LAND WEST OF RAYLEIGH - ENVIRONMENTAL STATEMENT ADDENDUM
COUNTRYSIDE PROPERTIES (UK) LTD
NOVEMBER 2014
Introduction

1.1. In August 2014 Countryside Properties (UK) Ltd (hereafter referred to as Countryside Properties) submitted a planning application to Rochford District Council, seeking approval in outline for residential development, non-residential development (uses falling within Use Classes A1 (retail), A3 (sale of food and drink on the premises e.g. restaurant), A4 (public house), C2 (residential care), D1(a) (medical use) or D1(b) (crèche / day nursery / day centre)), reservation of land for a primary school, open space, landscaping, a link road from Rawreth Lane to London Road, parking, servicing, utilities, footpath and cycle links, drainage and infrastructure works. All matters of detail were reserved for future approval, with the exception of access.

1.2. An environmental impact assessment (EIA) was undertaken as part of the application, in accordance with schedule 2 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011 (the EIA Regulations) and an environmental statement (ES) was prepared to report the findings.

1.3. Countryside Properties is proposing to submit some minor changes to the original application parameter plans, to submit some additional details in respect of access within the Application Site, and to update the Flood Risk Assessment (in response to previous comments from the Environment Agency). This ES addendum considers the implications of these changes in the context of the original ES.

1.4. The minor changes are described as follows:

Additional link road details

1.5. Countryside Properties is submitting detailed designs for two short stretches of highway at either end of the proposed link road (i.e. close to the junctions with Rawreth Lane and London Road) to supplement the details already submitted relating to access. Please note that the detailed designs fall entirely within the parameters assessed in the Land west of Rayleigh ES submitted in August, and on this basis the submission of these additional details does not require any amendment to the previously submitted ES.
Potential amended bus routing

1.6. Following discussions with Arriva, the bus only link between the link road and Rawreth Lane Industrial Estate is no longer required, although a secondary road will continue to pass from the site to the adjacent land at this point. The parameter plans have therefore been amended to show a secondary road only, not a bus link. The amended parameter plans are included in Appendix 1 of this ES addendum.

1.7. Paragraph 11.93 of the ES currently notes that “The master planning of the proposed development has been designed so that a bus could loop through the development” and goes on to note that this is shown in Figure 11.9. Similarly, the Transport Assessment (TA) has the same statement and diagram at paragraphs 3.7 and 7.29 / Figures 3.5 and 7.6. The Travel Plan at Appendix G of the TA contains the same statement and diagram at paragraph 8.29 and Figure 8.6.

1.8. It remains the case that a bus service will run through the Application Site, and the changes to the parameter plans simply allow greater flexibility as to the route that the bus service may take through the Application Site. On the basis of the discussions with Arriva, it is now likely that rather than turning within the Application Site as originally proposed, the service will carry on to Asda on Rawreth Lane and turn there before returning.

1.9. Whether the bus loops within the development on the route previously shown or at Asda makes no difference to the effectiveness of the package of mitigation measures in paragraphs 11.78 to 11.115 of Chapter 11 of the ES, or the assessment of the residual and cumulative effects thereafter in that chapter, none of which presented findings that were dependent upon the precise routing of the proposed bus service through the Application Site.

1.10. Therefore on the basis both that the possible changed route of the bus is immaterial to the package of mitigation measures, and the option of using the original route shown is not in any case precluded, it is not considered necessary to update the ES, TA or Travel Plan.
Updated flood risk assessment

1.11. The flood risk assessment (FRA) has been updated to reflect comments received from the Environment Agency, which predominantly relate to the influence of the downstream tidal conditions of the River Crouch on the discharge of the Rawreth Brook at the Application Site. The outline drainage strategy for the proposed development is also now included as an appendix to the FRA, which forms Technical Appendix H to the ES.

Amendments to the Environmental Statement

1.12. Amended figures are:

- NTS3 Land use and landscape parameter plan
- NTS6 Access and movement parameter plan
- Fig 2.2 Land use and landscape parameter plan
- Fig 2.5 Access and movement parameter plan

1.13. The amended parameter plans can be found in Appendix 1 of this ES addendum.

Amendments to the Non Technical Summary

1.14. Paragraph NTS.15 is amended to reflect the potential for alternative routing of the bus link through the development:

"The Application Site and link road have been designed so that a bus can run through the Application Site, encouraging new residents to use the bus service."

1.15. Paragraph NTS.23 is amended for the same reason:

"The master plan for the Application Site has evolved over time and has been subject to a number of changes following consultation and the findings of baseline environmental studies. The main aspects of the master plan where alternatives were considered were:

- Health provision – the need to locate it on a route which allowed traffic to access the health facility without passing residential dwellings were key considerations"
Primary school – early discussions with Essex County Council’s education department indicated that school provision would not be necessary within the Application Site. However, the Council subsequently revised its position, deeming a primary school would be necessary. The position of the school site was established to be in close proximity to new and existing residents, bounding the north east of the Application Site and on flatter ground to ensure suitability for the provision of school playing pitches, and at a location that could be serviced relatively early in the construction programme.”

Amendments to Chapter 9: Natural heritage

1.16. No changes are necessary in relation to the proposed amendments.

1.17. However, some typographical errors have been identified in paragraph 9.23 in relation to the number of ponds stated as being within the Application Site (i.e. one), and the paragraph should therefore read:

“There is one pond within the Application Site and four ponds within the wider survey area, including the two ponds within the grounds of Rawreth Hall, and twenty within 500m of the Application Site and wider survey area boundary. These ponds were surveyed for their potential to support great crested newts using a Habitat Suitability Index in accordance with the latest Natural England guidelines. However, access to three of the ponds identified was not permitted.”

Amendments to Chapter 12: Water environment

1.18. To reflect the changes to Technical Appendix H Flood Risk Assessment (FRA) paragraph 12.37 of the ES is amended to reflect the change in date of the FRA:

“The following sources of information that define the proposed development have been reviewed and form the basis of identifying potential impact sources (as listed in Table 12.5 and
12.6) and their effects on water resources, drainage and flood risk:

- Parameter plans (see also ES Chapter 2: Site description and proposed development)
- Flood Risk Assessment (FRA) undertaken by URS (September 2014)"

1.19. Paragraph 12.39 is amended for the same reason:

“Additional data has also been collected from the following sources:

- Landmark Envirocheck Report 49415887_1_1 (2013)
- Environment Agency website – Aquifer designation maps
- Anglian Water Pre Planning Assessment Report: Land South of Rawreth Lane, Rayleigh (2013)
- TriConnex Interim Utility Infrastructure Report (2014)
- URS Flood Risk Assessment (2014)
- URS Outline Drainage Strategy (2013).”

1.20. Paragraph 12.52 is updated with a more specific definition of the direction of flows across the Application Site:

“A number of watercourses are present within the Application Site, with the primary watercourse being Rawreth Brook (main river), which flows approximately south east to north west across the Application Site before flowing via a culverted section underneath the A1245 and eventually connecting to the River Crouch (main river) approximately 2km to the west of the Application Site. There is a potential pathway from the Application Site to the River Crouch via Rawreth Brook. The Application Site naturally drains into Rawreth Brook. Figure 12.4 illustrates the key water features within the Application Site.”

1.21. Paragraph 12.71 is updated to reflect the amended date of Technical Appendix H / FRA:
“A Flood Risk Assessment (FRA) was carried out for the Application Site in September 2014 (Technical Appendix H: Flood Risk Assessment) and represents a key document for establishing the flood risk baseline for the proposed development.”

1.22. Three new paragraphs on tidal flooding are provided:

“Tidal Flooding

The Application Site is located out of the tidal flood extent of the River Crouch Estuary, which is located 1.7km to the north. However, the Rawreth brook is a tributary of the tidal River Crouch, therefore the discharge of the Rawreth Brook is dependent on the downstream tidal conditions.

The Flood Zone extents for the Rawreth Brook take into account the effect of tide locking on the flooding from the River.

The flood risk to the proposed development from tidal sources is Low.”

1.23. Paragraph 12.78 is amended to refer to one small pond, as opposed to two:

“A small pond is currently present on the Application Site, which will hold a limited amount of water during rainfall events.”

1.24. Paragraph 12.86 is amended to reflect the same change:

“A small pond is located within the Application Site, and is isolated from any watercourses within the Application Site. The pond is not raised above the surrounding land. In the event of water within the pond exceeding bank level, water would flow towards the Rawreth Brook. The flood risk from this source was deemed by the FRA to be low.”

1.25. Table 12.2 is amended to refer to the pond being located towards the centre of the Application Site (extract of table provided only):
1.26. Paragraph 12.98 is amended to reflect consideration of tidal locking in the assessment:

“The Environment Agency provides guidance for allowance for climate change in the assessment of flood risk is support of the NPPF and recommends that peak rainfall intensity during extreme events is increased by 30% from the present day by the period of 2085-2115 across England and Wales. When considering the impact of the proposed development on surface water runoff, the Outline Drainage Strategy has allowed for this increase in peak rainfall intensities, ensuring that runoff rates are not increased post-construction up to, and including the 1 in 100 year event. Surface water attenuation at the Application Site will be sized to account for any restrictions on surface water discharge resulting from fluvial flooding or tide locking of the Rawreth Brook.”

1.27. Paragraph 12.138 is amended to reflect consideration of tidal locking:

“The outline drainage strategy for the proposed development will incorporate a number of attenuation ponds and roadside swales to ensure that the development meets the requirements of the NPPF regarding surface water runoff from development sites. As required through national and local policy, the proposed development will not increase peak surface water

<table>
<thead>
<tr>
<th>Water feature</th>
<th>Location description</th>
<th>Watercourse classification</th>
<th>WFD water body and current status</th>
<th>WFD 2027 status objective (identified in RBMP)</th>
<th>Designations</th>
<th>Receptor value / sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pond</td>
<td>Located in the centre of the Application Site, north of Rawreth Brook.</td>
<td>Standing Water</td>
<td>Not assessed.</td>
<td>Not assessed.</td>
<td>None</td>
<td>Low</td>
</tr>
</tbody>
</table>
runoff rates above pre-development rates for all rainfall events up to and including the 1 in 100 year event with an allowance for climate change. Surface water attenuation at the Application Site will be sized to account for any restrictions on surface water discharge resulting from fluvial flooding or tide locking of the Rawreth Brook.”

1.28. Paragraph 12.171 is amended to reflect the possibility of tidal locking:

“The Ground Investigation Report states that due to the presence of underlying London Clay, soakaway drainage is not considered to be appropriate, hence the proposal to incorporate attenuation measures to retain water above ground on-site. Soakage tests will be undertaken to confirm the suitability of infiltration measures. Surface water leaving the Application Site will be discharged to the Rawreth Brook, with runoff rates restricted to existing greenfield rates. The proposed attenuation solution for the Application Site is the placement of attenuation ponds at the Application Site, with discharge from the ponds to the Rawreth Brook limited by a flow control. Attenuation will be sized to account for restrictions on flow in the event of the Rawreth brook flooding or becoming tide locked. Roadside swales are also considered for the proposed development.”

Amendments to ES Technical Appendices

Technical Appendix H – Flood risk assessment

1.29. The flood risk assessment (FRA) has been updated to reflect comments received from the Environment Agency (a copy of the updated FRA is submitted to Rochford District Council alongside this Addendum). The amendments predominantly relate to the influence of the downstream tidal conditions of the River Crouch on the discharge of the Rawreth Brook at the Application Site. The outline drainage strategy for the proposed development is also now included as an appendix to the FRA (appendix F). The following amendments have been made to the FRA.
1.30. Text has been added to paragraph 4.2.3 to outline the potential of tide locking at the proposed development:

“Although the tidal extent does not reach the site, there is likely to be an effect on the discharge of fluvial water within the Rawreth Brook as a result of tide locking. This will be discussed further within Section 2.3.”

1.31. Tidal flood risk has been changed in paragraph 4.2.5 from ‘negligible’ to ‘low’:

“The flood risk from tidal sources is considered to be negligible, however there is the potential for fluvial flows at the site to be tide locked. The fluvial flood zones, shown in Figure 4-1, are based on modelling that accounts for the restriction on flows in the event of a high tide.”

1.32. Paragraph 4.3.5 clarifies the current modeling, showing impacts of tidal levels on discharges from the Rawreth Brook:

“Fluvial flooding for the Rawreth Brook was modelled in 2007 for a range of return period scenarios within the South Essex Flood Risk Study. The modelling has been completed to include the effects of tidal water levels from the River Crouch on flows within the Rawreth Brook. The flood levels from this modelling have been supplied by the Environment Agency (Appendix A). To the east of the site, where the Rawreth Brook enters the site, the flood levels for the 1% AEP (1 in 100 year) event plus climate change are at 12.81 mAOD. The flood levels decrease along with the topography to the west of the site, where they are at 6.08mAOD just beyond the crossing of Chelmsford Road.”

1.33. Text has been added to paragraph 4.3.13 outlining flooding mechanisms of the Rawreth Brook upstream of the site (trash screen blockages):

“Flooding, primarily associated with surface water flooding was observed on the 24th of August 2013 at Fairmead, Salem Walk and Boston Avenue. This is associated within high surface water flows running off into the channel of the Rawreth Brook with
flooding resulting from blockages of trash screens along the channel.”

1.34. Paragraphs 4.4.2 to 4.4.4 now make reference to the Environment Agency surface water flood mapping rather than SWMP mapping:

“Flood mapping from the Environment Agency14 (Appendix A) shows the risk of flooding from surface water to the site. At the site, there is a high risk (3.3% AEP) of surface water flooding associated with the lowest points alongside the river channel. Flood depths are modelled to be below 300mm (velocities of over 0.25 m/s). There is low risk (0.1%) of surface water flooding across a much larger extent of the site, alongside the river channel with flood depths of between 300 – 900mm (velocities over 0.25 m/s).

To the west of the site, the extent of surface water flooding is much greater as a result of water backing up behind Chelmsford road due to the restriction of surface water flow at the culvert passing below Chelmsford Road.

The South Essex Surface Water Management Plan (SWMP, 201215) undertook analysis of surface water flooding and identified Critical Drainage Areas (CDA). The site itself is not within a CDA, however to the east of the site, the urban area of Rayleigh is within a CDA (ROC1) and to the north west of the site Watery Lane is a CDA (ROC2). Of importance to this site, are the surface water flow paths that are shown to flow within ROC1. The SWMP shows that these flow from across the urban extent of Rayleigh towards the west of the urban area (i.e. towards the site). The surface water flow paths tend towards the channel of the Rawreth Brook which then flows into the proposed site. Flows from the CDA ROC2 flow away from the site in a northerly direction.”

1.35. Tidal risk has been altered in Table 4.1 from ‘negligible’ to ‘low’ and mitigation to “yes, consideration of tide locking on fluvial flows”: 
Table 4-1 Summary of flood risk to the development

<table>
<thead>
<tr>
<th>Type of flooding</th>
<th>Source of flooding</th>
<th>Flood risk to the development</th>
<th>Mitigation required?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tidal</td>
<td>River Crouch estuary</td>
<td>Low</td>
<td>Yes – consideration of tide locking on fluvial flows</td>
</tr>
<tr>
<td>Fluvial</td>
<td>Rawreth Brook</td>
<td>High</td>
<td>Yes – development within flood zone 1 and 2 only</td>
</tr>
<tr>
<td></td>
<td>River Crouch</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>Surface water</td>
<td>Runoff from surrounding land</td>
<td>Moderate</td>
<td>Yes – slite layout to manage overland flow routes</td>
</tr>
<tr>
<td>Sewers</td>
<td>Surrounding public / private drainage systems</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>Groundwater</td>
<td>Underlying geology and groundwater levels</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>Artificial sources</td>
<td>Ponds within the site</td>
<td>Low</td>
<td>No</td>
</tr>
</tbody>
</table>

1.36. Paragraph 5.2.4 has been changed to outline the requirement of flood storage compensation on a volume-by volume basis:

“The masterplan for the Proposed Development, presented in Appendix C, identifies the land located within Flood Zone 2 and 3 to be intended for the development of natural and seminatural green space. The masterplan also identifies an access road to pass across the river to connect the northern and southern sections of the site. The construction of the bridge for the access road will need to be completed in such a way that, should any land be
raised, compensatory flood storage is provided on a volume-by-volume basis and that the 1% AEP (1 in 100 year) plus allowance for climate change flow is not impeded. Mitigation measures for bridge design are discussed below.”

1.37. Paragraph 5.2.5 has been changed to outline the requirement for consents for work within 9m of the river bank:

“In addition it should be noted that under the terms of the Water Resources Act 1991, and the Land Drainage Bylaws 1981 works within 9 m of a main river (including works or structures in, under, over or within 9 m of the top of the bank), require the written consent of the Environment Agency.”

1.38. Reference is now made in paragraph 5.3.4 to the Outline Drainage Design in Appendix F:

“An outline drainage design is included in Appendix F. A detailed surface water drainage strategy for this site will be completed separately to the FRA as part of the detailed planning application and following consultation with Essex County Council and the Environment Agency. The surface water drainage for the site will be developed to accommodate surface water runoff for all rainfall events up to and including the 1% AEP + 30% Climate Change event.”

1.39. Paragraph 5.3.7 now confirms that calculations within the FRA are estimates and these will be refined as part of detailed drainage design:

“Estimates of the greenfield runoff rates for the site (the 20.08 ha that will be developed) have been determined using the MicroDrainage WinDES software (further details are provided in Appendix E). Table 5-1 outlines the greenfield runoff rates for the site for a range of return period events. These runoff rates will be refined once the site layout is confirmed, and used to determine the attenuation requirements for surface water runoff as part of the detailed drainage design.”
1.40. Paragraph 5.3.9 outlines that surface water drainage discharge will need to consider potential tide locking conditions of the Rawreth Brook:

“In order to achieve the greenfield runoff rates outlined above, surface water will need to be attenuated on site prior to discharge. The discharge from the surface water drainage system will need to consider the water levels of the Rawreth Brook and take into account the potential for tide locked conditions. Should the discharge from the site be restricted by high water levels in the river, capacity will be required to ensure that there is sufficient capacity to attenuate surface water within the drainage network until water levels subside.”

1.41. Paragraph 5.3.12 outlines that soakage tests will need to be completed to confirm potential for infiltration SUDS:

“Building Regulations Part H details that surface water should be discharged via soakaways or other infiltration systems where practicable. As the geology of the site is predominately impermeable clay, discharge via infiltration is not suitable. Therefore surface water should be discharged to the nearest watercourse, in this case, the Rawreth Brook following treatment and attenuation. Soakage tests will be completed to confirm the soil type and potential for infiltration measures.”

1.42. A new section has been added (section 5.5 – paragraphs 5.5.1 – 5.5.3) to include an outline of effects of development on groundwater flood risk (low). It also sets out that groundwater levels will need to be monitored during construction:

“Groundwater Flooding

The development proposals do not include any major earthworks such as the construction of deep foundations or basements. It is recommended that groundwater levels are monitored during construction to determine the risk of flooding and inform appropriate mitigation during construction.”
Following the completion of soakage tests, should it be determined that infiltration SuDS are suitable for use on the site, there may be the potential for water to increase the groundwater levels locally. The use of infiltration SuDS would be unlikely to affect local potable water supplies as the site is not with the source abstraction zone (see section 2.5).

The risk of impact on the local groundwater level is considered to be low.

1.43. Another new section has also been added (section 5.6 – paragraphs 5.6.1 – 5.6.2) to include the effects of development on artificial sources (ponds) to be ‘low’ pending their incorporation into drainage strategy:

“Artificial Sources

It is proposed that the ponds within the site will be incorporated in the surface water drainage network as part of the SuDS management train. This will be confirmed with the detailed drainage strategy.

The flood risk from the ponds, resulting from the proposed development is likely to be low as any development will incorporate flow controls and ensure suitable capacity is available.”

1.44. Appendix F of the FRA now includes the outline drainage design previously referred to in the FRA but omitted from the original version – see Appendix 2 of this ES Addendum.
## Appendix 1 – Amended ES figures

<table>
<thead>
<tr>
<th>NTS3</th>
<th>Land use and landscape parameter plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTS6</td>
<td>Access and movement parameter plan</td>
</tr>
<tr>
<td>Fig 2.2</td>
<td>Land use and landscape parameter plan</td>
</tr>
<tr>
<td>Fig 2.5</td>
<td>Access and movement parameter plan</td>
</tr>
</tbody>
</table>
Appendix 2 – Updated FRA Appendix F