C2-2B- Changes to Existing Activities

Description of changes to existing activities

I. IQE currently operates one production tool for the development and production of Gallium Nitride (GaN) based semiconductor structures. This tool falls within the scope of Schedule1, Section 4.2 A (1) (d) of The Environmental Permitting Regulations.

IQE propose to install one additional GaN production tool where ammonia will be used as a source of nitrogen for the production of epitaxial layers on the GaN based structures.

The existing machine is a single wafer tool operated without abatement due to the low ammonia flows (approximately 9slpm) used to grow epitaxial layers on the substrate.

The proposed tool is a multi-wafer platform which will increase operational production capacity as the business moves forward. To achieve the desired surface deposition rate on the multi - wafer platform IQE has determined that ammonia flow rates of approximately 50slpm will be necessary.

H1 modelling performed for the most recent permit variation EPR/KP3235SS/V002 (January 2012) indicates that at the ammonia flow rates identified above abatement of ammonia emissions will be required.

IQE are therefore seeking a permit variation authorising the installation and operation of thermal abatement equipment for the abatement of ammonia emissions to atmosphere (refer to document C2-5C1 BAT appraisal and non-technical summary – thermal abatement).

II. IQE operates three wet abatement systems (scrubbers) which are used to remove residual arsine and phosphine gases prior to discharge to atmosphere via emission point A3. These three scrubbers generate approximately 25,000 litres of sodium hypochlorite effluent per month.

Currently this waste is collected from site and transported to a third party facility where the hypochlorite solution is drained from the shipping containers and discharged to foul sewer.

In order to minimise on-site and off-site carbon dioxide emissions and reduce the current transport and disposal costs associated with this activity IQE are seeking a permit variation authorising the direct discharge of sodium hypochlorite solution to foul sewer from the IQE facility (refer to document C2-5C2 – BAT appraisal and non-technical summary – discharge to foul sewer).