

15 ASSESSMENT OF CUMULATIVE EFFECTS

15.1 Introduction

This chapter presents those cumulative effects not explicitly addressed elsewhere in the Environmental Statement. The majority of the EIA topic assessments consider the effects of the Scheme on receptors or receptor groups and, as such, many of the inter-related impacts on those receptors are considered within the topic chapters. For instance, effects on ecological receptors arising from any combination of land take, noise, visual disturbance, air quality impacts, water quality impacts and potential traffic collision are considered within the ecology chapter. As such, the potential for inter-relationships is inherent within the topic assessments and these effects are not repeated in this chapter.

15.2 Legislative and best practice guidance requirements

The approach to assessing cumulative impacts is addressed under DMRB Vol. 11, Section 2, Part 5 (HA 205/08)^{15.1}. This draws on guidelines for assessing indirect, cumulative and impact interactions, published by the European Commission^{15.2}. HA 205/08 recognises two principle types of cumulative impacts to be addressed in EIAs as follows:

- *Cumulative Impacts from a single project (e.g. combined effects of differing environmental impacts on a single receptor or resource), and*
- *Cumulative impacts from different projects (in combination with the project being assessed).*

The guidance states that in the first type (impacts from a single project) the impacts arise from the *'combined action of a number of environmental topic specific impacts upon a single receptor/resource'*.

For the second cumulative impact assessment type (cumulative impacts from other projects) the guidance states that:

'For the purposes of this guidance, 'reasonably foreseeable' is interpreted to include other projects that are 'committed'. These should include (but not necessarily be limited to):

- *Trunk road and motorway projects which have been confirmed (i.e., gone through the statutory processes),*
- *Development projects with valid planning permissions as granted by the Local Planning Authority, and for which formal EIA is a requirement or for which non-statutory environmental impact assessment has been undertaken'.*

In terms of *'trunk road and motorway projects which have been confirmed'*, there are none within the immediate area which are likely to have a cumulative affect with the Scheme. Planned trunk road projects in Wales are included in the Wales Transport Strategy (2008) and National Transport Finance Plan (2015) (refer to section 4.1)

15.2.1 Approach to assessing cumulative impacts from a single project (the Scheme)

The first cumulative impact assessment type as outlined in Section 15.1 (cumulative impacts from a single project) is addressed using a matrix style approach (refer to Table 15.2.1 below), which quantifies the in-combination effects of a number of

environmental impacts on a certain receptor (e.g. combined effects of noise and air quality on nearby residents).

Chapters 5 to 14 of this Environmental Statement have addressed impacts of the Scheme in relation to certain environmental topic areas (e.g. air quality, noise, landscape etc.) on certain receptors. These impacts associated with various topics have the potential to interact and combine with one another to have a greater impact on certain receptors. Several impacts that may have been insignificant by themselves may combine to have an adverse effect.

Potential receptors of these cumulative impacts are nearby residents (highest sensitivity), users of the PROW (medium sensitivity) and local workers and road users (low sensitivity). This assessment considers the most sensitive receptors, which are the local residents.

Table 15.2.1 outlines the in-combination effects of certain environmental effects on sensitive receptors based on the findings of the relevant detailed environmental topic chapters, the professional judgement of the chapter authors and assuming mitigation is put in place. Due to assessment criteria differing between the individual environmental assessments, the overall cumulative effect is difficult to quantify. The assessment is therefore based on best professional judgement, and comments are provided on how the cumulative impact has been reached. Guidance given in DMRB HA 205/08 has also been taken into account when undertaking the assessment.

15.2.2 Approach to assessing cumulative impacts from different projects

Consultation

With regards to *'development projects with valid planning permissions as granted by the Local Planning Authority, and for which formal EIA is a requirement or for which non-statutory environmental impact assessment has been undertaken'* the JV Team has consulted with Gwynedd Council (GC) and other statutory environmental bodies as recommend in HA 205/08.

The Environmental Scoping Report (Report No.3513874-PB-XX-XX-RP-EN-00001) included a request that statutory environmental bodies suggest other developments to be considered in the assessment of cumulative impacts. Section 1.6.4 provides details of the statutory environmental bodies consulted on for the Environmental Scoping Report and draft ES.

In response to this consultation, no projects or plans for consideration in the assessment of other projects were highlighted by GC. Following a response to a review of the draft ES by NMWTRA, comment was made that the following other projects might need to be considered. These included:

- Recent and ongoing developments at Glynllifon – recent completion of a new learning campus and change of use of existing mansion building into a hotel and conference centre
- A55 flood alleviation, Bangor – Part of the Abergwyngregyn to Tai'r Meibion improvement works
- Glyn Rhonwy Pumped Storage, Llanberis – Conversion of two disused slate quarries into a Pumped Storage Battery with a capacity of up to 99.9MW

From accessing additional information via GC's planning portal and through internet searches, Gyllifon Mansion and A55 flood alleviation were subsequently screened out of further assessment for the following reasons:

- Glynllifon learning campus and mansion – Although surveys in the area have recorded Lesser horseshoe bat (LHB) activity, the learning campus has been completed and therefore is not considered as a project or plan. Subsequent applications for additional work are not deemed significant enough to require further assessment.
- A55 flood alleviation – The distance from the Scheme and nature of the proposed project mean it is considered unnecessary to undertake further assessment.

Due to the nature of the Glyn Rhonwy Pumped Storage project and its potential impact on the Afon Gwyrfaï a Llyn Cwellyn Special Area of Conservation, this was taken forward for further assessment. The EIA and Report on the Implications for European Sites (RIES) undertaken for the Glyn Rhonwy Pumped Storage Scheme in 2015 highlighted potential impacts on both bats and otters and as such have been used to inform the in-combination assessment included within this document, as detailed in table 15.2.2.

Searches using Gwynedd Council's planning portal

- Following responses to the Scoping Report and searches of the GC Planning website, one additional project has been identified which should be assessed for its potential to have a cumulative effect with the Scheme. Caernarfon Brickworks Quarry – Change of use of land for the siting of 3 temporary buildings, parking areas, 2 storage containers together with security fencing in relation to constructing the Caernarfon Bypass.

15.2.3 Projects considered for further assessment

Caernarfon Brickworks Quarry

Gwynedd Council have concluded that the proposed development outlined above is required to undertake an EIA having been screened with regard to developments covered under Schedule 2, Para 11 of the EIA Regs. 1999 (as amended). The guidance given in HA 205/08 requires that the cumulative impact of other projects be considered by the JV team where '*a valid planning permission granted by the local planning authority and for which formal EIA is a requirement or for which non-statutory environmental impact assessment has been undertaken*'. The Caernarfon Brickworks Quarry proposal must therefore be considered within this ES with regard to cumulative effects. At present, this project is currently on hold.

Glyn Rhonwy Pumped Storage

This is a national infrastructure planning application made to the planning inspectorate in 2015. At the time of writing, the timeline for review of the project documentation is as follows:

10th August - Deadline for receipt by Examining Authority (ExA) of:

- Comments on the ExA's draft DCO
- Comments on the RIES
- Comments on any further information received by the ExA for Deadline 6

- Comments on SoCG
- Any further requests for information by the ExA, if required

Under the EIA regulations 1999 (as amended), an EIA was carried out and an environmental statement was produced (available from: <https://infrastructure.planninginspectorate.gov.uk/projects/wales/glyn-rhonwy-pumped-storage/?ipcsection=docs>).

The potential effects with this other project are considered in Table 15.3.1.

15.3 Assessment of cumulative impacts from a single project (the Scheme)

Table 15.2.1 below shows the in-combination effects of the Scheme. It uses the matrix-style approach described in part two of DMRB Volume 11, Section 2 – Assessment and management of environmental effects, in order to determine the significance of environmental effects.

Table 15.1.1 In combination effects – Cumulative impacts from a single project (the Scheme)

Receptor / Environmental Resource	Significance of noise impact following mitigation	Significance of air quality impact following mitigation	Significance of visual impact following mitigation	Comments and significance of in-combination effect following mitigation
Construction impacts				
Parc	Slight adverse impacts during site clearance and earthworks. These activities are not expected to last to last for a few days in close proximity.	Not Significant (assuming appropriate measures to prevent and control dust are maintained by the contractor).	Substantial Adverse	There would be an in combination effect from noise and visual impact during construction, which is considered likely to have an increased adverse significance of effect on the receptor than the impacts experienced in isolation.
Morogoro	Slight adverse impacts during site clearance and earthworks. These activities are not expected to last to last for a few days in close proximity.	Slight adverse impact (assuming appropriate measures to prevent and control dust are maintained by the contractor).	Moderate Adverse	There would be an in combination effect from noise, air quality and visual impact during construction, which is considered likely to have an increased adverse significance of effect on the receptor than the impacts experienced in isolation.
Dinas	Not Significant	Not Significant (assuming appropriate measures to prevent and control dust are maintained by the contractor).	Moderate Adverse	There would be no in combination effects as only a moderately significant visual effect is identified following mitigation. This is addressed in Chapter 7.
Glanrafon Fawr	Not Significant	Not Significant (assuming appropriate measures to prevent and control dust are maintained by the contractor).	Moderate Adverse	There would be no in combination effects as only a moderately significant visual effect is identified following mitigation. This is addressed in Chapter 7.

Receptor / Environmental Resource	Significance of noise impact following mitigation	Significance of air quality impact following mitigation	Significance of visual impact following mitigation	Comments and significance of in-combination effect following mitigation
Caegwynedd/ Merddyn	Not Significant	Not Significant (assuming appropriate measures to prevent and control dust are maintained by the contractor).	Substantial Adverse	There would be no in combination effects as only a substantially significant visual effect is identified following mitigation. This is addressed in Chapter 7.
Glyn	Not Significant	Not Significant (assuming appropriate measures to prevent and control dust are maintained by the contractor).	Substantial Adverse	There would be no in combination effects as only a substantially significant visual effect is identified following mitigation. This is addressed in Chapter 7.
Cae Philip	Not Significant	Not Significant (assuming appropriate measures to prevent and control dust are maintained by the contractor).	Substantial Adverse	There would be no in combination effects as only a substantially significant visual effect is identified following mitigation. This is addressed in Chapter 7
Bodrual	Not Significant	Not Significant (assuming appropriate measures to prevent and control dust are maintained by the contractor).	Substantial Adverse	There would be no in combination effects as only a substantially significant visual effect is identified following mitigation. This is addressed in Chapter 7
Plas Treflan	Not Significant	Not Significant (assuming appropriate measures to prevent and control dust are maintained by the contractor).	Substantial Adverse	There would be no in combination effects as only a substantially significant visual effect is identified following mitigation. This is addressed in Chapter 7
Glan Gwna Lodge	Not Significant	Slight adverse impact	Moderate Adverse	There would be an in combination effect from noise and visual impact during construction, which is considered likely to have an increased adverse significance of effect on the receptor than the impacts experienced in isolation.
Lon Glai Farm	Not Significant	Not Significant (assuming appropriate measures to prevent and control dust are maintained by the contractor).	Moderate Adverse	There would be no in combination effects as only a moderately significant visual effect is identified following mitigation. This is addressed in Chapter 7.

Receptor / Environmental Resource	Significance of noise impact following mitigation	Significance of air quality impact following mitigation	Significance of visual impact following mitigation	Comments and significance of in-combination effect following mitigation
Tyddyn Bistle	Not Significant	Not Significant (assuming appropriate measures to prevent and control dust are maintained by the contractor).	Substantial Adverse	There would be no in combination effects as only a substantially significant visual effect is identified following mitigation. This is addressed in Chapter 7.
Tyddyn Hen	Significant effects during roadworks and earthworks would be temporary and limited in duration.	Slight adverse impact	Not Significant	There would be an in combination effect from noise and air quality during construction, which is considered likely to have an increased adverse significance of effect on the receptor than the impacts experienced in isolation.
Bryn Eden	Not Significant	Not Significant (assuming appropriate measures to prevent and control dust are maintained by the contractor).	Substantial	There would be no in combination effects as only a substantially significant visual effect is identified following mitigation. This is addressed in Chapter 7.
St Gwyndaf's Church	Significant adverse short term effect expected.	Not Significant (assuming appropriate measures to prevent and control dust are maintained by the contractor).	Not Significant	There would be no in combination effects as only a significant adverse noise impact is identified following mitigation. This is addressed in Chapter 7.

15.4 Assessment of cumulative impacts from different projects with the Scheme

Table 15.3.1 below assesses the cumulative impact of the Scheme with other projects and plans, as highlighted in previous sections. The two projects are assessed against the relevant chapters of this ES and assigned a significance using the matrix-style approach.

Table 15.2.1 Assessment of potential cumulative impacts from different projects with the Scheme

Project/ plan	Description of project/ plan	Environmental Topic	Magnitude/ Significance	Description of impact with other projects and plans
Seiont Brickworks Quarry (Seiont Mill Road, Caernarfon, Gwynedd, LL55 2YL) – Full Planning Application (No.: C15/0977/19 /LL	Change of use of land for the siting of 3 temporary buildings, parking areas, 2 storage containers together with security fencing in relation to constructing the Caernarfon Bypass.	Air Quality	Minor Adverse	Additional dust could arise from vehicle operation along both the existing access and the proposed long haul route, although the effect would be minor and limited to the duration of operation of the quarry. These impacts on the can be mitigated through use of the long term haul routes taking HGV away from the sensitive receptors at Eryri Hospital and Caernarfon centre. Additional vehicular emissions can be expected from increased traffic through Caernarfon and Bontnewydd, however the bulk of operations will be associated with the A487 scheme with traffic using haul roads connecting to the scheme.
		Cultural heritage	Neutral/ Not Significant	The current documentation for the Seiont Brickworks does not identify or predict any impact upon cultural heritage assets. The Scheme's effects therefore stand alone, rather than contributing to any cumulative impact.
		Landscape	Neutral/ Not Significant	The Zone of Visual Influence (ZVI) does not include the Seiont Brickworks Quarry and therefore does not have a cumulative impact with the Scheme.
		Nature Conservation		There is potential for a cumulative effect with the Scheme in relation to Lesser Horseshoe Bats as there is a known roost within the brickworks. The magnitude and significance of this impact cannot be determined at present with the information provided.
		Geology & Soils	Neutral/ Not Significant	<p>The applicants are proposing to recommence extraction at Seiont Quarry, partly in relation to the bypass Scheme, but other aspects relate to the current planning permission to extract materials, believed to be mostly glacial tills and restore the quarry as per the Conceptual Restoration Masterplan.</p> <p>The construction of the bypass Scheme would lead to sterilisation of the mineral reserves under the road alignment and an offset on either side. The reserves of the brick clay in the area are extensive, therefore the cumulative impact is considered Negligible Adverse. It is considered that whilst the removal of glacial till may affect shallow groundwater levels in the short term that, once the material is replaced there would be no significant long term effects on the groundwater flow or quality. The significance of the effect is assessed as Neutral.</p> <p>There is an existing planning permission at Seiont Quarry to allow several more decades of quarrying to extract brick clay. If this was to be undertaken, it would lower the quarry floor by a further 28m and make the side slopes of the quarry bowl considerably steeper. Such excavations would be limited by the location of the road and the offset to protect it. Extraction of material at</p>

				<p>this depth would only affect deep groundwater levels as a result of dewatering requirements. It is considered that this would not affect the proposed road scheme on its current alignment.</p> <p>The bypass Scheme design has been developed to be in balance, so the volume of materials excavated (from cuttings) would be approximately the volume required to form embankments. This minimises the importing of additional materials to the site. It has been reported (Richards Moorehead & Laing Ltd, September 2015, Seiont Quarry, EIA Scoping Report for Jones Bros Civil Engineering) that the results from the ground investigation indicate that up to 200,000m³ of extracted material would be considered unsuitable as fill material for the road construction and formation of embankments. Therefore a disposal site for unsuitable material would be required, and a replacement construction fill would be required to make up this shortfall.</p> <p>Construction - The construction of temporary site office accommodation and welfare facilities, staff and visitor parking and parking for operating plant will be required. If mitigation measures and best practise procedures are followed (including desk study and ground investigation) there are considered to be no cumulative impacts on the geology, soils and hydrogeology of the proposed bypass Scheme.</p> <p>The construction of the haul road through the Seiont Valley will require excavation of the existing soils Minor Adverse effect, with a predicted Minor Adverse significance of effect.</p> <p>Operation - When the quarry, close to the Scheme is operational, imported material required for the Scheme where confirmed to be suitable for use, can be extracted locally. This would result in a Minor Beneficial impact on the bypass Scheme.</p> <p>A further Minor Beneficial impact, where extracted material from the bypass Scheme is not suitable, it can be used to the restoration and rehabilitation of the quarry slopes and sump.</p> <p>Adverse impacts associated with the potential mobilisation of soil contamination have the potential to occur during the operation phase of the quarry. Mitigation measures and best practise procedures should be followed so impacts associated with contaminated ground are minimised. Therefore the impacts associated with these works are considered to have no change with a predicted Neutral significance of effect.</p>
		Materials	Neutral/ Not Significant	<p>Approximately 239,100m³ of fill material needs to be imported to the Scheme which will be sourced from quarries in the local region, generating approximately 21,500 HGV movements on the local highway network. The Scheme will also generate approximately 160,900m³ of unsuitable excavated material that will be exported offsite to a suitable landfill in the local region generating a further 14,500 HGV movements on the local highway network.</p> <p>The supply of approximately 200,000m³ suitable fill material from Seiont Quarry, which is adjacent to the scheme, and the use of a haul route from the quarry to the Scheme would remove</p>

				<p>a significant number of HGVs movements from the local highway network and will retain the same volume of fill material in other local quarries which can be used for other developments. Equally the disposal of 160,900m³ of unsuitable excavated material from the Scheme into Seiont Quarry would remove a significant number of HGVs movements from the local highway network and retain capacity with landfills in the local region.</p>
		Noise and Vibration	Minor Adverse	<p>Construction - Cumulative effects from construction would depend on the timing relative to the Bypass works in the area; if construction at the Brickworks site takes place prior to the Bypass Scheme works there would be no significant cumulative construction impacts. If there is overlap, only the impact associated with the haul route construction could generate cumulative effects, for receptors to the south of the Brickworks site. Mitigation for construction noise/vibration should refer to BS 5228 guidance and Local Authority operational restrictions.</p> <p>Operation - Cumulative effects from operation of the Brickworks site would also be limited to the new haul road accessing the Bypass works site, around 135m from the nearest receptor. Noise from haulage could be significant, but can be adequately controlled in the same way as the wider Bypass works, referring to BS 5228 and Best Practicable Means. Mitigated cumulative effects from the Bypass works and Brickworks site are expected to be insignificant for receptors in the vicinity. In the longer term, restored operation of the Brickworks site as a mineral processing and quarry area could result in some additional noise for receptors located to the south and east, which would be subject to significant adverse road noise impacts from the Bypass. However, it can be argued that since the site already benefits from approval for this type of activity it could already be lawfully operated as such without undue restriction, despite having currently fallen into disuse. Therefore, any additional noise from the proposed changes to operation would also need to be considered against the potential noise output from the site as already approved.</p> <p>The proposed mineral processing area lies to the north of the site and so would minimise additional exposure to receptors at the south, noise levels at which would predominantly be determined by the Bypass road traffic. Conversely, any effects at the more distant receptors to the north of the Brickworks site, are likely to be dictated by impacts from the Brickworks site alone, since Bypass noise impacts are expected to be minor or negligible (and in some cases beneficial) in this area. On this basis, cumulative effects are considered unlikely to be significant.</p>
		Effects on all Travellers	Minor Adverse	<p>Additional noise and dust that may arise from operations within the Seiont Brickworks are predicted to have a minor adverse impact on PRoW Bontnewydd Rhif 26. This PRoW received a usage category of three from Gwynedd Council meaning it provides an important connection between category one and two PRoW. There may be increased traffic on local roads during the operation of the quarry site leading to severance for NMU and increased driver stress, however insufficient data are provided to assess this at present.</p>
		Community & Private Assets	Minor Adverse	<p>The proposals include a small extension to the quarry on the north side, approximately 1.8ha (Table 1 F). This is currently agricultural land in area potentially of Best and Most Versatile agricultural</p>

				<p>quality. This would therefore increase the overall amount of such land potentially affected. The impact on agricultural land would remain of major adverse significance.</p> <p>There would be an increased impact on one agricultural business. This land forms off lying grazing land and the effect would remain of minor adverse significance.</p>
		Road Drainage & the Water Environment	Not Significant	<p>The Design and Access Statement for the Seiont Quarry scheme states that a FCA has been produced, including hydraulic modelling as necessary to demonstrate that flood risk will be managed in such a way as to satisfy the requirements of TAN15. It is assumed that this FCA outlines all the necessary measures to prevent unacceptable risk of flooding to the site and to people and property elsewhere. The site is approximately 1.2km downstream of the Scheme construction works on the Afon Seiont. Therefore, the risk of cumulative flood risk impacts at the Quarry site, at the Scheme site or to people and property elsewhere is very low.</p> <p>It is assumed that a CEMP will be provided and implemented for the Quarry site, and that the provisions of the CEMP will be sufficient to prevent pollution of the Afon Seiont as a result of construction activities or runoff from the constructed Quarry site. The Quarry site is approximately 1.2km downstream of the nearest construction activity for the Scheme and a CEMP will be provided and implemented for the Scheme. The provision and implementation of CEMPs for both sites and the distance between the sites will prevent any cumulative impacts on water quality in the Afon Seiont. There is no <i>hydraulic</i> connectivity between other water resources with potential to be impacted by both sites.</p>
		Other		N/a
Glyn Rhonwy Pumped Storage	Convert two disused slate quarries into a Pumped Storage Battery with a capacity of up to 99.9MW.	Nature Conservation	Not significant	<p>An Environmental Impact Assessment (EIA) and Report on the Implications for European Sites (RIES) (including for the Afon Gwyrfa a Llyn Cwellyn, Menai Strait and Conwy Bay, Glynllifon and Meirionnydd Oakwoods SACs) have been undertaken for this scheme and these have been used to inform the in-combination assessment included within this document.</p> <p>The Glyn Rhonwy Pumped Storage project is approximately 8km from the Scheme and a Habitat Regulations Assessment (HRA) was carried out. The outcomes of the HRA concludes that the proposed development would have no likely significant effects, either alone or in-combination with other projects or plans, on the qualifying features/ interests of the European sites listed below:</p> <ul style="list-style-type: none"> • Afon Gwyrfa a Llyn Cwellyn SAC; • Y Fenai a Bae Conwy/ Menai Strait and Conwy Bay SAC; • Glynllifon SAC;

				<ul style="list-style-type: none">• Coedydd Derw a Safleoedd Ystlumod Meirion/ Meirionnydd Oakwoods and Bat Sites SAC;
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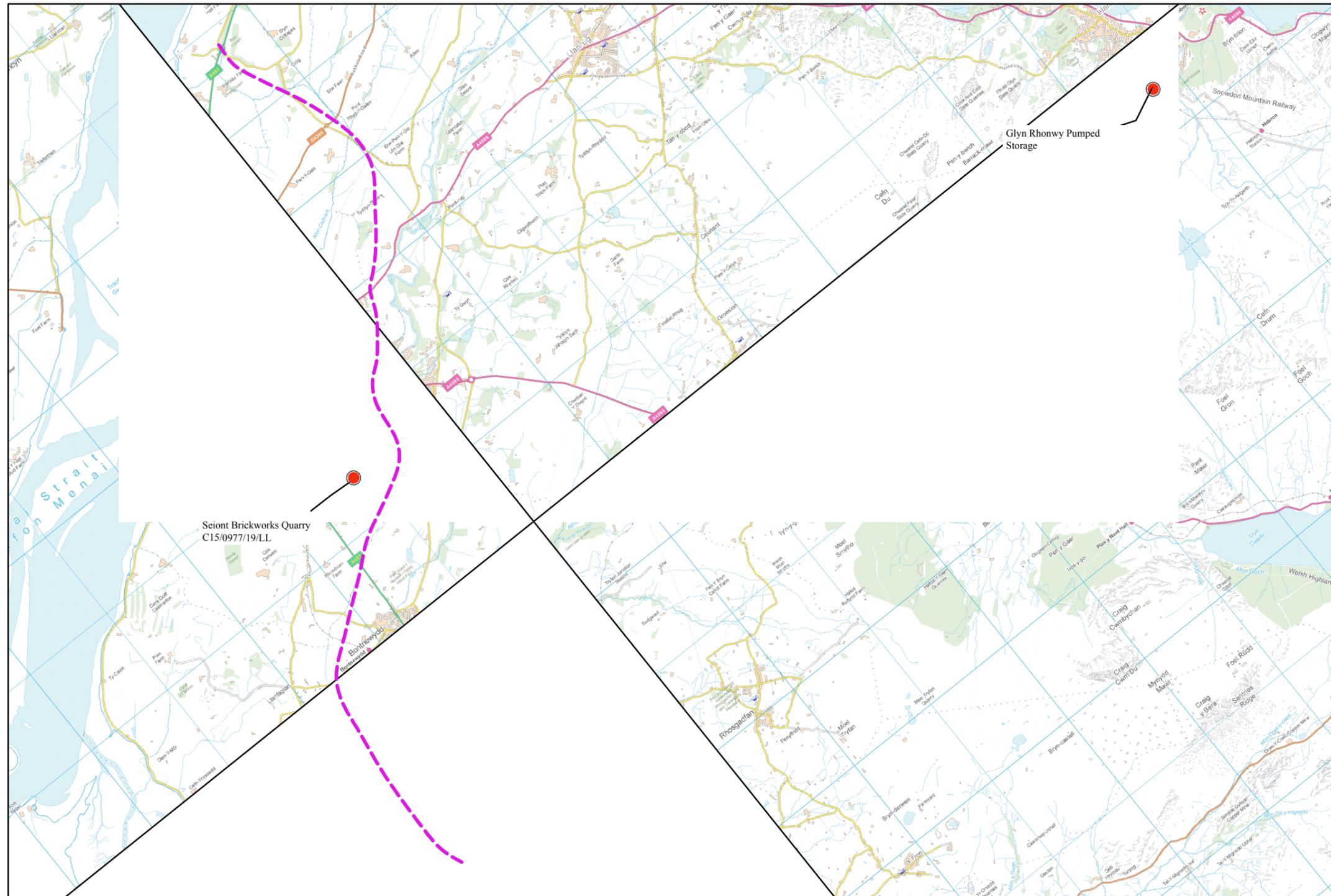
15.5 Summary and conclusions

15.5.1 Assessment of cumulative impacts from a single project (the Scheme)

There are likely to be a number of in-combination temporary and permanent impacts on some receptors as defined in table 15.2.1, however these will be reduced where possible using the mitigation methods defined in individual chapters (i.e dust suppression is described in Chapter 5 – Air Quality). Specific mitigation would be defined in the Construction Environmental Management Plan (CEMP).

15.5.2 Assessment of cumulative impacts from different projects with the Scheme

Following the research and consultation described in section 15.1, no other projects assessed would be likely to have significant effects on the environment when combined with the Scheme.



 The Scheme



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Assessment of Cumulative Effects
Plans and Projects Considered (a-c)
Sheet 1 of 3

Ty Glyn, Canol Y Dre, Ruthin
Denbighshire Tel: 01824 703661

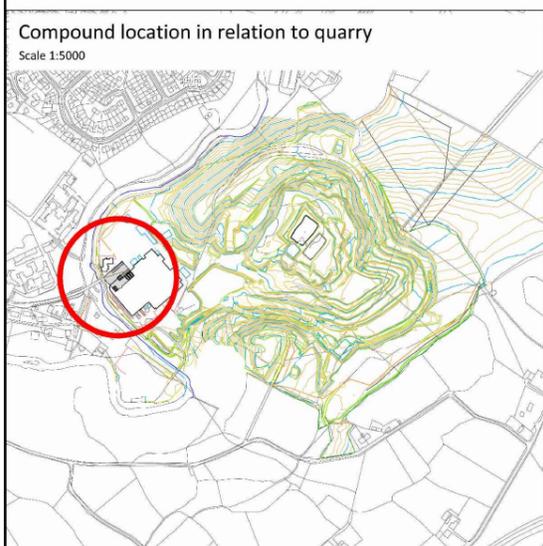
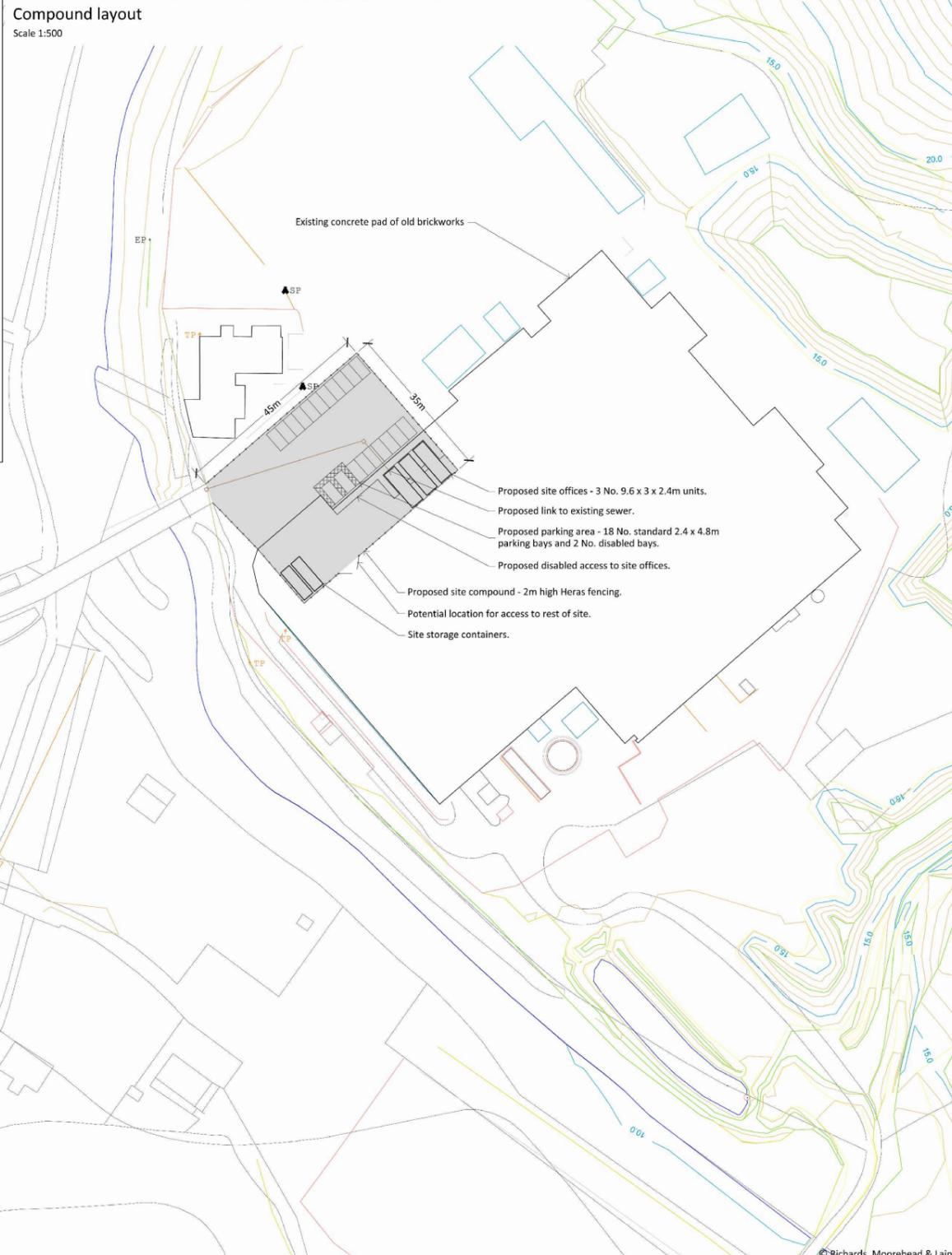
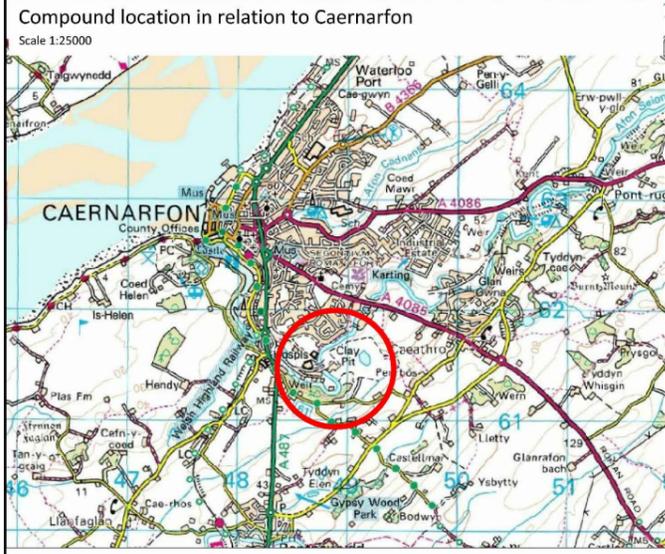
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A487 CAERNARFON AND BONTNEWYDD BYPASS
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 Plans and Projects Considered (a-c)
 Sheet 2 of 3

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Assessment of Cumulative Effects
Plans and Projects Considered (a-c)
Sheet 2 of 3

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