CHAPTER 6: DEMOLITION AND CONSTRUCTION

Introduction

6.1 This chapter details the indicative construction programme, its potential environmental impacts and suitable controls and mitigation measures. Due to the scale and nature of the project a Construction Environmental Management Plan (CEMP) is recommended. A CEMP outlines a list of control procedures which specify legislation, standards and best practice methods which should be adhered to during construction works. Detailed assessments of potential impacts resulting from construction activities along with mitigation measures are presented in each technical chapter.

Demolition and Construction Programme

Programme and Phasing

6.2 The phasing strategy for the development seeks to deliver the proposals over an eight year period commencing in 2014 with completion estimated at 2022. The delivery of the development is anticipated to be in accordance with the following.

6.3 Construction at Kingsland and Penrhos will commence in 2014, with completion of the first phase of Penrhos in 2016/2017. This will include areas around the hub and central areas of the site, which will be completed in 2016, when the Penrhos Leisure Village will open at approximately 50% capacity. The remaining lodges will be completed at Penrhos and the facility will open at 100% capacity in 2020.

6.4 The construction at Cae Glas will commence in 2015, with occupation by nuclear workers in 2016. From 2021, the refurbishment works at Cae Glas will be undertaken to deliver the second part of the leisure village. This will open at full capacity in 2022.

6.5 Kingsland construction will conclude in 2022, with approximately 50 dwellings having been delivered per year between 2016 and 2022.

Penrhos

6.6 As with Kingsland, the Penrhos site will also be subject to substantial advanced planting to provide additional screening during construction and to allow some time for vegetation to establish prior to commencement of development.

6.7 Built development at Penrhos will commence at the primary access point at the north-western corner of the site, where the access, parking and main hub buildings will constitute the first stages of construction. In addition, the first phase of development will include commencement of works on the Quillet and Woodland Lodges, as well as the Woodland Parking area.

6.8 Concurrent with the development of the first phase at Penrhos, the public areas of the Penrhos Coastal Park will be subject to woodland planting and management, improvements to the coastal path and the creation of additional recreation facilities throughout the woodland as described in Chapter 5: The Proposed Development.

6.9 Phase 1 will also involve the restoration and refurbishment of the Bathing House as a restaurant and the Boat House as a water sports centre.

6.10 The second phase of development at Penrhos will include the construction of the Headland Lodges. This will allow the vegetation screen planting time to establish prior to construction.

Cae Glas

6.11 An advanced planting programme will be delivered prior to the commencement of development at Cae Glas to provide improved screening of the site from sensitive viewpoints. This will involve significant areas of planting around the periphery of the site. In addition, the 4m bund, complete with planted landscaping, will be engineered concurrent with any built development taking place.

6.12 The development at Cae Glas will commence at the proposed access point in the west of the site. Work will commence firstly on the main lodge area, building out in a broadly north to south direction. The extension and creation of the central water feature will also be carried out at this time as well as the planting of trees and other vegetation throughout the central areas of the site.

6.13 Works will commence on the new cricket pitch and football pitch to coincide with the timing of their closure at the Penrhos site. The provision of the cricket and football pitches at an early stage is integral to the delivery of the Penrhos site as the new facilities must be operational before the closure of the old facilities.

6.14 When the Cae Glas site is no longer required for nuclear workers accommodation, the lodges and other buildings at Cae Glas will be refurbished for the long term use as a leisure facility and works on the nature reserve will commence. This will involve additional/replacement planting in and around the site to further enhance the quality of the woodlands.

Kingsland

6.15 The development at Kingsland will, as stated above, run between 2014 and 2022, resulting in the delivery of around 50 units per year between 2016 and 2022. Development will progress on the site in a north-east to south-westerly direction, commencing at the proposed primary access point. It is intended that a series of reserved matters applications will be submitted for the delivery of parcels of land within the site.

6.16 The landscape screening areas to the boundaries of the site will be delivered as advanced planting to the first phase of development, prior to the commencement of any built development on the site. This will allow the anticipated visual screening benefits to be realised during the construction period and will ensure that trees are allowed time to mature, offering greater screening for all subsequent phases of development.

Advanced Planting

6.17 As described in the previous sections, advanced planting will form a key component of the delivery of each of the three sites and the screening of the construction activities. Accordingly, planting at the site boundaries on Kingsland, Cae Glas and Penrhos will be implemented during the early stages of development.

Enabling Works and Site Preparation

6.18 Prior to any demolition or construction activities commencing on any of the three sites, a range of enabling works are required to ready them for development. These actions are described in the following paragraphs.

6.19 Remediation of any hot spots of contaminated soils, if found to be present, would be undertaken during the enabling works, as would any additional ecological surveys or mitigation measures.

6.20 At Kingsland, site hoarding will be erected prior to the commencement of works on site. This will be coloured to be sympathetic to the surrounding environment to minimise visual impacts. Initially, the hoarding will be confined to the development area at the north-east of the site around the area to be used as the primary access point.

6.21 At Cae Glas and Penrhos, site hoarding will be erected to site compounds for security purposes but natural planted screening will be used elsewhere to minimise the visual intrusion of the works unless specifically required for acoustic screening purposes.

6.22 The three sites will not be subject to any significant levelling or earthworks prior to development. Lodges and dwellings will be integrated into the prevailing landscape and topography, with only the creation of individual levelled development platforms likely to be necessary at Kingsland.

Site Compounds

6.23 It is proposed to utilise the proposed site compounds to offload, store and handle materials as well as for welfare facilities, where appropriate. It is anticipated that these will be positioned close to the proposed access points and as remote from existing developed areas as feasible. The location of the compound within each construction site area will enable materials to be offloaded in one controlled area and then moved within the site to the required construction area. The currently anticipated locations of site compounds are described in the following paragraphs. These will be confirmed during subsequent reserved matters applications.

Penrhos

6.24 The site compounds at Penrhos are to be located on the land to the south of the proposed Hub and within the central area of the Quillet. From these areas, the development of the Hub, Estate Lodges/Cottages, Quillet Lodges and Woodland Lodges can be facilitated.

6.25 For the development of the Headland Lodges in the second phase of development, a small site compound will be set up to the east of the Hub. This phase requires a limited area for the site compound as almost all of the required construction works will involve prefabricated construction techniques.

Cae Glas

6.26 For the development of Cae Glas, the proposed car park to the south of the Entrance Hub will act as the main site compound until the occupation of the site by nuclear workers. Smaller satellite site compounds may be required in the north-western corner of the site in order to deliver the parking area and at the location of the visitor centre for the nature reserve for the works required in this area.

6.27 For the refurbishment of the Cae Glas lodges following the departure of nuclear workers, the site compound will again be located in the main car park to the south of the Entrance Hub.

Kingsland

6.28 The site compounds at Kingsland will be included within the application areas for each of the four anticipated future reserved matters applications. They are currently assumed to be located within the proposed squares at the centre of the four phases. This provides a central location within each phase that is easily accessible from the access points and contained within the central areas of the site to minimise disruption to sensitive receptors off-site and residents in the preceding phases of development.

Demolition

6.29 As the majority of the site is previously undeveloped, there is little demolition work required in order to prepare the site for construction. However, there are some isolated structures that will require demolition. Buildings to be demolished are as shown on Figure 6.1.

6.30 The listed buildings on the site will not be demolished as they are to be restored and refurbished as part of the proposals.

6.31 It is proposed that the demolition works be undertaken with bulldozers or hydraulic arm demolition machines.

6.32 Prior to demolition, all buildings will be inspected for the presence of asbestos. Should any be identified, this would be removed and disposed of by an appropriately licensed contractor. Any buildings that have been identified as having high bat potential will also be subject to an internal inspection to confirm the absence (or, if present, obtain a licence from CCW for relocation) of protected species prior to demolition.

Construction

Substructure

Hub

6.33 A programme of intrusive ground investigations will be carried out to inform the foundation design. Based on reports of investigations carried out at nearby sites it is anticipated that foundations for the hub buildings will comprise traditional reinforced concrete pads and strip footings. Their depth will vary depending on the nature and depth of bedrock and soils encountered.

Lodges

6.34 Lodges will utilise an auger bored mini piling system for foundations. This will require the use of a track mounted mini-piling rig. This will reduce the impacts on geology and hydrogeology and the noise impacts of the works.

Residential Dwellings

6.35 It has been assumed that, due to the presence of bedrock at relatively shallow depths, foundations at Kingsland will be of standard strip type. However, in localised areas, piling or raft foundations may be required to provide suitable development platform.

6.36 The exact nature of the foundation design will be determined following further site investigation works at the reserved matters planning application stage. In order to provide a robust assessment, the effects of the potential use of auger bored piling have been considered in the assessment of construction noise in Chapter 16: Noise and Vibration.

Superstructure

Hub

6.37 Superstructure will be primarily timber framed with glazing and cladding.

Lodges

6.38 The lodges at Penrhos and Cae Glas will be of prefabricated construction. The structure will be primarily constructed in factory conditions off site and delivered to site by HGV. It is assumed that 2 HGVs will be required to deliver one lodge in component parts. The lodges will be sited and secured to the mini piled foundations and then subject to fit out.

Residential Dwellings

6.39 The development at Kingsland will utilise standard housebuilding techniques. Dwellings will be of timber frame construction with brick/render façades and pitched roofs.

6.40 Construction of frames, façades and roofs will be predominantly by hand with lifting of materials to upper floors by mobile telescopic crane. Tools used will primarily be hand held.

Potential Demolition and Construction Impacts and Control Measures

6.41 Construction sites have the potential to cause adverse environmental effects in the short term which are likely to impact most significantly upon sensitive receptors in and around the site. This section presents a summary of the likely environmental effects associated with the construction programme (including demolition), and suggests procedures that should be implemented to control or mitigate these effects.

6.42 Detailed mitigation proposals to ameliorate specific impacts are presented in each technical chapter. These include measures for the mitigation of impacts related to the construction programme which can be implemented through a Construction Environmental Management Plan (CEMP). The CEMP would set out the legislative and best practice standards for demolition and construction activities minimising impacts on the local environment and the local community. The CEMP will be presented to IOACC prior to the commencement of works. For Example, the CEMP will include, but not limited to the following:

- A plan showing the phasing of the demolition and construction programme;

- Baseline levels for noise, vibration and dust; with monitoring protocols;
- Environmental control measures; and
- Any requirements for monitoring and record keeping.

6.43 All working procedures, controls and mitigation measures will be required to conform to statutory controls through key pieces of legislation.

6.44 A selection of general guidance is included below which covers construction activities as a whole as opposed to effects of construction that are impact area specific.

Construction Environmental Management Plan (CEMP)

6.45 A Construction Environmental Management Plan (CEMP) seeks to mitigate potential demolition and construction impacts through adherence to regulatory controls and the application of best practices on site. The document will be formally prepared after planning permission is awarded and prior to any development on-site. Its production may be secured through the application of a planning condition by IOACC.

6.46 All site workers will be subject to a site induction, a component of which will be training on the restrictions and requirements imposed by the CEMP. A site 'Environmental Manager' will also be appointed to ensure compliance and monitor progress against environmental targets as appropriate.

6.47 An outline of the methods and practices that would be defined in the CEMP is presented in the following paragraphs.

Hours of Work

6.48 Working hours will be subject to agreement with IOACC. However, it has been assumed that the following working hours would be followed, these are presented below:

- Monday – Friday : 08:00 - 18:00;
- Saturday: 09:00 - 18:00; and
- No working on Sundays or Bank Holidays.

6.49 Exceptions may arise, for example when abnormal loads are delivered or when specialist activities are conducted. The applicant acknowledges that should these circumstances arise the appropriate permissions and notifications would be sought from IOACC.

Demolition and Construction Wastes

6.50 Waste will be generated during all stages of the demolition and construction works such as from packaging from deliveries and materials that become surplus to requirements (for further details please see Chapter 18: Waste). The applicant will seek to minimise any waste at source and then explore opportunities for recycling and reuse of construction materials. Burning of any construction wastes on the site will not be permitted.

6.51 All waste arising as a result of the demolition and construction programme will be dealt with in accordance with the waste duty of care in Section 34 of the Environmental Protection Act 1990 and the Environmental Protection (Duty of Care Regulations) 1999. In addition, due to the nature of the project a Site Waste Management Plan (SWMP) will be produced and will complement the CEMP. This

will be developed prior to development in order to make an assessment of the potential for waste minimisation in the site preparation, demolition and construction stages. It will also provide more detail of waste arising and assess the management options of these.

6.52 The SWMP will be a working document and will be updated at regular intervals throughout the project. It will identify and prioritise options for minimisation, reuse and recycling of demolition and construction wastes where practicable. In addition, it will allow for emerging markets, best practice and any unforeseen changes to the project to be taken into account.

6.53 A Framework Site Waste Management Plan is included at Appendix 18.1.

Loading Zones

6.54 In is envisaged that strict management of loading zones will be implemented by way of a delivery booking system linked to crane availability. This will ensure that material movements are efficiently managed and will also facilitate a 'just in time delivery regime'. Where possible, material movements will be managed to coincide with off-peak traffic periods.

On-Site Storage of Hazardous Materials

6.55 Due to the nature of the development it is likely that there will be minimal storage of hazardous materials on site during the construction period. However, if required, fuels for construction vehicles will be ordered on a 'just in time' basis; and if storage is essential this will be in a safe, secure and bunded weatherproof area.

Community Liaison

6.56 Typically a CEMP will identify a Community Liaison Officer who will provide the public and local business with information about the site preparation, demolition and construction activities and deal with any complaints or concerns of the community. Information will also be made available to the public and local business through notice boards/hoardings and newsletters where appropriate.

Procedures and Mitigation Measures

6.57 Table 6.1 sets out the procedures and mitigation measures that should feature in the CEMP. These reflect the mitigation measures identified in the technical chapters of the ES.

Table 6.1: Potential Construction Effects and Mitigation

Potential Impact	Activity and Effect	Procedures & Mitigation Measures
Visual Intrusion	Construction Activity and Vehicle Movement	▪ Advanced planting ▪ Site hoarding and screening where appropriate ▪ Use of hydraulic cranes that can be lowered when not in use
Noise & Vibration	Movement of vehicles	▪ Controlled vehicle movements ▪ Use of acoustic screening

Potential Impact	Activity and Effect	Procedures & Mitigation Measures
	Use of large equipment/machinery	▪ Use of acoustic site hoarding ▪ Work only within agreed working hours ▪ Screening plant to reduce noise which cannot be reduced by increasing the distance between the source and the receiver (i.e. by installing noisy plant and equipment behind large site buildings) ▪ Ensuring the use of quiet working methods, the most suitable plant and reasonable hours of working for noisy operations, where reasonably practicable ▪ Locating noisy plant and equipment as far away from houses as reasonably possible, and where practical, carry out loading and unloading in these areas ▪ Shutting down any machines that work intermittently or throttling them back to a minimum ▪ Orientating plant that is known to emit noise strongly in one direction so that the noise is directed away from houses, where possible ▪ Closing acoustic covers to engines when they are in use or idling
	Loading/unloading of lorries	▪ Activity must take place only in designated areas away from sensitive receptors ▪ Lowering material slowly, wherever practicable, and not dropping them
Air Emissions & Dust	Emissions from vehicles	▪ Vehicles must be regularly serviced ▪ All non-road mobile machinery to use ultra low sulphur tax exempt diesel where available and be fitted with appropriate exhaust after-treatment from an approved list managed by the energy saving trust ▪ Minimise movement of construction vehicles around the site ▪ Impose a site speed limit
	Dust	▪ Damping down during dry weather ▪ Locate dust generating activities away from site boundaries ▪ Site haul roads to be hard surfaced ▪ Vehicles to be cleaned and wheels washed before leaving site ▪ Loads entering and leaving site to be covered ▪ Cover, seed or fence stockpiles to prevent wind generating dust ▪ The local authority must be notified of the use of a concrete crusher and a permit to allow operation must be provided
Community	Disruption	▪ Notify community and local businesses of works through notice boards and leaflets ▪ Designation of a community liaison officer ▪ Work only within agreed working hours ▪ Provision of complaint helpline
Archaeology	Damage to archaeology during excavation	▪ Stop works and liaise with the personnel in charge of the watching brief ▪ Upon discovery of remains contact IOACC, for recording or collection

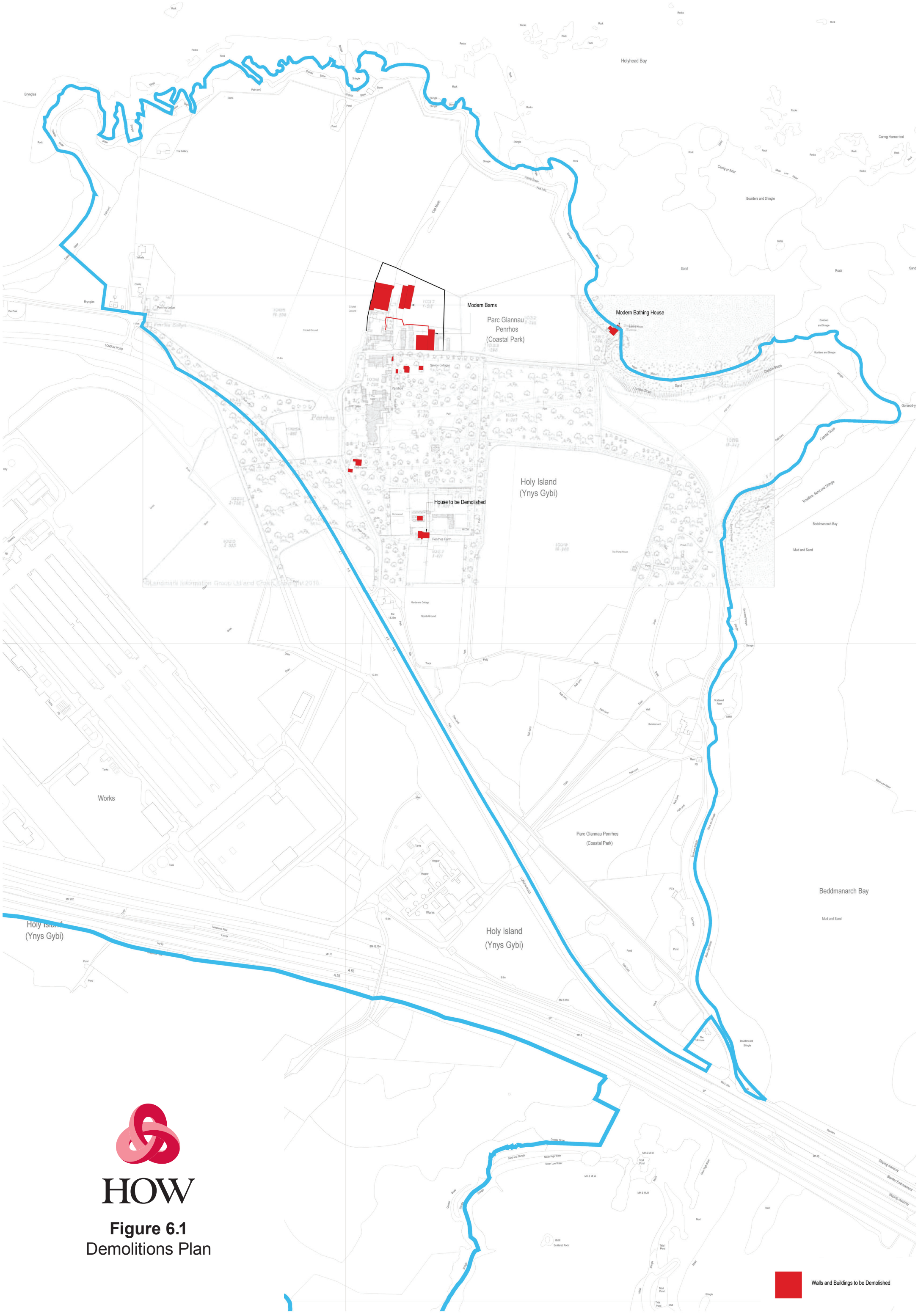
Potential Impact	Activity and Effect	Procedures & Mitigation Measures
Waste	Generation of general waste (packaging, surplus material, excavation material)	▪ Waste minimisation and re-use methods should be considered
	Removal of general waste	▪ Recycling of materials where possible ▪ Non-recyclable waste to registered landfill ▪ Sheeting to cover lorries and trucks removing waste from site
	Generation of contaminated waste material is found to be present	▪ Specialist waste management procedures must be employed
	Storage of hazardous wastes	▪ Storage should be in designated areas, securely contained, marked, and stored liquids bunded appropriately
Storage & Handling of Materials	Storage of general materials	▪ Store in packaging until use to prevent damage and waste
	Storage of hazardous materials	▪ Storage should be in designated areas, securely contained, marked, and stored liquids bunded appropriately
Discharges to water	Site runoff and seepage into groundwater	▪ Management of site drainage ▪ Provision should be made for the safe disposal of wastewaters.
Accidents and emergencies	Spillage of fuels, oils, or chemicals	▪ Contingency plan for spills to be drawn up ▪ Absorbent granules to be stored on-site
	Accidents involving the public	▪ Appropriate signage to be provided
Traffic	Adverse traffic conditions caused by HGV access.	▪ Appropriate routing of construction traffic

Summary and Conclusion

6.58 This chapter has presented a description of the construction methods, activities and sequences. The potential environmental impacts of the construction phases of the proposed development have been considered and all controls or measures to mitigate these effects are in line with current environmental standards and legislative requirements.

6.59 The applicant and their contractors will develop and implement a Construction Environmental Management Plan (CEMP) for the site prior to construction, thereby ensuring that any potential environmental effects are within suitable standards or mitigated where no standards exist.

6.60 Potential effects will be monitored over the lifespan of the construction period so that remedial action can be taken if required. Therefore, the applicant invites IOACC to condition the preparation and implementation of an approved CEMP prior to construction works starting on site.



HOW

Figure 6.1
Demolitions Plan