

15 Summary tables

Introduction

- 13.1 This chapter summarises the findings of the EIA. Table 15.1 summarises the mitigation measures proposed and table 15.2 summarises the significant residual effects envisaged to remain following mitigation.

| Table 15.1: Mitigation measures | |
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| Potential effect | Mitigation |
| <i>Landscape and visual effects</i> | |
| -- | None proposed |
| <i>Cultural heritage</i> | |
| Destruction of below ground archaeological remains during construction | <p>A written scheme of investigation (WSI) has been prepared setting out the proposed excavation for six zones on site prior to the commencement of infrastructure works:</p> <ul style="list-style-type: none"> • Zone 1: negligible archaeological potential, no further work • Zone 2: Preservation in situ, known archaeological sites undisturbed by proposals, in particular S3, S11 and S14. For these sites, suitable fencing or barriers should be erected prior to commencement of construction to clearly delineate the archaeological areas and prevent accidental disturbance or damage during enabling or initial construction works • Zone 3: primary investigation routes. These areas are positioned along proposed roads and swales to provide initial evaluation between the gravel ridge and clay plain outside the known archaeological sites in the primary development area • Zone 4: 'landscape zone' between S19 and S37 and currently of known potential. The findings from initial investigations along zone 3 will aid the level and concentration of further excavation at an intensity appropriate to the nature, extent, survival and likely relationship of the archaeology uncovered. Once the area has been stripped back and settlement / occupation evidence has been revealed, the level of sample excavation will be confirmed with Cambridge Heritage Environment Team, but will be similar to zone 5 • Zone 5: dense concentration of archaeology requiring full excavation. There are areas identified for extensive excavation that will take place for sites deemed crucial to revealing the settlement organisation and evolution of the complex prehistoric landscape north of Rampton Road • Zone 6: areas of low archaeological potential on the clay plain. The findings from initial investigations along zone 3 will aid the level and concentration of further excavation at an intensity appropriate to the nature, extent, survival and likely relationship of the archaeology uncovered <p>Full details of the proposed measures are set out in the WSI in technical appendix B3.</p> <p>To ensure the above principles are transparently applied by contractors, all proposed archaeological mitigation measures will be provided in a construction environmental management plan (CEMP) for each phase of development and agreed with Cambridge Historic Environment Team. Clear and concise statements on the exclusion of construction activities in areas identified for preservation in situ will be provided in the CEMP, but in general should include:</p> <ul style="list-style-type: none"> • Groundworks, topsoil stripping, excavations, earthmoving or landscaping • Construction of haulage roads • Vehicle movement, tracking or parking • Storage or disposal of any materials or liquids • Location of temporary buildings • The routing of services, including temporary construction-related activities |

| Potential effect | Mitigation |
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| Destruction of below ground archaeological remains during construction (cont.) | <p>In the unlikely event that features of archaeological interest are uncovered during construction outside of investigation areas, further appropriate surveys and investigations will be undertaken. In the first instance, the Cambridge Historic Environment Team will be informed and the methodology for appropriate archaeological investigations will be discussed and agreed.</p> <p>The archaeological resource within the development area will be preserved by record under approved schemes of investigation. A number of strategies are set out in technical appendix C3 for the dissemination of the information gleaned from these investigations to the local population. These include:</p> <ul style="list-style-type: none"> • Excavation open days • Online excavation diary / blog • Monthly information leaflets / pamphlets / newsletter • Selective media coverage – local paper, local news • Temporary displays produced in association with the local history society and schools • Talks / lectures by academic advisors and site director as required • Excavation training to schools, local society members and other interested members of the community • Training in finds processing <p>Recent advances in media, such as android mobile phone technology and realtime video excavation feeds, present the opportunity to educate and eradicate previous misconceptions of archaeological excavations. Technological advances, such as creating mobile phone activated applications (Apps) that would update local residents on findings, and provide a video diary at times where public participation in the excavations is not possible, will be investigated. Research projects as part of university departments in marketing and media, or computer science, may assist in delivering a unique Northstowe heritage App that local schools or heritage societies can participate in. There could also be a dedicated Northstowe heritage Twitter account that would keep local residents, and interested archaeologists, aware of progress. This could potentially open discussion up to a wider audience in instances of enigmatic discoveries. Applying the latest media tools could lead to a wider section of the local community feeling they are part of their local heritage, whilst ensuring wider academic coverage. This empowerment is key to a local community understanding and valuing the currently unknown and intangible buried archaeological heritage.</p> |
| <i>Natural heritage</i> | |
| Loss of amenity, improved and semi-improved grassland | Approximately 38.56 ha of new grassland habitats is incorporated in the design of the proposed development. A natural hay meadow and wet grassland mix will be sown in these areas. Mixes such as EM3 (special general purpose meadow mixture) and EM8 (meadow mixtures for wetlands) will be sown at a rate of 4 g/m ² . An ecological management plan will be prepared that will include details of a cutting regime for this grassland to create a varied sward height. Low intensity cutting of road verges and the edges of sports facilities will provide additional habitat. |
| Loss of arable habitat used by foraging mammals and nesting and foraging birds | The newly designed open space will provide habitat replacement for these species through the planting of cornfield annuals in the south eastern corner of the primary development site. This area will be rotavated and sown on an annual basis. |
| Loss of seasonal ditches | Approximately 2,986 m of linear waterbodies will be incorporated into the soft landscaping. These will have profiled edges to incorporate a shelf for marginal planting and maximise potential burrowing habitat for species such as water vole. Specified native species will be planted at set proportions. The ditches will be subject to a rotational management regime to create a varied structure of vegetation, prevent drying from siltation and manage levels of litter and other debris. The details of this will be presented in a five year ecological management plan for the site. |

| Potential effect | Mitigation |
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| Damage to retained habitats and waterbodies from dust deposition / pollution during construction | <p>A Construction Management Strategy will be prepared prior to works commencing on site, a draft of which has been submitted in support of the application which will set out a strategy to minimise the risk of damage to retained habitats. This will include the following measures where appropriate:</p> <ul style="list-style-type: none"> • Materials, vehicles and fuels will be stored in a designated secure area away from these habitats • Diesel pumps and standing plant will be regularly maintained and drip trays will be used to prevent leaks • Oil interceptors will be provided for discharges from any temporary oil storage or refuelling areas • Spill containment equipment will be provided on the site and the site will be secure at all times to prevent vandalism • Pollution control procedures will be developed in line with the Environment Agency's guidelines and appropriate training will be provided for all construction personnel • Dampening of stockpiles and surfaces and implementing a speed limit to minimise dust deposition |
| Loss of hedgerows | <p>An equal amount of new hedgerow to that lost will be incorporated into the design through structural planting. A double hedgerow will be created along the western site boundary and hedgerows will also be planted throughout the residential areas and along the southern site boundary adjacent to the balancing pond. Native species that will be planted will include hawthorn, blackthorn, crab apple, wych elm, rown, guelder-rose, ash, oak, field maple and hazel.</p> |
| Loss of ponds | <p>A cluster of six ponds will be created in the south western corner of the site, ranging from 2 m² to 15 m², that will vary in profile. Six ponds will also be created in a linear design with connecting overflow ditches along the eastern boundary. A range of sizes and depths, from 30 cm to 2 m, will be provided. A second cluster of six ponds will be created in the south eastern corner of the site. The planting of species such as blue water-speedwell and brooklime will create like for like habitat for two nationally scarce weevils that were recorded in ponds on the golf course during the field survey. Similar species and proportions will be used as are proposed for the linear waterbodies. The banks of the balancing ponds will be profiled to incorporate a variety of gradients, including gently sloping banks, shelves and vertical banks. The ponds will be subject to management conducive to optimising potential for wildlife and the details of this will be set out in the ecological management plan.</p> <p>The balancing ponds will be designed to attract wildlife through the creation of reedbeds. Shallow waters will be created along the edge, between 1 cm and 10 cm deep. Small floating islands will also be incorporated into the design to provide a breeding habitat for birds.</p> <p>The retained lake will also be subject to ecological enhancement and management, the details of which will be included within the ecological management plan. Measures will include the planting and management of marginal vegetation.</p> <p>The lake and balancing pond on the primary development site and the larger of the Hatton's Road attenuation ponds will be designed to incorporate a kingfisher bank. A hollow concrete structure, filled with low density mortar to resemble packed sand along a bank, will be provided and covered with soil and plant debris to encourage breeding populations on site.</p> <p>Areas of grassland between the development area and the ponds in the eastern side of the site will be terraced, allowing wetter and drier grassland communities to form in close proximity to each other. Ridge and furrow will be created around the Hatton's Road attenuation ponds.</p> |
| Partial loss of ditches in the Hatton's Road attenuation ponds area and diversion of part of Longstanton Brook | <p>The diversion will be enhanced once the excavation and infilling is complete and will be profiled, planted and managed as described above.</p> |

| Potential effect | Mitigation |
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| Loss of scattered trees | A mixture of native trees and shrubs will be planted within landscaped areas, including crab apple, elder and apple, to provide sources of food for invertebrates and badgers. Other tree species to be incorporated will include oak, ash, field maple and hawthorn. A 30 m wide green space containing footpaths and sustainable drainage systems will be planted with an avenue of trees. |
| Loss of scrub habitat | A mosaic of scrub covering 1.08 ha will be planted. A scrub and grassland mosaic will be created in the south western corner of the primary development site and along the eastern boundary of the residential dwellings, parallel to the CGB. A mixture of native species, including hawthorn, blackthorn, elder, wych elm and hazel, will be planted and bramble will be allowed to colonise these areas. |
| Presence of Japanese knotweed on site | An eradication programme will be implemented by a specialist sub-contractor prior to site clearance, following the Environment Agency's Code of Practice. A method statement will be prepared detailing this programme. The stands will be removed and taken to landfill. Construction traffic, machinery and personnel will be strictly forbidden from entering an area within a 7 m radius of the stand of knotweed. Herras fencing will be provided to prevent movement into this area. |
| Disturbance to badgers during construction | A temporary sett closure is required prior to construction works and a Natural England licence will be needed for this closure. A new artificial sett will be created within the north western corner of the primary development site, adjacent to the current site entrance. This will comprise three chambers constructed from concrete paving slabs and 500 mm ² wooden chambers, connected by 300 mm plastic piping. Temporary fencing will be installed at a suitable radius from the new sett, constructed of metal / wooden posts with two strands of barrier tape, with the lowest at least 30 cm from the ground to allow free movement of badgers. Signs will be attached to the temporary fencing, forbidding access into the zone around the sett. Any trenches or holes left overnight and during weekends will be covered or an exit will be provided to ensure badgers do not become trapped. |
| Loss of badger foraging habitat | Approximately 23 ha of informal open space will be incorporated into the soft landscaping, along with tree species favoured by badgers for foraging. The community orchard to be created in the area around the new artificial sett will include apple and cherry trees. An ecological management plan will be prepared that will include details on a planting regime and tree management. Species-rich grassland will be sown around the sett and within the orchard, which will be managed at a varied sward height between 5 cm and 15 cm. Fruit shrubs such as crab apple and elder will be incorporated into the tree planting along the western boundary. The sowing of natural hay meadow mixes within areas of informal open spaces will support higher worm populations. |
| Loss of common pipistrelle summer bat roost | Prior to demolition of the club house, a new compensatory bat roost will be created that will be suitable for a non-breeding summer roost of common pipistrelle bats. This will be provided through the construction of a store building for the proposed allotments, approximately 60 m south of the club house. The building will be designed to include a cavity wall to mimic the existing area used by the bats and access will be provided via bat tubes. A roof void will be available, with small crevices suitable for pipistrelles. Works to the club house will be conducted outside the summer season (1 May to 30 August). Soft-demolition will be carried out under the watching brief of a licensed bat ecologist and post-development monitoring will be put in place for two years. |
| Loss of habitat used by breeding and foraging birds | Habitats favoured by passerines for nesting and foraging will be incorporated into the landscaping of the development, including scrub, hedges and scattered trees. Where possible, site clearance will be timed to avoid the bird breeding season (March to August). If works must take place during this time, a suitably qualified ecologist will check for nesting birds prior to work commencing. Any nest present will be left and a buffer zone of at least 5 m radius will be placed around the nest, excluding any work until the young have fledged. |

| Potential effect | Mitigation |
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| Loss of bat foraging habitat | Bat foraging habitat will be provided within the design of the scheme and within the areas of new habitat. Areas of existing tree groups that bats are currently using will be retained, such as the line of poplar trees along the southern boundary of the primary development site, and new structural planting will be provided using native trees and shrubs. Native trees and shrubs will also be planted in the residential areas to increase potential bat foraging areas. These will include species set out above. Hedgerows will be planted along the SuDS on the southern boundary, creating buffer strips that remain predominantly dark for light-sensitive species. Fifty 1FF Schwegler bat boxes will be erected on a variety of aspects on trees across the site. |
| Loss of habitat used by breeding skylark | An area of strips of cornfield annuals will be planted in the south eastern corner of the primary development site and will be sown at a rate of 2.5 g/m ² . |
| Noise disturbance to birds using retained habitats during construction | Construction works will be restricted to normal working hours during the week and machinery used on site will be fitted with appropriate sound moderators. |
| Harm to water voles during the diversion of Longstanton Brook | Mitigation will include excluding and trapping water voles from the working area. Vole-proof fencing will be required around the stretch of brook that is to be diverted to prevent recolonisation. Controlled habitat degradation will be conducted to discourage water voles away from their existing burrows prior to installing fencing to increase trap success. This will be achieved by removing surface vegetation to encourage water voles to use nearby alternative areas. New shoots will be removed at frequent intervals to discourage water voles from returning and to maintain a short sward height. This will be carried out early in the year. Work along the ditch will be undertaken outside the water vole breeding season (May to August) and will avoid the autumn, when water voles population are highest. Water voles will be captured by setting out traps on features such as latrines, feeding stations and regularly used runs. Traps will be checked twice daily and will contain hay and chopped apple to entice water voles into the trap. Trapping is best conducted between September and October or March and April. Once trapped, water voles will be released singly and slowly along the stretches of Longstanton Brook that are to be enhanced. Prior to the controlled habitat degradation and trapping, adjacent lengths of the Longstanton Brook that are not going to be affected by the proposed development will be enhanced for water voles to provide suitable alternative habitat for water voles to migrate into and act as a receptor site for captured animals. Five metre stretches of the banks will be profiled to ensure that suitable shelves are available for burrowing and use as feeding platforms. The vegetation will be managed along the stretches of the brook that are currently choked by common reed by cutting sections to ground level. In areas where there is currently little bankside vegetation, native species will be planted, with additional species that are particularly favoured foods of water vole. The banks of the diverted length of brook (which will be longer than that lost) will be profiled to incorporate a combination of vertical banks suitable for burrowing and shelves to provide feeding platforms. Additional habitat will also be provided by the creation of four small inlets of approximately 2 m in length along the ditch. The attenuation ponds will also provide additional water vole habitat. |
| Harm to reptiles during construction | An exclusion exercise using specialist drift fencing to ring-fence the construction site will be undertaken and the reptiles will be relocated to habitat created within the informal open areas and surrounding the Hatton's Road attenuation ponds. This will also allow migration onto suitable habitat in the adjacent fields, along the drainage channel parallel to the CGB and along Longstanton Brook. |

| Potential effect | Mitigation |
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| Loss of habitat used by reptiles | A hedgerow of native species will be created along a bank in the south western corner of the primary development site. This will act as hibernacula for reptiles. A scrub and grassland mosaic will also be created in this area, with the species set out above, and adjacent to the edge of the development area, together with 10 hibernacula. In addition, 10 log piles will be created across the site, in the community orchard, the south western corner of the site and along the eastern boundary. A planting strategy will be devised to enhance the areas of Longstanton Brook that will not be affected by the diversions. This will help to create and enhance existing habitat for reptiles that have been recorded along the ditch and field margins. The ecological management plan will provide information on the cutting regime required along here to maintain a varied sward height. In addition, earth mounds will be provided adjacent to the attenuation ponds, which will be seeded with a mix of natural hay meadow and wetland grass mixtures and will provide potential sheltering and foraging habitat. Scrub and woodland blocks in this area will also provide suitable hibernation sites. |
| Loss of habitat used by aquatic invertebrates | Habitat suitable for the two nationally scarce species of water beetle / weevil and the Red Data Book soldier fly will be incorporated into the wetland habitats, including the balancing ponds and the linear watercourses. Sediment will be imported from the two ponds where the nationally scarce species were recorded and placed into the newly created waterbodies, either in spring or late autumn at a time when aquatic beetles are mobile. The ponds will be created with a range of depths, from 30 cm to 2 m, suitable for a range of aquatic invertebrates. The beetle and weevil were recorded on blue water-speedwell and brooklime respectively, and these species have been included within the planting scheme for the wetland habitat. The wetlands will be managed through the ecological management plan. |
| Effects on waterbodies and water quality from increased run-off and potential contamination | The proposed surface water drainage scheme will include the use of trapped highway gullies and interceptors to minimise pollution levels in run-off. The run-off will be directed to one of the several proposed balancing ponds across the site. |
| Disturbance of badgers post-construction | The existing badger sett will be reopened once works are complete and will be screened from the residential development with existing trees and the new area of informal open space. In addition, new native trees will be planted, including holly, blackthorn and hawthorn, which will prevent access to the sett entrances. |
| Increased lighting on site affecting feeding bats and hunting birds | Light spill will be kept to a minimum by using low level and directional lighting where possible. Lights will be no greater than 3 lux, and where possible 1 lux. Floodlights will be installed surrounding the sports area, but asymmetric beam floodlights oriented so that the glass is parallel to the ground will help reduce light spill. In addition, the sports field will be surrounded by native planting, which will act as a screen. The area to the west of the site will mainly be unlit to ensure suitable habitat is available for light sensitive bats. |
| Increased predation of birds by species attracted by food waste | Green bins for food waste will be provided by SCDC, which will be collected on a fortnightly basis. These will be loaded directly into collection vehicles. |
| Effect on water vole habitat through altered water levels and quality | The measures identified above to prevent pollution and increased run-off will also mitigate this impact. |
| <i>Traffic and transport</i> | |
| Increased severance on the B1050 | A series of pedestrian crossings will be provided to link development east and west of Station Road, which will reduce severance and improve pedestrian / cycle amenity. |

| Potential effect | Mitigation |
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| Increased traffic generation | <p>The following package of measures is included in the proposed development to reduce any identified impacts further:</p> <ul style="list-style-type: none"> • A Construction Management Strategy that will restrict HGV traffic to primary roads and programme these to avoid sensitive time periods • A permeable network of footways and cycleways, linking to external routes and avoiding existing roads • Enhanced access to high quality public transport services, with enhanced bus services on the B1050 • Site access junctions that preserve journey time reliability on local roads • Resident, workplace and school travel plans to change travel characteristics <p>Within this package of improvements will be enhancements to the Citi 5 bus service, which currently provides a 20 minute frequency of service between Bar Hill and Cambridge. This will be extended to Longstanton and into the site. Through this provision, in combination with the CGB, all houses at Northstowe will be within 400 m of a bus service offering at least a 20 minute frequency of service to Cambridge city centre.</p> |
| <i>Air quality</i> | |
| Generation of dust and PM ₁₀ during construction | <p>A Construction Management Strategy has been prepared that sets out the overall strategies and best practice techniques to be used during construction. A series of more detailed Construction Environmental Management Plans will be prepared as different parts of the site come forward for development. The scope and content of these will be agreed with SCDC and will adhere to the framework outlined in the Construction Management Strategy. The measures to be set out in these documents to minimise generation of dust and PM₁₀ will include where appropriate:</p> <ul style="list-style-type: none"> • Use of appropriately designed vehicles for materials handling • Where appropriate, screening of earthworks and perimeter landscaping should be completed to provide a physical barrier between the site and the surroundings • Surfaced and un-surfaced site access roads should be watered as necessary using a water bowser and surfaces kept in order • Vehicles should be kept clean through the use of wheel washers as appropriate, particularly on departure from the site onto the public highway • Vehicles carrying loose aggregate, fill materials or contaminated materials to and from the site should be sheeted at all times • Vehicles travelling on un-made haul routes should travel at low speeds to minimise dust re-suspension and dispersion • Regular inspection of local highways and site boundaries to check for dust deposits (evident by soiling and marking) on vegetation, cars and other objects, taking remedial measures where necessary. Inspections will be carried out on a daily basis, during the working week, or more frequently depending on the nature of the activity being undertaken • On site aggregate handling should be carried out in enclosed areas and transfer should be completed in a way that minimises the requirements to deposit materials from height • When loading materials into vehicles or using transfer chutes and skips, drop heights should be kept to a minimum and enclosed wherever possible • On site cement and concrete batching (if required) should be undertaken in enclosed areas, with suitable water dowsing and wind shielding measures applied as appropriate • Observation of wind speed and direction prior to conducting dust-generating activities to determine the potential for dust nuisance to occur, avoiding potentially dust-generating activities during periods when wind direction may carry dust into sensitive areas and avoiding dust-generating operations during periods of high or gusty winds • Stockpiles of materials should also be covered or screened, as appropriate, especially during the day when wind speeds are moderate (>20 kph) and when the site is closed to reduce the potential for wind pick-up and dispersion of dust |

| Potential effect | Mitigation |
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| Generation of dust and PM ₁₀ during construction (cont.) | <ul style="list-style-type: none"> • Where possible, stockpiles of soils and materials should be located as far as possible from sensitive properties, taking account of prevailing wind directions and seasonal variations in the prevailing wind • Surface areas of stockpiles should be minimised where possible (subject to health and safety and visual constraints regarding slope gradients and visual intrusion) to reduce the area of surfaces exposed to wind pick-up • Dampening of exposed soils and stockpile materials to be carried out as and when appropriate, using hoses and/or sprinklers. If longer term exposure is anticipated then these areas should be re-vegetated • Windbreak netting should be positioned around materials stockpiles and vehicle loading / unloading areas, as well as exposed excavation and material handling operations, where appropriate • Completed earthworks to be covered or vegetated as soon as is practicable • Use of dust-suppressed tools for all operations • No unauthorised burning of any material anywhere on site <p>It is recommended that liaison with the local authority be maintained throughout the demolition, earthworks and remediation process. If at any time during the construction process an incident leads to excessive depositions of dust at residential locations, this should be reported to the environmental health department at SCDC. Any complaints received from local residents should be documented in a diary or log, which should be kept on site by the site manager. A nominated member of the construction team should act as a point of contact for local residents who may be concerned about elevated dust concentrations; the contact details of this member of staff should be passed to the local authority prior to the commencement of the construction phase.</p> |
| Emissions of NO ₂ and PM ₁₀ from construction plant | <p>To minimise any effects of exhaust emissions associated with construction traffic and plant, the following measures will be implemented where appropriate:</p> <ul style="list-style-type: none"> • Identified routes for all construction traffic will be agreed with SCDC and CCC prior to commencement of works. This will reduce the likelihood that construction vehicles will pass along sensitive roads (i.e. residential roads, congested roads, via unsuitable junctions) • Large scale vehicle movements to be timed to avoid peak hours on the local road network as far as reasonably practicable • All plant and equipment to be maintained in good working order and not left running when not in use • On site movements should be restricted to well within the site and not near the perimeter or existing sensitive receptors, wherever possible • If possible, plant should also be located well within the site, away from the site perimeter and existing sensitive locations |
| Emissions of NO ₂ and PM ₁₀ from post-construction traffic | <p>A range of framework travel plans have been developed that outline the key transport measures and strategies that will be implemented as part of the various aspects of the development. Many of the proposed measures will be common across the suite of travel plans, and the following list is an example of the measures that will be implemented at the site:</p> <ul style="list-style-type: none"> • Promotion of available transport options through the provision of marketing material, a travel plan information board on site, knowledgeable residential sales staff (including the appointment of a settlement travel plan co-ordinator) and two sustainable travel events a year for the five years following the occupation of 250 dwellings • Creation of a dedicated website for Northstowe residents that provides up to date travel information, including details of transport routes, walking and cycling maps etc • Provision of resident ‘Sustainable Travel Information Welcome Packs’ that will include a summary of all travel options and local (including routes maps and timetables), loyalty / discount cards, details of taxi firms, details of local cycle groups etc • A travel advisor to visit each resident within the first three months of occupation to help with personal travel planning |

| Potential effect | Mitigation |
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| Emissions of NO ₂ and PM ₁₀ from post-construction traffic (cont.) | <ul style="list-style-type: none"> • Promotion of the benefits of walking and cycling and the facilities that are available within Northstowe itself • Implementation of specific measures to promote efficient car use including car sharing, adoption of set car parking standards within the site, car clubs <p>In addition, a Low Emission Strategy has been prepared that provides a mechanism for adopting the transport measures that will reduce the impact of transport-related emissions on local air quality. The measures within the strategy should be agreed with SCDC. Some of the key measures include:</p> <ul style="list-style-type: none"> • Contributions to the local air quality monitoring data through the provision of new monitoring locations in and around the development (for example, through the use of passive diffusion tubes), the locations of which would be agreed in advance with SCDC • Supporting local authority air quality initiatives that will have a benefit on future residents, visitors and employees within the proposed development • Provision of supporting infrastructure for future electric charging bays and low emission fuelling points • Provision of car clubs • Personal travel planning (promoting low carbon travel to all site users) • Allocated parking spaces for car clubs and / or low emissions vehicles • Low emission incentives and mechanisms in liaison and possible partnership with proposed retail outlets • Management charge incentives for employment-based development, based on Euro standards and VED emissions bands • Improvements to public transport and / or incentives for the use of public transport |
| <i>Noise and vibration</i> | |
| Generation of noise and vibration during construction | <p>The occupation of dwellings on the site will be carefully considered to ensure that future residents are not exposed to unacceptably high levels of noise and vibration from construction works and noise calculations undertaken where necessary to ensure that future residents are not exposed to unacceptably high noise levels. It is recommended that site preparation works in phases 1-1 and 1-2 immediately adjacent to Hatton Park Primary School shall have regard to the effective operation of the school and that restricted hours of working and the use of quieter plant should be adopted wherever practicable. It is recommended that further calculations are undertaken when sufficient information becomes available and mitigation measures are reviewed where necessary.</p> <p>The following best practice measures should be integrated into the construction methodologies where feasible, together with the additional measures set out in the Construction Management Strategy:</p> <ul style="list-style-type: none"> • Noisy works should be conducted within the core hours (to be agreed with SCDC), whilst work outside these hours would be inaudible at the boundary • ‘Best Practicable Means’ as defined in Section 72 of the Control of Pollution Act 1974 should be adopted to minimise noise • Guidance given in BS 5228: 2009 Part 1 (Annex B Noise sources, remedies and their effectiveness) should be followed • Best construction practices and methods should be used in executing the construction works so as to avoid or reduce noise and vibration as far as possible. Only plant that conforms to the relevant European Union noise emission standards as defined in EC Directive 86/662/EEC (and any subsequent amendments) should be used during construction • All plant items brought to the site should be properly maintained, provided with effective silencers and operated in a manner so as to avoid causing excessive noise • All items of plant operating on the site in intermittent use should be shut down in the intervening periods between use • All stationary plant should be located as far as possible from occupied dwellings as agreed with the site manager |

| Potential effect | Mitigation |
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| Generation of noise from plant post-construction | <p>Fixed plant items will be designed to achieve set noise levels. An assessment will be undertaken at the detailed design stage to assess noise levels from both fixed and mobile sources, and mitigation measures will be specified where necessary. The following best practice measures should be considered at this stage:</p> <ul style="list-style-type: none"> • Static and mobile plant should be located as far as possible from residential areas (existing and proposed) and screened where necessary • No plant should be operating, or activities undertaken, in the evenings and at night • The operating hours of the household recycling facility should be carefully considered to minimise the potential impact at the residential areas • No HGVs should be allowed to access the site before 08:00 hours and HGVs should be prevented from waiting outside |
| Generation of noise from the proposed sports pitches | <p>At the detailed design stage, the assessment will consider the guidance set out in SCDC's Open Space in New Developments (2009), alongside the proposed frequency and time of use for the pitches. Where appropriate, mitigation measures will be set out to minimise potential impacts. These will include restrictions on the times of use of the pitches and / or boundary fencing.</p> |
| Effects of existing noise on the proposed development | <p>The site layout should be considered such that, where feasible, dwellings are screened from the noise sources by other buildings on the site, or are set back as far as possible from the roads. Where feasible, the orientation of the dwellings should be considered so that their angle of view to the noise sources is minimised.</p> |
| | <p>The internal layout of the dwellings should be considered so that, where possible, habitable room windows do not overlook the B1050 or the primary internal road.</p> |
| | <p>The use of acoustic barriers along the site boundaries with the roads may be considered appropriate.</p> |
| | <p>In order to achieve target noise levels for habitable rooms overlooking the B1050, a glazing unit with a sound reduction of 41 dB is required for daytime habitable rooms and a glazing unit with a sound reduction of 33 dB is required for bedrooms. For daytime habitable rooms overlooking the primary internal road, a glazing unit with a sound reduction of 35 dB is required and for bedrooms a glazing unit with a sound reduction of 33 dB is required. For dwellings at 50 m from the CGB, glazing units with a sound reduction of 28 dB and 32 dB are required for daytime habitable rooms and bedrooms respectively. These levels could be reduced if an acoustic barrier is used.</p> |
| <p>The following measures should be considered for the proposed primary school, where feasible:</p> <ul style="list-style-type: none"> • Outdoor teaching areas should be located to the rear of the proposed buildings, such that they are screened from the road • The internal layout of the school should not place teaching rooms in elevations fronting the primary internal road • The requirements for an enhanced glazing specification and ventilation strategy | |
| <i>Geology, hydrogeology and contamination</i> | |
| Potential for health effects due to contact with contaminants during construction | <p>Supplementary ground investigation works are required to complete coverage across the golf course and to delineate known contamination hotspots. The results of the investigation will be used to complete an appropriate risk assessment to determine the significance of any soil and groundwater contamination encountered. Should the risk assessment indicate that any significant contamination is present on site, a Remediation Strategy will be required to set out the methodology for dealing with the contamination.</p> <p>Demolition asbestos surveys (Type 3 surveys) will be required prior to the demolition of all buildings on the site. Appropriate measures to remove asbestos-containing materials will need to be incorporated into the demolition process. Asbestos removal works will be undertaken by a specialist.</p> |

| Potential effect | Mitigation |
|---|---|
| Potential for health effects due to contact with contaminants during construction (cont.) | Construction workers will be required to wear personal protective equipment, such as gloves, overalls etc. These measures will be combined with general site best practice, including the provision of on site washing facilities and designated areas for eating, smoking etc. These measures are outline in the Construction Management Strategy submitted in support of the application. |
| Potential risk to human health and built structures from buried ordnance / munitions | Ordnance surveys and related risk assessments will be completed to inform the earthworks proposed at the site. Any potential ordnance targets will be excavated by a specialist contractor to determine their presence and significance. Any ordnance will be removed or mitigated as appropriate prior to construction. |
| Effects on surface water and groundwater from pollution during construction | During construction, all fuels, oils and chemicals will be stored in appropriate containers within a bunded compound, in accordance with the Environment Agency's Pollution Prevention Guidance Note 6. On site practices will include adequate bunding and containment of fuels and oil, washing of vehicles and equipment before they leave the site and adequate protection of on site drains and watercourses through the use of temporary covers or bunds. Construction vehicles will be regularly maintained to reduce the risk of hydrocarbon contamination and will only be active when required. Mitigation measures will also be used as part of the construction of the balancing ponds, such as appropriate liners and petrol interceptors to contain any potential hydrocarbon spillage. General details of the proposed site-wide mitigation measures are included within the Construction Management Strategy. A more detailed site-wide Construction Environmental Management Plan will be developed that will describe any mitigation measures in more detail. |
| Potential for health effects due to contact with contaminants post-construction | The supplementary ground investigation works and risk assessment discussed above will mitigate this effect. |
| Potential for the presence of ground gas or landfill gas to pose a risk to future site users and new structures | A post-earthworks ground gas assessment, limited to parts of the site where fill depths are over 1 m and comprise Ampthill or Kimmeridge Clays beneath 0.5 m below ground level will determine any residual risks from ground gas, if necessary. During earthworks, organic material from within any ponds to be backfilled must be excavated for use elsewhere on the development site. This should not be beneath or in the immediate vicinity of buildings. |
| Effects on surface water and groundwater quality from pollution post-construction | The balancing ponds will be designed with liners and / or petrol interceptors to prevent any downward migration of contamination into the aquifer and to contain any hydrocarbons should any spillages occur. Site surface water drainage will be designed in accordance with best practice to prevent pollution from surface water run-off. |
| <i>Water resources, flooding and drainage</i> | |
| Effects on surface water quality due to increased sediment loading during construction | At no stage during the construction process will surface water runoff from the construction site be permitted to discharge in an uncontrolled manner into any watercourses or the sewer system. Prior to the commencement of the construction phase, site run-off will be controlled to mitigate both flood risk and sediment loading. The drainage strategy for the construction stage will be addressed during the detailed design stage in agreement with the Environment Agency. It is assumed that site runoff will be collected and directed through the temporary drainage system and attenuated on site prior to construction. Additional temporary stilling ponds may be required to deal with construction based solids in suspension. |
| | A variety of good environmental site practices will be implemented, including, where appropriate: <ul style="list-style-type: none"> • Working areas shall be clearly defined to ensure the disturbance of soils is minimised, where possible • Haul routes and accesses shall be clearly defined to minimise the risk of accidents • The cleaning of vehicle wheels prior to leaving site |

| Potential effect | Mitigation |
|---|--|
| Effects on surface water quality due to increased sediment loading during construction (cont.) | <ul style="list-style-type: none"> • Implementation of a phased temporary drainage network in line with construction phasing to prevent sediment laden surface runoff from leaving the site or entering surface water features • Controlled and covered waste storage areas • Dust suppression (i.e. damping down) • Provision of environmental awareness training for site workers • Where necessary, all site works will be undertaken in accordance with the EA's Pollution Prevention Guidelines, in particular: <ul style="list-style-type: none"> ○ PPG1 General Guide to the Prevention of Water Pollution (ref. 11.10) ○ PPG5 Works in, near or Liable to Affect Watercourses (ref. 11.11) ○ PPG6 Working at Construction and Demolition Sites (ref. 11.12) • Installation of systems such as silt traps, including adequate maintenance and monitoring of these to ensure effectiveness, particularly after adverse weather conditions • The position and extent of working areas shall reflect the sensitivity of surrounding areas and works being carried out. The contractor shall appraise the suitability of such working areas in this respect as part of working method statements <p>Earthworks and construction activities will also be undertaken in accordance with CIRIA guidance C532. All site works and ground works will be undertaken in accordance with the Considerate Contractors Scheme to help ensure a well-managed operation that minimises environmental risks. Best practice recommendations for the prevention of contamination will be outlined in more detail in a construction environmental management plan, which will be developed prior to the construction phase. Any dewatering that will be carried out as part of the construction process will be stored, attenuated and discharged at appropriate rates to the public combined sewer. Discharge consents will be obtained from the Environment Agency as appropriate.</p> |
| Effect on construction workers and construction activities from increased surface water runoff and flooding during construction | <p>Prior to the commencement of the construction phase, site surface runoff will be controlled to mitigate flood risks as discussed above. The drainage strategy for the construction phase will be prepared during the detailed design stage. Groundwater levels should be monitored during all excavations. Dewatering measures should be employed if necessary. Should dewatering be required, abstraction and discharge licences will be sought from the Environment Agency. Construction workers on site should be made aware of risks during the construction phase. Contingency and evacuation plans for any risk will be prepared and the information provided to all workers on site.</p> |
| Effect on surface water quality from increased sediment loading post-construction | <p>Site surface water drainage (including roads) will be designed in accordance with best practice to prevent pollution from surface water runoff. A network of positive drainage systems will direct surface water runoff to on site attenuation ponds prior to discharge. In addition, a series of local SuDS options will be utilised throughout the development that will ensure water quality is maintained prior to discharge from the site. This will include the use of swales, ditches and permeable surfaces / pavements.</p> <p>Interceptors will be used at appropriate locations to enable other contaminants to be removed from the surface water runoff prior to entering the retained drainage ditches.</p> <p>A commitment is made to ensure that the attenuation features and drainage infrastructure are appropriately managed and maintained throughout the duration of the operational phase of the development.</p> <p>Future tenants of light industrial / commercial units will be required to ensure that materials are stored in accordance with the Environment Agency's pollution prevention guidelines.</p> |
| Effects on groundwater from reduced recharge rates post-construction | <p>The SuDS used on site will attenuate flows and promote infiltration where ground conditions allow.</p> |

| Potential effect | Mitigation |
|---|--|
| Effects on the hydrology and associated flood risk of surrounding watercourses due to increased surface water run-off post-construction | <p>There will be substantial freeboard (over 1 m) from the top flood water level during the 1 in 200 year event (including an allowance for climate change), and the proposed minimum finished floor levels of built development will be set at higher levels to the water park area. This will provide a substantial amount of storage if a second storm occurred whilst the water park was draining down. The exact volume required in this area, and therefore its final capacity, will be confirmed as part of the detailed design.</p> <p>Discharge to the Beck Brook and Cottenham Lode from the water park will be pumped at a time when the Cottenham Lode is not in flood and therefore will not increase the flood risk downstream.</p> <p>The flood flow and levels in the Beck Brook and Cottenham Lode will be monitored following the development using a telemetry system linked to a number of sensors. These systems will be integrated into both the pump control systems on the site and the stakeholders' monitoring systems to allow discharge from the site to be regulated in response to dry weather and storm conditions within the catchment.</p> <p>A range of SuDS options will be considered at the next stage in the planning process and included into the design codes, depending on the development type and location. The exact form of SuDS will depend on the specific local constraints associated with individual areas of the site. These will help to reduce local flood risk.</p> |
| Increased demand for potable water post-construction | <p>The developers aim to achieve a Code for Sustainable Homes three credit rating for water demand for residential properties, which equates to a demand of 105 litres per person per day or less. The Water Conservation Strategy submitted in support of the application sets out plans on how to achieve a water demand figure of 99 litres per person per day. The strategy for commercial buildings is to provide a 33% to 50% reduction in demand over typical industry baseline figures. Targets for the school should keep in-line with the minimum policy 33% reduction over typical school demand. It is anticipated these reductions will be achieved across the site through the implementation of demand reduction and rainwater harvesting. In addition, the viability of greywater reuse will be assessed.</p> |
| Increased demand for wastewater treatment post-construction | <p>The detailed foul drainage system for the primary development site has not been finalised to date and will be addressed during the detailed design stage in collaboration with Anglian Water. It is anticipated that this will include measures for minimising foul drainage in combination with measures for minimising water use.</p> |
| <i>Community, economic and social effects</i> | |
| Increased pressure on local services and facilities, including secondary schools | <p>Financial contributions will be made through a section 106 legal agreement with South Cambridgeshire District and Cambridgeshire County Councils, including towards secondary schools and community / sports facilities.</p> |
| Effects on amenity of existing residential receptors from increased lighting during construction | <p>The following measures will be put in place during construction to minimise amenity effects associated with increased lighting:</p> <ul style="list-style-type: none"> • Adherence to best practice measures recommended by the Institute of Lighting Engineers, CIRIA and the Health and Safety Executive • Regular consultation with South Cambridgeshire District Council and feedback from any nuisance issues arising from the public liaison activities • Glare caused by poorly directed security lighting and floodlighting will be minimised by ensuring that light fittings are mounted close to the horizontal and directed into the centre of the site. Temporary light fittings should be designed to provide full cut-off, or should be directionally shielded to ensure that artificial light is controlled and substantially confined to the defined area intended to be illuminated • The location of residents with intermittent and / or direct views within a 25 m radius of the site should be evaluated prior to the installation of lighting |

| Potential effect | Mitigation |
|--|--|
| Effects on amenity of existing residential receptors from increased lighting post-construction | <p>The proposed lighting specification and / or strategy should be designed to use current best practice and best available technology, conform to planning policy and be agreed with South Cambridgeshire District Council. Additional care should be taken to minimise light spill and glare from any lighting installed by ensuring the correct luminaire is selected and installed correctly. The following recommendations from the Institute of Lighting Engineers Guidance Notes for the Reduction of Obtrusive Light (2005) should be strictly adhered to:</p> <ul style="list-style-type: none"> • Lights should be switched off when not required for safety, securing or enhancement of the night time scene. The introduction of a curfew with further limitations in lighting levels between agreed hours should be investigated • Lights should direct downwards wherever possible to illuminate the target, not upwards. If there is no alternative to the installation of upward lighting, then use of shields and baffles will help to reduce light spill to a minimum. These should also be considered adjacent to sensitive areas where darker environments are currently experienced (particularly relevant for Brookfield Farm) • Lighting equipment should minimise the spread of light near to or above the horizontal • Glare should be kept to a minimum, ensuring that the main beam angle of all lights directed towards a potential observer is kept below 70 degrees. It should be noted that the higher the mounting height, the lower the main beam angle can be, although columns in excess of 10 m in height should be avoided • Wherever possible, floodlights with asymmetric beams should be adopted. These permit the front glazing to be kept at or near parallel to the surfaces being lit • ‘Over lighting’ should be minimised. It is recommended that reference is made to lighting standards for individual work tasks • Any architectural or decorative lighting within the proposed development should comply with best practice <p>Should any illuminated advertisement be installed on any element of the proposed development, the signage will be designed to minimise glare and follow best practice guidance in the Institute of Lighting Engineers (2001) Technical Report 5: Brightness of Illuminated Advertisements. Following a review of the detailed sports lighting specification, consideration will be given to the potential for light spill and glare, and floodlight modelling will be undertaken if nuisance at receptors is considered to be a possibility.</p> |
| <i>Agriculture and soil resources</i> | |
| Damage to soil resources during construction | <p>A number of commitments are set out in the Construction Management Strategy submitted in support of the application, including the stripping and storage of soil for later re-use within the site. It is recommended that the re-use of soil resources takes into account the soil units on site. The limited soil unit 1 resource should be used within allotments / community gardens. Soil unit 2 resources should be used within residential gardens and the remainder of the soil resources should be used for less demanding end-uses, such as amenity grassland and general landscaping. All management practices will be in accordance with DEFRA’s Code of Practice for the Sustainable use of Soil on Construction Sites. Maintaining the quality and quantity of soil resources within the site should be further detailed within a Soil Management Plan, which should be produced during the detailed application stages.</p> |

| Table 15.2: Residual effects | | | | | | |
|--|--------------------------------|----------------------------|---------------|-----------------|-------------------------|---------------------------|
| Significant residual effect | Sensitivity of receptor | Magnitude of change | Nature | Duration | Degree of effect | Level of certainty |
| <i>Landscape and visual effects</i> | | | | | | |
| Change in character and landscape resources of site area | Medium | Large | Adverse | Long term | Substantial | Reasonable |
| Change to Viewpoint 6: Rampton Road | Medium | Medium (upper range) | Adverse | Long term | Substantial | Reasonable |
| Change to Viewpoint 7: Rampton Road | Medium | Medium (upper range) | Adverse | Long term | Substantial | Reasonable |
| Change to Viewpoint 8: Rampton Road | Medium | Medium | Adverse | Long term | Moderate | Reasonable |
| Change to Viewpoint 9: Rampton Drift | Medium | Medium | Adverse | Long term | Moderate | Reasonable |
| Change to Viewpoint 14: B1050 near Park and Ride | Low | Large | Adverse | Long term | Moderate | Reasonable |
| Change to Viewpoint 15: B1050 | Low | Large | Adverse | Long term | Moderate | Reasonable |
| Change to Viewpoint 16: Western side of golf course | Medium | Large | Adverse | Long term | Substantial | Reasonable |
| Change to Viewpoint 17: Public footpath through golf course | Medium | Large | Adverse | Long term | Substantial | Reasonable |
| Change to Viewpoint 18: Southern side of golf course | Medium | Large | Adverse | Long term | Substantial | Reasonable |
| Change to Viewpoint 19: Magdalene Close | High | Large | Adverse | Long term | Very substantial | Reasonable |
| Change to Viewpoint 20: Rampton Road | Medium | Large | Adverse | Long term | Substantial | Reasonable |
| Change to Viewpoint 21: Rampton Road | Medium | Large | Adverse | Long term | Substantial | Reasonable |
| Change to Viewpoint 22: Rampton Road | Medium | Large | Adverse | Long term | Substantial | Reasonable |
| Change to Viewpoint 23: Reynolds Drove | Medium | Large | Adverse | Long term | Substantial | Reasonable |
| Change to Viewpoint 24: CGB | High | Large | Adverse | Long term | Very substantial | Reasonable |
| Change to Viewpoint 25: CGB | High | Large | Adverse | Long term | Very substantial | Reasonable |
| <i>Cultural heritage</i> | | | | | | |
| Knowledge gained through excavation required to mitigate substantial effect on the on site archaeology | High | Large | Beneficial | Long term | Substantial | Absolute |
| Bisection of southern portion of S19 | High to medium | Medium | Adverse | Long term | Substantial to moderate | Absolute |
| Incomplete archaeological appreciation of S19 | High | Large | Adverse | Long term | Substantial | Reasonable |
| Effects on Longstanton conservation area through changes to setting | Medium | Medium to small | Adverse | Long term | Moderate to slight | Reasonable |

| Significant residual effect | Sensitivity of receptor | Magnitude of change | Nature | Duration | Degree of effect | Level of certainty |
|---|-------------------------|---------------------|------------|----------------------|------------------|--------------------|
| <i>Natural heritage</i> | | | | | | |
| Loss of grassland habitat | Low | Medium | Adverse | Long term | Moderate | Absolute |
| Loss of arable habitat | Low | Large | Adverse | Long term | Moderate | Absolute |
| Creation of new linear waterbodies and enhancement of the diverted section of Longstanton Brook | Low | Medium | Beneficial | Long term | Moderate | Absolute |
| Loss of skylark nesting habitat | Medium | Medium | Adverse | Long term | Moderate | Absolute |
| <i>Traffic and transport</i> | | | | | | |
| None | -- | -- | -- | -- | -- | -- |
| <i>Air quality</i> | | | | | | |
| Generation of dust during on site construction activities | Medium | Medium to large | Adverse | Short to medium term | Moderate | Reasonable |
| Generation of PM ₁₀ during on site construction activities | High | Medium | Adverse | Short to medium term | Moderate | Reasonable |
| <i>Noise and vibration</i> | | | | | | |
| None | -- | -- | -- | -- | -- | -- |
| <i>Geology, hydrogeology and contamination</i> | | | | | | |
| None | -- | -- | -- | -- | -- | -- |
| <i>Water resources, flooding and drainage</i> | | | | | | |
| Reduction in existing flood risk post-construction on site and in Longstanton | High | Small | Beneficial | Long term | Moderate | Reasonable |
| <i>Community, economic and social effects</i> | | | | | | |
| Effects on public rights of way network during construction | Medium to high | Medium to large | Adverse | Short term | Substantial | Reasonable |
| Increase in light spill and glare during construction at 41 Station Road and Brookfield Farm | High | Small to medium | Adverse | Short to medium term | Moderate | Reasonable |
| Increased population in Longstanton ward | Medium | Large | N/A | Long term | Substantial | Absolute |
| Provision of new housing | High | Large | Beneficial | Long term | Very substantial | Absolute |
| Provision of new affordable housing | High | Small | Beneficial | Long term | Moderate | Absolute |
| Increased employment generation post-construction | Low | Medium to large | Beneficial | Long term | Moderate | Reasonable |
| Increased pressure on NHS dental services | Medium | Medium to large | Adverse | Long term | Moderate | Reasonable |
| Increase in light spill and glare at Brookfield Farm post-construction | High | Small to medium | Adverse | Long term | Moderate | Reasonable |

| Significant residual effect | Sensitivity of receptor | Magnitude of change | Nature | Duration | Degree of effect | Level of certainty |
|---|--------------------------------|----------------------------|---------------|-----------------|-------------------------|---------------------------|
| <i>Agriculture and soil resources</i> | | | | | | |
| Loss of best and most versatile agricultural land | Medium | Medium | Adverse | Long term | Moderate | Reasonable |