

# EARLY FAILURE OF STRUCTURES AND PLANT

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# THE PROBLEM

- Multiple identical structures, plant or equipment
- Some are failing “early”, the others are now suspect
- Can Owner recover from
  - Design and Build Contractor?
  - Insurers?

# ALLOCATION OF RISKS IN LAW

- The question is,

*Who carries the risk of the works not meeting expectations?*

- Orthodox view: the professional design engineer must exercise “Reasonable skill and care”

*“Apply this to the employment of a professional man. The law does not usually imply a warranty that he will achieve the desired result, but only a term that he will use reasonable care and skill.”*

*Greaves v Baynham Meikle [1975]*

# DESIGNER'S OBLIGATION

- The designer must meet the standard of “reasonable skill and care”

*“[The professional] is not guilty of negligence if he has acted in accordance with a practice accepted as proper by a responsible body of medical men skilled in that particular art.*

*Putting it the other way round, a man is not negligent, if he is acting in accordance with such a practice, merely because there is a body of opinion who would take a contrary view.”*

*Bolam v Friern Hospital [1957]*

- The “*contrary view*” is likely to be that of the angry client - or more specifically his expert

# BOLAM TEST APPLIES TO DESIGNERS

- *Architects*

*... courts approach the matter upon the basis of considering whether there was evidence that at the time a **responsible body of architects** would have taken the view that the way in which the subject of enquiry had carried out his duties was an appropriate way of carrying out the duty, and would not hold him guilty of negligence merely because there was a body of competent professional opinion which held that he was at fault.*

- *Saunders v Bristow [1957]*

# BOLAM 2-FOLD TEST

- The endorsement of a “responsible body of peers” - self-regulation by the profession
- Disregarding of his critics - by the judge, a legal issue

# HIGHER DUTIES

- It is possible for D&B contractors to warrant fitness for purpose of their works
  - *Viking Grain v White* [1986]
  - *Greaves & Co v Baynham Meikle* [1975]
  - *IBA v EMI and BICC* [1980]

# KNOWHOW MOVES ON

- The designer must move with the times  
*“At the same time, that does not mean that a medical man can obstinately and pig-headedly carry on with some old technique”*

*Bolam v Friern Hospital [1957]*

- Designer must use common sense and remain alert and vigilant

*Hyde v JD Williams [2001]*

# CODES OF PRACTICE (1)

- They are not mandatory in law
- Ignore them at your peril

*“Bearing in mind the function of codes, a design which departs substantially from them is prima facie a faulty design, unless it can be demonstrated that it conforms to accepted engineering practice by rational analysis.”*

*Bevan Investments v Blackhall 1973*

# CODES OF PRACTICE (2)

- Codes are an analog for the design process
- Codes must be applied with due skill and care

Designers who apply a code without properly understand the implicit assumptions are liable

*IBA v BICC [1980]*

- Particular care must be taken
  - when extrapolating
  - With novel designs

## CODES OF PRACTICE (3)

- *It is plain from the evidence that the code of practice is no more than a guide for use by professional men, who have to exercise their own expertise*
- *Practice alone can, I consider, provide of itself no reliable guide where, as here, a novel design concept is being used.”*

***Holland v Welsh Health [1985]***

# AT THE FRONTIER OF KNOWLEDGE

- Where the existence of a risk is known, but there is no accepted method of confronting it, the designer's methods will be assessed by the court

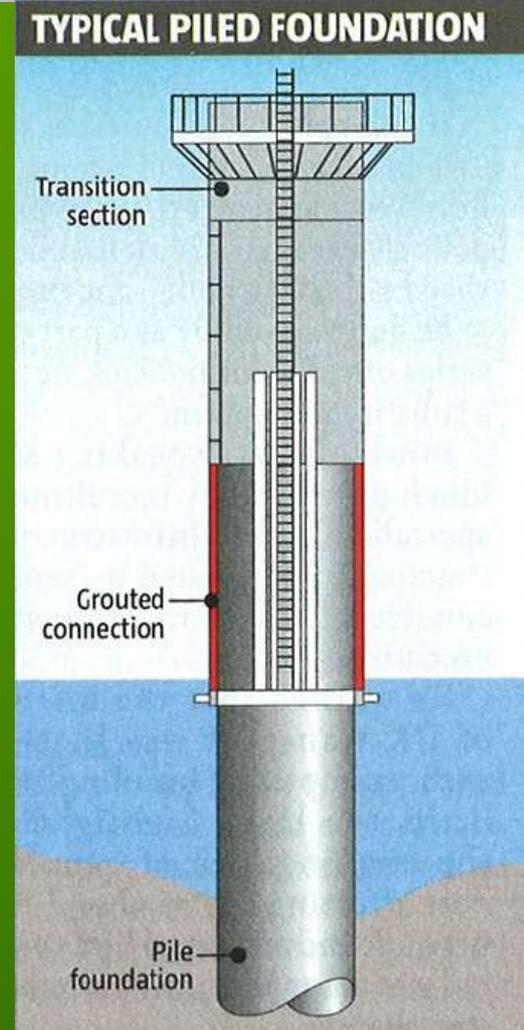
*199 Knightsbridge v WSP [2014]*

- assessment of the duty will take personal knowledge into account - not just standard industry practice

*Greenwich v Essex Services [2013]*

# ROBIN RIGG [2015] CA (1)

- D&B contractors for windfarm
- there was no body of experience to draw on for the design of the connection between the pylon and the transition piece
- Spec stipulated DNV J101 for foundations



# ROBIN RIGG - Functional Requirements

- *Works elements shall be designed for a minimum site specific 'design life' of twenty (20) years ...; all elements shall be designed to operate safely and reliably in the environmental conditions that exist on the site for at least this lifetime.*
- *The Contractor shall identify ... any components which the contractor considers cannot be designed for a life of twenty (20) years*

# ROBIN RIGG - Wind Turbine Foundations

- *3.2.2.2 Detailed Design Stage*
- *The detailed design of the foundation structures shall be according to the method of design by direct simulation of the combined load effect of simultaneous load processes (ref: DNV-OS-J101).*
- *The design of the foundations shall ensure a lifetime of 20 years in every aspect without planned replacement*

# ROBIN RIGG - TCC and Court of Appeal

- TCC focused on giving effect to the specific requirements mentioned above.
- The court of appeal sought to put these obligations into context with the rest of the contract and other relevant facts

*Investors Compensation Scheme v West Bromwich Building Society [1998]*

# ROBIN RIGG - THE TEST

- *The court must consider what [a reasonable person having all the knowledge available to those two parties] would have understood ... TR paragraph 3.2.2.2 (2) to mean.*

# DECISION OF THE COURT OF APPEAL

- Focus is on the “design life”, not on the “lifetime”
- *If a structure has a design life of 20 years, that does not mean that inevitably it will function for 20 years, although it probably will*
- *J101 is stochastic. Weather conditions at sea and the forces which will be imposed upon offshore structures cannot be predicted with certainty. The authors of J101 prescribed what needed to be done in order to create a structure which has a sufficiently high probability of functioning for 20 years.*
- *The authors of J101 regarded paragraph F301 as appropriate for a structure with design life of 20 years. No-one suggests that that provision would achieve a structure with a guaranteed life of 20 years.*

# LIFETIME AND DESIGN LIFE

- The obligation for foundations to have a “design life” is an aspiration that the lifetime will be 20 years

*A reasonable person in the position of E.ON and MTH would know that the normal standard required in the construction of offshore wind farms was compliance with J101 and that such compliance was expected, but not absolutely guaranteed, to produce a life of 20 years.*

# ROBIN RIGG - FITNESS FOR PURPOSE

- There have been cases such as Baynham Meikle [CA] where courts have been willing to **imply** terms of “fitness for purpose” where a specific requirement has been made known to the contractor
- Although these cases show that the court is prepared to impose “fitness for purpose” obligations, they are rare
- Here readiness to construe the contract against “fitness for purpose” is understandable in the circumstances
- Also perhaps indicative of the courts desire not to extend the circumstances where “fitness for purpose” is imposed

# WINDCAR - PERILS AND PROPERTY

- Covered Perils

*“all risks of physical loss of and/or physical damage ...”*

- Covered Property

*“... works executed anywhere in the world in the performance of all contracts relating to the Project ...”*

# WINDCAR - BASIS OF RECOVERY

- The Basis of Recovery clause takes as its basis “new for old”
- Where there is a redesign or a total loss recovery is still by reference to “new for old” of the original
- Where there is betterment, which would include attending to a design defect such as the grouting defect, increased cost (ie, compared to the standard” new for old”) is “*in no event*” covered

# WINDCAR Defective Part Exclusion Clause (1)

- INCLUDED
  - The insurance afforded by Section I covers physical loss and/or physical damage to the property ... **resulting from** a Defective Part, faulty design, faulty materials, faulty or defective workmanship or latent defect ...
  - "Defective Part" shall mean any part of the subject matter insured which is or becomes defective and/or unfit or unsuitable for its actual or intended purpose, whether by reason of faulty design, faulty materials, faulty workmanship, ... or any other reason whatsoever

# WINDCAR Defective Part Exclusion Clause (2)

- EXCLUDED
- loss or damage to (including the cost of modifying, replacing or repairing) any Defective Part itself, unless all of the following are satisfied:
  - a. such Defective Part has suffered physical loss or physical damage during the Policy Period;
  - b. such physical loss or physical damage was caused by an insured peril external to that part; and
  - c. the defect did not cause or contribute to the physical loss or physical damage.
- In no case shall Section I provide coverage for any cost or expense. incurred by reason of betterment or alterations in design.

# WINDCAR -TRANSITION PIECE

- grouting itself is the “Defective Part”, and the defect is internal to itself
- Damage to other components - eg due to a clash between the foundation and the transition piece - would be covered

# OPS COVER - MB

- The Insurers shall not be liable for  
5 loss or damage caused by any faults or defects existing at the time of commencement of this Policy within the knowledge of the Insured or his representatives, whether such faults or defects were known to the Insurers or not;

# LEG 2/96

- “The Insurer(s) shall not be liable for
- All costs rendered necessary by defects of material workmanship design plan specification
- and should damage occur to any portion of the Insured Property containing any of the said defects the cost of replacement or rectification which is hereby excluded is that cost which would have been incurred if replacement or rectification of the Insured Property had been put in hand immediately prior to the said damage.

# LEG 3/06

- The Insurer(s) shall not be liable for
- All costs rendered necessary by defects of material workmanship design plan or specification
- and should damage ... occur to any portion of the Insured Property containing any of the said defects the cost of replacement or rectification which is hereby excluded is that cost incurred to improve the original material workmanship design plan or specification.

# LEG/2 AND LEG/3 - ENDEMIC DEFECTS

- For the purpose of the policy and not merely this exclusion it is understood and agreed that any portion of the Insured Property shall not be regarded as damaged solely by virtue of the existence of any defect of material workmanship design plan or specification