quantum of investment. The weighted average cost of capital (WACC) may be significantly higher compared to Dutch Government 10-year bonds, which may not be in the best long-term interest of consumers. • The challenge of securing the required quantum of investors (ticket size) given the overall funding requirements. • The time required to build the funding "book" and complete the associated due diligence

FUNDING OPTION		REVENUE SUPPORT MECHANISM	PROPOSED GOVERNMENT SUPPORT PACKAGE LEVEL	PROS / CONS
				process could disrupt the smooth transition of the project from development to construction, significantly impacting supply chain efficiency if funding is limited or constrained.
C.	**The government funds the project until commissioning, then refinances with private sector investment.**	**PPA** Or **CfD** Or **Combination of revenue streams** for the owner/operator to hedge market demand fluctuations	**Moderate-Comprehensive (post-commissioning)** • The Government funds the project until commissioning (GSP as per option A). • Upon commissioning, the project is refinanced with private sector investment through long-term PPAs and/or CfDs, ensuring stable revenue streams, with a RAB approach (similar to UK airports / utility companies) giving a guaranteed return on the RAB. • As the construction risk profile would have ceased, a moderate GSP would be required focusing on risks during the operations phase (e.g. political shutdown, nuclear indemnities, market fluctuations)	***Pros***: • As option A, above • Given the unique characteristics and risk profile of the Dutch GW nuclear program, the asset will likely become more attractive to investors upon successful commissioning and with a guaranteed revenue stream. This could result in a lower expected return, reflecting the reduced risk premium. • This approach removes the need for the project to achieve an investment grade rating, which might be challenging to secure due to the project's unique risk profile, even with the selected Technology Vendor's core reference design. • The project is likely to receive a more favourable investment grade rating at the point of commissioning and entry into operations, as the construction risk will have been mitigated. ***Cons***: • The potential level of capital (in billions of EUR) that will need to

FUNDING OPTION		REVENUE SUPPORT MECHANISM	PROPOSED GOVERNMENT SUPPORT PACKAGE LEVEL	PROS / CONS
				be raised from the market should be comparable to that attracted by typical non-nuclear infrastructure projects. • As option B above.
D.	**The government funds the majority of the project, with the vendor country ECAs financing the power block scope through a Public-Private Partnership (PPP) approach.** **On completion the asset either remains in government ownership (similar to A) or is refinanced on a public/private basis similar to B**	On completion revenue support would be similar to options A and B	**Medium/Comprehensive** • The Government funds the majority of the project, while the Technology Vendors ECAs finance the power block scope. • A GSP would be required for ECA vendor financing, covering payments on contract completion, indemnities, termination risks and similar to those under Option A but with greater scrutiny from ECA lenders. • The extent of the GSP would depend on the sources of the remaining funding (government/private), but it would be a subset of those required under Option B.	***Pros***: • Dutch Government Bonds offer a competitive source of finance compared to the premiums that third-party sources, such as pension funds and project debt providers, would attract. • Structuring vendor payment terms to align with project outputs, requiring vendors to raise working capital finance (from banks or ECAs), ensures that vendors and their financiers have a vested interest and are accountable in delivering the expected performance outcomes. • Vendors, under the scrutiny of their financiers (banks or ECAs), will focus on performance delivery in addition to meeting KGG's expectations. • Although KGG will bear the funding liability for the entire project, similar to Option A, this scheme aligns payment liabilities with the security of project deliverables. • This option could be attractive to future investors if Option C

FUNDING OPTION	REVENUE SUPPORT MECHANISM	PROPOSED GOVERNMENT SUPPORT PACKAGE LEVEL	PROS / CONS
			(refinancing at commissioning) is considered, as Technology Vendor contract payment terms are aligned with successful outcomes. • Aligns potential ECA funding directly to the vendor to fund working capital prior to contract completion payments by KGG. • Removes the requirement for the project to achieve an investment grade rating, which might be difficult to secure given the project's unique risk profile, despite adopting the selected Technology Vendor's core reference design. ***Cons:*** • Vendors may need to accept receiving the majority of contract payments aligned with outcomes, requiring them to raise working capital finance.
E. **Initial government and vendor country ECA funding, with refinancing at commissioning through private sector investment.**	Similar to option C	**Medium-High** • Initial government and vendor country ECA funding. • At commissioning, the project is refinanced with private sector investment through PPAs, ensuring long-term revenue stability and cost-sharing among shareholders.	***Pros:*** • Removes the requirement to build a 3rd party project finance book (both debt and equity) during the development and construction phase. • Leverages ECA financing into the project structure, thereby reducing the burden on the sovereign state. ***Cons:***

FUNDING OPTION	REVENUE SUPPORT MECHANISM	PROPOSED GOVERNMENT SUPPORT PACKAGE LEVEL	PROS / CONS
			• With ECA financing flowing into the NPP Project, and not the Vendor removes a dual accountability / focus on the Vendor's performance.

Please note the implications of the EU State Aid rules in assessing and finalising funding options. On 18 December 2024, the European Commission has opened an in-depth investigation to assess whether public support that Poland plans to grant for a NPP in Lubiatowo-Kopalino is in line with EU State Aid rules. Based on its preliminary assessment, the Commission has found that the aid package is necessary and has an incentive effect, as the beneficiary would not carry out the project without the public support. Nevertheless, the Commission has doubts at this stage on whether the measure is fully in line with EU State Aid rules. For this reason, it has decided to open an in-depth investigation in relation to:

- The appropriateness and proportionality of the aid package. Given there are three different aid measures (equity, guarantees, two-way CfD) that together limit the risk for the beneficiary, Commission has stated that it is important to ensure that overall no more aid than what is strictly necessary is ultimately granted. In particular, the Commission will examine further (i) whether the 60-year duration of the CfD is justified taking into account the other two measures, and (ii) whether there could have been other companies interested in leading the project which might have resulted in a smaller aid amount; and

- The impact of the aid package on competition in the electricity market and whether this is kept to the minimum. The Commission will investigate whether the design of the two-way CfD sufficiently incentivises the power plant to operate and participate efficiently in the electricity markets, within its technical capacity. This is important to minimise market distortions, facilitate the integration of renewables, and allow the electricity system to move towards decarbonisation. In particular, the Commission will require that the power plant should plan its maintenance and refuelling in an optimal way and adapt its power production to market prices. In addition, the Commission has confirmed that it cannot exclude that the aid will not be passed-on to electricity consumers through direct contracts.

While the Commission's conclusions from its investigation may not be available before the Dutch Government makes (or has to make) key decisions concerning its aid package, this investigation highlights the range of issues the Commission may scrutinise from the perspective of EU State Aid rules. As such, thorough consideration of such issues and documentation of the reasoning and decision-making process leading to the proposed aid package are advised.

9.6 Development of the BIS – Considerations

9.6.1 Limits of Vendor Information

Sections 9.3 and 9.4 of this TPR Report identify the limitations of the Technology Vendor information gathered through the MC. This information is crucial for informing the BIS and detailing the parameters of the contractual arrangements and mechanisms that a contracting authority would typically test with potential bidders before initiating a BIS competitive procurement exercise of this nature.

Based on the Amentum TPR Team's experience, it is essential for the tendering authority to clearly communicate and explain its intentions and expectations to the Technology Vendors in detail and test different scenarios with each Technology Vendor to limit the tender clarification process, avoid extensive qualifications, and minimise delays in completing the overall procurement process. This engagement helps mitigate the risk of the procurement process or the award being challenged. An example of such a challenge occurred during the tender process initiated by the Czech Government in October 2023 for a fifth unit at the Dukovany NPP, along with non-binding offers for up to three additional units – one more at Dukovany and two at the Temelin NPP in the Czech Republic.

9.6.2 Areas for further dialogue

The Amentum TPR Team, based on extensive experience of procuring, negotiating, and drafting nuclear technology vendor contracts, has identified four areas where further optioning should be undertaken, involving an additional round of dialogue with the three Technology Vendors. This further dialogue is considered of paramount importance as a basis for KGG to inform the requested Dutch Government mandate such that, on granting the mandate, the Dutch NPP can swiftly move into the next phase. The four identified areas for further dialogue are:

a) Commercial Parameters – What is the commercial basis and revenue model of the awarded contract? This is further developed by the Amentum TPR Team in Section 9.6.3 of this TPR Report.

b) Structure and implementation of the BIS process – Which structure should the BIS process follow (single phase or multi-phase)? Which approach will be taken for its implementation? Please refer to Section 9.6.4 of this TPR Report for further details.

c) Contract award – Under which parameters, at which stage and what are the requirements for the award and execution of the contract with the awarded bidder? Please refer to Section 9.6.5 of this TPR Report for further details.

d) Delivery Model – An additional feature of the dialogue should be to review and provide feedback on the interpretation of the Technology Vendors' individual delivery models against the outline anticipated structure of KGG's preferred approach (i.e., what KGG intends to purchase).

By their very nature the development of GW nuclear projects involves a complex array and merging of many aspects, planning, licensing, financing, permits & approvals, legislation, which is ultimately enabled between the Developer (SPC) and their appointed Supply Chain Partners. Typically, nuclear GW projects will eventually involve the configuration of a vast national and international specialist supply chain that is primarily integrated and managed by the Technology Vendor and / or The Owner’s Project integrator (Sec 9.5.1). Therefore, prior to embarking on the procurement of the key Supply Chain Participants (in this case the Vendor), based on experience of similar undertakings it is only prudent to test various aspects of the intended relationship that will form the basis of the competitive process and the eventual contract.

This proactive approach will help mitigate risks and align the Technology Vendors' offerings with KGG's strategic objectives and operational requirements.

9.6.3 Commercial Parameters

As mentioned above, before releasing any tender documents to the market and initiating the formal competitive process for a complex procurement of this nature, it will be essential to conduct an additional phase of dialogue with the Technology Vendors enabling KGG to develop a common understanding as to the basis (scope, terms, structure) as to how the BIS / procurement will be undertaken. This phase aims to gather insights and opinions on

several critical topics, ensuring that KGG's requirements are clearly articulated and included in the BIS. Additionally, it is crucial for KGG to ensure that these parameters meet the likely requirements of third-party investor stakeholders. The topics to be discussed in this further round of dialogue should include:

a) Approach to contract structure and basis of Pricing – Discuss the preferred contract structure, including the type of contract (e.g., full turnkey, EPC, etc.) and the allocation of risks and responsibilities between KGG or the SPC, as applicable, and the awarded Technology Vendor. Potential funders will rigorously scrutinise the contract structure and pricing basis. A key consideration when determining the structure of the contract is defining the basis of the pricing. This could be fixed, variable, target, GMP, or actual costs, to provide a clear financial framework for the project. It is crucial for KGG to present a well-thought-out and transparent financial and commercial framework that demonstrates sound risk management and cost control measures. This will enhance the project's attractiveness to investors and increase the likelihood of securing the necessary funding.

b) NPP Guaranteed Performance Levels – Define the expected performance or availability guarantees for the project, including metrics such as thermal output (MWth), electrical output (MWe), steam / moisture content and percentage availability.

c) Delivery Performance Guarantees – Establish delivery performance guarantees, including sectional completion damages, to ensure timely achievement of project milestones and overall project completion.

d) Liability structure, allocation and caps – Discuss liability structure, including caps on and allocation of liability, taking into account any feedback received from potential funders and other key stakeholders. KGG must determine their risk tolerance profile for this project ahead of this further discussion.

e) Compensation and Incentives Mechanisms – Discuss and establish a comprehensive approach to compensation mechanisms that effectively incentivises cost efficiency, timely delivery and high performance by the awarded Technology Vendor, ensuring the successful completion of the Dutch NPP. KGG are advised to develop incentive structures that reward the Technology Vendor for meeting or exceeding project milestones, delivering high-quality work, and adhering to budget constraints without compromising the quality or lowering safety standards of the project. This may include performance bonuses, milestone payments, and penalties for delays or subpar performance. Such incentive arrangements should ensure that the interest of key stakeholders (Dutch Government, consumers) and potential third-party investors (inc., banks, ECAs) are reflected into the Vendor Commercial arrangements enabling a strong alignment of interest to be demonstrated.

f) Costs Management – Taking into consideration the preferred contract structure (e.g., fixed-price, cost-plus) and compensation mechanisms, it is crucial for KGG to define a strategic approach to managing overheads that mitigates and monitors cost overruns. This approach should ensure a balance between budgetary constraints and the flexibility required for complex projects. KGG must clearly outline the scenarios in which the awarded Technology Vendor is entitled to cost recovery or contract price adjustments. These scenarios may include change orders, changes in project scope, unforeseen circumstances, or regulatory changes. Given the lessons learned from other projects, cost overruns are a particular concern for potential NPP investors and funders. Therefore, it is important to develop a robust budget management process, which should include strict budgetary constraints, clear guidelines for allowable overhead expenses, and a detailed procedure for approving and managing any deviations from the budget for any reason including additional scope, potential re-work or de-scoping.

g) Payment terms and mechanisms – Payment terms and mechanisms should be discussed in the context of the preferred approach for compensation and incentives mechanisms, as well as the costs management plan. The Amentum TPR Team advises KGG to aim to find a balance between the following key factors:

- Technology Vendor’s Financial Requirements – payment terms must align with the financial capability of the Technology Vendor (e.g., vendor's cash flow).
- Investability and Bankability – the payment mechanisms should take into account the project's investability and bankability considerations.

- Alignment with Compensation and Incentives Mechanisms and Cost Management processes – it is essential to align the payment terms with the established compensation and incentives mechanisms to support the overall goals of incentivising performance, cost efficiency, and timely delivery. Payment milestones and (if applicable) bonuses should be linked to specific project deliverables and performance metrics to motivate the Technology Vendor to meet or exceed expectations.

h) Vendor scope financing – Explore options for financing the Technology Vendor's scope, including potential financing arrangements and their implications for project cash flow and risk allocation. It is important to consider the implications under EU State Aid regulations while exploring these structures to ensure compliance and avoid any legal complications or potential delays.

i) Transparency – Discuss the critical importance of transparency in all aspects of the project, including pricing (hourly rates, overheads, fixed and non-fixed price components), cost reporting, progress tracking, health and safety concerns, and dispute resolutions. Potential funders and other key stakeholders will require clear visibility into the project's status and financial health in the form of financial and other information covenants in the loan documentation. The proposed engagement will provide KGG with an opportunity to set clear expectations regarding transparency from the outset. This includes establishing comprehensive reporting requirements, regular progress updates, and open communication channels for addressing any issues that arise. In addition, it will help KGG to understand and compare the Technology Vendors' stance on transparency, which can sometimes be met with resistance due to the sensitive nature of nuclear technology.

j) Subcontracting – The Amentum TPR Team advises KGG to discuss subcontracting strategies with each Technology Vendor to protect the project against value leakage, including the use of sole source versus open market procurement. Contracts with the Technology Vendors should include covenants and restrictions in respect of the delegation of scope of work to subcontractors. We expect Funders and other key stakeholders to require market standard subcontracting covenants to be in place.

k) Approach To Nomination and Acceptance of Nominated Strategic Vendor Suppliers. Similarly, it is advised that KGG establish criteria and processes for the nomination and acceptance of strategic vendor suppliers to ensure quality and reliability. We suggest that KGG take into account both, technical and financial considerations for the development of the criteria and processes.

l) IP Rights. It is advised that KGG thoroughly discuss the approach to managing IP rights with the Technology Vendors, considering the implications of export control regulations for nuclear items and other potential restrictions on transferring IP among different parties, especially if it entails cross-border transfer of information. The sensitive nature of nuclear technology means that IP management is a critical aspect of the project, requiring careful planning and clear agreements considering, at the minimum, the following:

- Export Control and Regulatory Compliance: Ensure that all IP-related activities comply with relevant export control regulations and other legal requirements. This includes obtaining necessary licenses and approvals for the transfer of technology and ensuring that all parties involved are aware of and adhere to these regulations. Non-compliance can result in significant legal and financial penalties, as well as project delays.

- IP Transfer and Access: Clearly define the conditions under which IP can be transferred or accessed by different contractors. This is particularly important in scenarios where the original contractor must be replaced before the project's completion. In such cases, the new contractor will need access to the existing IP to continue the project. Establishing clear protocols and agreements for IP transfer can help mitigate the challenges associated with this process.

- Risk Management: Address the risk that Technology Vendors may be reluctant to share their IP, given that their value largely lies in their proprietary technology, patents, and know-how. To manage this risk, we advise negotiating terms that balance the Technology Vendors' need to protect their IP with the project's requirements for access and continuity. This may include: (A) licensing agreements, (B) escrow arrangements, in addition to the (C) confidentiality and NDAs.

m) Contract termination. The Amentum TPR Team advises KGG to develop a comprehensive approach to contract termination, guided by financial and legal advisers, and discuss it with Technology Vendors to set the basis for the BIS and future contract negotiations. The approach to termination must be consistent with the security packages delivered by the awarded Technology Vendor and the SPC under the relevant contract. Key items to address include:

- Conditions for Termination: Define specific conditions such as default by either party, force majeure events, or mutual agreement.
- Relief Measures: Establish measures including compensation for work completed, reimbursement of costs and expenses, return of materials, contractor replacement procedures (considering IP rights implications), and termination payments.
- Dispute Resolution: Implement clear processes for resolving technical and non-technical disputes, including independent technical expert, mediation, arbitration, and legal proceedings.

n) Step-in rights. The Amentum TPR Team advises KGG to develop a comprehensive approach to step-in rights to allow KGG, or other key stakeholders (such as governmental entities) to take over the project in case of contractor default or other critical issues (e.g., emergencies, natural disasters, state of emergency). This approach should consider the interests of potential funders and the implications of IP rights transfer. Key items for discussion with the Technology Vendors include:

- Conditions for Step-in Rights: Define specific conditions such as vendor default, financial distress, regulatory non-compliance, and force majeure events. Note, it is in our experience highly unlikely that funders will seek to step-in to the project given that (i) they will not have the intelligent nuclear and operational capabilities to operate the plant or provide the requisite levels of oversight and (ii) they could expose themselves to nuclear liability risk if they become (or were deemed to have become) the licensed operator, given that liability for nuclear damage is channelled to the licenced operator on a strict liability basis in almost all cases.
- IP Rights Transfer: Ensure that a new contractor can access necessary IP through licensing agreements, escrow arrangements, and confidentiality agreements to maintain project continuity if Funders or governmental entities enforce their step-in rights and decide to replace the contractor.
- Conflicts of interest and restrictions: We recommend KGG to assess and identify potential conflicts of interest from the Technology Vendors and establish restrictions to maintain integrity and impartiality throughout the project. This includes considering potential conflicts and restrictions (such as international sanctions) not only on the Technology Vendor and their place of business but also on their entire supply chain.

9.6.4 Structure and Implementation of the BIS Process

Consideration will need to be given to how the BIS is constructed to balance the need to drive optimum competition to protect the commercial interests of the Dutch Government and the consumer/taxpayer while recognising the degree of unknowns when embarking on a nuclear development project. Furthermore, the coverage of the BIS approach within the MC report was limited and did not address the unique characteristics of the Dutch program. By addressing these areas and incorporating the insights from further dialogue with Technology Vendors, the Dutch Government can develop a more robust and well-informed BIS that supports the successful implementation of its nuclear ambitions.

Table 2 below contains an outline preliminary options analysis on how to approach the BIS and tender procurement process with the Technology Vendors. Two options are considered (i) Option 1 – a single stage bid against a comprehensive set of Owner - Operator requirements to deliver a NPP; (ii) Option 2 – a staged bid process with the possibility of down selection to identify the optimum Technology Vendor (and delivery model) commensurate with the project's requirements. While the TFS process has provided great clarity about the ability to license the Vendor's technology with the Netherlands, there remains a significant level of unknowns that will take a considerable time to mature to enable Option 1 to proceed. It is likely a further 12 to 18 months of project development and investment would be needed to firm up the requirements to support a BIS process consistent

with the approach outlined in Option 1. Therefore, as we have outlined in the Table 8 below, Option 2 (the staged / phased bid) is recommended as the basis to conduct the formal procurement and selection of the Technology Vendor.

Both the suggested BIS process and rationale for the selection of Option 2 should be discussed with the Vendors during the further round of dialogue that has been recommended. This ensures all Vendors can comment, influence, and align with the suggested route, safeguarding against future challenges from unsuccessful participants.

TABLE 3 – OPTIONS ANALYSIS FOR TENDER AND PROCUREMENT PROCESS

PROCUREMENT OPTIONS		PROS	CONS	TPR's COMMENTS
1	**Single-stage BIS procurement process**	• Although a single process may delay the BIS launch (by approximately two years+ due to site selection), it will offer greater clarity on project assumptions and the requirements to enable a more comprehensive tender return for delivering an operational plant. • Provides KGG / Dutch Government more time to consider all aspects of the Dutch GW nuclear power program before proceeding to select and sign a "Technology Vendor".	• Significant levels of Owner - Operator input data will be required to quantify scope, requirements, site conditions, regulatory constraints that will take time (+18mths) to assemble prior to commencement of procurement. • High risk of post contract Vendor claims / variations as they seek to receive compensation for tender qualifications and caveats. • The procurement process and interactions with the Technology Vendors will be paused as KGG / SPC develop the procurement documentation. This gap in is likely to result in the Vendor's interest being directed to other GW opportunities globally. • KGG runs the risk of not securing all the necessary capability to launch and deliver the Dutch NPP Project arising from delays in the procurement process. • Technology Vendors' NI drives such a small % of the overall cost of the build program and waiting for a full comprehensive bid specification, unless	• The primary considerations in selecting the optimum procurement approach are to establish "what is KGG buying?" and "what is the primary capability" of the Vendors. • The core capability of the Vendors is the NI / primary circuit, with few having varying degrees of success to step outside their organisational zone to deliver a "whole plant solution". • A single stage procurement process would normally be adopted for turnkey solutions to deliver an asset that has been previously constructed several times (NOAK) from a Party who has all the proven capability to deliver the asset, and a degree of commonality is known (i.e. design, regulatory permits, planning, sub contracted supply chain) to enable bidders to adequately gauge the risk profile without excessive caveats and qualifications.

TABLE 3 – OPTIONS ANALYSIS FOR TENDER AND PROCUREMENT PROCESS				
PROCUREMENT OPTIONS		**PROS**	**CONS**	**TPR's COMMENTS**
			KGG intends to procure an EPC entity to deliver a power station, may not warrant the overall time impact of a single stage approach. • A single Procurement approach is potentially requesting the "Nuclear Technology Vendor" to deliver a whole plant solution outside its organisational capability and core scope of works. • Gives KGG / SPC minimum flexibility to design a flexible procurement process focussing on the primary aspects of the "Technology Vendors" core capability. • Contract will require extensive subcontract pricing by the Vendors which will be difficult to achieve given overall project maturity.	
2	**Multi-stage BIS procurement process**	• Presents opportunity for KGG to commence the Vendor selection process whilst some of the wider requirements and site conditions are quantified, focussing on the power block cost and performance, whilst gradually locking in key commercial terms that are divorced from site/permit/regulatory requirements but critical to securing 3rd party finance	• Will require strong commercial and legal expertise to support KGG in developing and executing a novel progressive market approach to a nuclear NPP BIS. • The procurement process, and rational for adoption will need to be explained to the Vendors in full to ensure they fully embrace and accept the process. • KGG will require multi-phase governance approvals to endorse the outcome of the staged process such that risks	• A stage process enables the procurement process to proceed with the Vendors, building on the TFS and addressing the core value offering of the Vendors whilst wider project requirements and constraints mature. • The approach balances engagement and timing with the Vendors on a progressive basis based on knowns and

TABLE 3 – OPTIONS ANALYSIS FOR TENDER AND PROCUREMENT PROCESS				
PROCUREMENT OPTIONS		**PROS**	**CONS**	**TPR's COMMENTS**
		confidence (debt & equity). • Enables KGG to develop a stage process that maintains and leverages optimum competition over the different stages as Vendors face a risk of deselection on a stage basis. • Enables KGG to construct a BIS process commensurate with maturing project maturity whilst continually engaging the Vendors on a progressive basis.	under competition law are managed and unsolicited representations from Vendors host governments are appropriately managed, particularly if down-selection occurs prior to the final stage.	expectations critical to KGG.

9.6.5 Contract Enactment

KGG will need to give consideration to how the contract is enacted with the successful Technology Vendor to ensure that value can be preserved, optionality and/or flexibility is maintained, and a degree of commercial and delivery tension is maintained as the project progresses to a successful FID and FC overall. There was a tendency and inference within the EY MC report to consider a single stage EPC type of contractual arrangement without considering the risks, options and steps on the journey to FID/FC and the corresponding impact on the KGG/Vendor contractual arrangements. Table 9 below presents two outline options for KGG's consideration as to how the contract relationship with the successful Vendor could be enacted:

a) Option One – The contract is enacted through a single agreement on conclusion of the procurement process.

b) Option Two – The contract is enacted through a series of independent but connected contracts with core commercial principles secured via a memorandum of understanding or binding heads of terms document on completion of the procurement process. Under Option Two, the rights, obligations and liability regimes in the early phase contracts would be wrapped into each subsequent contract to ensure a continuous and contractually robust project delivery.

After consideration of the project's risk profile and overall maturity development status the Amentum TPR Team recommend that Option 2 is developed further and feedback from the Vendors is taken on board as part of the recommended extended Vendor dialogue process that has been recommended.

Overall, for the reasons that have been outlined in Section 9.6.1 above the Amentum TPR Team advise that it would be prudent to undertake a further round of Technology Vendor dialogue not only to inform the future robustness of the BIS and overall procurement process but to assist KGG in having greater clarity in outlining the specific construct of the mandate that will be requested from the Dutch Government, whilst ensuring if such a mandate is endorsed the next phase of the project can proceed with haste.

In taking forward the above recommendations the Amentum TPR Team advise KGG to give due consideration to the timing and securing the appropriate resource expertise to ensure the outcomes of the further round of vendor dialogue is completed to inform and support the Parliamentary mandate.

a) Timing: Content should be developed over a 4-6 week period followed by a short period of review / approval in anticipation of holding a series of targeted Vendor meetings over a 4 week period. As a guide if resourced appropriately with the right expertise (see below) the process can be concluded over a 3 month period.

b) Capability: Given the specialist nature of the proposed undertaking it is anticipated only a small specialist experienced team would be required to support and guide the KGG team. However, it is important that such resource is highly experienced with a strong track record in establishing commercial nuclear supply arrangements covering technical specification, procurement, negotiation, administering and drafting vendor commercial contract documents.

TABLE 4 – OPTIONS ANALYSIS FOR CONTRACT ENACTMENT

CONTRACT ENACTMENT OPTIONS		PROS	CONS	TPR COMMENTS
1	**Single contract (whole life contract)**	• One set of contract documents to draft, albeit the contract will require the introduction of a complex array of NTPs (Notice to Proceed) to control KGGs risk profile.	• Potential loss of KGG commercial leverage, specifically during the development stages to FC as the overall project requirements mature, and the Vendor leverages its commercial position. • A complex series of termination clauses will be required if the project, for whatever reason fails to achieve final close post signature of the main contract. • Given the level of unknowns and evolving requirements the contract will be prolonged in its negotiation as each party attempts to optimise their risk profile, potentially impacting smooth progression of the project overall. • A complex whole life project contract will be required with a significant value (EUR Billion) prior to FC and	• The contract will be complex and protracted to negotiate given the quantum of unknowns. • The approach is more relevant to delivery of a NOAK asset that has been significantly de-risked on all aspects (regulatory approvals, permits, design, subcontract supply chain, interface and integration, commissioning and start-up, etc)

TABLE 4 – OPTIONS ANALYSIS FOR CONTRACT ENACTMENT				
CONTRACT ENACTMENT OPTIONS		**PROS**	**CONS**	**TPR COMMENTS**
			potentially, the Dutch government's final investment decision.	
2	**Separate/multiple contracts (FEED A, FEED B, EPC) assigned to key stages / phase, wrapped by an overarching MoU aligning key commercial principles**	• Enables KGG /SPC to make a contractual commitment for known scope of work and deliverables commensurate with the phase of the project, including the practical ability for KGG to secure committed funding for the next phase of the project. • Enables optimum commercial leverage to remain as progression to the next stage (and contract) will be linked to successful outcomes and completion of the stage in progress. • If constructed appropriately series of contracts will limit KGGs liability on termination in the event the project was discontinued for any reason and the next contractual phase did not proceed. • Enables contractual commitments to be made for known scope and a known risk profile, particularly in the pre-construction development phase.	• KGG will require experienced capability in the field of nuclear development (commercial, legal, delivery) to ensure the process and contracts are constructed and administered appropriately, particularly during the development pre-construction phase. • Specifically, the commercial/legal expertise will need to have undertaken similar contract negotiations to ensure the successful vendor does not game the staged approach to their commercial advantage to the overall detriment of the project. • A rigorous MoU locking key commercial principles will be required as a basis to conduct progressive negotiations. MoU's are not legally binding so strong moral business alignment will be required. The MoU would be strengthened by an intergovernmental agreement reinforcing full Vendor commitment not just with KGG but their host governmental body.	• Methodology presents the optimum risk adverse approach to progressively engage the successful Vendor as the project transitions through various stage gates and levels of maturity.

9.6.6 Delivery Model (Key Capability)

As part of the TPR process it has been highlighted on numerous occasions the timing of other critical procurements that are key to the Dutch NPP, specifically the OE and the role of the Project Integrator (Delivery Partner) who will take an active role in providing oversight and integration of the Technology Vendor's contracted scope of works and that of the Owner's scope which will in itself involve a complex array of contractual supply chain agreements. Given the importance of timing and ensuring such resource is secured in a manner that complies with procurement legislation and is flexible enough to accommodate the longevity of the project, a similar market engagement process is developed with potential suitors in these specific fields.

However, KGG need to be mindful of the increasing global demand for such scarce resources, conflict of interest considerations together with the procurement challenge risks that could occur from unsuccessful parties. Conflict of Interest considerations are covered towards the end of this TPR Report as this will need to be factored into the procurements going forward, particularly certain actors could be part of the Technology Vendor's wider strategic supply chain and segregation of providers will need to be maintained between all key facets of the Delivery Model (OE, Owner's Project Integrator, and Vendor's design and project management supply chains.

Based on past experience, judging the appetite of various providers for these packages of work and degree of alignment (commercially) with the Technology Vendors is another key aspect to help calibrate to support wider aspects of the mandate that will be sought.

Past learning from other nuclear developments is that consideration is not given at the onset to onboarding appropriate OE and integrator capability consistent with securing the main Technology Vendor. This is a key risk that should be mitigated during the early phases of a nuclear development project and this important aspect was not noted or considered in the EY scope of works, particularly in presenting the structures of the organisational and business models.

9.6.7 Procurement Law Considerations

In developing the BIS, the following should be taken into account:

Pre-BIS Consultation

There are no specific EU procurement rules regarding the content or form of a consultation prior to the issue of the BIS (whether as a formal tender in line with the relevant directives or as an informal process pursuant to an exemption). Therefore, KGG has the discretion to design and conduct the pre-BIS consultation according to its own commercial and strategic needs. However, as a public body, KGG is bound by the basic principles of good governance under Dutch law, which require fairness and transparency in its actions. To ensure these principles are upheld, it would be advisable to consider the following:

- ***Referring to the Gids Proportionaliteit (GP) for guidance.*** The GP outlines how the principles of good governance apply to tender procedures. Although the GP does not apply to discussions outside of an actual tender, such as a pre-tender consultation, it can still provide useful guidance for organising a tender process in a way that minimises the risk of legal challenge or complications.

- ***Providing a comprehensive overview of all interested parties to pre-empt any objections at a later stage from parties that are not selected to participate in a tender process.*** Please note that Article 5k Regulation (EU) 833/2014 prohibits public bodies from awarding contracts to any Russian company or tenderers with Russian subcontractors due to EU sanctions. As we understand it, only contracting authorities - and not Russian tenderers - may in accordance with Article 2k (2) (a) Regulation (EU) 833/2014 request for such a ban to be lifted in certain cases, such as when the contract pertains to civil nuclear energy projects. This provides a lawful basis to exclude Russian companies from the tender procedure. It is advised that the reliance on any such exclusion, and the basis on which it is made is made clear ahead of a tender process. Please note that this regime does not appear to apply in relation to China and there may be no EU or Dutch law sanctions that can be used as a basis to exclude Chinese companies.

- ***Sharing a timeline with the market that outlines the path to an award of contract.*** We envision that such timeline would begin with the continuation of the current consultation, including an indicative schedule for

completing this phase and transitioning to a tender based on a BIS. This timeline should clarify that (i) the current consultation and its continuation are not yet a competition, and (ii) how this consultation phase fits into the overall procurement timeline. It is also advised that KGG clearly states that the timeline may be adjusted and specifies the reasons for any adjustments. Before initiating a tender (whether formal or informal), it is crucial to have a clear understanding of not only what KGG wants but also what is technically feasible and commercially acceptable to the market. Therefore, a dialogue with the market should continue until there is sufficient clarity on all these aspects.

- ***Indicating clearly the transition from the current non-competitive consultation to the competitive tender stage***.

Phasing and Selection – No Formal Tender

If KGG is not bound by a formal tender obligation due to an exemption, it has the option to select from the three applicant Technology Vendors with whom consultations has been conducted so far. However, please note that there is a possibility of objections and challenges to decisions that may exclude certain parties from competition. To mitigate the risk of such challenges/objections, it is advised that KGG considers the following:

- Disclosing the following information: (i) decisions regarding the form and content of the competition, (ii) the parties which are allowed to compete, and (iii) the timeframe within which legal actions must be taken in relation to such decisions. After this timeframe, it will be more difficult, though not impossible, for excluded parties to successfully challenge the decisions made.

- Even if formal public procurement law does not apply, following typical formal tender procedures can be beneficial, as both the market and KGG are familiar with these procedures, which may help streamline the process. Given the matter at hand, it may be advisable to select a tender form which allows for discussions with the market, such as, for example, a competitive dialogue or a competitive procedure with negotiation.

- As noted in relation to pre-BIS consultation above, KGG as a public body must follow the basic principles of good governance. To minimise the risk of legal challenges, we suggest referring to the GP for guidance in organising a procurement process.

The public procurement laws leave open possibilities for KGG to procure without a formal tender, for example, where there are concerns around national security. Although there are no relevant precedents in the Netherlands for applying this particular exemption in the context of a nuclear project, we are aware that the security exemption has recently been invoked on other recent nuclear new build projects in Europe, such as the Lubiatowo-Kopalino project in Poland. Additionally, KGG can exclude applicants from states that are not parties to the World Trade Organisation Agreement on Government Procurement, as amended on 30 March 2012.

We note from public sources that the recent award to KHNP in Czechia was challenged.

Furthermore, if KGG is not bound by a formal tender obligation due to an exemption, the tender procedure may, if desired, be conducted in phases. We assume that all parties admitted to the tender are financially and technically equipped to be eligible for the award, although KGG will need to consider the claims made by WEC in relation to KHNP's IP rights. Therefore, the selection criteria should relate to the subject of the tender and focus on quality, financial aspects and contractual conditions. The selection criteria must also be directly relevant to the award criteria, which will determine the eventual winner.

Phasing and Selection – Formal Tender

If it is determined that no exemption applies and a formal tender in line with the EU public procurement rules must be followed, very specific publication rules, timelines, and formal procedures will need to be adhered to. The contracting authority will have less flexibility in prescribing its selection criteria. Additionally, there will be an impact on the content of the contract entered into at the end of the tender process, which must be fair and balanced. For example, EU public procurement rules can affect the ability to impose fines, set deadlines, or assess risks in a certain way. The GP mentioned above provides more detailed rules.

Additionally, the 2022/2560/EU (Foreign Subsidies Regulation) applies to tenders conducted in line with EU public procurement rules, but not if a security exemption in the meaning of Article 346 TFEU applies and an

informal tender is carried out. Depending on the value of the contract, KGG may be required to inform the European Commission in advance about foreign subsidies (e.g., ECA financing) awarded by non-EU countries, such as South Korea, the US, or China, to any companies participating in the tender. The European Commission will then assess whether these subsidies distort the internal market and, if so, demand that those distortions be remedied. If not remedied, the award of the contract may ultimately be prohibited. Furthermore, the European Commission has the authority to conduct *ex officio* investigations into foreign subsidies awarded by third countries that distort competition in the internal market. While the Foreign Subsidies Regulation does not necessarily impact KGG's decision-making, it must be considered by companies from the US, South Korea, or any other third country when they intend to pursue a contract awarded by KGG. For clarity, the Foreign Subsidies Regulation cannot be used to categorically bar companies from third countries from pursuing the award of a Dutch contract.

9.6.8 G2G agreement

We note that KGG has previously indicated to the Dutch Government that the Technology Vendor will be selected pursuant to a competitive tender process and in our view this strategy is the optimum means by which KGG can obtain the best commercial terms for the Dutch NPP. Notwithstanding the foregoing, it is becoming increasingly common for bilateral or government to government agreements (G2G agreements) to be entered into by governments of each of the global technology vendors and owner respectively to establish high level commitments for cooperation and setting a viable framework for the development of nuclear power projects. These G2G agreements have traditionally been entered into with state owned Technology Vendors but more recently have also been entered into by states with privately owned nuclear vendors. In each case, the G2G agreements are entered into to form a strategic relationship between the respective nuclear industries of the jurisdiction of the Technology Vendor and the host country. G2G agreements are customarily legally binding and will contain dispute resolution provisions even though in practice these often require disputes to be settled through diplomatic channels.

G2G agreements can be a useful tool for developing long term strategic partnerships in lieu of a procurement process. This is perhaps most beneficial where the host government is an emerging nuclear state (i.e. it is new to nuclear) and where active co-operation between two states can assist in not just the development of a specific nuclear project, but the wider development of a fully functioning nuclear industry within that emerging nuclear state. For example, the G2G agreement would likely contain provisions for the technology vendor state to offer support for the development of a fully functioning nuclear regulator or long-term supply chain development and/or other localisation. Similarly, there may be shared benefit if both governments reaffirm their commitment under the primary international nuclear treaties and conventions covering nuclear non-proliferation and safeguards and nuclear safety.

Such G2G agreements are also established to formalise shared strategic objectives relating to pertinent issues such as carbon reduction and energy security objectives. They may also contain certain commercial terms although these are usually limited to base level responsibility for obtaining licenses, permits and export controls and potentially a description of the key documentation to be entered into. G2G agreements are also essential to progress alignment on and sharing information related to security. Additionally, one of the benefits of a G2G agreement is that the technology vendor state will customarily agree to provide funding in support of the nuclear project in question. In each case these commercial items would be subject to policies, procedures, requirements and independent decision making of each relevant institution including their legal, technical, environmental, social and safety due diligence and further negotiation and entry into long form documentation.

G2G agreements can therefore be an important strategic tool to help implement national energy policy and other national or European wide initiative or recommendations which are not legally binding, such as the Draghi Report. However, G2G agreements will not of themselves serve to secure a good commercial-level deal from the perspective of the host government. To ensure the most favourable conditions for the host government to ultimately negotiate an arms-length commercial deal, it will likely be necessary to maintain a level of commercial tension with at least two technology vendors in a well organised procurement process which is developed specifically to take account of the relevant new nuclear project.

By way of example, Poland entered into an G2G agreement with the US which came into force on 24 February 2021. This G2G agreement recognised the intention to construct six (6) nuclear reactors in Poland over a maximum of three (3) unspecified nuclear sites. This agreement reflected the high-level strategic objectives and

specific areas for cooperation including the selection of a US nuclear reactor design and to engage U.S. entities as the main nuclear reactor technology vendor and main EPC contractor. Each government agreed that US technical, regulatory, safety and security expertise offered under the G2G would be most effective if the nuclear reactor technology vendor and main EPC contractor were US entities already operating under US regulatory regimes. Further, the Polish government was expressly required to "*endeavour to obtain clearance from the European Commission and competent Polish authorities, as appropriate, that the financing of the Program and the selection of the main nuclear reactor technology vendor and the main EPC contractor do not need to undergo an open market procedure*". This requirement to sole source a US technology vendor and civils contractor effectively pointed to WEC and we understand that the relevant Polish government relied upon a specific exemption to circumvent the relevant EU procurement law which would otherwise have required the Government of Poland to run a tender process. By relying on this specific exception, the Polish government was able to sole source WEC.

While this sole source route has secured a viable technology vendor for the new nuclear programme in Poland, it has since become clear that the absence of a competitive process has resulted in a protracted and stagnated negotiation between technology vendor and owner entity where in practice the owner has very little commercial leverage to negotiate a balanced commercial deal. It should be noted however that in this specific case, G2G agreement was one part of a wider strategic discussion between the US and Poland which also centred upon the supply of military defence supplies and military troops to mitigate the effects of Russia's invasion of Ukraine.

In our view it is not necessary for the Dutch Government to enter into a formal G2G agreement with the Technology Vendors for the following reasons:

- Entry into G2G agreements is unlikely to secure a better commercial level deal for the Dutch Government;
- The Netherlands already has a developed nuclear sector with existing nuclear facilities and an experienced nuclear regulator in ANVS;
- G2G agreements necessarily entail government level involvement across every aspect of a new nuclear project and, as such, can result in increased bureaucracy in the development of a nuclear programme over the long term; and
- Given the above concerns relating to increased bureaucracy, it is likely that the project schedule for the Dutch NPP would be needlessly delayed which in turn would likely result in increased costs for the Dutch Government given the state of the nuclear market as it stands today.

There is no requirement in the international nuclear legislation for the Dutch Government to enter into a G2G agreement. Of note, Milestone 2 of IAEA document "Milestones in the Development of a National Infrastructure for Nuclear Power" describes that "*other approaches are also being used, involving, for example, strategic partners, sole suppliers and direct negotiations through intergovernmental agreements*" in addition to competitive bid processes. In recognition that G2Gs may be used to enter into direct negotiation of commercial contracts for new nuclear power projects, Milestone 2 has been amended from '*Ready to invite bids for the first nuclear power plant*' to '*Ready to invite bids/negotiate a contract for the first nuclear power project*'. Equally, there is no requirement under Dutch legislation to explicitly excluded G2G as an option for tendering and provisions pertaining to the Foreign Subsidies Regulation are disassociated with any G2G process.

9.7 Conclusions of the MC Review

9.7.1 Concluding remarks

Based on our review, the Amentum TPR Team make the following conclusions:

- Both the EY Report and BNPP Report have been produced to a high standard and provide valuable information to assist the Dutch Government in developing policy decisions for the Dutch NPP.
- However, while both reports provide valuable insights, they tend to adopt a broad market perspective based largely on current trends and do not identify specific differences of the Dutch nuclear development proposals.

Further emphasis on the unique aspects of the Dutch programme could enhance their relevance. This gap has been addressed within this TPR Report in Section 9.6.

- The EY Report would have benefitted from identifying the unique characteristics of the Dutch nuclear build program and how these differ from other GW nuclear projects that have progressed beyond the development phase into construction. This would have been informative and helpful to KGG in understanding the risks associated with the funding and finance arrangements and what the market is likely to find acceptable. The absence of this analysis by both EY and BNPP is considered by the Amentum TPR Team as a key gap, as it would have helped KGG articulate to key stakeholders why some components of the funding, financing, and GSP packages for the Dutch program will need to be different.

- The EY and BNPP Reports could have placed greater emphasis on addressing the perceived market risks and obstacles associated with developing a third-party financing strategy within the Netherlands.

- The Vendor consultation process carried out by EY was well-designed and executed. It facilitated a better understanding of each party's business experience with GW nuclear developments and provided insights into the Dutch Government's nuclear ambitions and regulatory environment. However, the output from the MC will have limited impact on shaping the BIS or determining the likely acceptability of key commercial parameters that will form the basis of the proposed competitively tendered contract.

- The organisational models presented by EY in their will require further refinement and development before the mandate to proceed to the next phase is requested. This will require the Dutch Government to determine what it will "buy from the Vendors", how the remaining work will be managed, the approach to overall project integration (owner and vendor scope), and how the SPC will be formed and its relationship with KGG, as the sponsoring authority. In summary, the EY approach in the EY Report was too simplistic and generic without considering the particular application in the Netherlands and how nuclear projects are developed, constructed and operated.

- The EY Report outlined the GSP structure and its crucial role in enabling nuclear development projects. The Amentum TPR Team supports the importance of the GSP and agrees with EY's categorisation of the GSP into five elements. However, the EY Report tends to draw on the UK's experience as a reference. Further analysis on how each GSP feature could be tailored to specific Dutch stakeholders would have been beneficial, and will need to be considered as the GSP is further developed by KGG.

- The BNPP Report contains valuable information and insights regarding obstacles to nuclear financing, along with the pros and cons of various instruments. Distilling some of this information would aid the future development of the project, particularly in relation to the structural governance and assurance arrangements for the SPC and the oversight mechanisms to be implemented by KGG.

- Building on the findings of both the EY and BNPP Reports (and the MC process carried out) some of the more macro-level inhibitors to nuclear GSPs, such as State Aid together with the challenges of deploying instruments like a CfD or RAB model within the Dutch context will need to be considered in great detail.

- Overall, both reports serve as invaluable reference materials on the financing and funding structures for nuclear power development projects. However, during the next development stage more specific tailoring of advice and considerations will need to accommodate the unique characteristics of the Dutch Nuclear programme compared to similar projects that have advanced into the construction phase in both Europe and other territories globally.

9.7.2 Proposed next steps

Based on our concluding remarks set out above, the Amentum TPR Team advise the following:

- A further round of Technology Vendor dialogue should be undertaken that will de-risk the NPP Project by better defining the BIS and commercial structures that will form the basis for eventual engagement of the successful Technology Vendor. This should be undertaken on a timescale commensurate with supporting the Parliamentary mandate.

- Additional work should be carried out to develop outline funding options tailored to the unique circumstances of the Dutch nuclear development program. This will help form the basis of the requested mandate to Parliament, identifying options and scoping for the future GSP that will be required.
- The scope and capability requirements to support the critical "nuclear development" phase, should be recalibrated to reflect the observations and findings from the Amentum TPR Team. This ensures that KGG has access to critical, scarce nuclear development expertise covering technical, commercial/procurement, legal and financial aspects.
- To support the mandate request, it is advised that KGG produce a set of baseline documents to inform policy decisions, thereby providing greater clarity to the overall approach and strategy. In particular, the project's overall procurement and contracting strategy and delivery strategy should be documented. These documents should be periodically updated as KGG's thinking, and approach evolve.
- Preliminary MC should progress to gauge levels of interest for the OE and Owner's Project Integrator packages of work, enabling these two critical procurements to commence in line with project needs.

10 Connectivity between TFS and MC findings

The Amentum TPR Team has been involved in numerous GWe NPP schemes during the project development phase, several of which have successfully transitioned into the construction phase. It is the experience of the Amentum TPR Team that Western Europe Owners/Sponsors often do not give due consideration at the outset to the key interdependencies between the "physical tangible" aspects of the NPP Project (design and construction of the NPP asset) and the "virtual intangible" aspects (Owner capability, project funding and financing structures, together with the array of regulator and governmental approvals) that are essential to progressing these mega-projects in an efficient and effective manner. This disconnect often results in interruptions to progress, re-phasing of NPP Project activities, and in many cases can lead to demobilisation and remobilisation of capability, wasted effort, delay and significant increases in cost.

> **R10.1** - It is recommended that when entering the next phase of the Netherlands GWe NPP Project that KGG (and its advisors) should ensure that the connectivity between the requirements, constraints and understanding emerging from the TFS are aligned with the critical enabling structures (GSP, Funding/Finance, legislation, regulatory approvals) that have been scoped and tested in outline by the EY MC and BNP Paribas reports. Together with the TPR Report they create a common set of facts on which to base decision-making.

At a high level, based on the Amentum TPR Team's direct experience, one of the key linkages aligning these "interdependencies" is the structure of the main contracts between the Contracting Authority (KGG/SPC) and the Supply Chain (the selected Technology Vendor for the NPP and the organisations that will support the Owner in the delivery of the Owner's Scope). Time should be taken to ensure such agreements are adequate, reflect the needs of all key stakeholders and together they will deliver the required NPP Project benefits. Past cases studies (confidential) have highlighted the difficulties that other NPP Projects have suffered when misalignment of these important interdependencies have occurred, leading to project delays, renegotiations, and additional cost.

This TPR Report sets out a series of recommendations, proposed next steps and a draft NPP Project Road Map to Financial Close that are all focussed on ensuring that the connectivity between the "physical" and "virtual" aspects of the NPP Project are addressed, building on the findings and foundations that the TFS and MC phases of the NPP Project have positively created.

11 Parliamentary Decision Making

11.1 Why: Context

Stakeholder management as part of the TPR

The initial proposal explains that KGG needs support with stakeholder management to facilitate transparent communication between the government, technology suppliers, the Regulator and other stakeholders, ensuring all data gaps are addressed for an informed decision-making process. This means that all stakeholders are fully informed and aligned with NPP Project goals and that a broad support is secured from local, regional, and national stakeholders. This includes translating complex technical information and insights from the TPR into communication material that is clear and accessible to all stakeholders.

Additional emergent needs alongside the TPR

KGG seeks practical advice on structuring and organising national (parliamentary) decision-making. With parliamentary letters submitted in Q4 2024, Q2 2025, and Q3 2025, the primary focus of support from the TPR team is on the Q3 2025 letter to prepare for the first mandate request. This mandate request is a fundamental step in the NPP Project, because it brings the outcomes of the different workstreams, namely the MC & TFS, including the TPR with the draft NPP Project Road Map and funding options, the first phase of the project procedure, and the national-regional package together to provide sufficient validated information. This ensures that a decision can be made about the next phase of project development, including:

- The set up of the Owner Organisation
- Proceeding with early Owner's activities
- The tendering of the new build NPP Project.
- A draft location decision.
- The delivery of a preliminary national-regional package.

11.2 Why: Challenges

Current insights in challenges

As the TPR progresses and the draft Road Map was developed, several key insights have emerged that underscore the significant challenges associated with building new NPPs in the Netherlands:

- **Siting**: The Borssele site as currently defined is technically challenging for a GWe-scale NPP.
- **Regulatory obstacles**: Some ANVS requirements may drive NL specific design changes. Regulatory resource may be challenged by a new build.
- **Tight timelines and high upfront costs:** The draft Road Map reflects very tight timelines for achieving major milestones if KGG wants to deliver a NPP project by the late 2030's (deterministic). Also, the nature of this NPP Project requires significant upfront investment to mitigate project related risks later in the NPP Project. This is key because any delays later in the NPP Project could lead to extra financial costs and further delay.
- **Big steps, big decisions:** The scale of the decisions required to secure the desired NPP Project benefits is vast, such as deciding on the site location(s), procurement strategy, government support package and the national-regional package, and expectations around Export Credit. Also, each step in the process has major financial, political, and operational implications. Decisions involve many stakeholders, detailed research and carry long-term consequences.
- **Lack of capabilities:** This NPP Project is unlike any recent large-scale infrastructure or defense project in the Netherlands, making it uniquely complex. With no new NPPs built in the Netherlands in decades, there is a major gap in experience in industry, supply chain and regulators. There is still a substantial amount of work to be done to develop the proposed Special Purpose Company (SPC), NEO NL: Nuclear Energy Organisation NL, in order to become an Intelligent Customer. High employment rates mean different resourcing enablers may be required.

Impact on stakeholder management and decision-making

These challenges make stakeholder management and decision-making more complex in achieving KGG's goal to secure a mandate.

- **Urgency:** Given the NPP Project's scale, impact, duration and the extensive number of stakeholders involved, there is an urgent need to fully inform key stakeholders promptly. Ensuring they have clear insights into the approach and an understand of their roles is critical to preparing for decision-making and keeping momentum.
- **Alignment with policy and stakeholder needs and concerns:** Seeking a mandate requires broad political support, but this NPP Project touches on several key areas, such as energy (security), climate policy, government financing and support, regional development, industry policy and environmental impact. The impact of the NPP Project means that diverse stakeholders with varied interests are involved. Aligning their interests and aligning with policies to secure buy-in is essential but challenging.
- **Knowledge gap:** Moreover, building a NPP is a highly technical undertaking, and many decision-makers may not fully grasp the complexity and risks involved. This knowledge gap could slow down or complicate the decision-making process, especially when it comes to securing approval for major milestones. Some lessons learned from ongoing deployment of the smaller PALLAS isotope production reactor are relevant, and an opportunity exists to transfer learning and resources.
- **Timely, transparent and traceable decision-making:** Finally, with tight timelines and significant decisions needed at every stage, delays in stakeholder alignment or hesitation could put the NPP Project at risk. Maintaining timely, transparent, and traceable decision-making is essential to keeping the NPP Project on course and achieving critical milestones.

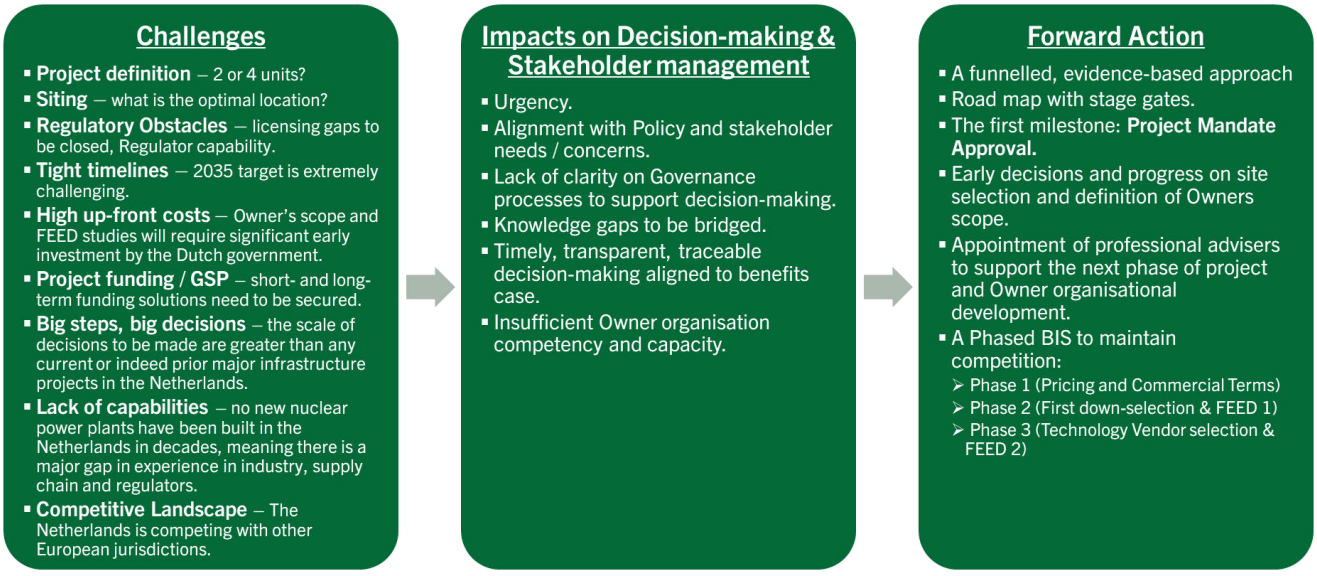


Figure 4 - Overarching challenges at a national level, impacts and proposed forward actions

11.3 Why: Objectives

For KGG to deliver a two-unit NPP Project, a structured and integrated approach to project planning and decision-making is essential. This advice centers on giving guidelines on securing stakeholder support and enabling effective decision-making for the initial mandate approval and subsequent stage gates.

The advice in this section of the TPR report explains how to tackle the challenges and organise (cross-departmental and parliamentary) decision-making and engage national stakeholders to prepare for the first mandate approval. The scope of this advice is based on the results that come from the TPR workshops that took place between August and October 2024. Please note that this is not a detailed plan, but a set of guidelines for the NPP Project team to prepare for parliamentary decision-making. It will help KGG to make a detailed plan,

(including a stakeholder management plan) after the decisions are made about the final planning for the necessary mandates that need to be approved to move towards Financial Close.

The report consists of the following:

1. **Why:** Context, scope, challenges, and objectives.
2. **What:** Decision-making approach.
3. **How:** Recommendations for next steps

Context of the decision-making process:

- **Draft Road Map and stage gates.**
  Effective decision-making requires a clear understanding of the NPP Project's scope and objectives. To this end, a draft NPP Project Road Map with stage gates has been developed, as can be found on the following page, incorporating current insights from the TPR and international expertise from Amentum, CMS, and ENCO. The draft Road Map, reviewed in a workshop with KGG on 16/10/24 and further developed in subsequent workshops throughout November 2024, outlines the key decision points and can be adjusted as the TPR progresses.

- **A funnelled, evidence-based approach.**
  Each stage gate in the draft Road Map builds a more detailed project understanding, necessitating a funneled approach for sequential decision-making. To reach each stage gate, KGG needs decisions that are made based on supporting evidence. KGG will make financial and legal commitments during the whole project, so they must be fully transparent with stakeholders including for example the budget (risks), government's role in support packages, and owner's scope.

- **The first milestone – "Mandate Approval".**
  The initial milestone for KGG is securing mandate approval. While the scope of this mandate was discussed in a workshop with KGG on 24/09/24, it must be confirmed after assessing its feasibility based on the final TPR insights and site selection procedure. Achieving this mandate approval demands a structured, phased approach by identifying the needed supporting decisions and evidence. To come to the mandate approval KGG - together with the relevant ministries - needs to start with the identification of key policies and strategies for the NPP Project's core issues. These should be distilled into guiding principles, which can then be formalized within an evaluation framework with weighted criteria. Together, these guiding frameworks enhance objectivity in decision-making and ensure clarity for all stakeholders. To secure project mandate approval, establishing the necessary supporting evidence, decisions, and guiding frameworks is essential. A comprehensive understanding of what is needed for all stage gates is crucial to ensure the NPP Project's success.

11.4 What: Draft NPP Project Road Map and Decision-making Approach

11.4.1 Road Map and key decision gates

As mentioned, KGG needed a clear outline of the steps required for designing and constructing a new NPP. A draft Road Map with stage gates (a high-level diagram is shown below) has been created, drawing on TPR insights, as well as knowledge and experience from international NPP Projects. The approach is structured as a funnel, with

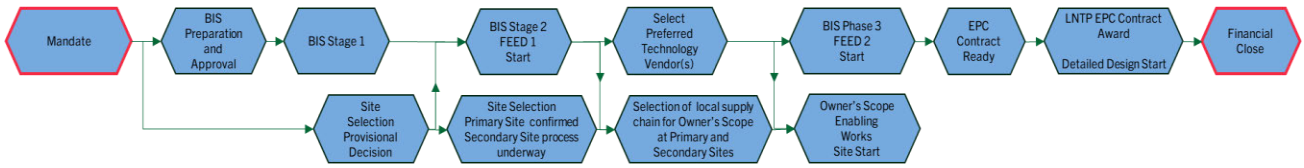


Figure 5 - Proposed Road Map key decision gates

each stage gate serving as a decision point for KGG to assess whether and how to proceed with the NPP Project, including any associated financial and legal commitments. The broad scope of the mandate allows for parallel progress without delays. However, political debate is essential to assess the NPP project's feasibility in terms of budget and risk.

The NPP Project is seeking a mandate (comprising progressive funding approvals linked to key decision gates) to progress towards financial close based on the following:

1. BIS Preparation

- Completion of the current process to identify a most suitable site (Units 1&2) and the start of a new process to identify a second site (Units 3&4).
- An assessment team and specification writing process that draw upon lessons learned from the TFS and TPR and address outstanding Amber items and TPR recommendations.
- A phased BIS that maximises competition between Technology Vendors during the period up to Contract Award for the design and construction of units 1&2 at a site to be confirmed (and the option for units 3&4 at a second site yet to be determined).
- Initiation of project funding / State Aid Consultations (ongoing until Financial Close).
- Appointment of NPP Project's financial, technical, commercial and legal advisers
- Initiation of land access arrangements / acquisition process dependent on the results of the Site Selection process.
- Initiation of investigations surveys and environmental assessments at selected sites once determined (ongoing until end of FEED 2).
- SPC capability development – acquisition / resource augmentation / external support (ongoing development throughout the project lifecycle).
- Parallel activity to increase capacity and capability in Regulators.

2. BIS Stage 1 - Technology Vendors Pricing and Commercial Terms Competition

- Contract Heads of Terms agreed.
- Pricing of plant, equipment and above ground structures.

3. BIS Stage 2 – First option for down-selection & FEED 1

- Technology Vendors develop Concept Design including cooling water solutions, Enabling & Groundworks proposal for Primary Site and Secondary Site.
- Preparation of Cost and Schedule Estimate and Risk Register.

4. Owners Scope

- Selection of local supply chain for Owner's Scope at Primary and Secondary Sites.
- Site clearance (e.g. existing assets / facilities) and early Enabling Works (utility diversions etc.).

5. BIS Phase 3 – Technology Vendor Selected & FEED 2

- Awarded FEED 2 Contract to develop Preliminary Design.
- Negotiation of EPC Contract terms and conditions.

6. Limited Notice to Proceed – EPC Contract

- Detailed Design and Licensing Start by selected Technology Vendor.

7. Financial Close

- All project funding secured and in place.
- Final EPC contract award with full notice to proceed.

11.4.2 Guiding Principles for Decision-making:

Guiding principles provide a solid foundation for making effective decisions, aligning actions with policy, addressing stakeholder needs, and ensuring that success criteria are met. Therefore, establishing clear guiding principles for stakeholder management and decision-making is beneficial as well. These principles will guide KGG in deciding on the right approach for organising decision-making, communication and stakeholder engagement.

Building on our discussions and experience with similar defense and infrastructure projects, we propose the guiding principles for parliamentary decision-making listed below. These principles are designed to ensure transparency, alignment, and traceability across all interactions and decisions.

These are preliminary recommendations that can be further refined through workshops and ongoing discussions with relevant stakeholders to tailor them to the specific needs and objectives of this NPP Project. Also, we suggest aligning these guidelines with the ones for stakeholder management as listed in the document "Strategisch Omgevingsmanagement Kernenergie Coördinatie en organisatie".

A proposal for guiding principles for decision-making:

1. **Decisions are transparent, timely and traceable.**

   Clear, visible, and justifiable decision-making processes build trust and accountability, making it easier for all stakeholders to follow and support critical NPP Project decisions. Particularly in NPP Projects that are long-term, complex, and work towards channelled decision-making.

2. **Interdepartmental collaboration and knowledge sharing is encouraged.**

   To ensure effective and timely decision making, it is essential that collaboration between departments is established on time from the outset to ensure that all perspectives are considered, information is actively shared, and NPP Project decisions are made with a full understanding of all relevant factors.

3. **Everyone has the right level of knowledge.**

   All stakeholders, including Parliament, have an appropriate level of understanding of the NPP Project's complexities and requirements, closing the knowledge gap and facilitating informed decision-making on time.

4. **Stakeholders trust the NPP Project and are equipped to make informed, aligned decisions.**

   First, stakeholders experience transparent and consistent communication, and a credible and reliable NPP Project team surrounded by experts, fostering trust in the NPP Project. Second, all stakeholders including Parliament are equipped with a clear policy framework, guiding principles, and robust supporting evidence, along with interdepartmental alignment, that empowers confident and well-supported decision-making.

11.4.3 Required Decisions and Supporting Evidence

The following diagram gives an overview of all required decisions and supporting evidence at each stage gate in the draft Road Map. The scope of our advice is mainly focussed on the TPR and support securing the Mandate. However, understanding of what is needed in the entire Road Map up until financial close is crucial for seeking for mandate approval.

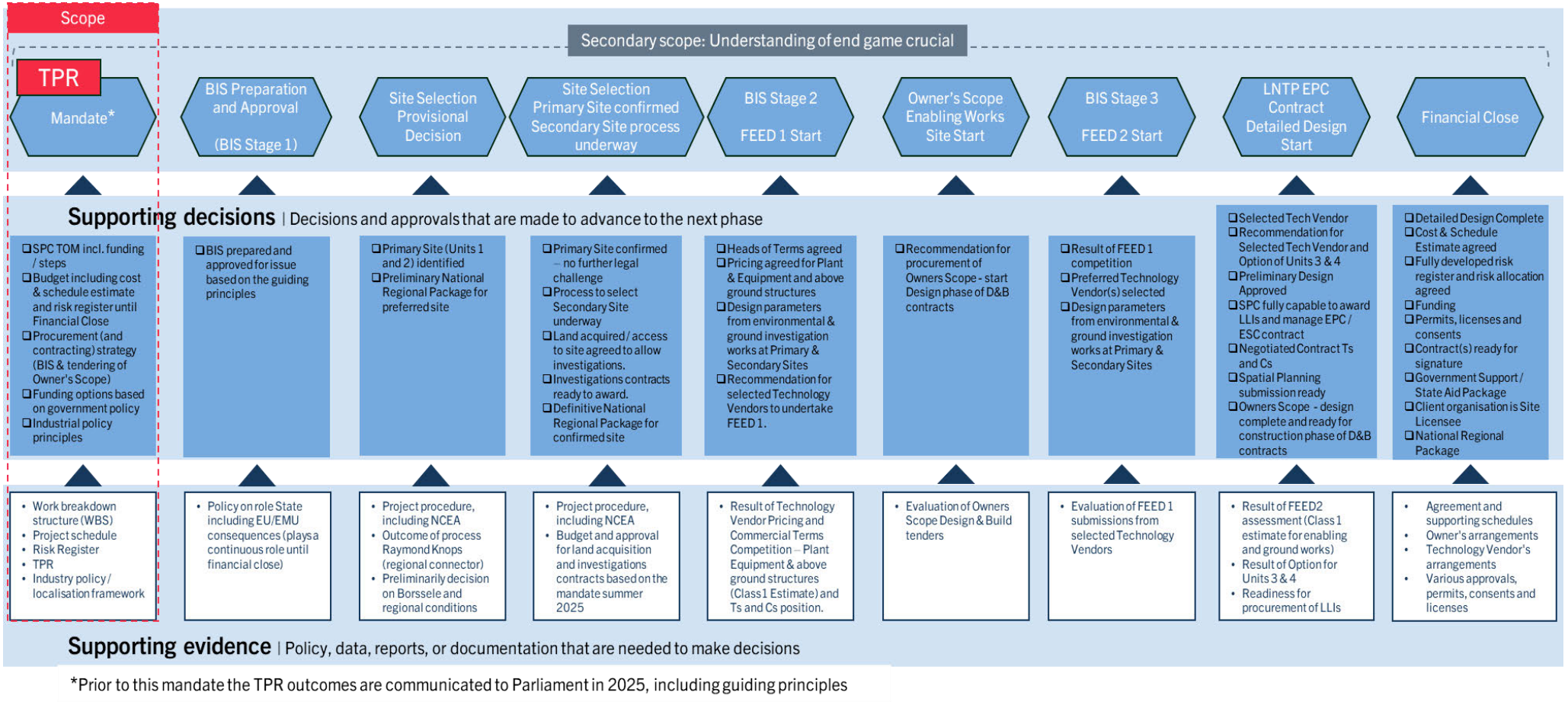


Figure 6 - Proposed draft Road Map key decisions and supporting evidence

The diagram shows the following key elements for decision-making:

- **Stage gates**: A key decision point to determine to proceed to the next phase.
- **Supporting decisions:** Decisions and approvals that are made to advance to the next phase.
- **Supporting evidence:** Data, reports, policy or documentation that are needed to make decisions.

For these decisions, it is essential to have the right frameworks to ensure well-aligned, transparent and traceable decisions:

- **Policy framework:** Identify and develop relevant policy documents (e.g., energy security, climate change, industrial policy, and the role of government). Define the overarching ambitions and objectives that guide the decision-making process. And highlight established frameworks that align decisions with national or organizational priorities.
- **Assessment framework:** Provide a structured method for evaluating decisions in a transparent and traceable way. Base assessments on weighted criteria that are consistent with the policy framework and ensure decisions are measurable and aligned with overarching goals.

To effectively detail and prepare for each stage gate, address the following questions:

1. **Supporting decisions:** Which decisions do we have to make to pass through this stage gate?
2. **Type of decision:** Is the decision an approval on funding, consent to proceed, agreement to move to next stage, agreement on policy, agreement on mandate? And is it a go/no go decision? Is it legally or financially binding? Is it subject to Regulatory approval?
3. **Supporting evidence:** Which supporting evidence, such as policy, data, research results and advice is needed from whom to make this decision?
4. **Mandate:** Who has the mandate in making this decision?
5. **Role of Parliament:** Is this decision within the authority of the Parliament?
6. **Stakeholders:** Who are the decision-makers, who should support this decision, who have an influence and who are impacted?
7. **Interdepartmental collaboration:** Which interdepartmental collaboration and alignment is needed to come to the decision?
8. **Engagement strategy:** How should the stakeholders be engaged to enable a smooth decision-making process?

11.4.4 Stakeholder Groups

Stakeholder management is a key enabler for decision-making as it helps you prevent resistance, secure buy-in and create wide support. The following stakeholders should be taken into account. This list is non-exhaustive and can broaden based on new insights and further progress in the NPP Project.

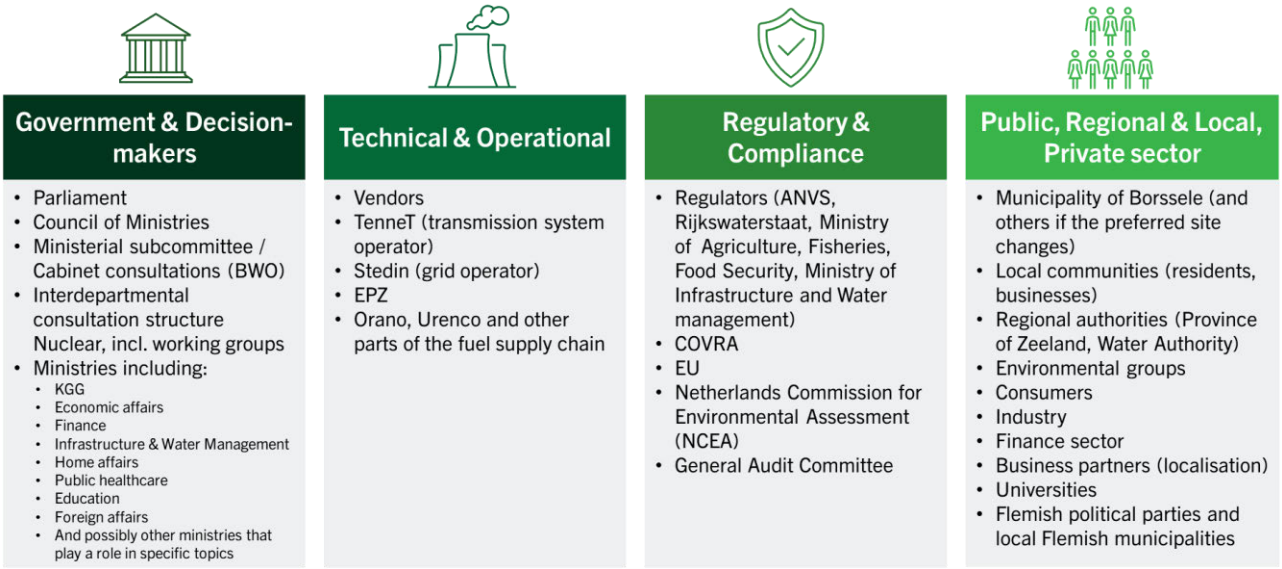


Figure 7 - Key Stakeholder Groups

11.4.5 A Proposal for Stakeholder Engagement Approach

The roles of the different stakeholders are mapped per stage gate in Appendix G. Please note that this mapping is an example and based on current insights and assumptions. The exact type of role is dependent on what you need per stage gate and your engagement strategy. Please ensure to improve this role mapping together with the people responsible for local, regional, and national stakeholder engagement.

The following roles were used in the mapping:

- **Responsible:** The person or role responsible for completing the task or activity.
- **Accountable:** The person who is ultimately accountable for the task or decision, who has decision-making authority.
- **Approver:** The role authorized to formally approve or reject the task's outcome, providing a final check to ensure alignment with NPP Project goals and policies.
- **Support:** Individuals or roles that provide support, resources, or assistance for the task.
- **Consulted:** People who are consulted for input or expertise before a decision is made or an activity is completed.
- **Informed:** People who need to be kept informed about progress, decisions, or outcomes but are not directly involved in the activity.

Each stage gate presents unique issues that require various roles, making it essential to bring all parties together across ministries as early as possible, with a clear agenda and defined tasks, roles, and responsibilities. However, it is first important to focus on the rationale for nuclear energy, the purpose of this NPP Project, its history, the NPP Project's unique characteristics, and the intended approach or Road Map, emphasizing the need for intensive collaboration.

11.5 Recommendations for first key steps to take

1. **Establish policy framework and guiding principles**

   Effective decision-making enables consistent, transparent, and traceable decisions aligned with relevant policies. To achieve this, we recommend KGG establish a policy framework and guiding principles in collaboration with relevant ministries.

   Next steps: Align on the policy framework

   Start by determining relevant policies (Climate, Energy Security, Industrial, Procurement/legal and Financial/ government) and identify missing policies, such as the industrial policy for nuclear energy. In this case, collaborate with the Ministry of Economic Affairs and industry groups to bridge gaps on industrial policy (quick scan), also as a start for the key choices in localization.

   Next steps: Set the guiding principles

   Work with relevant ministries to define and prioritize guiding principles for the NPP Project. Translate these into specific principles for key topics, such as the procurement strategy. Establish measurable, weighted criteria to provide the necessary detail for evaluating and assessing decisions effectively.

2. **Ensure understanding and support at highest political levels**

   There are two options for organizing decision-making to ensure this level of understanding and support:

   a. **Informally with BWO** (*Bewindsliedenoverleg*) (ministerial consultation) **meetings.** This is an effective way to quickly engage the right national politically responsible stakeholders in a structured manner.
   b. **Formally through the Sub-Council.** This ensures that decision-making is transparent and traceable. To establish a dedicated sub-council only for the two NPP, such as was done with the submarines, you need approval from the Prime Minister, or you can join existing sub-councils. But you can also use existing sub councils.

   Next steps: Organize alignment on the highest political level with other ministries

   Given the need for insight into the process and to ensure everyone is up to speed, initiating informal BWO meetings by the end of this year is advisable. At a later stage, formalizing decisions through a sub-council can help maintain transparency and traceability.

   Next steps: Determine the Road Map working agenda

   To support structured decision-making and alignment at the highest political level, we recommend setting up a working agenda that follows the gated Road Map approach. This agenda should outline the timeline and project approach, identifying specific actions, responsibilities, and stakeholder involvement.

3. **Create interdepartmental working groups**

   Alignment between stakeholders is key for ensuring support. Starting with this the sooner is the better, which can be achieved by facilitating interdepartmental working groups.

   Next steps: Facilitate cross departmental working groups

   Establish working groups between Economic Affairs, Finance, Infrastructure & Water, and other relevant departments to work on the various key topics, who are currently being investigated in different workstreams, such as the government support package. These groups enhance knowledge sharing, foster engagement, and build support among stakeholders involved in these areas.

   Next steps: Align Road Map working agenda with pollical decision-making level:

   Whatever the choice of political level coordination (informal: BWO or formal: Sub-council), it is important to align the tasks of the working groups with the Road Map working agenda and ensure clarity on tasks and timelines. Ensure the groups are responsible for preparing for the sessions and addressing their specific issues and objectives (e.g., policy gaps, guiding principles).

4. **Develop a parliamentary decision-making and stakeholder plan**

   This TPR Report provides guidance on organizing parliamentary decision-making, with a primary focus on national stakeholders. However, this finally must be translated into a plan to ensure the right actions are made to enable effective decision-making.

Next steps: Develop a plan based on the final decisions based on the TPR and Road Map delivery

After the final TPR and Road Map are delivered, decisions regarding NPP Project planning and the timing of specific decisions, including the mandate, can be addressed. When these decisions are made, we recommend using this TPR Report to develop a parliamentary decision-making plan. Such a plan contains at least the following:

a. The context, guiding principles and objectives of the plan
b. Key parliamentary decisions with the needed supporting evidence aligned with the Road Map
c. A stakeholder management strategy, based on a thorough analysis, aligned with the stakeholder management approach for the local and regional other stakeholders
d. A planning of all activities (from collecting supporting evidence up to engaging stakeholders) where communication plan is aligned with the integral communication plan (see recommendation 8)
e. Risk management and mitigation
f. Implementation plan, including roles and responsibilities

5. **Conduct a cost-benefit analysis**

Before making a stage-gate decision it is essential to not only understand the costs, but also the benefits. This is important because it enables informed decision-making, allowing investments to be weighed against expected realized value and the effectiveness of risk management. By clearly outlining the costs and benefits in advance, decision-makers can better assess whether the advantages outweigh the disadvantages and whether the investment aligns with the NPP Project goals and policy framework.

Next steps: Conduct a cost-benefit analysis

Therefore, we propose to conduct a cost-benefit analysis for key decisions that must be made at each stage gate in the Road Map. This provides decision-makers with insights into the NPP Project's progress and feasibility at each critical decision point, enabling potential issues to be identified and addressed early. It also allows decisions to be reassessed based on the latest information, helping the NPP Project stay as much as possible within budget and timeline and to manage contingency effectively and efficiently.

6. **Establish consistent, targeted communication**

A key challenge lies in creating the confidence that this NPP Project can be delivered in an efficient and cost-effective manner to meet key dates. Creating confidence in the NPP Project requires targeted, bandwidth communication.

Next steps: Use targeted, bandwidth-appropriate communication

- Use the funnel approach to clarify the stages of commitment (legal and financial), noting that costs and risk estimates will become more precise as additional information is gathered. It is key from the start to have an insight in the contingency costs.
- Emphasize the NPP Project's unique complexity, distinguishing it from other large-scale initiatives in sectors like Defense, IT, and Infrastructure, particularly in decision-making and the state's role. Address relevant financial frameworks that support public values and address market challenges.
- Communicate both knowns and unknowns, highlighting why additional steps—like further research or vendor assessments—are necessary.
- Communicate in a consistent way. Avoid setting different expectations, because this may lead to stakeholders losing trust in the NPP Project. If there are uncertainties, use bandwidth communication.
- Communicate the dilemmas/tradeoffs before you make “big decisions”.

7. **Create one integral communication plan**

To avoid miscommunication or overwhelming stakeholders with communication, we recommend developing an integrated and well-coordinated communication plan.

Next steps: Plan with clear responsibilities

Given that the SPC and KGG will both communicate to stakeholders, it is essential to establish clear agreements on who will communicate:

- To which stakeholders

- What type of information
- Through which channels
- In what timeframe (aligned to Road Map)

Define roles and responsibilities to prevent overlaps and ensure that each party understands their communication duties.

Next steps: One communication planning

By creating a unified communication planning, both the SPC and KGG can ensure that messaging is consistent, timely, and aligned with stakeholders' information needs. This approach will foster clarity, enhance stakeholder engagement, and ultimately support well-informed decision-making.

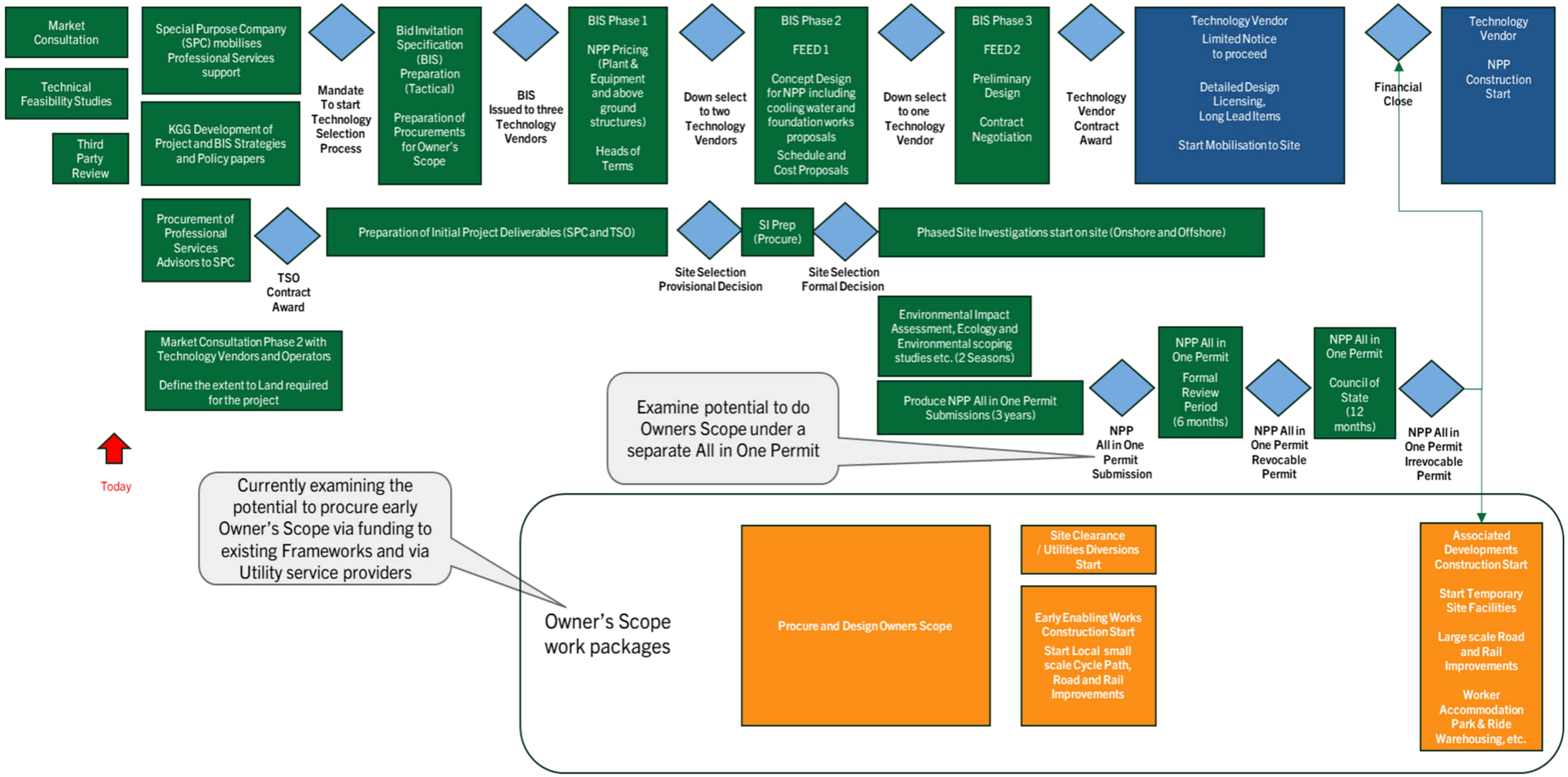
8. **Bridge the knowledge gap**

A major challenge is the current knowledge gap between the NPP Project team and all relevant stakeholders, such as the decision-makers. Bridging the knowledge gap is key for ensuring effective decision-making and requires knowledge-sharing sooner than later.

Next steps: Organize Nuclear Knowledge seminars based on needs

Collect stakeholders' information needs and organize knowledge seminars tailored to these needs. For example, a seminar could cover what a NPP Project entails, insights from the TPR, and details on the procurement and funding aspects of such a project.

A. Draft NPP Project Road Map



B. TPR Methodology

Execution of Stages 1-5

Stage 1 – Familiarisation

Stage 1 of the TPR spans the period up to the Kick-Off Meeting on 2 September 2024 and encompasses all familiarisation activity with the work done to date by KGG and its consultants. This stage was verified as completed with acceptance of the Project Execution Plan (PEP) on 4 October 2024, which detailed the plan for execution of Stages 2 to 5, which is outlined below.

Stage 2 –TFS Review

Gap Analysis of TFS Specification

The first step in Stage 2 was to conduct an in-depth assessment of the TFS Specification documents produced by Assystem. This examines the level and nature of questions posed and data requested for the TFS, within the context and limitations of the TFS. It also identifies potential omissions, if deemed to have been within the scope of the TFS specification.

The outcome of this assessment was captured in tabulated format following the heading and sections of the Assystem TFS Specification, consisting of Red / Amber / Green (RAG) flags against each scope area.

The outcome of this assessment was used as input data for the overall Technical Assessment of the Technology Vendor submissions to ensure that they are fairly assessed against the scope of the specification, but any further areas that the Amentum TPR Team deem to be relevant to the feasibility of the proposed solution are also captured.

Technical Assessment of TFS Submissions

The approach to assessment of the TFS Submissions was to review the set of deliverables (as set out in section 8 of the TFS specification) against the specific requirements as listed in the appendices of the TFS scope. Against each requirement listed together with the compliance matrix aligned to the Dutch Safety Guidelines' for water cooled reactors (VOBK), (*Veilig Ontwerp en het veilig Bedrijven van Kernreactoren)*, the Amentum TPR Team have verified the data and its accuracy. For each item identified a RAG rating was applied to highlight compliance with the requirements set out in the TFS (Dutch legislation and regulatory guidelines, spatial, logistical, permitting, planning, etc.) associated with the Borssele site. The rating system to be used for the TPR is defined below:

RAG Status	TPR Assessment Criteria
RED	Major discrepancy / non-conformance with TFS requirements, and /or technical non-compliance and/or a lack of adequate supporting information that justifies the Technology Vendor's response that would likely require significant adaption to the reference plant with the potential to impact time / cost / risk. Red issues shall require further clarification with the Technology Vendor via KGG during the Stage 2 Review.
AMBER	Minor discrepancy with TFS requirements and/or insufficient supporting information that in the opinion of the Amentum TPR Team it would be possible to resolve the issue satisfactorily during the BIS through future work without significant impact to overall time / cost / risk.

GREEN	Technology Vendor's response compliant with TFS requirements.

Throughout the review process, all comments were logged within the 'TPR Tracker'. The TPR Tracker consists of a series of tables (one per Vendor), which logs:

- The RAG status of each question / criteria within the TFS response.
- The name of the TPR SME reviewer and date reviewed, including TPR SME review comments and recommendations.
- Any delta between the TPR SME review compared with the KGG TFS consultant's assessment of the Technology Vendor's response. Where a significant delta exists (e.g. assessed as Red versus Green) the issue will be raised with KGG for clarification between TPR team and TFS consultant.
- TPR SME comment / action to rectify any non-conformance / discrepancy with TFS requirements (RED or AMBER).
- Interdependency flag with other Work Packages / Workstreams and/or sections of MC.
- Common theme 'flag' – to show where issues are highlighted across two or more Vendor responses.
- The name of TPR peer review assurance panel member and date assured.
- Date of final approval by Core Team / Project Lead.
- Consolidated technical query and / or question for Technology Vendor consultation.

The RAG assessment above can be consolidated into the flow diagram in the Figure A below.

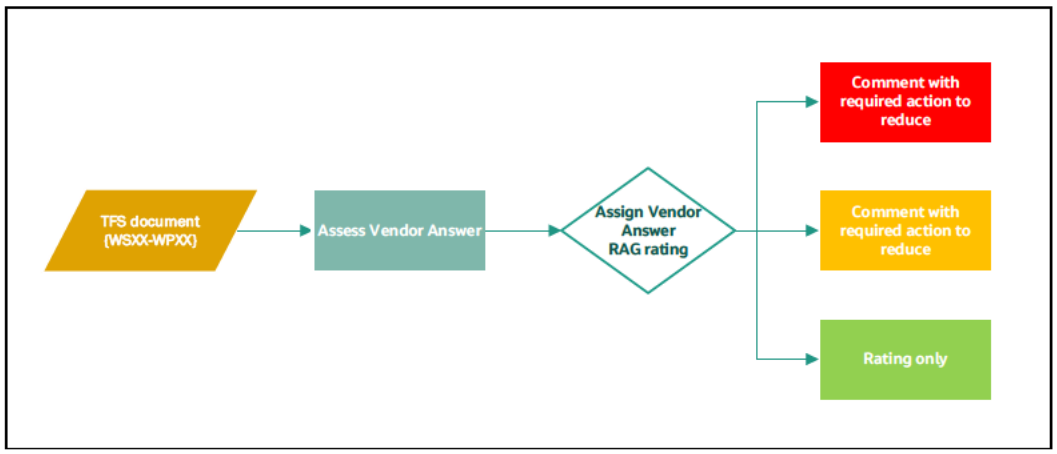


Figure A - RAG Selection Process for Vendor Replies

Assurance

The core of the TPR quality assurance process is the CRAV methodology:

- **C**heck – Core Team.
- **R**eview – SME (Red/Amber).
- **A**pprove – Core Team.

- Verify – Expert Peer Review panel.

This process is focused on Amber and Red topic areas where the level of compliance with requirements warrants further review before close-out or escalation to a Technology Vendor via KGG. To demonstrate that the team of SMEs conducting the TFS review are suitably qualified and experienced in major nuclear projects, the breakdown of team review responsibilities and the CVs of each Amentum TPR Team member are provided in Appendices F and G respectively.

Consultation with Technology Vendors

Throughout the review, the Amentum TPR Team have produced a consolidated list of issues identified, followed by appropriate dialogue / questions to raise with the Technology Vendors and or the TFS consultant via KGG. The aim of these is to test interpretations and identify remedial actions that would need to be considered by the Technology Vendors when responding to the BIS through the formal procurement process.

Any items identified that were rated as a RED that cannot be suitably addressed without significant adverse impact to the overnight cost, schedule and risk funding envelope were consolidated per Technology Vendor and discussed with KGG to agree the way forward. Where appropriate, these instances will also be discussed with the Technology Vendor by KGG.

During the process of deriving Red and Amber comments, the request was made for 'higher priority' Amber issues to be highlighted for early engagements with the Technology Vendors. This exercise was done after the initial review and was reflected in the RAG rating as 'Amber 1'. These items were assessed as being beneficial (whilst not essential) to address at this stage, ahead of the BIS. In the Final TPR Report, these items have been returned to 'Amber' status to remove any ambiguity.

The Amentum TPR Team captured the key outcomes and responses of the Technology Vendor consultations and have reflected these in the ultimate final report as part of the close-out of Stage 4. This process is outlined in Figure B below.

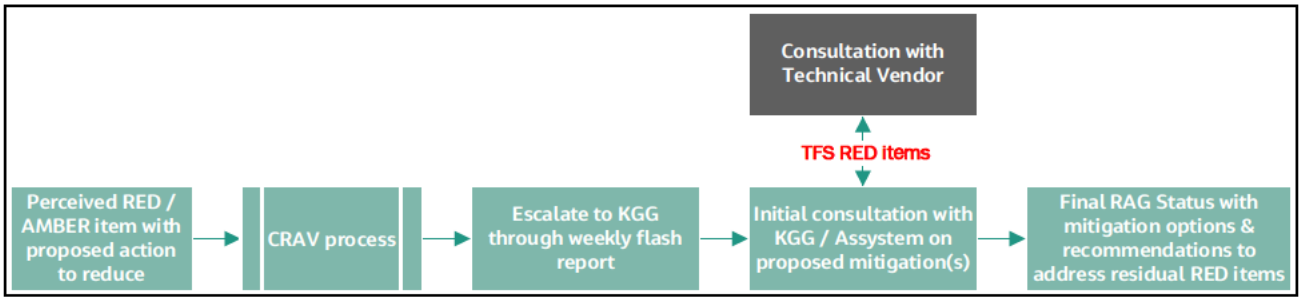


Figure B - Consultation process for identified RED items

Production of the preliminary findings reports

The deliverables under Stage 2 were made up of four preliminary findings reports – one that summarises the review of the TFS specification, and three vendor-specific reports that summarise the findings of the TPR. These reports were produced by the Core Team, with input from relevant SMEs from Amentum and ENCO.

Stage 3 – Market Consultation Review

The first step in Stage 3 was to review the methodology of how the MC was undertaken by the Consultant (in this case, EY) to gain assurance and confidence in the approach. Particular emphasis was given to the methodology and findings arising from the workshops undertaken in Round 1 and Round 2 of the engagement session with the three Technology Vendors. Consideration was given to the potential overlap and submissions presented in the TFS outputs arising from WS03 Work Packages 1 (execution strategy), 6 (lessons learnt) and 7 (supply chain).

A consolidated list of common findings and differentiating factors and an analysis of how these may impact the structure of the requested parliamentary mandate, SPC structure and BIS are presented. Options analysis is

presented to KGG to inform the direction of the project (including those key factors that may influence the project schedule) and full risk analysis of the differing Technology Vendor offerings. For example, it is highly likely that each Vendor will have different expectations regarding commercial structures and risk appetite that are communicated through a typical MC of this nature. It is not uncommon for "Business Development" to pitch more favourable requirements than what would be considered during a procurement process (BIS).

Therefore, based on the individual MC findings, input from each Technology Vendor was tabulated against the core commercial structures that are typically required in a project of this nature (pricing mechanisms, performance guarantees, IP constraints, employer/Vendor risk allocation), together with a risk assessment and likelihood of achieving a degree of commonality to help inform the BIS.

As an example: Availability performance guarantees between Commercial Operation Date (COD) and first/second outage would be normal in a project of this nature and will likely be an important factor for third party financing. If one (or more) of the Vendors initially dismiss this requirement, then a risk assessment of trying to achieve alignment through the BIS, or risk to the project overall from not pursuing the requirement was undertaken.

Potential areas that require further interrogation are identified to KGG with a suggested approach, how these can be followed up during the TPR with the three Technology Vendors. These points of interrogation may just be kept between the Amentum TPR team and KGG to help inform the direction on how to approach the BIS. Where the review highlights any inaccuracies with the MC report these are flagged to KGG. The RAG and CRAV methodology for Stage 2 equally applies to Stage 3.

Optionality for the components suggested that might inform the GSP as outlined in the MC report, together with risk profile associated with each Technology Vendor are reviewed against latest market trends due to the current dynamic nature of potential sponsor funding arrangements associated with Nuclear New Build Projects.

The MC Review examines the feasibility of all aspects of the report from the Dutch regulatory perspective and identifies any issues or constraints that may introduce risk, or where new legislation may be required that has not been identified or included within the MC report.

The MC Review ultimately confirms whether the findings of the MC and the presented possible GSPs are feasible given the current Dutch and European context by conducting the following analysis:

- Review of the proposed options for the GSP and next steps.
- Evaluation of the conclusions of the MC.
- Assessment of the risk of the proposed components of the GSP, including recent example benchmarks, insights and evaluation of issues associated with:
    - Government equity / owner financial support.
    - Government debt or guarantees.
    - Revenue support.
    - Risk allocation (including Dutch legal restrictions).
    - Indemnities (e.g. political risk, nuclear liability).

Stage 4 – Merging the findings of the TFS and MCs

Stage 4 of the assignment merged the findings from the three TFS documents and the MC.

During Stage 2, RED Flag issues with each TFS submission were raised and issued to the three Vendors. The responses from the Vendors to clarify and/or provide supplementary information shall be captured in the final issue of the Stage 4 Report. The output of this final assessment then informed any resulting actions that the Amentum TPR Team would recommend for closing out the third issue of the TFS and/or in support of the

preparation of the BIS in the next phase of the vendor selection process. The final TPR Report addresses and captures the outcomes of these discussions as part of the evidence-based close-out of RED items.

The final report summarises and concludes:

- The key findings from the individual preliminary findings reports will be assessed in totality, cognisant of the defined requirements KGG's / the proposed SPC's organisational maturity and the ANVS's position.
- Any common issues / concerns across the TFS responses highlighted with appropriate options and/or resolutions.
- Interdependencies between the TFS workstreams and with the MC that have been flagged throughout the review, in particular between Workstream 3 of the TFS and the MC document.
- Key themes identified to be addressed in the BIS.
- Advice to KGG on their key risks during the next phase of the project.
- Advice on the appropriateness of the proposed division of responsibility between the owner and each of the Technology Vendors, based on their proposed delivery model, such that all elements of scope are covered. Indicative timelines and costs for owner's scope to be advised for each option.

Stage 5 – Facilitation and communication of the final conclusions

Stage 5 of the assignment involved two phases:

- Production of a public version of the TPR Report to serve as the basis for a Parliamentary Letter to be prepared by KGG. This shall be derived from the Stage 4 TPR Report, and shall represent a consolidation of findings from the review of TFS responses and the MCs, with any commercially sensitive Vendor-specific information redacted.
- Core Team availability to KGG to offer ongoing support to parliamentary processes linked to the Parliamentary Letter up to the presentation to the Government of The Netherlands.

This stage will largely be informed and supported by the Parliamentary Decision-Making advice, a supporting deliverable that was developed and produced by the Amentum TPR Team and delivered to KGG during Stage 2 and 3 of this assignment. This advice can be found in section 12 of the TPR Report.

Amentum TPR Team

The Amentum TPR Team structure is depicted in Figure C below.

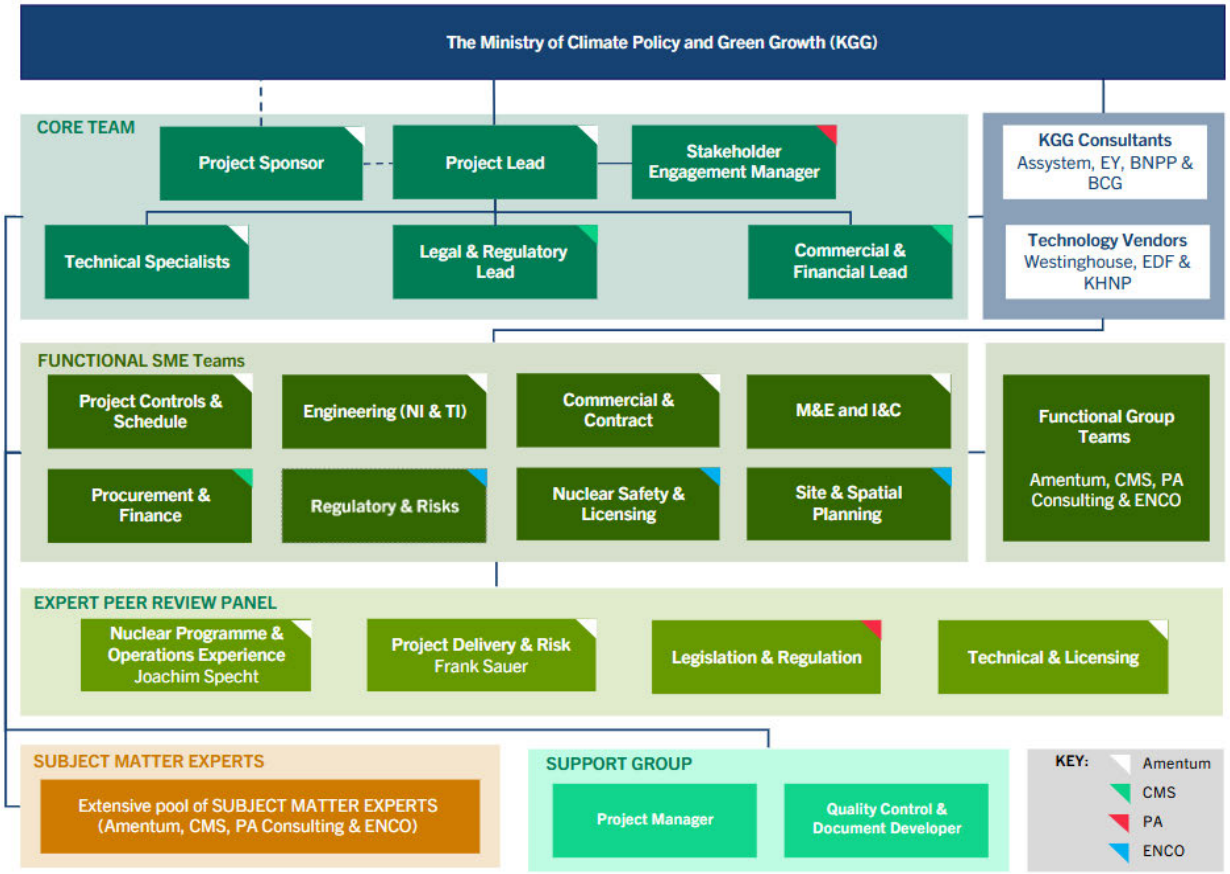


Figure C - Amentum TPR Team structure

The Core Team is comprised of leading individuals at the forefront of the global nuclear new-build sector. The Core Team's role is to ensure that key learning is drawn from relevant nuclear projects who have embarked on a similar process to KGG and the Dutch government. The Core Team acts as the main interface with both KGG and the Technology Vendors.

This Core Team is supplemented by reach back to a wide team of SMEs with specialist knowledge in various fields pertinent to the topics covered in the TFS and MC.

Finally, the expert peer review panel is used to assure the accuracy and quality of the review as part of the CRAV process, as well as completing a final review of both the preliminary and final reports to be delivered to KGG.

Conflict Management and Non-Disclosure Agreements

The Conflict Management Plan (CMP) is intended to ensure that the Amentum and its sub-consultants in meeting their obligations to protect client's confidential information and to take appropriate measures to effectively prevent, identify and remedy conflicts and perceived / potential conflicts of interest arising, to ensure that all Technology Vendors are treated equally, are on a level playing field and that no unfair competitive advantage is gained by any party during the TFS process.

Each member of the Amentum TPR Team confirmed that they have read and understood the requirement in relation to the confidential information being reviewed in this assignment by signing the CMP.

C. KHNP TFS – TPR Findings

Redacted.

D. WEC TFS — TPR Findings

Redacted.

E. EDF TFS — TPR Findings

Redacted.

F. TFS Review Team – Scope Allocation

Redacted.

G. Roles of NPP Project Stakeholders

See below.

Roles of stakeholders per stage gate

Concept

R - Responsible: The person or role responsible for completing the task or activity.
Ac - Accountable: The person who is ultimately accountable for the task or decision, who has decision-making authority.
Ap – Approver: The role authorized to formally approve or reject the task's outcome, providing a final check to ensure alignment with project goals and policies.
S - Support: Individuals or roles that provide support, resources, or assistance for the task.
C - Consulted: People who are consulted for input or expertise before a decision is made or an activity is completed.
I - Informed: People who need to be kept informed about progress, decisions, or outcomes but are not directly involved in the activity.

Each Stage Gate presents unique issues that require various roles, making it essential to bring all parties together across ministries as early as possible, with a clear agenda and defined tasks, roles, and responsibilities. However, it is first important to focus on the rationale for nuclear energy, the purpose of this project, its history, the project's unique characteristics, and the intended approach or roadmap, emphasizing the need for intensive collaboration.

	Stage gates:								
Stakeholders:	Mandate	Site selection provisional decision	Site selection primary site confirmed, secondary site process underway	BIS preparation and approval (BIS Stage 1)	BIS Stage 2 FEED 1 start	BIS Stage 3 FEED 2 start	Owner's scope enabling works, site start	LNTP EPC Contract, detailed design start	Financial close
Government & decision-makers									
Parliament	Approval (approving funding/ budget right for the different workstreams, such as national/regional package), but also Informed/Consulted about procurement strategy, preliminary site selection. It depends on the specific workstream	Informed (if the project procedure is based is the old RCR), but in combination with the national regional package it is approval (budget right)		Approval (budget right/legal commitments) and Informed including discussion about state aid, SPC capability development and acquisition process,	Informed	Approval /informed (depending on what is agreed upon)	Approval (approving budget right)	Approval (approving budget right and legal commitments)	Approval (approving budget right)
Council of Ministers	Approval (approving approach, budget, legal commitments)	Approval (approving approach, budget, legal commitments)							

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This mapping of roles per stage gate is an example and based on current insights and assumptions. The exact type of role is dependent on what you need per stage gate may be subject to change based on the final TPR and roadmap, the scope of mandate, further research, analysis, and stakeholder input.

1

Roles of stakeholders per stage gate

Concept

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Stage gates:

Stakeholders:	Mandate	Site selection provisional decision	Site selection primary site confirmed, secondary site process underway	BIS preparation and approval (BIS Stage 1)	BIS Stage 2 FEED 1 start	BIS Stage 3 FEED 2 start	Owner's scope enabling works, site start	LNTP EPC Contract, detailed design start	Financial close
Government & decision-makers									
Ministerial subcommittee/ cabinet consultations (BWO)	Approval (approving approach, budget, legal commitments	Approval (approving approach, budget, legal commitments)				Approval (approving approach, budget, legal commitments) / informed (depending on what is agreed upon)	Approval (approving approach, budget, legal commitments)		
Interdepartmental consultation structure Nuclear, incl. working groups	Responsible for the supporting evidence and decisions bringing together for example the GSP inclusing state aid during every stage gate, procurement and contracting strategy)	Responsible for the supporting decisions and evidence							
SPC NEONL - Nuclear energy organization NL	-	-	-	Responsible for delivering the necessary business case, technical, and financial documentation required to support project approval.	Responsible for ensuring the transition to engineering and design phases by supporting decisions and providing key project inputs	Responsible for managing the progression of detailed designs and validating that the project remains technically and financially on track.	Responsible for overseeing the initial physical preparations for construction to ensure the site is ready for major works.	Responsible for securing and managing the critical contracts and ensuring all design and procurement align with project goals.	Responsible for bringing all stakeholders together to finalize financial agreements, ensuring the project is fully funded and ready to move forward.

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 2

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Stage gates:

Stakeholders:	Mandate	Site selection provisional decision	Site selection primary site confirmed, secondary site process underway	BIS preparation and approval (BIS Stage 1)	BIS Stage 2 FEED 1 start	BIS Stage 3 FEED 2 start	Owner's scope enabling works, site start	LNTP EPC Contract, detailed design start	Financial close
Government & decision-makers									
Ministry of KGG	Accountable for whole NPP project including policies on energy security, climate change and setting up the SPC	Accountable, as initiator for site selction and national regional package		Accountable for whole NPP project					
Ministry of Economic affairs	Responsible and Consulted, especially a role in the industry policy on nuclear and localisation/supply chains including the procurement strategy	Informed and consulted		Informed and consulted on the BIS especially from the industry perspective and the supply chain			Informed and consulted		
Ministry of Finance	Responsible and Consulted, especially a role in the budget, risks, government support package including role government (SPC) , state aid etc. and consulted for guiding principles national regional package	Responsible and consulted for national regional package and the guiding principles on the groundwork on the preferred site, from a financial perspective		Responsible and consulted for role government, the risk assessment of the procurement and contracting strategy and owner's scope		Responsible and Consulted, especially a role in the budget and risk assessment etc			Responsible and consulted, with financial close as end result also from state aid perspective

The same applies to all ministries: each plays its own role based on its respective policies and they are represented in the interdepartmental working groups.

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3

Roles of stakeholders per stage gate

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Stage gates:

Stakeholders:	Mandate	Site selection provisional decision	Site selection primary site confirmed, secondary site process underway	BIS preparation and approval (BIS Stage 1)	BIS Stage 2 FEED 1 start	BIS Stage 3 FEED 2 start	Owner's scope enabling works, site start	LNTP EPC Contract, detailed design start	Financial close
Government & decision-makers									
Ministry of Infrastructure & Water Management	Responsible and Consulted. especially a role in the nuclear waste policy, environment, and the executive organisations: RWS and the independent regulator: ANVS	Responsible and consulted for the consequences of the national regional package guiding principles on the groundwork on the preferred site, especially the consequences for the infrastructure (e.g. waterways and dikes)		Informed	Informed, Consulted/ Responsible if there is groundwork involved where infrastructure has to be adapted	Informed or consulted if there are any consequences on the groundwork on the preferred site, especially consequences for the infrastructure (e.g. waterways and dikes)	Responsible and consulted for consequences on the groundwork on the preferred site, especially the consequences for the infrastructure (e.g. waterways and dikes)	Informed	Informed and consulted
Ministry of Home affairs	Responsible and Consulted, especially a role in the site selection in combination with the regional/national package and policies on national employer policy (SPC)	Responsible and consulted for the guiding principles of the national regional package		Informed					Informed and consulted

The same applies to all ministries: each plays its own role based on its respective policies and they are represented in the interdepartmental working groups.

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4

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Stage gates:

Stakeholders:	Mandate	Site selection provisional decision	Site selection primary site confirmed, secondary site process underway	BIS preparation and approval (BIS Stage 1)	BIS Stage 2 FEED 1 start	BIS Stage 3 FEED 2 start	Owner's scope enabling works, site start	LNTP EPC Contract, detailed design start	Financial close
Government & decision-makers									
Ministry of Public healthcare	Responsible and Consulted, especially on health policies including waste policy	Informed							Informed and consulted
Ministry of Education	Responsible and Consulted, especially on establishing a knowledge level on nuclear in the Netherlands	Informed							Informed and consulted
Ministry of Foreign Affairs	Informed and consulted on approach from a diplomacy role regarding the vendors	Informed		Informed and consulted on the BIS approach from a diplomacy role regarding the vendors	Informed	Informed and consulted from diplomacy role especially if the Preferred Tech Vendor(s) is selected	Informed		Informed and consulted

The same applies to all ministries: each plays its own role based on its respective policies and they are represented in the interdepartmental working groups.

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5

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Stage gates:

Stakeholders:	Mandate	Site selection provisional decision	Site selection primary site confirmed, secondary site process underway	BIS preparation and approvail (BIS Stage 1)	BIS Stage 2 FEED 1 start	BIS Stage 3 FEED 2 start	Owner's scope enabling works, site start	LNTP EPC Contract, detailed design start	Financial close
Technical & Operational									
Vendors	Informed, support and consulted for technology, delivery model and funding options (see TFS and MC)	Informed, consulted, supported		Informed, supported					
Tennet (transmission system operator)	Informed and consulted, especially needed for energy infrastructure			Informed			Informed and consulted, especially needed for energy infrastructure	Informed	Informed and consulted, especially needed for energy infrastructure
Stedin (grid operator)	Informed and consulted, especially needed for energy infrastructure			Informed			Informed and consulted, especially needed for energy infrastructure	Informed	Informed and consulted, especially needed for energy infrastructure
EPZ	Part of investigation to taken over shares by the Ministry of Finance								
Orano, Urenco	Informed								

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6

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Stage gates:

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Regulatory & Compliance									
Regulators (ANVS, Rijkswaterstaat, Ministry of agriculture, Fisheries, Food Security, etc.)	Approval on licensing (ANVS) and or specific permits (environmental or spatial issues)								
COVRA	Informed, consulted and supported on nuclear waste								
EU	Approval of ultimate GSP including state aid test, this is a continuing process until Financial close								
Netherlands Commission for Environmental Assessment			Approval on the spatial procedures						
Public, regional & local, private sector									
Municipality of Borssele (and others if preferred site changes)	Informed, consulted and responsible for the national-regional package			Informed, consulted for localisation	Informed		Informed, consulted	Informed	Informed, consulted and responsible for the national-regional package
Local communities (residents, businesses)	Informed and consulted			Informed					

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7

Roles of stakeholders per stage gate

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Stage gates:

Stakeholders:	Mandate	Site selection provisional decision	Site selection primary site confirmed, secondary site process underway	BIS preparation and approvail (BIS Stage 1)	BIS Stage 2 FEED 1 start	BIS Stage 3 FEED 2 start	Owner's scope enabling works, site start	LNTP EPC Contract, detailed design start	Financial close
Public, regional & local, private sector									
Regional authorities (Province of Zeeland, Water Authority)	Informed, consulted and responsible for the national-regional package including the permits			Informed, consulted for localisation	Informed		Informed, consulted	Informed	Informed, consulted and responsible for the national-regional package and permits
Environmental groups	Informed								
Consumers	Informed								
Industry	Informed and consulted for localisation				Informed				
Finance sector	Informed and consulted for funding options	Informed		Informed and consulted for funding options					
Business partners, VNO-NCW, FME	Informed and consulted for localisation				Informed	Informed and consulted if the preferred vendor is selected from the supply chain and industry perspective/localisation	Informed		Informed and consulted
Universities	Informed and consulted for the industry policy including technology and knowledge base, this especially applies in the first phase and later on if needed								

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H. TFS Workstreams & Work Package Topic Areas

TFS Workstream	Topic Area
Workstream 1 – Technology	Licensing / Conceptual Safety Document (as per ANVS) & DSR Deviation (WP01)
Workstream 1 – Technology	NPP Technology and Design Specifications (WP02)
Workstream 1 – Technology	Performance: Output, Efficiency, Availability, Load Following Compliance to Dutch Grid Code (WP02)
Workstream 2 – Site Specifics	Site Information Package Due Diligence and Gap Analysis (WP01)
Workstream 2 – Site Specifics	NPP Preliminary Layout (WP02)
Workstream 2 – Site Specifics	Platform Level (WP03)
Workstream 2 – Site Specifics	Deep Excavations & Constructability Study (WP04)
Workstream 2 – Site Specifics	Site Infrastructure Interfaces and Logistics (WP05)
Workstream 2 – Site Specifics	Cooling system Preliminary Design (WP07)
Workstream 2 – Site Specifics	Changes in Design due to Site and Dutch specifics (WP08)
Workstream 2 – Site Specifics	Construction Permits Data (WP09)
Workstream 2 – Site Specifics	Mobilisation Plan (Project Management, Engineering, Construction and Commissioning) (WP10)
Workstream 3 – NPP Delivery	Project Execution Strategy (WP01)
Workstream 3 – NPP Delivery	CapEx (WP02)
Workstream 3 – NPP Delivery	OpEx (fuel, operations, maintenance) (WP03)
Workstream 3 – NPP Delivery	Level 1 milestone schedule (WP04)
Workstream 3 – NPP Delivery	Qualitative risk register /contingencies (WP05)
Workstream 3 – NPP Delivery	Lessons learned /continuous improvement / value engineering (WP06)
Workstream 3 – NPP Delivery	Potential subcontractors & local content (WP07)

I. Key Risks to the Dutch NPP Programme

Redacted.

J. Typical NPP Project Delivery Models

Typical NPP Scope Split

The TFS Specification document *AEOS-FEET-EZK-RE-0031 Rev B* sets out an indicative battery limits and scope of supply for the Technology Vendor's scope for the purposes of the TFS. It is noted that each of the Technology Vendors proposed different Divisions of Responsibility (DoR), some of which were dependent on the technology solution and other aspects related to the Technology Vendors' preference. The final DoR will be determined through the BIS process with the selected Technology Vendor.

It is the TPR team's experience on other NPP Projects that the typical scope split between the Owner and the Technology Vendor (when the Technology Vendor has taken the overall EPC integration responsibility to deliver a functioning NPP) is as detailed below:

Typical Scope of Owner includes:	Typical Technology Vendor Scope includes:

• Quality and Safety
• Regulatory engagement
• Site specific licensing, project approvals, consents and permits
• Assurance
• Project Funding
• Procurement of a NPP technology solution via a BIS
• Land acquisition
• Procurement of Owner's Scope Work Packages (tbc)
  ○ Site Clearance and Utilities Diversions
  ○ Enabling Works
  ▪ Local Road and Rail improvements
  ▪ Site Fence
  ▪ Site utilities provision
  ▪ Initial Site Facilities (Site Security, Offices, Welfare etc.)
  ○ Associated Developments
  ▪ Worker accommodation
  ▪ Park and ride
• Contract management and oversight of the design and construction contracts
• Oversight of the complete quality control lifecycle through to capture of Lifetime Quality records, supplemented by Conformity Assessment Bodies
• Setting to work, system testing and commissioning of the NPP
• Connection of NPP to Grid
• Operation and Maintenance of the NPP
• Developing a Design Authority and managing design integrity
	• Generic licensing
	• Project and construction management
	• Progress and performance monitoring and reporting
	• Downstream Supply Chain selection, assurance and management
	• Design of the NPP
	• NPP Plant and Equipment manufacture / procurement
	• Bulk materials procurement
	• Construction of the NPP including:
	  ○ Earthworks
	  ○ Foundations
	  ○ Temporary buildings, stores. workshops and welfare facilities to enable construction
	  ○ Concrete batching plant
	  ○ Permanent buildings
	  ○ Marine works and tunnels for the power station cooling water system
	  ○ Installation of NPP plant and equipment within the building structures
	  ○ Construction logistics
	  ○ Lifting operations
	  ○ Quality Assurance and Quality Control*
	  ○ Construction records
	• Nuclear fuel for initial fuel loading

Options for NPP Project Delivery Model

There are several delivery models that have been utilised to successfully deliver NPP Projects. These are dependent on the capability of the Owner organisation, the breadth of construction capability and risk appetite of both the Technology Vendor organisation and its consortia / supply chain partners. The primary forms of project delivery model comprise:

- **Engineer Procure Construct (EPC)** Turnkey where the EPC entity takes single-point responsibility for project delivery performance and plant performance. Where a consortium is delivering the EPC scope, one party usually takes the Prime Contractor role (EPC Prime Contract).
- **Multi-Contract** where the responsibilities for delivery performance and plant performance are divided across multiple entities involved in delivering the project. In the Multi-Contract model the Owner takes on the coordination and integration role across the entities involved in the NPP Project and may procure additional support to work directly for the Owner to undertake this role. There are several further sub-options for Multi-Contract delivery model that include:
    - NI supply plus EPCM for the NPP.
    - NI supply delivery plus Engineering of NPP.
    - Limited Delivery of NI plus Eng. support.
    - Split Package (Island Multi-Contract Model).
    - Engineer Procure Construction Management (EPCM).

Examples of the application of the above delivery models on recently delivered NPP Projects are identified in Figure A below:

Delivery Model	Olkiluoto 3, Finland AREVA (Framatome) EPR	Hanhikivi, Finland OKB Gidropress (Rosatom) VVER 1200	VC Summer 2&3, USA Westinghouse AP1000	Vogtle 3&4 USA Westinghouse AP1000	Barakah 1 to 4, UAE KEPCO APR-1400	Sanmen 1&2, Haiyang 1&2, China Westinghouse AP1000	Taishan 1&2, China AREVA (Framatome) EPR	Tianwan 1 to 4, China OKB Gidropress (Rosatom) VVER V-428M	Kashiwazaki-Kariwa 6&7, Japan HGNE ABWR	Flamanville 3, France Framatome EPR	Hinkley Point C, UK Framatome EPR	Wylfa Newydd, UK HGNE ABWR	Mochovce 3&4, Slovakia OKB Gidropress (Rosatom) VVER V-213
EPC Turnkey	✓	✓	✓	✓								✓[1]	
EPC Prime Contractor Consortium					✓								
NI supply plus EPCM for the NPP						✓							
NI supply delivery plus Engineering of NPP							✓						
Limited Delivery of NI plus Engineering support								✓					
Split Package (Island Model)									✓				
EPCM													✓
Multi-Contract				✓[2]						✓	✓	✓	

[1] Delivery model converted from EPC to Multi-Contract in 2018 because of not being able to transfer adequate risk at an affordable price to the EPC.

[2] Vogtle moved from EPC to Multi-Contract at around the 50% completion mark.

Figure A - Recent NNP Project Delivery Models (Project, Technology Vendor and Reactor type)

The key differences between the delivery models are defined by which organisations are responsible for:

- Setting the requirements for the NPP (Technical Functional Specifications). This role must be taken by the Owner, supplanted by an early form of the Owner's Engineer.
- Coordinating and integrating design across the NPP Project to achieve a safe power plant that is capable of commissioning and performs as specified in the requirements (Architect Engineer Role).
- Project and construction management on the NPP Project – Coordinating and integrating the construction activities across the NPP Project and down into the supply chain tiers to safely construct a plant in accordance with the Design.
- Commissioning, operating, and maintaining the NPP – this role must be taken by the Owner/Operator.

Role of the Architect Engineer

The EPC and Multi-Contract delivery models all require a capable Architect Engineer (AE) with relevant experience and a depth of resources (in house and/or procured) to support the NPP Project. Owner organisations that have the internal capability may decide to undertake the Architect Engineer (AE) role. Tokyo Electric Power undertook both the AE and the project and construction management role on the Kashiwazaki-Kariwa, K6 & K7 NPP in Japan that was delivered utilising a Split Package (Islands Approach) form of the Multi-Contract delivery model.

The AE is responsible for the integration of the entire design of the NPP. The AE coordinates all engineering packages to achieve the specified requirements and ensure that the construction, testing and commissioning of the plant is executed to the design such that it does not invalidate the Performance Guarantees and Warranties. Physical interface management is a key role of the AE.

The AE manages design interfaces by preparing the Nuclear Island (NI) technical specification and coordinating technical specifications prepared by the Turbine Island (TI) and Balance of Plant (BOP) Engineer and Procure (E&P) contractors. The AE is also responsible for acceptance that installation, testing and commissioning of NI and interfaces to TI and BOP have been completed in accordance with the design and the specifications to secure Performance Guarantees and Warranties for thermal output and availability. Depending on the Licensing regime, this model can be strained if the Owner has strong Intelligent Customer and controlling mind requirements placed upon it for commissioning.

Where not delivered internally by the Owner, the AE may be contracted directly to the Owner or to the Nuclear Island Package Contractor. Where the AE is contracted directly to the Owner there is no practical risk transfer with regard to the AE design coordination role. Where the AE is the EPC or the NI technology vendor (in the case of Multi-Contract model) then risk transfer is possible, the extent of which is dependent on the liabilities determined in the respective agreements.

EPC Turnkey

The EPC turnkey delivery model is commonly used on large projects in the petrochemical, pharmaceutical and power sectors where a major component of the scope is process plant. The primary advantage to the Owner from an EPC model for a NPP Project is that the EPC entity takes single-point responsibility for delivery performance and the resulting plant performance. In the EPC delivery model, the Owner, through the EPC contract, seeks to maximise the risk transfer from the Owner to the Technology Vendor for achieving cost, schedule and plant performance certainty in the design and construction of the NPP.

However, the size and complexity of NPP contracts and the scale of the financial risks means that the extent to which risk transfer can achieved in practice is limited by the balance sheet and bonding limitations of Technology Vendor consortia. Even where risk transfer is achieved it will typically be limited by express liability caps within the EPC contract. Any risk above this cap is ultimately borne by the Owner.

Owner capability may be enhanced by the use of an Owner's Engineer (OE) to augment the Owner's technical capability and a Project Management Consultant (PMC) or Project Management Contractor (depending on

whether the extent of the scope PMC includes construction activities / direct control of a construction supply chain) to augment the Owner's project management capability. The PMC may be used on EPC or Multi-Contract delivery models; it is less likely to be applicable to project that is utilising an EPCM delivery model as the PMC is effectively duplicating much of the role that would be undertaken by the EPCM.

Depending on the Licensing regime, this model can be strained if the Owner has strong Intelligent Customer and controlling mind requirements placed upon it.

Benefit	Disadvantages

• Bankability
  ○ Provides a high degree of early cost and schedule certainty (on paper) based on firm price and agreed dates, project more bankable for investors and lenders where limited recourse finance is proposed.
  ○ Transfers risk of integrating the performance of all package contractors including designers to the EPC.
  ○ Transfers supply chain solvency risk to the EPC.
  ○ The transfer of other construction risks is maximised relative to other procurement methods / delivery models.
  ○ Potential to quantify remedies such as liquidated damages, liability caps and bond amount to the total cost of the works, thus covering a significant portion of the Owner's losses; attractive where limited recourse finance is proposed. Remedies (such as LDs), liability caps and bond amounts are all sized relative to the total cost of the works and thus likely to cover a significant proportion of the owner's losses.
• Owner Capability - Minimizes the project management and commercial administration burden on the Owner.
	• Localisation
	  ○ An EPC Contract puts the contractor in full control of the procurement process which makes it more difficult for the Owner to introduce local suppliers (which may require training, capital, quality control help, specialized nuclear knowhow, etc.) to the project.
	  ○ EPC's mature supply chain solutions may leave little opportunity for local supply chain involvement.
	• Investible
	  ○ Value for Money requires a credible competition.
	  ○ High potential for layering of profit and overhead, profit on profit (and potentially duplication of overhead) and profit layers corresponding to the EPC, the AE and the works packages where there is no effective competition at EPC or package level.
	• Financeable - EPC's have mature supply chains that support their delivery models, that may limit the opportunity to select major equipment suppliers from other countries that can attract state loans and loan guarantees.
	• Risk Management
	  ○ High potential for inflated premium for risk transfer to EPC.
	  ○ Potential for effective risk transfer is limited due to express liability limits imposed by caps and by balance sheet and bonding limitations of Contractors. Ultimately the liability is too big for a company (e.g. Toshiba, Framatome) and requires state backing.
	• Collaborative Behaviours - Increased probability of Contractor claims / transactional behaviour to alleviate burden of risk transfer.

Multi-Contract

Where the Owner has all of the capability (either directly or through its appointed integration and Owner's Engineer partners) required to manage multiple contracts and is able act as the AE (and if the Technology Vendor allows this) it may choose to adopt a Multi-Contract delivery model.

Other than this, the primary reason for adopting a Multi-Contract delivery model would be the situation where the Technology Vendor is not willing to offer an EPC solution. This typically occurs where the Technology Vendor consortia comprise:

- A Technology Vendor that only undertakes engineering, manufacturing, and procurement (E&P) scope and will accept a share of technology performance risk but will not take on construction risk.
- Constructor(s) that will accept a share of construction performance risk but will not take on technology performance risk.

It is to be noted that there are also project examples (Horizon Nuclear Power) where Owners have not been able to secure effective risk transfer to an EPC Contractor at an affordable price, and consequently the Owner chose to amend the delivery model from EPC to a client led Multi-Contract solution where the delivery solution was augmented by a Project Management Contractor employed directly by the Owner in order to better accommodate supply chain capability and appetite for risk.

Whereas an EPC offering typically comprises a pre-determined supply chain solution, the Multi-Contract delivery model has flexibility to allow the Owner to select the optimum packaging of the delivery model to best suit the supply chain capacity and capability and be involved in the selection process which can be beneficial if localisation is a priority for the Owner.

Variants of the Multi-Contract delivery model have been adopted that enable enhanced levels of oversight and control by the Owner particularly in relation to risk and quality management. Typically, in the Multi-Contract delivery model the Technology Vendor (NI E&P contractor) acts as the AE and integrates the design. There are further options within the model whereby a PMC or EPCM employed by the Owner may undertake construction management of the civils construction and MEH erection contractor supply chain on the project.

The primary disadvantage of a Multi-Contract solution is the lack of a single-point responsibility for delivery performance. Under a Multi-Contract model there is a significant risk of delay and additional cost in one part of the supply chain incurring delay to another supplier or suppliers resulting in various parties seeking compensation for additional costs from the Owner and/or relief from delay damages. This is a risk that is typically held and managed by the EPC including the resource costs for the EPC Contractor to resolve the issues with its supply chain. In the Multi-Contract model the Owner is required to hold contingency for this risk and may choose to augment its resources to manage the additional interfaces and to help to mitigate the additional risk associated with a Multi-Contract delivery model.

Benefit	Disadvantages
• Investible - model has potential to reduce layering of profit and overhead. • Bankability - model can achieve some elements of effective risk transfer throughout the supply chain. • Cost and Schedule Certainty - allows Owner to have more control over safety at site, over the quality of the design, equipment manufacture, installation, construction, and the schedule and of the budget. • Risk Management - risk management is more transparent and potentially transfers risk to the	• Risk Management - the overall risk is owned by the Owner, and it must implement proactive risk management across the project and ensure that the risks are adequately mitigated and carried down to the supply chain. • Risk Management – In this model more risks retained by the Owner than EPC: o Risk of interface claims from contractors o Burden of proving fault o Owner's legal remedies are diluted:

Benefit	Disadvantages
party best able to manage it. Model potentially does not attract the potential for excessive risk premiums. • Owner Capability - The Owner is more involved in the project management and in particular the management of significant interfaces and interdependencies associated with multiple packages – the Owner may augment its technical and PM resource capability via engagement of an Owner's Engineer and/or a PMC. The Owner is also able to significantly grow its internal capability (for Units 3 and 4 on second site) and hire local resources by leveraging the knowledge, shared training and development and the adoption of good industry practices obtained from its professional support partners.	▪ By need to allocate fault ▪ By reduced value of remedies o Significant demands are placed on the Owner's skills and resources which may be mitigated by support from an external Owner's Engineer (OE) and PMC. o More complex contract documentation. • Bankability - The PMC and OE contracts are consultancy agreement comprising the following features: o Reasonable skill and care in providing services, not fitness for purpose of the works. o Limited remedies – re-performance and perhaps some liquidated damages for deficient services. o Possible gainshare/pain-share on project outcomes. o But all financial remedies are scaled to the fee, not the cost of the works. o The Owner is buying skills and resources, not legal remedies. • Owner Capability – Owner must have adequate Contract Management / Commercial Administration capability and capacity to manage the multiple package contracts, although much of these activities can be outsourced.

Multi-Contract utilising an EPCM

The EPCM delivery model is commonly used in the petrochemical sector where there is a lack of Owner capability to manage the NPP Project and was used as the delivery model for the Mochovce 3&4 NPP Project in Slovakia. The EPCM is responsible for developing the concept and detailed design of the plant (the E part of the EPCM) and to support the Owner by undertaking the procurement activity on behalf of the Owner but the construction contracts are awarded directly to the supply chain by Owner with the EPCM acting as the Owner's disclosed agent in relation to the construction contracts. The EPCM model requires the engagement of a specialist that takes on the risk associated with design integration, but in this delivery model the risk of supply chain performance (E&P and construction works) lies with the Owner. Depending on the Licensing regime, this model can be strained if the Owner has strong Intelligent Customer and controlling mind requirements placed upon it.

EPCM contractors by comparison to EPC are typically engaged on a reimbursable arrangement that may include an incentive fee aligned to cost and schedule performance of the project. A target cost and target schedule commercial arrangement with an EPCM for their scope may also be possible. The main drawback for the Owner is that the EPCM is a service provider and typically does not take on either construction performance nor plant performance and availability risk.

Benefit	Disadvantages
An EPCM is no different to an EPC in that it can use its experience in project management and planning to optimise the project delivery. EPCM may take role of Owner's Engineer.	• An EPCM contractor is mainly an agent for the Owner whereas an EPC Contractor is a principal. An EPCM contractor provides services and unlike an EPC Contractor does not provide a turnkey product guarantee. • The EPCM contract is in effect an enhanced consultancy agreement comprising the following features: o Reasonable skill and care in providing services, not fitness for purpose of the works. o Limited remedies –re-performance and perhaps some liquidated damages for deficient services. o Possible gainshare/pain-share on project outcomes. o But all financial remedies are scaled to the EPCM fee, not the cost of the works. o The Owner is buying skills and resources, not legal remedies. • Cost and Schedule Certainty - EPCM involves multi-point responsibility and does not benefit from single point responsibility that an EPC Contractor provides. • In this model more risks are retained by the Owner than EPC: o Risk of interface claims from contractors o Burden of proving fault o Owner's legal remedies are diluted: ▪ By need to allocate fault ▪ By reduced value of remedies ▪ By limited rights against the EPCM contractor o Owner's later package choices may be limited by earlier decisions. o Significant demands are placed on the Owner's skills and resources (the EPCM contractor may have conflicts of interest which require management) o Complex documentation. o Financing options other are more limited. o EPCM works best within established relationships between experienced parties. • There are very few organisations globally that have previously undertaken a successful EPCM or similar role on an NPP Project, many are conflicted by roles with Technology Vendors (Fluor, Bechtel etc.).

Commercial Arrangement Options

Each of the delivery models may be aligned with one of the following main forms of commercial arrangement:

- Fixed Price.
- Guaranteed Maximum Price.
- Target Cost and Target Schedule.

- Reimbursable.

Fixed Price

A fixed price contract is where a Contractor offers to undertake the works specified by an Owner for a fixed price with interim payments made against completion of activities set out in the Contract. The Contractor typically accepts the cost and schedule impact of the following risks: quantification errors; integration errors; low productivity; defective work (pre and post completion); insolvency of suppliers and / or Subcontractors; shortages of labour, Plant and Materials; and schedule. The Owner retains risks associated with changes to provided items including but not limited to Works Information (or scope); access to the site; changes due to third parties (such as the regulator); and other Owner furnished items. Under this method of reimbursement, the Contractor retains the full benefit if the scope of work is delivered below the agreed fixed price and takes the risk if the actual cost of completing the works exceeds the fixed price. One of the risks that exist on a fixed price contract is that the Contractor front end loads the price of the early activities for example ground works and substructure to obtain positive cash flow.

This price mechanism is suited to projects where risk of change is low, the specification is stable, and the Owner is prepared to pay for risk transfer. It is most frequently deployed for medium to low complexity projects or for construction contracts where the Owner has completed the design and wishes to secure prices for build / installation works. For example, fixed price EPC contracts are common for combined cycle combustion turbine power plants.

Guaranteed Maximum Price

A Guaranteed Maximum Price (GMP) contract is in essence a cost reimbursable contract where the Contractor is paid his defined costs plus fee up to a pre-agreed maximum price. The intention of this method of reimbursement is to transfer the vast majority of risks to the Contractor and to limit his ability to effect variation.

This type of contract is commonly used where the extent of the works is less well defined, risks understood and there is a mature understanding of cost boundaries and price point. Commercial drivers are typically included to protect the Owner's position (with or without incentives). The GMP mechanism is most suited to standard commercial developments; where functional or prescriptive requirements are stable; risk of change to scope is low and residual risk quantifiable.

Target Cost Target Schedule

Under a Target Cost Target Schedule contract, the Contractor is reimbursed on the basis of their expenditure (defined cost plus fee) with the opportunity to enhance their profit by delivering the project at a price below the target cost and to or ahead of key dates. Conversely, the Contractor can potentially make a loss if the total of the allowable defined costs plus fee exceeds the target cost or there is slippage on key dates. The benefit of the target cost contract is that it is designed to encourage the Contractor and the Owner to work collaboratively to mitigate risks and realise savings for the mutual benefit of both parties. The ratio in which the parties share the benefits of any savings or cost overruns against the target cost and key dates are set out in the Contract. This ratio can be progressively stepped, have dead bands with no pain / gain share or include caps and collars and include opportunities for the Contractor to re-earn incentives lost due slippage on early key dates should the project complete on time. The solely Contractor-owned risks in the GMP arrangement are typically shared between the Owner and the Contractor in this arrangement and include risks associated with quantification errors, integration errors, low productivity, defective work (pre-completion), insolvency of suppliers and Subcontractors, shortages of labour plant and materials, and schedule.

The Owner retains risks associated with changes to items / information issued by them (to the Contractor) such as the Owner's requirements, Rely Upon Information (e.g. Site characteristics, ground investigation data, elements of design prepared by or for the Owner, grid connection, seismic spectra, etc); access to the Site and some risks related to Licensing.

A target cost contract requires a significant amount of post contract management resources as the target cost is adjusted in the same manner as a fixed price contract (through the agreement of variations) and the defined costs have to be managed and forecast on the same basis as a cost reimbursable contract.

This type of contract is commonly used when the extent of the work is not (or cannot) be fully defined, risks identified and scaled or can be driven by market conditions. Delivery to time and cost targets are typically incentivised and there is a predetermined allocation of risk between Contractor and Owner via the target cost mechanism.

Cost Reimbursable

Under a cost reimbursable contract, the Contractor is reimbursed on the basis of their expenditure (defined cost plus fee). There are three main variants:

- The Contractor is reimbursed against a schedule of hourly and expenses or day rates and expenses for Contractor provided staff with third party costs being reimbursed on a defined cost plus fee basis.
- The Contractor provides open book details of salaries of staff that are used to set base rates to which a percentage multiplier is added to cover payroll burden and overhead with third party costs being reimbursed on a defined cost plus fee basis.
- Full cost reimbursement where the Contractor is paid the true cost of all employees based on open-book accounting with third party costs being reimbursed at defined cost plus fee.

This type of contract is commonly used where the extent of the work is not well defined and there is an imperative need to deliver the project to time. Delivery is typically incentivised against schedule performance. Under this type of contract, the Owner bears all of the financial risk in delivering the project with a few minor exceptions.

Alignment of NPP Delivery Models to Commercial Arrangements

The are several options for the commercial arrangements that may be utilised in the Project Agreement applicable to the EPC and muti-contract delivery models:

- Where scope is well defined, and the supplier is able to manage the risks associated with both manufacture, installation, and plant performance it may be possible to contract this scope via a firm price arrangement. This has the additional benefit to the Owner of driving cost certainty combined with single point responsibility. For a NPP Project based on a reference plant, the major items of plant and equipment are Next of a Kind (NOAK) and consequently the market is able to offer Owner's a firm price for the Nuclear Island and Turbine Island Engineering and Procurement (E&P) scope which may comprise some 40% of the overall Technology Vendor consortia's scope. Note in nuclear, the risk is that we never reach true NOAK equilibrium design.
- Where the scope is not well defined or significant risk transfer to the Technology Vendor consortia is being sought by the Owner, the Technology Vendor consortia may seek to include a significant risk premium in their price. Where the Owner does not wish to pay such a premium then risk sharing arrangements can be incorporated within the Project Agreement that utilise an incentivised commercial arrangement aligned to a Target Cost and Target Schedule.
- Elements of scope can also be undertaken via the Project Agreement on a reimbursable basis where the scope is not well defined and there is an urgency to proceed.

Application of Commercial Arrangements to Delivery Models

All of the commercial arrangements can be applied across the various delivery models. Typically:

- Turnkey EPC contracts are combined with a Fixed Price commercial arrangement as this has the benefit of driving cost certainty combined with single point responsibility. Where the scope is not well defined or a significant risk transfer to the Contractor is being sought by the Owner then a significant risk premium may require to be paid to the EPC Contractor for them to agree to a Fixed Price. EPC Contracts can also

be undertaken on a Target Cost basis where the Owner does not wish to pay a premium for risk transfer or a reimbursable basis where there is an urgency to proceed.

- EPCM contractors by comparison are typically engaged on a Reimbursable arrangement that may include an incentive fee that may be aligned to cost and schedule performance of the project with a Target Cost commercial arrangement.
- E&P Contracts are fixed price. However more complex projects may utilise a two stage arrangment. The Concept Design (or FEED) phase is often carried out using a reimbursable arrangement. On completion of the Concept design the scope is quantifiable and the risks well understood and as a result a Fixed Price arrangement may be agreed for the Detailed Design and Procurement phase of the E&P contract.
- Construction contracts are fixed price when the design is well advanced prior to the bidding process. More complex projects, or projects executed in a "fast track" timeframe may sometimes use target cost or reimbursible contract. These contracts may also contain elements of several commercial arrangements, and follow a staged approach where they are converted into fixed price after most of the uncertainty is clarified. Often nuclear projects may progress design detail only when contracts are signed, and have significant elements of scope that are only at the maturity of concept design, leading to significant design activity within the scope of the contract.
- Services contracts tend to be Reimbursable, Target Cost or Fixed Price dependent on the maturity of the scope definition.

Experience from other NPP Projects indicates that where the Technology Vendor consortia has not adequality identified the risks, priced for the risk it has taken on via the contract and/or is not adequately incentivised to manage this risk effectively and efficiently then collaborative behaviours can be impacted increasing the probability of contractual claims / transactional behaviour by Technology Vendor consortia as it tries to alleviate the burden of the risk transferred.

The selection of an appropriate commercial arrangement aligned to the Delivery Models being offered by the Technology Vendors will be undertaken as part of the Preparation of the BIS and will be dependent on several factors including the appetite of the supply chain for risk and the required timeframe for project completion.

K. CVs of TFS Review Team

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