



**Proposed development of up to 1,460 dwellings
(with a further 498 beyond the Local Plan Period) on
land north of Bradley Road, Bradley**

Kirklees Local Plan Allocation Site Reference: HS11

Environmental Statement

Non-Technical Summary

April 2021

The Environmental Statement

1. This document provides a summary in non-technical language of the Environmental Statement for the development proposals on land off
2. An Environmental Statement reports on the findings of Environmental Impact Assessment, which is a process to identify and assess the environmental effects of the proposed development before planning consent is granted. The need to undertake Environmental Impact Assessment is set out in UK and European legislation under the (Town and Country Planning (Environmental Impact Assessment) Regulations 2017.
3. Environmental Impact Assessment considers the likely environmental effects of the proposed development resulting from its construction and intended purpose. Where possible any foreseeable adverse impacts on the environment are avoided, but where this is unrealistic, ways to mitigate adverse impacts (reduce, remediate or compensate) are proposed. In addition, positive impacts on the environment may be enhanced where this is possible.
4. This EIA is submitted to assess what development of the whole HS11 allocation site would have on environmental impact and how this impact can be mitigated against accordingly. The EIA is submitted at the same time as a Full Planning Application for the Bradley Villa Farm Phase of development for 270 residential dwellings to be developed by Redrow Homes.

The Site Allocation in the Kirklees Local Plan

5. The Kirklees Local Plan was adopted as the Statutory Development Plan in 2019 and its purpose is to set out the policies to guide new development in the District. The Local Plan covers the administrative area of Kirklees Council except for that part within the Peak District National Park and covers the period 2013 – 2031.
6. Kirklees has a growing population that is set to increase by 47,800 from 428,100 in 2013 to 475,900 in 2031. Over the same period the number of households is expected to increase by 27,300 from 176,300 to 203,600.
7. The Local Plan housing requirement is a minimum of 31,140 homes over the plan period from 2013-31 which will meet identified needs. This equates to an annual housing requirement of 1,730 new homes per annum. The Local Plan allocates 44 separate housing sites and 4 mixed use sites in the District to deliver circa 10,100 dwellings over the Plan Period.
8. Land north of Bradley Road is allocated in the Local Plan under Policy LP65 Site Ref: HS11 and is expected to be developed for residential use to deliver circa 1,460 new residential dwellings with a further 498 dwellings delivered beyond the Local Plan period.

9. The allocation site is a major housing allocation in the Local Plan that is needed to assist the Council in meeting and maintaining its five year housing supply requirements and assessed housing need over the Plan Period and beyond.

The Existing Site Context

10. The allocated site (HS11) is located to the north of Bradley Road (the A6107), and occupies much of the land between that road and the M62 to the north, including the 18-hole municipal golf course and driving range at Bradley Park. The allocated site is in two ownerships – the majority (including the golf course and driving range) is council-owned, while Bradley Villa Farm at the west end of the allocated site is in private ownership.
11. The allocated site has a 68.34 hectare gross site area, and a 62.84 net site area (excluding ponds and a buffer area to the north of the site from the developable area).
12. Vehicular access points currently exist at Bradford Road (the A641), Shepherds Thorn Lane, Lamb Cote Road and Tithe House Way. Public Rights of Way enter and/or run through parts of the allocated site.
13. There are residential properties adjacent to the allocated site to the west, south and east, as well as buildings in agricultural use at Bradley Villa Farm. Land to the north is in the green belt. An area of land to the east of the allocated site is designated as urban green space in the Local Plan.
14. There are no designated heritage assets within the allocated site, however the Grade II listed barn at Shepherds Thorn Farm (Historic England ref: 1290881) is just outside, and parts of the allocated site are within the setting of that designated heritage asset. The allocated site is not within or close to a conservation area. Site allocation HS11 notes that the western part of the allocated site includes an archaeological site. Non-designated heritage assets also exist in the area.
15. The allocated site is located within Flood Zone 1 and is therefore at low risk of flooding. Part of the allocated site (at Tithe House Way) is at risk of surface water flooding, as is an area at the northern edge of the golf course. To the east of Shepherds Thorn Farm, a watercourse runs north-eastwards (via a pond), joining Deep Dike, Bradley Park Dike and, eventually, the River Calder. Another watercourse runs eastwards from a pond adjacent to the golf course club house. Other unmapped watercourses may exist within and close to the allocated site. Yorkshire Water sewers exist beneath Bradford Road, Bradley Road and Tithe House Way.
16. Regarding the social and other infrastructure currently provided and available in Bradley, the area has a number of pubs, churches, eating establishments and other facilities within proximity. There are also schools, nurseries, play spaces and open spaces.
17. Regarding public transport, while the main roads are reasonably well served at times by the X63 bus service along Bradford Road and the 328 bus service that terminates at Alandale Road, the nearest railway stations are at Brighouse and Deighton. Cycle lanes

have been provided on the carriageway of Bradley Road, and this route forms part of the existing Core Walking and Cycling Network. An expansion of the network is proposed under the Local Plan via Shepherds Thorn Lane.

Planning History

18. Part of the wider allocation site HS11 on land to the west of Tithe House Way was recently granted planning permission for the development of 105 dwellings with associated highways works and landscaping (Ref: 2018/49/93965/W). The Application was approved by Kirklees Council on the 4th September 2020. The remaining planning history of the site relates to agricultural works relating to Bradley Villa Farm and works to the Golf Course.

The Proposed Development

19. An Illustrative Masterplan for the whole Allocation Site HS11 has been undertaken by Redrow Homes and is submitted with the ES. The Masterplan demonstrates how the site is proposed to be developed in accordance with Parameter Plans and the requirements of Allocation HS11. Parameters of development for the Council owned balance of the Allocation site has been informed by Council Officers.
20. Detailed Masterplanning of the remainder of the HS11 site owned by the Council would be determined during the planning application stage for each phase of development. The proposed development will form a new community for Bradley in accordance with the allocation of the site under Ref: HS11 in the adopted Kirklees Local Plan.
21. A Full Planning Application for the Bradley Villa Farm Phase of Development for 270 dwellings is submitted alongside this ES for the whole Allocation Site. Planning permission is sought for the Bradley Villa Farm phase of development only and not on the wider Allocation site that is under the Council's ownership. The wider allocation site will be developed out on a phase by phase basis in future years.
22. The Allocation site development will broadly comprise of the following:
 - Circa 1,460 residential dwellings (with additional capacity for a further 498 dwellings post plan period) providing a total site capacity of 1,958 dwellings
 - A main access road to the west onto Bradford Road (A641) and a spine road;
 - A 2-form entry primary school;
 - A sustainable drainage network;
 - Ecological enhancements;
 - Public open space;
 - A repurposed nine-hole golf course combined with a floodlit driving range, clubhouse and two full-sized 3G pitches; and
 - A new local centre

Construction Phase / Delivery Trajectory

23. The proposed delivery rate of the site is outlined at Appendix 3 of the Kirklees Local Plan (2019) and below:

Year	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	2030-2031	Post Plan Delivery
Housing Delivery - Units per annum	40	40	120	170	190	190	190	170	160	190	498

Planning Policy Framework

24. Consideration has been given to key national and local planning policy guidance in Chapter 4 of the ES. The proposed development would deliver jobs, homes, associated amenities and infrastructure to support new development, which would provide significant benefits to the District.
25. Overall, the proposals for the Application Site accord with both national and local planning principles and do not conflict with the policies of either the National Planning Policy Framework (NPPF) or the Development Plan.
26. The Full Planning Application for the Bradley Villa Farm phase of development includes a detailed Planning Policy Assessment which assesses the development proposals against National and Local Planning Policy.

Summary of Environmental Impact

Socio-Economics and Community

27. The proposed development is expected to provide economic benefits to the local area. Construction of the proposed development would generate short-term employment during the construction phase and longer term employment opportunity through the provision of a new local centre, primary school and sporting facilities. Opportunities exist for local residents through training opportunity, supply of materials and employment opportunities within the construction sector.
28. The residual effect of the Proposed Development on employment during construction is direct temporary minor to moderate positive with a minor to moderate positive effect on the local economy.
29. Community disturbance during the preparation/construction phase may arise from the anticipation of disruption, which may have a negative effect on the health and well-being

of nearby existing residents and the communication channels between the developer and local residents.

30. The significance of the effect will be dependent on the residents' perception and attitudes towards the Proposed Development. The site will be developed over a phased approach over a number of years and as such, the Proposed Development is likely to have an indirect temporary minor negative effect at worst. Communication between the developers for each phase of development and local residents affected by the development will be important as the scheme progresses.
31. It is anticipated that the site preparation/construction works will have a residual effect of indirect temporary negligible significance on the disturbance to local residents.
32. Large construction sites may be targeted by thieves and vandals with machinery, equipment and materials being vulnerable, especially in areas which are not overlooked. This can also make nearby properties more susceptible to incidents of crime.
33. The construction contractors will implement the following protective and crime preventative measures to reduce the likelihood of crime on the site:
 - Use of site surveillance;
 - Use of lighting;
 - Fencing around the construction sites and compounds;
 - Secure tools and machinery when not in use; and
 - Label tools and machinery for easy identification.
34. With the above measures in place, the construction works will have an indirect temporary negligible effect on levels of crime.
35. The Proposed Development will provide circa 1,460 new dwellings in Kirklees with a further 498 beyond the Local Plan Period. The development site is allocated for residential development in the Kirklees Local Plan under Site Ref: HS11.
36. The number of houses proposed is reflective of the objectively assessed housing need over the plan period in the Local Plan to meet housing needs for both market and affordable homes in Kirklees. The residual effect on the population will be permanent and of moderate to major positive significance.
37. The Proposed Development is expected to cause an indirect positive change in levels of multiple deprivation in the area as a result of:
 - Provision of new housing including affordable housing;
 - Provision of new open and play space;
 - Provision of a local centre and 2-form primary school;
 - Provision of new and improved footpath and cycle routes;
 - Provision of jobs during construction and operational phases; and

- Improvements to local schools arising from education contributions where required.
 - Reprovision of golfing /sporting facilities,
 - Support to sustainable travel options for non-car owners to improve connectivity and accessibility to local employment opportunity
38. It is hoped that the Local Centre can be accommodate a food convenience store provision and / or a health services provision such as a pharmacy or GP Surgery. This would be determined at the detailed design stage for the Phase of development the local centre would be part of. The effect of changes to the level of deprivation is considered to be indirect permanent minor positive significance.
39. The Proposed Development will increase demand for education provision in the area, as a result of the increase in the school-age population of the area. Notwithstanding this, the baseline conditions show that there is generally level capacity at primary school level and good availability at secondary school level at schools within proximity to the proposed development site. The increased number of schoolchildren arising from the development will support school populations in the locality.
40. The wider allocation site includes plans and land provision for a new 2-form entry primary school to provide additional primary school places for primary aged children arising from the development. If any further financial contributions are required for primary or secondary school places including travel costs, this would be determined on a phase by phase approach for each phase of development and would be agreed through the S106 Agreement for each phase of development. The residual effect on education will be permanent and minor negative significance.
41. The wider Masterplan for HS11 proposes circa 28.48 hectares of open space / recreational space including provision for relocation and re-provision of the existing golf course and driving range and provision of additional 3G sporting pitches with associated facilities.
42. Significant open, play and recreational space is proposed through the wider Allocation site development including re-provision of the golf course and driving range. It is expected that the golf course will be re-provided ahead of that part of the Allocation site being developed to ensure there are no periods where it is forced to close. Exact details of this would be determined through planning for each phase of development alongside suitable mitigation.

Health Impact Assessment

43. Policy LP47 of the Kirklees Local Plan requires that any residential development proposals for 30 units or more to include a Health Impact Assessment (HIA) as part of an application submission. This is provided in Chapter 5 of the ES.
44. A separate Health Impact Assessment is also submitted with the Full Planning Application for the Bradley Villa Farm phase of development and is directly relevant to that phase of development. It is expected that each Phase of development and subsequent planning application will be expected to procure its own Health Impact Assessment as part of the development proposals.

45. Having regard to Local Plan policy HS47 and the Council's Joint Health and Wellbeing Strategy, the cumulative public health impacts of the proposed development and development at other sites have also been assessed. Opportunities have also been considered with regards improving pedestrian and cycle connections through the whole Allocation site and beyond into Ashbrow Ward and enabling active travel and exercise throughout the area.
46. Health-related issues such as inclusive environments, dementia-friendly design, mental health and loneliness, opportunities for inter-generational interaction and the space, design and amenity implications of the Covid-19 pandemic have all been considered as part of the design of the site Masterplan.
47. The development of the wider Allocation Site provides new housing, play and open space and sporting facilities for the local community and new residents and supports the health and wellbeing of the resident population. The proposal will deliver a wide range and mix of market and affordable housing in Kirklees and supports the Local Plan aspirations to meet housing need in the District.

Highways

48. This chapter assesses any potential significant environmental effects that could arise from the change in traffic flows during the construction and operational phases of the proposed development. The assessment has been undertaken in accordance with the IEMA guidelines.
49. The assessment of the impact of construction traffic concluded that the traffic generated during the construction phase of the proposed development would be significantly less than the traffic generation of the development once it is occupied, particularly during peak periods. The effect of the construction traffic as a result of the proposed development on the surrounding network is considered negligible and will be temporary during the short/medium term.
50. Specific improvements are proposed in order to mitigate the impact of the proposed development on the wider highway network and as such would result in a negligible on severance, driver delay, pedestrian and cycle delay and amenity, fear and intimidation and accidents and safety.

Landscape and Visual

51. The Site is allocated for housing, with circa 1,958 dwellings expected to be delivered across the HS11 housing allocation within and beyond the Plan Period. The large-scale nature of the development will result in substantial changes to the landscape and visual effects to the Site and its environs, however the Development Proposals are entirely consistent with the Site allocation.

52. The landscape assessment demonstrates that, beyond the Site boundary itself, the magnitude of change experienced by landscape receptors will be medium or low. The greatest level of effects will largely be limited to those landscape elements found on Site (agricultural land, tree cover etc.) which is to be expected due to the transformational nature of development.
53. Similarly, the visual assessment identifies that those receptors experiencing the greatest magnitude of change to the views are those in close proximity or on Site itself, which is to be expected due to the transformational nature of development to residential use.
54. Mitigation reduces these effects by breaking up and softening the mass of built form within the developable areas. Longer range views from around the Kirklees and Calderdale valleys, including from Castle Hill result in moderate levels of visual effects or less. The presence of additional (cumulative sites) does not substantially alter the views experienced by the receptors.
55. To conclude, the locations of developable areas on Site, coupled with extensive space for new green infrastructure and buffer planting allows the Proposed Development to better assimilate to the local and regional setting without significant harm to the character and/or visual amenity of the receiving landscape.

Ecology

56. The proposals alone will not result in any residual effects on designated sites within the specified zone of influences. A cumulative effect of visitor pressure on Bradley Park Wood LWS/SEGI and Bradley Wood Replanted Ancient Woodland could be expected considering the proposals with the nearby Calderdale housing allocation at Woodhouse Garden Suburb (Ref. LP1451). Increased footfall to the designated sites is expected to cause not-significant adverse effects at Local level, however this is considered to be a negligible impact at District / County level.
57. Proposals will result in permanent losses of habitats under the footprint of the built environment. The habitats lost are predominantly of low ecological importance, with the exception of c. 2.5 ha of mixed plantation woodland, standing water (P1) and c. 0.48 km of hedgerows.
58. Prior to the extensive compensation and enhancement measures proposed, the loss of mixed plantation woodland will result in significant residual effects at a Local scale.
59. Mitigation through design has been utilised to avoid impacts and construction phase impacts will be minimised through careful control of construction activities through industry best practice. As a result, all other predicted effects on important ecological features are not anticipated to be significant.
60. Further protected species surveys are required in 2021 in order to confirm this impact assessment and inform detailed mitigation strategies in relation to bats, great crested newts, badgers and white clawed crayfish (if required).

61. The scheme is predicted to provide net gains for biodiversity as there is scope to provide habitat enhancements within the wider allocation site. Biodiversity Net Gain calculations using the Defra 2.0 metric will be completed by The Wildlife Trust.

Trees

62. Trees are generally located around the periphery of the site with all trees located along field boundaries. There are no trees within central field areas, with the overall tree cover being limited.
63. An Arboricultural Impact Assessment and Tree Survey are submitted as part of the Bradley Villa Farm phase of development detailing the general health of any trees on site and making recommendations for any trees that would require removal.
64. The proposed planting scheme as part of the Bradley Villa Farm phase of development will result in trees situated throughout the whole site, therefore significantly improving the future canopy cover within the site. This will result in a long term major beneficial effect upon the site for trees.

Bradley Park Golf Club

65. The proposed development scheme for this area of land within the allocation is within concept design stages and the assessments made are indicative only.
66. The most significant impact upon the site will be tree removal. The site is an existing golf course with a significant number of trees and tree groups covering approximately 17.23 Ha of canopy.
67. A total of 31 tree groups and seven individual trees are likely to be affected through tree removal of either whole or part removal of groups. The most significant effect will be the full removal of Category A tree groups, with full removal of Category B groups as the second most significant effect upon the Arboricultural receptors resulting in major and moderate to major adverse effects. Where part removal of groups is likely to occur this will involve removal of less than 50% of the group in all cases resulting in minor effects, with the majority of the receptor being retained. Overall an area of canopy of approximately 3.06 Ha is likely to require removal to facilitate development, this equates to 17.75% of the overall canopy cover across the golf course site.
68. Tree removal can only be mitigated for by replacement planting. As a significant area of trees will require removal to facilitate development of the site it is recommended that Forestry Commission guidelines on replanting are followed with a minimum of the equal area of canopy being replaced at a stem density of 1600 stems per Ha. It is also recommended that existing and retained tree groups are added too, to increase the area of existing groups. This will prevent whole new woodland groups being created and affecting the existing landscaping of the golf course which will affect open space and visual amenity of the site.

69. Trees and tree groups proposed for removal are generally located centrally within the golf course and it is not likely that loss of canopy will have a significant effect upon the wider land landscape. The area of canopy within the site and potential woodland habitats that will be lost as part of the development will have the most significant effect. Replacement planting will reduce the overall effect of the development, however, any benefit provided through replanting will be long term and not experienced for a number of years following completion of any development.

Area A – Pasture/Grazing Land

70. There is very limited tree cover within the area of land designated Area A. These consist in the main part of poor unmanaged hedgerow and self-sown young trees. Two larger Category B trees are present within the site.
71. There is no detailed development plan available at this stage for the wider allocation site and golf course area owned by the Council and the main impacts have been assessed as tree and hedgerow removal, which can only be mitigated for through replacement planting. As the site has limited canopy cover in its existing condition, it is likely that any replacement planting as part of an approved landscaping plan will improve the overall future canopy cover for this site and lead to a beneficial effect in the long term for trees.
72. Once a final proposed layout is available an accurate Arboricultural assessment will identify where tree retention could occur with appropriate mitigation.

Archaeology

73. The assessment of archaeology has involved undertaking a desk-based assessment and field survey. Data was collected from the West Yorkshire Historic Environment Record, local archives and secondary sources as well as a site visit and examination of LiDAR data. Geophysical survey was undertaken across the Bradley Villa Farm phase of development and associated attenuation pond and drainage areas.
74. The assessment has concluded that no designated assets will be affected by the proposed development. Receptors identified were as follows:
- Geophysical anomalies in Bradley Villa Farm phase and associated drainage and pond area
 - Unknown archaeological remains in the Allocated Site
 - Potential remains of Lamb Cote Farm
 - Potential remains of coal pits and coke ovens
75. These will all be subject to a Major Negative impact through topsoil stripping and earth moving. The significance of the effects ranges from Minor Adverse to Moderate Adverse.
76. A comprehensive scheme of mitigation has been outlined in this chapter to be undertaken prior to construction activity. Further evaluation will be undertaken on the geophysical anomalies in Bradley Villa Farm phase and the area of the attenuation ponds and further

geophysical survey and trial trenching will be undertaken on the Allocated Site as appropriate. Where preservation is not desirable or feasible, any significant remains will be excavated, recorded and the results published and archived as appropriate.

77. The mitigation measures will bring the residual effects to no more than Minor Adverse and not significant in EIA terms.

Heritage

78. The heritage impact assessment has concluded that the Proposed Development will sustain the significance of the vast majority of heritage assets within a 1km radius of the Application Site boundary, taking into account the potential cumulative effects of development in the local area.
79. The Proposed Development has been found to have the potential to cause less than substantial harm to one non-designated heritage asset, Bradley Villa Farm, as a result of change within its setting. This level of harm constitutes a residual effect of minor significance, which is not considered to be significant in EIA terms.
80. The Proposed Development also has the potential to cause less than substantial harm to the significance of the Barn at Shepherds Thorn Farm, a Grade II listed building, as a result of change within its setting. The indirect adverse heritage impact has been mitigated in part through design with the incorporation of a 'green buffer' of open space to the immediate south of the farmstead, with new and existing trees being included to screen the new dwellings. However, the residual effect would still be of moderate significance, which is considered to be significant in EIA terms.
81. The less than substantial harm has been found to be significantly outweighed by the wide-ranging and large scale public benefits which would flow from the scheme, in accordance with NPPF Paragraph 196 and Policy LP 35 of the Kirklees Local Plan. As such, the proposed development accords with local and national planning policy relating to conservation of the historic environment.

Air Quality and Odour

82. The proposed development has the potential to cause air quality impacts as a result of fugitive dust emissions during construction and road traffic exhaust emissions associated with vehicles travelling to and from the site during operation, as well as expose future site users to existing odour issues. As such, assessments were undertaken in order to determine baseline conditions and assess potential effects as a result of the proposed development.
83. During the construction phase of the proposed development there is the potential for air quality impacts as a result of fugitive dust emissions from the site. These were assessed in accordance with the IAQM methodology (IAQM, 2016). Assuming good practice dust control measures are implemented, the residual effect of potential air quality effects from

dust generated by demolition, earthworks, construction and trackout activities was predicted to be negligible, which is considered to be not significant.

84. Potential impacts during the operational phase of the proposals may occur due to road traffic exhaust emissions associated with vehicles travelling to and from the site. Dispersion modelling was therefore undertaken in order to predict pollutant concentrations at sensitive locations as a result of emissions from the local highway network both with and without the proposed development in place. Results were subsequently verified using local monitoring data.
85. Review of the dispersion modelling results indicated that effects on annual mean NO₂ and PM₁₀ concentrations as a result of traffic generated by the proposed development were classified as negligible at all receptor locations. Following consideration of the relevant factors, the overall significance of potential air quality effects was classified as negligible, which is considered to be not significant.
86. The development is located in the vicinity of Bradley Villa Farm and the Bradley Park Waste Management facility. There is the potential for odour emissions from these sites to cause loss of amenity for future occupants of the development and act as a constraint to planning consent. A two stage Odour Assessment was therefore undertaken in order to determine baseline conditions at the site and consider its suitability for the proposed end-use.
87. Based on the results of the staged assessment, overall odour effects at the site are not considered to be significant. As such, odour is not considered to represent a constraint to planning consent for the Bradley Villa Farm phase of development or Site Allocation HS11.

Noise and Vibration

88. Without any mitigation measures in place, the likely effects of the Proposed Development would be short term moderate-major during the construction phase and moderate-major adverse effect on the residential element of the scheme and from the potentially noise generating activities i.e. the local centre and leisure uses introduced as a result of the development.
89. Mitigation measures for the construction phase (noise and vibrations) will be implemented through a Construction Environmental Management Plan (CEMP) which will revolve around a set of good practice procedures in line with guidance contained within BS 5233 and Local Authority requirements.
90. Mitigation measures through the use of good acoustic design principles and where necessary, the use of the building envelope will achieve suitable internal and external living conditions for future residents.
91. The effects of noise from the Local Centre and proposed leisure uses (MUGA's) will be mitigated through a combination of operational restrictions to avoid noise sensitive periods and physical measures such as maximising distance separation and screening.

92. The residual effects of construction phase of the Proposed Development have been assessed as short-term minor to moderate adverse. The residual effects of the operational phase of the Proposed Development on both existing and future receptors, have been assessed as negligible in all cases.

Ground Conditions

93. A desk study of the 76ha wider allocation site and an intrusive ground investigation has been undertaken in the west of the wider site (c. 12ha), within the curtilage of Bradley Villa Farm.

94. Preliminary Investigation (Desk Study) of the wider site, comprised the following works:

- review of publicly available Government held digital data via QGIS and an Envirocheck report
- an assessment of the land use history
- determination of the site's environmental setting.
- a site walkover and inspection
- assessment of anticipated ground conditions, including potential contaminants
- assessment of anticipated foundation and engineering issues associated with redevelopment
- preparation of a Conceptual Site Model and design of an appropriate ground investigation

95. Lithos subsequently completed an intrusive ('Phase 2') ground investigation within the Bradley Villa Farm sub-area in the west of the wider site, the scope of works for which was determined by the Preliminary Investigation, and included the following. Findings of the above have been incorporated into the ES.

- 41 trial pits, including soakaway tests in 5 trial pits.
- retrieval of appropriate soil and groundwater samples
- laboratory analysis of soil samples (geotechnical & chemical)

96. Geological maps suggest the Site is directly underlain by bedrock. No drift deposits are shown to underlie the Site but residual soils (c. 1m to 2m thick) are likely to be present above bedrock. A veneer of made ground is anticipated within the vicinity of Bradley Villa Farm, the golf clubhouse & car park and historical coke ovens. Deep made ground is anticipated within the former landfill in the far east.

97. The intrusive ground investigation within the fields surrounding Bradley Villa Farm in the far west encountered topsoil underlain by Residual Soils. Coal Measures bedrock (sandstone, mudstone and siltstone) was encountered from an average depth of 1.8m (notably shallower in the northwest and south east).

98. Approximately half of the site is located in a Coal Mining Development High Risk area - land close to the conjectured outcrops of the Crow and Black Bed coals. Any unrecorded mineworking associated with these coal seams could affect surface stability. In addition, there are 15 known mine entries within, or within 20m of its boundary and there may also be earlier, unrecorded bell pits.
99. Coal Measures bedrock is classified as a Secondary A Aquifer. Drift cover is likely to be absent and it is therefore likely that site soils do not afford significant protection to the underlying aquifer. Three tertiary rivers cross north and south of the site.
100. There are potential sources of hazardous gas associated with: landfilled ground in the far-east; the adjacent, currently operational Bradley Park Tip; and shallow mineworkings. There is a low likelihood that adverse impacts to construction operatives and adjacent residents will occur during the construction phase. Adverse environmental effects could occur due to the inappropriate use and storage of construction materials and fuels during construction.
101. Mitigation of impacts can be satisfactorily achieved through the adoption of safe working practices and compliance with the relevant statutory and advisory guidance.
102. There is a low likelihood that adverse impacts to Site end users and the built development will occur during the operational phase of the Proposed Development due to the potential presence of contaminants and hazardous ground gas at the Site.
103. An intrusive investigation (with gas monitoring and risk assessment) will be required before mitigation measures can be recommended however these would be determined on an individual basis for each phase of development. At this stage it is considered likely that the following will be required:
- some excavation/treatment of contaminated soils and placement of soil cover in garden areas;
 - some drilling and grout stabilisation of mineworkings;
 - protective gas measures in all new buildings.

Flood Risk and Drainage

104. The water ES chapter presents information related to surface water, groundwater, flood risk management and infrastructure (water supply and wastewater treatment and sewerage), as part of the EIA. The assessment covers both the construction and operational phases of the proposed development.
105. Information from a variety of sources has been assessed to provide a baseline review of hydrology and hydrogeology, including a desktop study and site-specific Flood Risk and Drainage Assessments (site wide, Parcel R and Parcel A).

106. From this, receptors of potential environmental effects from the proposed development have been identified, the effects of the proposed development have been assessed and where required mitigation measures proposed, and residual effects have been identified and evaluated.
107. The construction and operational phases of the proposed development have the potential to reduce surface water and groundwater quality and increase flood risk, the demand for potable water and foul water discharges to the public sewer network.
108. During the construction phase this would be managed through a range of control and monitoring measures including best practice construction methods that, as a whole, would act to mitigate the potential effects on surface water, groundwater, flood risk, land drainage and infrastructure.
109. The likely significant effects during the operational phase of the proposed development would be managed by a package of mitigation measures comprising the implementation of a surface water strategy (including the incorporation of SuDS), raising finished floor levels to cater for event exceedance, considering design bridge principles, and the monitoring and maintenance of Deep Dike, UW1 and UW2.
110. The identified mitigation measures will result in a residual significance of environmental effects on the water environment which is assessed to be Negligible with Minor Beneficial in respect of the flood risk from Bradley Park Dike, Deep Dike UW1 and UW2.

Lighting

111. The current Kirklees Council and BS EN Guidance will be followed in developing the external lighting design for the development as more detailed design proposals emerge for the Council owned element of the site.
112. The site has been surveyed and observations taken from locations in and around the existing site. Furthermore, key receptors (both ecological and residential) were identified and assessed. As a result of this, a strategy has been developed for each area of High Potential Visibility with the resultant anticipated outcome.
113. The strategies established for the areas of high potential visibility will be adopted throughout the development.
114. The above responds to the considerations identified in the response to the EIA Scoping Document (refer to Appendix A) and the outcomes described in this report are as follows:
- The lighting will be designed carefully in accordance with all standards noted in this document including but not limited to: Replacement Kirklees Highway Design Guide SPD; SLL Guide to limiting obtrusive light; BS EN 13201-2:2015; PD CEN/TR 13201-1:2014 and the proposals within this document, as well as any other relevant standards.

- The impact of lighting from the development on the ecological receptors are considered and addressed,
- The impact of lighting from the development on the existing residential properties are considered and address.

Cumulative Effects, Summary and Conclusions

115. Schedule 4 of the 2017 EIA Regulations states that an ES should include a description of the likely significant effects of the development on the environment resulting from the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources.

116. Each Technical Chapter (5-16) provides an assessment of cumulative impact of the proposed development together with other committed or permitted developments in the locality which were agreed with the Council during scoping of the EIA and set out in Chapter 3 of the ES.

117. This ES was scoped with Kirklees Council with input from Calderdale Council prior to the ES being collated and a request was made for cumulative development schemes to be highlighted during the scoping period so they could be taken into account during the ES for cumulative effect. The Council provided a list of eight cumulative development sites to be assessed which is detailed in Chapter 3 of this ES.

118. The cumulative sites required to be assessed were scoped with the Council prior to the ES being produced and the Council provided a list of eight sites that would require cumulative impact assessment. These are as follows:

- HS11 - 105 dwellings approved 04/09/2020 on land at Tithe House Way under application Ref: 2018/93965).
- HS12 – Land north and west of Gernhill Avenue, Fixby. Housing allocation (indicative capacity: 377 units). Planning permission granted for 252 units under application ref: 2018/92055.
- ES1 – Land at Bradley Business Park (Aflex Hose site), Dyson Wood Way, Bradley. Employment allocation (indicative capacity: 15,155sqm floorspace). Planning permission granted for 19,202sqm B1(a), B1(b), B2 and B8 floorspace under application ref: 2018/91432.
- HS13 – Land to the east of Netheroyd Hill Road, Cowcliffe. Housing allocation (indicative capacity: 68 units).
- HS14 – Land north of Ashbrow Road, Brackenhall. Housing allocation (indicative capacity: 162 units). Planning permission granted for 161 units under application ref: 2019/92940.

- ES9 – Former Cooper Bridge Waste Water Treatment Works, Leeds Road. Employment allocation (indicative capacity: 14,910sqm floorspace).
- MXS6 – Land at Slipper Lane and Leeds Road, Mirfield. Mixed use allocation (indicative capacities: 166 residential units and 17,234sqm employment floorspace). Various permissions granted for residential and employment development.
- Garden Suburb Proposed Allocation Site Ref: LP1451 in Calderdale Council Local Authority Area which proposes circa 1,257 dwellings and associated infrastructure

119. A number of environmental impacts have been identified and the significance of the resulting effects has been assessed throughout the ES. Mitigation measures are proposed in each technical chapter to detail how environmental impact will be mitigated against and the residual effect.

120. The proposed development would generate jobs, housing and associated amenities and infrastructure to support the development. There would be residual environmental impacts associated with the development, however these impacts would be minimised by the implementation of appropriate mitigation measures wherever practicable

Comment to the ES

121. The Environmental Statement is available to view freely online on Kirklees Council's Planning Portal Website or alternatively at the Council Planning Offices (address below) during normal opening hours for the requisite consultation period following validation.

122. If you wish to comment on the Environmental Statement please write to the following address:

Kirklees Council
PO Box B93
Civic Centre III
Market Street
Huddersfield
HD1 2JR