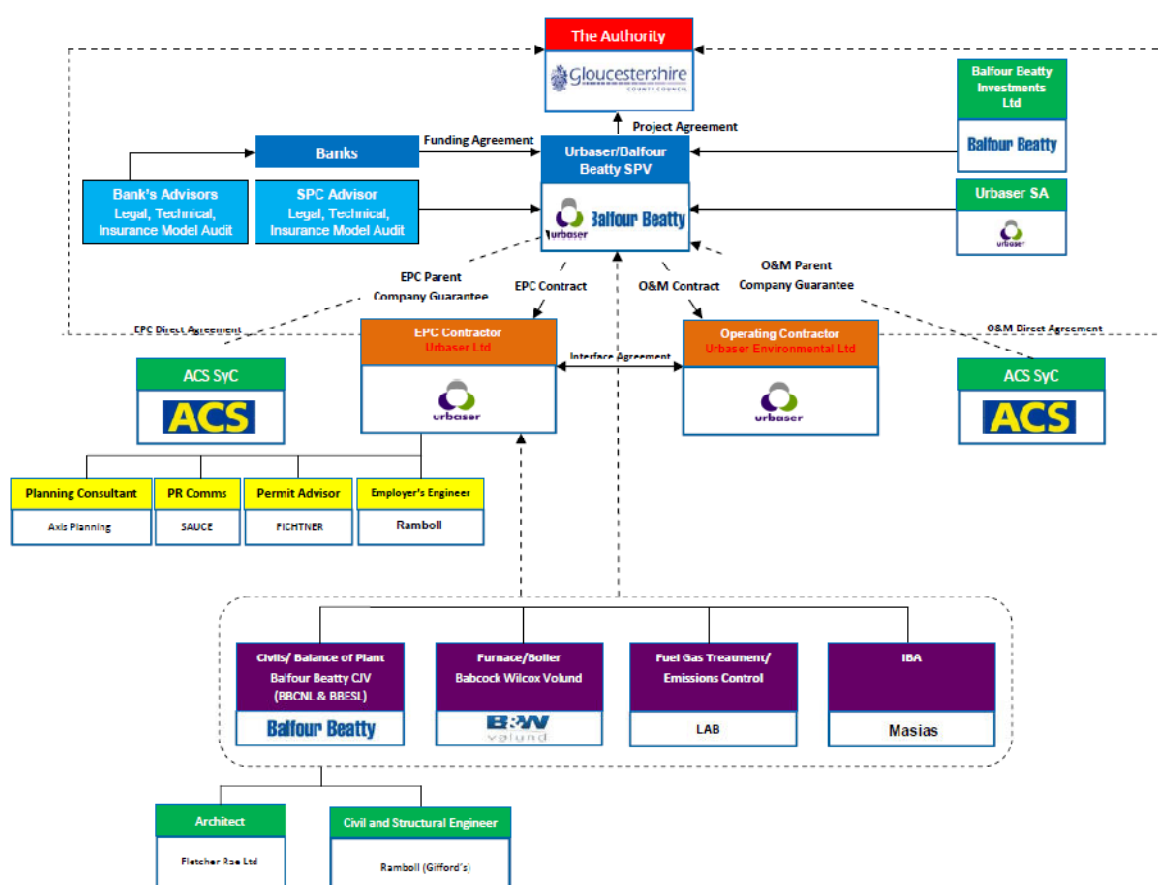


Urbaser Balfour Beatty Proposal

Commercial Structure

1. Urbaser Balfour Beatty (UBB) is a special purpose vehicle (SPV) set up for the purposes of this contract. The SPV structure and key relationships are shown in figure 1.

Figure 1: UBB SPV structure and key relationships.



Technical proposal

Description of the solution

2. UBB has proposed a modern energy from waste (EfW) facility located at Javelin Park, a 12 acre site owned by the council. The facility will receive Gloucestershire's household residual waste and also some third party commercial and industrial waste. The facility will have a planned maximum capacity of 190,000 tonnes per annum.
3. The proposed development will be based around one main building which will contain the following areas:

- waste reception hall;
 - waste bunker;
 - boiler hall and demineralisation plant;
 - turbine hall;
 - flue gas treatment facility;
 - air pollution control (APC) reagent silos and APC residue silos;
 - incinerator bottom ash (IBA) processing facility; and
 - education/visitor centre and staff facilities.
4. The facility will also include ancillary infrastructure, for example, vehicle weighbridges, offices, an electricity substation, internal access roads, car parking, and areas of hard and soft landscaping. A visitors' centre and wildlife zone is proposed as part of the facility.
 5. The process will use the latest moving grate technology to combust residual waste. The hot gases produced during combustion pass through a boiler where the heat is used to produce steam which is used to operate a turbine to generate electricity and heat. These gases then pass through a flue gas cleaning process and the cleaned gases are released to the atmosphere. The cleaning system generates a by-product known as APC residues. IBA is also produced from the combustion process, which consists of inert ash and metals.
 6. The facility will also include onsite reprocessing of the IBA to produce a secondary construction aggregate. This process also extracts metals from the IBA for recycling.
 7. UBB has selected the Danish supplier Babcock & Wilcox Vølund (BWV) to supply the furnace and boiler including the technology for the moving grate, the SECOLAB system from LAB S.A will be used for the flue gas treatment (FGT). Masias will provide the IBA treatment facility. Balfour Beatty Engineering Services (BBES) will provide the turbine and balance of plant, civil works (building services) and pre-processing equipment (shredder, waste cranes); and Balfour Beatty Construction (BBC) will carry out the civil works (structures and architecture).

Facility design and layout

8. Figures 2 and 3 provide an artist's impression of the EfW facility. The main building will be 236m in length. The width of the building will vary from 55m to 25.6m. The building will be divided into the different process areas with the height of the structure varying depending on the process that it houses. For example, the highest section of the building will house the FGT facility and the APC reagent and residue silos. In this area the building height will peak at 48m. The section of the building housing the boiler and turbine hall will be at a height of 42m, the waste bunker at a height of 31.5m and the tipping hall at a height of 21m. The lowest part of the building, at a height of 14.65m, will house the IBA processing facility, which will be located at the eastern end of the building. The stack (chimney) located adjacent to the western elevation of the building will be 70m in height and with a diameter of 2.5m.
9. The waste bunker and boiler will be sunk into the ground in order to reduce the height of the building. Over half of the excavated material will be re-used on site to provide soil bunds that

serve to screen low level views into the site, provide noise attenuation to nearby residential properties and provide relief within the landscaped areas surrounding the building.

Figure 2: Artist's impression of UBB facility

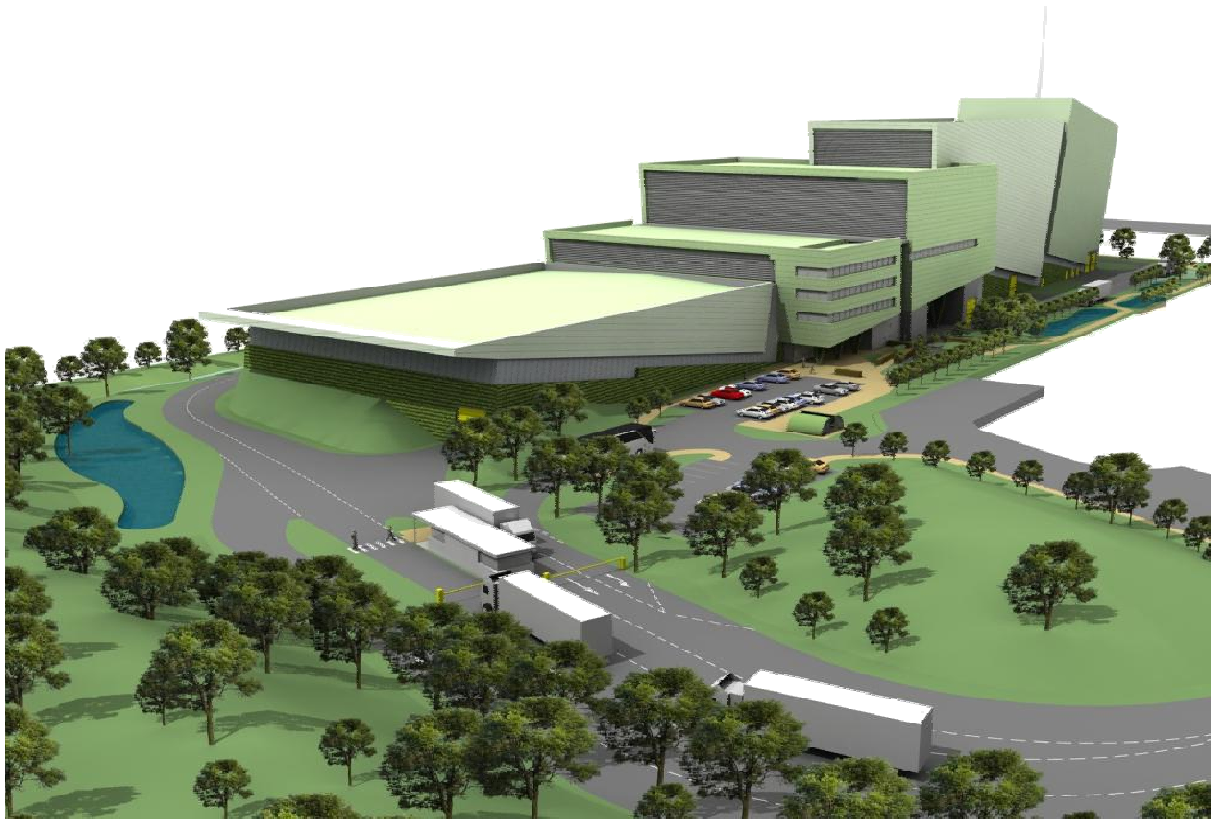


Figure 3: Artist's impression of UBB facility (view from Blooms Centre, the north east)

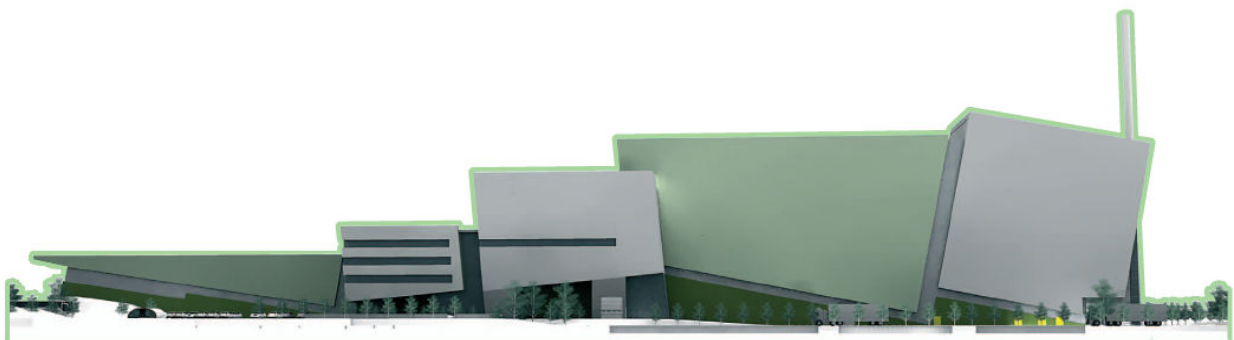
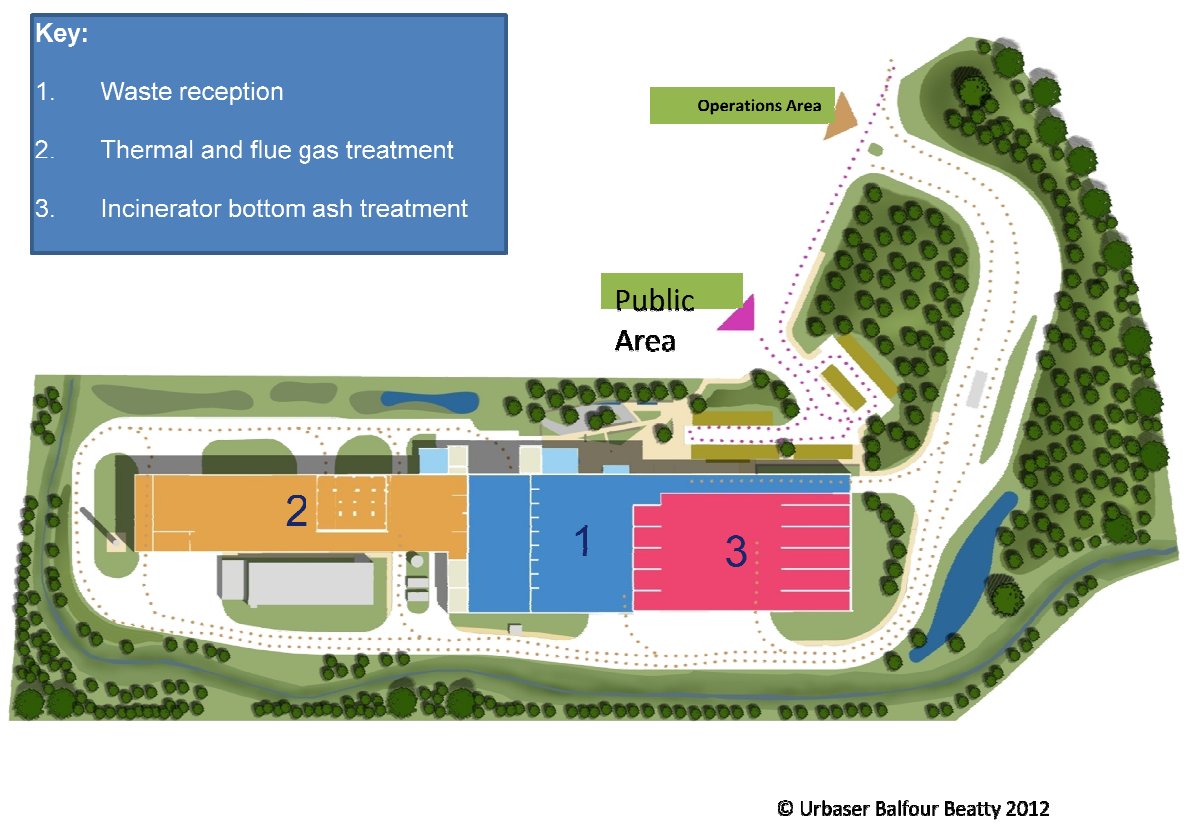


Figure 4: Areas of operation within the EfW facility



10. Figure 4 shows the three key areas of the facility; the waste reception area, the FGT and furnace (thermal treatment), and the IBA treatment facility. Operational vehicle entry will be separate from access to the public. The northern boundary will have an outdoor wildlife and educational zone.
11. The visitor centre and office space will be integrated as part of the main building on the northern facade of the building. This area will include offices, staff welfare facilities, a control room and a number of visitor facilities. The visitor centre will be a secure environment offering an interactive exhibition space and an audio visual presentation suite. The wildlife corridor along the existing watercourse on the site boundary will be supplemented with additional native planting to optimise biodiversity potential. In addition to the woodland and tree planting, all areas of land not required for operational activities will be returned to playing an active role in the local eco-system. Extensive conservation grassland areas will be sown, which will ultimately support diverse insects communities. Within the sustainable site drainage system, new wetland habitats (both permanent ponds and seasonally damp grassland) will be introduced.

Performance, guarantees, outputs and markets

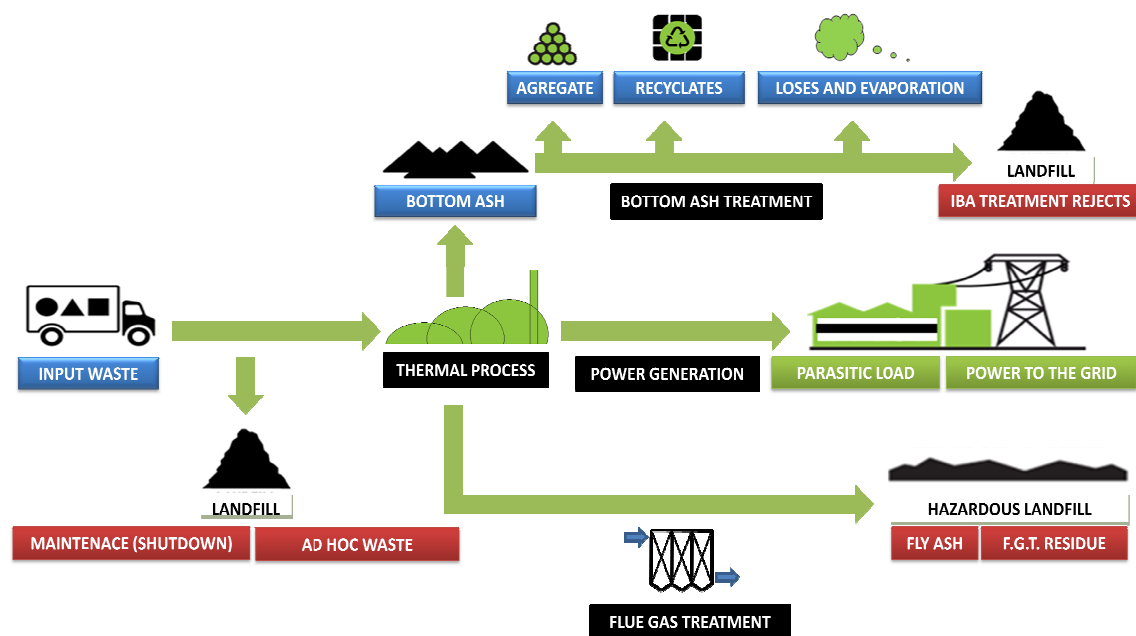
Landfill diversion

12. UBB will divert over 92% of residual waste from landfill and provides for the diversion of 96% of all biodegradable waste.
13. The outputs from the process treating circa 190,000 tonnes of waste per annum are summarised in table 1 and shown in figure 5.

Table 1: Outputs from the EfW facility

EfW facility outputs	Description
Electricity	14.5 MW net (116,000 MWhr/annum)
Metals (ferrous and non ferrous)	Approximately 3,100 tonnes per annum, or 1.7% by weight of total waste input
Incinerator bottom ash (IBA)	Approximately 40,000 tonnes or 21.3% by weight of total waste input. Of this, approximately 80% will be recycled (remainder is sent to landfill which is included in residues below).
Air pollution control (APC) residues	Approximately 4,500 tonnes or 2.4% by weight of the total waste input.
Total residues to landfill (or possible treatment)	This includes residues from incinerator bottom ash, air pollution control residues and waste that is sent to the facility but cannot be accepted for treatment, for example, asbestos and tyres.

Figure 5: Diagrammatic representation of the mass balance of the EfW facility



Energy

14. The facility will generate around 116,000MWhrs of electricity annually which is sufficient to power more than 25,000 homes. The facility will be capable of providing renewable heat energy. The turbine design allows for the off-take of steam which can be used (as high pressure steam or hot water) by neighbouring industrial users or via a district heating network.
15. UBB is investigating the opportunities for the export of heat to neighbouring industrial and other potential users and is currently talking to developers. UBB is identifying potential developments and buildings that could connect to a local area heat network delivering low cost, low carbon heat energy. Looking to the future, they are also considering how the plant can be made ready for new developments, ensuring that opportunities for low cost, low carbon heat energy are available throughout the life of the facility.

Incinerator bottom ash – aggregate and metals

16. IBA, the residue from the combustion process, will be processed on site and will be used as a recycled secondary aggregate in the construction industry. Metals remaining in the IBA will be recovered on-site for recycling.

Air pollution control residues

17. The FGT system will ensure compliance with the Waste Incineration Directive and the forthcoming Industrial Emissions Directive emission limits. The residual emissions will be strictly monitored to ensure there is no risk to public health and emissions data will be published on a website.
18. APC residues (which contain treatment reagents and 'fly ash') will be transferred off-site to a suitably licensed treatment facility, an out of county hazardous landfill site. UBB recognise that different options for APC residue utilisation may be considered feasible in the near future providing the availability of users (e.g. cement providers, construction developments).
19. UBB will continue to explore alternative options for the disposal and treatment of the APC residues throughout the operational lifetime of the facility. This will be based upon regular reviews of the market taking full account of social, environmental and economic factors and also potential emerging technologies.

Residues and unacceptable waste

20. Any remaining non recyclable residues or unacceptable waste such as asbestos received at the facility, which cannot be processed on site will be either sent to a licensed landfill or appropriate reprocessing facility. Therefore, based on all municipal waste arising in Gloucestershire, this means if we recycle 60% of our waste, we will be landfilling under 3%¹ of total Gloucestershire municipal waste arisings. This moves Gloucestershire significantly closer to the aspiration to send zero waste to landfill. UBB will work with the council to gain continuous improvement.

¹ Based on overall Gloucestershire municipal waste arisings of 375,000 tonnes, 60% recycling, 2.9% will still be landfilled. If UBB find alternatives for the APC residues this will reduce further to under 2%

Management of environmental impacts

Air quality

21. The air quality assessment has determined that the chimney stack should be 70 metres tall, providing a balance between air quality and the visual impact of the facility.
22. Emissions from the facility will be continuously monitored and tightly regulated under the European laws enforced by the Environment Agency. To ensure that the emission limits are not exceeded, the facility will incorporate a number of systems to reduce the emissions to atmosphere such as gas cleaning and particulate removal equipment. The Environment Agency has the power to prosecute and to close down the facility should emissions not comply with the law.
23. UBB will also publish air emissions data online.

Ecology and nature conservation

24. The watercourse corridor that runs along the southern and western boundary of the site will be maintained. Ecological improvements to the site have been proposed as part of the landscaping scheme including planting of species that will encourage wildlife to the site and creation of wetland habitats.

Odour

25. Negative pressure inside the building will prevent odours being released. Fans will be used to draw air from the tipping hall, bunker hall and boiler hall into the furnace to feed the combustion process.
26. All waste handling operations will be undertaken within the EfW main building.

Litter

27. All waste handling operations will be undertaken within the EfW main building and waste will be delivered to the site in fully enclosed or sheeted vehicles. The site will be maintained to ensure any litter is collected and cleaned up.

Traffic

28. A detailed traffic assessment has been carried out as part of the planning application. Peak HGV movements will occur outside the traditional weekday morning and evening rush hours with the highest number of HGV movements predicted to occur at 13.00 hrs. Delivery vehicles will all queue within the site boundary and not on the public highway.
29. The Cotswolds Lorry Management Zone will restrict movements of HGVs south beyond the roundabout at Javelin Park and along minor roads leading east towards Haresfield. As a consequence, the roads leading to Haresfield and Standish will not be used by HGVs accessing the facility, other than for local waste collection rounds serving local properties.

Noise

30. All waste handling operations will be undertaken within the EfW main building. Noisy equipment will be positioned away from sensitive receptors, i.e. closer to the M5 motorway.

Flooding

31. UBB has carried out an assessment that shows that the stream which flows along the boundary of the site does not present a significant flood risk to the site.
32. A number of surface water attenuation ponds will be included in the scheme to control the rate at which water is released into the stream following rainfall. This will help ensure that the development will not increase flood risk in the local area.
33. Appropriately designed storage areas for fuels, chemicals and oils and provision of pollution control measures within the surface water drainage system will ensure that the facility does not affect the water quality of the surrounding area.

Lighting

34. The external lighting system will only operate during hours of darkness when vehicle deliveries are occurring. After this time the main lighting will automatically be switched off. A reduced, low level lighting system will remain in operation for staff access using low level lanterns. These will be restricted to walking routes and staff parking areas.

Geology, soils and groundwater

35. The operating areas of the facility will be sealed with concrete to ensure that any pollutants are unable to penetrate into the underlying ground. Additionally systems will be in place to ensure all potential contamination issues associated with the operation of the facility will be controlled, for example, there will be spill kits and containment equipment around the site and the drainage system will not discharge directly into the stream.

Sustainability

36. UBB has proposed that the solution will achieve high quality civil engineering and will obtain a CEEQUAL² 'Excellent' rating and a BREEAM³ 'Very Good' rating. These are assessments used to measure overall sustainability of building developments.
37. The proposed design incorporates Sustainable Urban Drainage Systems. The design also includes maintaining and enhancing the existing stream and the wildlife corridor.
38. The proposed solution will contribute positively towards reducing the council's climate change impacts of waste management when compared to continuing to landfill.
39. The facility will contribute to Gloucestershire's overall renewable energy production by over 50%. In simple terms, the energy produced will be enough to power 25,000 homes. This will help to reduce reliance on fossil fuel energy and avoid landfill, giving the net reduction of just over 40,000 tonnes of carbon dioxide (CO₂) equivalent annually (based on a UBB assessment).

² Civil Engineering Environmental Quality Assessment and Award Scheme

³ Building Research Establishment Environmental Assessment Method

Jobs and inward investment

40. The project will create the equivalent of around 40 full time jobs during operation and about 300 jobs during construction. UBB will offer employment opportunities throughout the supply chain and focus on recently unemployed skilled workers from the local area including a 100% job interview guarantee for Gloucestershire residents who meet the job specification.
41. UBB will host a 'Meet the Buyer' event and provide business support and encouragement for local companies to join their supply chain in autumn 2012.
42. UBB has committed to a target of 8% of their workforce being apprentices during the construction phase. They have set a target of a minimum of 75% of their apprentices completing the framework.
43. UBB is looking to work with voluntary associations and will offer student work placements in administration, communications, construction, ecology or engineering.

Communications and the community

Visitor centre and wildlife area

44. The facility will include a visitor centre and wildlife area for use by all members of the community. The visitor experience area will have a viewing area where visitors can view the primary activities of the tipping hall, crane grab, boiler hall and control room from a secure space. The visitor centre will provide a facility for use by local schools, further and higher education institutes, local community groups, local businesses related to waste and renewable energy industries and the local councils.
45. The wildlife zone (accessible to visitors of the facility) will include an outdoor classroom that demonstrates the biodiversity of the local area and the enhancements brought about by the facility. A short footpath will lead visitors through meadow and woodland habitats to an outdoor teaching space positioned next to a pond. Visitors will be able to read about the biodiversity of the site on information boards.

Website

46. UBB has launched a dedicated website for the project (www.ubbgloucestershire.co.uk) that will be adapted for the whole life of the Project.

Community liaison group

47. UBB will facilitate a local community liaison group throughout the life of the project. Members of the public, including local residents, will be invited to join the group which will also include representatives of UBB and representatives of the council.

Planning and permitting

Planning

48. The planning application was submitted to the Waste Planning Authority on 31st January 2012. The planning application was validated on the 5th March 2012 (see www.ubbgloucestershire.co.uk for further details).
49. To date UBB has hosted a number of stakeholder events in order to present an overview of the project to any and all stakeholder groups who have requested it, including:
- Two public exhibitions (July and November 2011) to allow people to meet UBB and learn about the proposals.
 - To date, 14 presentations have been given on the project, including to the Javelin Park Community Forum, Stroud District Council and local parish councils including Haresfield.
50. As part of this engagement process, UBB have responded to all queries that it has received from interested parties.

Permitting

51. UBB submitted their environmental permit application to the Environment Agency on 24th February 2012. The environmental permit application was 'duly made' on 12th April 2012.
52. As part of the permitting process, the Environment Agency carried out public consultation on the application which included drop-in sessions for the general public to attend to discuss the project in more detail.

Timeline

53. Figure 6 shows the indicative timeline that represents the delivery of the contract up to service commencement.

Figure 6: Indicative project timetable

