





# **Developing Wind Projects Safely:**

## A Partnership Safety Strategy.

#### **Safety Toolkit Series:**

DRAFT Consultation Document for the purpose of developing a partnership approach between stakeholders for the safe construction of wind farms in Ireland.

#### Developing Wind Projects: A Partnerships Safety strategy



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#### Introduction

Our members at IWEA aims to achieve world-class safety & environmental practices in the development and construction of renewable energy projects in Ireland in the coming years. IWEA is committed to working with our members to promote, build and sustain a high standards of safety excellence in the industry. Over recent months, the IWEA Construction Safety Strategy team have been hard at work with our members, defining common points of interest, providing information about lessons learned and providing input into safety guidance for the industry. Later in the year, IWEA intend to publish a series of draft safety guidance notes for the renewable construction sector, first off is to highlight a common levels of expectations when it comes to safety practices and partnership standards as we build project into the future.

The Renewables sector is a relatively new industry with significant challenges; from developing wind resources in mountainous environments to managing and building up the skill set of people who can do the job safely. As well as these new challenges, we deploy the traditional civil engineering and building trades to building out this energy infrastructure of the future, and not everyone is aware of the unique challenges presented in wind farm environments.

Whilst there has been much improvement in the safety performance in the construction industry, in general there is much more that can be done. As the representative organisation for the renewable energy sector, we aim to ensure IWEA members fulfil a key role in continuously improving safety performance in the world of wind.

Over the past year, IWEA have fully supported the construction safety subgroup, a team drawn from our members, the tremendous work of this team has lead to the development of a strategy which our members may apply when partnering up with designers, wind turbine and transformer suppliers, EIA consultants, and the civil and electrical contractors who build out wind farm infrastructure. This strategy will hopefully provide an outline and demonstrate the high level of commitment to safety performance from our members.

Success in safety management can only be achieved through teamwork between all the project stakeholders, it is incumbent on us to drive strong and positive safety cultures, in setting this benchmark, we aim to reach the goals of being the safest country to develop renewable projects in the world.

Paul Whelan
Chairperson, IWEA Safety Strategy Group



#### 1. What is the Partnership Safety Strategy?

The partnership safety strategy suggests and describes a practical approach that those involved as developers of wind farm projects as Clients may undertake in the management of safety to achieve key performance outcomes thus **reaching excellence in safety, health and environmental (SAFETY) performance**.

As safety laws and environmental regulation have increased through the years, the developer as client is now recognised as a key stakeholder and influencer from early in the design stage right through to the operation and maintenance of facilities. The safety partnership strategy represents a model with **Management Actions to be adopted by the Client and the PSCS/Principal Contractor in partnership** to ensure that the project is completed without injuries to workers or others.

#### **Expected Outcomes of the Partnership Strategy:**

- Continuous improvement in safety performance by all industry stakeholders
- Ensure safety, health and environment form a key part of a procurement process
- Improvement in the industry supply chain, i.e. subcontracting
- Provide assistance and practical guidance to stakeholders
- Help industry players to meet and exceed regional and national legislation

In addition, construction regulations detail the clear responsibilities of contractors, designers and the Client for construction projects.



#### 2. Management of Projects

There are clear responsibilities set out in law for everyone involved in construction projects, such requirements should be met at all times. In addition developers / clients may consider the following approach:

- consult with designers to ensure that any construction work in connection with the design can be undertaken without risk to the environment, or health and safety of any person undertaking the construction work.
- deliver a tender package with outline designs and suggested best practice in wind farm construction.
- consult with contractors to ensure that persons undertaking the construction work can do so
  without risk to health and safety, as well as to ensure that no person on or near the
  construction site is put at risk from the construction work.

Once contracts are placed and work commences the transfer of responsibilities for controlling the work will move across to the appointed contracting companies however developers should consider how they can further influence the safety on the project through their role as client. Where there is a Client Project Team it will remain focussed on supporting the Project Management Team to ensure the arrangements in place are suitable for the work at any given phase of the construction project. This is where a partnership approach will be most valuable as it ensures that safety is managed effectively.



## 3. Key Management Actions: Client

Key Management Actions are deliverables which wind farm developers may undertake in addition to client duties. A summary of these actions are outlined in Tables 4.2 to 4.5. In addition to these actions, appointed contractors and turbine supplies shall also meet its obligations as set out in Section 5.

#### 3.1. Develop Project Brief

	Develop a Project brief with clear Safety & Environmental requirements.
Action	A concise brief of the project requirements are communicated.
Description	The project brief communicates to design consultants the importance of Safety & Environmental protection. It will include details of the project goals and establish clear performance criteria for Safety performance and Environmental protection in design. The brief identifies people whose safety could be impacted through the project lifecycle, for example people who will construct, occupy, maintain, clean and demolish the project, and require designers to take reasonable steps to eliminate and reduce risk.
Key benefits	Clear communication.
	Clear understanding amongst designers.
Desirable outcomes	Design Teams have a safety objective of equal importance to that of scheduling, cost, quality, functionality.
Performance measure	Improved design.
measure	Register of improvements into Safety File.
Documents	



## 3.2. Saftey Tender Cost Criteria

The cost criteria outlines implied costs that should be included in the tender submission in addition to explicit construction safety costs which may not be accounted for as a single line item in tender proposals.

	Tender Contract Safe	ety Costs	
Action	documents where po highlighted as line item	ossible. Developer ns costs on a Project indicators that saf	e included in the tender s may consider what is specific basis. Guidance on fety has been adequately
			explicit safety costs by along with a description
Description	Management: Hire Safety Professional Site Supervision Other Resources		
	Project Costs: Safety Construction Stage Plan Peat Risk Management Inductions & Training Monitoring/Inspection EIS Compliance Hazardous Waste Waste Recycling Spill Protection	Insurance CCTV Speed Traps Drainage Environmental Monitoring Flora & Fauna Protection Canteen First Aid	Dust Control Public Roads Maintenance Excavation Shoring Steel or Plastic Shuttering for Bases Passing Bays Traffic Management Plan Traffic Management
Key benefits	The Client has an opportunity to consider safety value added proposals and weight them accordingly.		
Desirable outcomes	The Project requirements have appropriately allocated safety costs for the duration of the Project.  The developer can track allocation of safety resources.		
Performance measure Documents	Safety is given a weight of consideration in awarding contracts.  Opportunity to analyse Safety proposals in detail.		



## 3.3. Review of Construction Stage Safety Plan

	High Level Document Review
Action	Client review Construction Stage Plan and provide feedback.
Description	PSCS / PC will submit plans for review in advance of construction.  The Plan should address the requirements set out in the preliminary safety & health plan / pre-construction information pack and comply with the Regulations.
Key benefits	PSCS/PC safety management principles are reviewed by Client Team. Implementation of the Plan is monitored by the Client Feedback loop and communication.
Desirable outcomes	Careful management of safety through an effective plan.
Performance measure	Plan reviewed to the satisfaction of the Client prior to commencement on site.
Documents	Construction Stage Safety Plan



## 3.4. Audits & Inspection

	Audit & inspections
Action	Client will undertake regular planned site audit & inspection programme.
Description	Publish Inspection Checklist and Audit Sheets. Client safety professional will audit site. Opportunity to engage senior management in audits. Formal Inspection will be no more than once per fortnight.
Key benefits	Client displays leadership in safety Senior Management recognition of good activities on the ground. Site Management are not overloaded with hosting Senior Management audits / inspections. Streamlining of audit/inspection process. Monitoring for Improvements is identified.
Desirable outcomes	High level recognition of safety values imparted to site operatives/team.  Work load of hosting inspections is reduced.
Performance measure	KPI for client Monitoring improvement and site activities Suggestions for work improvements Elimination of serious incident and reduction in hazards.
Documents	Standard Audit & Inspection Documents



#### 4. Key Management Actions: PSCS / Principal Contractor

While the Project Supervisor Construction Stage / Principal Contractor have well defined duties under construction regulations there are some client expectations in terms key management actions which should be agreed between the Client and the PSCS/PC. This section describes some of these client expectations.

By getting agreement on these key management actions at an early stage the PSCS /PC will have agreed to roll out a safety programme on the project to reflect these requirements.

Also these client expectations will then be included in the following project safety documentation:

- pre-construction information pack/ preliminary safety & health plan, and,
- Employer's Requirements.

The suggested Key Management Actions are set out in the following Tables.



#### 4.1. Project Specific Safety Charter

Contractors SAFETY expectations should be clearly stated in a **Safety Charter**, which articulates SAFETY expectations and goals, and outlines how they will be implemented. The Charter should provide a **clear vision for Safety on the Project**, and is a key tool in ensuring the construction & design team(s) are committed to effective SAFETY for the duration.

Title	Safety, Health and Environmental Project Charter
Action	PSCS / PC Contractor should develop a Safety Project Charter for the Site.
Description	Commitment of proactive management and integration of Safety with the working culture of the site.
Key benefits	Clear Vision communicated
	Operatives take the message seriously
	Shared understanding for all those on site.
Desirable outcomes	Outlines the commitment of all stakeholders in the Project; including designers and subcontractors.
	A statement that the Team will strive for high Safety standards
	A statement of intent to comply and exceed statutory requirements and client / developers standards.
Performance measure	Specific to the project.
illeasure	Signed by Site Management Team and Company's most senior person, e.g. Managing Director; CEO, etc.
	Published in prominent places in the Site Offices.
Documents	Safety Charter for Principal Contractor



## 4.2. Appoint Safety Professional & Team

	Appoint Safety & Environment Officer
Action	At the outset of the project, the PSCS / PC Contractor should appoint a senior team member from within the company, who has appropriate safety skill set, and whose responsibility it will be to oversee safety through the Project.
Description	A project safety team should be formally appointed and a senior employee named as representing the Contractor throughout the project.
	This person should have a keen interest in safety and be fully committed to safety processes and performance. Members of the project safety team should have the necessary level of awareness and competence relevant to the management of the construction processes phase.
	Team composition may change during the various stages of the project. However, we will always expect representation on the Construction Team.
Key benefits	Single point of contact.
	Clear responsibilities for safety.
	Project Champion.
Desirable outcomes	A safety champion for the project, who will provide leadership and oversight throughout the construction phase.
	Provides safety direction and oversight through the Project.
Performance measure	Appointment of appropriate person(s) to form the safety team
	Appointment of a senior representative with responsibility for safety on the project.
Documents	Organisation Chart



## 4.3. Design

Title	Select a Design Support Team
Action	On turnkey projects Contractors should select competent designers who are competent in the area of safety, health and environment and committed to design improvement for the Project Life Cycle.
Description	The project should be designed taking into account of the pre- construction information pack/preliminary safety & health plan and tender documents provided.
	The designers should have the appropriate knowledge and resources to identify and manage safety risk in design and keep a register of design improvements.
	The contractor shall write a section on designing for safety in the contract for design services.
Key benefits	Streamlined design process
	Application of lessons learned from other Projects.
	Selection of right tools, plant & material for the job.
	Reduction of incidents.
	Engagement of competent personnel
	Demonstrated commitment by designers for safety
	Design Reviews
	Safe Construction, Operation & Maintenance
Desirable outcomes	Design Review Meetings
outcomes	Production of safety Risk Register with risk reduction recorded
	Designers to account for Project safety improvements
	Safety Message on drawings
	Inputs to Safety File
Performance	Improved design
measure	Design changes without construction costs.
	Enhances risk management
Documents	Contract & Letter of Appointment



## 4.4. Communications between duty holders.

Ensure there is direct and effective communications between the design & construction teams and the CDM-coordinator/Project Supervisor Design Phase at the earliest stage of the project.

Title.	Duty holder communications
Action	Ensure early contact and cooperation between all parties to facilitate the management of safety for the Project life cycle.
Description	Schedule design review meetings
	Document communications.
	Ensure permanent and temporary design works certificates are issued.
	Complete a life cycle risk assessment and mitigate risk.
	Provide inputs into Safety File
Key benefits	A well managed project from inception to operation and decommissioning.
	Safety "traps" designed out at an early stage.
Desirable	A contribution to site safety improvements
outcomes	Subcontractors are awarded for safety performance
	Zero incidents
Performance measure	Competent operatives working to an acceptable standard.
	Compliance with Site Inspections & Audits.
Documents	Design Risk Assessments



## 4.5. Develop Project Risk Register

Title.	Understanding the project safety risks at design stage.
Action	As the project design is underway, the contractor, designers and CDM-coordinator should develop a project specific safety Register of Risk inherent in the delivery of the project.
Description	Construction and design is subjected to a rigorous hazard identification and risk assessment process which is project specific.
Key benefits	Allows for early identification of key risk areas and to plan for mitigation measures.
	Particular risks are further assessed and are identified early on in construction and design.
	Builds upon the pre-construction information pack.
	Updated throughout the Project.
Desirable outcomes	Safety risks fall for the Project.
outcomes	Inputs into Safety File.
Performance measure	Improved design
illeasure	Design changes without construction costs.
	Appropriate risk management decisions.
Documents	Risk Register available on site and at the Office of CDM-coordinator.



#### 4.6. Sub-contractor Pre-qualification

All sub-contractors will be required either to demonstrate appropriate pre-qualification of their safety management systems within the PSCS / Principal Contractor Safety Management system. This will include all appropriate documentation regarding safe management of their activities, method statements, risk assessments etc.

Title.	Assess & Appoint Subcontractors	
Action	The PSCS/Principal Contractor to ensure a prequalification process is in place for sub-contractors and will ensure that all subcontractors are comprehensively assessed and are suitably competent for the specific work to be undertaken.  All construction contracts have safety clauses.	
Description	Complete a desktop document assessment of method statements, safety statement, insurance policies and qualifications and experience of personnel to ascertain they are appropriate and will meet with the Clients expectations.	
	Check insurance is adequate	
	Examine historical safety performance	
	Keep records of CSCS cards and other tickets of personnel.	
	Ensure they have the appropriate training and that the sub-contractor company has undertaken its occupational health requirements in accordance with Safety legislation.	
Key benefits	Sub-contractors will be competent and have the necessary skills and experience to undertake the work safely.	
	The subcontractors will understand the high standards expected prior to commencement of work.	
Desirable	A contribution to site safety improvements.	
outcomes	Subcontractors with safety competence are selected.	
	Write safety requirements into the Contract Document with subcontractor.	
	Subcontractor understands our safety requirements.	
	Management of safety non-compliance is documented.	
Performance measure	Safety is given a weight of consideration in awarding contracts	
Documents	Evaluation Checklists and Question Set in Appendix A.	



## 4.7. Safety Reward Scheme

Title.	Positive Performance is Rewarded
Action	Client includes a requirement for the PSCS / Principal Contractor to set up and manage an award scheme recognising positive Safety inputs from groups and individuals.
Description	Contractor to submit plans for award programme to Clients project manager for approval.
Key benefits	Worker engagement and ownership.
	Subcontractor engagement and ownership
	Regular delivery drivers are included.
	Message of good performance is key.
	Near misses are reported.
	Good catches are encouraged.
Desirable outcomes	Careful delivery of programme to ensure culture is fostered without 'burying' or hiding events.
Performance measure	Zero Incidents.
illeasure	Non injury incident reports.
	Improved Work Practices.
Documents	Clear outline of award scheme proposal.
	Poster on Site.



## 4.8. Construction Site Documentation

Title.	Site Specific Safety Plan and supporting documentation
Action	Provide a Construction Stage Plan and Method Statements in advance of mobilisation.
Description	Review preliminary safety & health plan and existing documentation.
	Publish Construction Stage Safety Plan.
	Communicate with all stakeholders.
	Submit for review in a timely manner.
	Develop Emergency & Traffic Management Plans specific to the site.
	Develop Method Statements and submit for review.
	Update documentation as required following review and implement plans.
Key benefits	Good Management Practices.
	Established protocols and methods for construction understood by relevant parties.
	Incident elimination & reduction.
Desirable outcomes	Adherence to safe working practices.
outcomes	Reduce risk level.
Performance measure	Compliance with Plans.
Documents	Construction Plans



## 4.9. Set Project Safety KPI's

Title.	Set out measurable KPIs with Clients / Developers minimum reporting requirements as a base
Action	Identify and set out quality safety & environment KPI's
Description	Reliable - indicators should be used.
	Indicators should relate to the important safety features of the project
	They should be simple to use.
	Should be linked to project safety objectives and targets
	Understandable- site operatives/management should know exactly what indicators represent and how to determine their value
	Practical-the information required should be easily available.
Key benefits	Provides leading measure of performance.
	Indicates improvements in performance of the duration of a project.
	Ability to benchmark between projects.
Desirable	Measurable.
outcomes	Prospects for future success in working with the Client.
Performance measure	Some suggestions for leading and lagging indicators are as follows:
	<ul> <li>Project incident reporting-percentage incident reports acted on by the relevant project manager Incident action tracking-the percentage of near miss incidents; SEARs which have been closed out with appropriate records.</li> </ul>
	<ul> <li>Site safety inspections-number by supervisors, management and safety representatives completed against a pre-agreed number.</li> </ul>
	<ul> <li>Management safety walks/inspections-number completed against a pre-agreed number.</li> </ul>
	<ul> <li>Site safety inspections-outstanding issues identified from previous period which have been closed out.</li> </ul>
	<ul> <li>Seat Belts-compliance rate with driver safety requirements.</li> </ul>
	<ul> <li>PPE- compliance rate with wearing the correct PPE.</li> </ul>



- Speeding compliance rate with traffic management plan speed limits.
- Procedural Compliance-percent adherence to Method Statements.
- Hazard identification (SOR's)—percentage reported rectified within the defined timeframe.
- Safety audits (internal/external bodies)—percentage of audits completed as identified in the SAFETY project plan.
- Review of audit reports—percentage of total internal/external audit reports reviewed by senior management.
- Sharing/communication of information—the number of toolbox talks, safety committee meetings conducted during a defined period.
- Demonstrated use of adopting a successful idea, and practical examples adopted form the pre-construction information pack/preliminary safety & health plan.
- Inductions—percentage of employees who have received sitespecific safety induction.
- Safety training—number of employees/managers who have received safety training/toolbox talks.
- Design changes—percentage of design changes made to address identified safety issues over the life of the project.
- Quality and consistency of reporting

#### **Lagging Indicators:**

- TRIR total recordable incident rate per 100,000 hours
- Number of fatalities
- Medical treatment injuries
- First aid incidents
- Lost time injuries
- Total days lost
- Members of the public injured/killed
- number of accident investigations conducted

**Documents** 

#### **Schedule of KPIs and Monthly Metrics Reports**



## 4.10. Training

Title.	Establish targeted training programme for operatives and site management
Action	Ensure induction is adequate.
	Review pre-construction information pack/preliminary safety & health plan.
Description	Develop site specific inductions.
	Review Clients induction pack when published.
	Ensure toolbox talks are targeted in a timely manner and relevant to the activity on site.
Key benefits	Elevated awareness
	Communicates potential issues.
	Understanding the necessity to protect flora and fauna.
Desirable outcomes	Buy in and engagement of operatives.
	Continuous improvement.
Performance measure	Positive working.
measure	Compliance with standards.
Documents	Training Documents



#### **4.11. Construction Start**

Title.	Commencement of Activity
Action	Ensure the appropriate safeguards, facilities and enabling works commence to a satisfactory standard.
	Ensure site based personnel complete a full induction.
Description	Visit site and install relevant signage and safeguards.
	Mobilise to site with suitable equipment and machinery.
	Complete a ½ day site orientation covering aspects of safety management for the site. This may include working in bog and mountainous environments, understanding the Client's safety requirements, understanding management philosophy of B.O.P. Contractor.
	Invite the Client's Project Team to attend.
Key benefits	Establish safety is priority
	Communicates environmental protection is paramount
	Key Project Goals are clear.
Desirable	Buy in and engagement of operatives.
outcomes	Inculcate the desired safety culture.
Performance measure	Positive working
Documents	Records of Orientation.



## 4.12. Audit & Site Inspection

Title.	Audit & inspections
Action	Provide a programme of site inspection and audits to cover all elements of the safety management system.
	All aspects of construction activity shall be audited on a continuous cycle.
Description	Publish Inspection Checklist and Audit Safetyets.
	Communicate Audit Programme.
	Nominate a Senior Management Representative (not site based) to audit the site.
	Inform the Client's Construction Project Manager of the Senior Management Audit so he/Safety may coordinate the audit with the Client's Senior Management Representative.
	Establish KPI's for the site and publish them on a wall chart on a weekly basis.
Key benefits	Provide inputs to monitor continuous improvement.
	Monitors performance.
	Incident elimination & reduction.
	Reduces likelihood of serious unplanned events.
Desirable	A contribution to site safety improvements.
outcomes	rewarded for safety performance.
	Zero incidents.
Performance measure	Compliance with Key Performance Indicators (KPIs)
	Compliance with Site Inspections & Audits.
Documents	Suite of Audit & Inspection Checklists



## 4.13. Project Completion Review & Lessons Learned

Title.	Perform a review of the project following completion.
Action	Provide presentation on lessons learned from the project to the Client's team.
	Review safety performance.
	Highlight key lessons learned.
Description	Provide summary of project highlights, costs, scheduling, KPI's and ways to improve dialogue and streamline project management.
Key benefits	Prevention of future issues.
	Communicate good practices to the Group.
	Consideration for future work.
Desirable outcomes	Buy in and engagement of operatives.
outcomes	Continuous improvement.
Performance measure	Arrange for review <4 after substantial completion.
Documents	Project Review Template