

GIS analysis of site options

Introduction

A GIS analysis of all site options (either submitted through the call for sites or identified through the desktop review) has been carried out to inform the Sustainability Appraisal (SA) process and Strategic Land Availability Assessment (SLAA) for the emerging new Local Plan. This document sets out the methodology, in particular the criteria, thresholds and data used for the analysis. The findings of the analysis are presented in a proforma for each site option and this document is available separately.

Methodology

The methodology essentially involved employing GIS datasets and measuring ('quantitative analysis') how each site option related to various constraint and opportunity features. The site options appraisal methodology is presented in **Table A** below. It sets out the criteria and thresholds as well as the GIS tool used and provides further commentary as necessary. The table recognises data limitations.

It is important to note that further work is being carried out through the SLAA process which will help to address any potential gaps in the GIS analysis. For example, the SLAA will consider the potential for the loss of employment land if a site is being proposed for residential development as well as the potential loss of open/ green space. Further to this, the GIS analysis will be updated in the future to account for and reflect the findings of various evidence base studies that are in preparation, including the Strategic Flood Risk Assessment (SFRA) as well as landscape and heritage sensitivity studies.

Table A: Site options appraisal methodology

Criteria	'RAG' rules	Data and measurement	Commentary
Accessibility (relevant to a number of the SA themes, including communities, economy and employment, health and wellbeing, equalities, diversity and social inclusion, transport, air quality and noise and climate change)			
Primary school walking catchment	R = > 30 mins A = 15-30 mins G = < 15 mins	Data provided by Uttlesford District Council and taken from the TRACC Outputs.	Accessibility catchment outputs were generated by Basemap TRACC software for Uttlesford District. Catchments have been generated for walking, cycling and public transport access to a range of destinations. For details on the methodology, assumptions and limitations of the accessibility assessment, please refer to the Technical Note .
Secondary school walking catchment	R = > 50 mins A = 30-50 mins G = < 30 mins	Data provided by Uttlesford District Council and taken from the TRACC Outputs.	As above.
Secondary school cycling catchment	R = > 30 mins A = 20-30 mins G = < 20 mins	Data provided by Uttlesford District Council and taken from the TRACC Outputs.	As above.
Secondary school public transport catchment	R = > 60 mins A = 30-60 mins G = < 30 mins	Data provided by Uttlesford District Council and taken from the TRACC Outputs.	As above.
Sixth form public transport catchment	R = > 60 mins A = 30-60 mins G = < 30 mins	Data provided by Uttlesford District Council and taken from the TRACC Outputs.	As above.
GP and health centre walking catchments	R = > 30 mins A = 15-30 mins G = < 15 mins	Data provided by Uttlesford District Council and taken from the TRACC Outputs.	As above.
Hospital public transport catchments	R = > 60 mins A = 40-60 mins G = < 40 mins	Data provided by Uttlesford District Council and taken from the TRACC Outputs.	As above.

Criteria	'RAG' rules	Data and measurement	Commentary
Retailers that sell fruit & vegetables walking catchments	R = > 30 mins A = 15-30 mins G = < 15 mins	Data provided by Uttlesford District Council and taken from the TRACC Outputs.	As above.
Local centres walking catchments	R = > 30 mins A = 15-30 mins G = < 15 mins	Data provided by Uttlesford District Council and taken from the TRACC Outputs.	As above.
Local centres cycling catchments	R = > 20 mins A = 10-20 mins G = < 10 mins	Data provided by Uttlesford District Council and taken from the TRACC Outputs.	As above.
Employment centres cycling catchments	R = > 30 mins A = 20-30 mins G = < 20 mins	Data provided by Uttlesford District Council and taken from the TRACC Outputs.	As above.
Employment centres public transport catchments	R = > 45 mins A = 30-45 mins G = < 30 mins	Data provided by Uttlesford District Council and taken from the TRACC Outputs.	As above.
Bus network walking catchment 1 service per hour	R = > 15 mins A = 5-15 mins G = < 5 mins	Data provided by Uttlesford District Council and taken from the TRACC Outputs.	As above.
Bus network walking catchment 4 services per hour	R = > 20 mins A = 15-20 mins G = < 15 mins	Data provided by Uttlesford District Council and taken from the TRACC Outputs.	As above.
Rail station walking catchment	R = > 30 mins A = 20-30 mins G = < 20 mins	Data provided by Uttlesford District Council and taken from the TRACC Outputs.	As above.

Criteria	'RAG' rules	Data and measurement	Commentary
Rail station cycling catchment	R = > 20 mins A = 10-20 mins G = < 10 mins	Data provided by Uttlesford District Council and taken from the TRACC Outputs.	As above.
Rail station public transport catchment	R = > 30 mins A = 20-30 mins G = < 20 mins	Data provided by Uttlesford District Council and taken from the TRACC Outputs.	As above.
Communities			
Green Belt	R = Wholly within A = Intersects G = Outside	Data provided by the Uttlesford District Council. Straight line distance/ overlap measurement.	It is recognised that the Green Belt (GB) is a policy designation and has no bearing on the sustainability of a site. However, it is useful to flag sites that fall within the GB as this will be a consideration in future stages when establishing spatial strategy alternatives for consideration through plan-making and the SA process.
Settlement development limits	R = Outside A = Adjacent G = Intersects	Data provided by the Uttlesford District Council. Straight line distance/ overlap measurement.	Highlights those sites that intersect with, are adjacent to, or fall outside the settlement development limits.
Health and wellbeing			
Deprivation	R = Site does not intersect with an 'output area' that is relatively deprived A = Any of the site intersects with an 'output area' that is relatively deprived i.e. in the 20-40% (2nd quintile) most deprived in the district. G = Any of the site intersects with an 'output area' that is relatively deprived (i.e. in the 0-20%	Data provided by the Department for Levelling Up, Housing & Communities and includes features outside the District. Straight line distance/ overlap measurement.	Highlights site options that fall within an area of deprivation. Development in an area of relative deprivation (as measured by the Index of Multiple Deprivation) may support regeneration. However, it is recognised that this will be dependent on a variety of factors, including the level of improvements delivered in terms of community facilities.

Criteria	'RAG' rules	Data and measurement	Commentary
	(1st quintile) most deprived in the district		
Stanstead Airport Public Safety Zone	R = Intersects with 1:10,000 contour A = Intersects with 1:100,000 contour G = Does not intersect	Data provided by Uttlesford District Council. Straight line distance/ overlap measurement.	Highlights those site options that fall within Stanstead Airport's Public Safety Zones.
Transport, air quality and noise			
Air Quality Management Area (AQMA)	R = Intersects or adjacent A = < 200m G = > 200m	Data provided by Uttlesford Council. Straight line distance/ overlap measurement.	200m has been assumed to represent AQMA buffer zones as these are not individually defined.
Poor Air Quality Zone	R = Intersects or adjacent A = < 200m G = > 200m	Data provided by Uttlesford Council. Straight line distance/ overlap measurement.	200m has been assumed to represent an appropriate buffer for a Poor Air Quality Zone.
Noise contours	R = Intersects with 72, 69 or 66 noise contour A = Intersects with 63, 60 or 57 noise contour G = Outside of noise contours	Data provided by Uttlesford District Council. Straight line distance/ overlap measurement.	Highlights those site options that fall within Stanstead Airport's noise contours.
Climate Change adaptation			
Fluvial flood risk	R = > 50% intersects with Flood risk zone 2 or 3 A = < 50% intersects with Flood risk zone 2 or 3 G = Flood risk zone 1	Data provided by the Environment Agency. Straight line distance/ overlap measurement.	This criterion will help to identify sites that fall within high flood risk areas. N.B. While it is important to avoid development in flood zones, there is the potential to address flood risk at the development management stage, when a 'sequential approach' can be taken to ensure that uses are compatible with flood risk. There is also the potential to design-in Sustainable Drainage Systems (SuDS).

Criteria	'RAG' rules	Data and measurement	Commentary
Land and water resources			
Agricultural land classification	R = Grade 1 to 3 A = Grade 4 or 5 G = Urban	Data provided by Natural England. Straight line distance/ overlap measurement.	Recent land classification has not been undertaken in many parts of the District. As such the pre-1988 classification is the only means of consistently comparing sites. This does not however provide a distinction between Grade 3a (i.e. land classified as the 'best and most versatile') and Grade 3b land (i.e. land which is not classified as such). Taking the above into account it is appropriate to 'flag' red those sites that may include Grade 1 to 3 agricultural land.
Mineral and Waste Consultation Area	A = Intersects G = Does not intersect	Data provided by Uttlesford District Council. Straight line distance/ overlap measurement.	It is assumed that any development outside of a mineral and/ or waste safeguarded site would not result in the sterilisation of that resource and the RAG distances reflect this.
Groundwater Source Protection Zones	R = Within a Zone 1 SPZ A = Within a Zone 2 SPZ G = Not within a SPZ	Data provided by the Environment Agency. Straight line distance/ overlap measurement.	<p>Groundwater Source Protection Zones are designated zones around public water supply abstractions and other sensitive receptors that signal there are particular risks to the groundwater source they protect.</p> <p>The zones are based on an estimation of the time it would take for a pollutant which enters the saturated zone of an aquifer to reach the source abstraction or discharge point. For each source, three zones are defined around a particular water abstraction based on travel times, of the groundwater (Zone 1 = 50 days; Zone 2 = 400 days) and the total catchment area of the abstraction (Zone 3).</p>
Landscape			
Countryside Protection Zone	R = Intersects G = Does not intersect	Data provided by Uttlesford District Council. Straight line distance/ overlap measurement.	It is appropriate to 'flag' a red where a site falls within the Countryside Protection Zone (CPZ) .
Tree Preservation Order	R = Intersects G = Does not intersect	Data provided by Uttlesford District Council and does not include features outside the District. Straight line distance/ overlap measurement.	Highlights if a site contains any Tree Preservation Orders (TPOs).
Protected Open Space	R = Intersects G = Does not intersect	Data provided by Uttlesford District Council. Straight line distance/ overlap measurement.	It is appropriate to 'flag' a red where a site falls could result in the loss of protected open space.
Historic environment			

Criteria	'RAG' rules	Data and measurement	Commentary
Conservation Area	R = Intersects or is adjacent A = < 50m G = > 50m	Data provided by Uttlesford District Council and does not include conservation areas outside the District. Straight line distance/ overlap measurement.	<p>It is appropriate to 'flag' a red where a site is within, intersects or is adjacent to a Conservation Area. It is also appropriate to flag sites that might more widely impact on the setting of a Conservation Area and a 50m threshold has been assumed. It is recognised that distance in itself is not a definitive guide to the likelihood or significance of effects on a heritage asset. It is also recognised that the historic environment encompasses more than just designated heritage assets.</p> <p>Whilst there is good potential to highlight where development in proximity to a heritage asset might impact negatively on that asset, or its setting, a limitation relates to the fact that it has not been possible to gather views from heritage specialists on sensitivity of assets / capacity to develop each of the sites. This is a notable limitation as potential for development to conflict with the setting of historic assets / local historic character can only really be considered on a case-by-case basis rather than through a distance based criteria. It will also sometimes be the case that development can enhance heritage assets.</p>
Registered Park or Garden	R = Intersects or is adjacent A = < 50m G = > 50m	Data provided by Historic England and includes assets lying outside of the District. Straight line distance/ overlap measurement.	As above.
Local Historic Park or Garden	R = Intersects or is adjacent A = < 50m G = > 50m	Data provided by Historic England and includes assets lying outside of the District. Straight line distance/ overlap measurement.	As above.
Scheduled Monument	R = Intersects or is adjacent A = < 50m G = > 50m	Data provided by Historic England and includes assets lying outside of the District. Straight line distance/ overlap measurement.	As above.
Listed Building	R = Intersects or is adjacent A = < 50m G = > 50m	Data provided by Historic England and includes assets lying outside of the District. Straight line distance/ overlap measurement.	As above.

Criteria	'RAG' rules	Data and measurement	Commentary
Archaeological Site	R = Intersects or is adjacent A = < 50m G = >50m	Data provided by Uttlesford District Council and does not include features outside the District. Straight line distance/ overlap measurement.	As above.
Locally Listed Heritage Asset	R = Intersects or is adjacent A = < 50m G = >50m	Data provided by Historic England and includes assets lying outside of the District. Straight line distance/ overlap measurement.	As above.
Protected Lanes	R = Intersects G = Does not intersect	Data provided by Uttlesford District Council and does not include features outside the District. Straight line distance/ overlap measurement.	As above.
Proximity to a Historic Landscape	R = Intersects or is adjacent A = < 50m G = > 50m	Data provided by Uttlesford District Council and does not include features outside the District. Straight line distance/ overlap measurement.	As above.
Biodiversity and geodiversity			
Essex Coast RAMS Zone of Influence	A = Intersects or within Zol G = Outside of Zol	Data provided by Uttlesford District Council.	While there are no European sites within the district, parts of the district in the south east fall within the Zone of Influence (Zol) of the Blackwater Estuary SPA and Ramsar and Essex Estuaries SAC (22km). Further information can be found in the Essex Coast Recreational disturbance Avoidance and Mitigation Strategy (RAMS) SPD. ¹
Site of Special Scientific Interest (SSSI)	R = < 200m A = < 1km G = > 1km	Data provided by Natural England and includes sites lying outside of the District. Straight line distance/ overlap measurement.	As above, it is recognised that distance in itself is not a definitive guide to the likelihood or significance of effects on a designated biodiversity site. This criterion will help to highlight the SSSI that lies in closest proximity to the site and together with the criterion below for SSSI Impact Zones, it will help to differentiate between sites.
SSSI Impact Risk Zones	R = Within a SSSI IRZ where any planning	Data provided by Natural England and includes sites lying outside of the	Impact Risk Zones (IRZs) are a GIS tool developed by Natural England to make a rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular

¹ <https://www.uttlesford.gov.uk/article/6829/Essex-Coast-Recreational-disturbance-Avoidance-and-Mitigation-Strategy>

Criteria	'RAG' rules	Data and measurement	Commentary
	<p>application requires consultation with NE</p> <p>A = Within a SSSI IRZ</p> <p>G = Not within an SSSI IRZ</p>	District. Straight line distance/ overlap measurement.	<p>sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts. The IRZs also cover the interest features and sensitivities of European sites, which are underpinned by the SSSI designation and "Compensation Sites", which have been secured as compensation for impacts on Natura 2000/Ramsar sites.</p> <p>LPA's have a duty to consult Natural England before granting planning permission on any development that is in or likely to affect a SSSI. As such IRZs enable a consideration of whether a proposed development is likely to affect a SSSI and determine whether they will need to consult Natural England to seek advice on the nature of any potential SSSI impacts and how they might be avoided or mitigated.</p>
Hatfield Forest Zone of Influence	<p>R = < 10.4km</p> <p>A = 10.4 to 14.6km</p> <p>G = > 14.6km</p>	Data provided by Natural England. Straight line distance/ overlap measurement.	The National Trust commissioned a visitor survey and impact study in response Hatfield Forest (SSSI and NNR) showing severe signs in winter of being over-capacity in terms of visitor traffic, and being registered as 'Unfavourable, Recovering' by Natural England after their SSSI condition survey. The visitor survey and impact management study was published in 2018 and concluded that the zone of influence to capture at least 75% of the visitors should be set at 14.6km.
National Nature Reserve	<p>R = Intersects or is adjacent</p> <p>A = < 200m</p> <p>G = > 200m</p>	Data provided by Natural England and includes sites lying outside of the District. Straight line distance/ overlap measurement.	There are two National Nature Reserves (NNRs) within the District. The RAG distances reflect this along with the assumption that these are of less significance and therefore less sensitive than European sites and SSSIs. However, it is recognised that the designations overlap in places.
Ancient Woodland	<p>R = Intersects or is adjacent</p> <p>A = < 50m</p> <p>G = > 50m</p>	Data provided by Natural England and includes sites lying outside of the District. Straight line distance/ overlap measurement.	Ancient Woodlands are spread across the District. The RAG distances have been selected to take account of this and help differentiate between the sites options.
Local Wildlife Site	<p>R = Intersects or is adjacent</p> <p>A = < 50m</p> <p>G = > 50m</p>	Data provided by Uttlesford District Council and does not include sites lying outside of the District. Straight line distance/ overlap measurement.	There are a number of Local Wildlife Sites situated within the District and the RAG distances reflect this along with the assumption that these are of less significance and therefore less sensitive than internationally and nationally designated biodiversity.
Priority habitats	<p>R = Intersects or is adjacent</p> <p>A = < 50m</p>	Data provided by Natural England and includes sites lying outside of the	This seeks to flag if a development at a site could result in the loss of and therefore fragmentation of BAP priority habitats. It also helps to flag if there is the potential for disturbance to priority habitats within 50m of the site.

Criteria	'RAG' rules	Data and measurement	Commentary
	G = > 50m	District. Straight line distance/ overlap measurement.	
Special verges	R = Intersects or is adjacent A = < 50m G = > 50m	Data provided by Uttlesford District Council and does not include sites lying outside of the District. Straight line distance/ overlap measurement.	This seeks to flag if a development at a site could result in the loss of special verges. It also helps to flag if there is the potential for disturbance to special verges within 50m of the site.
Important Woodland	R = Intersects or is adjacent A = < 50m G = > 50m	Data provided by Uttlesford District Council and does not include sites lying outside of the District. Straight line distance/ overlap measurement.	This seeks to flag if a development at a site could result in the loss of important woodland. It also helps to flag if there is the potential for disturbance to important woodland within 50m of the site.
Geological sites	R = Intersects or is adjacent A = < 50m G = > 50m	Data provided by Uttlesford District Council and does not include sites lying outside of the District. Straight line distance/ overlap measurement.	This seeks to flag if a development at a site could result in the loss of a geological site. It also helps to flag if there is the potential for disturbance to a geological site within 50m of the site.