CHAPTER 22: SUMMARY OF MITIGATION AND RESIDUAL EFFECTS

Introduction

22.1 The residual effects of the proposed development have been assessed as part of the EIA and can be described as the effects which remain after the implementation of the proposed mitigation measures. The residual effects have been identified for each effect category in the preceding technical chapters [Ref: Chapters 8-20] and are summarised in Table 22.1. It is expected that various mitigation measures will be secured through planning conditions.

22.2 The EIA and the design evolution has been an iterative process and therefore many measures to mitigate potential adverse environmental effects, such as ecological enhancement, highways infrastructure and landscape features have all been incorporated into the design of the proposed development in order to avoid, reduce or offset negative changes.

22.3 Table 22.1 summarises the residual effects from both the construction phase and once the proposed development is completed and operational. Following the table is a discussion of the residual effects and a conclusion.

Table 22.1: Summary of Residual Effects

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
Socioeconomics, Regeneration and Health	Construction	Direct Employment	None required	Moderate to Major Beneficial
		Induced and Indirect Employment	None required	Moderate Beneficial
	Operation	Direct Employment	None required	Moderate to Major Beneficial
		Indirect Employment (Penrhos / Cae Glas)	None required	Moderate to Major Beneficial
		Indirect Employment (Kingsland)	None required	Minor to Moderate Beneficial
		Meeting Housing Requirements	None required	Minor to Moderate Beneficial
		Demographics	None required	Moderate to Major Beneficial
		Education	None required	Moderate to Major Beneficial
		Recreation	None required	Minor Beneficial
		Community Facilities	None required	Negligible to Moderate Beneficial
		Health Facilities	Further discussions to be held with the PCT and IOACC.	Negligible
		Welsh Language	None required	Negligible to Moderate Beneficial
		Synergy with the wider regeneration aims	None required	Moderate to Major Beneficial
Landscape & Visual	Construction	The visual impact of HGV movement & general construction works	▪ Site compounds will be positioned close to the proposed access points and as remote from existing developed areas as feasible. ▪ Hydraulic cranes will be used, which can be lowered when not in use, in order to minimise l impacts of construction works.	Moderate Adverse
		Visual and landscape impacts of remodelling ground levels.	▪ 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.	Negligible
		The visual impact of site hoarding- Penrhos/Cae Glas	▪ Site hoarding will be erected to site compounds for security purposes but natural planted screening will also be used elsewhere to minimise the visual intrusion of the works.	Minor Adverse
		The visual impact of site hoarding- Kingsland	▪ Site hoarding will be coloured to be sympathetic to the surrounding environment to minimise visual impacts.	Minor Adverse
		The visual impact of site lighting around construction areas	▪ Use of directional lighting will be used across the site in accordance with recommendations in chapter 18.	Moderate Adverse

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		The visual impact of offloading, storing and handling of materials within compound areas- Penrhos/Cae Glas	▪ Site hoarding will be erected prior to the commencement of works on site.	Minor Adverse
		The landscape impacts of incorporating services and utilities	▪ 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.	Minor Adverse
		The visual impacts of temporary screening measure and protective fencing. - Penrhos/Cae Glas	▪ 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.	Minor Adverse
		The visual impacts of temporary screening measure and protective fencing- Kingsland	▪ Site hoarding will be coloured to be sympathetic to the surrounding environment to minimise visual impacts.	Minor Adverse
		The landscape and visual impacts of temporary parking, on-site accommodation and work areas - Penrhos	▪ Construction of the Headland Lodges will form part of the second phase of development in order to allow time for the advanced screening planting to establish and provide as much screening of the development as possible. ▪ Public areas of the coastal park will be subject to woodland planting and management and improvements to the coastal path will be concurrent with the development of the first phase of development.	Moderate Adverse
		The landscape and visual impacts of temporary parking, on-site accommodation and work areas - Cae Glas	▪ The proposed short-term accommodation for nuclear workers will be in the form of timber lodges. These can then be converted to holiday accommodation, minimising the need for further a further lengthy period of construction, which has the potential to impact on landscape character and views. ▪ A 4 metre high, planted bund will be constructed along the interface of the site with the A55 prior to any development taking place on the site.	Moderate Adverse

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		The landscape and visual impacts of temporary parking, on-site accommodation and work areas- Kingsland	▪ Where possible, landscape screening and ecological enhancement measures will be delivered in advance of the construction of the built elements to soften and screen the development. ▪ 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.	Moderate Adverse
		The landscape and visual impact of material stockpiles- Penrhos/Cae Glas	▪ Lodges will primarily be prefabricated off site, which will help to minimise the duration of the construction period on site. ▪ A 4 metre high, planted bund will be constructed along the interface of the site with the A55 prior to any development taking place on the site.	Minor Adverse
		The landscape and visual impact of material stockpiles- Kingsland	▪ Where possible, landscape screening and ecological enhancement measures will be delivered in advance of the construction of the built elements to soften and screen the development. ▪ 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.	Minor Adverse
	Operation	Landscape Impacts		
		Impact on Designated Landscapes: Area of Outstanding Natural Beauty Penrhos site	▪ Opportunities to increase awareness and understanding of the AONB, create opportunities for recreational use where currently lacking, and contribute to the creation of a living and working landscape through development of new employment and local housing opportunities.	Neutral

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Impact on Designated Landscapes: Area of Outstanding Natural Beauty Cae Glas site	▪ Opportunities to increase awareness and understanding of the AONB, create opportunities for recreational use where currently lacking, and contribute to the creation of a living and working landscape through development of new employment and local housing opportunities	moderate beneficial
		Impact on Designated Landscapes: Area of Outstanding Natural Beauty Kingsland	▪ Opportunities to increase awareness and understanding of the AONB, create opportunities for recreational use where currently lacking, and contribute to the creation of a living and working landscape through development of new employment and local housing opportunities	Neutral
		Impact on Designated Landscapes: SSSI	▪ The masterplans for both the Penrhos and Cae Glas sites aim to recognise and respond to the special qualities of the SSSI. The retention of agricultural land along the coastal edge around Penrhos creates a buffer between the proposed development and the SSSI. ▪ The proposed nature reserve at Cae Glas provides a significant buffer between the proposed development and the SSSI designated inland sea.	Negligible
		Impact on Designated Landscapes: Heritage Features	▪ Retention of a substantial area of green open space around Trefignath burial chamber. Beyond the immediate setting, proposed car parking is sensitively arranged, responding to ground levels in order to minimise potential visual impacts. ▪ Mitigating planting is also incorporated to screen parked vehicles.	Neutral

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Impact on Landscape Character Penrhos- National Level	▪ The coastal path route, and in particular its landscape and visual qualities, have been carefully considered as part of the development of the masterplan proposals for the Penrhos site to ensure that any potentially negative landscape and visual impacts affecting users of the route are minimal, and mitigated against. ▪ Enhancement works to the coastal path will be carried out, incorporating potential improvements such interpretation boards and signage.	Minor beneficial
		Impact on Landscape Character Penrhos- Regional Level	▪ Retention of a wide band of agricultural land along the headland will contribute significantly to retention of the landscape features, which has been identified as including small fields, gorse hedges, windblown hedges where they are present use landform and vegetation patterns to provide mitigation and use typical local characteristics, both in the design of the buildings, and within the landscape design.	Neutral
		Impact on Landscape Character Penrhos- Local Level	▪ Increase management of those areas of highest value, such as the woodland, and increase quality	Minor beneficial
		Impact on Landscape Character Cae Glas - National Level	▪ Masterplan proposals have been developed to respect the burial chamber site. A substantial area of green open space will be retained around the site, in order to maintain a strong landscape setting around the monument.	Neutral
		Impact on Landscape Character Cae Glas – Regional Level	▪ Masterplan developed to preserve, enhance and protect the special landscape character of the site, and allow people to appreciate and enjoy this character without harm.	Negligible
		Impact on Landscape Character Cae Glas - Local Level	▪ Opportunity to increase landscape value across the site by allowing controlled access. ▪ The masterplan aims to protect areas of highest landscape quality, and locate the majority of new development within areas identified as lower in terms of their quality and value.	Moderate Beneficial

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Impact on Landscape Character Kingsland- National Level	▪ New development will sit within a strong landscape setting, which will contribute positively contribute positively to the surrounding landscape character.	Minor Adverse
		Impact on Landscape Character Kingsland- Regional Level	▪ Typical features of regional landscape character, including heathland planting, will be introduced to the development	Minor Adverse.
		Impact on Landscape Character Kingsland- Local Level	▪ Elements of landscape quality, including typical heathland planting and tree cover, will be incorporated into the development. ▪ New parts of the site will be opened up for informal use, thus adding new landscape value to the site	Neutral
		Impact on Seascape Character- Seascape Unit 8	▪ Coastal Park will largely be retained, and will remain open for public use. ▪ Residential accommodation and leisure uses will be sensitively integrated into the site retain, enhance and protect the Coastal Path retention of a substantial strip of agricultural land of varied width along the Penrhos headland in order to retain the existing coastal landscape character. ▪ Significant amounts of planting will be employed further inland to visually screen new development and embed it into the landscape. ▪ Leisure uses will be contained within the central Hub, away from the coastal edge, and have been driven by the desire to retain the tranquil character of the coastline and the historic character of the former Penrhos Estate.	Negligible
		Overall impact on this Seascape Unit	▪ Sensitive character and quality of the coastal edge and adjacent land within the Cae Glas has been recognised by the masterplan proposals, and these qualities will be retained, protected and, where necessary, enhanced by the proposals.	Negligible

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Impact on Footpaths and Cycleways- Penrhos	▪ The Isle of Anglesey Coastal Path/Wales Coast Path will be retained and enhanced as part of the proposals. ▪ Proposed improvement works include improvements to surfacing, increased width to aid accessibility where required and signage and interpretation at strategic locations. ▪ National Cycle Network route 8 will be retained and incorporated into the masterplan proposals. ▪ Access to permissive footpath routes within the Coastal Park will be retained wherever Possible.	Neutral
		Impact on Footpaths and Cycleways- Cae Glas	▪ Sensitive public access in the form of formal footpath routes in order to provide new recreational access to the site without harm to habitat or features of ecological value	Major Beneficial
		Impact on Footpaths and Cycleways- Kingsland	▪ Footpath route will be retained within the proposed masterplan. strong landscape buffer, including species characteristic of the area, to soften the interface between the proposed housing, the footpath and the more naturalistic landscape to the west of the footpath. The development proposes a new publicly accessible woodland walk route along the southern edge of the site.	Minor Beneficial
		Impact on Topography- Penrhos	▪ The ground levels will generally remain the same.	Negligible
		Impact on Topography- Cae Glas	▪ Minimal ground works are proposed within the site in order to retain the valuable landscape and historic features where possible.	Neutral
		Impact on Topography- Kingsland	▪ Ground modelling would not result in significant loss of any landscape features due to the open character of the site, the proposed masterplan aims to work with the existing ground levels	Negligible

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Impact on Tree Cover- Penrhos	▪ Stepchange in woodland management in terms of increased inputs to planning and human involvement compared to a situation where the landowner used internal resources and Forestry Commission grant monies.	Minor Adverse
		Impact on Tree Cover- Cae Glas	▪ New planting will increase as it becomes established and will result in a net increase in collective tree cover. ▪ Effective management of the existing treestock will alleviate inherent problems and catalyse the transition from plantation to woodland.	Moderate Beneficial
		Impact on Tree Cover- Kingsland	▪ New tree planting presents an opportunity to establish tree cover that is significantly more diverse in terms of species, distribution and growth form than currently exists. ▪ New trees would be subject to on-going management. ▪ A woodland buffer along the southern edge of the development will be established to provide visual and physical screening of the proposed development and the golf course to the south.	Moderate Beneficial
		Impacts on Other Site Landscape Features of Value- Penrhos	▪ New use of the site creates the opportunity to maintain, restore, sympathetically redesign or re-use existing site features currently in a poor condition. ▪ Many of the remaining built elements are Grade II listed, and therefore subject to stringent controls to ensure their long-term preservation. The long-term management of the site as part of its proposed use as a tourist destination will facilitate this. ▪ Crumbling former Boat House and derelict Bathing House will be re-used and fully integrated into the proposals.	Moderate Beneficial
		Impacts on Other Site Landscape Features of Value- Cae Glas	▪ Tre-Gof farmstead will be integrated into the proposed new hotel. This historic feature, which would otherwise continue to decay and possibly be lost, will therefore be retained and re-used. ▪ Marshy areas present within the site will be retained and enhanced where required	Moderate Beneficial

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Impacts on Other Site Landscape Features of Value- Kingsland	▪ Incorporate the existing good quality field boundaries present around the site, enhance degraded hedge and stone wall field boundaries where retained, and create new stone wall and hedge boundaries to reinforce the existing landscape character. ▪ Marshy areas present within the site will be retained and enhanced where required as part a comprehensive landscape strategy.	Moderate Beneficial
		Visual Impacts		
		Penrhos – Viewpoint P1 View from IOACP at Penryn	▪ Naturalistic planting is to provide substantial screening of lodges and embed lodges into the landscape.	Minor Adverse
		Penrhos- Viewpoint P2 Wireline Photomontage	▪ Naturalistic planting is to provide substantial screening of lodges and embed lodges into the landscape. ▪ Retention of a substantial area of open grazing land along the coastal edge. ▪ Green roofs, use of natural materials, careful positioning of lodges	Minor Adverse
		Penrhos- Viewpoint P3 – View from IOACP at Twyn-gwy	▪ Naturalistic planting is to provide substantial screening of lodges and embed lodges into the landscape.	Minor Adverse
		Penrhos- Viewpoint P4 - View from Valley/IOACP	None Required	Negligible
		Penrhos- Viewpoint P5 - View from Stanley Embankment	None Required	Negligible
		Penrhos- Viewpoint P6 - View from pedestrian footbridge over the A55.	None Required	Negligible
		Penrhos- Viewpoint P7 - View from the A5	None Required	Negligible
		Penrhos- Viewpoint P8 - View from the A5153	None Required	Negligible
		Penrhos- Viewpoint P9 - View from IOACP parking area	None Required	Neutral
		Penrhos- Viewpoint P10 Coastal Path, The Battery	▪ Significant band of grazing land that will be retained between the Coastal Path and the proposed development. ▪ Planting around the lodges ▪ Green roofs, use of natural materials, careful positioning of lodges	Year 1-3 Moderate Adverse Year 5-8 Minor Adverse Year 10+ Minor Adverse

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Penrhos – Viewpoint P11 - View from the IOACP	• Sensitive layout, orientation and design of lodges embeds them into the landscape. • Planting provides visual screening over time. Use of typical local species, stone walling and mounding contributes positively to landscape character.	Minor Adverse
		Penrhos- Viewpoint P12 Coastal Path	▪ Retention of a substantial band of agricultural grazing land between the Coastal Path and the proposed lodges ▪ Additional of new stone walls and new native planting. ▪ An existing belt of low trees and shrubs will be retained.	Year 1-3 Moderate Adverse Year 5-8 Moderate Adverse Tear 10+ Minor Adverse
		Penrhos- Viewpoint P13a - The Headland- view north-west	▪ Carefully considered approach to the design of the lodges, with use of a mixed palette of natural materials and green roofs, will help to ensure that the lodges will be visually appropriate to their setting. ▪ Small but clearly defined area to the right of the view remains as a clearly undeveloped coastal edge	Year 1-3 Moderate Adverse Year 5-8 Moderate Adverse Year 10+ Moderate Adverse
		Penrhos- Viewpoint P13b The Headland- view south-west	▪ Proposed development will be well integrated into the mature woodland. The woodland will be managed and supplemented to retain the screening function.	Negligible
		Penrhos- Viewpoint P14 -	None Required	No Impact
		Penrhos- Viewpoint P15 Photomontage	▪ Substantial area of open grazing land which will be retained in order maintain the existing coastal edge character. ▪ Use of natural materials, including green roofs that use coastal grass species planting along the headland	Year 1-3 Minor Adverse Year 5-8 Minor Adverse Year 10+ Neutral
		Penrhos- Viewpoint P16 wireline photomontage	None	Negligible
		Penrhos- Viewpoint P17 View from the inland sea	None	Minor Beneficial
		Penrhos- Viewpoint P18 View from Bedmannarch Bay	None	Negligible
		Penrhos- Viewpoint P19 View from high ground on the opposite side of the inland sea	Agricultural strip of land retained along headland edge avoids substantial change in character.	Neutral
		Penrhos- Viewpoint P20 View from IOACP to the immediate west	None	Negligible

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Penrhos- Viewpoint P21	None	Negligible
		Penrhos – Viewpoint P22 A5 Stanley Embankment	None	Negligible
		Penrhos – Viewpoint P23 - View from Valley on the IOACP	None	Negligible
		Penrhos – Viewpoint P24 - View approximating the view from ferries leaving and arriving in Holyhead.	▪ Agricultural strip of land retained along headland edge avoids substantial change in character. ▪ Majority of development screened within retained woodland.	Moderate Adverse
		Penrhos – Viewpoint P25 - View from cruise ships/Salt Island	▪ Agricultural strip of land retained along headland edge avoids substantial change in character. ▪ Majority of development screened within retained woodland.	Minor Adverse
		Penrhos – Viewpoint P26 wireline photomontage	▪ Use of natural materials in the design of the buildings. ▪ The retained area of grazing land around the coastal edge use of natural materials, which will help the lodges to blend in with their natural surroundings. ▪ The Hub building is slightly more prominent, but a sensitive approach to the design means that it will be in keeping with the large scale agricultural buildings common in the area.	Minor Adverse
		Penrhos – Viewpoint P27 Photomontage	▪ Large area of retained grazing land around the coastal edge natural materials proposed for the lodges, along with the use of green roofs, and semi-natural screen planting will embed the development into the landscape, ▪ The use of a mixed palette of natural and typical local materials will make the development blend well with surrounding built context. ▪ The layout of the development reflects existing local housing by forming a finger of development through agricultural land.	Neutral
		Cae Glas – Viewpoint C1 - View from Snowden View Road	None	Negligible
		Cae Glas – Viewpoint C2 – View from Parc Cybi	Existing tree cover and proposed new planting and subtle integration of the proposed new access to the site will minimise potential visual impacts	Minor Adverse

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Cae Glas- Viewpoint C3 Photomontage	▪ High quality architectural design and use of a range of typical local and natural materials. ▪ New planting providing a strong landscape setting and partial screening/privacy for lodges	Year 1-3 Minor Beneficial Year 5-8 Minor Beneficial Year 10+ Moderate Beneficial
		Cae Glas- Viewpoint C4	None	Negligible
		Cae Glas- Viewpoint C5	None	Negligible
		Cae Glas- Viewpoint C6	None	Negligible
		Cae Glas- Viewpoint C7	None	Neutral
		Cae Glas- Viewpoint C8 Tyddyn Uchaf –view north-east	▪ Use of natural materials and an architectural form that reflects an agricultural style.	Year 1-3 Neutral Year 5-8 Neutral Year 10+ Minor Beneficial
		Cae Glas- Viewpoint C9 Burial Chamber	▪ Careful siting of the car parking at lower ground levels, with tree and shrub planting, provides extensive screening potential. ▪ Existing tree cover and planting of value within the site will be retained.	Year 1-3 Minor Adverse Year 5-8 Minor Adverse Year 10+ Minor Adverse
		Cae Glas- Viewpoint C10 A55 South	▪ Landscape bund will be sensitively planted with native species.	Moderate Adverse
		Cae Glas- Viewpoint C11 – View from A5153	▪ Landscape bund will be sensitively planted with native species.	Minor Adverse
		Cae Glas- Viewpoint C12 Penrhyn Geiriol	None	Negligible
		Cae Glas- Viewpoint C13 View from Lon Towyn Capel	None	Negligible
		Cae Glas- Viewpoint C14 Penrhyn Geiriol	None	Negligible
		Kingsland – Viewpoint K1 – View north along Kingsland Road	none	Negligible

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Kingsland- Viewpoint K2 Kingsland Road west	▪ Retention of a substantial landscape buffer along the edge of the site closest to the viewpoint, with semi-natural shrub planting, typical landscape boundaries, and native trees to screen buildings facades. ▪ Design consideration has been given to every element of the dwellings, including roof pitch, use of natural materials, layout, orientation and mix, to ensure that the form of the development is 'broken up', with filtered views into the development to visually reduce massing.	Year 1-3 Moderate Adverse Year 5-8 Moderate Adverse Year 10+ Moderate Adverse
		Kingsland- Viewpoint K3 – View from Kingsland Road	▪ High quality design and use of natural materials which reflect local character. ▪ Potential to further minimise impacts at the detailed design stage.	Moderate Adverse
		Kingsland- Viewpoint K4 - View from Kingsland Road at the roundabout junction with the A5153,	▪ High quality design and use of natural materials which reflect local character	Neutral
		Kingsland- Viewpoint K5 Yr Ogof, Mill Road	▪ High quality design, local materials, varied roofline and integration of a strong landscape framework ▪ Introduction of native planting	Year 1-3 Moderate Adverse Year 5-8 Moderate Adverse Year 10+ Minor Adverse
		Kingsland- Viewpoint K6 Photomontage	▪ Retention of a substantial landscape buffer along the edge of the site closest to the viewpoint, with semi-natural shrub planting, typical landscape boundaries, and native trees to screen buildings facades. ▪ Design consideration has been given to every element of the dwellings, including roof pitch, use of natural materials, layout, orientation and mix, to ensure that the form of the development is 'broken up', with filtered views into the development.	Year 1-3 Moderate Adverse Year 5-8 Moderate Adverse Year 10+ Moderate Adverse
		Kingsland- Viewpoint K7 Public Footpath	▪ Stone wall field boundary along the site edge will be retained. ▪ A significant band of green open space and semi-natural planting along site edge. ▪ Site layout, house type design, materials and landscape carefully designed.	Year 1-3 Moderate Adverse Year 5-8 Minor Adverse Year 10+ Minor Adverse
		Kingsland- Viewpoint K8 - View west from the burial chamber	▪ Advance planting	Minor Adverse

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Kingsland- Viewpoint K9 - View from Parc Cybi,	None	Neutral
		Kingsland- Viewpoint K10 - View from Porthdafarch Road	None	Negligible
		Kingsland- Viewpoint K11 - View from the public footpath to the north of the site,	None	Negligible
		Kingsland- Viewpoint K12 - View from within the leisure centre complex,	▪ High quality design and use of natural materials which reflect local character. ▪ Potential to further minimise impacts at the detailed design stage.	Moderate Adverse
		Kingsland- Viewpoint K13 - View from the public footpath along the western edge of Holyhead Golf Course,	None	Negligible
		Kingsland- Viewpoint K14 - View from Kingsland Road	None	Negligible
		Kingsland- Viewpoint K15 - View from Penrhyn Geiriol	None	Negligible
Ecology and Nature Conservation	Construction	Beddmanarch-Cymyran SSSI: Disturbance of coastal breeding/overwintering birds during bird hide and footpath construction in nature reserve	Avoidance of works during sensitive periods – breeding and late winter	Not significant
		Beddmanarch-Cymyran SSSI: Removing sand accretion between vegetated spit and Cae Glas coastline	None	Beneficial
		Partial loss of woodland to facilitate new development	Long term management of retained and new woodland areas	Not significant
		Small increase in quantity but increase in habitat quality	Long term management of retained and new hedgerow habitat.	Beneficial
		Ponds enhanced to increase their wildlife and amenity value	None	Beneficial
		Creation of a small lake	None	Beneficial
		Loss and gains in garden habitat	None	Beneficial
		Contamination of reedbed during construction phase	Implement pollution control measures as defined in CEMP.	Not significant
		Partial loss of vascular plant Species of Conservation Concern.	▪ Confirm native bluebell distribution prior to felling works. ▪ Translocate plants to suitable receptor sites	Not significant
		Disturbance of remaining bird habitats leading to localised temporary exclusion.	▪ Avoidance of works during sensitive periods – breeding and late winter. ▪ Establishment of nest box scheme	Not significant

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Loss of bat roosts associated with buildings.	▪ Construction of bat roost building. ▪ Installation of bat bricks in retained building ▪ Avoidance of works during sensitive periods – late spring and summer	Not significant
		Loss of potential tree bat roosts during tree clearance to facilitate new development.	▪ Pre-construction tree surveys. ▪ Establishment of bat box scheme.	Not significant
		Disturbance of two bat roosts during construction	Construction activities limited to daytime periods.	Not significant
		Disturbance of badger setts and foraging behaviour.	▪ Provide artificial badger setts in two badger mitigation areas. ▪ Phase construction activities to minimise disturbance. ▪ Temporarily close setts is required. ▪ Erect temporary construction fencing.	Not significant
		Disturbance of otters	Undertake pre-construction survey to confirm presence/distribution.	Not significant
		Red squirrels: Loss/disturbance of drey and den sites.	Undertake pre-construction survey to confirm presence/distribution.	Not significant
		Red squirrels: Loss of foraging habitat to facilitate development	Establishment of nest box scheme and feeding stations.	Not significant
		Red squirrels: New woodland planting.	None	Beneficial
		Losses and gains in terrestrial reptile habitats (foraging, shelter & dispersal)	None	Beneficial
		Loss of individual reptiles – killing or injury during site clearance and construction works.	▪ Implementation of RAMS. ▪ Creation of hibernacular prior to destructive works.	Not significant
		Loss of terrestrial amphibian habitats (foraging, shelter & dispersal) to facilitate new development.	Creation of hibernacular prior to destructive works.	Not significant
		Loss of individual amphibians – killing or injury during site clearance and construction works.	Implementation of RAMS.	Not significant
	Operation	Holy Island Coast SAC: Trampling of vegetation within Annex 1 habitats	▪ Management of visitors to the SAC via a shuttle bus. ▪ Implementing educational awareness measures such as interpretation boards. ▪ Collecting a small fee for each visit to a part of the SAC to be contributed to the current on-going habitat management works.	Not significant

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Beddmanarch-Cymyran SSSI: Disturbance of coastal breeding/overwintering birds	▪ Wardens will patrol Cae Glas nature reserve and Penrhos. ▪ Footpath network designed to reduce risk. ▪ Visitor numbers to Cae Glas reserve capped and no dog walkers allowed access. ▪ Disturbance events monitored.	Not significant
		Beddmanarch-Cymyran SSSI: Trampling of saltmarsh/coastal vegetation	▪ Wardens will patrol Cae Glas nature reserve and Penrhos. ▪ Footpath network designed to reduce risk. ▪ Visitor numbers to Cae Glas reserve capped. ▪ Trampling effects monitored	Not significant
		Beddmanarch-Cymyran SSSI: Incidental disturbance of birds during habitat management works	▪ Habitat management works timed to avoid sensitive periods/locations. ▪ Breeding birds monitored.	Not significant
		Deterioration of woodland edge habitat through physical disturbance	Condition of woodland monitored.	Not significant
		Disturbance or degradation of pond habitat	▪ Condition of ponds monitored. ▪ Interpretation boards used to educate visitors. ▪ Limited direct access to pond edges provided.	Not significant
		Trampling of UKBAP habitat	▪ Condition of UKBAP habitats monitored. ▪ Interpretation boards used to educate visitors.	Not significant
		Contamination of pond/reedbed habitat	Implementation of pollution control structures.	Not significant
		Trampling of protected vascular plant species	Condition of bluebells monitored.	Not significant
		Trampling of uncommon vascular plants species	▪ Condition of uncommon plant species monitored. ▪ Interpretation boards used to educate visitors.	Not significant
		Disturbance of habitats leading to localised bird exclusion.	▪ Breeding bird populations monitored. ▪ Sensitive bird species monitored on an annual basis. ▪ Remediation works implemented under Management Plan if required	Not significant
		Disturbance of birds due to human avoidance	▪ Breeding bird populations monitored. ▪ Sensitive bird species monitored on an annual basis.	Not significant
		Increased disruption to foraging and commuting bats offsite by increased lighting	Bat populations monitored at roost sites.	Not significant

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Changes to bat foraging and commuting routes	Bat populations monitored at roost sites.	Not significant
		Disturbance of badgers by visitors	Badger sett monitoring. Wardens will patrol Cae Glas nature reserve and Penrhos.	Not significant
		Disturbance of badgers during woodland management works.	Avoidance of works during sensitive periods.	Beneficial
		Disturbance of otters	Otter migration and holt monitoring.	Not significant
		Disturbance of red squirrel drey and den sites.	Red squirrel monitoring. Wardens will patrol Cae Glas nature reserve.	Not significant
		Loss of individual reptiles – killing or injury during management works.	▪ Reptile monitoring. ▪ Avoidance of works during sensitive periods in sensitive locations. ▪ Safe working practices defined in Wildlife Management Plan	Not significant
Archaeology and Heritage	Construction	1. Bodwredd Farmhouse	None	Neutral
		2. Site of former Bodwredd Farmhouse	None	Neutral
		3. Site of former building	None	Neutral
		4. Site if Ty'n y Coed cottage	None	Neutral
		5. Site of Cae'r Ty Hen Farmhouse	None	Neutral
		37. Prehistoric settlement, Kingsland	Trail Trenching with mitigation dependant on trenching results	Unknown
		38. Possible prehistoric field-system, Kingsland	Trail Trenching with mitigation dependant on trenching results	Unknown
		39. Post-medieval field system, Kingsland	Basic Record	Unknown (Negligible)
		40. Possible modern pit	None	Negligible
		41. Pit with burnt stone, Kingsland	Trail Trenching with mitigation dependant on trenching results	Unknown
		7. Trefignath Farm	Trail Trenching with mitigation dependant on trenching results	Unknown
		8. Trefignath Burial Chamber	Avoidance	Minor Adverse
		9. Tyddyn Bach	None	Neutral
		10. Tidal Mill at Felin-Heli	None	Neutral
		11. Tre-Ddaniel	None	Neutral
		12. Cae Glas Farm	None	Neutral
		13. Tre'r Gof Farm	Trail Trenching with mitigation dependant on trenching results. Historic building record.	Minor/ Moderate Adverse
		14. Trearddur Burial Chamber	Avoidance	Minor Adverse
		33. Roman coin hoard findspot	None	Neutral
		34. Pillbox	None	Neutral
		35. Pillbox	None	Neutral

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		36. Pillbox	None	Neutral
		42. Prehistoric burnt mound	Strip, map and sample	Minor Adverse
		43. Prehistoric burnt mound	Strip, map and sample	Minor Adverse
		44. Culvert	Basic Record	Negligible
		45. Post-medieval field system, Cae Glas	Basic Record	Negligible
		46. Possible Roman period ditch	Trail Trenching with mitigation dependant on trenching results	Unknown
		6. Stanley Gate Tollhouse	None	Neutral
		15. Penrhos Bailiff's Tower and Home Farm	Listed Building consent; historic building record	Minor Adverse
		16. Penrhos Betting Stand	Listed Building consent; historic building record	Neutral
		17. Penrhos Candle Tower and walls adjoining Penrhos House	Listed Building consent; historic building record	Minor/ Moderate Beneficial
		18. Penrhos Water Tower	Listed Building consent; historic building record	Minor Beneficial
		19. Penrhos Garden	Conservation Management Plan with mitigation dependent upon the results of the Conservation Management Plan	Minor Adverse
		20. Footprint of Penrhos House	Inspection after vegetation clearance	Unknown
		21. The Tower, Dairy, Laundry and Gunroom, Penrhos	Listed Building consent; historic building record	Minor Beneficial
		22. The Battery	Listed Building consent; historic building record	Minor Beneficial
		23. Prehistoric Standing Stone	None	Unknown (Minor/ Moderate Adverse)
		24. Flint Finds, Penrhos Bay	None	Neutral
		25. Boathouse	historic building record	Minor/ Moderate Adverse
		26. Bathing House	historic building record	Neutral
		27. Fish Weir	None	Neutral
		28. Fish Weir	None	Neutral
		29. Fish Weir	None	Neutral
		30. Beddmanarch	None	Neutral
		31. Roman coin hoard findspot, Penrhos	None	Neutral
		32. Penrhos Lodge	None	Neutral
		47. Post-medieval field system, Penrhos	Basic record	Neutral
		48. Site of possible barn, Penrhos	Watching brief	Unknown (Neutral)
		49. Site of possible barn, Penrhos	Watching brief	Unknown (Neutral)
		50. Site of building and yard, Penrhos	None	Neutral
	Operation	1. Bodwredd Farmhouse	None	Neutral
		2. Site of former Bodwredd Farmhouse	None	Unknown (Neutral)

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		3. Site of former building	None	Unknown (Neutral)
		4. Site if Ty'n y Coed cottage	None	Unknown (Neutral)
		5. Site of Cae'r Ty Hen Farmhouse	None	Unknown (Neutral)
		37. Prehistoric settlement, Kingsland	None	Neutral
		38. Possible prehistoric field-system, Kingsland	None	Neutral
		39. Post-medieval field system, Kingsland	None	Neutral
		40. Possible modern pit	None	Neutral
		41. Pit with burnt stone, Kingsland	None	Neutral
		7. Trefignath Farm	None	Neutral
		8. Trefignath Burial Chamber	None	Minor Adverse
		9. Tyddyn Bach	None	Neutral
		10. Tidal Mill at Felin-Heli	None	Neutral
		11. Tre-Ddaniel	None	Neutral
		12. Cae Glas Farm	None	Neutral
		13. Tre'r Gof Farm	None	Minor/Moderate Adverse
		14. Trearddur Burial Chamber	None	Minor Adverse
		33. Roman coin hoard findspot	None	Neutral
		34. Pillbox	None	Neutral
		35. Pillbox	None	Neutral
		36. Pillbox	None	Neutral
		42. Prehistoric burnt mound	None	Neutral
		43. Prehistoric burnt mound	None	Neutral
		44. Culvert	None	Neutral
		45. Post-medieval field system, Cae Glas	None	Neutral
		46. Possible Roman period ditch	None	Neutral
		6. Stanley Gate Tollhouse	None	Neutral
		15. Penrhos Bailiff's Tower and Home Farm	None	Minor Adverse
		16. Penrhos Betting Stand	None	Minor Beneficial
		17. Penrhos Candle Tower and walls adjoining Penrhos House	None	Moderate Beneficial
		18. Penrhos Water Tower	None	Minor/ Moderate Beneficial
		19. Penrhos Garden	None	Negligible to Minor Adverse
		20. Footprint of Penrhos House	None	Unknown
		21. The Tower, Dairy, Laundry and Gunroom, Penrhos	None	Moderate Beneficial
		22. The Battery	None	Moderate to Major Beneficial
		23. Prehistoric Standing Stone	None	Neutral

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		24. Flint Finds, Penrhos Bay	None	Neutral
		25. Boathouse	None	Minor Adverse
		26. Bathing House	None	Negligible
		27. Fish Weir	None	Neutral
		28. Fish Weir	None	Neutral
		29. Fish Weir	None	Neutral
		30. Beddmanarch	None	Neutral
		31. Roman coin hoard findspot, Penrhos	None	Neutral
		32. Penrhos Lodge	None	Neutral
		47. Post-medieval field system, Penrhos	None	Neutral
		48. Site of possible barn, Penrhos	None	Neutral
		49. Site of possible barn, Penrhos	None	Neutral
		50. Site of building and yard, Penrhos	None	Neutral
Geology and Land Contamination	Construction	Direct loss of Agricultural land	None	Negligible
		Permanent/Temporary damage to Soil Quality	Soil Management Plan and good soil handling practices. Reuse and reinstatement of soils in line with site restoration plan.	Negligible
		Permanent Loss of geological Materials	None	Negligible
		Permanent Damage / loss of cliff exposures and Local Geological Site at Gorsedd-y-Penrhyn	Construction is not expected to take place in sensitive geological locations.	Negligible
		Disruption of groundwater flow in Aquifers	Groundwater management measures in accordance with EA guidance will reduce effects.	Negligible
		Local abstraction at Tyddyn-Uchaf (If present)	Monitoring of water levels at the source will be implemented.	Negligible
		Reduction in drainage flows	Groundwater and surface water management and discharge will reduce effects	Negligible
		Spillages and leakages of oil, fuel and other potentially polluting substances that could impact groundwater	Good site management practices will be adopted (Environmental Management Plan) in accordance with EA guidance.	Negligible
		Penrhos: Adverse impacts on Health of Workers direct contact, inhalation, ingestion with sandpit / rocky depression	PPE and H&S management as required	Negligible
		Penrhos: Adverse impacts on Health of Workers direct contact, inhalation, ingestion with Pet Cemetery	The site is clearly defined and marked with grave stones. Contact with the waste is considered highly unlikely.	Negligible

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Penrhos: Migration of leachate onto site from Cae Glas landfill. Adverse impacts on Health of Workers	Significant contamination is not anticipated. Site investigation to confirm. PPE and H&S management as required.	Negligible
		Cae Glas Infilled Quarry: Adverse impacts on Health of Workers direct contact, inhalation, ingestion	Site investigation is necessary to confirm. PPE and H&S management as required to manage risks to workers.	Negligible
		Cae Glas Infilled Quarry: Adverse impacts on Health of Residents from dust inhalation and ingestion	Dust suppression and good construction management practices required to manage risks.	Negligible
		Cae Glas Infilled Quarry: Pollution of Ground water by leachate	Site investigation is necessary to confirm. Remedial measures (groundwater interception, containment and treatment) may be required.	Negligible
		Cae Glas Infilled Quarry: Local abstraction at Tyddyn-Uchaf (If present)	Water Quality monitoring may be required	Negligible
		Cae Glas Infilled Quarry: Pollution of Surface water by discharge of contaminated groundwater	Site investigation is necessary to confirm presence of contamination. Remedial measures (groundwater interception, containment and treatment) may be required prior to discharges.	Negligible
		Cae Glas Existing Access Route: Adverse impacts on Health of Workers direct contact, inhalation, ingestion	Site investigation is necessary to confirm. PPE and H&S management as required to manage risks to workers.	Negligible
		Cae Glas Landfill: Adverse impacts on Health of Workers direct contact, inhalation, ingestion	Site investigation is necessary to confirm details in development areas. PPE and H&S management will be required to manage risks to workers. Gas monitoring and assessment will be required during works.	Negligible
		Cae Glas Landfill: Adverse impacts on Health of Residents from dust inhalation and ingestion	Dust suppression and good construction management practices required to manage risks.	Negligible
		Cae Glas Landfill: Local abstraction at Tyddyn-Uchaf (If present)	Water Quality monitoring may be required	Negligible
		Cae Glas Landfill: Pollution of Ground water by leachate	Site investigation is necessary to confirm details in development areas. Remedial measures (groundwater interception, containment and treatment) may be required.	Negligible
		Cae Glas Landfill: Discharge of contaminated groundwater	Site investigation is necessary to confirm details in development areas. Remedial measures (groundwater containment and treatment) may be required.	Negligible
		Cae Glas: Degradation of Local Geological sites such as Gorsedd-y-Penrhyn	Access management plan is required in liaison with local RIGS group to limit access to slopes and other zones susceptible to increased erosion.	Minor Adverse

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Cae Glas: Disruption of groundwater flow in Aquifers	None proposed.	Negligible
		Cae Glas: Local abstraction at Tyddyn-Uchaf (If present)	None proposed.	Negligible
		Cae Glas: Reduction in groundwater recharge and base flow to streams	None proposed.	Negligible
		Cae Glas: Spillages and leakages of oil, fuel and other potentially polluting substances that could impact groundwater	None proposed.	Negligible
	Operation	Cae Glas: Adverse impacts on Health of Site users from direct contact, inhalation, ingestion from Sandpit / Rocky Depression	Site investigation to confirm condition. Removal and of contaminant sources if required.	Negligible
		Cae Glas: Adverse impacts on Health of Site users from the migration of ground gas from Sandpit / Rocky Depression	Site investigation to confirm condition and potential for gas generation. Removal and of contaminant sources if required.	Negligible
		Cae Glas: Contaminant migration in service runs and impacts on below ground services and groundwater from Sandpit / Rocky Depression	Site investigation to confirm condition. Removal and of contaminant sources if required.	Negligible
		Cae Glas: Pollution of controlled surface waters (Pond and Coast) by leachate from sandpit	Site investigation to confirm condition. Removal and of contaminant sources if required to provide long term benefit.	Minor Beneficial
		Cae Glas: Pollution of Groundwater from leachate (Rocky Depression) from sandpit	Site investigation to confirm condition. Removal and of contaminant sources if required.	Negligible (Beneficial)
		Cae Glas: Pollution of Groundwater from leachate (sandpit)	Site investigation to confirm condition. Removal and of contaminant sources if required to provide long term benefit.	Minor Beneficial
		Cae Glas Peter Cemetery: Adverse impacts on Health of Site users from direct contact, inhalation, ingestion	None proposed	Negligible
		Cae Glas Peter Cemetery: Contaminant migration in service runs and impacts on below ground services and groundwater	None proposed	Negligible
		Cae Glas Peter Cemetery: Adverse impacts on Health of Site users from the migration of ground gas.	Site investigation to confirm condition and potential for gas generation. Mitigation may be required.	Negligible
		Cae Glas Peter Cemetery: Pollution of Groundwater from leachate.	None proposed	Negligible

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Cae Glas: Adverse impacts on Health from migration into buildings from Naturally Occurring CO2	Site investigation required with gas protection measures if necessary.	Negligible
		Cae Glas: Adverse impacts on Health from migration into buildings from Naturally Occurring Methane	Mitigation measures required to remove peat deposits for construction if encountered.	Negligible
		Cae Glas: Adverse impacts on Health from migration into buildings from Naturally Occurring Radon	BR211 Radon report to be obtained from BGS. Gas protection measures may be required	Negligible
		Cae Glas: Adverse impact on land from lateral migration of contaminants from AAM & Aluminium Powder Works	Site investigation required to determine appropriate risk management actions to prevent complete pollutant linkages.	Negligible
		Cae Glas Landfill: Adverse impacts from soils and leachates on site users accessing the landfill area as an amenity	Site investigation required to determine appropriate risk management actions to prevent complete pollutant linkages.	Negligible
		Cae Glas Landfill: Adverse impacts on Health of Site users from the migration of ground gas	The potential for gas migration is considered very low due to distance, nature of soils and geology. Site investigation to confirm.	Negligible
		Cae Glas Landfill: Adverse impacts on Health of Site users from direct contact, ingestion of migrating leachate	Site investigation required to determine appropriate risk management actions to prevent complete pollutant linkages.	Negligible
		Cae Glas Landfill: Contaminant migration in service runs and impacts on below ground services and groundwater	Site investigation required to determine appropriate risk management actions to prevent complete pollutant linkages.	Negligible
		Cae Glas Landfill: Pollution of controlled surface waters (Pond) by leachate	Site investigation required to determine appropriate risk management actions to prevent complete pollutant linkages.	Negligible (Beneficial)
		Cae Glas: Effect of accumulated Pesticides and herbicides on all receptors	Site investigation required to determine appropriate risk management actions to prevent complete pollutant linkages.	Negligible
		Kingsland: Adverse impacts on Health of Site users from direct contact, ingestion of contaminated soils affected by Transformer Oil (PCBs)	Access to location needs to be Secure during operation.	Negligible
		Kingsland: Pollution of controlled surface waters (drains) by Transformer Oil (PCBs)	None proposed	Negligible
		Kingsland: Adverse impacts on Health from naturally occurring Radon migration into buildings	BR211 Radon report to be obtained from BGS. Gas protection measures may be required	Negligible

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Kingsland: Effect of Porthdafarch Waste Site on all receptors	None proposed	Negligible
		Kingsland: Effect of Pesticides and herbicides on all receptors	Site investigation required to determine appropriate risk management actions to prevent complete pollutant linkages.	Negligible
		Cae Glas infilled quarry: Adverse impacts on Health of Site Users by direct contact, inhalation, ingestion of soils	Site investigation and monitoring required to determine appropriate risk management actions to prevent complete pollutant linkages if necessary.	Negligible
		Cae Glas infilled quarry: Adverse impacts on Health of Site users from the migration of ground gas via ground.	Site investigation and monitoring required to determine appropriate risk management actions to prevent complete pollutant linkages if necessary.	Negligible
		Cae Glas infilled quarry: Contaminant migration in service runs and impacts on below ground services	Site investigation and monitoring required to determine appropriate risk management actions to prevent complete pollutant linkages if necessary.	Negligible
		Cae Glas infilled quarry: Pollution of constructed pond by leachate migration	Site investigation and monitoring required to determine appropriate risk management actions to prevent complete pollutant linkages if necessary.	Negligible
		Cae Glas infilled quarry: Pollution of Ground water by leachate migration	Site investigation and monitoring required to determine appropriate risk management actions to prevent complete pollutant linkages if necessary.	Minor Beneficial
		Cae Glas infilled quarry: Local abstraction at Tyddyn-Uchaf (If present)	Site investigation and monitoring required to determine appropriate risk management actions to prevent complete pollutant linkages if necessary.	Negligible
		Cae Glas infilled quarry: Pollution of controlled waters including local ponds and coastal water by leachate	Site investigation and monitoring required to determine appropriate risk management actions to prevent complete pollutant linkages if necessary.	Minor Beneficial
		Cae Glas existing access route: Adverse impacts on Health of Site Users by direct contact, inhalation, ingestion	Site investigation required to determine appropriate risk management actions to prevent complete pollutant linkages.	Negligible
		Cae Glas existing access route: Pollution of Ground water by leachate	Site investigation required to determine appropriate risk management actions to prevent complete pollutant linkages.	Negligible
		Cae Glas Landfill: Adverse impacts on Health of Site Users direct contact, inhalation, ingestion of soils	Site investigation required to determine appropriate risk management actions to prevent complete pollutant linkages.	Negligible

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Cae Glas Landfill: Adverse impacts on Health of Site users from the migration of ground gas	Site investigation required to determine appropriate risk management actions to prevent complete pollutant linkages. Gas monitoring, assessment and mitigation will be required.	Negligible
		Cae Glas Landfill: Contaminant migration in service runs and impacts on below ground services and groundwater	Site investigation required to determine appropriate risk management actions to prevent complete pollutant linkages. Mitigation will be required.	Negligible
		Cae Glas Landfill: Long Term Pollution of Ground water by leachate	Contamination of groundwater beneath the landfill site is highly likely. Mitigation measures to address this issue directly are considered impractical but beneficial effects from other actions likely.	Negligible (Beneficial)
		Cae Glas Landfill: Local abstraction at Tyddyn-Uchaf (If present)	The location is a significant distance from the development area. None proposed	Negligible
		Cae Glas Landfill: Long term leachate breakout and pollution of controlled surface waters and SSSI	Site investigation required. Monitoring and treatment measures to address this issue will be required and will therefore have a major beneficial impact.	Major Beneficial
		Cae Glas Landfill: Pollution of local ponds by leachate	Site investigation is necessary to confirm. Remedial measures may be required.	Minor Beneficial
		Cae Glas: Adverse impacts on Health from migration into buildings of Naturally Occurring Radon	BR211 Radon report to be obtained from BGS. Gas protection measures may be required	Negligible
		Cae Glas: Effect of Pesticides and herbicides on all receptors	Site investigation required to determine appropriate risk management actions to prevent complete pollutant linkages.	Negligible
		Cae Glas A55 Trunk Road and Railway land: Adverse impacts on Health of Site Users direct contact, inhalation, ingestion	None proposed, however, scheme design is beneficial	Negligible
		Cae Glas A55 Trunk Road and Railway land: Existing streams and proposed Surface waters	Site investigation required to assess potential risk.	Negligible (Beneficial)
Drainage and Flood Risk	Construction	Impact of additional surface water runoff	Construction works will be carried out in accordance with good practice. This includes the EA's Pollution Prevention Guidance PPG5 (Works and Maintenance in and Near Water) and PPG6 (Working at Demolition and Construction Sites), CIRIA Report C502 (Environmental Good Practice on Site).	Negligible
		Surface water contamination		Negligible

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Damage to trees and tree roots of foul drainage installation	▪ Wherever practicable, foul drainage will be routed through the site via a shallow network of gravity sewers. The natural topography will be used to achieve this so far as possible. ▪ Drains will generally be laid close to open areas or lodge clusters or follow road networks. Consequently tree loss or disturbance associated with drainage installation would be kept to a minimum. ▪ The network of gravity drains will be supplemented by a number of low head pumping stations. These will be used to discharge foul water from isolated areas, depressions or where the topography would otherwise necessitate deep excavations.	Negligible
		Off-site trench construction	Trenches providing routes for off-site sewer rising main connections to DCWW sewerage will be routed so far as practicable within or alongside roads, tracks or highways. Trench width and depths will be kept to a minimum.	Negligible
		Flooding of construction facilities	The positioning of site facilities, storage of materials and construction of temporary access routes will be away from areas at risk of flooding.	Negligible
	Operation	Increased runoff from the site	The use of a range of sustainable drainage methods	Negligible
		Surcharging and flooding from drainage	▪ Design of drainage to current standards. ▪ Raising finished floor levels a minimum of 150mm above surrounding ground. ▪ Management plans will be prepared and implemented to ensure all drainage is kept fully functional and limit the risk of potential blockages.	Negligible
		Contamination of water environment	▪ Design will be carried out to CIRIA Design Guide for Sustainable Urban Drainage and Building Regulations Section H. ▪ Drainage in adoptable highways will be carried out to the standards set down by the adopting Highway Authority. ▪ Areas required for the storage of chemical products, waste bins or recycling areas will be discharged via a petrol interceptor and vulnerable areas protected by a pollution shut off valve.	Negligible

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Contamination from leaks or surcharges	▪ The drainage system will be designed to meet the standards of the Building Regulations Part H and in accordance with BS-EN 752. In addition sewerage that will be adopted by DCWW will be designed to Sewers for Adoption standards. ▪ On Penrhos and Cae Glas foul manholes would be clearly identified and gullies for the use of cleaners would be clearly indicated and located at strategic locations to avoid accidental discharge and contamination of the surface water system. ▪ Management plans will be put in place to ensure the ongoing maintenance of drainage assets thus minimising the risk of blockage or failure. ▪ Foul drainage will be offered for adoption by DCWW where possible and such sewerage will then be maintained by them.	Negligible
		Reduced discharges of treated effluent to groundwater	None Required	Minor Beneficial
		Impacts on sewerage infrastructure and WWTW	To be Confirmed	To be Confirmed
		Penrhos Flood Risk: Tidal Flooding	▪ EA Flood Watch Service ▪ Management plan prepared so traffic movements could be managed during flooding. ▪ Damaged gabions will be repaired and subsequently retained in good condition.	Negligible
		Penrhos Flood Risk: Fluvial flooding in Coastal Park area	▪ Preparation of a management plan for the ditches and culverts, the majority of which are in the Coastal Park. ▪ All culverts and pipes will be inspected and repaired or replaced as necessary. The outfall under the coastal footpath will be reinstated and subsequently maintained in a serviceable condition.	Minor Beneficial
		Penrhos Flood Risk: Fluvial flooding from drain towards A5	▪ The area of the assumed outfall will be investigated and the outfall repaired / replaced as necessary. ▪ The design of the nearby building floor level such that in the event of a further blockage of the outfall the flood risk is reduced.	Negligible

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Penrhos Flood Risk: Springs and high ground water	▪ In areas at risk of flooding, lodges will be set above the existing ground at a typical height of 600mm. ▪ Boardwalks will be used for access where feasible, and vehicle access will be routed away from the more vulnerable lowest lying areas. ▪ Further investigations will be required to determine seasonal variations in ground water level.	Negligible
		Penrhos Flood Risk: Overland flow	A detailed topographical survey of the site will be undertaken which will enable ground modelling to be carried out and existing overland flow paths of surface water accurately determined. This will be used to locate buildings away from such flow paths or carry out local re-grading to mitigate the effects.	Negligible
		Kingsland Flood Risk: Overland flow	A detailed topographical survey of the site will be undertaken which will enable ground modelling to be carried out and existing overland flow paths of surface water accurately determined. This will be used to locate buildings away from such flow paths or carry out local re-grading to mitigate the effects.	Negligible
		Kingsland Flood Risk: Springs and high ground water levels	▪ Ground investigations will be carried out to confirm the nature of the ground water emergence. Land drainage will be constructed to route this around the site so as to mitigate the risk of it affecting properties on the site. ▪ It is anticipated housing will be set no lower than the floor level of the Leisure Centre. An assessment of the potential effects of a blockage in the culvert under Mill Lane will be made and the results of this used to agree with the EA a minimum floor level.	Negligible
		Cae Glas Flood Risk: Tidal flooding	Information signs would be installed to alert the public to this possibility.	Negligible

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Cae Glas Flood Risk: Fluvial flooding from ditches and ponds	▪ Earthworks on the site will include limited cutting and filling. Where this is carried out in areas which may flood, ground profile modelling will be undertaken and design carried out to ensure the there is no loss of potential volume for storage of floodwater. ▪ In determining the finished floor levels of buildings to mitigate the risks of additional surface water runoff, the hydraulic assessment will take account of this risk and combined mitigation will be provided. ▪ Building levels will be assessed following a detailed modelling assessment of the catchment upstream and downstream of the site, considering a range of return periods up to 1 in 100 plus an allowance for predicted climate change. ▪ Access routes to and from the buildings will be designed so a safe route is always available in the event of flooding from the ponds or ditches. ▪ An overflow connection will be made from the southern outfall to the northern outfall so that in the event of a blockage downstream of the site that causes water to back-up on the site it can be released to another outfall. The existing ditch between the two outfalls will be extended so far as the topography permits, following which a pipe will connect the two.	Negligible
		Cae Glas Flood Risk: Overland Flows	A detailed topographical survey of the site will be undertaken which will enable ground modelling to be carried out and existing overland flow paths of surface water accurately determined. This will be used to locate buildings away from such flow paths or carry out local re-grading to mitigate the effects.	Negligible

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Cae Glas Flood Risk: Springs and high ground water	▪ The lowest lying parts of the site will be used for drainage and wetland habitat / amenity purposes rather than built development. ▪ Local land drainage pipes will be constructed where necessary to replace those which are expected to exist and potentially be affected by the development. ▪ Further investigations will be carried out to establish seasonal variations in ground water level. This will inform the detailed design of development floor level and infrastructure provision.	Negligible
Transport and Access	Construction	Construction Traffic	Measures included within a CEMP	Minor Adverse
	Operation	Impact on Accessibility	None Required	Major Beneficial
		Severance	None Required	Negligible
		Driver Delay – Penrhos Site Access	None Required	Negligible
		Driver Delay – Cae Glas Site Access	None Required	Negligible
		Driver Delay – Kingsland Site Access	None Required	Negligible
		Driver Delay - A55 Junction 1	None Required	Negligible
		Driver Delay - A55 Junction 3	None Required	Negligible
		Driver Delay - B4545 Kingsland Road/A5153 Roundabout	None Required	Negligible
		Driver Delay - A5153/A5 Roundabout	None Required	Negligible
		Driver Delay - A5/A5025 Crossroads	None Required	Negligible
		Driver Delay - A5153/Parc Cybi Access Roundabout	None Required	Minor Adverse
		Driver Delay - A55 Junction 2	None Required	Minor Adverse
		Pedestrian Delay and Amenity	None Required	Negligible
		Accidents and Safety	None Required	Minor Beneficial
		Hazardous Loads	None Required	Negligible
Air Quality and Dust	Construction	Dust	▪ Measures to be included in the CMEP: ▪ vehicles carrying loose aggregate and	Negligible
		Ecological Effects		Negligible

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		PM_{10}	workings should be sheeted at all times; ▪ implementation of design controls for construction equipment and vehicles and use of appropriately designed vehicles for materials handling; ▪ completed earthworks should be covered or vegetated as soon as is practicable (particularly along the borders of the site in line with the landscaping parameter plans; ▪ regular inspection and, if necessary, cleaning of local highways and site boundaries to check for dust deposits (and removal if necessary); ▪ minimise surface areas of stockpiles (subject to health and safety and visual constraints regarding slope gradients and visual intrusion) to reduce area of surfaces exposed to wind pick-up; ▪ where appropriate, windbreak netting/screening should be positioned around material stockpiles and vehicle loading/unloading areas, as well as exposed excavation and material handling operations, to provide a physical barrier between the site and the surroundings; ▪ where practicable, stockpiles of soils and materials should be located as far as possible from sensitive properties, taking account of prevailing wind directions and seasonal variations in the prevailing wind; ▪ during dry or windy weather, material stockpiles and exposed surfaces should be dampened down using a water spray to minimise the potential for wind pick-up; ▪ use of dust-suppressed tools for all operations; ▪ ensuring that all construction plant and equipment is maintained in good working order and not left running when not in use; ▪ restrict on-site movements to well within site and not near the perimeter, if possible; and ▪ no unauthorised burning of any material anywhere on site.	Negligible

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Road Traffic	▪ construction traffic should not pass along sensitive roads (residential roads, congested roads, via unsuitable junctions, etc) where possible ▪ vehicles should be kept clean (through the use of wheel washers, etc.) and sheeted when on public highways. ▪ Timing of large-scale vehicle movements to avoid peak hours on the local road network will also be beneficial.	Negligible
	Operation	Traffic Impacts	None Required	Negligible
		CHP Plant Emissions	▪ additional vehicle movements generated through transportation of fuel for biomass boilers will be minimised by sourcing local materials and maximising storage provision; ▪ air emissions to be minimised through use of best available technology such as modern burner designs and emissions should be assessed at the detailed design stage to ensure negligible effects on local air quality; ▪ the flue stack height(s) will be optimised to ensure minimal effects on local air quality; and ▪ an on-going regular inspection and maintenance programme should be implemented for the energy centre plant.	Negligible

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
Noise and Vibration	Construction	Noise	Measures to be included in the CEMP: ▪ Any compressors brought on to site to be silenced or sound reduced models fitted with acoustic enclosures; ▪ All pneumatic tools to be fitted with silencers or mufflers; ▪ Care to be taken when erecting or striking scaffolds to avoid impact noise from banging steel. All operatives undertaking such activities to be instructed on the importance of handling the scaffolds to reduce noise to a minimum; ▪ Deliveries to be programmed to arrive during daytime hours only. Care to be taken when unloading vehicles to minimise noise. Delivery vehicles to be routed so as to minimise disturbance to local residents. Delivery vehicles to be prohibited from waiting within or in the vicinity of the site with their engines running; ▪ All plant items to be properly maintained and operated according to manufacturers' recommendations in such a manner as to avoid causing excessive noise; ▪ All plant to be sited so that the noise impact at nearby noise-sensitive properties is minimised; ▪ Local hoarding, screens or barriers to be erected as necessary to shield particularly noisy activities; and ▪ Problems concerning noise from construction works can often be avoided by taking a considerate and neighbourly approach to relations with the local residents. Unless prior agreement has been sought, works should only take place during given periods, e.g. during normal construction hours and not at night.	Negligible to minor

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Vibration	Measures to be included in the CEMP: ▪ Adoption of low vibration working methods, with consideration given to the use of the most suitable plant; ▪ Where processes could potentially give rise to significant levels of vibration, on-site/receptor vibration monitoring should be undertaken with the results assessed in accordance with the guidance contained within BS7385-2 (for building damage) and BS 6472-1: 2008 (for human comfort). The results of such monitoring would determine the need for any additional mitigation measures such adjustments to the rate / intensity of work / operations, or the adoption of alterative working practices; ▪ The contractor should establish and maintain effective liaison with the local community throughout the construction period. This will include provision of information concerning the on-going activities and provision of telephone numbers to contact the site for information during operational hours. A person should be identified with appropriate authority to resolve any problems. A log of complaints and actions should be taken to remedy these to be completed; and ▪ Operations with the potential to give rise to significant vibration levels should not be undertaken during the early morning, late afternoon/evening or during the night-time, when neighbouring properties are most likely to be occupied.	Negligible to minor
	Operation	Existing Noise Environment – Impact on Proposed Noise Sensitive Development	▪ Appropriate glazing and ventilation depending on location of properties ▪ No mitigation required for outdoor spaces	Negligible
		Proposed Holiday Accommodation at Cae Glas and Penrhos	▪ Acoustic bund to northern edge of Cae Glas ▪ Acoustic fence to the western boundary of Cae Glas ▪ At specific locations, lodge design and orientation will be used to ensure compliance with required noise levels.	Negligible
		Development Generated Road Traffic Noise Level Changes	None required.	Negligible to Minor

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
		Noise from Proposed Fixed Plant/ Commercial Operations	Procurement of suitably quiet plant or appropriate mitigation options such as housings, bolt on silencers, relocation and/or screening.	Minor
Waste	Construction	Construction derived waste	Site Waste Management Plan	Negligible to Minor Adverse
	Operation	Operational waste arisings	Compliance with the following waste plans: ▪ Collection, Infrastructure and Markets Sector Plan ▪ Food Manufacture, Service and Retail Plan ▪ Industrial and Commercial Sector Plan ▪ Municipal Sector Plan Site waste management strategy to include adequate waste and recyclable waste storage.	Negligible to Minor Beneficial
Lighting	Construction		▪ Lighting installed for the construction site will need to be designed such that where possible all luminaires are mounted within the site hoarding and are directed into the working area and should only be operational during construction works. ▪ Any temporary lighting for the users of the site should be provided at a level not lower than is required under the CIBSE guidance documents (CIBSE, 1992) to provide a safe working environment. ▪ Where temporary luminaires are required these should be carefully selected for the task required and a photometric design undertaken to ensure it complies with the relevant sections of this chapter, such as the ILP Guidance Notes for the Reduction of Obtrusive Light (ILP, 2011).	Negligible

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
	Operation		▪ All lighting to be controlled through the use of photoelectric cells (PEC) or lighting Central Management System (CMS). ▪ Lighting will only be provided during the hours of darkness and dependant on operational requirements, ▪ Lighting should be implemented with due consideration for the use of best practicable means to prevent, or to counteract the effects of the artificial light on the surrounding area. ▪ The lighting shall be designed by competent designers and assessed against guidance and will be assessed on an area by area basis based on proposed usage. ▪ Compliance with: o BS EN 13201; Road lighting o BS 5489-1:2003; Road lighting o CIBSE LG6 Lighting guide, The outdoor environment and o CIE 129, Guide for lighting exterior work areas. ▪ All lighting will be designed under the principal of Ultra Efficient Lighting (UEL). ▪ Lighting designers will take due regard to mitigating potential obtrusive light and nuisance impacts. The designs shall include an obtrusive light study to demonstrate that based on the proposed lighting design that the sensitive receptors will not receive excessive amounts of light as a result of the Proposed Development. ▪ At the detailed design stage, the design will be checked against all identified receptors to ensure that it is within the limits required for the environmental zones applied to the proposed development.	Negligible
Utilities	Construction	Electricity	Specific requirements for diversionary and/or protections to existing utility apparatus will be progressed into detailed design with the incumbent utility providers following planning consent and as the development phasing progresses.	Negligible
		Gas		Negligible
		Potable Water		Negligible
		Telecommunications		Negligible

Category	Stage of the Development	Description of Residual Effect	Mitigation Measures	Significance
	Operation	Operation impacts on utilities	None required	No effects

Summary & Conclusions

22.4 A comprehensive assessment of the potential effects of the construction and operational phases of the proposed development has been undertaken as part of this EIA to establish the environmental changes associated with the development.

22.5 The EIA has identified the potential for residual effects, particularly during the construction phase, such as in terms of the generation of noise, dust and visual impacts during some of the construction works. These effects are unavoidable, despite the implementation of best practice measures, are common to almost all developments and are limited to the anticipated construction period.

22.6 In order to further minimise any potential disruption and disturbance to nearby sensitive receptors such as the local residents a Construction Environmental Management Plan (CEMP), developed in conjunction with IOACC and relevant consultees, has been recommended. The CEMP will outline how the effects of construction can be managed by good practice and environmental controls which are routinely and successfully applied on other similar development proposals.

Conclusions

22.7 The proposed development has been designed in accordance with the findings and recommendations of the EIA. Any adverse effects identified through the assessment have been minimised as far as possible through the design process or the application of appropriate mitigation measures. Effects associated with construction activities will be controlled by a CEMP for which an outline strategy has been produced.

22.8 The most significant adverse effects are associated with the change of use of the site incorporating changes to the landscape character and views into the site due to the previously undeveloped nature and sensitivity of the site. However, due to the extensive efforts of the design team to integrate the development into and improve the quality of the landscape, it is considered that the proposals will contribute positively to the landscape.

22.9 There are a number of beneficial effects associated with the scheme - most notably these include substantial positive impacts to the socioeconomic environment including the provision of jobs and training opportunities during construction and long term employment opportunities once the development is completed. The majority of the remaining impacts identified are of negligible or minor significance and have been mitigated through good design or through the measures described above wherever possible.