

6 Construction and Decommissioning

6.1 Introduction

- 6.1.1 The Development has already been constructed. However in line with the requirements of the EIA Regulations, this chapter provides a description of the physical characteristics and activities of associated with the construction phase. The description provided is obviously retrospective and is based on the reports that were submitted to discharge planning conditions under the 2015 Permission and other information provided by the Project Team. The chapter outlines the programme during which construction works were substantially undertaken and also describes the future decommissioning and demolition of the Development after its expected operational lifetime.
- 6.1.2 This chapter been informed by the following documents which were submitted to the VoGC for approval pursuant to planning condition (Condition 28) of the 2015 Permission, copies of which are provided as appendices to the ES:
- Appendix 6.1 - Construction Phase Plan (CPP); and
 - Appendix 6.2 - Project Environmental Plan (PEP).
- 6.1.3 This chapter has been used to inform the retrospective assessments of the construction stage impacts of the Development as provided in each technical chapter of this ES (i.e. Chapters 7 to 11 and Volume II).

6.2 Programme Overview and Works Stages

- 6.2.1 Following the granting of 2015 Permission on 31st July 2015, site works commenced in February 2016 and were substantially complete (i.e. allowing commissioning of the Development to commence) by Q1 2018.
- 6.2.2 Construction of the Development did not take place continuously over the period from February 2016 to Q1 2018. However, for the purposes of the EIA, a worst-case assumption was taken that the Development was constructed over a single phase during this period. This provides a reasonable worst-case basis for the assessments.
- 6.2.3 The stages of the construction process were broadly as follows:
- Stage 1: Site preparation and enabling works (including excavation);
- Stage 2: Construction of the Development and
- Stage 3: Installation and Commissioning of the Development.

6.3 Description of Works

6.3.1 The following sections provide an overview of the works activities that were undertaken at each stage.

Stage 1: Site Preparation and Enabling Works (including Excavation)

6.3.2 The following works formed the basis of the enabling works, remediation and infrastructure and services stage, where relevant, of the completed Development, as required:

1. Contaminated land investigations and remediation, including asbestos removal.
2. Erection of hoardings and temporary post and wire fences to the site perimeter.
3. Excavation for an access road.
4. Provision of Contractors temporary accommodation including site welfare cabins.
5. Site clearance and earthworks, including civil engineering groundwork activities including excavation, grading and preparation of surfaces as well as the placement/compaction of fill. This included the reduced level dig for the temporary piling mat. The removal of topsoil and vegetation was also undertaken.
6. Establishment of construction laydown areas.
7. Construction of a temporary haul road along the eastern Site boundary.
8. Digging of trial holes to survey existing utilities on the boundary of David Davies Road.

6.3.3 The above works were undertaken in Q1 2016.

Stage 2: Construction

6.3.4 Construction commenced on the main building structures following approval of reserved matters (2016/00187/RES), discharge of pre-commencement planning conditions (2015/00031/1/CD) and completion of the aforementioned site preparation and enabling works.

6.3.5 The main construction activities undertaken during this stage are outlined below:

1. Piled foundations using the driven steel precast piling (vibratory piling) method and reinforced concrete bases – piling locations and activity was undertaken within the footprint of the approved building footprint (as defined by the 2015 Permission) in Q2 2016.
2. Construction of fuel storage and feed building.
3. Installation of gasifier and boiler equipment.
4. Construction of turbine and welfare building.
5. Installation of interconnecting pipework, electricity substation and electrical installations associated with the above - upon completion of the buildings, interior fit out and installation of mechanical, electrical, and plumbing systems commenced including the construction of the biomass technology itself.
6. Installation of surface water drainage infrastructure within the planning application boundary in line with details approved by VoGC.

7. Construction of hardstandings - areas were prepared using large and small excavators.
- 6.3.6 The buildings were progressively installed and / or constructed. In some instances, steel frame construction of buildings occurred in parallel where site logistics and structural integrity allowed. The structure of the Development was substantially completed in Q1 2018.

Stage 3 – Installation and Commissioning

- 6.3.7 Following construction and receipt of the Natural Resources Wales (NRW) Environmental Permit in 2018, a commissioning process commenced to ensure all elements of the Development were operating safely and as designed to quality standards. This stage involved checking and testing of all equipment and services within including mechanical, electrical, pipelines, as well as fire and security systems. Commissioning also included installation of the weighbridge.
- 6.3.8 In the period 2018 to 2021, the commissioning process was supported by construction works and alterations to equipment and plant within the Site. However, these were minor and as such are not considered further under the assessment of construction effects. Further information on some of these works is provided in Chapter 2: Site and Context.

6.4 Construction Methods

Plant and Equipment

- 6.4.1 The CPP (Appendix 6.1), prepared by the Contractor (Galliford Try) identifies the major pieces of plant and equipment that were to be used on Site including 360⁰ excavators, dumpers, piling rigs, cranes, tractor bowser and dozer. A list of large plant and equipment that were likely used at various stages of construction is provided in Table 6.. Table 6.1 also shows the plant and equipment which could be used during any future decommissioning and subsequent demolition of the Facility (in the event of definitive cessation). Decommissioning and demolition of the Facility is not required under the 2015 Permission.

Table 6.1: Plant and Equipment

Plant and Equipment	Site Enabling works	Excavation	Construction	Installation and Commissioning	Decommissioning
360 ⁰ Excavator	2	3	1	0	1
Tower / Mobile Crane	0	0	2	0	2
Breaker	0	2	2	0	2
Compressor & Air Tools	0	0	2 Compressors (Various hand tools)	1 Compressor (Various hand tools)	2 Compressors (Various hand tools)

Plant and Equipment	Site Enabling works	Excavation	Construction	Installation and Commissioning	Decommissioning
Drills / Cutters	0	0	Various (hand tools)	Various (hand tools)	Various (hand tools)
D5 Dozer	1	0	2	0	1
Compacter / Roller	1	0	2	0	0
Juntann / Banut Piling Rigs	0	0	2	0	0
Concrete Pumps	0	0	2	0	0
Generators	1	1	2	3	3
Scaffolding	✓	X	X	✓	✓
Fork Lift Truck	0	0	2	2	1
Goods/ Passenger Hoist	0	0	0	0	0
Mast-climber Platforms	0	0	0	0	0
Mechanical Road Sweeper	1	1	1	1	1
Floodlights	0	0	Various mobile towers	Various mobile towers	Various mobile towers
Hydraulic benders and cutters	0	0	0	0	1
Lorries and Vans	Various	Various	Various	Various	Various
Ready mix concrete trucks	Various	Various	Various	Various	Various

Hours of Work

6.4.2 The following normal hours of work were set out in the CPP and agreed with VoGC:

- Monday – Friday: 07:30 – 18:00.
- Saturday and Sunday: 07:30 – 15:00.

6.4.3 Activities that could be heard from the Site boundary were restricted to the following working hours:

- Monday – Friday: 07:30 – 18:00.
- Saturday: 08:00 – 12:30.

6.5 Construction Traffic

Construction Vehicle Movements

6.5.1 During construction, vehicles accessed and egressed the Site via David Davies Road. Construction vehicles accessing the Site were routed to the north of Dinas Powys using the A4050, therefore avoiding residential areas as much as possible. Access arrangements and the routing of construction traffic were agreed with VoGC as part of the CPP and access information was sent to all major hauliers on placement or orders by the Contractor.

6.5.2 The Contractor stated in the CPP that construction-related vehicle journeys, including Heavy Goods Vehicle (HGV) movements were expected to be as shown in Table 6.2. Further to this, trips have been apportioned to broad construction stages and Light Good Vehicles (LGVs) movements have also been provided. LGV trips have been derived from the peak demand of up to 130 staff on Site at any one time, as cited in the CPP (section 2.9).

6.5.3 It is estimated that construction stage of the Development resulted in approximately 30 two-way HGV trips per day on average, equating to approximately 10 vehicle trips per hour. However, there were estimated peaks in activity where vehicle movements were more concentrated, with an anticipated peak at up to 100 trips (200 daily two-way movements) HGVs and LGVs during the initial groundworks stage. A slightly higher number of HGV movements were generated in the groundworks stage associated with muck shifting. This peak period of muck shifting occurred for no longer than a period of 3-4 months.

Table 6.2: Daily Construction Traffic Movements (HGVs and LGVs) Q1 2016 to Q1 2018

Vehicle type	Groundworks Stage	Build Stage
HGVs	100 two-way movements	60 two-way movements
LGVs	100 two-way movements	100 two-way movements
Total	200 two-way movements	160 two-way movements

6.5.4 There were some abnormal HGV loads during the construction phase, including earth moving plant which was brought to Site at the start and removed at the end of the groundworks stage. Staff welfare equipment was also brought to the Site and removed at the end of the construction phase. Other abnormal HGV deliveries included cranes which

were brought to Site when required and other large LGVs, including the delivery of key operational biomass processing equipment during the build stage. Note, these were one-off deliveries that occurred infrequently, and travel was restricted to off-peak periods. Irregular, abnormal HGV loads do not therefore form part of this assessment.

- 6.5.5 Further consideration of the construction vehicle movements on the surrounding road network is presented within Appendix 3.10: Transport Technical Note.

Construction Vehicle Management

- 6.5.6 The construction site layout was phased to reflect the sequence of works from site preparation to construction. The Contractor put in place a Traffic Management Plan during construction, and the traffic management measures to be adopted during the works were defined in section 5.8 of the PEP. No road closures were required as a result of construction activities on-Site.

6.6 Construction Environmental Management

- 6.6.1 Condition 28 of the 2015 Permission required a Construction Environmental Management Plan (CEMP) to be submitted to the Local Planning Authority for approval prior to the commencement of works. Condition 28 stated that *"The CEMP shall include details of how noise, lighting, dust and other airborne pollutants, vibration, smoke and odour from construction work will be controlled and mitigated"*.
- 6.6.2 A CPP and PEP were both submitted to VoGC to discharge Condition 28 (provided as Appendix 6.1 and 6.2 respectively) and were subsequently approved. The CPP was prepared by the Contractor (Galliford Try) and provided a description of how construction works would be managed and arrangements for controlling site-specific risks and health and safety.
- 6.6.3 A PEP (Appendix 6.2) was also prepared by the Contractor to identify and manage the environmental risks associated with the construction stage of the Facility. The PEP set out the following information:
- Environmental risk assessment and control measures;
 - Project environmental objectives and targets;
 - Roles and responsibilities (including sub-contractor management);
 - Communication and liaison (including complaint management procedures);
 - Environmental incidents and emergency response procedures;
 - Environmental training; and
 - Environmental audits and inspections.
- 6.6.4 A summary of the key environmental risks and protection measures which were in place through the PEP is provided in the following sections although Appendix 6.2 should be referred to for detail. Throughout the duration of the construction stage, the environmental risk assessment included in the PEP was intended to be subject to review and updated on a monthly basis.

6.6.5 The key environmental objectives identified in the PEP with associated targets were as follows:

- Protection of all pollution paths to watercourse (zero);
- Minimise waste to landfill (90%);
- Increase site personal environmental awareness through training;
- Control of dust emissions from the Site;
- Control of site traffic; and
- Minimise waste generated from materials.

Construction Waste and Materials

6.6.6 Environmental control measures relating to waste storage, handling and segregation, off-site disposal, and reporting waste performance were set out in section 5.1 of the PEP.

6.6.7 Where appropriate, excavated materials and materials were re-used to create suitable platforms for development. Re-use of such materials was dependent on meeting relevant geotechnical specification requirements and being inert. Reuse of material reduced deliveries to the Site and the amount of waste for disposal.

6.6.8 Details of construction materials volumes and waste materials are not available for assessment purposes.

6.6.9 All waste produced during the construction stage of the project was subject to the 'Duty of Care' as set out in the Waste Duty of Care: Code of Practice issued under section 34(7) of the Environmental Protection Act 1990. It was joint responsibility of the Appellant and the Principal Contractor to ensure that waste produced on-Site was disposed of in accordance with appropriate legislation.

6.6.10 Contractors were required to carry out works in a way that, as far as was reasonably practicable at the time, minimised the amount of waste to be disposed of by landfill. Waste arisings from the Site would be also required to be transported and disposed of in accordance with relevant legislation in force at the time.

Water Management

6.6.11 Environmental control measures relating to water management, including abstraction, impounding, and dewatering, discharges to surface, groundwater, or sewer, works near water, site drainage, washing activities and monitoring were set out in section 5.2 of the PEP.

Ecological Management

6.6.12 Section 5.3 of the PEP set out the mandatory environmental control measures related to ecological management including works in protected areas, protected species, tree and hedgerow protection and invasive species.

Land Use Management

- 6.6.13 Section 5.4 of the PEP set out the mandatory environmental control measures related to earthworks and contaminated land.

Nuisance Management

- 6.6.14 Section 5.5 of the PEP set out the mandatory environmental control measures related to noise and vibration controls, dust and odour, visual impact, and light.

Resource Management

- 6.6.15 Section 5.5 of the PEP set out environmental control measures related to energy and water conservation.

Sustainable Procurement

- 6.6.16 Section 5.5 of the PEP set out measures that would be adopted in relation to sustainable procurement including supplier assessments, procurement for timber and aggregates and use of local suppliers. The PEP also set out the measures that would be adopted to reduce packaging waste.

Materials Management

- 6.6.17 Sections 5.6.2 to 5.6.5 of the PEP set out the environmental control measures that were in place in relation to the storage of hazardous materials, refuelling, storage of raw materials, the import of recycled aggregates, crushing of aggregates and management of soils.

Cultural Heritage

- 6.6.18 No specific risk issues were identified in relation to heritage at the Site, although this issue was addressed in section 5.7 of the PEP.

6.7 Communication and Complaints Procedures

- 6.7.1 The Contractor was registered with the Considerate Constructors Scheme and was therefore committed to managing impacts on neighbours and the public and to proactively maintaining effective engagement with the local community.
- 6.7.2 Through the PEP, the Contractor committed to an Operations Management Team that would liaise with the local community throughout the duration of the project on an as needed basis. The PEP stated that all potentially affected parties that may be subject to disruption and / or disturbance as a result of the project activities would be consulted and / or notified.
- 6.7.3 The PEP set out the procedures for managing environmentally related complaints during construction which required the completion of an Environmental Incident Report. The PEP stated that each substantiated complaint would then be managed in accordance with the Contractors Accident and Incident Reporting Standard.

6.8 Emergency Incidents and Response

6.8.1 Section 11 of the PEP set out the procedures for dealing with environmental incidents and emergencies on-site. The Appellant is not aware of environmental incidents having occurred during the construction stage of the project.

6.9 Decommissioning

6.9.1 An assessment is included in the ES of the effects of the future decommissioning and demolition of the Development (subsequently referred to throughout this ES as 'decommissioning'). This section sets out the assumptions that have been made with regard to these future works for assessment purposes.

6.9.2 The Development was substantially complete in 2018 although has not been operational since this time. The Development has an assumed design life of 25 years, although there are no limits imposed by the 2015 Permission or Permit on its operating period. Assessments assumed that the Facility would be operational for a period of 25 years. The operating period may longer, although this is unlikely to materially affect the outcome of the assessments. It would be unsustainable to assume a lifetime of less than 25 years.

6.9.3 The Development is predominantly modular in design and decommissioning of the Facility could be phased over a period of approximately 18 months to 2 years in a controlled dismantling exercise. Each assessment assumes a worst-case position in terms of decommissioning relevant to their topic.

6.9.4 Traffic associated with the decommissioning stage would access the Site via the existing entrance via David Davies Road. Vehicles accessing the Site would be routed to North of Dinas Powys using the A4050 therefore avoiding residential areas within Barry Waterfront as far as practicable.

6.9.5 Prior to the dismantling of plant and equipment, all residues and chemicals would be removed and disposed of appropriately in line with waste legislation in force at the time. Fuel stores would be sealed and removed off-site to contain any leaks or spills. The Development would then be dismantled to ground level. It is assumed that hardstanding would be left in-situ to facilitate the Site's future re-use rather than being broken up.

6.9.6 The Permit in place for the Development, under Permit condition 1.1.1a, requires the Appellant to have a written management system (i.e., Site Closure Plan) in place which identifies and minimises the risks of pollution including those arising from closure. At the definitive cessation of activities, the operator must satisfy NRW that necessary measures have been taken so that the entire Development ceases to pose a risk to soil or groundwater.

6.9.7 The Site Closure Plan would detail the measures that will be carried out to ensure that the site is closed and decommissioned in a controlled manner and without any adverse impact to the environment. The Site Closure Plan would take into account all potentially polluting aspects and require full mitigation and prevention to be in place prior to its implementation. No aspect of the Site Closure Plan can therefore be implemented without formal approval from NRW and mitigation is followed. As such, the likelihood of significant environmental effects associated with decommissioning are minimal.