

Bishop's Castle Biomass Power Ltd

Replies to Questions from the Community College Biomass Working Group.

1. What plans are in place if the plant is closed due to a pollution incident or other emergency?

In the case of emergency situations, the combustion operation is automatically and immediately ceased by quenching the boiler with a very large flood of gravity fed water (there is provision to collect and contain this water on site). The plant would be shut down automatically by fuel and air cut off, if it is operating outside the stringent emission limits set. This cut off would be well before anything that could be described as a pollution incident. In the case of an automated non-emergency shutdown, the plant operation issue would be addressed and the plant restarted.

2. What plans are in place at the college if the plant has a pollution incident /other emergency?

See 1 above.

If the college takes heat from the CHP plant via the heat main, it is recommended that the college's oil boilers remain in place to cover maintenance or other shut-downs. Alternatively, back-up could be provided by a wood-pellet boiler in the CHP plant. Similarly, if the college takes electricity from the plant through private wires, the national grid would provide the back-up.

3. What plans exist at the similar plant at Eccleshall?

See 1 above.

The heat use at Eccleshall is not provided to external users and as such no contingency is required. Wood fired municipal heating systems in Europe invariably have gas or oil boiler backups, either on the site or within the end user's location.

4. What percentage of biofuel will be grown locally?

(NB "biofuel" normally refers to liquid transport fuels like bio-diesel or bio-ethanol.) BCBP expects that the biomass fuel for the CHP plant will initially be mainly forestry residues. One potential supplier has stated that it could provide the entire requirements from its operations within a 50-60 mile radius, and there are other sources even closer. (It should be noted that this currently under-utilised fuel will almost certainly be transported further afield if there is no CHP plant at Bishop's Castle.)

There is a large amount of marginal land in the locality which is not good enough for growing wheat or other food crops, but is suitable for growing miscanthus or short rotation coppice willow or poplar.

5. 5% of the fuel consumed can be other than biofuel – what will be burnt?

(NB "biofuel" normally refers to liquid transport fuels like bio-diesel or bio-ethanol.) The CHP plant will only burn biomass – wood-chip, energy crops, or arable crop by-products. No other material will be burnt e.g. waste of any kind.

6. Is the “eco footprint” of electricity produced at the plant less than that of electricity produced by current means?

The electricity generated by the plant will be essentially carbon neutral, because the carbon dioxide released during combustion equals the amount absorbed from the atmosphere as the biomass grew. The “lifetime carbon footprint” of power stations is a measure of the carbon dioxide emitted during construction of the plant, mining/growing the fuel, transporting the fuel and combustion. For coal-fired plants it is about 1000grams CO₂ per kilowatt hour of electricity generated, for gas it is 400g/kWh, and for biomass 25-80g/kWh [source: Parliamentary Office of Science and Technology, “Carbon footprint of different electricity sources”, July 2006]. The biomass power plant would be supplying Bishop’s Castle’s base load electricity, which is currently brought to us (with huge losses in the transmission lines) from coal-fired power stations situated in the east of England. Two-thirds of the coal used in the UK is imported, mostly from Russia, South Africa and even Australia. These large power stations cannot use the heat which is an inevitable by-product of the electricity generation process.

In summary, the proposed biomass combined heat and power plant will generate most of Bishop’s Castle’s power requirements from local, sustainable fuel at a fraction of the present carbon footprint, and its location enables the surplus heat to be utilised.

7. How will the plant benefit local people – e.g. combined heat?

1. The opportunity for residents and businesses to buy locally generated green electricity and be part of the fight against climate change.
2. The Community College and SpArC will be offered locally generated green electricity via private wires at a lower cost than from the national grid.
3. The opportunity for the Community College, SpArC and other nearby establishments to have green heat at a reduced cost. This would greatly reduce the emissions from their oil boilers – currently 350 tonnes of carbon dioxide/year (plus other pollutants) for Co Co and SpArC alone, over and above the approximately 8000 tonnes/year saved in the electricity generation.
4. A more robust and stable electricity supply for the town and surrounding area.
5. The wood pellets produced by the associated plant will be a local source of low carbon, low pollution fuel for other buildings not on the heat main.
6. Stimulation of the local economy, the creation of new employment and the safeguarding of existing rural jobs. (DEFRA estimates that this size of CHP plant supports 25 jobs.)
7. The plant will be available for schools and others to visit, to encourage interest in engineering and renewable energy.
8. A community chest will be set up using part of the green heat revenue, which will be made available for local sports and social activities.

8. Will there be more noise – how much more? – noise from the plant, noise from extra traffic?

Both the CHP plant and the wood pellet plant will be contained within acoustically insulated buildings, which will limit the sound level to 30dBA at 200 metres from the stack (the A488 or the B4385). This is similar to the quiet room of a library. The vehicles bringing biomass to the plant and taking away wood pellets will be a small addition to the lorries already using the local roads and limited to daytime activity. Any business on the industrial estate would cause an increase in traffic.

9. Pollution from extra traffic?

There will be a small amount of additional traffic pollution. However, compared to shipping fuels from this locality to plants further afield, which is already starting to happen, one would see a reduction in transport mileage and thus pollution.

10. What assurances can the company give the college regarding possible pollution from the plant?

It can be assured that the plant will have a non-significant impact. The modelling shows there will be non-significant impact vs. government air quality standards. There will also be non-significant impact vs. the current air quality seen in Bishop's Castle, which is far better than National Air Quality Standards. For detailed information please refer to section 3 of the non-technical summary and the air quality addendum in the planning application, which have been scrutinised and approved by SSDC's Environmental Health Officers and the Environment Agency.

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11. What health risks are there eg asthma?

The government and the European Union have laid out levels of air quality which localities should strive to meet. These are levels at which their research suggests there will not be an impact to sensitive receptors, the young, elderly, asthma sufferers, who are very sensitive to air quality issues. The levels they have found are set out in the National Air Quality Standards. Comparing the air quality around Bishop's Castle to NAQS one can see Bishop's Castle has far lower levels than the NAQS levels. The modelling of the emissions shows there would be a non-significant change in the local air quality. As such it is difficult to conceive that even very sensitive persons in the area could be affected. For detailed information please refer to section 3 of the non-technical summary and the air quality addendum in the planning application.

12. Travel time to nearest hospital A&E?

Approximately 35 minutes.

13. What specific pollution might occur?

Of the emissions from the plant, the most significant is Oxides of Nitrogen (NO and NO₂) as seen in the air quality sections of the planning application. These occur in all higher temperature combustion processes, including the cleanest forms e.g. natural gas or even hydrogen, due to the nitrogen present in the air. As the plant is a relatively small combustion process and has features designed to limit the amount of NO_x produced, the levels emitted would not have a significant impact vs. NAQS or local air quality. Other emissions and their potential impacts can be seen in the air quality addendum of the planning application.

It should be noted that the high quality combustion process ensures that there is no visible smoke plume and, under most atmospheric conditions, there is no visible steam plume either.

Any fossil fuel consumption replaced by the heat main, and wood or coal fires/stoves replaced by wood pellet burners, will result in lower pollution levels in the town.

14. What is the worst that could happen at the plant and what would happen then?

We believe fire is the greatest risk at any industrial unit. As mentioned previously there are sophisticated fire controls which not only reduce the risk of a fire starting but hugely reduce the potential for fire to spread. The location limits the hazards of a

fire and no serious consequences would be envisaged. As with any new industrial unit, the plant would be subject to serious scrutiny by the fire brigade resulting in detailed plans. It should be noted the result of a fire would have a lesser impact than in many other industrial processes as biomass does not produce hazardous materials when burnt. This can be compared to any other site storing wood, or contrasted to sites storing or processing materials which could cause a hazard in the case of fire.

15. Visual impact on the valley.

The CHP plant and the wood pellet plant have been designed to minimise the height of the two buildings which will contain them (12 metres to the ridge). The chimney stack is also very low (16 metres) for a plant of this capacity.

The plant will be landscaped and surrounded by a screen of trees which will make it virtually invisible from the nearest houses or the College. It will be visible from the high ground of Oakley Mynd, but will be less prominent than existing buildings at the timber yard. (See photo-montages.)

16. Effects upon “at risk” groups – pregnant mums, young children, and the elderly?

Please refer to the discussion on National Air Quality Standards in health risks / asthma section (11 above).

17. What problems has the Eccleshall plant had? How have these been addressed and with what success?

From the point of commissioning, problems at Eccleshall have included operation of the grate and superheater, (part of the boiler that takes the highest temperature gas to superheat the steam ready for the turbine). These issues caused the plant to be out of operation for several months whilst an alternative grate and new superheater components were constructed. The plant has now been re-commissioned and is currently operating satisfactorily. In initial commissioning the plant did not operate at one point to the expected standard for emissions whilst testing the plant with several variations of woodfuel and operation levels. The air pollution control equipment has since had some adjustments and repairs, and the combustion and filtration components are now performing to better than the emission limits.

18. How does the Biomass plant (1MW) compare with alternatives e.g. 1 wind turbine produces 3MW power

The proposed Bishop’s Castle biomass CHP plant will produce 2.5MW of electrical power and up to 5MW usable heat; wind turbines produce no usable heat. The biomass plant can produce power for 8000 hours per year (i.e. 90% of the time); wind turbines generate at rated power for about 30% of the time and therefore require additional steady generating capacity, such as the proposed biomass plant, to fit with energy demands. Wind turbines are more obtrusive in the landscape, although some people do find them aesthetically pleasing.

19. 1MW = 500 tonnes carbon dioxide

The proposed biomass power plant will save about 8000 tonnes of carbon dioxide per year compared with generating the same electrical energy in a coal-fired power station.

20. What is the cost of the heat pipes from the plant to college/Bishop’s Castle – not in the planning application – who will pay and when will they be installed?

The planning application does include the heat main, but there is no requirement for it to be costed. We are currently budgeting very roughly £100 per metre. It is envisaged BCBP will finance the heat main in all cases. It will be installed following commissioning of the plant.

21. A wider, integrated plan is needed for future energy use

BCBP Ltd agrees that all avenues for renewable energy production and particularly energy conservation should be explored. The biomass CHP plant is just one part of the solution to the huge problems of climate change, peak oil and energy security which confront us.

All forms of alternative energy will need to be used.

22. Critical height of plant chimney and prevailing wind direction

The stack has been designed to be as unobtrusive as possible without compromising its efficiency. The prevailing wind is away from the town. Again, to see how dispersion occurs please refer to the Air Quality Addendum in the planning application.

23. Is the Biomass company obtaining any capital grants or green levy payments?

BCBP Ltd has not applied for any grants or other public money. The electricity produced will be eligible for Renewable Obligation Certificates (ROCs), which is the Government's system for encouraging renewable electricity generation.

24. How will "value for money" be measured?

The Community College and SpArC will be offered heat and electricity at reduced rates.

25. What financial savings will be made by the college – short, medium and long term?

Based on current oil prices, the college could save at least £20,000 per year on heating bills. This would increase if oil prices continue to rise. The college would make additional savings if it takes electricity through private wires.

26. What other energy options are there for a sustainable energy future?

BCBP Ltd believes that all sustainable renewable energy sources should be considered and used where appropriate. Greenpeace, Friends of the Earth and the Green Party concur that CHP is good and biomass powered CHP is the best. For example, Greenpeace's model town "EfficienCity" features a biomass CHP plant (www.greenpeace.org.uk/efficiency/about).

27. Is the company really thinking about us?

The project will bring significant benefits to the local area (see 7 above), and particularly to the college, as well as fulfilling national goals regarding renewable energy. The directors of the company are part of the local community, and three of them are a current parent, a past parent and a former pupil.

28. Will the promises made by the company be delivered and to what timescale?

The company sees no reason why the project's aims should not be achieved. The CHP plant should be operating within 18 months of receiving planning permission,

and could already have been under construction if the planning process had not been delayed.

29. Risk analysis and disaster management issues.

These are addressed through fire safety requirements, insurance policy requirements and management best practice. The CHP plant is not a high risk operation: the store of biomass (which is far less flammable than oil) is separated from the combustion chamber, and the whole plant is continuously monitored by sophisticated instrumentation.

30. Air quality report; how verifiable is the company report?

The air quality report has been produced by experienced environmental consultants using an international standard computer model with certified accuracy. It has been verified by the local Environmental Health Officers and scrutinized by the Environment Agency.

31. How will the plant be monitored and air quality regulations enforced?

The plant will be monitored continuously with a NAMAS accredited CEMS (Continuous Emissions Monitoring System). This will continuously record levels of NO_x, SO_x, CO and Particulates among other things. The instrumentation will be regularly calibrated by accredited means. The SSDC Environmental Health Office will regularly check and review the recordings and they will be made available publicly. It is envisaged the Environmental Health Office will have the power to stop operation at the plant if the agreed limits are not met. The detailed enforcement framework was laid out in the conditions listed in the planning report (please refer to the first report of the SSDC planning officers).

32. Impact on tourism and more positive image of other alternatives.

There would only be an adverse effect on tourism if damaging propaganda is circulated. It should be noted that many people are interested in green energy and are keen to learn how it is generated. The Kielder Forest biomass district heating system now has a visitor trail in response to popular demand. Vienna's district CHP plant is one of the city's top ten tourist attractions, even in such a cultural capital. Bishop's Castle could reap great benefits from eco-tourism.

33. Pollution of valley.

The high quality combustion process and the exhaust gas filtration ensure that the plant will have an insignificant effect on the local air quality. The computer modelling shows that the temperature and velocity with which the gases leave the stack are sufficient to take them through the temperature inversion which sometimes occurs. This has all been confirmed by SSDC's Pollution Control Team. Every oil boiler, and every wood or coal fire/stove, which is replaced by the heat main or a wood pellet boiler will reduce the pollution in Bishop's Castle. The biggest source of dioxins in rural areas is low temperature combustion in bonfires, so the CHP plant has the potential to reduce the level of dioxins in the local environment by burning these materials under controlled conditions.

34. Is source of renewable energy sustainable?

Forestry residues are a sustainable fuel source because the felling is followed by re-planting and the residues are only baled up and removed where this will benefit the

forest. Energy crops are sustainable because they can be grown with little fertilizer or pesticide input on marginal land, so they do not compete for resources with food crops. Sustainability is now a major criterion in the planning process, and the SSDC planning officers have confirmed that the project is sustainable by recommending approval of this application.

35. What is visual impact from other angles?

See 15 above, and photo-montages.

36. How will the plant be monitored?

See 31 above.

37. What other forms of energy have been considered i.e. biodigester, wind power, solar, geothermal?

BCBP Ltd believes that biomass CHP is appropriate for this location as it can provide the right quantity of green power and heat from readily available materials. However, other renewable energy sources should be considered as well – they are all needed if climate change is to be mitigated.

38. What would look better?

Considerable attention has been paid to the design of the plant to reduce its visual impact: see 15 above.

39. What would be healthier?

All forms of renewable energy would have no discernable impact on health, although use of the heat main and wood pellets would reduce the pollution in the town.

40. There is a feeling that some questions have been avoided.

The directors of BCBP Ltd welcome questions (such as these).

41. Concern that answers are not always backed up with data.

The Planning Application contains in-depth detail which has been scrutinized by independent consultees. It can be viewed at www.bishopscastlebiomass.co.uk

42. Who will monitor the management of the plant?

The directors will be responsible for the management of the plant. The local authority environmental health officers will monitor the environmental aspects of its operation.

43. CCBC eco credentials could be compromised.

The eco credentials of the college would be massively enhanced by a project such as this. Using heat and electricity through private wires would make it one of the greenest colleges in the UK, an example for others to follow. The whole town would be given a huge boost towards carbon neutrality, showing a real commitment to fighting climate change.

44. Many issues have been raised that need to be passed to our Eco-Council for consideration.

BCBP Ltd will try to answer any further questions that are raised.

45. Should other energy saving strategies be employed before building a biomass plant?

Energy conservation measures should be considered as well as renewable energy sources. The biomass CHP plant might enable the college to use cost savings from reduced heating bills to fund energy conservation measures.

46. Are we satisfied that people making decisions are best qualified to make judgements as biomass plants are a very new idea?

Biomass plants are not new. They have been providing heat and power in many European countries for 30 years, often serving communities of similar size to Bishop's Castle. The technology has evolved over this period, leading to greater efficiencies and better emission control. The UK has ignored them so far because of its reserves of coal and North Sea oil and gas, but as these supplies dwindle and the threat to the planet from burning fossil fuels becomes ever more apparent, biomass CHP plants are now seen by all political parties and environmental groups as a significant part of the solution.

The team of consultants working on this project is led by a chartered engineer who has many years experience of CHP plants and who is also a chartered environmentalist.

SSDC's Pollution Control Team has stated that the plant will not have an adverse impact on the environment. This is backed up by the Environment Agency. The Planning Officers have confirmed the sustainability of the project, and have recommended approval.

47. Is the company really thinking about us?

See 27 above.

48. Will the promises made by the company be delivered?

See 28 above.