

CUMULATIVE IMPACT 17

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INTRODUCTION

- 17.1 This section assesses the potential cumulative impact generated by the proposed development. Throughout the technical sections and associated appendices contained within the Environmental Statement, the impacts that the development could potentially have on the site and the surrounding area has been assessed. This section draws together the findings of all the technical assessments and outlines whether any cumulative impacts may emerge from the interaction between different environmental impacts.
- 17.2 Cumulative impacts relate to the way in which different impacts can affect a particular environmental resource or location incrementally, for example, combined noise, dust and traffic emissions on a dwelling from a new road scheme.
- 17.3 In essence, cumulative impacts are those which result from incremental changes caused by other past, present or reasonable foreseeable actions together with the proposed development. Therefore, the potential impacts of the proposed development cannot be considered in isolation but must be considered in addition to impacts already arising from existing or planned development.
- 17.4 In terms of the site itself, the mothballed quarry is only used for occasional scuba diving training purposes, and this will cease upon commencement of development: there is no cumulative impact associated with continued use of the site for existing uses.
- 17.5 The Cumulative Impact assessment draws on the results of the ES to provide a summary of proposed and existing development in the area and the potential impact that these will have on residential amenity and environmental issues, when combined with the construction and/or operation of the NERRC.

SITES OF POTENTIAL CUMULATIVE SIGNIFICANCE

- 17.6 The following represent those sites or activities in the vicinity (generally within 5km) of the site that may have cause to increase amenity or environmental perceptions about combined operations. Their location is illustrated on Drawing 18-1:

Sherford Market Town (Location 1)

- 17.7 The Sherford Market Town Development scheme is located (at its closest point) approximately 3km to the west of the site.
- 17.8 The Sherford site has been identified in prevailing development plans for some ten years, and planning permission (subject to a s.106 Agreement) was issued by South Hams District Council in April 2009. It is understood that construction is due to commence in mid-2010.

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- 17.9 The proposed development includes the following, to be constructed over a ten year period:
- Approximately 5,500 houses;
 - 1 secondary school;
 - 3 primary schools;
 - a sports centre including swimming pool
 - a health centre (cottage hospital type);
 - some 67,000 m² of B-uses; and
 - over 16,500 m² of retail development.

Langage Power Station (Location 2)

- 17.10 The Langage Power Station, on the eastern outskirts of Plymouth, some 3km to the north-west of the application site, is an 885 MW CCGT (Combined cycle gas turbine) plant for which planning permission was granted in 2000. The facility is being commissioned at the time of writing (November 2009). The Environment Agency has provided the detailed dispersion modelling undertaken in support of the Permit Application for the power station.

Langage Farm Anaerobic Digestion Plant (Location 3)

- 17.11 It is understood that this scheme is a small scale AD facility, intended to provide heat and power to the yoghurt making operations at the farm. This facility is designed to handle 12800 tonnes per annum of waste:
- source separated municipal kitchen waste (catering waste) 8,000;
 - cattle slurry (Langage herd) 3,000;
 - maize and grass silage 1,000;
 - Whey waste 300; and
 - Milk rich factory waste 500.

Hemerdon Quarry (Location 4)

- 17.12 Hemerdon is one of the largest tungsten and tin resources in the western world. Hemerdon is located approximately 5km to the north-west of the site near Plympton in Devon and lies to the north of the villages of Sparkwell and Hemerdon adjacent to large Imerys china clay pits.
- 17.13 The owner's (Wolf Minerals) website indicates that the intention is to recommence mining operations in September 2010.

Lee Mill Residential Development (Location 5)

- 17.14 A proposed minor housing development of 65 homes is proposed on the northern edge of Lee Mill approximately 1.5km to the north of the EfW building. Although it is understood that no application has been submitted a request was received via the scoping responses to consider the potential

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effects of the proposed EfW development on this site, due to its perceived local importance and value to the community.

TRANSPORT

17.15 The Transport Assessment assessed the potential traffic and transport impacts of the NEQRRC and took account of the traffic generation associated with the committed **New Community at Sherford** and the **Langage Farm Anaerobic Digestion** plant north west of Lee Mill.

17.16 The assessment concluded as follows;

- the trip attraction of the proposed facility has been undertaken on a first principles basis and trips have been distributed as per the applicant's model of waste arisings. The figures have been augmented to allow for potential hourly variations and staff trips have been assumed within the assessed peak hour periods, although this will not be case in reality;
- following extensive review of the public road network, and in consideration of the Waste Local Plan allocation of the site, the existing means of access to the application site have been determined as inappropriate. Consequently, the proposals include for access to be taken via a new haul road which will connect with the C194 south of Lee Mill. The arrangement onto the C194 was originally suggested by the Highways Agency and has undergone independent road safety audit, demonstrating that it will accord with current safety standards;

17.17 With regard to the above, it is considered that the development proposals would not discernibly or materially worsen the existing operation of the highway network and that all highway improvements meet the required design standards.

17.18 All of the predicted cumulative impacts are considered to fall within acceptable thresholds and are described in detail throughout Section 6 and associated technical appendices.

AIR QUALITY

17.19 There sources of existing air pollution within 2km of the application site are predominately associated with traffic, domestic and small industrial sources. Each of these locations is considered in the context of the various environmental considerations.

17.20 During the EIA scoping consultation and public exhibitions, requests were made for assessment of any potential cumulative impacts associated with:

- Hemerdon quarry; and
- Langage Farm Anaerobic Digestion Plant.

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- 17.21 Emissions from existing sources have been addressed through the selection of baseline ambient air quality data close to the proposed development. This includes existing impacts associated with existing traffic related and industrial facilities.
- 17.22 The cumulative NO_x impact of the **Langage Power station** and the New England Quarry EfW does not make a material difference to the conclusions of this report, in that the maximum ground level impact of the two plants would be at differing locations as would be expected given that they are over 2.7km from each other. Impacts for other pollutants are predicted to be similarly small and the risk of exceedance of any EAL as a result of a cumulative impact from the two schemes is negligible.
- 17.23 During the public exhibitions, the possibility of emissions of sulphur dioxide from the ore crushing process at **Hemerdon Quarry** was raised. Having considered the planning review and available documentation, we consider that there is no evidence to suggest that cumulative emissions of sulphur dioxide from the quarry and the proposed EfW would lead to a breach of the air quality standards for this pollutant.
- 17.24 **Langage Farm Anaerobic Digestion (AD) Plant** is a small scale AD facility, intended to provide heat and power to the yoghurt making operations at the farm. The generation is only 0.1MWe. It is considered that no cumulative modelling is required and therefore no cumulative impact is expected.
- 17.25 An assessment of the cumulative air quality impacts associated with the proposed EfW and Landfill has also been undertaken. The assessment has focussed on the principal emissions to air, including:
- Air Quality Strategy Pollutants from vehicles;
 - Air Quality Strategy and WID Pollutants from point sources (EfW Stack);
 - Dust and litter emissions during the construction and operational phases; and
 - Odours and bioaerosols arising from the waste treatment process.
- 17.26 The assessments of dust, litter, odour and bioaerosols during operation have been undertaken qualitatively and have found that the risk of significant generation of emissions during operational phase is insignificant.
- 17.27 The findings of the assessment of combustion emissions from the proposed EfW facility has found that for all pollutants the maximum predicted long-term and short term impacts would be negligible.
- 17.28 The landfill will require an operational Permit under the Environmental Permitting regime. This will ensure that emissions of dust, odour, landfill gas and combustion emissions (engines / flares) are strictly controlled and do not cause unacceptable levels of risk to human or ecological receptors.
- 17.29 The impact of emissions from the EfW on sensitive ecosystems are not predicted to be significant as process contribution is a very small increase on current levels, typically less than 1%, and neither critical levels nor critical loads are exceeded as a result of EfW combustion emissions.

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- 17.30 The findings of DMRB assessment of the effects of the development traffic on air quality at the closest sensitive receptors to affected roads indicates that the significance of impacts would 'negligible'.
- 17.31 In summary the proposed operations (EfW and landfill) is not predicted to lead to exceedences of applicable standards for either human or ecological receptors and Permitting of these facilities will ensure that the sites are operated without risk to the environment and not considered to lead to cumulative effects.

NOISE

- 17.32 To provide an indication of the cumulative impact of noise, a noise assessment was carried out with reference to British Standard and other government guidance. The assessment has considered both the potential for the construction and operational proposals to give rise to noise and vibration impacts at the closest noise-sensitive receptors.
- 17.33 The noise levels from operational processes at the site have been assessed against standards appropriate for each type of source considered, i.e. BS4142 for the operation of fixed plant, MPS2 for landfill operations and the existing ambient noise levels for traffic movements. The scope of BS4142 specifically excludes the assessment of mobile noise sources and is not appropriate guidance for the assessment of the cumulative impacts.
- 17.34 The cumulative noise levels have been assessed against the existing ambient noise levels and the potential change has been compared to the impact scale adopted for this assessment.
- 17.35 The cumulative impact of the operations at the proposed development, including traffic movements would, at worst, lead to a minor, barely perceptible impact during the midweek period.
- 17.36 Whereas the cumulative impact of the operations at the proposed development would, at worst, lead to a minor, barely perceptible impact during Sunday operations.
- 17.37 In summary, the cumulative impact of all operations and vehicles movements associated with the proposed development would have no impact on the existing measured ambient noise levels at any of the properties assessed.

GEOLOGY, HYDROGEOLOGY AND HYDROLOGY

- 17.38 The hydrology of the site is dictated by the River Yealm and the sump of the quarry void, which is water-filled.
- 17.39 The River Yealm dissects the site from north to south and effectively forms the east boundary of the main portion of the site.

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- 17.40 A comprehensive review of the development proposals which may impact the baseline hydrology and hydrogeology of the site is provided below:
- change of site use from quarry to landfill;
 - construction of an EfW plant and associated infrastructure, bottom ash recycling facility, offices and hardstanding areas; and
 - construction of a new access road.
- 17.41 This potential cumulative impacts of the proposed development on the hydrogeological and hydrological environments have been assessed. Impacts were considered separately for the construction and operational impacts of the development.
- 17.42 A qualitative risk assessment methodology was applied, in which the significance of an impact is determined based on both the probability that an impact will occur and the magnitude of the impact, if it were to occur.
- 17.43 This approach provided a mechanism for identifying mitigation measures appropriate to the risk presented by the development. It allows effort to be focused on reducing risk where the greatest benefit may result.
- 17.44 It is not considered likely that the proposed development will generate a negative cumulative impact on the local water environment. Overall, it is concluded that, with respect to geology, groundwater and surface water, there would be no significant residual impacts of the proposed development with the proposed mitigation measures in place.
- 17.45 The development will not increase flood risk on other sites in the vicinity.

LAND QUALITY

- 17.46 The human health assessment performed to date demonstrates that the soils on this site do not pose an unacceptable risk to the health of future site workers and visitors.
- 17.47 A conceptual site model has been developed (as part of the Human Health Impact Assessment) for the NERRC that has established potential sources of pollution, receptors and relevant pathways of potential exposure to persistent pollutants such as heavy metals and dioxins/furans from particle phase and vapour deposition to soil.
- 17.48 As potential linkages were identified an assessment of the risk these posed to human health was undertaken.
- 17.49 Predicted soil concentrations were compared to generic assessment criteria generated by the CLEA v1.05 model, which used to assess human health risks deriving from contaminated land.
- 17.50 Results from generic quantitative risk assessment for metals indicate that indirect, long-term exposure to all metal contaminants emitted from the proposed EfW facility and subsequently deposited to soil does not pose a

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health risk to downwind receptors. This conclusion is deemed to be robust as it is based on a worst case scenario and there is a large margin of safety (>3,500) between the highest predicted soil concentrations and soil assessment criteria that are protective of the most sensitive human receptors.

- 17.51 It is not considered that the proposed development will generate a negative cumulative impact on local land quality

LANDSCAPE AND VISUAL

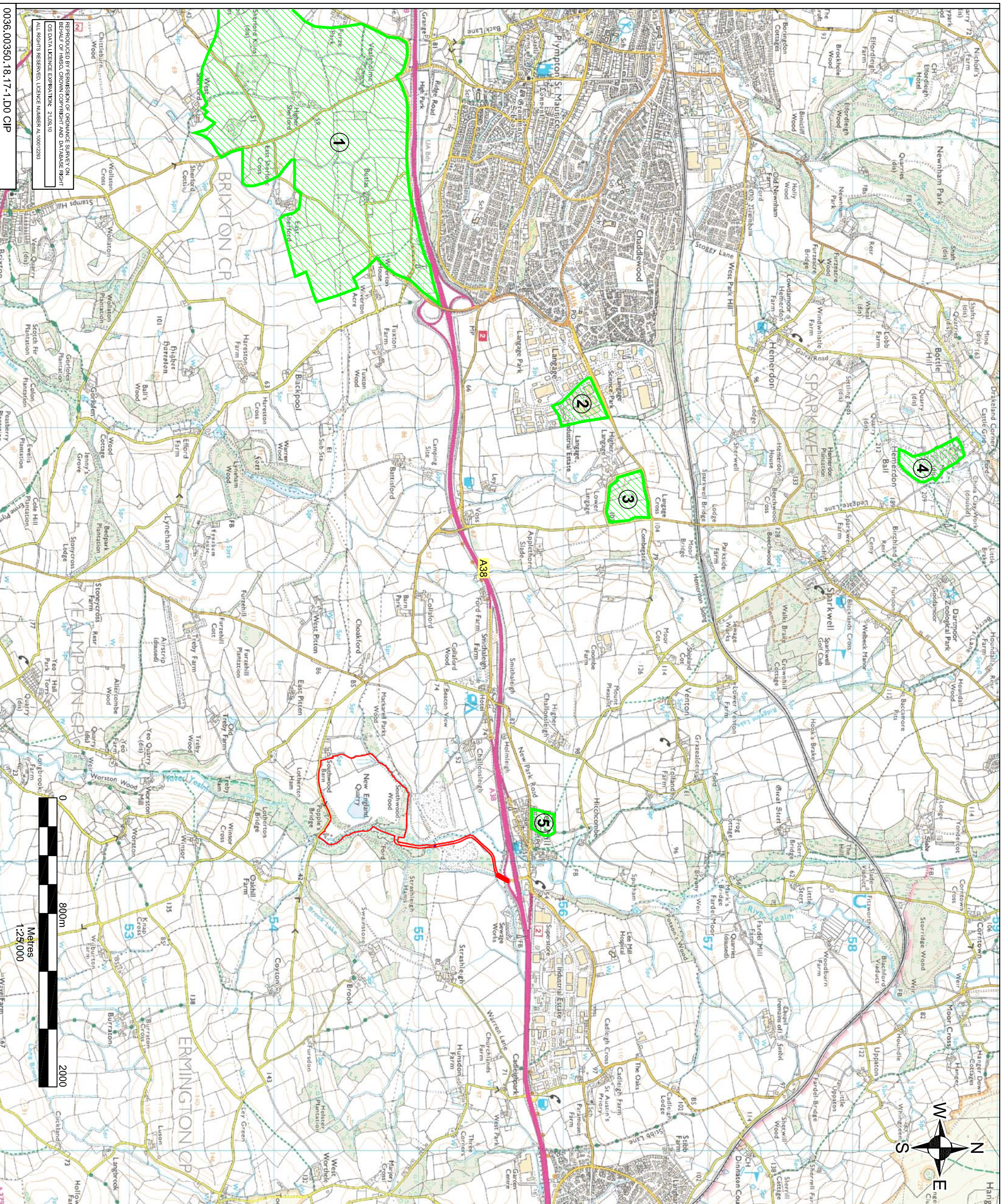
- 17.52 The proposed development will be seen within the context of existing development of industry and retail units east of Lee Mill and north of the A38, the **Langage Power Station and proposed Sherford Market Town**
- 17.53 The industry and retail units east of Lee Mill provide a context of large scale buildings within the adjacent landscape, although divided from the site by the A38.
- 17.54 The proposed dome will provide a visual focus to the area, and from this perspective is considered positive.
- 17.55 The EfW is a very different standard of building allowing it to be successful within its own context south of the A38 as a landmark building. Some cumulative effects would thus occur particularly from the area of Viewpoint C (included at Section 11) . However, these cumulative effects are not considered to be any greater than the landscape and visual effects already identified.
- 17.56 The proposed stacks would be seen from a number of viewpoints in conjunction with the Langage power station and its much shorter but wider enclosed stacks. The viewpoints concerned include Viewpoint A, D, F, H, I, J, O and Q (please see Landscape and Visual Impact assessment).
- 17.57 This selection of viewpoints illustrates the visibility of the power station and the two approaches to mitigation. The power station stacks (155m AOD height) have been engineered to be short to reduce visual impact on the surrounding landscape. However, their width (circa 20m x 10m) makes them visible over longer distances than a thin stack. The proposed EfW stacks are tall and thin (2m diameter each) with a top height of 150m AOD, and are therefore lower than the Langage stacks in terms of elevation, but are taller overall due to the lower base position. The cumulative effects are most likely to occur when the two sets of stacks are particularly visible due to sun light illumination at sunrise/sunset or when both stacks are producing a plume (please note this would not be a regular occurrence).
- 17.58 The new proposed settlement of Sherford would have limited visibility of the proposed EfW (see Viewpoint N Landscape and Visual Drawings Technical Appendix) and the intervening rural landscape would distance the two developments from each other. It is not considered that the proposed

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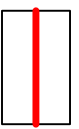

development would have more than minor/moderate effect at the most, and no cumulative effects would occur.

SUMMARY

- 17.59 The environmental assessment process within this ES considers the potential for cumulative impacts to arise, as a result of the proposed development in conjunction with other developments within the vicinity of the site.
- 17.60 No major cumulative impacts have been identified however the proposal does have the potential to have negative impacts on Ecology receptors identified within the comprehensive Ecological Impact Assessment. Nevertheless, it will be possible to mitigate most of the negative ecological impacts of the development.
- 17.61 These assessments have concluded that the NERRC will not cause negative cumulative impacts when considered in addition to existing and forthcoming developments in the vicinity of the site. In addition, the NERRC will provide local jobs and provide a sustainable waste facility, which also has the capability of producing renewable energy.



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- LEGEND**
-  APPLICATION BOUNDARY
 -  APPROXIMATE EXTENT OF DEVELOPMENT BOUNDARY

- ① SHERFORD NEW TOWN (PROPOSED)
- ② LANGAGE POWER STATION (OPERATIONAL)
- ③ LANGAGE FARM ANAEROBIC DIGESTION PLANT (PROPOSED)
- ④ HEMERDON TUNGSTEN MINE (PROPOSED)
- ⑤ LEE MILL RESIDENTIAL DEVELOPMENT

Viridor

SLR
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 RESOURCE RECOVERY CENTRE
 PLANNING APPLICATION
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1771

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 Date JANUARY 2010

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