

A120/A133 Link Road

Options Technical Note

June 2019

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1 Introduction

Essex Highways has been commissioned by Essex County Council (ECC) to undertake Design Stage 1 (Problem Identification) and Stage 2 (Scheme Identification) for the A120/A133 Link Road and RTS scheme and this note provides short a summary on the sifting of the initial options for the A120/A133 Link Road.

1.1 Options Review

The A120/A133 Link Road is an element of the Housing Infrastructure Funding bid that was submitted on 22 March 2019. In addition to the Link Road the bid included a Rapid Transit System (RTS).

The Link Road is over 2 km long and runs from the A133 in the south to the A120 in the north. The HIF indicated a single layout as an indicative option. A number of alignment options have been generated and this report summarises the optioneering carried out to date with the aim of selecting viable options that can be developed further and put to the local communities and stakeholders for their feedback.

This document provides a tabular overview of the advantages and disadvantages of each option and assess their viability against a set of criteria. Two of out four options are recommended to be taken forward. Details of the four options are provided in Section 2 of this report.

The table provides high level assessment against a number of areas, generally broken down into:

- General
- Connectivity
- Land Take
- Environment, and a list of constraints

This is not intended to be an exhaustive list and it is only intended to capture the headline items currently identified for each option. The detailed review of Options 1-3 and their variants will be documented in the Stage 2 Technical Report. Option 4 was discounted at the Stage 1 Initial Sifting Note stage.

2 Option Descriptions

2.1 Four Options

Option 1: This option is broadly the one that was indicated on the HIF bid. Four variants of this option were drawn up with the location of the new A120 grade separated junction in the north being the significant difference between the four variants. This option is approximately 2.1km

The main features of this option are:

- Grade separated 'dumb-bell' junction with A120 located east of the Trunk Road Service Area (TRSA) and Waste Transfer Station (WTS)
- At-grade roundabout junction with the A133 east or west of Blossomwood Cottages.
- Dual two-lane link road, 85kph design speed
- Provision of new access roads to TRSA and WTS
- Roughly north/south alignment, along the eastern edge of the Garden Community site.

Option 2: This is the most easterly option. Three variants of this option have been considered. Options 2A and 2B are approximately 2.6km whilst Option 2C is 2.1km.

The main features of this option are:

- Grade separated 'dumb-bell' junction with A120 with 1km weaving length to retained TRSA and WTS at-grade accesses.
- At-grade roundabout junction with the A133, with three potential locations.
- Dual two-lane link road, 85kph design speed
- A120 junction located just north of St Anne and St Lawrence's Church and Elmstead Hall.
- The variants pass either side of the lake but all are to the east of Allen's Farm.

Option 3: Similar to Option 1, roughly north/south but veering westward at the northern end. This option is approximately 2.4km.

The main features of this option are:

- Grade separated 'dumb-bell' junction with A120 located west of the Trunk Road Service Area (TRSA) and Waste Transfer Station (WTS) utilising the existing location of the Bromley Road overbridge which would be removed and replaced on a different alignment.
- At-grade roundabout junction with the A133 west of Blossomwood Cottages.
- Dual two-lane link road, 85kph design speed
- Links to Bromley Road from A120 junction 'dumb-bell'
- Current access/egress to TRSA closed and replaced with a new access road via a proposed Link Road intermediate roundabout.
- Access to WTS closed – new access off Bromley Road.

Option 4: This is the most westerly option. This option is also the longest at approximately 2.9 km.

The main features of this option are:

- Grade separated 'dumb-bell' junction with A120 located west of the Trunk Road Service Area (TRSA) and Waste Transfer Station (WTS) utilising the existing position of the Springvalley Lane overbridge which would be removed and replaced on a different alignment.

- At-grade roundabout junction with the A133 west of Blossomwood Cottages
- Dual two-lane link road, 85kph design speed
- Additional roundabout junction with Bromley Road is required and the link to the TRSA also provided off this roundabout.
- Existing TRSA merge and WTS diverge removed. Access to WTS off Bromley Road.

3 Function of Road

3.1 Function of Road

In deciding how the Link Road is to be designed and how it will operate it is necessary to determine what the function of the road is. This is our current understanding:

- To facilitate the development and growth and serve as the primary highway access to the Garden Community, providing connectivity with the local as well as strategic road network. It will function alongside the RTS to allow the movement of people into and out of the site.
- To act as a link road between the A120 and A133 and reduce congestion on these two roads, including maintaining traffic flows on the A120 below saturation limits following the TCBGC development.
- Be a dual 2-lane carriageway to accommodate the design traffic flows, and be subject to a 50mph speed limit.

4 High Level Assessment

	Option 1 (2.1km)	Option 2 (2.1km to 2.6km)	Option 3 (2.4km)	Option 4 (2.9km)
General	<p>Advantages:</p> <ul style="list-style-type: none"> • Shortest route • North/South alignment (desire lines) • In combination with closure of the existing A120 at-grade accesses removes existing conflict points from the dual carriageway. • Would form the eastern boundary to the residential area and a divide between the residential area (in the west) and the employment area/potential P&R/C (in the east) • Most variants avoid the existing Bromley Road and accommodation/PRoW overbridges. <p>Disadvantages:</p> <ul style="list-style-type: none"> • Possible buildability issue requiring diversion of overhead HV cable/ pylons • Risk associated with objection to closure of existing slip roads. 	<p>Disadvantages:</p> <ul style="list-style-type: none"> • Options 2A and 2B are longer than Options 1 and 3. • The accommodation and PRoW overbridge will need to be demolished, and if it cannot be installed in the same location (routes to it would be severed) with a bigger span, PRoW users and agricultural vehicles will need to be diverted to and around the new junction. • Allows retention of at-grade accesses on A120. 	<p>Advantages:</p> <ul style="list-style-type: none"> • Shorter than Options 2A, 2B and 4. • Bromley Road overbridge would not be a constraint for fitting in the merges/diverges. • North/South alignment (desire lines). <p>Disadvantages:</p> <ul style="list-style-type: none"> • Risk associated with objection to closure of existing slip roads. • Loss of A133 lay-by 	<p>Disadvantages:</p> <ul style="list-style-type: none"> • Longest route • Requires extra roundabout at Bromley Road or it will sever Bromley Road. • Requires demolition and major upgrade of the existing Springvalley Lane overbridge • Potentially affects the railway overbridge
Connectivity	<p>Advantages:</p> <ul style="list-style-type: none"> • Provides connectivity between residential and industrial areas but allows separate connections to these areas • Provides improved access and connectivity (in and out) to TRSA and WTS via new access roads • Will facilitate access to Allen's Farm. <p>Disadvantages:</p> <ul style="list-style-type: none"> • Loss of direct access from A120 to TRSA (passing trade) • May require land from WTS, to tie in slip roads prior to Bromley Road bridge • Central A133 roundabout position leads to private residential access on approach to roundabout, giving an increased collision risk • Option 1A results in loss of A133 lay-by 	<p>Disadvantages:</p> <ul style="list-style-type: none"> • Does not provide the desired connectivity between the Link Road and the Garden Community's allocated residential and industrial areas. The side roads off the Link Road will be a significant length before they reach the development. • Traffic travelling from the A12 will have to use the A120 for longer. 	<p>Advantages:</p> <ul style="list-style-type: none"> • TRSA could stay open in current location. • Bromley Road connection with A120 opens up opportunities. <p>Disadvantages:</p> <ul style="list-style-type: none"> • Does not provide the desired connectivity between allocated residential and industrial areas – may require masterplan concept framework to be altered. • Loss of direct access from A120 to TRSA (passing trade) • Traffic from WTS may be required to use the local road network • Wheatsheaf House would require new access 	<p>Disadvantages:</p> <ul style="list-style-type: none"> • Large distance from proposed employment and Park and Choose sites in NE corner of site. The Link Road should be the primary access for these sites and a short distance from the A120. • Extra infrastructure required to connect Bromley Road which would be significantly impacted during construction.
Land Take	<p>Advantages:</p> <ul style="list-style-type: none"> • All of the land take is within TCBGC boundary except that required to the north of the A120 <p>Disadvantages:</p>	<p>Disadvantages:</p> <ul style="list-style-type: none"> • Large proportion of required land is outside TCBGC site boundary, leading to potentially lower likelihood of current owner acceptance of acquisition. 	<p>Advantages:</p> <ul style="list-style-type: none"> • All of the land take is within TCBGC boundary except that required to the north of the A120 and for the westbound merge. <p>Disadvantages:</p>	<p>Disadvantages:</p> <ul style="list-style-type: none"> • Northern section of Link Road and A120 merges and diverges will be outside the TCBGC boundary. Would have severe impact on a number of residential properties and CPO of the properties affected may be difficult.

	<ul style="list-style-type: none"> The route encroaches into some sections allocated to residential occupation Additional land take required to cater for new access for TRSA (inside boundary) and WTS (outside boundary). 	<ul style="list-style-type: none"> Large areas of severance between roads connecting into the development. Might require CPOs and possibility of proposal being challenged 	<ul style="list-style-type: none"> Westbound merge with A120 would potentially be outside TCBGC boundary Additional land take required to cater for new access for TRSA (inside boundary). The link road would go through the areas allocated to residential development 	<ul style="list-style-type: none"> The option would go through the areas allocated to residential development, severing in half the northern residential area shown in the concept framework.
Environment	<p>Advantages:</p> <ul style="list-style-type: none"> Located well away from St Anne and St Laurence Church, Elmstead Hall, and Elmstead Market village. Few existing air quality and noise receptors and least direct impact to known sensitive receptors at this stage. Majority of route is at low risk of surface water flooding and groundwater flooding. Intersects only one PRoW. Shorter route, so potentially less material use and waste generated. <p>Disadvantages:</p> <ul style="list-style-type: none"> Affects potential large number of sensitive air quality and noise receptors on both sides of the link road. Option 1A results in the loss of Strawberry Grove wooded area. Multiple ponds within 250m which may provide breeding opportunities for protected species Great Crested Newts. Visual effect on views for receptors east of the proposed route, such as Allen's Farm which has open, direct views towards the proposed road, as well as a small number of dwellings along existing roads which are near the proposed route. Potential effect on the setting of 250m west of Grade II listed Allen's Farmhouse through noise and visual intrusion during construction and operation. Slip roads will be adjacent to petrol station and waste transfer station. There may be potential for unknown areas of infilled land surrounding this site. 	<p>Disadvantages:</p> <ul style="list-style-type: none"> Close proximity to, and potentially significant effects which may not be able to be mitigated, on the setting of high value cultural heritage assets - Grade I Listed Church of St Anne and St Laurence's and Grade II* Listed Elmstead Hall and Grade II Listed tombstones. Option 2 variants would have a visual effect on views for receptors such as Allen's Farm, St. Anne and St Laurence's Church and Pleasant Suites B&B and to key sensitive receptors to landscape changes include residential properties within Elmstead Market and St Lawrence's Church as well as Pleasant Suites B&B. Options are in close proximity to an ex sand and gravel extraction pit for which there may be potential for notable species associated to the site. Option 2A would result in the permanent loss of a large pond north of the pit and priority woodland habitat to the west. Multiple ponds within 250m which may provide breeding opportunities for protected species Great Crested Newts. Medium-high risk of groundwater flooding along options. Options are near an ex- sand and gravel extraction pit, landfill site and bio-gas plant. There may be potential for unknown areas of infilled land around this site. Option 2B and 2C have high number of existing noise receptors in Elmstead Market. A PRoW would be severely impacted by the proposed junction and slip roads along the A120. Large areas of land take required outside Garden Community especially for Option 2B and 2C 	<p>Advantages:</p> <ul style="list-style-type: none"> Not anticipated to affect the setting of any listed buildings. Few existing sensitive air quality and noise receptors. As the option is within the footprint of the proposed Garden Community, any effect on landscape character would likely be temporary until the Garden Community is developed. Very low risk of surface water flooding along entire route. Low risk of groundwater flooding. Intersects only one PRoW <p>Disadvantages:</p> <ul style="list-style-type: none"> Likely to adversely impact on Jubilee Cottages Wheatsheaf House will be surrounded A120, new overbridge and eastbound diverge slip road Affects potential large number of air quality and noise receptors on east and west of the route. Two Noise Important Areas along the A120 where the route connects to the A120. Sensitive receptors to adverse landscape and visual impacts would include residential properties to the north around Crockleford Heath and Ardleigh. Option is adjacent to petrol station and waste transfer station. There may be potential for unknown areas of infilled land surrounding this site. 	<p>Disadvantages:</p> <ul style="list-style-type: none"> Significant impact on properties outside TCBGC Would affect a potentially large number of air quality and noise receptors on east and west of the route. Permanent loss and severance of deciduous woodland, priority habitat east of Wivenhoe Road. Permanent loss and severance of irreplaceable habitat, Walls Wood Ancient and Semi-Natural Ancient Woodland. Multiple ponds within 250m which may provide breeding opportunities for protected species Great Crested Newts. Two Noise Important Areas along the A120 where the route connects to the A120. Sensitive receptors to adverse landscape and visual impacts from would include residential properties to the north around Crockleford Heath and Ardleigh. There are a number of Grade II and II* within 300m of the route option including: Moze Hall, Spring Valley Mill Grade II* and Spring Valley Mill House grade II, and Grade II listed Hulls farmhouse. Option is adjacent to petrol station and waste transfer station. There may be potential for unknown areas of infilled land surrounding this site. Intersects two PRoW.
Constraints	<p>Listed Buildings:</p> <ol style="list-style-type: none"> Grade II Listed Allen's Farm Farmhouse <p>Other Properties:</p> <ol style="list-style-type: none"> Mount Pleasant Turnip Lodge Cottages Blossomwood Cottages 	<p>Listed Buildings:</p> <ol style="list-style-type: none"> Grade I Listed Church of St Anne and St Laurence Grade II* Listed Elmstead Hall Grade II Listed Allen's Farm Farmhouse Grade II Listed tombstones near the church 	<p>Listed Buildings:</p> <p>None</p> <p>Other Properties:</p> <ol style="list-style-type: none"> Wheatsheaf House Mount Pleasant Turnip Lodge Cottages 	<p>Listed Buildings:</p> <ol style="list-style-type: none"> Grade II Listed Moze Hall Grade II* Listed Spring Valley Mill Grade II Listed Spring Valley Mill House Grade II Listed Hulls Farmhouse

	<p>4. Blossomwood Farm</p> <p>Business's and other operational sites:</p> <ol style="list-style-type: none"> 1. Allen's Farm 2. Ardleigh South A120 Trunk Road Service Area 3. ECC Waste Transfer Station <p>Strawberry Grove and other small areas of Woodland</p> <p>Existing highways and Public Rights of Way (PRoW) across the site.</p> <p>Utilities</p> <ol style="list-style-type: none"> 1. Overhead lines mounted on pylons 2. Asbestos concrete water main 3. Overhead and underground UKPN and BT Openreach cables. 	<p>Other Properties:</p> <ol style="list-style-type: none"> 1. Blossomwood Cottages 2. Blossomwood Farm 3. Brook Cottages 4. Balls Farm 5. Friars Hall Cottages <p>Small areas of Woodland.</p> <p>Lake (former sand and gravel extraction pit)</p> <p>Existing highways and Public Rights of Way (PRoW) across the site.</p> <p>Utilities</p> <ol style="list-style-type: none"> 1. Asbestos concrete water main 2. Overhead and underground UKPN and BT Openreach cables. 	<p>4. Blossomwood Cottages</p> <p>Existing highways and Public Rights of Way (PRoW) across the site.</p> <p>Utilities</p> <ol style="list-style-type: none"> 1. Overhead lines mounted on pylons 2. Asbestos concrete water main 3. Overhead and underground UKPN and BT 	<p>Other Properties:</p> <ol style="list-style-type: none"> 1. Wheatsheaf House 2. Mount Pleasant 3. Turnip Lodge Cottages 4. Blossomwood Cottages 5. The Bungalow 6. Melmillo 7. Crockleford Hall 8. Jubilee Cottages 9. Hull Farm Cottage <p>Areas of Woodland.</p> <p>Existing highways and Public Rights of Way (PRoW) across the site.</p> <p>Utilities</p> <ol style="list-style-type: none"> 1. Overhead lines mounted on pylons 2. Asbestos concrete water main 3. Overhead and underground UKPN and BT Openreach cables. 4. Gas in far NW of site near railway line
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5 Conclusion

5.1 Conclusion

Options 2 and 4 do not adequately meet the objectives for the function of the road, and their large number of disadvantages generally, mean it is not proposed that they are taken forward. Options 1 and 3 broadly meet the objectives and have sufficient advantages to be taken forward. This is summarised below.

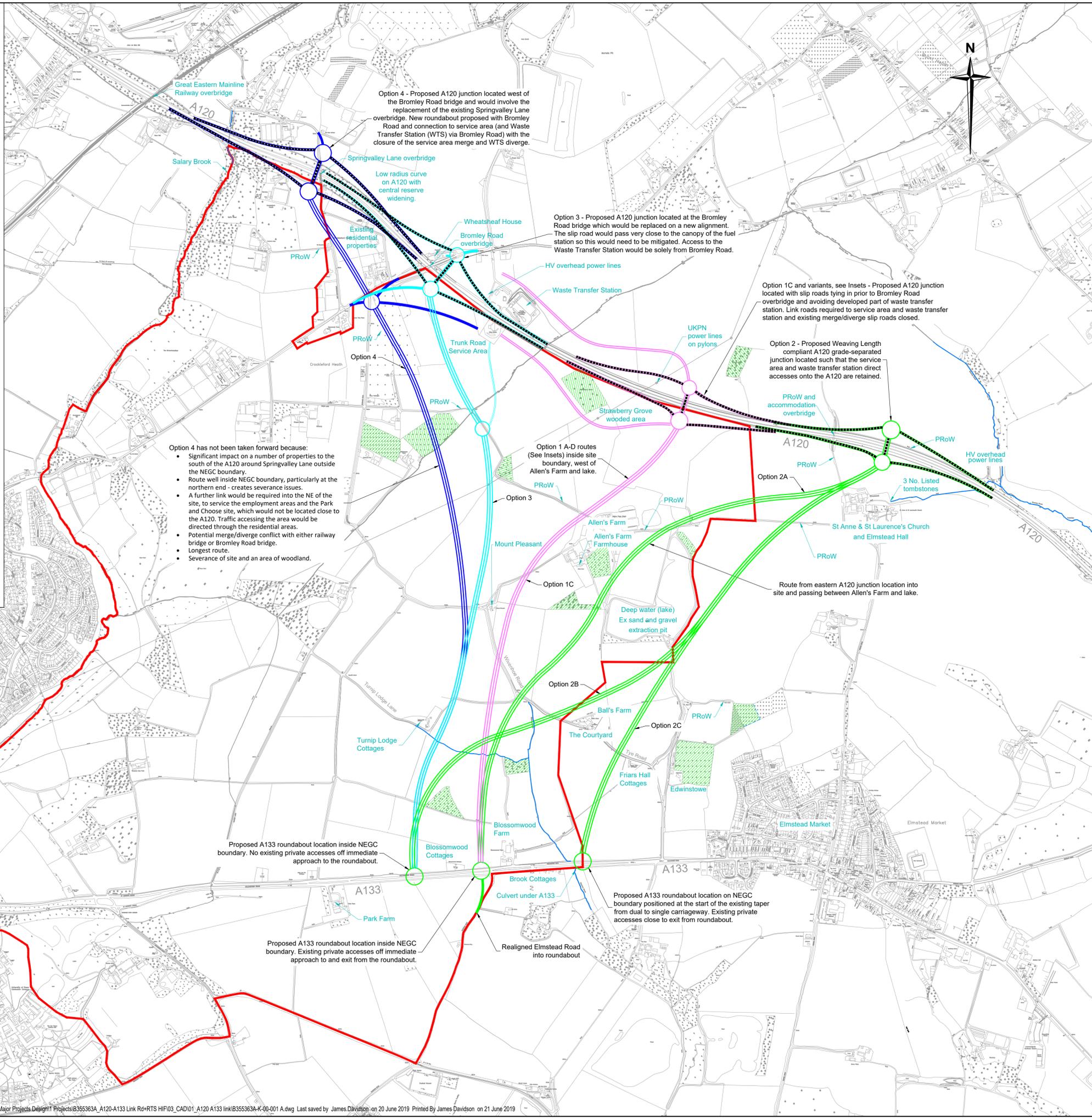
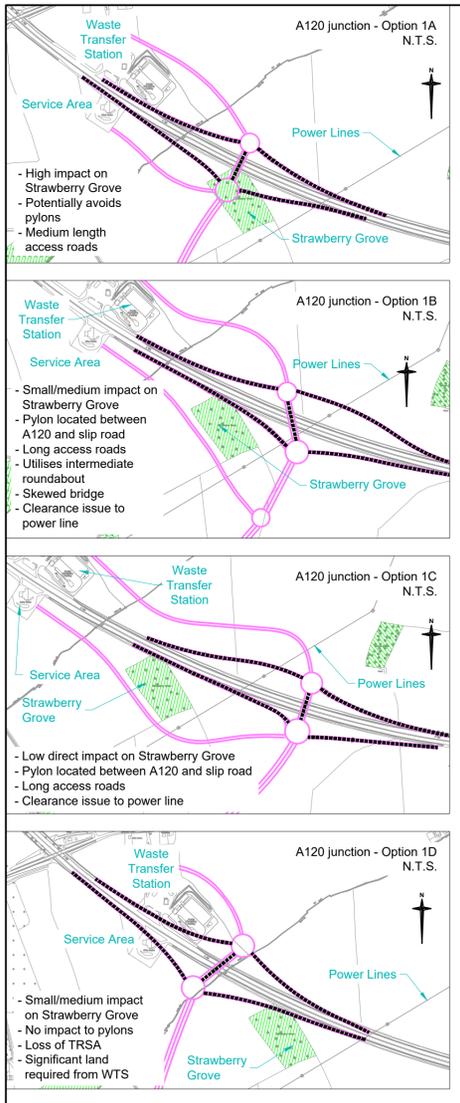
Option 2 – these routes are too remote from the Garden Community site, and Option 2A aside, the routes and the connections from the Link Road to the development would all require majority land take from areas outside the boundary, and potentially sterilise land in between. The option passes closest to Elmstead Market and a number of sensitive receptors, having a significant, potentially unmitigable impact on important listed buildings.

Option 4 – This option would pass through the core of the site, particularly the northern half and when considering the proposed function of the road, it does not meet that purpose and would create a severance issue. Furthermore as well as being the longest route, this link road would not provide connection to the designated employment and Park and Choose location meaning a further key route would need to be constructed. In addition there is an area the route passes through south of the A120 and north of Bromley Road which has been excluded from the NEGC boundary. There are a number of existing residential properties in this area. Several of the properties would need to be CPO'd or be significantly impacted by the option.

Option 1 - The variants of this option are generally the shortest. They take a smooth alignment from north to south, and form an eastern boundary to the residential part of the Garden Community. There are two workable locations for a roundabout junction with the A133. The variants allow an optimum position to be determined providing if possible minimal impact on Strawberry Grove, the overhead lines and the TRSA and WTS.

Option 3 - This option also takes a smooth alignment from north to south having an impact on a small number of existing properties but no listed buildings. Just the A120 junction is outside the NEGC boundary. It avoids all areas of woodland. The new structure would be constructed close to an existing bridge location and there is the potential to utilise existing infrastructure for connectivity for future development.

6 Appendix A – Proposed Options plan – B355363A-K-00-001A



Notes

1. Do not scale.
2. Link road based on 85kph (50mph) design speed dual two-lane carriageway.

Key

- Assumed site boundary
- Constraints
- Lengths of carriageway anticipated to form part of the Highways England network once constructed.
- Areas of woodland within the site
- Watercourses

Rev	Date	Description of revision	Drawn	Checked	Reviewed	Approved
A	06/19	Addition of further constraints and minor alteration of routes to avoid constraints	MC	JGD	MM	PK

DRAWING STATUS

FEASIBILITY

Essex Highways

Essex Highways, Seax House, Victoria Road South, Chelmsford, CM1 1QH.
Tel: 0345 6037631 © Essex County Council

SCHEME TITLE

A120/A133 LINK ROAD

DRAWING TITLE

PROPOSED OPTIONS

DESIGNED	DRAWN	CHECKED	REVIEWED	APPROVED
JGD	JGD	PJN	MM	PK
DATE	DATE	DATE	DATE	DATE
APR 19	APR 19	APR 19	APR 19	APR 19

DRAWING UNITS U.N.O.
DIMENSIONS IN MILLIMETRES
LEVELS IN METRES

SCALE AT A1 (841x594mm)
N.T.S.

DRAWING No. **B355363A-K-00-001** REV. **A**

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