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MAES Y DROELL QUARRY EXTRACTION OF INDUSTRIAL SAND

Environmental Statement
Volume II

Chapter 15: Summary of Effects, Proposed Mitigation, and Conclusions

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Chapter 15: Summary of Effects, Proposed Mitigation, and Conclusions

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15 SUMMARY OF EFFECTS, PROPOSED MITIGATION, AND CONCLUSIONS

15.1 Introduction

- 15.1.1 This Chapter provides a consolidated summary of the likely environmental effects of the Proposed Development, the mitigation, compensation, enhancement and monitoring measures relied upon in the Environmental Impact Assessment (EIA), and the residual effects predicted following their implementation.
- 15.1.2 It should be read alongside the detailed assessments at **Chapters 6 to 14** of this Environmental Statement (ES). It does not repeat those assessments or replace the separately prepared Non-Technical Summary (**ES Volume I, Non-Technical Summary**). Where topic-specific terminology differs, the terminology and significance conclusions of the relevant technical chapter have been retained.
- 15.1.3 The commitments summarised in this Chapter comprise:
- Embedded mitigation: measures incorporated into the design, phasing, operation and restoration of the Proposed Development and taken into account in the assessment;
 - Additional mitigation or compensation: measures identified through the assessment to avoid, prevent, reduce or offset adverse effects;
 - Enhancement: measures intended to provide environmental benefits beyond mitigation of an identified adverse effect; and,
 - Monitoring and management: measures intended to verify assessment conclusions, demonstrate compliance and identify where corrective action may be required.
- 15.1.4 The commitments schedule is intended to assist with decision-making and implementation. The final wording and mechanism for securing each measure will be determined through the planning, highways, licensing and environmental permitting processes.

15.2 Approach to the Summary

- 15.2.1 This Chapter identifies the principal effects and measures necessary to deliver the environmental outcomes reported in the ES. It distinguishes effects that remain significant for EIA purposes from effects that are not significant. Beneficial effects are also identified where relevant. This Chapter does not alter the assessment findings or introduce new project information.

15.3 Summary of Significant Residual Effects

- 15.3.1 Following implementation of the assessed mitigation, there would be only two likely significant residual effects. The effects identified are operational in nature and would only occur during the temporary period of operation. after which owing to progressive

restoration and aftercare especially, the effects would not be significant. No significant adverse long-term post-restoration effects are predicted.

Table 15-1 Significant Residual Effects

Topic	Phase	Receptor	Effect	Residual Significance	Comment
Noise	Operation	Residential receptors within 50 m of Road Link 2 (Unnamed Road – Southern Site)	Increase in operational road-traffic noise under the assessed maximum traffic scenario	Significant adverse	HGV Traffic Management Plan and operational controls are proposed and mitigate this impact
Landscape and Visual	Extraction	Landscape character within the Site and its immediate setting, nearby visual receptor groups and parts of the Clwydian Range and Dee Valley National Landscape	Changes to landform, vegetation, quarry activity, movement and perceived tranquillity during extraction	Major, Major/Moderate or Moderate adverse, depending on receptor	Effects are localised and reduce substantially through phased working, progressive restoration and establishment of planting. No significant adverse long-term post-restoration effects are predicted.

15.4 Environmental Commitments and Residual Effects

- 15.4.1 **Table 15-2: Proposed EIA** Commitments consolidates the principal control measures relied upon in the EIA. It should be read with the detailed requirements and plans within the relevant topic chapters and technical appendices.
- 15.4.2 Please see overleaf.

Table 15-2: Proposed EIA Commitments

Topic / Phase	Principal effect or issue	Embedded mitigation	Additional mitigation, enhancement and monitoring	Residual effect and significance	Indicative delivery mechanism
Noise Site preparation and operation	Construction, plant and processing noise at nearby dwellings.	Defined operating hours; processing within the quarry void; phased working; 4 m earth bunds and/or acoustic barriers along western and eastern boundaries.	Additional 4 m bund/barriers along the boundary of the site; maintain barriers for relevant phases; good operational practice.	Construction noise: not significant. Operational site noise after mitigation: negligible or minor and not significant.	Approved plans; planning conditions; operational environmental management plan.
Noise Operational traffic	HGV traffic noise at dwellings adjoining the haul route.	Maximum production and movement assumptions; defined hours; prescribed route south to the B5430 and east to the A5104.	HGV Traffic Management Plan, including routing and operational controls.	Links 1, 3 and 4: not significant. Road Link 2 receptors within 50 m: significant adverse in ES Volume II, Chapter 6: Noise .	Planning condition: HGV Traffic Management Plan.
Air quality All phases	Dust, suspended particulate matter and road-traffic emissions affecting nearby human receptors.	Phased extraction and restoration; extraction and processing in the quarry void; wet processing; limited exposed areas; retained/enhanced boundary vegetation; wheel wash; paved access.	Dust Management Plan; water suppression; road sweeping; haul-road maintenance and speed control; reduced drop heights; appropriate load covering; stockpile and lagoon management; monitoring and responsive action.	Worst-case disamenity dust: slight adverse, not significant. Suspended particulate and roadside air-quality effects: negligible/not significant.	Approved plans; planning condition; Dust Management Plan; operational monitoring.
Cultural heritage Site preparation and extraction	Potential damage or loss of known and previously unrecorded archaeological remains, particularly unworked northern areas	Phased working and avoidance where practicable.	Post-clearance walkover; strip, map and sample investigation; watching brief during relevant excavation; Written Scheme of Investigation agreed before works.	Potential minor adverse residual effect on archaeological deposits; not significant in the topic assessment. No adverse setting effects on designated assets.	Planning condition; approved Written Scheme of Investigation; archaeological reporting and archive.

Topic / Phase	Principal effect or issue	Embedded mitigation	Additional mitigation, enhancement and monitoring	Residual effect and significance	Indicative delivery mechanism
Landscape and visual Extraction	Changes to landscape fabric, landform, character, visual amenity and tranquillity, including effects within and near the National Landscape.	Phased working; use of existing quarry void; careful placement of soils and overburden; retention of boundary vegetation; no routine quarry lighting; progressive restoration.	Screening/noise bunds; advance native planting; woodland and boundary reinforcement; landscaped bund near cemetery; lighting controls; restoration landform and habitat establishment; aftercare.	Localised significant adverse effects during extraction at identified landscape and visual receptors. Effects reduce rapidly with distance and substantially following restoration.	Approved phasing, working and restoration plans; landscape and ecological management plan; conditions and aftercare scheme.
Landscape and visual Restoration	Permanent change in landform and vegetation following mineral extraction.	Progressive backfilling, regrading and restoration to woodland, rhes, heath, acid grassland, wetland and pond habitats.	Long-term establishment, management, replacement planting and aftercare.	Generally neutral or beneficial; no significant adverse long-term post-restoration landscape or visual effects predicted.	Approved restoration and aftercare scheme; long-term management plan.
Transport Operation	Additional HGV movements, access safety, delay, severance and interaction with vulnerable road users.	Upgrade existing access; 7.3 m access road; defined radii; compliant visibility splays; forward-gear entry/exit; internal queuing and servicing space; wheel cleaning; on-site staff parking.	HGV routing south from Site and east via B5430 to A5104; HGV Traffic Management Plan; detailed highway works agreement where required.	Highway operation, safety, pedestrian and severance effects: not significant. Separate traffic-noise conclusion reported under Noise.	Approved access drawings; planning conditions; HGV Traffic Management Plan; highways agreement if required.
Ecology Site preparation and operation	Temporary habitat loss, disturbance, fragmentation and pollution; potential effects on GCN, reptiles, bats, breeding birds, otter, badger and designated/non-statutory sites.	Four-phase working; retain eastern woodland corridor and habitat refugia; maintain pond, terrestrial and woodland connectivity; retain confirmed bat roost buildings; minimise lighting; progressive habitat creation.	Environmental Management Plan; protected-species licences and method statements; phased GCN habitat creation and translocation; pre-works checks and surveys; nesting-bird controls; mammal protection; pollution controls; ecological supervision.	No significant residual effects on designated sites, habitats or protected species. Temporary adverse effects are mitigated through phasing and restoration.	Approved plans; planning conditions; Environmental Management Plan / CEMP; NRW licences; ecological watching briefs.

Topic / Phase	Principal effect or issue	Embedded mitigation	Additional mitigation, enhancement and monitoring	Residual effect and significance	Indicative delivery mechanism
Ecology Restoration and aftercare	Need to compensate for habitat loss and secure long-term ecological function.	Restore diverse woodland, grassland, heath, wetland and pond mosaic; progressive creation ahead of or alongside habitat loss.	Bird/bat boxes, hibernacula and refugia; lesser horseshoe bat night roost; long-term habitat management and monitoring, including GCN habitat management aligned with licensing requirements.	Long-term habitat and GCN outcomes beneficial but not significant for EIA purposes; greater ecological resilience than the future baseline is predicted.	Restoration and aftercare conditions; habitat management and monitoring plan; licensing arrangements.
Hydrology and hydrogeology All phases	Potential pollution of aquifer, River Terrig tributary, wells, springs and private water supplies; potential changes to groundwater levels and flows.	Extraction to remain above groundwater table; no dewatering; controlled infiltration/sumps; bunded storage; controlled refuelling; pollution-prevention and spill-response procedures.	Additional monitoring borehole; groundwater-level and quality monitoring; periodic review by a Chartered Hydrogeologist; reporting and corrective action if required.	Very low risk and not significant for groundwater quantity, groundwater quality, surface waters and private supplies after mitigation.	Approved water-management measures; planning conditions; pollution-control procedures; groundwater monitoring plan.
Community and socio-economic Operation	Employment, supply-chain expenditure, mineral supply and potential disturbance to nearby businesses and community receptors.	Environmental controls identified under noise, air quality, transport, landscape and water topics.	Local employment, procurement and skills benefits where practicable.	Approximately 6–7 FTE roles and up to six long-term temporary roles at full extraction, plus indirect/induced benefits. Overall beneficial but not significant. No significant adverse effects or business displacement identified.	Operational commitments; planning controls for environmental effects.
Cumulative and combined effects All phases	Combined effects on common receptors and effects with Graig Quarry, including noise, air quality, traffic, landscape/visual and ecology.	Topic-specific mitigation and baseline assessments incorporate existing activity where relevant.	Coordinated implementation of traffic, noise, dust, landscape, ecological and water-management commitments.	No significant intra-project or inter-project cumulative effects identified in ES Volume II, Chapter 14: Cumulative Effects and Interactions or the topic assessments.	Topic-specific conditions, management plans and monitoring.

15.5 Cumulative and Combined Effects

- 15.5.1 The ES has considered both intra-project effects, where different environmental effects from the Proposed Development may combine at a common receptor, and inter-project effects with other relevant developments. Potential receptor interactions include the combination of noise, visual change, dust and traffic effects experienced by nearby residents and users of public rights of way.
- 15.5.2 Graig Quarry, approximately 0.8–1.0 km west of the Site, has been considered within relevant topic assessments. Existing quarry traffic forms part of the transport baseline, its landscape and visual influence forms part of the existing baseline, and potential cumulative noise and air-quality effects have been considered. The assessments conclude that no significant cumulative effects are likely. **ES Volume II, Chapter 14: Cumulative Effects and Iterations** similarly concludes that there would be no significant intra-project or inter-project cumulative effects.

15.6 Overall Conclusions

- 15.6.1 The EIA process has assessed the likely effects arising during site preparation, mineral extraction, processing, transportation, progressive restoration and the post-restoration period.
- 15.6.2 The Proposed Development incorporates mitigation through its design, phasing and operational controls. Principal measures include:
- Phased working and progressive restoration;
 - Acoustic bunds and barriers;
 - Dust and wheel-cleaning controls;
 - Access and visibility improvements;
 - Defined HGV routing;
 - Archaeological investigation;
 - Habitat retention, creation and long-term management;
 - Pollution-prevention controls; and,
 - Groundwater monitoring.
- 15.6.3 Following implementation of these specific operational measures embedded in the Proposed Development and mitigation measures, no significant residual effects are predicted in relation to air quality, cultural heritage, ecology and biodiversity, transport and highway safety, hydrology and hydrogeology, community and socio-economic considerations, or cumulative and combined effects. Minor or otherwise non-significant adverse effects remain in some cases, including potential effects on archaeological deposits and localised dust and ecological receptors.

- 15.6.4 Significant adverse landscape and visual effects would occur during extraction within the Site and at certain nearby receptors, including parts of the Clwydian Range and Dee Valley National Landscape. These effects would be localised and would reduce substantially as extraction progressed and restoration became established. Following restoration, landscape and visual effects are predicted to become neutral or beneficial, with no significant adverse long-term post-restoration effects.
- 15.6.5 **ES Volume II, Chapter 6: Noise** also identifies a significant adverse operational road-traffic noise effect at receptors within 50 m of Road Link 2 under the assessed maximum traffic scenario. Operational site noise would be reduced to a level that is not significant through acoustic bunds and barriers. The traffic-noise effect would be managed through the proposed HGV Traffic Management Plan and operational controls.
- 15.6.6 The Proposed Development would provide likely beneficial socio-economic effects through direct employment, supply-chain expenditure and recovery of a specialist industrial mineral, together with longer-term ecological and landscape benefits arising from progressive restoration and aftercare.
- 15.6.7 The limited identified significant residual effects and the commitments in **Table 15-2** should be considered by the Mineral Planning Authority as part of the planning balance.