

## CHAPTER 17: CUMULATIVE EFFECTS AND INTER-RELATIONS

### Introduction

17.1 The purpose of this chapter of the ES is to draw together the cumulative effects and inter-relations of the proposals and any residual impact associated with them.

### Methodology

17.2 As well as setting out the potential impacts arising from the proposed development and their nature, it is appropriate to quantify their significance. This analysis is undertaken in a tabular form, and based upon the conclusions of the preceding chapters.

17.3 The analysis undertaken considers the geographical area potentially affected by each of the impacts (positive and negative) in accordance with the following criteria:

- An impact of International importance would be one that affects an interest of international concern, such as a site protected under the RAMSAR Conventions. **No impacts** on this scale arise in connection with the proposed development.
- An impact of National importance will be one which affects the national interest identified by Government policy, such as effects on a National Park, AONB, SSSI or a Grade 1 listed building. **One impact** on this scale arises in connection with the proposed development.
- Impacts of Regional importance would be those where the scale of impact is such that it could support or undermine the regional guidance or strategic policy. **Few impacts** on this scale arises as a result of the proposed development.
- Impacts of borough-wide importance will be of relevance broadly within the context of the planning authority's administrative boundary. **Several impacts** on this scale occurs as a result of the proposed development.

- Impacts of local importance are those which affect a limited area, largely contained within or close to the development site itself. **The majority** of impacts fall into this category.

17.4 As set out above, potential impacts may be beneficial or adverse, or, in some cases, they may have beneficial or adverse consequences. They may also be short term (eg limited to the construction phase) or long term, reversible or irreversible. Each of the potential impacts identified for the topic areas the subject of the preceding chapters has been characterised in accordance with the criteria and a judgement made in respect of potential significance. The areas of potential impact have previously been explored in detail on a chapter by chapter basis within this ES and within any related papers. Taking account of this work, measures have been proposed, where necessary, to mitigate adverse effects. The overall nature and significance of the inputs predicted within the ES, taking into account any mitigation proposals, is summarised in table 17.1 below. It is appropriate to note that planning does not feature within the table, due to its multi-disciplinary nature and because it is planning that ultimately assesses the appropriateness, or otherwise, of the proposed form of development.

Table 17.1: Summary of Environmental Impacts (taking into account Mitigation Measures)

Topic Area	Description of Potential Impact	Geographical Importance					Significance	Impact	Nature	Mitigation Measures and Comments
		I	N	R	B	L				
<b>Socio-Economic Effects</b>	Provision of housing (including affordable housing)				◦		Moderate	Beneficial	<i>LT</i>	The applicant is in ongoing discussions with the Education Authority and NHS Property Services over Section 106 contributions regarding (i) primary and secondary schools provision, and (ii) health facilities (doctors' surgeries and dental practices). These discussions will ensure that an appropriate scale of mitigation can be agreed to minimise the impact of the new housing upon education and healthcare infrastructure in Boston.
	Household consumer expenditure				◦		Moderate	Beneficial	<i>LT</i>	Mitigation unnecessary.
	Employment (construction)			◦			Major	Beneficial	<i>ST</i>	Mitigation unnecessary.
	Employment (permanent)			◦			Major	Beneficial	<i>LT</i>	Mitigation unnecessary.
	Foodstore trade capture				◦		Moderate	Adverse	<i>LT</i>	Mitigation unnecessary.
	Commercial leisure floorspace trade capture				◦		Minor	Adverse	<i>LT</i>	Mitigation unnecessary.
	Stadium and associated education and community facilities			◦			Major	Beneficial	<i>LT</i>	Mitigation unnecessary.
	Hotel			◦			Minor	Beneficial	<i>LT</i>	Mitigation unnecessary.

<b>Landscape and Visual Impact</b>	Landscape Impacts					◦	Minor	Adverse	<i>LT; IR</i>	<p>Existing vegetation should be retained within the application site, especially at the boundaries. Dense and mature hedgerows along the site boundary should be protected and enhanced. Planting within the site should also serve to break up the urban edge and soften the development, where possible.</p> <p>New planting could be introduced throughout the development to diversify existing species and provide dense screening where required.</p> <p>From the A16 there are views towards the urban edge of Boston. As this is the main route into Boston from the south, a sense of arrival should be maintained by siting high quality frontages along the route and framing key views using planting along the boundary and within the site. There are long distance views to the two major landmarks in the area; the Water Tower and St Botolph's Church Tower or 'The Stump' as it is locally known. These are important vertical features within a very flat landscape and views towards these features, especially from the road, should be preserved and enhanced where possible.</p>
	Visual Impacts					◦	Negligible to Moderate	Neutral to Adverse	<i>LT; IR</i>	<p>Where possible, screen planting should be implemented within the new development, especially where it abuts residential areas. Evergreen species will provide year round cover and so should be included within the mix. The development should also be set back to maintain a feel of spaciousness within the views from these properties.</p>
<b>Flood Risk and Drainage</b>	Tidal/Fluvial flooding					◦	Major	Adverse	<i>ST; R</i>	<p>Construction works will be undertaken in accordance with method statements and a Construction Environmental Management Plan that takes account of the following best practice guidance:</p> <ul style="list-style-type: none"> <li>• Construction Industry Research and Information (CIRIA) Report 624 (2004) Development and Flood Risk – guidance for the construction industry;</li> <li>• CIRIA Report 650 (2005) Environmental Good</li> </ul>
Construction Phase										

									<p>Practice on Site; and</p> <ul style="list-style-type: none"> <li>CIRIA Report 697 (2007) The SUDS Manual.</li> </ul> <p>Where there is flood risk to workers on site during the construction process an Emergency Response Plan will be prepared. This will include an evacuation plan including the identification of safe access and egress routes. Additional mitigation will include signing up for EA flood warnings and monitoring of weather reports.</p>
	Flooding due to restriction of flows by debris				◦	Moderate	Neutral	<i>ST; R</i>	Construction works will be undertaken in accordance with method statements and a Construction Environmental Management Plan that takes account of the best practice guidance (see above).
	Flooding due to temporary increases in impermeable area				◦	Moderate	Neutral	<i>ST; R</i>	Construction works will be undertaken in accordance with method statements and a Construction Environmental Management Plan that takes account of the best practice guidance (see above).
	Flooding due to damage of water mains/sewers				◦	Minor	Neutral	<i>ST; R</i>	Construction works may require a number of consents/licences from Anglian Water and/or Environment Agency that will need to be in place prior to commencement of works. Any works affecting the existing public sewer network need to be undertaken in accordance with the requirements of Sewers for Adoption (7th edition). Consultation with BSIDB indicates that development must be carried out in accordance with the Boards byelaws and in particular, Byelaw No.3 regarding to the discharging of water and Byelaw No.10 regarding the siting of structures. It is noted that no structures will be permitted within 9 metres of the boards open or piped watercourses.
<b>Flood Risk and Drainage</b>  Operational Phase	Flooding due to permanent increases in impermeable area				◦	Moderate	Neutral	<i>ST; R</i>	Operational phase mitigation will consist of drainage proposals that will be included in the scheme's design. The need for treatment and containment measures will be based on risk assessment as defined by the method set out in the ES. In the first instance, opportunities for sustainable drainage systems will be considered.



										consultation with the Environment Agency and BBC. An option to ground raise 1m across the site with flood resilient construction accounting for the required freeboard has been raised in the FRA which is subject to further consideration.
	Flooding from proposed sewers					◦	Minor	Neutral	<i>ST; R</i>	An Emergency Plan will be developed in conjunction with local emergency service providers and Lincolnshire Fire and Rescue to ensure that inhabitants of the site remain safe for the lifetime of the development. Residents will be encouraged to sign up for EA flood warnings and safe access and egress routes to areas at lower flood risk will be identified.
<b>Transport</b> Construction Phase	Temporary traffic management					◦	Minor	Adverse	<i>SR; R</i>	It is envisaged that a Construction Management Plan will be produced prior to the commencement of development, detailing the phasing of construction, anticipated development programme, means of access to the site and anticipated traffic movements by construction traffic.  Temporary traffic measures may be required on the A16, in particular during the construction of the new roundabout but the contractor will liaise closely with the County Council with a view to maintaining safe and efficient operation of the public highway and minimising disruption to road users.
<b>Transport</b> Operational Phase	Impacts from development generated traffic					◦	Minor	Adverse	<i>LT; IR</i>	Traffic flows at all analysed junctions are shown to remain within capacity, with any impacts minor and not severe in nature.
	Impact of new distributor road					◦	Minor	Beneficial	<i>LT; IR</i>	The County Council's transport strategy for Boston advocates provision of a system of distributor roads to the west of the town to remove through-traffic from the town, thereby improving local traffic circulation and access to the town centre. Implementation of the distributor road scheme advocated in the transport strategy therefore provides the appropriate mechanism for dealing with identified traffic issues in the town and mitigating the impact of traffic generated by the proposed development.

<b>Historic Environment</b>  Construction Phase	Impacts to on-site heritage assets					◦	Negligible	Neutral	<i>LT; IR</i>	<p>It is proposed to adequately mitigate the anticipated Major Adverse development impacts on the site's identified archaeological remains by means of 'preservation by record' in the form of an archaeological 'Strip, Map, Record' exercise. This will take place during a mitigation phase, to be conducted in advance of any construction works. The 'Strip, Map, Record' excavation area of approximately 1.2 hectares, will be centred upon the four trenches containing identified archaeological remains (trenches 3, 4, 5 &amp; 6). It will aim to determine the extent, nature, date, depth, importance, form and function of all archaeological features in that area, in advance of the construction of the proposed development.</p> <p>Following recent discussions with the Planning Archaeologist for Boston Borough Council, it has been decided that the mitigation phase will also include a borehole survey of a former palaeochannel on the site, identified by the 2013 geophysical survey. This work will be conducted using a hand auger or percussion auger (as appropriate), using a transect method. A single transect comprising up to 15 boreholes across Field 3 is envisaged. If deemed suitable, two samples will be collected for Radiocarbon dating.</p> <p>All mitigation works will be designed in detail and agreed in advance, in liaison with the Planning Archaeologist for Boston Borough Council. In accordance with the National Planning Policy Framework (NPPF) and current guidelines, all archaeological work (&amp; groundworks), will be conducted in accordance with a Written Scheme of Archaeological Investigation (WSI), submitted by the applicant and approved in writing by the Local Planning Authority in advance of the start of works.</p>
	Impacts to potentially 'important' hedgerows on-site.					◦	Negligible	Neutral	<i>LT; IR</i>	Mitigation unnecessary.

	Impacts to off-site heritage assets		◦				Negligible	Neutral	<i>LT; IR</i>	Mitigation unnecessary.
<b>Historic Environment</b>	Impacts to on-site heritage assets					◦	Negligible	Neutral	<i>LT; IR</i>	Undertaken at construction phase.
	Operational Phase Impacts to off-site heritage assets		◦				Negligible to Moderate	Neutral to Adverse	<i>LT; IR</i>	<p>Potential mitigation measures already proposed for Tytton Hall by the LVIA include planting to augment the existing hedgerows on the site boundary and help to soften the impact of the urban forms.</p> <p>The anticipated Moderate Adverse impact and long-range intervisibility between the north-western boundary of the designated Conservation Area and the proposed stadium development could be mitigated by means of, 'planting to augment the existing hedgerows on the site boundary to further soften the impact of the development. Planting should include evergreen species to soften the impact in winter'.</p> <p>The large-scale and elevated nature of the stadium development to the east of the A16 could potentially obstruct or vertically challenge some views of the Stump. Where possible, views towards St Botolph's Tower should be maintained. Mitigation could include tall planting to help screen the stadium.</p> <p>Further mitigation measures to lessen the effects of the proposed development on the surrounding area could include screen planting along the site boundaries; infill planting along existing gappy hedgerows; and evergreen planting to soften seasonal (winter) impact.</p>
<b>Ecology</b> Construction Phase	Impacts to non-statutorily designated species					◦	Negligible	Neutral	<i>ST; R</i>	Careful control of construction works through implementation of CIRIA's working with wildlife guidance to ensure that appropriate environmental controls are used to protect habitats immediately adjacent to the Application Site and within surrounding areas. All possible practical means will be followed to reduce disturbance resulting from dust, light and noise during the construction process.

	Impacts to habitats					◦	Negligible to Minor	Neutral to Adverse	<i>ST; IR</i>	In order to ensure that there is no runoff into Towns Drain or the drain that runs parallel to the A16 in the western area of Application Site the Environmental Alliance's Pollution Prevention Guidance (PPG) 5 will be carefully followed.
	Impacts to fauna					◦	Minor	Neutral to Adverse	<i>ST; IR</i>	<p>Nesting Birds</p> <p>Where feasible, clearance of the existing vegetation from the Application Site will be undertaken outside of the main nesting bird period (i.e. only within the months August to February inclusive). If these works cannot be restricted to within this period, an Ecological Watching Brief will be maintained during the main bird breeding season to ensure that no nesting birds are adversely affected.</p> <p>Bats</p> <p>No bats have been found to be roosting within no 264, London Road, which has potential to support bat species. In order to confirm that the building is not utilised as a bat roost site a nocturnal bat survey will be undertaken during the peak active bat season.</p> <p>Badgers</p> <p>No heavy machinery is to enter the area within a 20 m radius of any of the known badger setts at the Application Site prior to a licence to disturb badgers being granted by Natural England and the setts being closed by the ecologist named on the licence. This will entail the installation of badger gates on each of the sett entrances once the licence has been granted and for a 21 day period by the ecologist. Before the setts closure works commence, a suitably qualified ecologist will undertake a</p>

									check for new badger setts on the Application Site and land within 20 m of the Application Site boundary.  Water voles  Water voles are anticipated to be present along Towns Drain, however, in order to confirm population size, and to ensure the mitigation proposal is appropriate, a water vole survey will be undertaken at the appropriate time of year before construction works commence.	
	Impacts to other protected species					◦	Negligible	Neutral	<i>ST; IR</i>	Mitigation unnecessary.
<b>Ecology</b>  Operational Phase	Impacts to non-designated sites					◦	Negligible	Neutral	<i>ST; IR</i>	Mitigation unnecessary.
	Impacts to habitats					◦	Minor	Beneficial	<i>LT; IR</i>	Through appropriate management of the recreational areas and the Ecology Corridor, any damage to vegetation along the Ecology Corridor will be minimised as residents will utilise the maintained amenity grassland areas for recreational activities rather than other areas of the Application Site. Furthermore, ensuring that the vegetation along the Ecology Corridor does not become overgrown will encourage pedestrians to stay on the walkways and not trample over other areas.

	Impacts to fauna					◦	Minor	Adverse to Beneficial	<i>LT; IR</i>	<p>Bats</p> <p>To mitigate for the potential effects of lighting on the Ecology Corridor and SUDS system, which represent ideal foraging or commuting habitat, it is recommended that a sensitive lighting plan be developed. This will ensure that light spill onto these areas and onto immediately adjoining habitats is kept to a minimum to ensure that bats have unlit corridors to encourage them to utilise the Application Site. With appropriate lighting at the Application Site along with the creation of the new habitats (including the SUDS system and Ecology Corridor), opportunities for foraging bats are expected to increase.</p> <p>Water Voles</p> <p>Regular management of the bankside vegetation along Towns Drain and along the banks of the SUDS system water bodies to prevent scrub encroachment and overshadowing will increase available suitable habitat and foraging opportunities for water voles at the Application Site.</p>
	Impacts to other protected species					◦	Negligible	Neutral	<i>LT; IR</i>	Mitigation unnecessary.
<b>Noise</b> Construction Phase	Impact of construction noise					◦	Minor	Adverse	<i>ST</i>	<p>The control of construction noise is considered to be amenable to planning condition, requiring a restriction of hours and adherence to good construction practices.</p> <p>Due to the requirement for piled foundations, highly temporary localised noise levels of up to 80 dB LAeq,T are predicted at nearby existing dwellings. In order to minimise disruption to local residents it is recommended that residents are informed of the piling schedule, with specific communication taking place with residents when piling is to be undertaken within close proximity (i.e. &lt;40 metres) to their properties. It is further recommended</p>

										<p>that piling activities are restricted to between the hours of 08:00 and 18:00 hours (i.e. times when the majority of the population are not at home).</p> <p>In order to mitigate against vibration, it is recommended that a schedule of vibration monitoring is prepared/undertaken to ensure that damage to residential properties (including cosmetic damage) is prevented. Monitoring should be undertaken at the site boundary nearest to the piling being undertaken.</p> <p>BS 5228 provides guidance on acceptable vibration levels in structures, with the threshold for minor cosmetic damage given as 10 mms-1. It is recommended that in the unlikely scenario of this trigger level being reached at the site boundary, piling work should be halted and condition surveys of the nearby residential properties should be put into place.</p> <p>A number of mitigation measures are available for reducing the level of noise and vibration associated with driven piling techniques. These include the provision of a pad above the pile to cushion the blow and reducing the drop height of the hammer. Although these techniques can reduce the specific noise level associated with this activity, both increase the length of time required to drive each pile. The benefit of slightly reduced noise levels is therefore offset by the increased exposure time and hence is not recommended.</p>
<b>Noise</b> Operational Phase	Impact of noise from non-residential development					◦	Negligible to Moderate	Neutral to Adverse	<i>LT</i>	<p>Stadium</p> <p>A 'bowl' stadium type has been proposed, this will be the most suitable stadium type in terms of noise breakout as the enclosed nature will prevent direct sight lines into the stadium. This, combined with its anticipated use will ensure there should be no noise associated with the development outside of daytime (i.e. 07:00-23:00) hours.</p> <p>With reference to internal ambient noise level criteria detailed in BS 8233, it is considered that designing the stadium to ensure that noise associated with its use is</p>

										<p>&lt;40 dB LAeq,T within dwellings with windows closed, satisfies the first aim of NPPF by avoiding a significant impact, whilst designing to &lt;35 dB LAeq,T would satisfy the second aim by mitigating the noise to a minimum. Assuming approximately 30 dB of attenuation for a standard thermal double glazed window within a masonry facade, the maximum free field noise level at the nearest residential facades should be no higher than 65 dB LAeq,T (based on achieving an internal noise level of 35 dB LAeq,T).</p> <p>The predicted free field noise level associated with crowd noise at the nearest existing facades is calculated to be 61 dB LAeq,T.</p> <p>In line with the above calculations, it is recommended that the PA system is set to ensure that noise levels at the residential dwellings are no higher than 60 dB LAeq,T (free field), including during times when music is being played. Careful positioning and direction of speakers should be used to ensure a suitable level is achieved within the stadium, whilst preventing an excessive level being experienced at the existing dwellings due to overspill.</p> <p>Current proposals show that car parking is to be provided to the north, west and south of the stadium. The car parks are likely to be used very sporadically outside of match times, with the match day parking limited to two periods of heavy activity (immediately prior to and after the matches). It is therefore considered that the noise impact is likely to be negligible. Screening has been recommended to the northern boundary of the application site to ensure that noise associated with vehicles is mitigated to a minimum.</p> <p>Retail/Commercial</p> <p>In line with the recommendations contained in the Noise Impact Assessment, all fixed services plant associated with the proposed retail/commercial elements of the</p>
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									<p>development should be controlled in line with the recommendations contained in BS 4142 to ensure an assessment of no greater than 'marginal significance'. For reference the lowest background noise levels in the vicinity of the nearest existing and proposed residential dwellings was measured at 46 dB LA90,T during the daytime and 32 dB LA90,T at night.</p> <p>Mitigation measures for delivery yards and other operational noise sources should be confirmed during detailed design stage. 24 hour deliveries may be acceptable, however this should be assessed at detailed design stage.</p> <p>It is not possible to accurately predict noise associated with the other retail/commercial units at outline stage due to the uncertainty regarding the occupiers, however localised screening (including orientation of the proposed units) may be utilised to attenuate noise sources associated with these units. Noise associated with their operation is therefore not considered to represent a constraint to development, however noise associated with each unit should be assessed on an individual basis at detailed design stage.</p> <p>The indicative masterplan shows some car parks are to be situated within close proximity to proposed residential boundaries/façades. An ambient noise level of 48 dB LAeq,1hour has previously been measured by ENS at 10 metres from the boundary a major supermarket car park. A noise level of 48 dB LAeq,T is not likely to result in any loss of amenity at either existing or proposed residential dwellings, however it is considered prudent to provide localised screening to both proposed and existing dwellings in the vicinity of proposed car parks.</p>
	Impact of noise from new access road (after completion)				◦	Minor	Neutral to Adverse	<i>LT</i>	In order to reduce the noise impact of the proposed access road it is recommended that acoustic barriers are provided to the north and south of this highway in the vicinity of the existing dwellings.

									<p>It is calculated that a circa 2 metre high barrier will fully break the line of sight from ground floor windows and gardens to the proposed access road, reducing noise levels by circa 10 dB, to 51 dB LAeq(0700-2300).</p> <p>Although the provision of a circa 2 metre high fence is unlikely to provide any degree of attenuation to 1st floor windows, due to the residential nature of the development (and primarily daytime operations at the proposed retail/commercial units) traffic flow at night is likely to be negligible.</p> <p>It is calculated that night time noise levels will be circa 10 dB below the predicted daytime levels of 61 dB LAeq. Furthermore, the nearest residential façade is located at a separation distance of circa 7.5 metres from the nearside kerb of the proposed access road, resulting in an additional 3 dB of distance attenuation.</p> <p>Based on 15 dB for a partially open window, the predicted noise level within bedrooms is calculated to be 30 dB LAeq(0700-2300). This is considered to be in line with the criterion contained in BS 8233 for good internal noise levels within bedrooms at night.</p>
<p><b>Air Quality</b></p> <p>Construction Phase</p>	Demolition					◦	Negligible		<p><i>ST; IR</i></p> <p>Mitigation to include:</p> <ul style="list-style-type: none"> <li>• Ensuring the availability of an appropriate water supply for dust suppression.</li> <li>• Minimising drop heights when handling materials and when loading and tipping.</li> <li>• Using suitable dust suppression techniques with cutting, grinding and sawing equipment.</li> <li>• Using enclosed chutes, conveyors and skips wherever practicable.</li> <li>• Ensuring availability of cleaning equipment for cleaning up spillages.</li> </ul>

										<ul style="list-style-type: none"> <li>Avoiding bonfires and burning of waste materials.</li> </ul>
	Earthworks					◦	Negligible	Neutral	<i>ST; IR</i>	<p>Mitigation to include:</p> <ul style="list-style-type: none"> <li>Planning site layout so machinery and dust causing activities are as far from receptors as is practical.</li> <li>Considering the erection of screening around site boundaries or specific operations where necessary.</li> <li>Storing potentially dusty materials in the lees of existing structures or screens. Cover stockpiles to prevent wind whipping.</li> <li>Minimising potential for run-off of sediment and mud.</li> </ul>
	Track-out					◦	Negligible	Neutral	<i>ST; IR</i>	<p>Mitigation to include:</p> <ul style="list-style-type: none"> <li>Using water-assisted dust sweeper(s) on access and local roads, as necessary. Avoid dry sweeping of large areas in dry and windy conditions.</li> <li>Ensuring loads entering or leaving the site are covered.</li> <li>Inspecting on-site haul routes for integrity and instigate necessary repairs, recording inspections and actions.</li> <li>Making use of hard surfaced haul routes and wheel washing systems if necessary, ensuring there is an adequate area of hard surfaced road between the wheel wash and site exit.</li> <li>Locating access gates at least 10m from receptors where possible.</li> </ul>
	Construction					◦	Negligible	Neutral	<i>ST; IR</i>	<p>Mitigation to include:</p> <ul style="list-style-type: none"> <li>Avoiding scabbling (roughening on concrete surfaces)</li> </ul>

										where possible.
										<ul style="list-style-type: none"> <li>Ensuring sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.</li> <li>Ensuring bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.</li> </ul>
<b>Air Quality</b> Operational Phase	Additional traffic emissions (nitrogen dioxide levels)					◦	Negligible	Neutral	<i>LT; IR</i>	Mitigation unnecessary
<b>Lighting</b>	Training pitch floodlighting					◦	Negligible to Minor	Neutral to Adverse	<i>LT; IR</i>	Mitigation unnecessary.
	Stadium floodlighting					◦	Minor	Adverse	<i>LT; IR</i>	Mitigation unnecessary.
	Amenity lighting					◦	Negligible to Minor	Neutral to Adverse	<i>LT; IR</i>	Mitigation unnecessary.
<b>Ground Conditions and Land Contamination</b> Construction Phase	Risk to groundworkers					◦	Negligible to Minor	Neutral to Adverse	<i>IR</i>	<p>A 'hotspot' protocol will be drawn up to ensure that any localised contamination identified during construction activities, which has not yet been identified, is assessed by a specialist in contaminated land.</p> <p>Site workers will be made aware of the possibility of encountering localised contamination through toolbox talks and good standards of personal hygiene, including welfare facilities on-site and the use of appropriate levels of personal protective equipment (PPE), will be enforced.</p>
	Risk to groundwater					◦	Minor	Adverse	<i>LT</i>	Though the need for upgraded pipework is considered

	and on and off-site surface water									unlikely, the local water authority should be liaised with in order to confirm any requirement for upgraded pipework.
	Risk to nearby residents					◦	Negligible to Minor	Neutral to Adverse	<i>ST</i>	Methods will be used to reduce the amount of dust, e.g. washing down of vehicle's wheels and the covering of any exposed soils.
<b>Ground Conditions and Land Contamination</b>  Operational Phase	Risk to future users					◦	Negligible to Minor	Neutral to Adverse	<i>LT</i>	It should be ensured that a suitable covering of clean topsoil is positioned in residential gardens and regions of soft landscaping. It may be possible to reuse current topsoil on-site for this purpose. Due to the size of the application site, further checks on topsoil quality are recommended.
	Risk to water supply pipes					◦	Negligible	Neutral	<i>R</i>	Though the need for upgraded pipework is considered unlikely, the local water authority should be liaised with in order to confirm any requirement for upgraded pipework.
	Risk to vegetation					◦	Negligible	Neutral	<i>R</i>	Site workers will adhere to health, safety and environmental precautions in order to reduce the potential for any accidents and incidents.

*Key: Geographical Level of Importance*

I = International  
N = National  
R = Regional  
B = Borough  
Li = Local

*Nature of Impact*

St = Short term  
LT = Long term  
R = Reversible  
IR = Irreversible

## Cumulative Effects

- 17.5 Following the aforementioned analysis, an assessment of the cumulative effects of the proposals is also undertaken in a tabular form. It is appropriate to note, however, that the assessment of cumulative effects is often better suited to assessing affects over a wider spatial area, rather than single projects of the type proposed.
- 17.6 The assessment scores the impacts identified within the preceding chapters from 1 to 5 on a plus and minus scale; -5 equating to a significant negative impact and +5 to a very significant positive impact, with 0 relating to a neutral or nil impact. The cumulative score is then considered as an average figure, based on the total number of disciplines scored in this way in this chapter, and then assessed against the same scale.

## Summary of Environmental Impacts

- 17.7 Table 17.2 summarises the environmental impacts of the proposals, in the light of the disciplines the subject of this ES and taking into account the mitigation proposed. From this table, it would appear that the development the subject of this application is principally to have an impact on the **local** level. Furthermore, most aspects of the proposed development will have a **negligible** to **moderate impact** upon the environment, ranging from **beneficial** to **adverse**.

## Cumulative Effects

- 17.8 In order to seek to identify the overall impact of the proposals upon the surrounding environment, the following analysis seeks to quantify the changes identified above.

Table 17.2: Cumulative Effects (following mitigation)

Topic	Construction Phase	Operational Phase
Socio-Economic Effects	+4	+2
Landscape and Visual Impact	n/a	-1
Flood Risk and Drainage	-3	0
Transport	-1	-1
Historic Environment	0	-1

Ecology	-1	0
Noise and Vibration	-1	-2
Air Quality	0	0
Lighting	n/a	-1
Ground Conditions	-1	-1
<b>Cumulative</b>	<b>-3</b>	<b>-5</b>
<b>Cumulative as an average of the 10 ES disciplines</b>	<b>-0.3</b>	<b>-0.5</b>

*Weighting*

Score each impact 1-5, on a + to – scale, so that:

-5 = very significant negative impact;

-3 = moderate negative impact;

-1 = minor negative impact;

0 = neutral or no impact;

+1 = minor positive impact;

+3 = moderate positive impact;

+5 = very significant positive impact

17.9 The assessment above demonstrates that the impact of the construction phase would only be slightly less than **neutral**, as would the overall impact of the development, when completed. The drawbacks to the cumulative assessment for proposals of the site have, however, already been identified, and the particular impacts, both positive and negative, (associated with the proposals) have been addressed within the preceding chapters to this statement. Whilst a detailed assessment of the planning merits of the scheme as a whole are left to the Planning Statement accompanying the application, it is appropriate to draw together the findings of this statement.

## Summary and Conclusions

17.10 On balance, the proposals are considered to generally lead to a **neutral** form of development, as the potential negative effects can largely be minimised through mitigation measures incorporated into the scheme and by a balanced weighting of the positive effects the scheme will deliver. Indeed, the analysis considers a worse case scenario and environmental effects may well not be as significant even as indicated.

17.11 In summary, the development of the application site is considered to adhere to Government and local guidance and objectives, particularly in terms of the economy, regeneration and the principles of sustainable development.

17.12 Within the context of the three dimensions of sustainability outlined within the NPPF, the development of the site with the proposed scheme is highly sustainable, will not have a significant adverse environmental impact and will deliver sustainable benefits to trigger the presumption in favour of this development as set out in the NPPF.