

HARLEYFORD AGGREGATES LTD

**Lower Hall Farm, Samlesbury,
Lancashire**

**Proposed Sand & Gravel
Extraction**

ENVIRONMENTAL STATEMENT

January 2021

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1 THE REGULATIONS

INTRODUCTION

1.1 This Environmental Statement (ES) in relation to the proposed development at Lower Hall Farm (LHF), Samlesbury, has been prepared in accordance with The Town and Country Planning (Environmental Impact Assessment) Regulations 2017, SI 2017 No 571 (the Regulations) which incorporate various amendments to previous Regulations.

1.2 The proposed development is Schedule 1 EIA development as defined in the Regulations because it consists of the carrying out of development of quarrying “where the surface area of the site exceeds 25 hectares”.

1.3 The fundamental purpose and goals of the amendments to the original Regulations is to provide more effective EIA by, inter alia, (a) streamlining ES assessments to reduce regulatory and administrative burden and reduce costs in line with the drive for smarter regulation, (b) to move away from a purely procedural process to focus the ES on the issues which are significant, and (c) to thereby achieve an ES which is shorter and relevant.

1.4 These aims are to be achieved by the application throughout the EIA process and in the ES of restricting assessment to addressing only those effects and impacts on factors, or on relevant elements of such factors, (as identified in the Regulations) which are “significant”. Impacts or effects which have little or no significance need only very brief treatment mainly merely indicating that their possible relevance has been considered but due to lack of significance they have not been subject to further assessment.

1.5 Other amendments in the Regulations relate to providing that an ES considers, where relevant and where significant, matters relating to Climate Change, the risks of major accidents or hazards, and the requirement to take account of other relevant available environmental assessments so as to reduce duplication and costs and focus the ES on significant issues not elsewhere resolved.

1.6 The Regulations define in regulation 4(1) that Environmental Impact Assessment is a ‘process’ which consists, inter alia, of the preparation of an Environmental Statement considering factors as specified in that Regulation and such consultation and publication as set out in the Regulations and such subsequent determination.

1.7 Regulation 4(2) states that the EIA process must identify, describe and assess in an appropriate manner for each case the direct and indirect significant effects for the relevant factors. The vehicle for this is the ES. Regulation 18(3), (4) and (5) and Schedule 4 of the Regulations set out what factors should be considered when preparing an ES but that is subject to the proviso of the need to only assess significant impacts of such factors.

1.8 Regulation 18(3) states that an ES should include at least:

- (a) a description of the proposed development,
- (b) a description of the likely significant effects of the proposed development on the environment,
- (c) a description of features or measures in the proposed development designed to avoid, prevent, reduce or if possible offset likely significant effects on the environment,
- (d) a description of the reasonable alternatives studied by the developer,
- (e) a non-technical summary of (a) to (d) above, and
- (f) information on relevant specific characteristics of the development as listed in Schedule 4 of the Regulations.

1.9 Regulation 18(4) states that an ES must:

- (a) where a scoping opinion has been issued be based on that scoping opinion (no such opinion has been sought in relation to this ES),
- (b) include such information reasonably required to reach a reasoned conclusion taking into account such current knowledge of and methods of assessment, and
- (c) must be prepared taking into account the results of any relevant environmental assessment in the UK where the results are relevant to the development and are reasonably available to the person preparing the ES with a view to avoiding duplication of assessment.

1.10 Regulation 18(5) states that an ES must:

- (a) be prepared by competent experts, and
- (b) must be accompanied by a statement from the developer outlining the relevant expertise or qualifications of such experts.

Competent Experts

1.11 What is a competent expert is not defined in the Regulations. Experts in legal proceedings are defined by the CPS as individuals who by formal academic study or experience have acquired sufficient knowledge of the relevant subject to render their opinion of value and who can provide impartial, unbiased and objective evidence.

1.12 That definition would be relevant to an ES. Statements of expertise are provided in Appendix A.

Regulation 18(4)(c) Other Relevant Environmental Assessments

1.13 The requirement under regulation 18(4)(c) relates to any relevant environmental assessment and is not restricted only to those assessments

on site, or nearby, or as produced as an Environmental Statement as part of EIA development. 'Relevant' is not defined. The extent to which the results of such assessments should be taken into account is not defined. It is not restricted to considering only such assessments of development where the development was subsequently permitted.

1.14 In this instance consideration will be given to the outline of the effects considered in any such environmental assessment, an outline of the conclusion of the significance or otherwise of the effect (with or without mitigation), and the overall decision of the relevant planning authority on the acceptability of those conclusions, as may be applicable at LHF.

1.15 For the purposes of this ES such relevant assessments are those related to potentially significant effects, where relevant, which may arise on site or affect the site or surroundings arising from development proposals on this site or in adjoining or more distant locations

1.16 There are no such other assessments on the site itself. A number of such assessments have been undertaken recently for development adjoining or nearby the site, or which may relate directly to a factor at the site. The most relevant are noted below

1.17 The three most recent and relevant such assessments were in connection with planning applications for:

- (i) the removal of Samlesbury Weir and the restoration of the site, where the works both adjoined and crossed part of this proposed development,
- (ii) night-time music etc activities at the adjacent Brockholes Centre, and
- (iii) the construction and operation of an EfW facility on the southern edge of Red Scar Industrial Estate.

1.18 The results of all three assessments demonstrated that the relevant developments would not give rise to likely significant harm to the environment locally or over a wider area either individually or in combination with other permitted or proposed development. The conclusions of all assessments were accepted by the relevant statutory agencies and planning authority and permission was granted.

The Weir Removal

1.19 The ES for the weir removal did not identify any significant negative harm but identified a number of positive biodiversity impacts. That demonstrates that a construction or other activity may have short-term impacts, that such impacts may be significant or not over the short-term, but that the works can provide long-term positive outcomes.

1.20 Similarly each phase of the construction or extraction operations at LHF will have short-term impacts (shown to be insignificant later in this ES), but those short-term impacts will provide a range of long-term positive outcomes for the environment and people.

Night Time Noise from Brockholes Centre

1.21 Planning permission was sought for music and other potentially loud noise producing events to take place until late at night at the Brockholes Centre. The activities would also involve numerous vehicles leaving the site at cessation of the events.

1.22 A noise assessment undertaken demonstrated that the ambient night-time noise level (mainly from the M6) in Samlesbury (measured at the Church) was of such a level that the additional noise would not cause significant further impact. Consultation with Natural England did not identify any likely adverse impact on protected sites or species.

1.23 That noise assessment confirms the dominance of noise from the M6 throughout the night and day over the wider location. It confirms that the noise levels shown on the DEFRA Strategic Noise Map (50-55dB Lnight) is representative of the background L90 at night over residential properties in Samlesbury.

1.24 While the mineral extraction operations will not take place at night, the noise assessment also thereby confirms that the current background day-time noise as shown on the DEFRA Strategic Noise Map at properties in Samlesbury will at circa 55-59.9dB LAeq 16 hour (07.00-23.00) and 24 hour LDEN of 60-64.9, mask noise arising from the proposed mineral extraction operations at LHF at those properties.

The EfW Incinerator

1.25 The ES for the development of the EfW incinerator is particularly relevant because it relates to a development that would bring permanent industrial development closer to and impacting on the site and its surroundings. That development would produce potentially negative impacts from air quality emissions and also from emissions of noise, light pollution, on residents and on designated and non-designated biodiversity sites. It would also produce potential negative visual impacts over a wide area, including the whole of the application area at Lower Hall Farm and beyond.

1.26 The relevant ES was submitted in 2019. The development was for the construction of a municipal waste energy from waste (EfW) incinerator with associated energy production. The main development units are a large building (174 by 121 metres and up to 37 metres in height) with two exhaust stacks rising to 85 metres. Vehicle movements would be around 186 hgvs per day plus further unquantified movement of staff cars.

1.27 The development was granted full planning permission in 2019 but has not commenced as yet. It lies on the southern extremity of Red Scar Industrial Estate at its closest some 60 metres from the Red Scar and Tun Brook Woods SSSI. It lies over part of the Pope Lane Ponds Biological

Heritage Site. This will be the nearest industrial activity to the development area at LHF.

1.28 The main potential effects in the ES relevant to LHF and considered here relate to air quality, noise pollution, light pollution and visual impact.

1.29 The potential significant air quality considerations in this assessment related to human health and the ecological impacts of a range of air quality pollutants. Air quality emissions would arise primarily via the two stacks and be dispersed over a wide area extending over the LHF site and well beyond. The ES considered all the air quality pollutants potentially arising from construction and both operation and transport.

1.30 The assessment noted those numerous air quality pollutants known to arise from such development extending to nitrogen dioxide, sulphur dioxide, particulates, ammonia, acid gases, various metals, dioxins, furans, PCBs, PAHs, etc and considered that most of those would not give rise to any significant impacts.

1.31 In relation to human health, the assessment focussed particularly on those chemicals of potential concern which would arise from the incinerator namely (i) PCDDs, PCDFs and dioxin-like PCBs; (ii) benzene and benzopyrene; (iii) mercury and mercuric chloride; and (iv) metals including cadmium, arsenic, chromium and nickel. Those chemicals of potential concern to human health arising from the EfW incinerator will not arise at any identifiable level from the mineral extraction operations at LHF.

1.32 The extent of sensitive receptors considered was within a radius of some 2 kilometres from the stacks. The assessment was primarily focussed on receptors in the urban area of Preston to the west or north of the development because that included the majority of the sensitive receptors. This area includes a significant part of the population of Preston, a number of schools and child care facilities, a hospital as well as public open space and recreation areas. Background levels of all these pollutants in the surrounding urban areas of Preston to the north and west of the proposed development are already significant, notably due to the presence of the M6, urban traffic and the existing densely developed industrial and urban areas.

1.33 There was limited assessment of impacts on receptors to the east towards LHF. The 2 kilometre radius of sensitive receptors extended to encompass all of the LHF development area, Lower Hall Farm itself, 'The Brambles' and 'Bezza Villa' at Potters Lane/Dean Lane, Seed House Farm and most of the isolated residential properties on Potters Lane towards the A59 including the School and Church.

1.34 The radius of assessment also extended over Seed Park Wood and Samlesbury Wood and over the Brockholes Centre and therefore encompassed most of the areas of ecological interest near the development footprint of LHF.

1.35 In relation to human health, the conclusion of the assessment was that the additional emissions of the various pollutants from traffic and the operation of the incinerator would have a 'negligible' impact on human health within the radius of assessment. Further it was concluded that the effect on human health will be 'not significant' in isolation or in combination with other development in that area. This was accepted by the relevant regulators.

1.36 In relation to ecological considerations the conclusion of the assessment was that the effect of the additional emissions on the Red Scar and Tun Brook Woods SSSI would be 'not significant'. This was initially not accepted by Natural England due to its concerns as to impacts of certain chemical pollutants intimately associated with combustion processes on the SSSI.

1.37 Natural England subsequently withdrew its objection on the basis that while the proposal would increase existing pollution levels at the SSSI there was no evidence that this current or historic pollution had produced damage to the SSSI or that the additional pollution arising from the development would be likely to harm the ecological features for which the site has been notified.

1.38 The Wildlife Trust for Lancashire also had no objection to the impacts of the increase in air pollution on either the SSSI or on their Red Scar Woods Nature Reserve or as would impact on their Brockholes Centre which immediately adjoins the SSSI to the south.

1.39 In relation to dust the assessment concluded that the effects will be 'not significant' on surrounding areas including residential areas and ecological areas such as the Red Scar and Tun Brook Woods SSSI.

1.40 The assessment also considered the impact of odour and concluded that this would not be significant. Odour will not arise with the mineral operations at LHF

1.41 The overall conclusion was that additional emissions of a wide range of air pollutants will arise and impact on the site and surrounding areas, including residential areas, schools and various ecological receptors but that the level of such pollutants will be such as to be 'not significant'.

1.42 This assessment thereby confirms that despite the adjacent land having existing significant levels of background air pollution, caused by the M6 and other industrial etc processes, that the additional air pollution arising from the development will not harmfully impact on either human health or ecological receptors over most of the LHF development site.

1.43 By default, the assessment shows that those areas beyond the 2 kilometre assessment limit will be subject to lower levels of such emissions.

1.44 The assessment thereby demonstrates that no harm will be caused to any human health or ecological receptors over that part of the LHF site.

1.45 Given those conclusions and that the development at LHF will not emit the various pollutants typically emitted by the EfW, no significant risk to human health from air quality pollutants is likely to arise from the mineral extraction operations at LHF. Similarly there is no risk of harm to ecological receptors nearby LHF from air quality pollutants from the mineral operations.

1.46 The application to which that ES related was granted consent. The determination of an application where an ES is Regulation 18(4)(c) relevant is not itself a matter directly relevant to conclusions in this ES as to the relevance of the conclusions of that ES, because that decision may be determined by other matters (inadequate housing supply, conflict with AONB designation, etc).

1.47 It is relevant to note that in relation to that ES that there were ultimately no objections to the ES conclusions, or the development by, the County Council, nor the Preston City Council, South Ribble Borough Council, or Ribble Valley Borough Council or either Grimsargh or Samlesbury Parish Councils.

2 THE PROPOSED DEVELOPMENT

Introduction

2.1 The application consists of the phased extraction of a net saleable reserve of some 3.0 million tonnes of sand and gravel, the erection of a processing plant and the provision of associated facilities requisite for those operations and the construction of a private access road between the A59 and the process plant area.

2.2 The area of the application is mainly improved and semi-improved agricultural grassland with minor hedgerows and the occasional tree. The exception is a low lying area of a former mineral working which consists of regenerated woodland, agricultural land and a pond.

2.3 The application area includes operational land, margins, landscaping and planting areas as detailed on the plans submitted with the planning application and as more fully described in the planning statement accompanying the application.

2.4 The application includes various phased landscaping and screening works; new tree and hedgerow planting; the provision of new water habitat, watercourses and ponds; and provides for the final restoration of the site and for aftercare.

2.5 On completion of the mineral extraction and processing operations the processing plant will be taken off site and the processing plant site and the private access road will be removed and the land restored mainly to woodland.

2.6 The construction and extraction phase of the development will involve the taking of agricultural land and other land and the removal of soils and subsoils to enable the access road and processing plant to be constructed and for extraction to commence.

2.7 The soils, subsoils, overburden and such unsuitable bedrock excavated for the access road and the plant site will be retained on site for use in screening bunds. On completion of operations this material will then be used in restoration of the access road or the plant site. The soils, subsoils, overburden and such unsuitable bedrock excavated from the mineral site will initially be used in screening bunds but then used in phased restoration or in the final restoration.

2.8 Water used in the processing plant will be sourced from an excavated clean water pond and after use in the processing plant will be returned to a silt pond (or series of ponds) and/or via a silt press if so desired, and then drain into a clean water pond for further use in the processing plant. The only losses of water from this process will be that from evaporation or that contained within pore space in sold aggregate.

2.9 Dried silt in ponds or from a silt press will be used in restoration. Process 'waste' from the plant (essentially screened off lumps of clay or oversize gravel, cobbles, etc) will be used in the restoration works.

2.10 The processing plant will be electrically powered. The extraction, unprocessed mineral haulage and load out will be undertaken by diesel powered mobile plant.

2.11 The development will require the removal of trees and hedgerows mainly of poor biodiversity value with the replacement in restoration of biodiversity target habitats including wetland, reed beds, ponds, and woodland. The restoration will enhance biodiversity by increasing connectivity.

2.12 The application is accompanied by a draft Unilateral Undertaking (UU) which includes obligations to maintain existing landscape and ecologically valuable woodlands; maintain new planting; and other obligations. In the event that permission is proposed to be granted by Lancashire County Council (LCC) as the mineral planning authority (MPA) then the UU will be signed and submitted.

2.13 The development application will produce a net immediate and long-term increase in wetland, ponds, hedgerows and woodland habitat. The development operations will provide passive substantial and significant flood alleviation capacity which can subsequently be incorporated into a formal flood management scheme subject to any additional relevant permissions and permits.

3 ALTERNATIVES

Introduction

3.1 The EIA regulations provide that where a developer considers alternatives to the proposed development then such alternatives should be assessed in the ES in so far as they are reasonable alternatives as may be considered by the developer.

3.2 The regulations do not require a developer to review all alternatives but only those which the developer has identified and which are reasonable to consider. In considering any alternatives a developer should indicate the main reasons for rejecting such alternatives, including the environmental effects (where applicable and identifiable). The 'do nothing' alternative of not pursuing the application is not required to be addressed and is not addressed.

3.3 The considerations relating to other sources of sand and gravel or the potential of other minerals are not alternatives over which the applicant has any control and are not considered in this ES although their supply potential and limitations are described in the Planning Statement in relation to Landbank matters.

3.4 The alternatives considered are identified below.

1. Alternative supply from other deposits in the control of the Applicants
2. Alternative supply from other deposits in the control of the Trustees
3. Alternative methods of working at LHF
4. Alternative processing plant location at LHF
5. Alternative access routes/junctions to/on the A59
6. Alternative transportation modes
7. Alternative restoration

ALTERNATIVE SUPPLY FROM OTHER DEPOSITS IN THE CONTROL OF THE APPLICANTS

3.5 The Applicants have no other deposits in their control in the vicinity of LHF or elsewhere in Lancashire.

ALTERNATIVE SUPPLY FROM OTHER DEPOSITS IN THE CONTROL OF THE TRUSTEES

3.6 The application does not extend over all the land in the control of the Trustees. There are some other deposits of sand and gravel elsewhere in that land.

East of application area

3.7 The application area is part of the largest deposit of fluvial sand and gravel in the control of the Trustees. Part of this deposit to the east and

south running up to Seed House Farm, Seed Park Wood and Bezza House is excluded from the application. The area was included in the preliminary mineral and planning assessment but has been excluded from the Applicants control and subsequent application due to a combination of non-commercial yields and the presence of major infrastructure (pipelines). These constraints are unlikely to be resolved.

3.8 Extraction in this area would be constrained by the need to take account of potential negative environmental and amenity impacts on property which would be difficult to resolve other than by shrinking the operational area. This would leave a very small resource which would also be affected by the route of the pipeline.

3.9 Due to the potential environmental and infrastructure constraints coupled with the non-commercial yields this area does not represent an alternative to LHF.

Adjacent to Junction 31 of the M6

3.10 There are two small fluvial deposits located to the south of the Ribble and southwest and southeast of the M6/A59 junction respectively.

The SW sector

3.11 In the south west sector the deposit consists of sand and gravel in a floodplain and a terrace. The sand and gravel in the floodplain is thin, discontinuous and overlain by thick overburden and uneconomic. The sand and gravel in the terrace is thicker and potentially workable. The workable mineral is around 240,000 tonnes gross. The site is used for agriculture mainly for arable crops with no significant biodiversity interests. There are no hedgerows within the site but it does contain a few mature trees over the workable mineral and the retention and protection of those would reduce the total yield.

3.12 The area is mainly flat and exposed and visually prominent from the A59/M6. The stand-off required to the M6 may reduce the total workable mineral. Any effective screening would reduce the total available mineral. A mobile processing plant and associated infrastructure could be located on site but a stand-alone plant might not be viable economically. However, the deposit could be worked in short extraction annual campaigns. Noise from extraction or a processing plant would probably be insignificant against the noise from the M6/A59.

3.13 There is no existing access off of the M6 slip road or the A59. Agricultural vehicles currently infrequently access the site via an underpass under the northbound 'off' slip road of the M6 from an existing junction on the westbound carriageway of the M6/A59 junction. This access is also currently used by motorway police and highways agency vehicles to access an operations building. However, this junction, while adequate for police vehicles and the very occasional agricultural vehicle, has limited sight lines to the east for hgv's and limited weaving distances for such vehicles.

3.14 Development of this site may therefore require a new 'left in - left out' access onto the M6 slip road or a new 'left in - left out' or more complex junction with 'ghost' islands on the westbound A59. Level differences would need to be resolved, but an access on to the A59 would not sterilise any economic mineral. Depending on the junction vehicles leaving the site, but needing to join the M6 and/or go east may need to travel west on the A59 into Preston some 1.5 kilometres to the roundabout junction with the A5085 to turn and then travel back eastwards. This would increase existing traffic impacts on this length of road and may not be an environmentally acceptable alternative. However, if worked on a campaign basis, limits as to access hours might overcome this and be acceptable.

3.15 This alternative will not meet the supply requirements; will not postpone the need for permission at LHF; and will have operational difficulties. Due to access limitations it may lead to a minor increase in traffic and noise and air pollution. It remains a potential site for a small scale operation but is not an alternative to LHF.

The SE Sector

3.16 The outcrop of the deposit in the south east sector is more extensive. However, in this location, most of the deposit is marginal and consists of thin (< 1.0 metre) sand and gravel overlain by and overlying non-mineral. Part of the deposit has been sterilised by fill material emplaced in connection with the former M6/A59 junction layout. The potential gross yield is less than 200,000 tonnes and is probably uneconomic.

3.17 The area is currently to agricultural use and contains a number of hedgerows and mature trees but is of no significant biodiversity value. The area is flat and exposed and visually prominent from the A59. Any effective screening of plant etc would significantly reduce the total available mineral. There is no suitable location for a processing plant and associated infrastructure. Access is possibly via Vicarage Road south of the A59 and on and off the A59 at that location. There are a number of water supply boreholes in this area which would restrict extraction operations, and/or mitigation works, significantly.

3.18 This alternative will not meet the supply requirements; will not postpone the need for permission at Lower Hall Farm; and will have operational difficulties. It remains a potential site for a small scale operation but is not an alternative to LHF.

Other Minor Deposits

3.19 There are some very minor fluvial deposits elsewhere in the control of the Trustees and indications from boreholes of possible glacial fine sand beneath and within thick deposits of glacial till (essentially clay) on higher ground.

3.20 None of these minor deposits are commercially viable due to their small size and uncertainties as to the presence of a commercial

deposit. The glacial deposits consist of thin (< 1.0 metre) fine silty sands set in clay which are not suitable for concreting end uses and impossible to recover commercially.

3.21 Extraction of any significant volume would require very extensive and complex operations producing similarly extensive environmental impacts. These are not an alternative to LHF.

Summary

3.22 The combined output from both sites near the M6 might provide 2-3 years gross supply together at the proposed LHF rate of 150,000 tpa. There are various operational, regulatory and environmental constraints to be overcome. The operational constraints are significant and will reduce the gross yields. Some material could be worked in short extraction annual campaigns. No detailed consideration or surveys of environmental impact have been undertaken.

3.23 In any event, even if the difficulties of both of the sites could be overcome, their development would provide only a very short-term 'fix' for the supply problem in Lancashire. It would not provide any delay in the need for an application to be submitted at LHF and for permission and extraction to commence at LHF. Development of these two areas is therefore not an alternative to LHF.

ALTERNATIVE METHODS OF WORKING

3.24 The proposed working method involves working that part of the deposit above the water table 'dry' and then that part within the water table 'wet'. The alternative considered would be to de-water the deposit by cells and work it all 'dry'. That has been rejected due to additional pumping costs, further noise generation and the risk of inflow or harm to the River Ribble and groundwater resources. Such methods would also slow down the colonisation/restoration of the extraction area and delay/conflict with its early availability for flood relief.

3.25 This is a commercially viable alternative but has been rejected because of the potential greater environmental and amenity harm and the delaying effect on restoration and flood alleviation potential.

ALTERNATIVE PROCESSING PLANT LOCATION

3.26 The proposed processing plant location benefits from being located nearest to where the private access road reaches the site as well as being screened from the nearest residential property by existing mature woodland and buildings associated with Bezza Nursery.

3.27 Alternative locations at LHF (both within the application area and other land to the east) would not be able to utilise those benefits, be more exposed and require more visual and noise screening, and/or would be closer to residential property.

ALTERNATIVE ACCESS

Alternative location of junction on the A59

3.28 Alternatives for the location of the junction on the A59 are limited by the north-south line of the high pressure gas main to the east (and land ownership limitations just beyond) and the extent of ownership to the west together with the vertical alignment of the A59 to the west and ground conditions/woodland in that direction. No better alternative location for an access on the A59 exists.

Access via Potters Lane

3.29 Potters Lane is partly a public road and partly a private road which is also a bridleway available for walkers, horse riders and cyclists. The route provides access to residential and commercial property as well as agricultural operations and to the Samlesbury Primary School and Samlesbury Church. The route is now part of an identified cycle network to primarily provide a route off of the A59 for cyclists between the wider Preston area and the expanding enterprise zone at the former Samlesbury Airfield.

3.30 The route is effectively single vehicle width with a few passing areas. The route has some restricted vertical or horizontal curvature. It is mainly bounded by hedgerows, which contain a large number of mature deciduous trees, ditches and limited verges and partly in cutting. The foundation conditions are unknown. The bridge over the Bezza Brook may not be adequate for a significant increase in use by HGVs over a period of some 20 years. Potters Lane joins the A59 roughly where the A59 starts to climb out of the valley at a junction with somewhat difficult vertical and horizontal alignment.

3.31 To use Potters Lane for long-term access would require works along the route and at the junction with the A59. Such works may require upgrading of foundations and drainage. It would require the removal of sections of hedgerow and numerous mature trees, so as to improve sight lines or create passing places or longer sections suitable for two HGVs to pass. Improvement works may be required at the junction with the A59. Some of these works, including that at the A59 junction, would require access to land not in the control of the applicant or the Trustees, and therefore are not achievable at this time.

3.32 The use of an improved Potters Lane for long-term access would probably still produce conflict with access to residential properties and the school and would conflict with its use as part of the cycle network.

3.33 Potters Lane is not a viable alternative due mainly to the extent of environmental and amenity impacts and the inadequacies of the road.

Alternative Route to the A59

3.34 The route of the private access road was defined following consultation with the Trustees and the relevant tenant farmers. That engagement produced some minor amendments which have been included in the scheme.

3.35 In concluding the proposed route a number of alternatives were fully evaluated in engineering and planning terms. This considered alternatives in relation to minimising disruption to farming practice and land take; in relation to the extent and significance of works on and harm to woodland, hedgerows, etc (including protected trees and woodland); drainage works; the potential to provide environmental mitigation through new planting, new hedgerows and new habitat; minimising disruption to users of Potters Lane; minimising impact on and diversion to Public Rights of Way; minimising or mitigating noise, dust or visual intrusions to residents and others.

3.36 None of the alternatives considered demonstrated any advantage over the chosen route and some consumed more land or were more disruptive to farming as well as producing considerably more impacts on habitat and amenity. No better alternative route for the private access road has been identified.

3.37 However, one tenant farmer proposed alternatives which were evaluated in the design process.

3.38 The main alternative suggested was a route which followed Potters Lane from the north of Bezza Nursery to the existing 'greenway'/PRoW by Seed House Farm; then using that 'greenway' heading roughly east, then either south to the A59, or continuing east over the gas and water mains, through Seed Park Wood, to Dean Lane and then south to a junction on the A59.

3.39 This route is considered to be less acceptable because it would require considerable improvement works to Potters Lane, Dean Lane and the 'greenway'; require the removal of a large number of trees and lengths of hedgerows; would cut through Seed Park Wood; require very costly and major works in the vicinity of the gas and water mains; conflict with agricultural and PRoW access; produce significant more noise to residents, which could not be effectively mitigated; and require a more complex junction at Dean Lane with the A59. This route is not an acceptable alternative for engineering but also environmental reasons.

3.40 A minor alternative suggested by a tenant was to divert the route to around the edges of Bezza Brook field from its direct course across the field. As proposed the direct course would not be fenced or require any lateral mitigation and therefore enables the field to be farmed as a single entity. A fully worked up engineering and environmental assessment of the alternative was prepared. This took account of the need for stand-off distance from the existing mature trees around the field and to Bezza Brook

and the need for noise bunds because the route came close to residential property. The route itself was more complex but in addition the noise mitigation and other stand-off requirements permanently removed a significant area from agricultural use. This minor variation in the route is therefore not an acceptable alternative.

3.41 The alternatives investigated produced greater impact on the environment, amenity and farming and have been rejected.

Access via Higher Brockholes and Junction 31 of the M6/A59

3.42 Both the former Higher Brockholes Quarry and Lower Brockholes Quarry accessed the highway network via a purpose designed junction layout onto the M6/A59 junction. Annual production from LHF would be no more than the historical levels from either of those quarries and there would seem (subject to the fact that other traffic on that junction has increased) no overriding limit on LHF using that junction. That would however only be of value if it can physically be linked to the extraction site through the former Higher Brockholes Quarry and via a temporary bridge over the River Ribble.

3.43 The former quarry is now a nature reserve and visitor centre, the Brockholes Centre, owned by the Lancashire Wildlife Trust (LWT) and used by the Trust and many members of the public on a daily basis. The target visitor numbers is 250,000 per annum. Currently visitor numbers are around 170,000 per annum.

3.44 The applicants have fully engaged with LWT to see if a viable route could be developed across the former quarry, and across the River Ribble using the existing M6/A59 junction. The options considered included (i) a dual use of the existing access road to the car park and then a new link to a bridge over the river, or (ii) a completely new restricted use access road to such a bridge.

3.45 Those discussions concluded that while a route across Brockholes was physically possible, subject to improvements for engineering purposes, and probably could be made without significantly harming the fundamental conservation interest. However, LWT considered that the movements of hgv's throughout the day would probably be visually and aurally unacceptable, and would conflict with public access and pedestrian activity. This was therefore not a viable or acceptable option. This route is therefore not an available alternative.

3.46 Separate from the discussions with LWT the applicants undertook an outline assessment of the crossing of the River Ribble. This would require a bridge spanning the river and founded on both banks, located upstream from Bezza Brook. There were no significant engineering limitations with such a structure that were not resolvable, although relevant licences for such crossing and associated works may not be granted. The potential impacts on the Ribble bed and banks might be significant although those might be capable of resolution or mitigation. Both visual impact and noise were identified as significant issues for residents at Samlesbury and

visitors to Brockholes and would be difficult or effectively impossible to mitigate.

3.47 As part of such assessment, the applicants also undertook an assessment of the access onto Junction 31 using the existing junction layout. The likely traffic impact of the number of vehicle movements was not considered to have any significant traffic or highway implications due to the insignificant total of movements, which in any event merely replace those movements previously from both the Higher Brockholes Quarry and Lower Brockholes Quarry, in relation to those associated with the Brockholes Centre and the landfill operations at Lower Brockholes.

3.48 However, this access frequently suffers from flooding problems. The flooding occurs in and around where the access road goes under the M6 alongside the right bank of the Ribble. Such flooding events have occurred a number of times over recent years, preventing access for a number of days to both the Brockholes Centre and Lower Brockholes, when the site at LHF has not itself been flooded.

3.49 The likely scenarios under Climate Change include more severe flooding events and therefore flooding here may become more frequent and extend more in time. In operational terms such flooding of the sole access to the operations at LHF would not be desirable. Flooding at this point could prevent the removal of equipment from the site at LHF in the event of a major flood emergency whereas the proposed scheme provides through the private access road a route out of the site and a location to store equipment safely. There is no economically viable solution that would remove this flood issue.

3.50 The assessment also considered the management and protection of the route and particularly the bridge over the Ribble. The LWT has noted problems of unauthorised access into the Brockholes Centre from the public access routes, including that along the bank of the Ribble. This has included pedestrian and motorcycle access and has been associated with vandalism, anti-social behaviour and littering.

3.51 Due to its isolated situation and with adjacent uncontrolled public access, the bridge would need to have robust security protection works to prevent unauthorised access, vandalism and damage to the bridge and also unauthorised access to the operational site beyond and to prevent people putting themselves into danger. Realistically such works would be both difficult to maintain and a major visual intrusion.

3.52 This alternative access was excluded following discussions with LWT but has been rejected because of access difficulties and potential impacts on amenity of local residents, flood risk issues and risk management in relation to the access and specifically the bridge over the Ribble.

ALTERNATIVE TRANSPORT MODE

3.53 Mineral companies are strongly encouraged by policy at national and local level to investigate the transport of mineral by modes other than by road to reduce traffic on the highways, and such associated environmental costs, and thereby produce a more sustainable solution. There is no rail route in the vicinity of the site and therefore rail transport is not viable.

Waterborne Transport

3.54 Transporting aggregate along waterways by barge is in comparison with road transport more fuel efficient and produces less CO₂ per tonne mile, although the total trip miles, including that to final customer may discount or completely negate some of these initial environmental advantages such that this mode actually becomes less sustainable than road transport.

3.55 Policy CS5 in the Adopted Core Strategy states that such alternatives, including transport by water will be encouraged and that potential transport facilities would be safeguarded. No water side facilities have been safeguarded or allocated anywhere along the River Ribble.

Harleyford Experience

3.56 Harleyford Aggregates are one of a very few mineral extraction companies in the UK with experience in using barge transport to deliver aggregate along inland waterways. This was in connection with transporting processed sand and gravel from a site at Denham, Buckinghamshire to an aggregate depot with asphalt and other value-added plant at West Drayton in London, a distance of circa 8 kilometres each way, using the Grand Union Canal. The barges typically held around 65tonnes net of sand or gravel each and transported around 60,000 tonnes per annum.

The Ribble

3.57 Given the riverside location of the extraction site at Samlesbury the Company has therefore evaluated using barges of varying capacity on the River Ribble as an alternative access and transport mode.

3.58 The river at Samlesbury is not tidal. It does display high variability over the year and over days in water depth and flow. It is effectively unconstrained by upstream river management works and adjacent to the extraction site has an irregular bottom form with locally extensive shoals and shallows formed from gravel derived from upstream erosion. There are rock bars in the bed downstream,

3.59 The normal tidal limit of the river is near Ribble Side Farm opposite Fishwick Bottoms. The Ribble has one of the largest tidal ranges of rivers in the UK with a maximum of around 8 metres at springs and a typical range of about 4 metres. The tidal stream is sufficient to produce a tidal bore. If sea levels rise as predicted by climate change forecasts then the

tidal limit may advance upstream. The potential impact on the tidal range is unknown.

The Barging Alternative

Background

3.60 The transport costs of high weight but low value products such as aggregate are clearly a constraining impact on market areas. An associated corollary of that is the need to minimise costs in handling and in transshipment facilities.

3.61 Unfortunately, income generation to port authorities from aggregate transshipment is normally always considerably less than that possible from other high value goods or from residential or non-port related commercial development. Therefore, high place value wharf or waterside locations are typically too expensive for development as aggregate wharves or are reserved for uses which generate more income.

3.62 This is a particular problem due to the extensive land area required for a waterside aggregate wharf for storage coupled with the increasing conflict (visual, noise, transport, operational times, etc) with incoming residential conversions or new build, or 'quality' commercial units near or adjacent to a wharf.

Infrastructure Required

3.63 The infrastructure required would be:

- (i) a fleet of barges (probably constructed specifically for this one-off contract), of a size and capacity dictated by: (a) required annual output; (b) the trip distance and turnaround time; (c) river dimensions (minimum consistent available depth of water and width of river for winding); (d) clearance dimensions of any bridges or locks or other obstacles; and (e) capable of operating over the majority of the typical range of river states;
- (ii) a relatively simple loading facility (wharf with tripping conveyor, or dump trucks/shovel loading directly into the barge) located at the bankside near/adjoining the plant area, and
- (iii) an unloading wharf with direct access to the river (if possible at all states of tide if tidal) and then the main highway network and with a minimum of 1.5 hectares of land for stockpiles, etc unlikely to flood.

3.64 Loading and unloading is a noisy activity which is difficult to mitigate. The physical presence and operation of the wharves requires direct unconstrained access to the River and visual impact in the immediate vicinity cannot be mitigated. Due to river and tidal conditions, both loading and unloading operations will probably require, especially in winter, the ability to operate in the early morning/evening and/or at night. This will produce impacts of noise, and also of light pollution, which may be intrusive and incapable of mitigation.

3.65 In engineering terms the loading facility would be relatively simple and would consist of a sheet piled wharf from the bankside of sufficient length to accommodate the barge(s) while being loaded. Loading would either be by wheeled excavator/dumptruck or by conveyor. Stockpiles of suitable size would be required to deal with variations in processing plant outputs. This operation would give rise to noise from transport and loading and this would be difficult to mitigate due to the open layout and the presence of open water. Loading times would depend on the method employed and the size of the barge. Trees on the bankside may need to be removed. The facility and the loading operations would be a visual intrusion which would be impossible to mitigate from either bankside.

3.66 In engineering terms the unloading facility could also be relatively simple and consist of either a sheet piled wharf from the bankside of sufficient length to accommodate the barge(s) while being unloaded or a wharf/pier developed into the river. The defining parameter here would be the impact of any tides and the availability to unload. Unloading would take considerably longer than loading.

3.67 In planning terms the unloading facility should be located directly on the river frontage in a suitable commercial, urban, brownfield or port environment and distant from residential or other property so that noise, dust and visual intrusion considerations are not of significance; not be a visual/noise intrusion in/on the open countryside, nor affect a Natura 2000 site, or SSSI, or the Green Belt or be in or near any other sensitive environmental area.

Possible Location of Unloading Facilities

3.68 There are no suitable locations for an unloading wharf upstream from Samlesbury and the river soon becomes unsuitable upstream due to narrowing and shoaling.

3.69 There are few suitable locations for an unloading wharf downstream as both banks are either already developed for residential or high value commercial uses, or are open countryside where an aggregate wharf would be intrusive.

3.70 The nearest possible location downstream is a circa 2 kilometre length on the right bank of the river on the brownfield site of made ground (sometimes known as 'Riversway West') on the south side of Wallend Road just beyond the Riversway Marina and the associated commercial area at Ashton Bank. This area includes various motor sport facilities and underused or derelict land and is partly allocated for employment uses. In this location there would appear to be no built or land use conflicts and apparently available development land.

3.71 However, much of the land is shown as 'Access Land' (Countryside and Rights of Way Act 2000) and the river is designated as an SPA. Works required to construct the wharf and an unloading pier or quay

would need to be evaluated in respect of any harm to that 'Access Land' and the European Natura 2000 designation.

3.72 Access to the main highway network can be achieved without travelling through residential areas. This site is approximately 15 kilometres by river from the application site and is within the tidal stretch of the river.

3.73 The actual size of the facilities would reflect the size and number of barges required and the number of trips, including loading and unloading times, per day. Using circa 60tonne net capacity (circa 1.5 metre draught laden) self-propelled barges, loading would typically take around 0.5 hours and unloading up to 1.0 hours, excluding mooring time. Larger self-propelled barges, with a 250 tonne net capacity (circa 2.5 metre draught laden), might take a similar time to load depending on facilities (larger conveyor, more loading plant, etc), but more time to unload. However, the typical trip time would be the same (circa 5 hours each way) for either type.

3.74 In effect, therefore, either size barge would probably only be able to undertake one trip (load, travel to unloading point, unload, travel back to loading point) per day, regardless of its capacity (and discounting any issues with navigation, tides, locks, headward water speeds, winding locations, daylight hours, downtime, working hours limits, loading or unloading time limits, etc).

3.75 Based on developing a wharf near Wallend Road and proposed annual sales, the barge fleet would need to be some 8 x 60tonne net capacity barges, or 2 x 250 tonne net capacity barges.

3.76 However, the whole objective of using a non-highway mode alternative is the perceived more sustainable nature of such a mode via the potential for an apparent lower environmental impact by that mode (noise, dust, visual, etc) and transport fuel consumption and associated CO₂ etc savings. It is clear from the above that the works and operations actually give rise to significant environmental impacts which cannot be effectively mitigated and would be intrusive both at a loading wharf at Samlesbury and potentially at the unloading facility.

3.77 Further the total transport impacts (fuel consumption, CO₂ etc emissions), including the onward transport from the unloading wharf, are, in total, potentially significantly greater than that of just using road haulage. This is because most of the market lies to the east and south of junction 31 on the M6. Transporting all production westward by barge takes material needing to go east and south in the opposite direction.

3.78 The energy etc savings achieved by barging to the west some 15 kilometres are therefore more than offset by the additional road haulage costs of taking most of the landings back (partly through Preston or adjoining urban areas) at least 10 kilometres to junction 31. Effectively the barging energy costs and emissions (even at the lower rate per tonne) and the additional highway energy costs back to junction 31 are all additional energy costs and emissions which would not be incurred by road use alone.

Need to Improve River Depth

3.79 However, there appears to be an irresolvable and fundamental problem which prevents transport by barge. This problem is the inadequacy of water depth in many stretches of the non-tidal river and the inadequacy of water depth for much of the day either side of low water in the tidal stretch.

3.80 The Port of Preston, and associated downstream dredging etc works were developed from the early 1800s. Access to the Port was significantly affected by tide times and limits. However, the Port closed in 1981 and the site was redeveloped as the current Riversway area. Concurrently with that, dredging of the river effectively ceased downstream from the Port entrance. Dredging does not appear ever to have been undertaken upstream from the entrance to the Port.

3.81 Between Samlesbury and the Port the river is initially non-tidal and then becomes tidal. Throughout this length, significant stretches of shallows are present across the full width of the river together with mid-stream and bankside gravel shoals (which may be effectively permanent or transitory) at Samlesbury, Cuerdale Hall, 'The Flats', etc. Rock outcrops and bars, which may extend across the full width of the river, are present for example at Penwortham. This latter bar is identified as a Local Geodiversity Site. These 'natural' features present a major navigational barrier. Together with the increasing tidal range downstream, and the wide fluctuations in river levels in the non-tidal section, these features currently effectively prevent barge transport completely.

3.82 The restrictions could be removed by major river bed engineering works and dredging with associated works on bridges and infrastructure. Dredging would need to be undertaken throughout the life of the barging operations given the continual resupply of sediment from the upstream sections of the river. In addition, due to the fall in river levels and the large tidal range, a number of barrages or weirs with locks would be needed to raise water levels along the route (including upstream from the loading point at Samlesbury) to maintain water depth and reduce sedimentation of the dredged route.

3.83 The logistics of such works would be significantly complex. The costs would be considerable and unacceptable. Further, the concept of a barrage or barrages along this stretch of the river were brought forward in recent years (1986 and 2007) but subsequently abandoned due to a combination of cost and the rejection of the concept by the public and relevant regulatory and conservation/fishing interests.

3.84 Even if such objections could be overcome, the high cost of such works, any associated infrastructure works, and the access etc difficulties in the construction phase, plus the significant time required for permission and construction (which means that the mineral supply from Samlesbury will be considerably delayed) makes transport by barge along the river a non-viable commercial activity.

Conclusion on Barging

3.85 The full environmental costs have not been assessed given that that barging is not a commercially viable alternative, although the public rejection of the 1986 and 2007 barrage proposals together with concerns as to impact on water quality, the Green Belt, flooding, fisheries and on the downstream European conservation designations, and the need to remove river barriers not construct new ones, suggests that such environmental costs are extensive and difficult or impossible to resolve or mitigate and are contrary to objectives for the Ribble.

3.86 Barging is not a viable alternative due to access problems along the river; the actual net increase in fuel and CO₂ etc emissions; possible impacts of infrastructure on protected sites and the environment of the river; and impacts on the environment and amenity at Samlesbury and on the Ribble.

RETAIN NEW ACCESS ROAD AS A PUBLIC ROAD

3.87 It was suggested by a Parish Councillor that the private access road should not be removed on completion of operations but retained and then given public highway status. This was proposed so as to help to resolve the inadequacies of Potters Lane.

3.88 The applicants have considered this alternative. Parts of the new road would probably be required to be widened and sight lines and curvatures adjusted so as to cater for all and any drivers/vehicles. This would not be available anyway for some 20 years. It probably would not be an attractive route to and from the school or to residential property on the existing public highway section of Potters Lane.

3.89 No further representations have been made on this alternative and currently this is not being pursued.

ALTERNATIVE RESTORATION SCHEME

Restoration to Agricultural Land Using Landfill

3.90 Representations from some members of the public suggested that all the site should be restored to intensive agriculture and that should include the area of the former mineral working and the route of the access road. This would require the importation of fill into the extraction void. This would extend the operational life even if it was undertaken in phases following extraction. That was accepted as necessary by those members of the public.

3.91 The applicants have considered this alternative. A fundamental problem is the inadequacies of suitably inert arisings of material to fill the extraction void. Such suitable material is now mainly processed and used as recycled aggregate and there is an oversupply of voids and a very significant, in practice, shortfall of suitable material. While the site might therefore be physically capable of being engineered to be restored by inert landfill, it is

probably that this could not be achieved within a slightly extended life of operations but will require operations to extend over a much longer period.

3.92 As a fully engineered inert landfill gross water pollution matters would be contained but the intensive agricultural use may reinitiate agricultural pollution. The emplaced fill will have very low porosity and hence negligible water storage capacity (lower than current capacity) and due to that very low porosity would not provide anything other than negligible groundwater recharge. Landfill will effectively remove the Natural Flood Management Facility and intensive agricultural use would remove the air quality and other environmental benefits including climate change mitigation, from tree planting, reed beds and water bodies.

3.93 The landfill will probably have to be domed to ensure run-off and no rain or other egress into the waste and this will both remove the potential of the land to provide any significant flood mitigation and will thereby pass floodwaters downstream where they may increase flood levels.

3.94 It would be very unlikely that the imported waste would be 'back-hauled' into the site by vehicles collecting mineral. This is because the sand will be going to concrete plants whereas the inert waste will be arising from construction and demolition operations of varying size scattered widely over the area. The amount of traffic would probably increase by up to 400% because of the smaller loads involved. This would probably require additional works on the access road to provide more passing places or a wider road.

3.95 The waste vehicles will have to access the former extraction area to tip their load which will then need to be emplaced by a bulldozer of similar. This will create more noise and visual disturbance and initiate more potential dust emissions. It will require further vehicle movements over the extraction area.

3.96 This additional activity will therefore increase environmental and amenity impacts and lead to the loss of the biodiversity and flood management opportunities as provided in the application and this alternative has been rejected by the applicants.

Public Access

3.97 Greater public access over the site either by the construction and designation of new public footpaths or unconstrained public access is suggested in policy. No specific requests for new rights of access were made by the public. New public access would harm the potential biodiversity opportunities create site management problems and has been rejected.

OVERALL CONCLUSION ON ALTERNATIVES

3.98 The applicant has fully considered all relevant alternatives in its control. None of the alternatives are more operationally viable, or will provide material to meet the supply requirements for concreting sand and

gravel for Lancashire in sufficient volumes, at the requisite time, and at less environmental and amenity cost, than extraction at Lower Hall Farm.

4 THE ASSESSMENT OF LIKELY EFFECTS

Introduction

4.1 This chapter undertakes the assessment of the likely environmental effects of the development itself as proposed including normal landscaping and screening and other normal mitigation. It also considers in combination effects. It considers if those effects are negative or positive. If they are significantly negative it considers the extent to which such effects can be mitigated. It contains in appendices the results of background surveys and studies.

4.2 The ES addresses the scale of those effects as identified. Possible harmful effects may be demonstrated by the assessment, with or without mitigation, to be insignificant and therefore require no further consideration.

4.3 Where harmful and significant effects arise proposed mitigation may, individually or in combination, change a significant effect into an insignificant effect, or remove any effect. Mitigation may also change a harmful effect into a positive effect. Further, effects may not be significantly harmful, but may have significantly positive outcomes.

Baseline Surveys

4.4 The background baseline surveys in this ES were used as part of the iterative process to define and refine the development works. That process has taken place over the last few years in conjunction with discussions with the planning authority and others.

4.5 Some of those surveys raised matters of potential impacts which will not arise due to operational or other decisions and subsequently built in mitigation. For example due to operating limits the possible impact on bats from lighting will not arise.

4.6 Some surveys address matters where a new factor could never develop subsequently. For example, there could never be an increase over the last few years in the number of veteran trees or the extent of ancient woodland.

4.7 The surveys provide a baseline of the factors. There is the potential over days or years for fluctuations in detail such that a survey today might show changes in say numbers present of a particularly species but no change in the relevant habitat used by that species. This is primarily true of surveys of ecology and habitat.

4.8 A single survey, even that undertaken over a period of months, can only be said to be representative, in detail, of that precise survey period and cannot be said to be contradictory or supportive of either a previous or a subsequent survey. That is because detailed changes in the presence or numbers of factors will always occur caused by random events both on and

off site. These random events may have a local, regional, national or wider origin and may arise due to natural or human actions.

4.9 Such random variations do not affect the underlying state of the environment and the typical character or potential of the site as described in surveys but only the specific and random changes in, for example, the variation in numbers and species of birds recorded. Such random variations may be different from day to day due to a simple variants such as in this situation, intermittent impulsive noise from various construction activity on the Red Scar Industrial Site, or changes in wind direction or the intensity of agricultural activities on that day or immediately prior to at the site, or even the intensity of activities and visitors on the Brockholes Centre. They may also arise due to a random event just off-site or on a previous day or from events occurring a considerable distance from the site, which events may be unknown on the survey day itself and unremarked in the survey.

4.10 Those variations may in some cases be identifiable (increased traffic on the A59 because of an emergency traffic diversion) but it will not be possible to identify and quantify their degree of impact or conclusively assess the scale of that variation in impact.

4.11 Importantly while the general impacts of such random effects are well known there is great uncertainty as to actual causes and the scale of the impact. Indeed, research on what initiates for example disturbance to birds or mammals and when they might flee or take flight (and therefore why numbers may vary) is both contradictory and uncertain.

4.12 In relation to noise, for example, the simple concept of a noise threshold for noise disturbance to birds and mammals has been shown by research to be incapable of justification. Such research has identified that our analysis of disturbance and harm to wildlife is complicated by our attempting to humanise the response of an animal when we have no basis for knowing how an animal perceives any noise as 'good' or 'bad', or intrusive or un-intrusive, or life threatening or not.

4.13 Our perception of disruption to animals by noise must also acknowledge that there are significant physiological differences between us and animals in relation to differing sensitivity over various frequencies. Standards or thresholds deemed acceptable for defining human annoyance is not directly transferable to the topic of disturbance and harm to animals. Indeed, animals may exploit what we perceive as a noisy and unattractive environment (as long as there is no actual threat) perhaps because of other attractions (safe nesting sites, abundant food, etc).

4.14 Further the disturbance to animals may also be a reflection of a combined set of threats, such as a combination or noise together with visual and scent, rather than a single factor.

4.15 However, man is seen by many animal species as a predator and therefore as a threat. That threat may be mitigated or even completely removed if species become habituated to human activity if that human

activity, operation of machinery, etc becomes part of the normal background and does not lead to a threat or harmful impact.

4.16 Ground nesting and resting species of birds or other animals may avoid any movement due to noise or the approach of humans or dogs and may not flee until disturbance produces imminent risk of harm when they will flush from beneath one's feet, perhaps not due to the level of noise but to the physical presence of danger and risk of direct physical harm.

No Change in the Application Area

4.17 Some fundamental changes, either natural or man induced, in the state of the environment on a site, or adjacent to, may justify subsequent resurvey of the baseline if that change significantly affects the physical characteristics of the surveyed area. Such changes may, for example, include the significant loss of mature tree cover due to removal by felling or wind blow thereby dramatically altering visual impact or subtly affecting drainage and shelter and hence biodiversity or affecting the setting of an historic structure.

4.18 The UK does not normally experience environmental change of such a degree or rapidity experienced elsewhere. However, some changes caused by events such as uncontrolled moor burning, bog bursts, landslides, etc in the UK might be significant on stability, flooding, water quality and biodiversity as well as risk harm to people and their health.

4.19 The application site itself has effectively experienced no such short term or long term changes over at least the last 20 years. The physical state of the site is the same now as when the relevant surveys were undertaken. The only change within the site has been the continuing gradual insignificantly measurable decay in the quality of hedgerows. The only development change has been the removal of the weir where the direct impacts were off site and not relevant to the site nor significant. All the surveys undertaken to inform the iterative process and this ES are therefore as relevant today as they were when undertaken.

4.20 It has been suggested that ecological surveys more than a year old may be out of date requiring a new survey to bring an assessment up to date. That presupposes that a new survey would discover new fundamental ecological conditions not identified previously. However while a new survey may pick up changes in numbers of a particular species (and normally that would be more noticeable for those highly mobile species such as migrating birds or large mammals with large ranges), such random, effectively single day, variation picked up in a new survey is not in itself any more relevant than a previous survey. It would merely describe a different moment in time but not different ecological conditions.

4.21 Importantly such variation is not conclusive in terms of any change in overall biodiversity significance or of value in impact assessment for an ES, unless there had been some great change in physiography and habitat.

4.22 Given the lack of change on site, the biodiversity impacts today, in ES terms, will be the same as already identified in the relevant surveys and the assessment. Similarly other surveys on factors other than biodiversity will remain relevant.

4.23 Regulation 26(2) provides that the reasoned conclusion on significance reached by a planning authority when determining an application should be up to date. That is however a matter for the determination process by the planning authority and not relevant to this ES.

4.24 There will be a need to undertake surveys prior to the commencement of operations in relation to specific features and particularly with respect to trees potentially providing roosting bats, or the location and extent of badger setts, etc.

4.25 However, these will need to be undertaken only once planning permission has been granted and immediately in advance of construction or other operations. Such details are not for this ES but can be considered as part of a Construction Environmental Management Plan and, where required, relevant licence applications.

Evolution of the Environment without the Development

4.26 An outline of the evolution of the local environment without implementation of the proposed development is required to be provided. This should be based on natural changes that can be reasonably assessed.

4.27 In that respect the only 'natural' changes will probably be (i) the continuing gradual decay of the hedgerows; (ii) the occasional loss of a tree due a combination of age, disease and wind blow; (iii) the potential increase in scrub vegetation or rank vegetation in unmanaged or disturbed land; and (iv) possibly minor reinvigoration of headward erosion in rivulets contained with the clough type features caused by increasing rainfall.

4.28 The area is not subject to any significant natural geomorphological or geological events that would lead to more significant changes.

4.29 However, even these changes are themselves significantly influenced by human action. They are not 'natural' in so far as they relate first to a human 'created' environment and land use. Any change will continue to be affected primarily by human actions associated with normal farming or land management processes.

4.30 Unlike other 'semi-wild' parts of the UK or areas in the UK with marginal farming (upland or exposed coastal locations); or areas in Europe which are predicted in the future to be affected by rural depopulation and a retreat from subsistence farming; it is unlikely that natural plant succession processes will at this site lead to any significant change in land use, vegetation cover or habitat.

5 EFFECTS SCREENED OUT

5.1 Schedule 4 of the Regulations confirms that an ES is only required to address 'likely significant effects'. Therefore some effects which will not arise, or are unlikely to arise, or which in an initial assessment are unlikely to be significantly harmful, can be 'screened out' from consideration.

5.2 That screening out process should itself be informed by the results of other environmental assessments undertaken for other development projects where the assessment conclusions are relevant to a development (as required to be taken into account by Regulation 18(4)(c)). Such assessments may, for example, identify that noise will always arise but in certain conditions could never be significant.

Effects Screened Out

5.3 The following effects have been removed from consideration because they will not arise or are unlikely to arise or if they arise are unlikely to have any significant environmental effects. A short justification of their removal is provided.

Bird Strike

5.4 Bird strike can be a significant hazard near aerodromes where wetlands or other attractions are provided by restored sand and gravel sites. The proposed operations are outside the relevant threshold for consideration. There are no effects to consider.

Conservation Areas and Historic Landscapes

5.5 Neither the site nor the settlement of Samlesbury are within or adjoin any designated Conservation Area or designated historic landscape. The nearest Conservation Area is at Fulwood in the urban area of Preston and located some 3 kilometres west of the site. There are no environmental effects to consider.

Fishing and Fisheries

5.6 The Ribchester and District Angling Club has rights from the Trustees to fish the Ribble from the bankside outside the development area. The operations provide for a 25 metre minimum stand-off to the Ribble from the bank top and for retention and improvement of access to the bank of the river. There are therefore no harmful impacts and some improvements in facilities for fishing.

5.7 The development does not affect the Ribble. Existing fisheries interests in the river are therefore not harmed to any extent by the development. The extraction operations and the provision of ponds and wetland restoration together with the provision of the NFMF may provide suitable habitat for fish including the European Eel and thereby provide an

environmental net gain. There are no environmental effects to consider in relation to fishing or fisheries.

Geological Conservation and Geomorphological and Geological Risk Impacts

5.8 There are no geological or geomorphological conservation sites within the application area. The extraction operations will continuously provide new exposures which may include those important to science relevant to determining the recent geological history of the location or relevant to geomorphological processes. Provisions are made in the UU to allow access for suitable scientific research. The site does not contain any geological risk. There are no environmental effects to consider.

Green House Gas Emissions

5.9 Green House Gas emissions from the very few vehicles visiting the site or in operation on the site are negligible. There are no significant environmental effects to consider.

Hazardous Substances

5.10 No explosives or hazardous substances will be used or produced on site. There are no environmental effects to consider.

Heat

5.11 No thermal processes are to be undertaken on site. There are no environmental effects to consider.

Lighting

5.12 No extraction, processing or transport etc operations will be undertaken in the hours of darkness. External lighting will not be required save for any emergency or security purposes. The private access road will be unlit. There will be no lighting impact on residents or sensitive species. There are no environmental effects to consider.

Major Accident Risk

5.13 The proposed development is not vulnerable to a major accident or disaster, nor will it give rise to or enhance any such event.

5.14 The location is subject to possible natural flooding events but the development provides new capacity to manage such events for the benefit of the wider community. The development itself will not be vulnerable to such an event to an extent which would produce any significant environmental effects on site or elsewhere.

5.15 The development site is not subject to any natural ground instabilities (karst, active fault, landslides, unstable rock faces, swelling clays, running sands) nor is it at risk from natural hydrocarbon fluid seeps or from radon gas.

5.16 The development site has not been undermined nor used for the emplacement of any significant volumes of landfill. The former mineral working in the extraction area was restored without the importation of any material using the natural inert materials arising on site. The small former clay pit contains an insignificant volume of agricultural waste most of which will be removed as part of the access road construction and disposed in a suitably licensed facility off-site.

5.17 The development site does not contain major underground infrastructure nor does it impinge on any such major underground infrastructure or on any buffer zone around such infrastructure.

5.18 The site is not within transport link or industrial area or facility which might be the source of an accident or disaster such as an explosion, fire, chemical or gas leak or geotechnical hazard.

5.19 The access road joins the A59 to the west of a high pressure gas main. The works lie outside the buffer zone to protect that gas main. An accident arising from a failure within the gas main itself at this location will not be exacerbated by the operations.

5.20 Other than an insignificant fuel store and associated storage of lubricants, etc, (located some 1000plus metres from the nearest possible source of fire, chemical leak or explosion on RSIE) the development will not involve or bring on site any, or any significant quantity of, hazardous or inflammable or otherwise potentially harmful materials that might otherwise add to the scale of any major accident or disaster on the Red Scar Industrial Estate, such as to increase the environmental effects or increase harm to the population or affect human health of any such event.

5.21 The development will not significantly increase the presence of people on site nor add any permanent residential or other presence, in any such risk zone, nor add structures that could exacerbate risk or harm to the population, human health or the environment if a major accident or disaster were to occur.

5.22 There are no environmental effects to consider in relation to major accident risk.

Odour

5.23 No putrescible materials will be used or produced or retained/disposed on site and no odour issues will arise. There are no environmental effects to consider.

Public Rights of Way

5.24 The development will not require the closure or diversion of any public right of way. The private access road crosses such rights of way but the works ensure no significant effects on the availability and use of such rights of way.

5.25 Potters Lane is a bridleway and part of a route available to cyclists for recreation and journey to work trips to and from the former Samlesbury aerodrome commercial site. The use by cyclists of this route is minimal. The private access road crosses this route but will not significantly affect its availability and use. There are no significant environmental effects to consider.

Radiation

5.26 No radioactive materials will be used on site. There are no environmental effects to consider.

Trees, Woodland and Hedgerows, Ancient or Veteran Trees

5.27 The operations involve the minimal removal of trees and hedgerows, other than trees in the poorly restored former mineral working and poor quality hedgerows. The removal of these will not cause significant harmful environmental effects.

5.28 The operations will not affect any ancient or veteran tree nor affect any Ancient Woodland as defined by the NPPF.

5.29 There are no significant environmental effects to consider.

Vibration

5.30 No blasting will take place. Vibration from vehicles or plant will be unidentifiable at the nearest sensitive property. There are no environmental effects to consider.

Waste

5.31 Waste arisings (other than insignificant quantities of office waste) will consist of inert excavated material and mineral rejects arising from the site itself and which will be utilised in site restoration. No material will be imported and placed in or on the site. There are no significant environmental effects to consider.

CONCLUSION

5.32 Many potential impacts can be screened out as being insignificant.

6 LIKELY SIGNIFICANT EFFECTS

EFFECTS CONSIDERED

6.1 This section will consider the significance or not of possible environmental impacts in and around the site on those environmental assets where such effects have not been screened out.

Archaeology & Heritage Assets

6.2 Archaeological impact effects are addressed in the Heritage & Archaeological Assessment. The report notes the presence of various archaeological features in the study area which extends outside the development area.

6.1 There are no Scheduled Ancient Monuments within the site or the general location. There are no listed buildings or structures within the site, although there are a six listed buildings or structures in the surrounding area of which two (Samlesbury Lower Hall and Seed House Farmhouse) are the only such in the vicinity of the operational land.

6.2 Samlesbury Lower Hall is a Grade II listed building, which consists of the derelict single wall of the structure within the Lower Hall Farm buildings complex and located some 150 metres from operational land.

6.3 With the current use and setting of this building in a farm complex, the proposed development will not negatively affect the remaining structure or significantly harm its setting in any aspect. The proposed substantial tree planting east of the operations between Lower Hall Farm and the operations will lead to an improvement in that setting.

6.4 Seed House Farmhouse is a Grade II listed building within the Seed House Farm buildings complex and located some 285 metres from operational land and 200 metres from the route of the private access road. With the current setting in a farm complex, neither the proposed operations, which will be screened by a bund and substantial tree planting, nor the construction and use of the private access road will negatively affect the building or harm its setting in any aspect.

6.5 To the south is the Samlesbury Church of England Primary School, which together with surrounding railings, is a Grade II listed building, and the Church of St Leonard the Less, a Grade I listed building. These buildings are at a significant distance from operations and where the operations will not harm their setting.

6.6 There has been some uncertainty as to the exact location and significance of a possible archaeological feature (ref PRN15231) outside the extraction area near Seed Park Wood and described in paragraph 3.3.17 of the Report. The route of the proposed private access road appeared to be on or near this feature. This matter has been clarified on site together with

officers from LCC and the possible feature is located at least some 50 metres from the road. The feature is very disturbed and overgrown with trees and shrubs within an open wooded area. The feature has been described as a possible but much mutilated motte and bailey by one researcher. However other researchers consider that conclusion as dubious and that the feature is probably not a motte and bailey. Those researchers consider that the feature is too disturbed to identify. In any event the construction and use of the road will not directly or indirectly significantly affect the feature or harm its setting.

6.7 The archaeological report notes that the extraction area is likely to have been the subject to regular flooding since prehistoric times making the extraction and processing area unsuitable for settlement or defensive works and therefore unlikely to hold such archaeological evidence. The report notes that there is no evidence of defensive works. The report also notes that the former sand and gravel workings will likely have removed any archaeological evidence in that location.

6.8 The report does not identify any significant negative environmental effects. It considers that the development, if permitted, should include archaeological investigation and evaluation in accordance with a Written Scheme of Investigation as agreed with the relevant planning authority.

Biodiversity

6.9 Biodiversity effects are addressed in the Ecological Assessment. Some of the potential effects considered in that report, particularly in relation to lighting, pollution, dust and noise, will not arise or are negligible and have therefore been removed from further consideration.

6.10 The report considers potential ecological effects on designated sites. There are no International, European or National designated sites within the site. The report concludes that the proposed operations would not have any impact or any significant impact on the designated Bowland Fells SPA or Ribble and Alt Estuaries SPA, or the relevant species in those SPAs, which sites are located distant from the operational area. Possible impacts on the Red Scar SSSI, located across the river, and a number of Biological Heritage Sites arising from lighting, pollution, etc are discounted or assessed as negligible.

6.11 The report then considers habitats in general and notes that any impacts are almost wholly restricted to the loss of agricultural land of low intrinsic ecological value and that while small sections of woodland (which is mainly natural regeneration since 1960 in a former sand and gravel extraction area), hedgerow (mainly of poor condition and low intrinsic value), and a few individual trees will be lost, extensive woodland planting, and the provision of new hedgerows, will not only mitigate that loss but connect the currently isolated woodland and other habitat components across the location. The woodland lost is not part of any identified Ancient Woodland.

6.12 The loss of the large pond at the western end of the site has a negligible impact given its low quality. No ponds elsewhere on the site will be affected but some 7 additional ponds and linking watercourses are provided. The design details for the crossing of the Bezza Brook indicate that no significant negative effects on the stream, the bankside or associated flora and fauna will be expected.

6.13 The ecological report concludes that there will be no loss of Great Crested Newt breeding habitat and limited loss to GCN terrestrial habitat which is mitigated by new habitat links and ponds.

6.14 In relation to bats the report notes that no roosts are affected by any works. The absence of lighting will reduce effects on foraging or commuting bats to a negligible level. Hedgerow and tree loss is minimal and will be mitigated by new planting helping to link, protect and extend bat commuting corridors.



6.16 No evidence of water vole was found. Field signs of otter have been found adjacent to the site on Bezza Brook and the River Ribble. The 25 metre buffer zone to the Ribble and the design of the crossing of the Bezza Brook will ensure no significant negative effects on these species. No reptiles are present. The report states that the proposals are unlikely to negatively impact on birds whether they are listed as requiring special protection or otherwise.

6.17 The report concludes by identifying the extensive new habitat areas provided and the value of these habitats to enhance the Brockholes Centre and provide green infrastructure.

6.18 The proposed operations therefore do not produce significant negative environmental effects on protected areas, habitats or species. They have the potential to provide a range of new environmental assets. Provisions are made in the UU to allow access for suitable scientific research.

Dust and Air Quality

6.19 The assessment of the effect of dust and air quality is set out in the Air Quality Impacts report. This report notes that dust is the only potential significant effect. Given the relative distances and guidance the report confirms that a detailed dust assessment is not required and reliance on preventing dust issues can be provided by good practice which can be provided by the MPA via a condition.

6.20 The report assesses that no significant negative effects will arise. The report notes that there is no evidence or likelihood of harm human health or to protected sites. Finally, the report concludes that new screening and landscaping provisions included in the proposal will further mitigate any potential dust arisings such that no significant environmental or amenity effects will arise.

Hydrogeology & Flood Risk

6.21 Hydrogeological and associated effects are set out in the Hydrogeological and Flood Risk Assessment report.

6.22 The report concludes that there are no surface water features or licensed or unlicensed water abstractions from either ground or surface water that will be affected by the proposed development. The report also notes that the proposed operations will provide a sufficient standoff to both the River Ribble and the Bezza Brook. In relation to protected sites the report concludes that such sites in the vicinity are not groundwater dependent on, and are hydraulically separated from, the development site. There are therefore no significant negative hydrogeological environmental impacts arising.

6.23 In relation to flooding the report concludes that sand and gravel extraction is defined in the NPPG as a water compatible use in the floodplain. The report notes that the provision of the extraction void would provide a net environmental benefit through flood alleviation.

6.24 The report notes that measures to protect the site from flood impacts, and thereby any environmental impacts, should be put in place. Such measures are identified in the report and planning statement and include the movement of plant, fuel stores, etc from the flood risk area in the event of a flood warning. With such mitigation in place no significant negative environmental or amenity effects will arise.

Landscape & Visual Impact

6.25 Landscape and visual effect considerations are addressed in the Landscape and Visual Impact Assessment report and in particular in the included plans and photographs.

6.26 The site is not within, adjacent or visible from a National Park or Area of Outstanding Natural Beauty. The site lies within the Green Belt but the proposed operations will comply with objectives to preserve openness and enhance the purposes for which Green Belts are designated.

6.27 In relation to landscape the report notes the changes to the landscape of the extraction area from open agricultural to mineral working and then to water and woodland. This change is concluded to be 'slight to moderate' in potential significance. However, the change in itself and mitigation works match the objectives of sustainability, provisions in the NPPF and NPPG and the current LCC Landscape Strategy, such that any

negative environmental impacts are offset by significant positive environmental and sustainability gains.

6.28 The report considers and defines the extent of visual impact of the landscape changes, while operations are underway. The report also addresses the end outcomes in terms of visual impact and concludes that such changes will be positive for the environment. The report states that the visual impact of the operations will be of 'moderate' significance but this significance is limited in extent and number of receptors. This is clarified in the Visibility Study where unmitigated visual influence can be seen to be limited to the two tenanted farms, a few properties and to public access routes along Potters Lane etc and the bankside area of the Brockholes Centre.

6.29 However, the development scheme includes mitigation works in screening bunds and landscaping which will screen views from all residential properties and from much of Potters Lane etc. It is not possible to screen extraction operations on the site from the Brockholes Centre bankside, although the processing plant will be screened. This visual impact will therefore change from 'moderate' to 'slight to moderate' and the negative environmental effect will become less than significant.

6.30 There are landscape and visual impact environmental effects associated with the development. The effects, as mitigated, range from 'slight to moderate' with a less than significant negative environmental effect. The changes arising from the development will however provide positive landscape and visual impact environmental effects.

Noise

6.31 The assessment of the effect of noise is set out in the Noise Impact report. That report concludes that noise at the nearest dwelling can be mitigated to accepted thresholds as set out in NPPG by screening bunds provided as part of the development. With such mitigation in place no significant negative environmental or amenity effects will arise. The report also notes that there is no evidence or likelihood of harm to protected sites.

6.32 The report confirms that the impact of noise from transport movements on the A59 would be 'Negligible'.

Soils

6.33 Soil and agricultural land assessment is set out in the Soils and Agricultural Land Classification report. The report describes the current soil characteristics and its use. Some of the soils are of the best and most versatile grade, although some of those soils occur in small irregular areas to the west of the site, surrounded by low grade or non-agricultural land making it not practical, as demonstrated by the current agricultural operations to exploit that potential.

6.34 Given the form of the deposit, inadequacy of supply of suitable filling material and the negative effects arising from landfill coupled with the

wet nature of the excavation, it will not be possible to restore the site for agricultural purposes.

6.35 The proposed restoration therefore has a negative effect on agricultural land but this is not in itself a significant negative environmental effect and is mitigated by net biodiversity gain and flood alleviation provision.

Transport & Highways

6.36 Transport and highway matters are considered in the Highway Statement and the Infrastructure Design Statement respectively.

6.37 Those reports confirm that the transport effects and highway impacts arising from the relevant movements are negligible; that the junction on the A59 can meet relevant specifications; and that the design and construction of the access road and crossing of Bezza Brook meet relevant standards and that therefore no significant transport, environmental or amenity effects will arise.

CONCLUSION

6.38 The assessment of potentially harmful significant effects has addressed through detailed baseline surveys and suitable assessments those effects that may arise with the proposed development. The purpose of those assessments was to identify any likely harmful effects, which unmitigated, could be significant and the extent to which mitigation can make harmful effects unlikely or insignificant.

6.39 The development as proposed with the relevant mitigation does not cause any significant impact on people, or their health or on any aspect of the environment.

7 CUMULATIVE EFFECTS

INTRODUCTION

7.1 The EIA regulations provide that an ES should describe any significant cumulative effects of a development with other existing and proposed development, where that is a reasonable requirement, to assess the environmental effects of the development. There is no definition or guidance on the extent of such cumulative effects. Typically, such an assessment should address the sum of the effects arising from a proposed development together with other proposed and existing developments.

7.2 Cumulative effects may be positive, not just negative. In this case the development works proposed will immediately lead to a positive cumulative effect in relation to the provision of new habitat and linkages, new multifunctional green infrastructure, substantial ecosystem services and provision of pollution off-setting. Further, in conjunction with other flood prevention works on the Ribble, the proposed works will lead to a positive cumulative decrease in flood risk downstream. The restored site will formalise that positive cumulative effect for habitat etc.

Other Mineral Sites

7.3 There are no other mineral operations in the area. The restoration of Lower Brockholes Quarry and of the former Higher Brockholes Quarry has changed the landscape from wholly agricultural. The restoration of LHF will similarly change the landscape. The effect of that cumulative change is in the medium term positive both in landscape and ecological terms

Other Development

7.4 The planned growth and development works associated with the Preston City Deal and major employment centres, such as that at Red Scar Industrial Estate and at Samlesbury aerodrome, will increase impacts on resource use, land use change, traffic generation, etc in general and distributed across the whole area. Development at the Red Scar Industrial Estate has been identified as being insignificant itself or in combination.

CONCLUSION

7.5 There are no significant negative cumulative effects associated with the development at LHF.

7.6 The development site will immediately become an attraction for birds and waterfowl, and other fauna, and this attraction will grow as operations proceed. This will extend to attracting species such as otter, and will add cumulatively to the positive environmental value of the Brockholes Centre. Similarly, the immediate value of the site in flood alleviation will grow and cumulatively increase positive value to other flood management works on the Ribble.

8 POSITIVE ENVIRONMENTAL EFFECTS

8.1 The relevant sections of the ES have identified a number of positive environmental effects arising from the proposed development. These effects range from the provision of substantial areas of specific biodiversity target habitats and linking of woodlands by significant new planting, substantial flood attenuation capacity and water pollution mitigation, to more tenuous but also significant mitigation such as absorption of CO₂, the provision of green infrastructure, the maintenance of “openness”, etc.

8.2 The provision of such positive effects are widely supported in policy at national and local level but depend almost entirely on the actions of commerce to deliver in quantity and in time. Providing certain habitat or biodiversity gains can only be achieved with large scale changes to the physiography of a site. The extraction of mineral creates that landscape change, provides the diversity of habitat and thereby has the potential to assist biodiversity.

8.3 A particularly valuable positive environmental effect on site is the linking by new planting of isolated habitat. Perhaps of more significance is the provision of the working area and the restored site as a ‘quiet’ habitat of ponds, woodland, reed beds, river cliffs, etc. Isolated by its geography (and by lack of public access) from disturbance it thereby provides a refuge for birds and other species to access other sites up and down the Ribble and particularly the Brockholes Centre across the river. This provision is outlined in Table 1 below.

8.4 The table also describes the provision timing. From this it can be seen that a substantial proportion of the new habitat is provided at the start of the operations with further provision as the operations and restoration advance in phases. The adoption of ‘wet’ working provides almost immediate colonising of such water bodies (even when part of a phase is still being worked) by waterfowl, other birds, water mammals and plants. The associated more tenuous positive environmental effects will commence at the same time.

8.5 The extraction of sand and gravel from this site will provide a further positive environmental effect via the availability of the void to provide flood alleviation for assets at risk downstream. This capacity will exist from the start and grow as operations advance. The capacity will exist naturally without any direct management, but ultimately can be managed subject to relevant permissions and permits.

Table 1

Feature/ Habitat	Existing/Lost	To be provided	Timescale
Large Water Body	Circa 1 ha (poor)	Circa 20ha (designed to maximise wetland biodiversity)	From start becoming bigger over time
Small Ponds	Nil	7 within influence zone of existing ponds	At start
Watercourses	Nil	Circa 650 metres, including linking new ponds	Most at start
Trees/Woodland	< 50 individual plus 2.5 ha wood in former mineral site	Circa 16.0 ha	Circa 5.0 ha at start rest in phases
Hedgerow	<450 metres (short lengths or poor and thin with gaps)	Circa 900 metres	Circa 600m at start, rest at end
Reed Beds	Nil	Circa 5.0 hectares	In phases

9 CONCLUSION

9.1 This ES demonstrates, subject to the mitigation proposed, that there will be no significant negative environmental effects associated with the development on its own or cumulatively. It also demonstrates that there will be significant positive environmental effects from the start of the development, increasing in significance throughout the development and at final restoration.

10 NON TECHNICAL SUMMARY

10.1 A Non-Technical Summary is provided separately.

APPENDIX A

COMPETENT EXPERTS

STATEMENT OF COMPETENT EXPERTS

John Cowley

A1 John Cowley is a Director of Mineral & Resource Planning Associates Ltd.

A2 John is the lead author for the Environmental Statement and produced the ES and the section on Dust and Air Quality supported by colleagues in the Company. The consultancy has been in business for over 35 years.

A3 The other experts involved in the production of the ES are detailed under the various topic headings.

A4 John has over 55 years of experience in mineral planning. He worked for 20 years in various planning authorities before forming his present business.

A5 He has been involved with a wide range of mineral developments, the assessment of environmental impacts and the review and production of related Environmental Statements both prior to and subsequent to the adoption of EIA procedures in the UK planning process.

A6 He has a BSc (Special) Hons in Geography and Geology. His MPhil dissertation in Resources Management in 1978 addressed the potential application of the provisions of the National Environmental Policy Act 1969 as enacted in the USA and the place of Environmental Impact Assessment within the discretionary planning process in the UK and particularly for mineral extraction.

A7 His experience in environmental impacts and Environmental Statements extends to surface and underground extraction of metal minerals (gold, tungsten, tin, copper, lead, zinc), industrial minerals (ceramic and refractory clays, industrial sand, salt, barytes, fullers earth, fluorspar, lime), construction minerals, (aggregates including marine dredged aggregates, brick clay, gypsum and cement raw materials, dimension stone) and energy minerals (onshore and offshore oil and gas, opencast and shallow coal).

A8 In that respect his UK experience extends to the largest onshore oil field in Europe, the first new modern opencast metal mine in the UK including the first Category 'A' Mining Waste Facility in the UK and a major new crushed rock aggregate quarry and associated railhead. The environmental settings involved included National Parks, AONBs, internationally and nationally designated habitats, historic landscapes, the urban fringe and areas of major tourism and recreation activities.

A9 His experience also extends to the assessment of environmental impacts in relation to waste management facilities (landfills, recycling operations, EfW incinerators, etc) to energy developments (HEP, tidal energy, solar power, wind turbines and nuclear power stations) and to transport and infrastructure activities (including port development, extensions to airports,

new or reinstated railway facilities and new highways) as well as for matters relating to landslides, contaminated ground and natural and human induced underground instability.

A10 This experience extends across the UK, to many parts of Europe, in North America, the Caribbean and Asia and in varying difficult climatic and topographical regimes.

A11 He has been instrumental in enabling and achieving environmental mitigation schemes and habitat restoration and creation schemes to lowland heathland, upland moorland, woodland, calcareous grassland and various wetlands.

A12 He has contributed to a significant number of research studies and publications on the provision of minerals, on the environmental impacts of mineral extraction and environmental geology for the UK Government, for the European Commission and for local authorities in the UK.

A13 John has given numerous presentations on such matters including the EIA process to various fora in the UK, in Europe and in North America.

A14 John has appeared as an expert witness in or prepared evidence for numerous planning appeals against decisions or enforcement, for Judicial Review proceedings and similar proceedings on policy and impacts of mineral extraction and specifically from blasting vibration, air overpressure, noise and on air quality associated with mineral operations.

Archaeology & Heritage Assessment

A15 This section of the ES was prepared by Charlotte Valance of the Archaeology Collective and supported by colleagues in the Archaeology Collective. Charlotte has worked in the historic environment sector for over 14 years in the UK and abroad. Her experience extends to major infrastructure projects, the energy sector and the minerals industry.

A16 The Archaeological Collective was formed to provide archaeology advice and assessment and provides that service across England and Wales. The team have extensive experience in all aspects of archaeological assessment ranging from desk studies to full excavation and recovery programmes. They provide services for a range of clients and can offer expert witness services for planning appeals.

Biodiversity

A17 This section of the ES was prepared by a team of experts at TEP covering expertise in ecological assessment, specific animal species, and arboriculture.

A18 TEP has produced environmental and biodiversity assessments as complete Environmental Statements or as elements for inclusion in such

statements or for Strategic Environmental Assessment for projects and plans across the UK.

Hydrogeology

A19 Phil Ham of Envireau Water prepared this section of the ES assisted by field staff of the Company. Phil has over 20 years academic and professional experience in the natural water systems and specialises in hydrogeological impact assessments. This extends across a range of industrial sectors.

A20 Envireau Water has over 25 years of experience in all aspects of groundwater and surface water management associated with mineral extraction operations. It provides technical support for all such aspects associated with mineral extraction, including reports for inclusion in an ES and expert witnesses for legal proceedings.

Landscape

A21 The Landscape and Visual Impact assessment was undertaken by Richard Payne. Richard is a Chartered Member of the Landscape Institute, (C.M.L.I.) and has been since 1976. Richard has been employed as a Landscape Architect between 1976 and 2014 at Peter Swann & Associates. He then practised as a Landscape Architect under his own name.

A22 Both during his time at Peter Swann & Associates and subsequently, his client base has mainly been the mineral extraction industry. However, his experience extends to cover Environmental Impact Assessments and Landscape and Visual Impact Assessments for the Ministry of Defence, Electricity Generating Industry, Health Authority, Department of Transport, Commercial Enterprises and Private Clients. Richard has appeared as an expert witness in relation to landscape and visual impact considerations.

Noise

A23 Kevin Gough of Advance Environmental Consulting Ltd prepared the section on Noise. Kevin has over 30 years of experience in the assessment of noise and vibration associated with mineral development activities across the UK and for a range of mineral operations. Initially working within the minerals industry Kevin formed the consultancy to provide expert advice on noise from minerals to a range of clients. This advice also extends to associated activities such as transport and waste management facilities.

A24 He has prepared numerous studies for inclusion in formal Environmental Statements and in support of other non-EIA mineral development. He has also frequently appeared as an expert witness at planning appeals.

Soils

A25 Dr Stuart McRae produced the section on Soils. Formerly of Wye College Stuart is a soil scientist with over 40 years of experience in the evaluation of soils and specifically with over 40 years of experience in agricultural land evaluation, agricultural land quality assessments and the restoration of mineral workings to agriculture and other land uses. His experience in agricultural land evaluation for prospective mineral extraction sites extends across the country and he has undertaken such assessments for numerous such sites.

A26 He has authored a number of textbooks and papers on the topic notably:

Soil, sand and gravel, 1977

Land Evaluation 1981

The productivity of restored gravel workings, 1981

Soil survey and its role in the sand and gravel industry, 1982

Soil science contribution to quarry design and reclamation, 1983

The role of the soil scientist in quarry design and reclamation, 1983

The aftercare stage in land restoration to agriculture, 1983

Opportunities for creative reclamation following sand and gravel extraction, 1986

Practical Pedology: Studying Soils in the Field 1988

The restoration of mineral workings in Britain – A review, 1989

A27 He has also been involved in various research studies into agricultural land evaluation and restoration of mineral workings notably:

Joint Agricultural Land Restoration Experiments 1973-1982 (DoE MAFF SAGA)

The Reclamation of Mineral Workings to Agriculture 1996 (DoE)

Guidance on Good Practice for the Reclamation of Mineral Workings to Agriculture 1996 (DoE)

Transport

A28 The Highway Statement and the Infrastructure and Design Strategy have been prepared by PCL Transport Planning Ltd and JRC Consulting Engineers Ltd respectively.

A29 PCL have extensive experience in the preparation of transport assessments for various development projects including commercial residential and infrastructure.

A30 JRC provide specific highway design and engineering expertise and has undertaken a wide range of civil engineering design and project management schemes. This has included the design of new public highways and private roads, and, in particular, such work for substantial private access and haul roads in association with mineral extraction. This work has included consideration of route engineering and drainage.