



innogy

Offshore Project Excellence

Project management
system for the
development and
construction of
offshore wind farms



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Introduction

Offshore Project Excellence is the project management system operated by innogy for the development and construction of Offshore Wind Farms.

This document gives an overview of how the project management system is implemented on offshore wind projects managed by innogy, either wholly owned or as lead operator.

Offshore Project Excellence is compatible with ISO21500:2012 Guidance on Project Management.

This document outlines the project management methodology for Health, Safety, Wellbeing and Environment and each of the ISO21500:2012 Subject Groups (1 to 10):

- 0 **Health, Safety, Wellbeing and Environment**
- 1 **Integration**
- 2 **Stakeholder**
- 3 **Scope**
- 4 **Resource**
- 5 **Time**
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“Offshore Project Excellence provides the framework for our best practice as a leading owner and operator of offshore wind farms. This project management system is integral to delivering our projects with a high level of performance, and ensuring we strive for continuous improvement in our project execution.”

Paul Cowling, Director Offshore Wind, innogy



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0. Health, Safety, Wellbeing and Environment

0.1. Health, Safety and Wellbeing

Health, safety and wellbeing are paramount on all innogy projects. They will be actively managed in accordance with the innogy Health, Safety, Environment and Security Directive.

This directive comprises 12 Elements which projects will implement via the project specific Health, Safety and Wellbeing Management Plan. This plan will be established at high level at Project Start and will be refined with appropriate detail as the project progresses until Project Close.

Projects will set Health, Safety and Wellbeing Key Performance Indicators (KPIs) to ensure both leading and lagging indicators are monitored and acted on. KPIs will be compatible with innogy Health, Safety and Wellbeing targets.

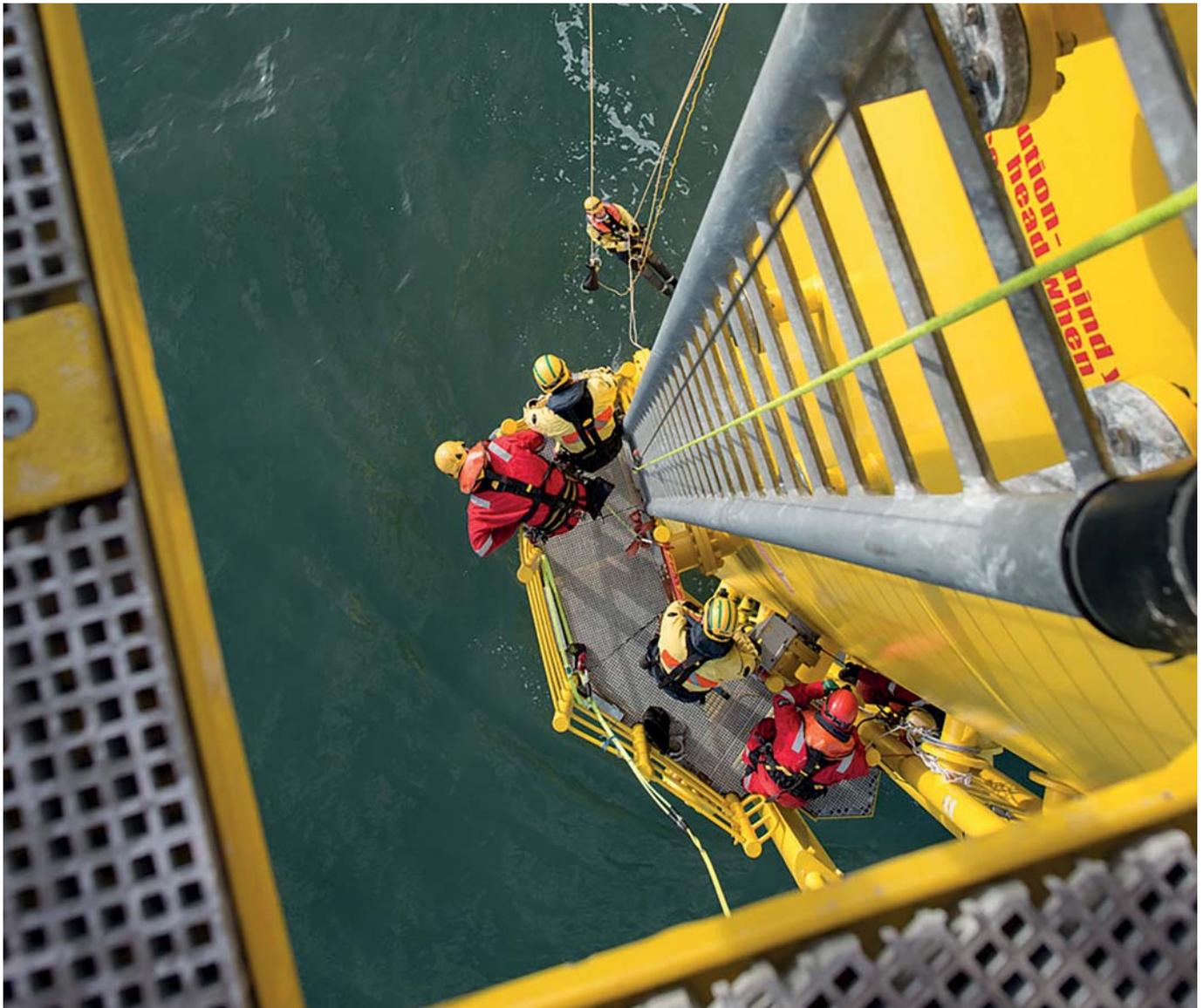
All project personnel are responsible for safety and are empowered to take action to report or stop unsafe situations.

Mental and physical wellbeing of all project personnel will be considered in the resource plan, and promoted in the project working methods and practices.

0.2. Environment

Projects will comply with all environmental regulations, permits and consents and managed in accordance with the innogy Health, Safety, Environment and Security Directive in order to minimise impact on the environment. Projects will comply with the Equator Principles which are a common requirement of Project Financing and an example of accepted international good practice.

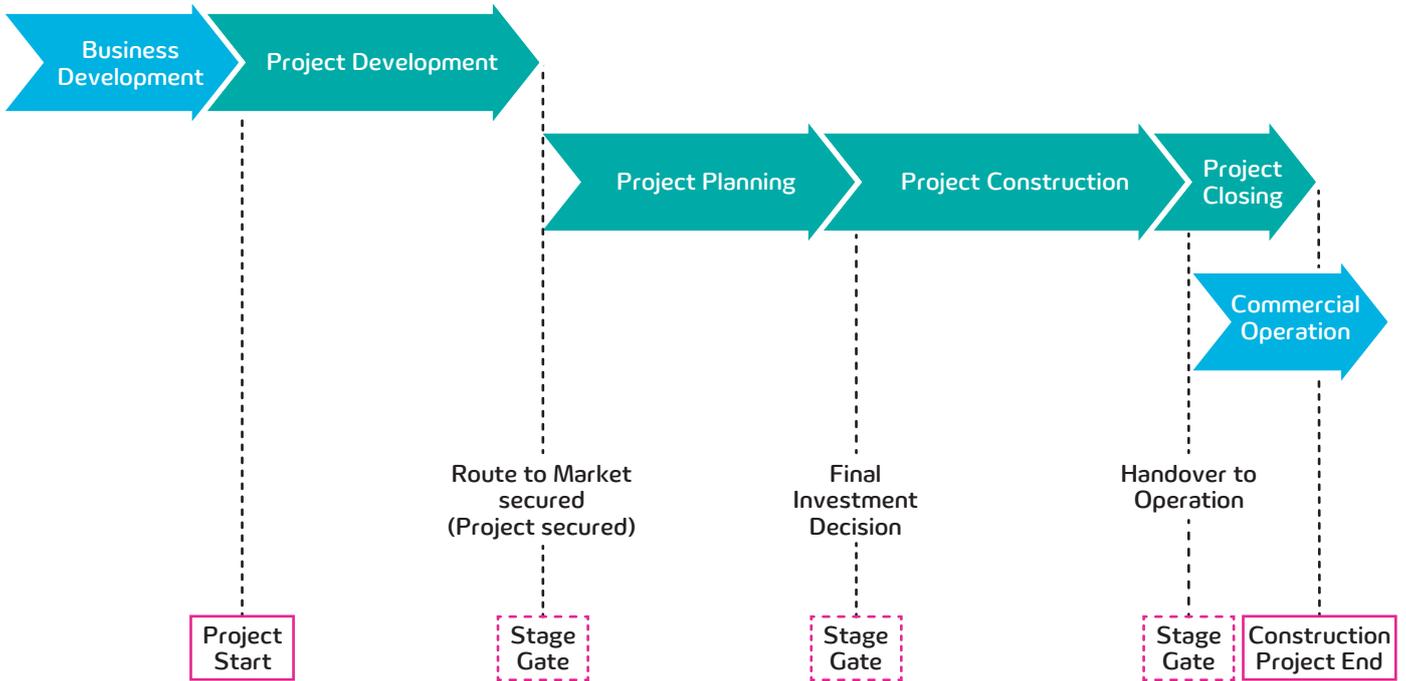
A project specific Environmental Management Plan will be established to ensure the project and its contractors comply with the requirements of legislation, permits, consents, and good environmental management practice. Compliance with this plan will be audited on a regular basis.



1. Integration

1.1. Lifecycle and Governance

Offshore Project lifecycles are defined as follows, with the lifecycle phases described below:



Project Development

The aim of the Project Development phase is to successfully progress the project from Project Start through any leasing, competitive selection or auction process to secure a Route to Market (Support Mechanism and/or Site Lease) for the project. A key activity is the optimisation of the project to deliver the lowest Levelised Cost of Energy (“LCoE”).

During this phase the project may secure permits, consents and rights (including connection to the grid) as well as undertaking development work (such as wind farm concept design, procurement strategy, and supply chain engagement) that is deemed necessary for securing the Route to Market and for successful future execution.

The scope of project development required for the applicable route to market will determine the size and structure of the project team, and innogy internal knowledge will be harnessed to ensure maximum efficiency during this initial project phase.

Project Planning

The aim of the Project Planning phase is to further develop and optimise the project technical and commercial base case, and progress the project to a Final Investment Decision, securing any third party equity, debt financing and off-taking agreements as required.

The project team will prepare the project for the later construction and operation of the project including the scope (an optimised project design, construction plan etc.) as well as full supply chain engagement whereby specifications, programmes and contracts are ready for execution.

Commercial aspects are also further detailed, refined and finalised such as the business model, cost book, risk assumptions, and investment return expectations.

Project Construction

The aim of the Project Construction phase is to safely execute the project within the approved time, cost and quality in accordance with the project plan. This will involve management and coordination of the design, manufacturing, installation and commissioning to achieve the completion conditions. Once operational, control of the wind farm will be handed over to the Operations team, along with the necessary documentation (Health and Safety documents, O&M manuals etc.).

In this phase, the project will continuously monitor and report against approved Key Performance Indicators, covering areas such as health, safety, wellbeing, environment, cost, risk, quality, scope and programme. The project team will take appropriate measures in the event of deviations from the project plan.

Project Closing

The aim of the Project Closing phase is to complete and terminate the construction project. The project team will close out all outstanding issues and at the end of Project Closing all open points are either closed, or handed over to operations. The team documents the project close out and lessons learned, and the project is closed.

Governance

Oversight and direction of the project is carried out by the Board of the project company. Each shareholding company will appoint Directors to the Board of the project company as determined by the Shareholders Agreement (between the shareholders of the project and the project company). Decision making and approvals, including levels of delegated authority to the Project Director, shall be carried out in accordance with the Shareholders Agreement and the Management Services Agreement (between the project company and innogy as service provider).

In accordance with the Shareholders Agreement, each shareholder shall be entitled to appoint an Investment Manager to the Investment Committee. Prior to each Board meeting, the Investment Committee shall be further informed by the Project Director about project activities and upcoming decisions in order to facilitate effective decision making at the forthcoming Board.

As the operator, innogy will nominate a board member as the Project Sponsor. The Project Sponsor will support the project at Board level and provide the project team members with visibility of the Board at key points in the project. The Project Sponsor will own the Project Charter which is produced by the Project Director and approved by the Board. The Project Charter will set out the key success factors, priorities and requirements for the project.

The Project Director is accountable to the Board for meeting Health, Safety, Wellbeing and Environmental targets and for executing the project in accordance with an approved Business Plan until the Handover of the project to the General Manager at the start of Operations. These targets and the Business Plan shall be approved in accordance with the terms of the Shareholders Agreement and captured via Key Project Indicators (KPIs) in the Project Charter.

1.2. Project Management Plan

The Project Management Plan is the primary document defining the organisation, roles, responsibilities and procedures for the management of health, safety, wellbeing, environment, risks, issues, opportunities, change, quality, cost, time, and communication on the project. It also defines the scope and objectives of the project, its inputs, outputs and constraints.



The Project Management Plan is put in place at Project Start and the main input is the Project Charter. It will be regularly updated over the life cycle of the Project and will reference more detailed plans produced for project functions (Health Safety and Wellbeing, Engineering, Quality, Environment) as required. It will be regularly communicated to relevant stakeholders including the project team.

1.3. Bid Management Framework

To secure a Route to Market in an auction, effective Bid Management is crucial and typically comprises: understanding complex auction rules, site specific characteristics, the competitive landscape as well as the local regulatory environment, formulating from that an appropriate bid strategy and subsequently developing a bid that is sufficiently competitive to win whilst delivering an acceptable risk and reward profile which is value accretive to the company.

A consistent and highly competitive approach towards bidding is needed to win a tender or auction. Continuous improvement of levelised cost of energy and revenue of energy levels (LCOE/LROE) and the approach to bidding are needed to stay ahead of competition in such way it systematically benefits all bid activities across markets. Best practice sharing and market intelligence need co-ordination to inform bid strategies and tactics for each bid.

For these reasons, a bid management framework will be structurally designed and applied at each bid (auction/ M&A tender) together with central management and co-ordination. The key objective is to define and execute a coherent, efficient, and systematic Bid Management Framework which enables innogy to secure renewable energy bid success on a sustainable basis.

1.4. Change Management

Effective change management is essential to project success. Projects will implement a Change Management Process to ensure the control of changes against the baselines which are defined for all project areas.

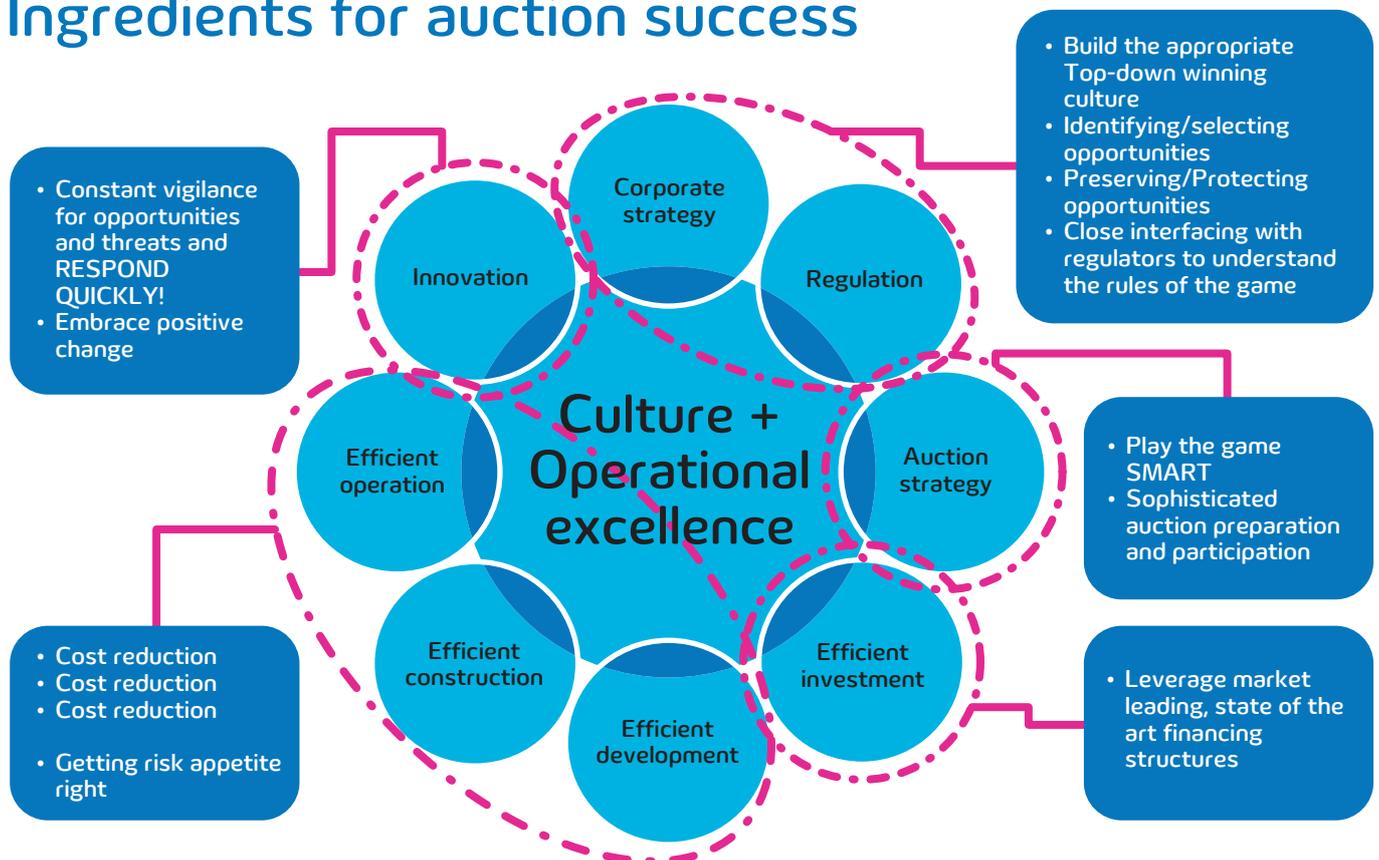
The baselines will be continually developed through the lifecycle of the project, starting with those mandated in the Project Charter, and expanding to the baselines captured by the project plan (scope, cost and time) as defined in the Project Management Plan.

1.5. Lessons Learned

Capturing, communicating and implementing lessons learned reduces risks on a project and increases the likelihood of successful execution.

Lessons learned will be captured with a regular structured approach, with formal lessons learned

Ingredients for auction success



workshops held normally after key project milestones, and the findings stored in a standard data base format. A standard presentation format compatible with the data base will be used for lesson communication.

Projects will actively communicate lessons captured on the project. Peer reviews shall be undertaken to ensure lessons from experienced peers and suppliers, which are focussed at the project needs, are communicated to the project team.

Projects will actively seek to gather lessons learned from other projects and the innogy database, review these for implementation, and record key lessons that are implemented.

The lessons learned process will be owned by the Senior Project Manager, with all members of the project team actively involved.

2. Stakeholder

2.1. Stakeholder Management

The project will identify the stakeholders, internal and external, by determining the individuals, communities or organisations affected by or affecting the project and determine the relevant information regarding their interest or involvement.

The stakeholders will be managed by developing an understanding of their needs and expectations and identifying their concerns and resolving or escalating any issues they may have.

A detailed analysis of the stakeholders and the impacts they may have on the project will be conducted so that the project can take maximum advantage of their contribution.

3. Scope

3.1. Consent

Consent is the process of obtaining approvals or permits from all relevant regulators necessary to construct, maintain and operate the project assets.

Consent will be obtained during the Project Development or Project Planning phases depending on the relevant regulatory regime (or it may be provided under the conditions of any tariff award).

Consent applications will take into account the expected envelope of project assets, their operation, maintenance and decommissioning alongside any regulatory or site

constraints. This requires careful interface with the other scope subject areas along with the necessary site surveys to determine the environmental baseline.

Granting of consent represents a key project milestone, at which project delivery risk is substantially reduced. A significant effort is then required to discharge consent conditions throughout the planning, construction and operational phases.

Liaison with regulatory authorities is normally carried out by dedicated project personnel who are responsible for managing the ongoing relationships with consenting stakeholders including regulators and the community.

Further key activities are the acquiring and maintaining of any required lease agreements, wayleaves or land holdings, and any commercial rights agreements or agreements with third parties with activities in the vicinity of the offshore wind farm, or affected by it.

3.2. Design

The design of the project will be developed taking into account a starting point or reference design based on lessons learned from previous offshore wind farm projects.

Overall wind farm design including project location, layout, grid interface points and relevant concepts such as electrical configuration, WTG and foundation type will be determined by the project team. This will inform consenting, construction planning, operation and decommissioning.

Detailed design of assets will be contracted to third parties, based on appropriate specifications provided by the project team. The overall design process and coordination of key interfaces between design/ construction contracts is managed by the project team.



Ensuring an intrinsically “safe by design” philosophy is a guiding principle for the design process, where risks to personnel fabricating, constructing, operating and decommissioning, or third parties affected by the wind farm are evaluated, avoided, reduced or communicated following the hierarchy of risk.

In the Project Planning phase interface points between contracts are defined, and the responsibilities and timing for provision of equipment and associated information are planned and documented in detail. During the design process these interfaces are coordinated, tracked and managed by the project team using methodology and tools defined in the Project Management Plan.

3.3. Certification

Where required by regulation or considered necessary to mitigate risk to the project company, an independent certification authority will be appointed to certify the design and in some cases the manufacture and construction of the wind farm. In some regulatory regimes certification may be mandatory as part of the licence or permit for the wind farm, and may be carried out by a regulator having a wider scope including compliance with consent conditions.

The certification process will either be managed by the project team or incorporated into the scope of design/ construction contracts.



3.4. Construction

Construction encompasses the manufacturing of project components, and the installation of these components on the project site, including any site construction works required.

Construction will be contracted out, with monitoring and inspection of the process, product and works carried out to the extent considered necessary to reduce risk to the project company, in accordance with the Quality Management Plan.

Planning, coordination and monitoring of construction will be carried out in accordance with the Health Safety and Wellbeing Management Plan. Coordination and site management of the offshore works will normally be carried out by the project team, unless the Procurement Strategy allows for this duty to be contracted out to a competent contractor whilst maintaining required safety management standards and compliance with applicable regulations.

Management of interfaces between contractors during construction requires particular focus from the project team to ensure work is coordinated efficiently, correct and adequate interface information is exchanged in a timely manner, and physical interface points mate and function correctly.

3.5. Commissioning

Commissioning of the project assets will be included within the scope of construction contracts, with a central commissioning planning and execution role either carried out by, or under the management of, the project team.

A key consideration for commissioning is the selection, planning and management of the High Voltage and Wind Turbine safety rules which may be innogy rules, suitable and sufficient rules operated by a contractor, or industry standard rules as appropriate to the project.

3.6. Operation Implementation

Operations Implementation is the activity of planning and implementing the operations and maintenance capability for the wind farm once the project is handed over.

Operations representatives will be integrated into the project team, and will begin planning for the operation of the wind farm at Project Start, providing an input into the scope for consenting and design.

Operation Implementation personnel will assist with preparation of specifications, ensuring safe by design, monitoring of quality and takeover of assets, spares strategy, product manual review, commissioning and handover of the project to the operating team.



4. Resource

4.1. Organisation Structure

As the project progresses, the team will be structured in packages which manage works such as WTGs, Electrical, Cables, Foundations, Offshore Site and Commissioning, and functions such as Consents & Environmental Management, Quality, Engineering, Health and Safety, Procurement, Finance, Legal, Commercial and Operations.

Project managers (leading packages), and functional managers (leading functions) make up the Senior Management Team. They will report to the Project Leadership Team (Project Director, Senior Commercial Manager and Senior Project Manager).

Each project team member will be assigned to an innogy standard role name (known as generic roles), each role belonging to a specific line department. Project specific job titles may be used to reflect the resource requirements of that project. Within a project, team members will work in a matrix structure reporting on a day to day basis to the relevant project or package manager, with functional managers ensuring competence during team recruitment, governance in accordance with the Project Management Plan, consistency of approach across the project, and providing team members with an escalation route to the Project Leadership Team.



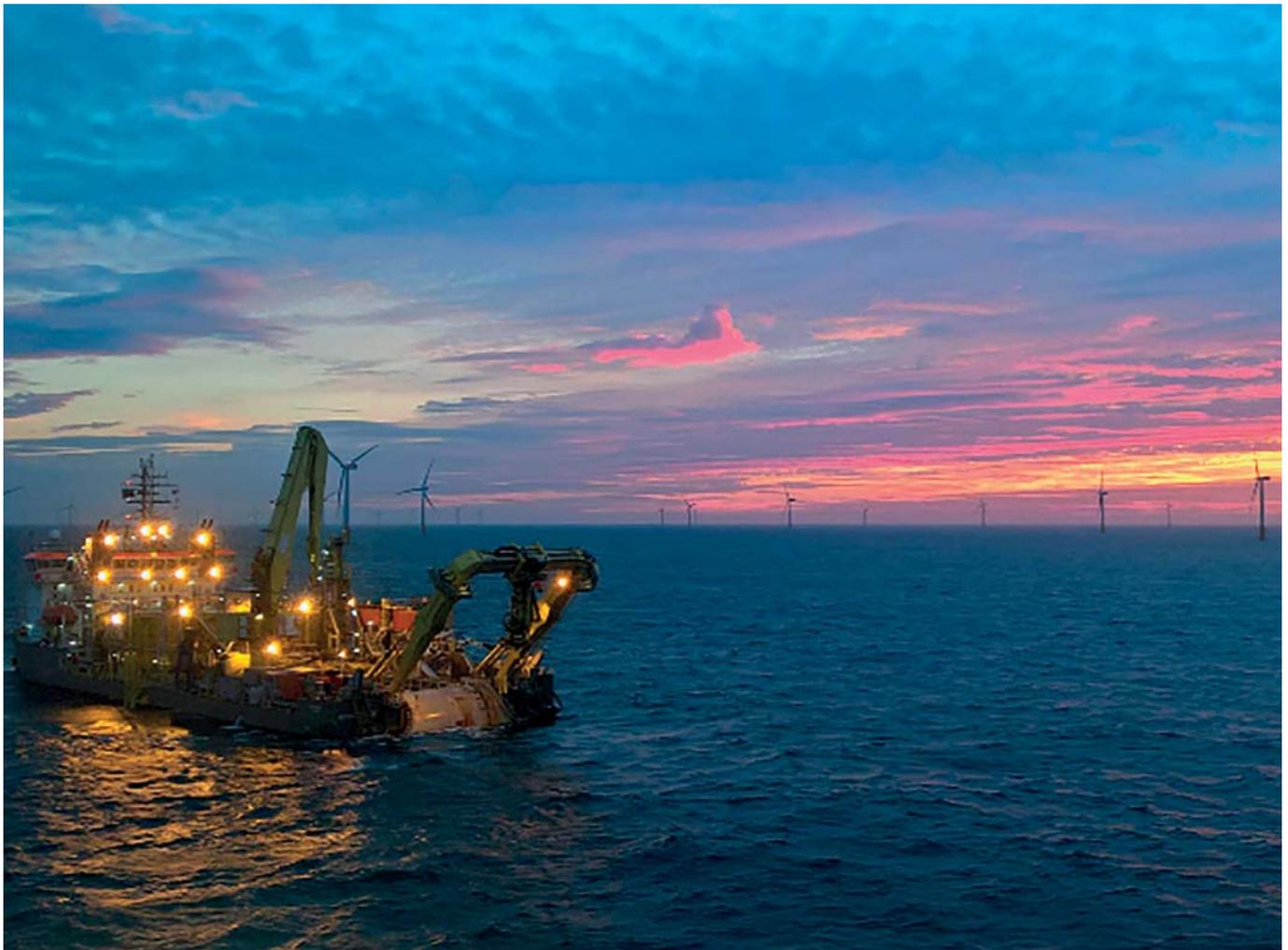
4.2. Recruitment and Resourcing

Competent resource will be provided by innogy to make up the project team (for projects with multiple owners, responsibility for role provision shall be agreed with the owners).

The Project Director (or their delegate) will liaise with the innogy line manager for the relevant generic role to establish availability of resource and the need for employee or contractor recruitment, with appointments being approved by both the Project Director (or their delegate) and the line manager.

Resource plans and resulting budgets will be updated on a regular (minimum quarterly) basis and fed into the innogy Resource Planning Platform (RPP).

Competence assessments shall be recorded for all statutory role holders (e.g. CDM Designers). Project training requirements will be recorded in a training matrix which will be in line with the G+ guidance documents (Global Wind Organisation or equivalent). Competence including standard industry training will be ensured by the line, with any project-specific training costs met by the project.



5. Time

Planning and executing a project to schedule is a key measure of project success, and a major driver for cost control and revenue delivery.

A work breakdown structure (WBS) will be established during the Project Development phase and finalised in the Project Planning phase. This will allow development of a master project schedule with activities planned in a logical sequence taking account of duration, milestones and interdependencies and the implementation of weather constraints within the offshore campaigns.

The detail in the master project schedule will be developed as the project progresses, and will normally require dedicated planning resource operating Primavera P6.

The schedule will be monitored against the approved baseline to determine any variance, forecasting completion dates, and implementing appropriate actions to avoid adverse schedule impacts.

Where appropriate, schedule risk analysis and scenario analysis will be carried out to inform risk management,

contingency planning and reporting. This will be done on a quantitative basis, according to the risk level set in the Project Charter.

6. Cost

6.1. Estimate Project Economics

During the Project Development phase an estimate of the project economics is produced which is a first approximation of the cost (incl. contingencies determined in line with the risk level set in the Project Charter) to develop, plan, finance, build and decommission the project, and the expected revenues. Based on these figures, a financial model is developed that reflects all commercial assumptions.

6.2. Develop Complete Business Case

During the Project Planning phase, the initial cost and revenue estimates are further detailed, validated and updated. All commercial assumptions are finalised and implemented in a financial model which is used for key decision analysis, and ultimately as the basis for the Final Investment Decision (FID).



6.3. Control Budget

Budget Control is an on-going activity that focuses on monitoring and controlling project costs against the approved project budget. Project costs are forecasted and reported, normally on a monthly basis. The financial model is updated as needed according to project specific requirements and milestones.

7. Risk

7.1. Risk and Opportunity Management

The objective of risk and opportunity management on the project is the identification, evaluation, management and control of threats and opportunities.

Risk and opportunity management is carried out throughout the lifecycle of the project, to a level of detail appropriate to the exposure to risk of the project owners.

By the end of the Project Development phase and throughout the Project Planning, and Project Delivery phases a quantitative risk management approach will

be taken to inform the contingency budgeting and cost control process. This is achieved using a probabilistic quantitative cost risk assessment (PQCRA) approach with Monte-Carlo simulation.

Similarly, early in the project lifecycle, value management activities will be established with the aim of reducing the cost of energy through the identification and evaluation of value creating opportunities.

Risk and opportunity identification is the responsibility of all members of the project team, with management of individual risks/opportunities allocated to specific individuals. Overall risk management tracking, analysis and reporting is the responsibility of a nominated project team member who would normally be dedicated to this task in the Project Planning and Project Construction phases.

7.2. Insurance

Insurance is an aspect of Risk Management, the objective of which is to provide a level of protection against possible eventualities.



The components and detail of the insurance programme will be determined by the project shareholders (and lenders if applicable). The insured party will be the project, with covered parties including suppliers and other investors. Cover will be active throughout the Project Development, Project Planning and Project Construction phases. The typical major components of the insurance programme provide cover against property damage (i.e. the project's assets), and potentially any revenue loss as a result, and third party liability.

A nominated project team member will act as the point of co-ordination for all insurance aspects, including the handling of any claims, and will liaise externally with applicable stakeholders (including service providers, brokers, loss adjusters, lenders' advisers and insurers).

8. Quality

Establishing and delivering quality requirements is a major driver of cost, revenue and time performance, and is therefore key to project success. Project quality activities aim to ensure components of the wind farm are designed, manufactured and installed in accordance with the contractually agreed requirements and thus reduce the likelihood of construction and operational issues due to technical failures.

The project will determine the quality planning, quality assurance and quality control requirements applicable to

the project, review the deliverables against the quality requirements and determine whether those requirements are being met.

During the Project Development phase the project contractual quality requirements will be defined in a Quality Management Plan. This will consider the scope of work of potential contractors, complexity and importance of individual components, as well as lessons learned from previous projects.

During the Project Planning phase, quality related information from the potential contractors will be evaluated and short-listed suppliers will be audited in order to evaluate their capability to fulfill the project's contractual and quality requirements.

During the Project Construction phase, audits and inspections will be conducted to monitor compliance to the quality requirements, inspection and test plans, and the technical specifications of the components and construction processes. Preventative and corrective actions will be determined as necessary to eliminate unsatisfactory performance and defects.

Information provided by the audits and inspections will be used to inform technical and commercial management of the design and construction contracts, and to drive continual improvement in effectiveness and efficiency of the project and future projects.



9. Procurement

9.1. Procurement Process

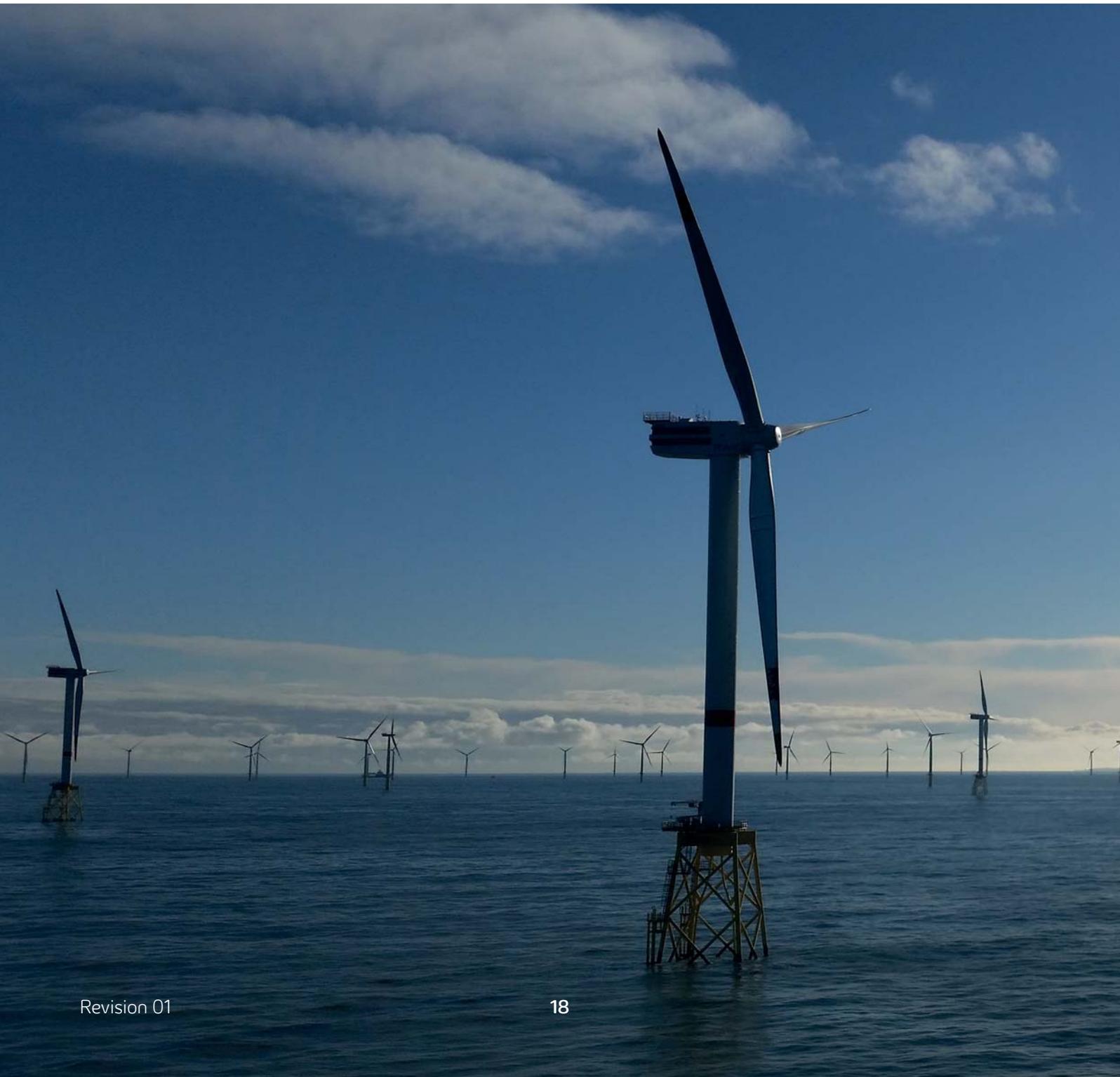
Procurement is carried out under a set of “end-to-end” processes and procedures, taking procurement activities from the Project Development phase through to Commercial Operation in accordance with the innogy Project Procurement Contract Management Manual, ensuring compliance with innogy procurement directives.

9.2. Procurement Strategy

An effective procurement strategy and implementation plays a vital role in managing risk over the project life cycle by controlling interfaces with external resources in terms of contractual, commercial and lifecycle cost management and delivery.

Development and implementation of robust procurement and contracting strategies is a pre-requisite to project success. innogy’s ability to leverage supply chain relationships and spending power across regions also contributes significantly to improving project results.

The procurement strategy will be developed during the Project Development phase by the Senior Procurement Manager in conjunction with the Project Director and their delegates. Implementation of the strategy is the joint responsibility of the Procurement Managers and Project Managers for each contract package, with the Procurement Managers responsible for upholding the innogy procurement process and engaging legal advice on the contract as necessary.



9.3. Contract and Claims Management

After contract award it is essential that the contract is managed following the processes outlined in the contract and the procurement process guide. The Contract Manager (who may have been the Procurement Manager prior to contract award) and the Project Manager are responsible for ensuring this, with the Project Manager having overall responsibility for the contract, and the Contract Manager providing commercial expertise in the management of the contract.

Contracts shall be planned, tendered, awarded and managed with a view to minimising the likelihood of claims from the contractor. In the event of claims they shall be managed following the delegations of authority set out for the project.

10. Communications

The project will plan communications based on the information and communication needs of the stakeholders and team members.

The frequency and method of information distribution will be aligned to the requirements of the recipient, taking into account their specific needs, and the needs of the project and business. The communication arrangements will be regularly reviewed and revised as needed.

Public communications will be planned and managed in conjunction with the innogy public relations department, and those of the project investors and suppliers.





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