

Ove Arup-v-Mirant Asia – Implications & Advice

On 21 December 2005 the Court of Appeal gave judgment in the case of Ove Arup & Partners International Limited-v-Mirant Asia-Pacific Construction (Hong Kong) Ltd on certain points appealed by Ove Arup from an earlier judgment of the Technology & Construction Court (“TCC”) of 2 December 2003.

The TCC and Court of Appeal judgments have wide-ranging implications for the construction industry and designers and engineers in particular.

Background

Mirant Asia contracted with Ove Arup for the design of boiler foundations for a power station at a site in the Philippines. The design agreement required Ove Arup to carry out a “concept design” followed by a preliminary and detailed design. The design was to include general arrangement drawings, details for tender and for construction and also calculations justifying the design.

However a detailed ground investigation in the area where the boiler unit was to be built could not be carried out immediately because the ground had to be removed by blasting and excavation before works could commence. These on-site conditions presented practical difficulties to Ove Arup in obtaining the data required to calculate the relevant pressure tolerances of the ground conditions upon which the design would be based. Notwithstanding these practical difficulties Ove Arup’s principal designer, on the basis of incomplete geological information, produced provisional design assumptions to enable the design team to commence initial design works.

For his part, Ove Arup’s geologist recommended a detailed ground investigation by accurate geological mapping, including the digging of trial pits and bore holes, be undertaken to verify the design assumptions before detailed design and construction works were carried out. It was the geologist’s understanding that these works would be undertaken, as was good practice, at the time an on-site inspection of the foundations took place. In the event, these works were not undertaken and the design was completed and the construction works commenced on the basis of the unverified design assumptions.

One of those initial design assumptions was the relevant ground had a bearing capacity of 3MPa. Two principal foundations for the boiler unit were designed as cast “in situ” reinforced concrete foundations of 5m in length, 3.6m in width and 1.5m in depth. But in April 1997 two of the boiler foundations failed. One settled by 46mm and the other by 66mm. They did so very early in the process of construction of the superstructure when the load was a small fraction of the eventual design load.

Designer’s Duty to Verify Design Assumptions

The key issue for the designers and engineers before the Court of Appeal was whether the engineer’s duty to exercise reasonable care and skill (of an ordinarily competent engineer with experience of this type of

work) created an obligation upon him to verify design assumptions. The Court of Appeal declared that it did and that in breach of that duty, Ove Arup had failed to ensure its design assumption was verified.

The Court of Appeal said

“A competent foundation design requires a sufficient knowledge of the ground conditions to determine a safe bearing capacity”.

The Court of Appeal further said

“If the designing engineer's knowledge of the ground conditions is insufficient to enable him to determine a safe bearing capacity, he may work initially upon assumptions. He has an obligation to see to it that the requisite additional information is acquired to verify the assumptions. He does not necessarily have to get the additional information personally but he must see to it that someone does, and he must see to it that the client knows that the additional information has to be obtained. Absent an explicit warning and disclaimer it would not be sufficient for a designer whose initial design is based on an unverified assumption to leave it to the client alone to obtain and evaluate the additional information. The designing engineer is responsible for the design, and he should normally see to it that the necessary additional information is conveyed back to him, so that he may judge that it is sufficient for the purpose of his design”.

The Court of Appeal also said that the verification process should have been *“systematic and detailed”*.

Practical Advice

This judgment emphasises the need for communication of the basis of an engineer's design assumptions throughout the project team. The Court of Appeal also emphasised that Ove Arup's engineer had a duty to see to it that someone verified his design assumptions and that he had a duty to ensure that the employer knew additional information was required to verify the design.

Warning and Disclaimer

The Court of Appeal also made reference to Ove Arup's failure to give a warning that its design assumptions required verification and could not therefore be relied upon for anything more than preliminary design works.

Any engineer producing a report, or designer producing a design on the basis of provisional data, should therefore ensure his work contains a warning that the design assumptions require verification. Such work should also contain a disclaimer that the designer or engineer is not liable for any loss and/or damage (including economic loss) caused by reliance upon the unverified design or data.

Ground Investigation Reports

The Court of Appeal did not go as far as to say that it was always negligent for a designer to proceed on the basis of design assumptions subject to confirmation by way of on-site surface examination or ground report, as is usual practice for some members of the industry. Instead the Court of Appeal concluded that on the facts of this case, it was negligent for Ove Arup to have done so in circumstances where its geologist had

expressly stated that a further, more detailed investigation was needed than the on-site foundation inspection that was carried out.

Project Management

This judgment emphasises the need for engineers and designers to adopt a risk management based approach to the verification of design assumptions.

Employers and contractors should therefore also play an active role in identifying and minimising areas of risk for the benefit of the project. Such an approach would include informing the relevant personnel and departments of the risk and delegating responsibility for minimising it.

Pure Economic Loss

Pure economic loss means just money loss as opposed to non-economic loss which is money lost as a consequence of damage to some physical thing such as property. In the TCC judgment, the TCC signalled a change in what was previously understood to be settled law. The position was understood to be that, in the absence of a contractual provision to the contrary or a wrong statement outside the contract but which was still actionable in law, a person negligently performing work or services in the course of a construction process was ordinarily only liable for non-economic loss. Accordingly, in the past courts have said that duties owed by professionals in the construction industry do not include liability for pure economic loss suffered by a third party.

The TCC here though held that Ove Arup's engineer had assumed responsibility to Mirant Asia for design services and, in circumstances where it performed such services negligently, it was just that it should be liable in damages for any economic loss. In fact, a significant proportion of the damages claimed by Mirant Asia in the sum of \$62.5 million were in respect of pure economic loss suffered by it.

Drafting

Not surprisingly given what is said above, when drafting contracts, designers and their advisers should attempt to exclude liability for economic losses.

Insurance

Further, both engineers and designers should check with their insurers that their professional indemnity insurance policies cover them for claims for pure economic loss.

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