C&C report past examples

Bii. Ability to handle sustainability aspects ie environmental, public concern & other societal issues, recognition of risks etc

Example 1

I contributed to the development of the company carbon estimating calculation tool to determine the green house gas emissions associated with building and operating treatment processes. This information is required when comparing project options and for reporting to the water industry regulator OFWAT.

I was tasked with producing embodied carbon estimating curves for a range of treatment processes. For example for primary settlement tanks I worked with estimators to calculate what raw materials and energy would be required to install a range of tank sizes. The green house gas production could then be calculated and I worked out a correlation between the kg CO2 equivalent produced and the size of tank. This relationship was then included in the company estimating tool.

The water treatment processes I design must achieve the correct drinking water standards to protect public health. For example at XXXX I designed the refurbishment of sand filters with activated carbon media to remove taste and odour to prevent customer complaints.

For wastewater treatment I ensure the site will meet environmental discharge consents. For example at XXXX I ensured the final effluent met an ammonia consent to prevent harm to aquatic life in the receiving water course.

On all projects I work closely with colleagues from the Environment and Sustainability team which help the design team consider third party issues such as planning applications, habitats, noise, odour, visual impact and traffic movements for different process options.

Whilst on the graduate training scheme I worked in the Regulation Team for six months. I was responsible for formal correspondence with the Environment Agency when the company's actions may have caused a pollution incident, or if a treatment works failed a discharge consent.

I contributed to corporate social responsibility when I had a one month placement with the charity XXX which helps small businesses reduce their environmental impact. I investigated the benefits of my companies relationship with this charity and made recommendations for the future funding arrangement.

Example 2

In my time working at a UK refinery, I was responsible for front-end development of a project to comply with an environment agency (EA) improvement condition as part of the pollution, prevention and control (PPC) permit. Here, I investigated options to reduce SOx emissions by ending the burning of a sour water stripper (SWS) off-gas stream in a plant subject to the large combustion plant directive (LCPD) and process the off-gas in the sulphur recovery unit (SRU).

The options I developed (using design data, specialist support and industry software) were to: (1) transfer the sour gas via a steam jacketed pipeline to the SRU, (2) To decommission the sour water stripper (SWS) and install a new SWS by the SRU, (3) decommission the SWS and send sour water to the other SWS on site, from which off-gas is sent to the SRU.

Based on the aforementioned technical evaluations, safety considerations and cost data, I was able to convince management to support option 3. Subsequently, I worked with the environment manager to communicate our plans to the EA.

Example 3	As the site safety engineer, I lead site issues alongside other staff and engineers on site to establish and minimise risks by using methods such as FMEA (Failure Mode Effects Analysis), general risk assessments, SIL (Safety Integrity Level) assessments on equipment and processes. I ensure project engineers/managers purchase equipment with low noise levels, as the EHS rep on the project teams. For the re-design of a process plant, I was involved with investigating the impact of any change to the emission of reaction vessel to atmosphere during a HAZOP. It was established that an outlet pressure relief valve got removed, but there was no overall change in emissions. The Environment Adviser reported the change to the Environment Agency (EA) and the EA was agreed that no change was required to the permit. As the EHS advisor on projects, I ask and ensure that work equipment and production lines have a switch off option when not in use to ensure that minimum amount of energy is used. I have mentored 2 work experience students, who were interested in studying chemical engineering. At the end of their placements, their feedback was very positive.
Example 4	I investigated a batch process as there was concern from routine product stability testing that there may be some active ingredient segregation which could not only affect product quality and efficacy (due to low active ingredient content in some bottles) but customer safety (as by definition some bottles may have higher content), hence a problem of high importance as regards public health. I completed a detailed review of variability within the manufacturing process, and a risk assessment regarding the potential level of active ingredient that could be found in a bottle and form that in a dose to a patient. I then implemented improved control of the product handling between processing and packaging, as the highest risk areas were found to be segregation and flocculation within un-stirred storage IBCs. I have assisted in the updating of IPPC permit applications for the production areas which I have had operational responsibility for, including basic estimation of VOC emissions from the plant through material displacement. After assessment of the potential environmental risks from a manufacturing process involving surfactant and biocide raw materials, I specified and installed a new captive drain, and product spill limitation barriers, for one of our liquids production areas. During my student industrial placement, I completed a monitoring study of the gas scrubber for the manufacturing facility to confirm that the system was operating effectively, and recommended alterations to the operational settings of the system to reduce the sulphur dioxide emissions from the top of the scrubber stack.