



Professional Ethics (HS-219)

Week 2 (Handout 2)

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Professional engineers should “perform services only in areas of current competence”.

Case Study:

An engineer who is trading as a consultant specializes in performing **Environmental Impact Assessments (EIAs)** for industrial developments is approached by Pellar Paper Ltd, a company that is planning to build a paper and board production plant. He has been offered the job of performing an EIA for the development, which he accepts. As the facility will produce over 200 tonnes of paper and board per day, legislation necessitates that an EIA is included as part of the submission to the local planning authority. Pellar Paper has already received a “scoping opinion” from the local planning authority, indicating the areas in which they have concerns. The engineer’s job is to describe the likely effects of the plant on various aspects of the environment and local community, and the mitigation efforts that will be made. There are many kinds of environmental impacts that have to be considered for this project. They include (but are not limited to) treatment and disposal of waste water, the visual impact of the development, noise pollution from the machinery and effect on air quality of emissions from the on-site incinerator. Now, as an EIA specialist, the engineer is expected to have a sufficiently broad understanding of engineering to be able to make informed judgements about these effects. However, one of the areas of concern highlighted by the local planning authority and the highways authority is the effect of the increase in the road traffic caused by the development.

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Case Study:

Unlike the other key elements of this EIA, the engineer does not feel competent to undertake the traffic impact assessment required in this case. He does not feel able to gauge the precise increase in traffic, nor its effect on the nearby village and the local road network, which includes many narrow country lanes. In the past, he has handled traffic assessments in one of two ways:

- If they have been simple or straightforward, he has conducted them himself.
- If they have been more complex, he has recommended the employment of a specialist in this area to provide the necessary input.

The engineer discusses the issue with Pellar Paper. He states that in his judgment, the traffic will not cause significant problems, and such problems as there are could be mitigated in various ways. Nonetheless, given the importance of this issue and the fact that it has already been raised by the local planning authority, he is not sufficiently confident in his judgment and recommends that a traffic impact expert is employed to undertake this aspect of the EIA. Pellar Paper is not keen on this idea, highlighting concerns about the extra time and expense of hiring a consultant. More than this, however, the engineer is left with the impression that Pellar Paper are worried that detailed scrutiny might uncover the kind of negative impact that will worry the local planning authority or the highway's authority. Pellar Paper urges the engineer to make the traffic impact assessment himself, and to state that in his judgement that there will be no negative effects due to the increase in traffic.

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Dilemma



Imagine you are the engineer in question.

Whilst completing an Environmental Impact Assessment (EIA) for a paper manufacturing company, you have been urged to include your judgement that the increase in traffic caused by the development will not have a negative effect.

However, you do not feel sufficiently competent in this area to be confident in your judgement and think that the company should engage a specialist consultant, which they are reluctant to do.

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What Should You Do?



You could explain that since you do not believe that you are competent to complete the traffic assessment in this case you will be unable to continue to work for Pellar Paper unless they engage an independent expert traffic impact consultant.

You could agree to complete the EIA, but restrict yourself to matters other than traffic, so leaving it incomplete.

You could accept the view of Pellar Paper and include your own view, of which they approve, in the EIA, as they are your clients and you do feel capable of making a traffic assessment with some level of accuracy.

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Discussion



In this case study, you are being pressurized to make judgement that you feel is outside your areas of competence. The client is less interested in you making a thorough and accurate assessment than in you making an assessment that will favor their plans. This places you under an obligation to consider the best way of producing a satisfactory EIA, whilst bearing in mind the interests of the client. One of the key elements in this case study is not only the need to be aware of your limitations, but the need to be confident in your communication of those limitations. Circumstances can make it tempting to claim competence which you do not have, or to acquiesce to other people's expectations of certain knowledge and skills. It may make their life easier if you perform a certain task, but that does not make it the right thing in the long run for you to do. This can be particularly relevant at the beginning of a project, where it may be easy to overlook unrealistic expectations of your competence. Or you may notice, but it might not seem like a significant issue. Projects develop their own momentum however, and it in most situations it will be easier to be clear at the outset about your range of expertise, even if that may disappoint clients. Given the options presented, 1 and 2 may well amount to the same thing – Pellar Paper are unlikely to want to receive a report that omits a key element that has been requested by the planning and highways authorities. In this case, you may be faced with a simple choice between doing the whole report and getting paid and not doing any work at all. It is in tough practical situations such as this that doing the right thing is the hardest. However, the earlier comments about setting expectations early are particularly relevant here – if you had set out clearly the services that you were able to supply at the beginning, you may not have found yourself in this difficult position in the first place.

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In this case you have made your judgement about your competencies clear to the client, but for apparently commercial reasons they are keen for you to include your assessment (of which they approve) even if you are not confident of its thoroughness and accuracy. In this situation, it is your responsibility to ensure that any work you sign off has been conducted competently. If you are not confident that this is the case with the traffic assessment then you should not put your name to it. Unfortunately, this may mean that you will have to withdraw from the project, unless you can persuade your client to employ an expert in traffic impact assessment.

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Other ethical considerations involved in this case



This case study raises issues of honesty and integrity, particularly if you think the report risks deceiving readers, or has been the subject of improper influence. The potential adverse effect on society of a poorly completed EIA also brings in considerations of the respect for life, law and the public good. Finally, you will need to consider whether your actions in this situation would violate your duty to show responsible leadership by ensuring all statements you make in your professional capacity are objective and truthful. This case study dealt with the issues that can arise when you are pressurized to offer a judgement that you feel to be outside your area of competence. But there are other ethical issues that can arise in the realm of professional competence. One is that it can sometimes be difficult to decide what is, and what is not, included in your area of competence. One factor that can make this difficult is that what counts as knowledge sufficient to back up a professional judgement can vary greatly depending on the situation. Depending on various complex factors, an engineer may have to have decades of specialized experience in order to provide an assessment, or may only require a passing familiarity.

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For instance, compare the situation of the chief engineer on the launch of a space shuttle with the same engineer discussing rocket propulsion with A-level students. The levels of expertise required in order to offer a “competent” judgement will differ radically in these two situations. Awareness of the nature of the situation, and the expectations of the people affected by the decision, is a key part of being aware of your limitations. Another issue is what precisely counts as a standard area of engineering competence is that engineering is a multi-disciplinary field, and a typical engineer may be expected to make decisions about a vast array of different issues, ranging from molecular and atomic factors to ways in which people and communities behave. There are various ways in which these areas of competence are codified, including the standard range of modules in undergraduate degrees. But there are still areas where individual reflection is required. Should an engineer be expected to make judgements about issues that are more “social” in nature? For instance, should an engineer developing a home surveillance system for the elderly be expected to make a judgement about the impact of the system on personal privacy? Is that rightly considered an engineering issue? There may well be engineering decisions that are closely and inextricably linked with social, political and ethical issues.

Furthermore, engineering is a dynamic discipline, with many engineers working with emerging technologies with unknown impacts, or on one-off major projects. In such cases engineers have to manage the risks of using novel methods rather than relying on tried and tested knowledge.

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