

CONTENTS

NON-TECHNICAL SUMMARY

ENVIRONMENTAL STATEMENT

| 1 | INTRODUCTION | 1.1 |
|----|--|------|
| 2 | SCOPE & METHODOLOGY | 2.1 |
| 3 | SITE & SCHEME DESCRIPTION | 3.1 |
| 4 | PLANNING POLICY CONTEXT | 4.1 |
| 5 | CONSIDERATION OF ALTERNATIVES | 5.1 |
| 6 | AIR QUALITY | 6.1 |
| 7 | NOISE | 7.1 |
| 8 | LANDSCAPE AND VISUAL IMPACT ASSESSMENT | 8.1 |
| 9 | WASTE | 9.1 |
| 10 | WATER RESOURCES | 10.1 |
| 11 | GROUND CONDITIONS | 11.1 |
| 12 | ECOLOGY & BIODIVERSITY | 12.1 |
| 13 | ACCESS & TRANSPORT | 13.1 |
| 14 | CLIMATE CHANGE | 15.1 |
| 15 | ARCHAEOLOGY & CULTURAL HERITAGE | 16.1 |
| 16 | SOILS AND AGRICULTURAL LAND CLASSIFICATION | 17.1 |
| 17 | SOCIO-ECONOMICS | 18.1 |
| 18 | VULNERABILITY TO MAJOR ACCIDENTS AND DISASTERS | 19.1 |
| 19 | CUMULATIVE EFFECTS | 20.1 |
| 20 | SUMMARY & CONCLUSIONS | 21.1 |
| 21 | GLOSSARY | 22.1 |
| | | |

TABLES

- Table 2.1 Receptor Sensitivity Scale
- Table 2.2 Magnitude of Change Scale
- Table 2.3 Level of Effect Matrix
- Table 2.4 Significance of Effect
- Table 2.5 Cumulative Site Assessment Update
- Table 6.1 Summary of Consultation Undertaken to Date
- Table 6.2 Closest Existing Sensitive Receptors to Construction Phase Activities



- Table 6.3 Existing Sensitive Receptors for the Construction and Operational Phase Road Traffic Assessment
- Table 6.4 Closest Existing Sensitive Human Receptors to Proposed Development
- Table 6.5 Closest Existing Sensitive Ecological Receptors to Proposed Development
- Table 6.6 Impact Descriptors for Individual Receptors
- Table 6.7 Air Quality Objectives and Limit Values Relevant to the Assessment
- Table 6.8 Critical Levels Relevant to the Assessment
- Table 6.9 Critical Loads Relevant to the Assessment
- Table 6.10 Background Pollutant Concentrations Used in the Road Traffic Air Quality Assessment
- Table 6.11 Predicted Unadjusted NO2, PM10 and PM2.5 Concentrations at Existing Sensitive Receptors for Scenarios 1, 2 and 4
- Table 6.12 Background Pollutant Concentrations used in the Air Quality Assessment
- Table 6.13 Current Air Pollutant Conditions at the Considered Designated Habitat Sites
- Table 6.14 Construction Phase Dust Assessment for ESRs
- Table 6.15 Predicted Unadjusted NO2 Concentrations at ESRs for Scenarios 2 and 3 Using the Emission Factor Toolkit v11.0
- Table 6.16 Predicted Unadjusted PM10 Concentrations at ESRs for Scenarios 2 and 3 Using the Emission Factor Toolkit v11.0
- Table 6.17 Predicted Unadjusted PM2.5 Concentrations at ESRs for Scenarios 2 and 3 Using the Emission Factor Toolkit v11.0
- Table 6.18 Predicted Unadjusted NO2 Concentrations at ESRs for Scenarios 4 and 5 Using the Emission Factor Toolkit v11.0
- Table 6.19 Predicted Unadjusted PM10 Concentrations at ESRs for Scenarios 4 and 5 Using the Emission Factor Toolkit v11.0
- Table 6.20 Predicted Unadjusted PM2.5 Concentrations at ESRs for Scenarios 4 and 5 Using the Emission Factor Toolkit v11.0
- Table 6.21 Maximum Modelled NO2 Concentrations for Existing Sensitive Human Receptors
- Table 6.23 Maximum Modelled NMP and Ethyl Carbonate (as C6H6) Concentrations for Existing Sensitive Human Receptors
- Table 6.24 Maximum Modelled NO2 Concentrations for Existing Sensitive Ecological Receptor Points
- Table 6.25 Maximum Modelled Deposition Rates for Nutrient Nitrogen and Acid at Existing Sensitive Ecological Receptor Points
- Table 6.26 Assessment of Maximum Modelled Deposition Rates, for Nutrient Nitrogen and Acid, Against Critical Loads



- Table 7.1 Existing Noise Exposure Hierarchy
- Table 7.2 Existing Sensitive Receptor
- Table 7.3 Sensitivity of a Receptor
- Table 7.4 Construction Phase Noise Magnitude of Change (i.e. Impact)
- Table 7.5 Construction Phase Vibration Magnitude of Change (i.e. Impact)
- Table 7.6 Operational Phase Noise Magnitude of Change (i.e. Impact)
- Table 7.7 Level of Effect
- Table 7.8 Thresholds for construction noise at residential receptors
- Table 7.9 Summary of Measured Baseline Noise Levels
- Table 7.10 Construction Noise Assessment Criteria
- Table 7.11 Measured vibration levels of plant under normal operating conditions
- Table 7.12 Operational Phase Plant Assumptions
- Table 7.13 Comparison of Rating Noise Levels and Background Sound Levels Daytime
- Table 7.14 Comparison of Rating Noise Levels and Background Sound Levels Night-time
- Table 7.15 Context Assessment at ESR for Daytime Operations of the AESC Plant 3, between 07:00 and 23:00 hours Figures in dB LAeq
- Table 7.16 Context Assessment at ESR for Night-time Operations of the AESC Plant 3, between 23:00 and 07:00 hours Figures in dB LAeq
- Table 7.17 Comparison of Cumulative Rating Noise Levels and Background Sound Levels Daytime
- Table 7.18 Comparison of Cumulative Noise Levels and Background Sound Levels Night-time
- Table 9.1 Criteria used in the definition of significance of waste management
- Table 9.2 Receptor Sensitivity
- Table 9.3 Waste Facilities in Tyne and Wear
- Table 9.4 Estimated Demolition Wastes from North Moor Farm
- Table 9.5 BRE SMARTwaste benchmark for New Build Construction waste
- Table 9.6 Operational waste categorised by land use
- Table 10.1: Flood-risk impact significance criteria
- Table 10.2: Foul & surface drainage impact significance criteria
- Table 10.3: Water quality impact significance criteria
- Table 10.4: Water supply Impact significance criteria
- Table 11.1 Definitions of Sensitivity or Value
- Table 11.12 Definitions of Sensitivity or Value
- Table 11.34 Significance Matrix
- Table 12.1 Protected Species Legislation
- Table 12.2 Effect Significance Matrix



- Table 12.3 Statutory and Non-statutory Designated Sites
- Table 12.4 Summary of the tree quality assessment
- Table 12.5 Summary of Impacts and Mitigation
- Table 13.1 Study Area Link References
- Table 13.2 Link Sensitivity Rating Categories
- Table 13.3 Link Sensitivity Rating
- Table 13.4 Fear and intimidation degree of hazard
- Table 13.5 Levels of fear and intimidation
- Table 13.6 Assessment Framework
- Table 13.7 Impact Significance Assessment Matrix
- Table 13.8 Impact Significance Category Descriptions
- Table 13.9 Summary of Collisions in Study Area
- Table 13.10 Summary of PICs at Junctions
- Table 13.11 Construction Phase Screening
- Table 13.12 Assessment of Severance (Construction)
- Table 13.13 Assessment of Amenity (Construction)
- Table 13.14 Assessment of Fear & Intimidation (Construction)
- Table 13.15 Operational Phase Screening
- Table 13.16 Operational Phase Screening (Cumulative Assessment)
- Table 14.1 Significance Criteria for Assessment of Impacts from GHG Emissions
- Table 14.2 Baseline Scenario Whole Lifecycle Carbon (WLC) based on Cradle-to-Grave
- Table 14.3 Absolute Scenarios Whole Lifecycle Carbon (WLC) based on Cradle-to-Grave
- Table 14.4 Susceptibility Criteria
- Table 14.5 Vulnerability Criteria
- Table 14.6 Likelihood Criteria
- Table 14.7 Consequence of Impact Criteria
- Table 14.8 Significance Matrix for Assessing Climate Resilience
- Table 14.9 Projected global impacts of climate change
- Table 14.10 Quantitative Summary of the Future Baseline for Key Climatic Variables in Sunderland
- Table 14.11 Potential Impacts on receptors at the Proposed development
- Table 14.12 Assessment of susceptibility and vulnerability of the proposed development to future climate baseline
- Table 14.13 Assessment of Magnitude of Effects on proposed development from Future Climate Baseline
- Table 14.14 Significance Assessment for Climate Resilience



- Table 15.1 Value of Cultural Heritage Asset
- Table 15.2 Understanding Change
- Table 15.3 Effect Significance Matrix
- Table 15.4 Known heritage assets with the potential to be impacted
- Table 15.5 Summary of impacts applicable to the seven identified heritage assets
- Table 16.1 Receptor Sensitivity (Land)
- Table 16.2 Magnitude of Change (Land)
- Table 16.3 Receptor Sensitivity (Soil Resources Structural Damage)
- Table 16.4 Receptor Sensitivity (Soil Resources Loss)
- Table 16.5 Magnitude of Change (Soil Resources)
- Table 16.6 Level of Impacts
- Table 16.7 Summary of ALC within the Survey Area
- Table 16.8 Provisional ALC gradings within Sunderland City Council
- Table 16.9 Refined ALC grading area within Sunderland City Council
- Table 16.10 The Soil Associations based on the Soil Survey of England and Wales (1984).
- Table 16.11 Interpolated Agroclimatic Data for the Site
- Table 16.12 Land use breakdown for the Site in hectares
- Table 16.13 Construction Effects
- Table 17.1 Definition of Effects
- Table 17.2 Definition of Significance of Effects
- Table 17.3 Matrix for Determining the Significance of Effects
- Table 17.4 Balanced gross value added and GVA per jobs (2020)
- Table 17.5 Median Gross Weekly Earnings
- Table 17.6 Median Gross Weekly Earnings
- Table 17.7 Median Gross Weekly Earnings
- Table 17.8 Construction Employment
- Table 17.9 Construction GVA
- Table 17.10 Total Operational Employment
- Table 17.11 Operational GVA
- Table 17.12 Job types and skills required for a typical gigafactory
- Table 17.13 Cumulative Schemes Scoped into Socio-Economics
- Table 17.14 Summary of Effects
- Table 20.1 Air quality summary assessment matrix
- Table 20.2 Noise summary assessment matrix
- Table 20.3 Landscape and visual impact summary assessment matrix
- Table 20.4 Waste summary assessment matrix



- Table 20.5 Water Resources summary assessment matrix
- Table 20.6 Geology and soils summary assessment matrix
- Table 20.7 Biodiversity summary assessment matrix
- Table 20.8 Access and transport summary assessment matrix
- Table 20.9 Climate change summary assessment matrix
- Table 20.10 Archaeology and cultural heritage summary assessment matrix
- Table 20.10 Soils and Agricultural Land Classification summary assessment matrix
- Table 20.10 Socio-Economics summary assessment matrix

FIGURES

- Figure 1.1 Site Extents
- Figure 6.1 Existing Sensitive Receptors Road Traffic Assessment
- Figure 6.2 Existing Sensitive Receptors Process Stack Emissions Assessment
- Figure 7.1 Noise Monitoring Locations
- Figure 7.2 Operational Phase Noise Levels
- Figure 7.3 Cumulative Noise Levels
- Figure 8.1 Zone of Theoretical Visibility and Viewpoint Locations
- Figure 8.2 Designated Areas and Sensitive Receptors
- Figure 8.3 Landscape Character Areas
- Figure 8.4 Topography
- Figure 8.5 Access Network
- Figure 8.6 Viewpoint 1 Annotated Panorama
- Figure 8.7 Viewpoint 1 Proposed View
- Figure 8.8 Viewpoint 2 Annotated Panorama
- Figure 8.9 Viewpoint 2 Proposed View
- Figure 8.10 Viewpoint 3 Annotated Panorama
- Figure 8.11 Viewpoint 3 Proposed View
- Figure 8.12 Viewpoint 4 Annotated Panorama
- Figure 8.13 Viewpoint 5 Annotated Panorama
- Figure 8.14 Viewpoint 6 Annotated Panorama
- Figure 15.1 Known Heritage Assets within 1km study area; and
- Figure 15.2 Location of forthcoming evaluation trenches.
- Figure 16.1 Agricultural Land Classification
- Drawing ENV3-RPS-ST-XX-SK-A-000083 Spatial Evaluation
- Drawing ENV3-RPS-ST-XX-SK-A-000084 Spatial Evaluation



APPENDICES

- Appendix 2.1 Cumulative Site Assessment
- Appendix 3.1 Proposed Development Suite of Technical Drawing (RPS)
- Appendix 3.2 Energy Statement (WA, October 2023)
- Appendix 3.3 Glint Assessment (WA, October 2023)
- Appendix 3.4 Sustainability Statement (WA, October 2023)
- Appendix 6.1 Legislation and Guidance
- Appendix 6.2 Methodology for Construction Phase Assessment
- Appendix 6.3 Methodology for Operational Phase Assessments
- Appendix 6.4 Operational Phase Stack Emissions Assessment Results
- Appendix 6.5 Road Traffic Sensitivity Analysis Results
- Appendix 6.6 References
- Appendix 8.1 LVIA Methodology
- Appendix 10.1 Flood Risk Assessment and Drainage Strategy Report
- Appendix 10.2 Water Framework Assessment
- Appendix 11.1 Phase 1 Geo-environmental Desk Study & Preliminary Risk Assessment
- Appendix 11.2 NQMS Declaration
- Appendix 12.1 Habitat Review, WA, 2024
- Appendix 12.2 Ecological Appraisal, E3 Ecology Ltd, 2020
- Appendix 12.3 IAMP One Phase Two Ecology and Biodiversity Ecology Chapter (12)
- Appendix 12.4 West Moor Farm Ecological Impact Assessment Bat and Barn Owl report, DWS Ecology, April 2021
- Appendix 12.5 North Moor Farm, Bat and Barn Owl Report, DWS Ecology (2022)
- Appendix 12.6 Interim Bat report, Ecology Solutions, June 2021
- Appendix 12.7 IAMP Bat Transect Report, DWS Ecology, 2022
- Appendix 12.8 GCN Survey Report, DWS, September 2022
- Appendix 12.9 Otter and Water Vole Survey Report, DWS Ecology, 2022
- Appendix 12.10 ELMA ONE Breeding Bird Survey Report, DWS Ecology, 2022
- Appendix 12.11 ELMA ONE Wintering Birds Survey Report, DWS Ecology 2022
- Appendix 12.12 IAMP ELMA ONE, Update Barn Owl Report, DWS Ecology 2023
- Appendix 12.13 Biodiversity Net Gain Assessment, WA, 2024
- Appendix 12.14 Farmland Birds Technical Note, WA 2023
- Appendix 12.15 Breeding Bird Survey Report, Ecology Solutions 2021
- Appendix 12.16 Wintering Bird Survey Report, DWS, 2019
- Appendix 12.17 Aerial Inspections for Roosting Bats, WA 2023
- Appendix 12.18 River Morphological Report, WA 2024



Appendix 13.1 Transport Assessment (Systra, 2024)

Appendix 13.2 Travel Plan (Systra, 2024)

- Appendix 15.1 Gazetteer of Cultural Heritage Assets / Receptors
- Appendix 15.2 Heritage Impact Assessment (Lichfields, 2024)
- Appendix 15.3 Geophysical Survey Report (WA, 2022)
- Appendix 15.4 Specification for Trial Trench Evaluation
- Appendix 15.5 Cumulative Effects Assessment
- Appendix 16.1 Agricultural Land Classification Report (WA, August 2023)
- Appendix 16.2 Soil Management Plan (WA, October 2023)
- Appendix 16.3 Soils and Agriculture Cumulative
- Appendix 18.1 Abbreviations & Definitions