CHAPTER 21: CUMULATIVE IMPACTS

Introduction

21.1 This chapter provides an assessment of the potential effects of the proposed development in conjunction with changes arising from other developments in the surrounding area. It also provides an assessment of the potential combination of some or all of the effects identified in the EIA on a particular receptor.

21.2 The requirement for cumulative assessment is stated in the following legislation:

- Directive 85/337/EEC requires the assessment of *'the direct effects and any indirect, secondary, cumulative, short, medium and long term permanent or temporary, positive and negative effects of the project';*
- Directive 97/11/EC states that criteria for assessment includes *'the cumulation with other projects'*; and
- EIA Regulations 1999 state that, *'the characteristics of the development must be considered having regard, in particular to…the cumulation with other development.'*

Methodology

21.3 Cumulative effects may be divided into two categories. The first considered in this chapter is the cumulative effects of the proposed development with other developments. These developments should be both reasonably foreseeable in terms of delivery and should be located within a realistic geographical scope where environmental effects could combine to create a more significant change to a particular sensitive receptor. These are referred to as cumulative effects.

21.4 Developments in the surrounding area were considered for the cumulative effects assessment on the basis of the following criteria:

- The development has been registered with the LPA or secured planning consent or could be reasonably seen as being delivered on the ground;
- Proximity to the proposed development;
- The scale of development; and,
- The likely significant environmental effects.

21.5 Cumulative effects can be generated at the construction stage if the sites are in close proximity and construction periods are likely to overlap. However most construction projects employ regulatory controls and good practice to minimise impacts occurring outside the site boundary.

21.6 The effects of cumulative operational impacts can be varied and will depend on the scale, nature and processes/ activities of the proposed development, the location of sensitive receptors, the surrounding developments and the immediate environs.

21.7 Wherever possible, detailed quantification of effects has been undertaken. Where quantification has not been possible, then the assessments have been made using professional opinion.

21.8 The second category is concerned with the combination of some or all of the effects predicted by the EIA affecting a particular receptor which may collectively cause a change of greater significance than individually. These are referred to as

synergistic effects and have been assessed by professional opinion. An example of a synergistic effect could be construction related visual intrusion, dust, noise and vibration combining to generate a significant adverse effect affecting a residential dwelling.

21.9 Cumulative and synergistic effects can either be adverse or beneficial and have been assessed using the significance criteria described in Chapter 2: Approach.

Cumulative Effects

21.10 The assessment of cumulative effects has considered schemes identified as having the potential to generate changes that may interact with those from the proposed development. As stated above, this has considered an assessment of committed or allocated developments which have the potential to influence the design of the proposals at the site. The developments considered are described below.

Holyhead Waterfront

21.11 A planning application for the development of a mixed-use development consisting of a new marina, residential properties, a hotel, commercial leisure and retail use was approved by IOACC in June 2012. An Environmental Statement was prepared by Axis (2010) to support the application.

21.12 The development will be located along the Holyhead seafront, in the shelter of the Great Breakwater with a new marina, surrounded by a new breakwater, extending into Holyhead Harbour. The Holyhead Waterfront Regeneration Scheme is located just over 3km to the north west of Penrhos.

21.13 Key features of the development include

- 326 apartments and townhouses,
- a 500 berth marina;
- 50,000 square feet of marine related retail, leisure, restaurants, hotel and office space.

Renewable Energy Plant

21.14 Development consent under Section 36 of the Electricity Act has been granted the development of a 299MW Renewable Energy Plant on the AAM operational land. An Environmental Statement was prepared by Parsons Brinckerhoff (2009) to support the application. This stated that the development was due to commence in 2011 and be operational by 2013, although these timescales would appear to have been missed.

Parc Cybi

21.15 In March 2005 the Isle of Anglesey County Council granted outline planning consent to the Welsh development Agency (now the Welsh Government) for the development of a mixed use scheme comprising employment uses, a hotel, office uses, leisure uses and industrial units at Parc Cybi. The consent also covered the construction of connections to the highways network. The development site is 48.7hs in area and is located on grazing pasture immediately to the north of the Cae Glas site. The proposed link road between the existing Penrhos junction on the A55 and Kingsland Road has already been constructed although no other development has occurred. An Environmental Statement was prepared by Capita Symonds (2004) to support the application.

21.16 The key features of the development are as follows:

- Business (B1) 30,555m^2
- Business/General Industry/Storage and Distribution (B1/B2/B8) 56,047m^2
- Leisure (D2) 4,645m^2
- Hotel (C1) 2,790m^2
- Food and Drink (A3) 1,394m^2
- Creche (D1b) 372m^2

Cumulative Assessment

21.17 The following sections set out the potential cumulative effects of the two developments based on the topic areas covered in the ES.

Socioeconomics, Regeneration and Health

21.18 There could be cumulative benefits associated with the provision of construction employment and associated indirect and induced employment, associated with wider spend in the economy. It is difficult to quantify construction employment as the approach taken to quantification varies. There is a potential for a temporary moderate cumulative benefit associated with the provision of construction employment and indirect and induced employment.

21.19 The proposals for Holyhead waterfront comprise residential, a Hotel, commercial, leisure and retail uses. There is a potential for a moderate cumulative benefit associated with the provision of housing on the waterfront and at Kingsland that will broaden the stock of housing available in the Holyhead area.

21.20 There could also be a moderate cumulative benefit associated with increased spend in the local economy arising from additional housing at Kingsland and Holyhead Waterfront.

21.21 The Parc Cybi / storage facility and lorry park is estimated to provide up to 70 jobs once operational. The biomass plant is anticipated to provide 100 FTE jobs once operational. The Holyhead Waterfront development is anticipated to provide 325 full and part time jobs. There is a potential for a moderate cumulative benefit associated with the provision of employment associated with these developments and Penrhos / Cae Glas.

21.22 There could also be a moderate cumulative benefit associated with wider spend in the local economy, including contributions to local authority income through Precepts and visitor spending linked to the Waterfront proposals and Penrhos / Cae Glas.

21.23 There could be a minor cumulative benefit associated with impact on the Welsh language; if the employment associated with the schemes identified helps retain people who speak Welsh on the Island.

21.24 The proposals for Holyhead Waterfront and Penrhos / Cae Glas could have a major cumulative benefit on the economy of Holyhead and the Island as a whole. The Waterfront proposals add to the attractiveness of Holyhead as a destination and gateway to Holyhead and the Island. Penrhos / Cae Glas provide a major tourist destination.

Landscape and Visual

21.25 The cumulative visual impact of the proposals has been considered within the analysis for the photomontages presented in Chapter 9 where views of more than one development are possible. Please refer to this chapter for further information.

Ecology and Nature Conservation

21.26 The following section considers other projects on Holy Island which have been approved by IOACC that could have cumulative impacts with the Proposed Penrhos Leisure Village development.

Renewable Energy Plant

21.27 The results of air quality analysis confirm that emissions associated with the REP will not result in significant effects on statutory protected sites. Overall the impact assessment identified no significant direct or indirect effects on the following statutory protected sites:

- Holy Island SPA
- Cemlyn Bay and The Skerries SPA
- Holy Island SAC
- Llyn Dinam SAC
- Beddmanarch-Cymyran SSSI

21.28 Prior to mitigation, the following significant construction and operational phase impacts have been identified as effecting habitats and species receptors:

Receptor	Impact	Significance
Construction phase		
Broadleaved semi-natural woodland	Loss of woodland uncommon in the local area known to support protected species	Low impact at a Local level
Marshy grassland	Complete loss of the habitat	High impact at a Local level
Swamp/reedbed	Partial loss of habitat	Medium impact at a Local level
	Reduction in habitat quality also effecting resident protected species	Low impact at a Local Level
Badgers	Loss of a subsidiary sett	High impact at a Local level
	Loss of foraging habitat associated with woodland	Low impact at a Local level
Water voles	Loss of potential shelter and foraging habitat	Medium impact at a Local level
	Disturbance of habitat	Low impact at a Local Level
Bats	Disturbance of foraging habitat	Low impact at a Local level
Birds	Loss of nesting habitat in woodland and marshy grassland	Medium impact at a Local level
	Disturbacne of feeding and nesting areas due to light spillage	Low impact at a Local level
Reptiles	Reduction in quality of potential migration corridors	Low impact at a Local level
Operational phase		
Otters	Disturbance of foraging areas near conveyor	Low impact at a Local level
Bats	Disturbance of feeding areas through light spillage	Low impact at a Local level
Birds	Disturbance of feeding and nesting areas due to light spillage	Low impact at a Local level

21.29 A range of mitigation proposals were identified including the following:

- replacement provision of woodland habitat, marshy grassland and reedbed to ensure no net loss;
- establishment of a Construction Environmental Management Plan (CEMP);
- temporarily closing the subsidiary sett during construction to avoid possible badger mortality should the sett be damaged;
- providing and maintaining a habitat corridor for migrating otters;
- designing lighting to minimise negative effects on birds and bats;
- designing replacement habitat to benefit breeding birds and reptiles.

21.30 The REP Environmental Statement concludes that there will be no residual impacts on habitat or species.

21.31 The badger bait marking study undertaken at Penrhos has demonstrated that the badgers at Penrhos are a different social group to those associated with the AAM plant area. Therefore there are no cumulative effects concerning badgers.

21.32 It is concluded that there will be no cumulative effects for the Penrhos Leisure development as a result of the REP development.

Holyhead Waterfront

21.33 The Holyhead Waterfront development will be located 125m south east of the Holy island Coast SAC/SPA/SSSI.

21.34 Prior to mitigation, the following significant construction and operational phase impacts have been identified as effecting habitats and species receptors:

Receptor	**Impact**	**Probability**
Holy Island Coast SAC/SSSI	Increase in recreational pressure on coastal heath at east end of SAC/SSSI	Certain
Holy island Coast SSSI	Potential increase in boat-borne disturbance near bird cliffs	Low to medium risk of occurrence
Holy Island Coast SPA / Chough	Small loss of potential foraging habitat for chough	Certain
Bats	Loss of foraging habitat used by small numbers of bats	Certain
Common lizard and potentially slow-worm	Loss of habitat / potential impact on individuals	Habitat loss certain to occur
Harbour porpoise and grey seal	Loss of habitat / potential impact on individuals	Risk and magnitude of disturbance uncertain.
Saltmarsh and coastal vegetated shingle	Loss of habitat in bay north of Porth-y-Felin	Certain
Deep water mud with Virgularia mirabilis and shallow sublittoralrock and littoral fringe habitats	Direct habitat loss and indirect impacts due to siltation	Certain
Woodland, scrub and grassland mosaic	Loss of feature	Certain
Acid grassland and rocky outcrops	Loss of most examples of feature	Certain

21.35 A range of mitigation proposals were identified including the following:

- A contribution to the maintenance of nearby parts of the Holy island SSSI, including measures to restore and maintain cattle grazing, fencing, public paths, signage and water supply as appropriate to maintain habitat quality and direct visitors away from sensitive areas;
- Agreement that the new marina maintains a Code of Practice for avoidance of impacts of recreational boats near South Stack;
- Landscape design in the new development to maintain habitat connectivity on the shared boundary with Breakwater Country Park;
- Implement working methods to minimise dispersal of sediments during land reclamation works;
- Landscape design which incorporates rocky outcrops in open spaces.

21.36 The Holyhead Waterfront Regeneration Environmental Statement identifies one number of residual impacts of moderate or minor significance:

- Minor loss of foraging habitat and commuting corridors for bats – minor significance;
- Displacement of common lizard and other common reptiles to adjacent habitats – minor significance;
- Loss or damage of sea-pen deep water mud and sublittoral reef habitats – minor significance;
- Partial loss of littoral habitats – moderate significance;
- Loss of woodland and grassland mosaic – minor significance;
- Loss of acid grassland over rocky outcrops resulting in potential reduction in species diversity – minor significance.

21.37 The Holyhead Waterfront Scheme is sufficiently distant from the Penrhos Leisure Village development for there to be no cumulative impacts on the protected species bats and reptiles.

21.38 Since the proposed development has no predicted effects on sea-pen deep water and sublittoral reef habitats, there will not be any cumulative impact on these habitats.

21.39 Woodland/grassland mosaic affected by the Holyhead Waterfront Scheme fairly small and the habitats are sufficiently distance from the Penrhos Leisure Village development for there to be no cumulative effect on woodland habitats.

21.40 The proposed development will have no direct impacts on littoral habitats and indirect impacts such as trampling will be minimised by a variety of measures such as directing people away from sensitive locations using appropriate footpath layouts, signage and by promoting public awareness. There will therefore be no cumulative impacts affecting littoral habitats.

21.41 The proposed development will only result in very small losses of acid grassland. Rocky outcrop features are nearly all retained. There will therefore be no cumulative impacts affecting acid grassland and rocky outcrops.

21.42 It is concluded that there will be no cumulative effects for the Penrhos Leisure development as a result of the Holyhead Waterfront Regeneration scheme development.

Parc Cybi

21.43 The Parc Cybi development will result in a net increase in woodland/scrub and marshy grassland. The detailed design of new habitats will place particular importance on bio-diversity and nature conservation. Minor areas of rocky

outcrops will be largely retained in the development. And proposed areas of scrub woodland will be linked with existing woodland to create habitat corridors with a view to benefiting breeding birds including a variety of warblers that occur on the site. Woodland management works, such as selective thinning, will also be undertaken to aid regeneration of the existing woodland. A number of sections of drystone walls and hedgerows will be lost to development although equivalent replacement habitat will be provided. An existing wetland/marshland will be enhanced and extended to provide additional habitat for water voles, amphibians and reptiles.

21.44 There are no predicted effects on the Beddmanarch-Cymyran SSSI which is located 800m to the south of Parc Cybi.

21.45 Overall the development will have a minor negative effect for associated wildlife and some possible longer term biodiversity benefits, particularly in terms of wetland areas.

21.46 It is concluded that there will be no cumulative effects for the Penrhos Leisure development as a result of the Parc Cybi development.

Archaeology and Cultural Heritage

21.47 The recent excavations at Parc Cybi uncovered a multi-phased historic landscape, in addition to the two Scheduled Ancient Monuments of Ty Mawr standing stone (A12) and Trefignath burial chamber (A11) already located on the site. The archaeological excavations as a result of the development revealed complex nationally important prehistoric archaeology in the form of a Neolithic house, Bronze Age burial cists, a Bronze Age roundhouse, and an Iron Age roundhouse settlement. As part of the excavations a Romano-British settlement and an early medieval cist cemetery were also found, the latter of which was of a similar scale and form to that found close to Holyhead during the construction of the A55 expressway. The archaeology was fully recorded and removed as part of the mitigation for the project and as such was preserved via archaeological record. Despite the huge gain in knowledge of the historic landscape of Holy Island the removal of nationally important archaeological site rather than their integration into the development should be considered as a low direct adverse impact overall.

21.48 The Parc Cybi development is not currently complete, although the transport network and utilities including electrical substation have been constructed. Despite this it is expected that the completed development will have an indirect adverse impact upon the significant inter-visibility between the Scheduled Ancient Monuments of the Trefignath burial chamber (A11) and Ty Mawr standing stone (A12). Furthermore, the views southeast from the Scheduled Ancient Monument of Holyhead Mountain hillfort and Roman signal station (A19) will have be adversely impacted upon.

21.49 In addition to the Parc Cybi development planning permission has recently been awarded to develop a biomass plant on the AAM site. The archaeological ES chapter has determined that there will not be any direct impact upon buried archaeological remains due to them having been removed during the groundworks of the original construction in 1969-1970. The frequency and complexity of archaeological remains encountered during the Parc Cybi development is almost certainly an indication of the type of remains that may have been present at the Anglesey Aluminium site. Thus it can be surmised that the original construction of the plant potentially directly impacted upon buried archaeological remains, most probably belonging to the prehistoric era but also possibly Roman and medieval remains. Indeed, the proposed biomass plant development should not be

regarded as having a cumulative direct impact upon the archaeological heritage of Holy Island, but the probable impact of the original plant should be considered when assessing the cumulative impact upon the island's heritage overall.

21.50 The archaeological assessment for the proposed biomass plant at Anglesey Aluminium also established that there would be an adverse indirect impact upon the views from the Scheduled Ancient Monuments of Ty Mawr standing stone (A12), Trefignath burial chamber (A11) and Holyhead Mountain hillfort and Roman signal station (A19), although this impact was deemed to be low due to the frustration upon the significant views from the existing A55 expressway and Anglesey Aluminium.

21.51 Planning permission has also recently been awarded for the redevelopment of Holyhead waterfront which is also in close proximity to the proposed development. The archaeological environmental statement chapter for this development has shown that the sites which will be directly impacted upon are predominantly Victorian in date, with historically important buildings and monuments associated with the construction of the Great Breakwater and Holyhead New Harbour between the years 1846-1873. The archaeological assessment, based upon the development proposals, established that the development will have a major or moderate direct impact upon 14 sites, three of which are considered to be beneficial, the rest adverse. In addition to this, the archaeological assessment established that the proposed development would have an indirect beneficial impact upon 8 high value sites, all of which are Victorian in origin.

21.52 It is clear that large scale developments on Holy Island have dramatically increased our knowledge of the historical evolution of this part of Anglesey, and the proposed development poses the opportunity to gain a greater insight into this. In particular in establishing whether there is a continuation of nationally important archaeology into the Kingsland and Cae Glas areas from the Parc Cybi development. Moreover, the proposed development of the biomass plant is expected to have an insignificant impact overall upon the archaeological heritage, and the Holyhead waterfront development is expected to have an overall beneficial impact. However the loss of potentially important archaeology during the construction of the Anglesey Aluminium plant increases the requirement to ensure that there is not a further loss to the archaeological record of Holy Island.

21.53 In conclusion, the cumulative direct and indirect impacts of the proposed development with that of the Parc Cybi site, biomass plant, and Holyhead waterfront is expected to be low so long as a relevant programme of mitigation is applied.

Drainage and Flood Risk

21.54 It is not anticipated that any cumulative impacts on flood risk will arise as a result of the cumulative developments as they have separate drainage catchments and discharge to different areas.

Transport and Access

21.55 As agreed with the IOACC Highways officers, the traffic flows from the consented Parc Cybi development have been taken into account in the calculation of road traffic impacts. Therefore, cumulative impacts have been considered throughout the assessment and no further analysis is required.

Air Quality

Demolition and Construction

21.56 The biomass facility is proposed to be operational by 2013 and the Holyhead Waterfront scheme by 2015. The opening year of the Parc Cybi scheme is not known. The ES for the biomass facility states that construction was due to commence in 2011, however construction has yet to commence. Therefore, it is possible that construction of the proposed development may take place at the same time as all three the other committed developments.

21.57 The Holyhead Waterfront development is located approximately 1.5km from the proposed development and therefore dust and PM10 generated from construction activities are unlikely to cause a cumulative effect on sensitive receptors.

21.58 As the biomass plant and the Parc Cybi scheme would be located within 350m of the proposed development it is possible that a cumulative effect may occur from the simultaneous construction of the biomass facility and the proposed development. However, given the sparsity and distance of sensitive receptors that may be affected by dust from both sites, the cumulative effect is considered to be of negligible significance, direct, short-medium term, temporary and local in effect. Additionally, it is assumed that the mitigation measures proposed within the ES for the biomass facility and the mitigation measures outlined in this ES for the proposed development will be implemented which will minimise any negligible cumulative effects further.

21.59 Given that the committed developments and the proposed development may be constructed at the same time, it is likely that construction vehicles travelling to and from the sites will utilise the same road network. Details of the construction routes or the number of construction vehicles for the proposed development or the other two committed developments are not confirmed; however for example, it is likely that all developments will use the A55 and receptors (properties) located along the A55 may be affected by cumulative increases in vehicle emissions (NO2 and PM10). However, considering the background concentrations and the likely increase in traffic emissions during construction it is considered that the cumulative effect would be of negligible significance, direct, short-medium term, temporary and local in effect.

Completed Development

21.60 As stated above, the flows for cumulative developments have been included at the request of IOACC Highways officers. Therefore, the cumulative effects of road traffic on air quality have been incorporated into the assessment.

21.61 Given the low background concentrations for the area it is unlikely that the AQS objectives would be exceeded and the cumulative impact is likely to be of negligible significance.

21.62 In addition to road traffic the ES for the proposed biomass facility has assessed the impact on local air quality from the biomass plant emissions. The assessment concluded that the maximum process contribution from the plant would be 0.2µg/m^3 for annual mean NO_2, 9.5µg/m^3 for hourly NO_2, 0.11µg/m^3 for annual mean PM_{10} and 0.4µg/m^3 for 24 hour PM_{10}. Adding these maximum process contributions onto the maximum total concentrations predicted for the proposed development would still not cause any exceedences of the AQS objectives.

21.63 Overall, given the low background concentrations for the area it is unlikely that the AQS objectives would be exceeded and the cumulative impact is likely to be of negligible significance, permanent, direct, long term and local in effect according to the assessment criteria detailed above.

Noise and Vibration

21.64 Based on the physical separation of Penrhos, Cae Glas and Kingsland sites, the construction phasing (See Chapter 6), as well as the presence of the A5 and A55 between the Penrhos and Cae Glas sites, it is considered that there is little potential for cumulative noise impacts from concurrent construction works on the different sites.

21.65 The assessment of development generated road traffic noise has been undertaken including for the combined effects of both natural traffic growth and traffic movements associated with the operation of the proposed development.

21.66 It is identified that the derived fixed plant noise level limits apply to the combined contribution of noise from all proposed fixed plant, such that the possible effects of combined plant noise are accounted for. If necessary, the derived plant noise level limits could be split and apportioned accordingly to different individual plant items.

21.67 The completed noise and vibration assessments have been undertaken drawing upon individual assessment methodologies and guidance specific to each individual source, e.g. BS5228-1 for construction noise and the DMRB for development generated road traffic noise. These assessment methodologies and guidance documents have been prepared to reflect the nature of each individual source.

21.68 It is not appropriate to undertake an assessment of the combined effects of noise and vibration from all different source simultaneously. This is firstly because the applicable guidance could not then be accurately applied, secondly because the combined effects are unlikely to arise simultaneously at any one time, and thirdly, because even if this did happen, it would be most likely be that the loudest individual source would dominate the noise environment, meaning that the most appropriate assessment methodology would be that for that source (as already assessed).

Waste

21.69 The table below illustrates the anticipated increase in waste production per year from the three consented schemes. In relation to the Holyhead Waterfront scheme, it has been assumed that the average property has 3 bedrooms for the purposes of calculating the waste arisings with an average waste generation of 70kg/annum per person. For the commercial uses, calculations have been based upon BS5906.

Development and Uses	**Tonnages/annum**
Holyhead Waterfront	
Residential (assuming an average dwelling of 3-bedrooms)	75.6
Retail/ Leisure Complex	126
Parc Cybi	
Business	548
Storage Distribution	1,005
Leisure	166
Hotel (60 room)	54

Food & Drink	13.5
Creche (40 participant)	10
Biomass Plant (based on 400 office employees and no waste from the plant)	71.76
TOTAL	**2,069**

21.70 The total waste arisings from the three consented schemes and the proposed development would be 2,609 tonnes per annum compared with current arisings in Anglesey of 136,938 tonnes (43,820 Municipal 93,118 C&I). This represents a 1.9% increase at the county level, which would be a **minor adverse** impact overall.

Utilities

21.71 The discussions that have taken place with the various utility companies have taken account as far as possible all known developments that are taking place within the Holyhead area. Although the final utility requirements and the delivery methods will depend on the actual committed demands on the utility networks at the time of application to the various utility companies that could result in additional reinforcement works.

Combined / Synergistic Effects

21.72 This section assesses the combination of some or all of the effects identified in the EIA on the sensitive receptors identified throughout the process. As with any development, there is the potential for impacts on different components of the environment to interact, both within and outside of the immediate area of the development.

21.73 This section assesses the most important of these interactions briefly drawing upon the detailed information under the relevant environmental topic chapters. As impacts associated with the completed development are predominantly negligible, the interaction of construction stage effects has been the focus of the assessment.

21.74 Construction on the site would generate additional traffic, primarily HGVs and construction worker vehicles. Some minor delay and disruption may be caused to users of the highway during the construction of the highway infrastructure. However, this will be short term in nature and would result in a negligible effect on users of the highway.

21.75 The additional construction vehicles may also impact on the sensitive receptors by increasing the level of emissions in terms of air and noise. However, the increase in construction vehicles is anticipated to be significantly less than forecast flows associated with the full development. The impacts on noise and air quality from construction traffic will be negligible. Furthermore, with the implementation of a traffic management plan and with the adoption of a Construction Environmental Management Plan (CEMP) any impact on sensitive receptors will be further reduced.

21.76 Construction can also cause visual intrusion associated with the movement of vehicles and the partial completion of the development. However, with adequate site screening and site best practice this is considered to be a negligible effect from more distant views and as much as moderate adverse from nearby views. It should also be noted that the number of residential properties within close proximity to the site and which could be affected is very limited.

21.77 Overall, the interaction of impacts on air quality, noise, transport and visual amenity, the synergistic effect is considered to be **minor to moderate adverse** for residents in closest proximity to the site.

Conclusion

Cumulative Impacts

21.78 The presence of three other major developments within the vicinity of the site has been identified as part of this assessment and through discussions with IOACC.

21.79 Where possible, a quantitative evaluation of cumulative effects has been undertaken, such as in the assessment of traffic on the local highways network and the subsequent assessment of effects on air quality and noise. Where quantitative assessment has not been possible, a qualitative approach has been taken using professional judgement to determine the potential for cumulative effects.

21.80 In summary, it is considered that the potential for cumulative effects as a result of the proposed developments is limited but that a cumulative benefit would be realised in social and economic terms.

Combined / Synergistic Impacts

21.81 The combined/synergistic assessment of impacts has focused on whether potential construction effects would combine to generate a significant adverse impact on sensitive receptors. The accumulation of aspects such as traffic, air quality, noise generation and visual intrusion caused by the construction and operational phase of development has been considered together.

21.82 The assessment demonstrates the potential for negative impact interaction during the construction phase, all of which are short term and reversible. These impacts will largely be addressed and managed through the operation of a traffic management plan, a Construction Environmental Management Plan (CEMP) and good site practices.