

**Eastleigh Local Plan 2011-2036**

**Strategic Growth Option sites - Public Transport/ Bus Service  
Options/Viability Study**

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## Introduction

The purpose of this document is to set out and evaluate the viability of potential options for public transport (mostly bus) connectivity at the two Strategic Growth Option (SGO) sites currently under evaluation as part of Eastleigh Borough Council's Local Plan process. This evaluation is one element of a much wider range of factors being evaluated for both sites, as part of the decision-making process which will result in identification of which SGO is the Council's preferred option for its published Local Plan.

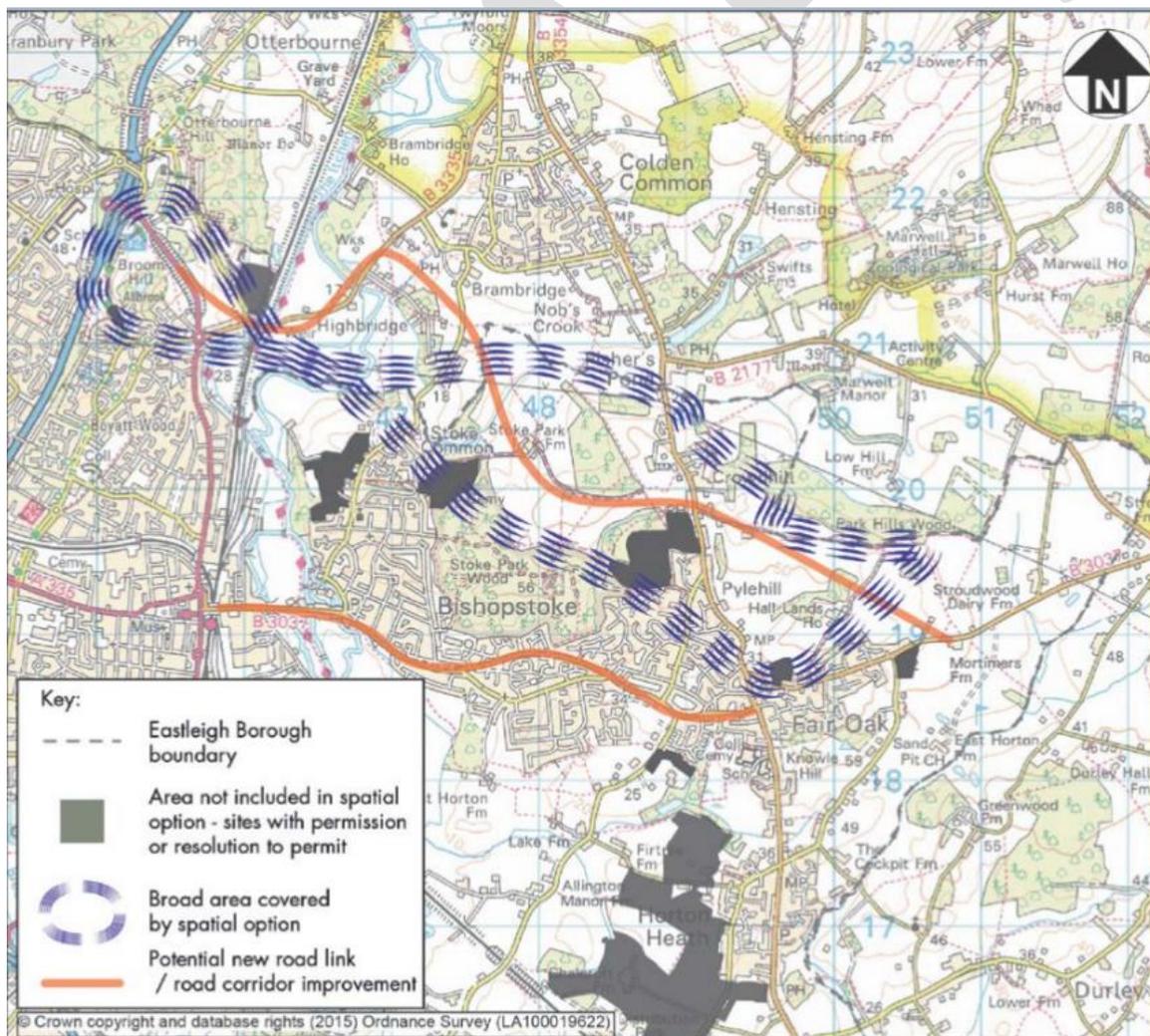
The two SGO sites are as follows:

### Options B+C (North Bishopstoke/ North East Fair Oak)

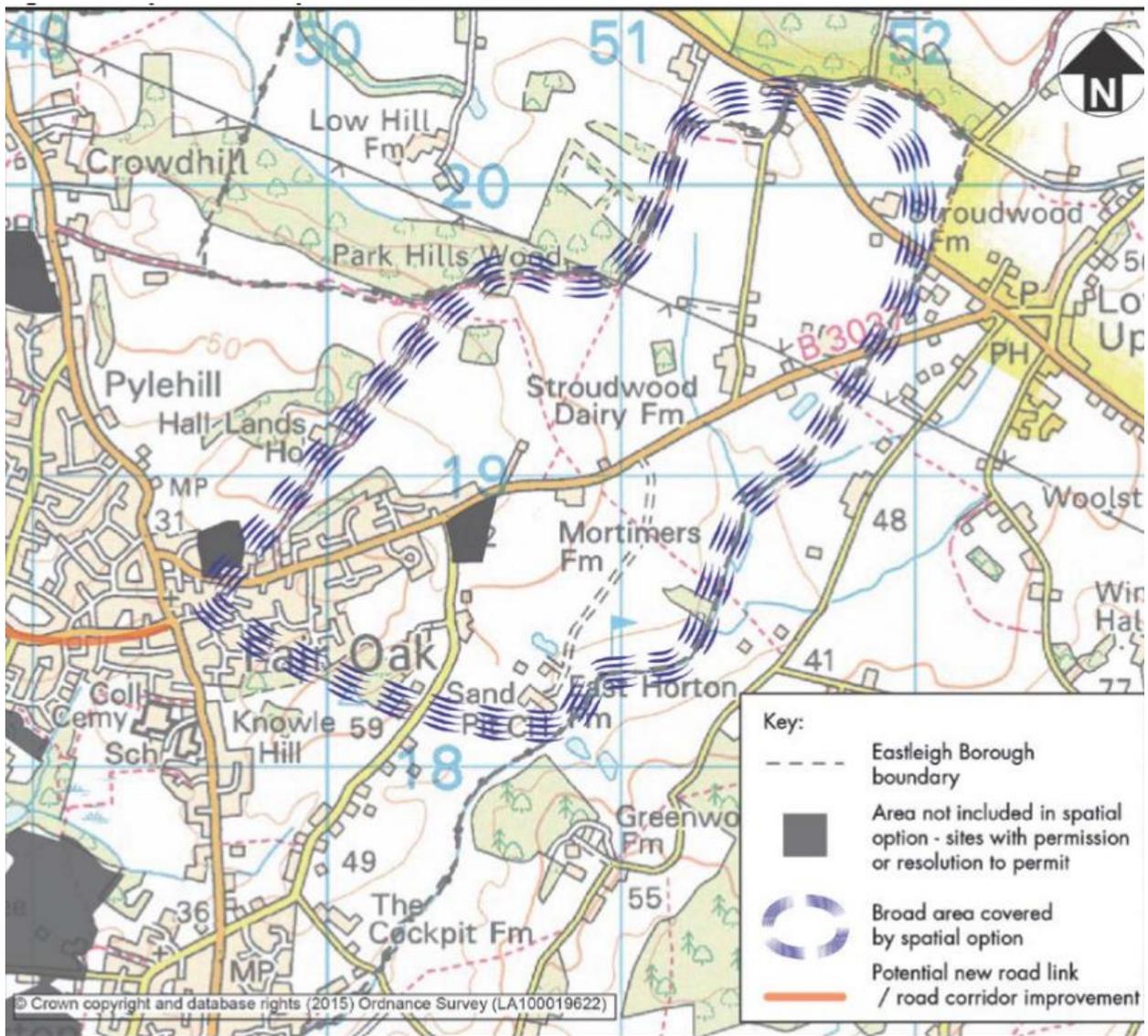
This option could accommodate between 4,000 and 6,000 dwellings (most likely figure is circa 5,000), as well as a limited quantity of other uses, on currently undeveloped land to the north of Bishopstoke, and to the north/north-east of Fair Oak. This option is being promoted by several landowners and their agents.

In order to provide access, a new east-west link road, acting as a spine road for the site and then connecting westwards via Allbrook towards the M3, would be constructed.

The general area covered by this option, as identified in the Council's earlier "Issues and Options" report<sup>1</sup>, are shown in the maps below (option B) and overleaf (Option C).



<sup>1</sup> [https://www.eastleigh.gov.uk/media/184064/151217-Issues-and-Options\\_postcabformat.pdf](https://www.eastleigh.gov.uk/media/184064/151217-Issues-and-Options_postcabformat.pdf)



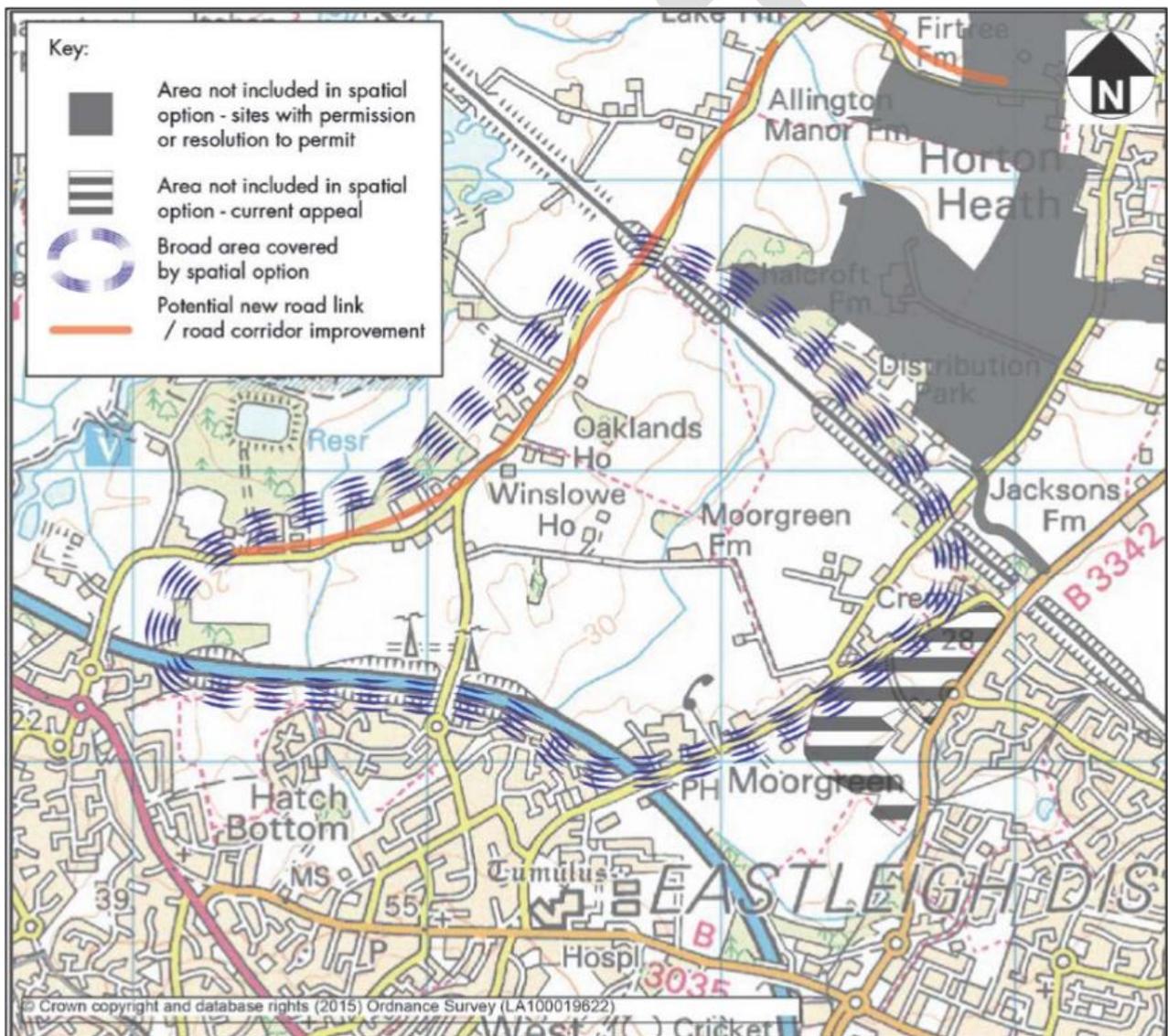
Option E (South of Allington Lane)

This is a potential strategic growth option that is also being actively promoted by landowners & their agents. A

This option would accommodate around 2,500 dwellings on the undeveloped land east & south east of Allington Lane, between the Eastleigh to Fareham railway line and the M27 north of West End.

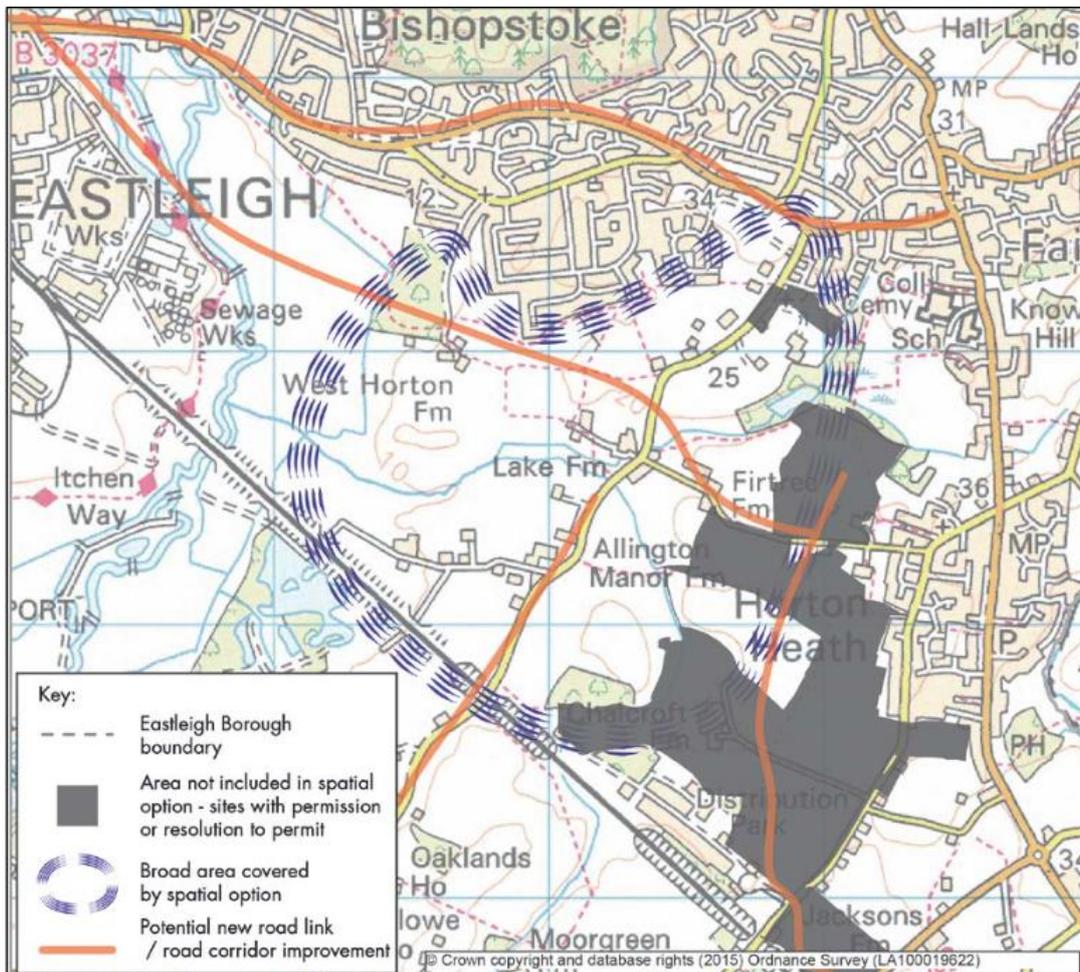
As this site would not be sufficient on its own to meet the Council's housing delivery requirements for the Local Plan period, some additional housing (circa 850 units) would be required elsewhere. It is as yet unclear exactly where these units would be provided although it is possible they could be delivered by a combination of smaller potential development sites elsewhere.

The approximate boundaries of the Option E/ South of Allington development site are shown on the map below.



## Option D – Expansion to the south of Bishopstoke and west of Horton Heath

This is a further potential Strategic Growth Option site which is also being assessed by the Council following identification in the “Issues and Options” consultation. The general location of this site is shown on the map below. It is not presently being promoted as actively by landowners & their agents as Options B+C and Option E are.



It is estimated that Option D could accommodate 2,000 dwellings, and would provide via a new link /access road running broadly parallel to, but south of, Bishopstoke Road linking through to Allington Lane. It is anticipated that if site were delivered, this would negate the need for any of the other SGO options (ie Option B+C or Option E), but that some housing delivery at smaller sites elsewhere would be required to meet the Council’s housing delivery requirements.

In comparison to Options B+C and Option E, no masterplans or other detailed plans (included proposals for how the site could be served by public transport) have been received by the Council.

In light of the relative lack of detail available regarding this site, it has not been possible to undertake a detailed assessment of public transport options as has been done for the other options (presented on pages 25 to 68).

However it is apparent that the potential new road link could enable bus access to Eastleigh town centre in particular (and possibly beyond), potentially on a route offering parallel service to the existing Bluestar 2 route. It is also likely that the relatively small number of dwellings the site could deliver would probably limit the level of public transport services that would be viable.

## West Horton & Firtree Lane developments

Existing proposals for housing development at West Horton Heath (circa 950 units) and the adjacent Firtree Lane (up to 450 units) site could also be relevant to the transport strategies for both of the Strategic Growth options, as these smaller sites are in a similar locality and could potentially be served by public transport services developed for the strategic growth option sites.

The West Horton Heath & Firtree Lane sites respectively have a resolution to permit, and outline planning permission. They are yet to be progressed to reserved matters and potentially their construction may occur over a similar time period as the early stages of delivery a potential SGO site. The public transport strategy for the West Horton and Firtree developments is also largely still to be determined but will focus on similar destinations to those likely to be important to the two SGO sites. There is potential that viability of services developed to support an SGO site could be improved if West Horton/ Firtree Lane were also served, as well as improving the range of connectivity for residents at all development sites.

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## **The importance of public transport provision in new developments**

Provision of public transport connectivity is an important element of the transport provision for new developments.

Provision of good quality public transport services is essential for communities- existing and new- for a variety of reasons:

- Provides a main form of accessibility for individuals/ households which do not have access to a car or van (which may be by choice or due to personal or financial circumstances), enabling access to work, shops, essential services and other opportunities
- A main form of accessibility for those who are unable to drive, which variously includes those under the age of 17, and those with disabilities or health difficulties, or where age related issues prevent them from driving
- Provides an alternative to driving to some destinations for those who do have access to cars, helping to tackle traffic congestion and many other negative environmental, social and societal effects of a car-dependent culture

Paragraphs 29 to 41 of the National Planning Policy Framework (NPPF)<sup>2</sup> sets out the government's expectations regarding transport provision at developments. NPPF states that *"the transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel"*. Public transport service provision is clearly a key element of the provision of travel choices.

It is also stated (para 30) that *"encouragement should be given to solutions which support reductions in greenhouse gas emissions and reduce congestion"*. Again, public transport is one of the key tools to achieving these objectives. It is stated (para 31) that *"Local authorities should work with [appropriate partners] to develop strategies for the provision of viable infrastructure necessary to support sustainable development"*. This study is an early stage in the Council's work on one aspect of ensuring that any future strategic site forming part of the Council's overall Local Plan strategy can be delivered in line with this requirement.

Finally, it is stated that (para 32) *"Plans and decisions should take account of whether:*

- *the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure*
- *safe and suitable access to the site can be achieved for all people*
- *improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development."*

Again, this study provides an early assessment of the opportunities for and relative merits of each SGO site for achievement of some aspects of these requirements.

Census 2011 data in the Borough and elsewhere shows that good quality, high frequency bus services can capture a significant share of the travel market to some destinations where other conditions (such as car parking, provision of employment & shops etc) also support public transport usage. For example, this data shows that around 10% of all commuting journeys between the Fair Oak/ Horton Heath areas and Eastleigh town centre are made by bus, and bus has a similar share of the Fair Oak to Southampton city centre market. This market share has been achieved mostly by the high quality and relatively frequent Bluestar 2

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<sup>2</sup> <https://www.gov.uk/guidance/national-planning-policy-framework/4-promoting-sustainable-transport>

route. The same census data indicates that the bus mode share between the West End area and Southampton city centre is as high as 19% achieved through (at the time) two bus services offering typically five buses per hour linking these areas.

Generally lower frequency services are less effective in capturing a significant market share unless their destination (s) have significant constraints on car parking.

Thus there is local evidence (in addition to a strong body of national evidence) to show that high quality bus services, if provided by new developments, can be effective and commercially viable. Long term commercial viability without local authority support is an important requirement- whilst developments are likely to be expected to provide “kickstart” funding for new services, in the long run services must be self-supporting.

It is important to provide some additional detail on what is meant by a “high quality” bus service. Generally, a bus service likely to offer a realistic alternative to car use for some journeys will have (at least most of) the following characteristics:

- Frequency of at least three buses per hour (and preferably more frequent), with operation seven days per week from early in the morning to late at night
- Preferably routing serving key origin & destination markets, and reduction of journey times through provision of priority over other vehicular traffic in areas of high traffic congestion
- High quality information provision for users including both mobile app/ web information, high quality shelters, good quality surfacing & materials, raised access kerbs, seating, bus stop flagpole, printed public transport and local wayfinding information, and real time information at stops, often with eye-catching branding
- Good quality vehicles, often with onboard facilities which offer a selling point compared to driving (such as onboard wi-fi, usb charging, and high quality seating)
- Transparent and competitive fare structure, ability to accept multiple means of payments (e.g. smartcards/contactless, app payment) and effective promotions
- Good quality bus stop facilities including shelters, lighting, raised access kerbs, information provision, seating, bins etc; all kept in good & clean provision

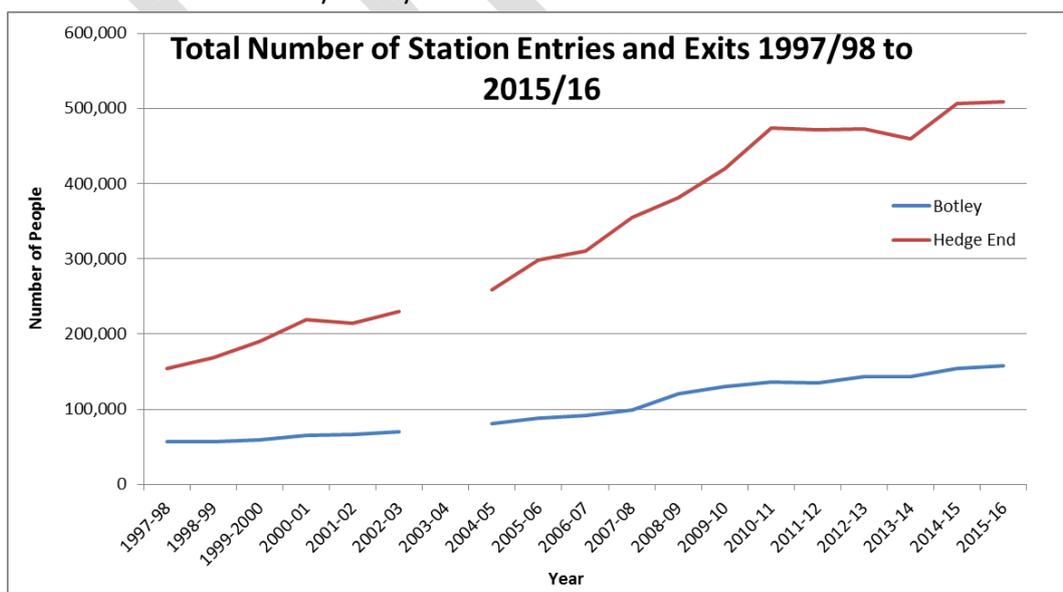
## Rail station options

The promoters of option B and C (N Bishopstoke/ NE Fair Oak) have not made reference to delivery of railway stations or improving links to existing railway services. Instead the promoters of this site have focused on improvements to the highway and walking and cycling infrastructure. The west of the site is located fairly close to the mainline railway between Eastleigh and London, however it is unlikely that a new station here would be viable; nor are the site promoters suggesting this as a possibility. Instead, the development would be served by Eastleigh Railway Station as the closest rail link.

The promoters of option E (South of Allington Lane) suggest that the site offers the opportunity to make use of the existing railway line between Fareham and Eastleigh. The promoters note that the railway line adjoining the site provides a way to “utilise under-used rail capacity on the Eastleigh-Fareham railway line including improving links to Hedge End railway station and potentially enabling the future provision of a new railway station”. Despite such assertions in the vision document, the promoters have not provided any further information as to how this new railway station would be delivered or its feasibility.

In order for a new railway station to be considered by Network Rail the site promoters would need to prove that investing in an existing station would not meet their objectives or that opening a new station would offer better value for money. In order to understand value for money of such a project, a full cost-benefit analysis and feasibility studies compliant with Network Rail’s GRIP and/or DfT’s WebTAG appraisal procedures would have to be undertaken. To our knowledge, no work to this effect has been undertaken, and no contact has been made with Network Rail by the promoters.

The proposals put forward for a new railway station need to show the benefits of providing for existing and future demand and should offer new journey opportunities. At present the demand for rail services from Hedge End station is growing. Data from the Office for Rail and Road show that between 1997/98 and 2015/16 the number of passenger entries and exits at the station has risen by 231% from 153,916 to 508,982<sup>3</sup>. The trend for increasing rail use in the South East region is noted in Network Rail’s most recent Wessex Route Study, as this predicts that there will be a 40% increase in passenger numbers on mainline service to Waterloo by 2043<sup>4</sup>. The chart below highlights this trend for increasing station use at Hedge End station as well as at nearby Botley.



<sup>3</sup> Estimates of Station Usage: <http://orr.gov.uk/statistics/published-stats/station-usage-estimates>

<sup>4</sup> Wessex Route Study 2015: <https://www.networkrail.co.uk/running-the-railway/long-term-planning/>

Although the number of users is increasing, and is expected to continue to increase, this combined with a proposed new development containing a potential station location does not in itself generate a case for delivery of a new station. One important consideration as to whether a new station would be feasible is whether an additional stop at the potential station could be accommodated on existing services, given that major parts of the local rail network operate close to capacity with limited scope to change timetables easily.

At present there are half hourly passenger services in the 'peak direction' calling at Hedge End in addition to an hourly service in the opposite direction. There is an hourly service in both directions throughout the rest of the day. Additionally the passenger services share the track with occasional freight trains, particularly aggregate trains to Botley and Fareham. Most passenger services operate between Portsmouth Harbour, Eastleigh, Basingstoke and London Waterloo.

The capacity for and timetabling of passenger trains using this line is constrained by the sections of single track between Botley and Fareham and also immediately to the south of Eastleigh station. However the overall timetable for these trains (and indeed the whole South Western mainline route) is dictated by capacity constraints closer to London Waterloo, as well as at key junctions, particularly Basingstoke and Woking. The junctions at Fareham and Eastleigh that Portsmouth to Waterloo via Eastleigh services pass over are also potentially sensitive locations.

Adding an additional station stop is likely to require existing trains to run about three minutes behind their current "path" at points after the extra stop. As the key determinant of the timetable (the approaches to Waterloo) is at capacity in the peak hours with gaps between trains on each line of no more than three to five minutes, modifying the timetable for an additional stop at a potential Allington station could require significant timetable alterations on the mainline, particularly in the northbound direction, to accommodate such a retiming. Issues could also arise with pathing at locations such as Woking, Basingstoke and on the single line sections of the Botley line, particularly in the peak. Addressing rail timetabling issues of this nature is not a trivial exercise.

The Council is not aware that discussion of these issues with Network Rail/ Train Operating Companies have been initiated by the proposer of the Allington site. The accommodation of an existing stop in the current (or future) peak hours rail timetable is a critical factor in the overall viability of a potential station at this location.

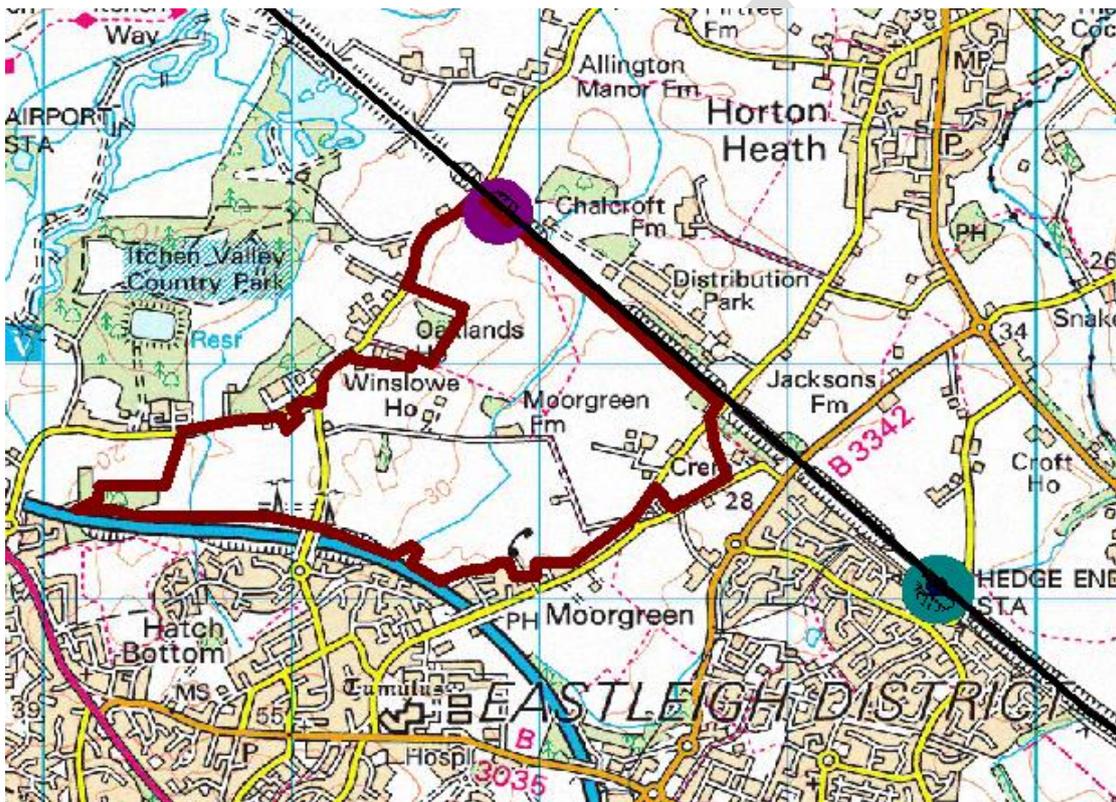
Additionally, provision of additional stops on existing services extends journey times for existing rail users, potentially making rail use unattractive for some of these users. Hence an additional station call is likely to result in the loss of some existing patronage (including at other stations in the Borough).

A major requirement for new stations is that they generate an economically viable amount of new patronage, ie that they generate significant additional patronage compared to the current provision, including offsetting any patronage lost due to extended journey times. Again, this is a factor that Network Rail/ DfT would require consideration of via feasibility studies. The Council is not aware of any estimates having been produced on likely patronage generated by a potential Allington station, and whether this would be likely to offset patronage losses elsewhere due to extended journey times.

The image overleaf shows the location of the development site in relation to Hedge End station and possible location of the new station. The site is bounded by the railway line to the north, the M27 motorway to the south, Hedge End to the east and Itchen Valley Country Park to the west. The map clearly

shows that apart from the dwellings proposed as part of the development site, there are currently very few people living in close proximity to the new railway station.

Whilst new development of up to a further 1,400 units is expected in the vicinity at West Horton Heath and Firtree Lane, these sites are being developed without reference to this station proposal. A large proportion of the development within these sites is located in excess of 800m from the proposed station (ie outside of convenient walking distance) and the access strategies for these developments do not explicitly seek to improve upon the current limited pedestrian/ cycle access from these areas to the vicinity of a potential Allington station. Hedge End station has been identified as providing an acceptable rail access option for these sites. Hence an Allington station may provide only moderate improvements to rail connectivity for these nearby development sites compared to the current situation.



The promoters of the Allington site have identified in their transport strategy that, via bus links and potentially pedestrian/ cycle links, Hedge End station would also be viable as a rail access for the proposed Allington site initially, or in the longer term in lieu of a potential additional station at the site.

### **Cost /affordability issues**

There are issues of cost and size of the proposed development and its ability to fund a major project such as a new station.

Network Rail would require that any new station built was able to handle the maximum length of train on the line. This line regularly sees 10/12 carriage trains (230/240 metre train lengths respectively) in the peaks hence would require maximum length platforms. Two platforms would be required as this is a double track route, and level access (for those with mobility difficulties etc) would be required for access to both platforms. Therefore the specification of station required is quite high and consequently would be costly.

For reference, a very basic, short-single platform station is likely to cost a minimum of circa £2m to £3m (for example the new halt at Newcourt in Exeter, which is reported to cost around £2.2m<sup>5</sup>). A station of the size/specification required for the proposed Allington development site would be expected to cost several times as much. One more comparable example could be the forthcoming Reading Green Park station, for which a cost of £8m<sup>6</sup> to £9m<sup>7</sup> has been published. This station will have two five-carriage length platforms as well as a variety of other facilities.

The new development is proposing to supply a maximum of 2,500 new homes. This is relatively small compared to the size of development sites elsewhere in the UK where new stations have been delivered. Some examples are provided below:

- **Aylesbury Vale Parkway:** 3,235 homes at Berryfields development; 1,035 at Weedon Hill development (total 4270) plus further development in nearby areas
- **Cranbrook station (nr Honiton):** initially 2,900 residential properties, rising to up to 6,550 properties by 2026
- **Newcourt (nr Exeter):** 16 hectares (40 acres) of employment land and 3,500 dwellings plus some existing nearby

All of the above stations are relatively basic stations on single track lines which were delivered at much lower costs than a potential Allington station.

If an Allington station serving a 2,500 unit development costing £10m (a possibly optimistic estimate) was delivered purely from development funding, this would cost £4,000 per dwelling to deliver. Assuming an average floorspace of 100m<sup>2</sup> per dwelling (an above-average dwelling size<sup>8</sup>), this value is more than half of total Community Infrastructure Levy (CIL) income per unit that might be expected per the Council's draft charging schedule<sup>9</sup> (which specifies a CIL rate for residential properties of £75 per m<sup>2</sup>). Clearly this large funding requirement would cause serious issues funding numerous other essential items of infrastructure - even if CIL from other developments was also used to fund such a station the CIL requirement per unit would probably be too onerous.

There could be other ways of funding such a station (e.g. from Local Enterprise Partnership budgets and funding bids, DfT funding etc) but all of these sources would require a strong business case as well as suitable funding opportunities, neither of which the Council is aware of existing at present.

Similarly there may be means by which a station could be delivered at somewhat lower cost (for example by providing a so-called "walkway station" intended to serve only a walkable catchment, and which does not provide parking or roadways (thus reducing construction costs) - however this does not address many of the other current unknowns regarding potential for provision of a station at Allington.

### **Longer term development of the rail network**

There may be potential for future development of the rail network to improve levels of service to Hedge End and /or enable delivery of a station to serve a potential Allington development at some point further

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<sup>5</sup> <https://www.devonnewscentre.info/first-trains-arrive-at-newcourt-station/>

<sup>6</sup> <http://thamesvalleyberkshire.co.uk/Portals/0/FileStore/StrategicInfrastructure/StrategicInfrastructure/BLTB/Reading-BC-01-Green-Park-Station.pdf>

<sup>7</sup> [http://www.reading.gov.uk/media/2398/Reading-GreenPark-Station---Summary/pdf/Reading\\_GreenPark\\_Station\\_-\\_Summary.pdf](http://www.reading.gov.uk/media/2398/Reading-GreenPark-Station---Summary/pdf/Reading_GreenPark_Station_-_Summary.pdf) (Costs in section 2.6.17)

<sup>8</sup> [http://www.savills.co.uk/research\\_articles/186866/188035-0](http://www.savills.co.uk/research_articles/186866/188035-0)

<sup>9</sup> <https://www.eastleigh.gov.uk/media/32590/dcsjuly14.pdf>

into the future. It is implied in the site promoter's proposals that this is may be a means of delivering a station, given delivery of a station is not a commitment for the strategic development site itself.

The Council is aware of two potential mechanisms which could, in the long term, have potential to deliver more substantial service improvements on the Botley line.

The first is potential additional train services driven by Network Rail's recommendations for development of the rail network set out in the current Wessex Route Study<sup>10</sup>. This study is the current key strategy for development of the rail network in this area.

The route study suggests that by its 2043 horizon, a second hourly service on between Basingstoke and Portsmouth may be in operation on the Botley line. This additional service is identified as a potential 'longer-term' (beyond 2024) scheme, to meet an identified need for improved Basingstoke/Winchester to Portsmouth connectivity. Regarding the capability of the partly single track Botley line to support such a service, the route study states that *"the addition of a further service to London Waterloo via Eastleigh on its own is unlikely to require any infrastructure interventions. If considered alongside [other proposed enhancements] then some intervention will be required"*. However elsewhere in the Route Study redoubling of the Botley line is identified as a potential longer term choice for funders of the railway to support this service, so it is not clear whether the current infrastructure could support an additional hourly service in each direction.

Historically, the Botley line has supported two trains per hour in each direction for a time (during the operation of the now withdrawn Reading/Basingstoke to Brighton SWT service in the early 2000s until 2007), however these additional services operated "fast" over the Botley line, not calling at any intermediate stations, and trains in each direction were scheduled to closely follow each other in order to avoid conflict on the single track sections. The withdrawal of these fast services enabled an AM & PM peak timetable that provided enhanced all stations services at Hedge End and Botley.

If a similar timetable was required to operate an additional service on this line in future, there is no guarantee that an Allington station (or indeed the existing Hedge End & Botley stations) would be served by additional trains, especially given that Network Rail's justification for improving services on this line appears to primarily be to improve journey times between major urban centres rather than at intermediate stations.

Thus it is unclear to the Council whether an approximately half-hourly all stations service in each direction could be supported by the current infrastructure or would serve existing or new stations on the line.

Additionally, the Network Rail route study is silent on the subject of new stations anywhere in the Borough.

Another potential means of delivery of service enhancements on this line could be through development of a "Solent Metro", as recommended in Solent LEP's Strategic Transport Investment Plan<sup>11</sup> published in May 2016.

Development of a Solent Metro service to better connect the Solent's two cities and wider settlements and address barriers identified by business to productivity and competitiveness, was the central recommendation of the Strategic Transport Investment Plan.

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<sup>10</sup> Wessex Route Study 2015: <https://www.networkrail.co.uk/running-the-railway/long-term-planning/>

<sup>11</sup> Solent LEP Strategic Transport Investment Plan <https://solentlep.org.uk/media/1514/tip-final-web-version.pdf>

Since that time, the case for phase 1 (connecting Southampton City Centre with Eastleigh Town Centre) is being made through the development of an Outline Business Case. This will consider route alignment and mode-type options, and a preferred option.

It is the Council's view that these proposals are at a very early stage of development, and at present it is not possible to be confident they will evolve beyond the current feasibility study, towards delivery. It is also felt that the proposals would be unlikely to be deliverable without significant external funding, which has not currently been identified.

Therefore it is not possible to give any weight to the Solent Metro proposal, or to base elements of our development planning strategies around its (potential) delivery at this time.

### **Conclusions- Rail**

The combination of cost and funding issues, the relatively small size of the development site, the limited number of potential rail passengers living in close proximity, and the absence of certainty about whether an additional station can be easily integrated into current or future rail timetables ( and the absence of evidence detailing how these challenges would be overcome) mean that at present the Council do not believe that delivery of a station at Allington Lane linked to the development proposal at this location is a realistic proposition.

Further, the guiding strategy for the long term development of the rail network (Network Rail's Wessex Route Study) is silent on the provision of a station here, and other long term improvement proposals (namely the Solent Metro proposal under development by Solent LEP) are at a very early stage and carry little weight or planning status. Thus there is nothing at present to give the Council confidence that delivery of a station here (and/or improved rail services on this line) is realistic even in the longer term.

## **Bus service options**

In the absence of any potential for provision of rail service at the potential North Bishopstoke/ North East Fair Oak site, and the low likelihood (in the Council's judgement) of provision of a rail station at the potential Allington Lane site, bus services will need to form the main component of public transport access strategies for either site. Bus services have the advantage of being more flexible in how they can be routed in comparison to rail and other fixed-route systems.

The remainder of this document sets out various options for bus services to each site identified by the Council, and our assessment of the feasibility/ viability of each option.

This assessment has been based on the premise that any new bus services at the new developments will in the long term need to be financially self-supporting (as is the case for the large majority of bus services in the Borough today).

## **Methodology**

In the most basic terms, this study:

- Estimated the Peak Vehicle Requirement (PVR) required to operate a number of route options; and then
- Estimated the level of patronage that these routes would generate based primarily on census travel to work and shopping catchment data, and utilising some typical assumptions on fares and vehicle costs, generated estimates of the number of peak vehicles that the developments each route option would serve could support

The methodology used gives substantial flexibility to test the viability of different routes under different quantities of residential development and at different levels of service frequencies as is demonstrated in the option assessment on pages 25 to 67.

The methodology used is fairly complex but is described in some detail over the next 9 pages. Further detail is available on request.

It is important to note that the supported PVR estimates are estimates of the patronage *generated by new developments alone*, ie they do not incorporate any estimates of additional patronage in existing developed areas that could be generated by new /improved existing services passing through.

### **PVR requirement / cost estimation methodology:**

The peak vehicle requirement for each route option (number of buses required to run a route at the busiest time of day) was estimated based on the length of each route, plus addition of a time allowance for layovers between journeys etc.

For each route, the distance of a round trip was calculated. Then, working on an assumption of a typical travel speed of 5 minutes per mile (12 mph), the time required for each round trip was established. An allowance for layover time was then added to this time to give a total time per "cycle".

The vehicle requirement was then established based on frequency (round trips per hour) and journey time for a route, and rounded up to the nearest whole number.

The assumption of 5 minutes per mile has been based on journey times/ speeds in published timetables for several representative bus routes in the Borough:

- Bluestar 1 Southampton-Chandler's Ford-Winchester: 1h00 to 1h05 to travel approx. 14 miles , urban-rural mix - 4.3 to 4.65 mins/mile
- Bluestar 2 Southampton-Eastleigh-Fair Oak: 1h00 to 1h10 to travel approx. 11.5 miles, predominantly urban - 5.2 to 6 mins per mile
- Bluestar 2 (Eastleigh to Fair Oak only): 20 mins to travel approx 4.2 mi, suburban- 4.76 mins/mile
- Stagecoach 69 Winchester to Fair Oak: 33 to 52 mins to travel approx 9.7 miles, urban-rural mix- 3.4 to 5.3 mins per mile

Across this spread of routes, a peak hour speed of 12mph/ 5 minutes per mile appears representative.

The operating cost (including share of overheads etc) of each peak vehicle has been assumed at a figure of £180,000 per year. This is based on consultation with local operators and also on a limited amount of published information elsewhere, suggesting a cost per peak vehicle in the £150k to £180k range. A high end figure has been used to avoid overly optimistic estimates of viability, and also to reflect the desire that a quality service is implemented at any potential strategic development site (s).

#### **Patronage/ supported PVR estimation methodology**

The methodology used to estimate demand for bus services from new developments utilises data from a number of published sources, primarily the 2011 Census Travel to Work (TTW) data (accessible via NOMIS<sup>12</sup>), DfT published data in the 2015 National Travel Survey<sup>13</sup>, average bus fares data published by DfT<sup>14</sup>, and data from the Eastleigh and Southampton Retail Study 2011<sup>15</sup>.

The method used for these demand/ viability estimates utilise various forms of the stages of demand forecasting used in typical transport planning methodologies (the "four step model"), namely trip generation, distribution, mode share estimation and assignment / routing.

#### **Trip generation**

It has been assumed that residents at each development will undertake the national average number of person-trips per year as identified in National Travel Survey 2015 data (Table NTS401/NTS402).

It was assumed that no trips of less than one mile distance would be made by bus due to the short distances involved. Thus an average of 742 trips per person, per year, of over 1 mile, which could potentially be made by bus, has been used as the basis of the trip generation.

It has been assumed that for all developments, there would be an average of 2.3 residents per household (per 2011 Census data on average persons per address).

Total number of relevant trips generated by a development has thus been calculated as (number of units) x (2.3 residents per household) x (742 trips annual per person)

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<sup>12</sup> <https://www.nomisweb.co.uk/>

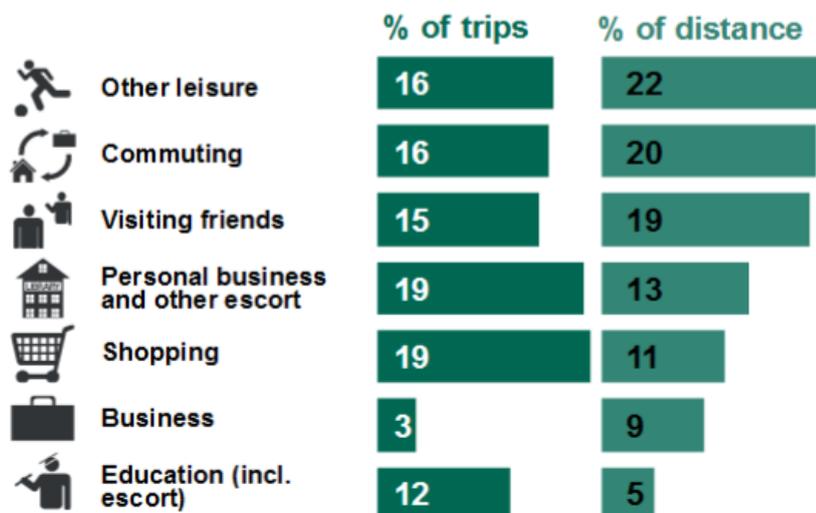
<sup>13</sup> <https://www.gov.uk/government/statistics/national-travel-survey-2015>

<sup>14</sup> <https://www.gov.uk/government/collections/bus-statistics>

<sup>15</sup> <https://www.eastleigh.gov.uk/planning-building/planning-policy-and-implementation/local-plan/draft-local-plan/local-plan-maps-evidence-base/local-plan-supporting-evidence-base/retail-study.aspx>

These total trip generation figures have then been split by purpose (eg shopping, commuting etc) per the 2015 National Travel Survey data shown in the chart below.

Purpose share of average number of trips and distance travelled: England, 2015 [\[NTS0401, NTS0402\]](#)



National Travel Survey: England 2015 - Page 26

This purpose split is important because levels of bus usage vary by journey purpose- buses are particularly well used for certain types of journey and less well-used for others. . Later stages of this methodology undertake a trip distribution which varies distribution according to journey purpose in an effort to more accurately estimate bus demand to key destinations such as shopping areas, than would be achieved by using Census travel to work data alone.

#### Trip distribution

Distribution of the trips generated by journey purpose has been undertaken based on the data sources outlined in the table below.

| Journey purpose                                 | Leisure                      | Commuting                       | Visiting friends                | Personal Business   | Shopping                     | Business                        | Education  |
|---|------------------------------|---------------------------------|---------------------------------|---|------------------------------|---------------------------------|--|
| <b>Data used for trip distribution estimate</b> | Shopping catchment data 2010 | C2011 TTW flows (bus mode only) | C2011 TTW flows (bus mode only) | C2011 TTW flows (bus mode only) 50%<br>Shopping catchment data 2010 50% | Shopping catchment data 2010 | C2011 TTW flows (bus mode only) | Not covered in this work (note re college buses etc) |

For journey purposes where **Census 2011 travel to work** (TTW) by bus flows were used for the distribution estimate, this was done based on patterns of Middle Level Super Output Area (MSOA) - to - MSOA flows to all relevant (ie potentially bus-accessible) nearby destinations.

As the potential developments do not currently exist, averages of 2011 Census TTW flows from zones (MSOAs) adjacent to the potential development sites have been used in an attempt to estimate the unique travel patterns that would occur at the potential development sites.

For example, it is expected that the proposed Option B+C site north of Bishopstoke/ east of Fair Oak is likely to have a significant Winchester-facing component to its travel patterns, similar to for example Colden Common; whilst the option E site sits between West End & Fair Oak so may have some characteristics similar to both in terms of travel patterns.

Hence the estimated trip distribution uses averages of existing travel to work flow / bus mode share data from these adjacent zones to generate an estimate of demand for the locations of the potential developments.

The following combinations of census zones (MSOAs) have been used to estimate travel demand for each site:

Options B+C (North Bishopstoke/ North West Fair Oak development)

- Bishopstoke: 33%
- Fair Oak / Horton Heath 33%
- Colden Common / Twyford/ Otterbourne 33%

Option E (Allington Lane development):

- West End 50%
- Fair Oak/ Horton Heath 50%

West Horton/ Firtree Lane site:

- Fair Oak Horton Heath 100% (development site is wholly contained within the MSOA zone covering Fair Oak & Horton Heath)

The proportions of the total travel demand to each destination zone (MSOA) was established (eg from the potential N Bishopstoke/ NE Fair Oak site, it has been estimated that 4.0% of all travel to work demand will be to Southampton city centre, 7.3% to the Eastleigh town centre area, and 7.5% to employment areas in the Chandler's Ford and Airport Parkway areas.

An estimate of total number of (all mode) trips per year for each journey purpose between potential developments and each destination zone was generated using these proportions.

A bus mode share estimate (based again on C2011 TTW bus mode shares for the appropriate flows) was then applied to give an estimate of the number of annual bus trips that would be generated, between each potential development and destination zone, for each journey purpose.

For **shopping & leisure trips**, data from the Eastleigh & Southampton Retail Study (2011<sup>16</sup>), which undertook a large scale telephone survey to establish market penetration/ catchments of various shopping areas across the two authorities, is deemed as a more accurate indicator of shopping travel patterns than census travel to work data. Whilst some major employment areas are located adjacent to shops, many

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<sup>16</sup> <https://www.eastleigh.gov.uk/planning-building/planning-policy-and-implementation/local-plan/draft-local-plan/local-plan-maps-evidence-base/local-plan-supporting-evidence-base/retail-study.aspx>

major employment sites are not near major shopping sites, hence travel patterns to work are substantially different to those for shopping trips. Applying travel to work patterns to shopping trips would not provide the best possible estimate of the distribution of these trips which are particularly frequently made by bus.

The process for this distribution estimation was as follows:

- The Retail Study catchment zone that each potential development resides in was established (North Bishopstoke/ East Fair Oak- Zone 23; Allington lane- Zone 22; West Horton Heath/ Firtree Lane- Zone 23)
- Key destinations for convenience and comparison retail trips, and the market shares of each of these destinations for the catchment zones the potential development sites reside within, were established based on 2011 data in Appendices II, II & VI of the retail study. It has been assumed that 50% of all shopping trips are to convenience retail destinations, and 50% to comparison retail destinations.
- The remaining “unaccounted for” shopping market share (market share going to shopping destinations outside the study area, e.g. Winchester, Portsmouth, Fareham etc) was (with reference to other data published in the study regarding market share of key shopping sites outside the core study area, shown in Appendix 2<sup>17</sup>) allocated to other potential retail destinations which could be accessible by bus from the development sites (in particular Winchester).
- A “sense check” was made on whether bus users from the potential development sites would be likely to use bus services to reach each retail site. For example, it was deemed unlikely that a resident travelling to the shops by bus from a potential North Bishopstoke/ East Fair Oak development would travel to Chandler’s Ford Asda given that any realistic bus service would pass through Eastleigh town centre (with multiple options such as Sainsburys, Tesco, Lidl & M&S) en route. Any “nonsensical” shopping destinations (and their share of trips) were removed from the estimation
- The total estimated shopping trip generation for each potential development site was then assigned to each shopping destinations based on the market shares, to give annual flows from each potential development to each shopping destination.
- The 2011 Census TTW bus mode share for the development to destination flow was then used to estimate the numbers of shopping trips that would be made by bus on each flow (for example, if 100,000 annual shopping trips were expected between a development and one shopping destination, and the Census 2011 TTW bus mode share for flows to this zone was 5%, it was assumed that the same mode share would apply to shopping trips- giving a total of 5,000 annual bus journeys on this shopping flow).
- For Leisure purpose trips, it has been assumed that these follow the same distribution pattern as shopping trips: many leisure destinations (eg pubs, bars, restaurants, cinemas, theatres etc) are located in or near town centres.
- For personal business trips, a mix of 50% of the shopping distribution and 50% of the travel to work distribution has been used. The basis for this is that many “personal business” trips (eg to banks, libraries etc) are to town /retail centres etc; but also that many “personal business” trips

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<sup>17</sup> [https://www.eastleigh.gov.uk/media/29800/GVA\\_-\\_StudyAppendices2011.pdf](https://www.eastleigh.gov.uk/media/29800/GVA_-_StudyAppendices2011.pdf)

may be made to destinations away from retail centres (eg doctors surgeries, hospitals, and other service providers which may be located closer to major employment centres)

Due to a lack of published data with which to construct an estimate of distribution, **education trips** have not been incorporated in these estimates. Education trips can be a very important component of the overall patronage / viability for some bus services, particularly those which pass near colleges. Indeed some college only routes support a “peak vehicle” by themselves. It is likely that any future services between potential development sites and Eastleigh town centre area (and potentially onwards to other destinations) could also serve Eastleigh/Barton Peveril College (at least at peak hours) to capture this market and improve the viability of a route. Similarly, potential links to Winchester could be designed to capture the student market at Peter Symonds College.

For **inbound trips** (ie from origins elsewhere, to the potential development sites) it has been assumed that these would be a relatively small component of overall travel demand, as these potential developments are primarily residential with only limited amounts of possible office or other local facility provision proposed. Therefore little inbound bus demand is expected.

In order to avoid over-complication, it has been assumed that the ratio of outbound to inbound commute trips from the Census 2011 TTW data for adjacent areas would hold true in the new developments. This is viewed as justifiable, as the majority of the adjacent MSOA zones used in the distribution estimation are (like the potential new developments) primarily residential with few major inbound trip generators.

#### Mode share / mode share variation depending on level of bus service

The methodology described above thus uses 2011 Census data (and other data sources) to estimate the number of annual bus trips that would be made from each development, based on bus mode shares from the 2011 Census.

These mode shares will clearly reflect a number of factors, the most critical of which is almost certainly the frequency of bus service provided to the area and key destinations at the time of the 2011 Census.

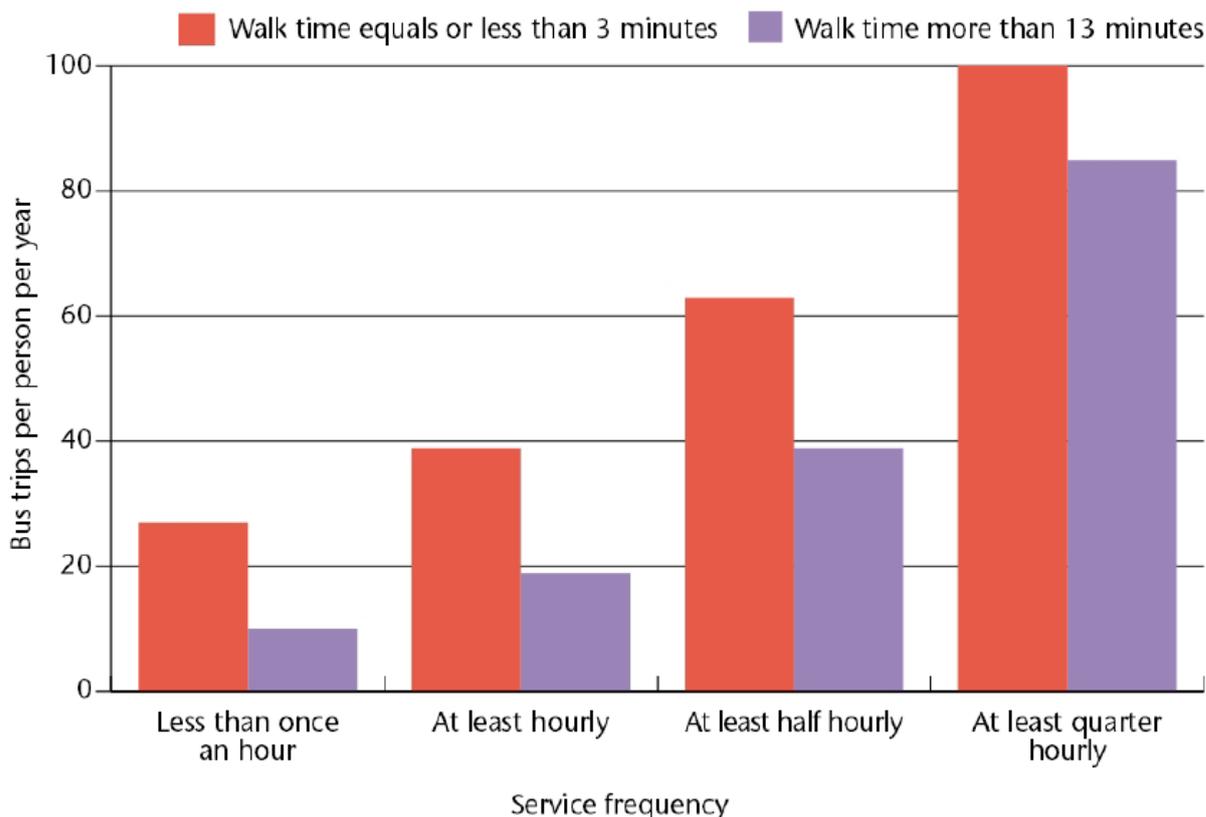
It would be expected that higher frequency bus services would attract a higher number of users, whilst a less frequent, less attractive service would attract fewer users.

For some of the options considered later in this document, the viability of more frequent bus services to certain destinations than those serving census zones used for this exercise in 2011 is tested.

This methodology has sought to account for the effect of potentially increased bus frequency on patronage as described below.

The chart below shows the impact of frequency on the willingness of bus users to walk a shorter and a longer distance to a bus route. High frequency (15 minutes or at worst 20 minutes) bus services are much more attractive and serve a wider walking catchment than low frequency (30 or less min) services.

**Figure 2.5: Bus use by availability of bus services, 1998–2000**



Source: Focus on Personal Travel (DTLR 2001)

The table below shows this as numeric values of bus trips per person, per year (the values for a 20 minute frequency are estimated based on figures for the 30 minute and 15 minute frequencies).

|                              | Number of annual bus trips per person   |                                |         |
|------------------------------|---|--------------------------------|---------|
|                              | Walk time equals or less than 3 minutes | Walk time more than 13 minutes | Average |
| Less than hourly             | 26                                      | 10                             | 18      |
| Hourly                       | 39                                      | 19                             | 29      |
| Half hourly                  | 62                                      | 39                             | 50.5    |
| 20 min frequency (estimated) | 81                                      | 61.5                           | 71.25   |
| Quarter Hourly               | 100                                     | 84                             | 92      |

It should be noted that the difference in usage rates shown in the above data will not be entirely caused by frequency differences, but will also reflect other factors such as differences in underlying demand. However this should not detract from recognising the effect that higher frequencies have of widening the walking catchment and likely levels of usage of a bus service.

From this, it is possible to create an estimate of the percentage changes in numbers of journeys per person that may occur if a bus service frequency is changed:

|                              | Estimated % Differences in usage |             |         |
|------------------------------|----------------------------------|-------------|---------|
|                              | From....                         |             |         |
| To....                       | Hourly                           | Half Hourly | 20 Mins |
| Less than hourly             | -38%                             | -64%        | -75%    |
| Hourly                       | 0                                | -43%        | -59%    |
| Half hourly                  | 74%                              | 0           | -29%    |
| 20 min frequency (estimated) | 146%                             | 41%         | 0       |
| Quarter Hourly               | 217%                             | 82%         | 29%     |

For example, if an hourly service is increased in frequency to half-hourly, this data indicates that a 74% increase in patronage will occur, whereas if a currently 20 minute frequency service is reduced to hourly, it is estimated that patronage will reduce by 59%.

These estimated “changes” in patronage have been used to try to estimate the effect on bus mode share on flows from the potential developments that might occur if a more frequent service than that represented in the Census 2011 TTW mode share data for adjacent zones was provided at the development.

For example, if for a flow between a potential development and a destination, a bus mode share of 5% is indicated based on Census 2011 data (where a route operated half-hourly at that time), this methodology indicates that if the link from the new site to this destination was operated every 20 minutes, the mode share of the route would increase by 41% (to 7.05%).

#### Routing/ assignment & patronage estimates/ income estimates

Following the above processes (total annual trip generation > annual trips by journey purpose > distribution to destinations/zones by journey purpose > establishment of bus mode share> mode share adjustment for frequency changes) an estimate for total annual one-way bus trips between the potential development site and each destination/census zone is generated.

This is then doubled to give an estimated two way number of bus journeys per year between the potential development site and each destination/zone.

This two way flow has been multiplied up by an average fare of £1.70 per journey (the average fare for bus journeys in England outside metropolitan areas in 2016<sup>18</sup>) to give an estimate of annual revenue between the development and each and each destination/zone.

Then, to give estimates of income on different routing options, the income & patronage values for each destination/ zone served along the line of each route option have been added together to give an estimate of overall patronage/ income generated by potential new developments.

So for example, for a potential West Horton Heath/Firtree Lane- North Bishopstoke/Fair Oak -Eastleigh service (route 1B in the later options evaluation), the following individual flows/ revenues from new development sites to destinations are added together:

<sup>18</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/576617/bus0402.ods](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/576617/bus0402.ods)

- West Horton / Firtree to Fair Oak/Horton Heath
- West Horton / Firtree to Boyatt Wood
- West Horton / Firtree to Eastleigh Town Centre & adjacent areas
- North Bishopstoke/West Fair Oak to Fair Oak/Horton Heath
- North Bishopstoke/West Fair Oak to Boyatt Wood
- North Bishopstoke/West Fair Oak to Eastleigh Town Centre & adjacent areas

This gives total revenue from new developments for the route, which can then be compared to the estimated cost of operating the route based on peak vehicle requirements.

#### Caveats and other considerations about the outputs

All outputs are based on “current” data, ie 2011 Census travel to work patterns, 2010/2011 shopping patterns, 2015 average bus fares, 2015 National Travel Survey data etc. By the time any of these potential developments are built (2020s to 2030s), many of these values may have changed.

Thus this study provides an indication of the level of bus service that each development could support if it existed today, assuming broadly current travel to work & shopping patterns, bus journey times, fares, operating costs etc.

Additionally, this study has not considered how much “kickstart” subsidy/ support would be required to build up bus service to get to a commercially viable level. It is generally accepted that provision of a bus service from very early stages of a development maximises its ability to capture the market and reduce levels of car usage as soon as residents move into a development; however doing this normally requires subsidy until such time as the development reaches a size sufficient for bus services to be viable by themselves. With major sites taking perhaps as long as 15 to 20 years to fully complete, some of the options discussed could take many years to reach their full potential. It is likely that successful implementation of most of the access options described in the following pages would be dependent upon site-specific developer contributions to support the initial start-up and potentially “phased” build-up of bus services towards a final, commercially viable state.

Finally, this study is built on multiple estimates using published “best available” data. Clearly some elements of these estimates will not be perfect, and the multiple levels of estimation mean that some compound errors etc are likely, hence the costs/ viability estimates set out should be regarded as indicative (with a margin for error) rather than exact.

There are some obviously pessimistic elements to the methodology, most notably that all education bus trips have been disregarded. Similarly the PVR estimates are rounded up to the nearest whole figure, and no allowances have been made for potential (especially with higher PVR services) to make tweaks to layover times or interworking arrangements to maximise the efficiency of use of vehicles and “save vehicles”.

#### **Consultation with operators**

As part of the development of this study, consultation has been undertaken with local bus operators to seek their views on the options presented. Draft copies of the study were provided to representatives of the following operators:

- Firstbus

- Go South Coast (Bluestar and Uni-link)
- Stagecoach South
- Xelabus

At the time of publication, feedback had been received from one operator. This valuable feedback has resulted in alterations to some of the text in this study to better reflect their views.

DRAFT

## Review of bus service options – Option B+C site (North Bishopstoke/ North East Fair Oak)

The promoters of the Option B+C site (hereafter referred to as “N Bishopstoke/ NE Fair Oak”) state in their Strategic Site Rationale and Proposed Delivery Strategy (November 2016) that:

*“It would be anticipated that the main issues for development in surrounding highway network arising from Options B and C could be:*

- *[various highway/traffic related impacts]*
- *the lack of public transport in this location”*

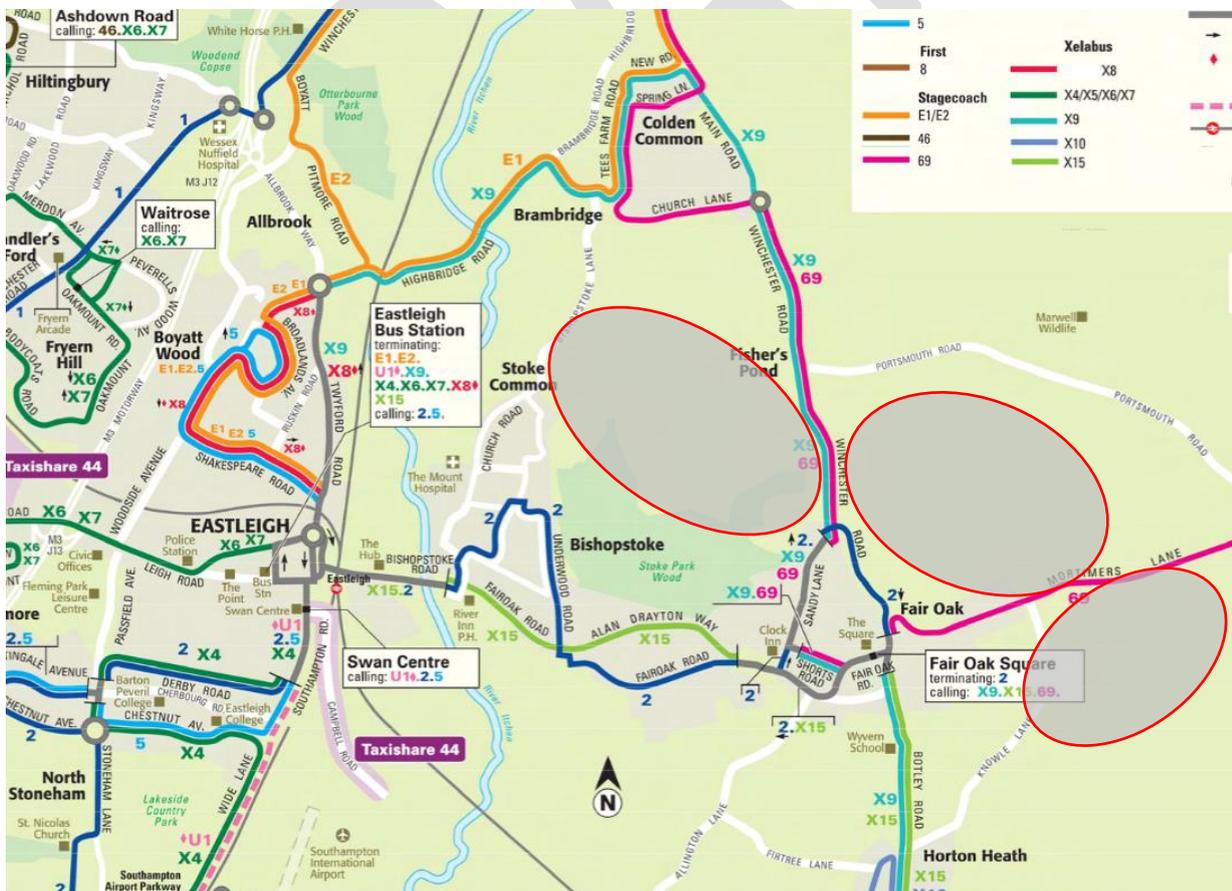
and

*“[EBC’s 2015 Issues & Options Background paper identified that ] impacts [at option B+C sites] are likely to be severe unless suitable new transport infrastructure is provided, including the provision of good access to public transport.....Suitable new infrastructure for all modes of travel.....financial contribution to bus services”*

As the site is not in the vicinity of an existing or potential rail station any public transport strategy for the site will need to be based around bus services.

The high-level information currently published by promoters of N Bishopstoke/ NE Fair Oak do not make any outline or detailed proposals for how the site would be served by public transport services. Therefore this study has examined several possibilities which may be realistic.

Existing bus services in the Fair Oak area would be relevant to some parts of the N Bishopstoke/ NE Fair Oak site. These are shown in the figure below:



- **Stagecoach 69**- hourly service to Winchester/ Bishops Waltham/Fareham. Fully commercially operated. On its current route via B3354 Winchester Rd and BB3037 Mortimers Lane, this service would be within an acceptable walking distance (400m) of some parts of the site, particularly areas around Crowdhill and north and south of Mortimers Lane. However this service only runs hourly for most of the day, with some additional peak time frequency (but also some gaps between journeys of greater than an hour in the peaks), and has no Sunday service or service after 7pm.
- **Xelabus X9**: Hourly service to Eastleigh via Colden Common and to Horton Heath, Hedge End, Botley & Bishops Waltham. An HCC supported bus service- current route is not self-supporting and requires subsidy. In light of ongoing reductions to local authority budgets and consequent cuts to bus service support, long term viability of this service is not assured. This service would be within an acceptable walking distance (400m) of some parts of the site, particularly areas around Crowdhill. However this service only runs hourly for most of the day, with no service after approximately 1815, very limited Saturday service and no Sunday service.
- **Bluestar 2**: 20 minute frequency service to Southampton via Bishopstoke, Eastleigh and Portswood. Almost entirely commercially operated but with a small amount of financial support from EBC for commercially unviable late evening services. This service would be within an acceptable walking distance (400m) of a small part of the site to the east of Winchester Road between Sandy Lane and Fair Oak square, and possibly some parts around Crowdhill. Service runs at a 20 min frequency Mon to Sat, half hourly on Sundays (from summer 2017), operating hours on all days approx. 0600 to 2330.

Thus the current configuration of bus services in the area would provide public transport accessibility for certain parts of the N Bishopstoke/ NE Fair Oak site (perhaps 1/3<sup>rd</sup> of the overall site), albeit mostly not to an attractive frequency and with mostly limited or no service on evenings or weekends.

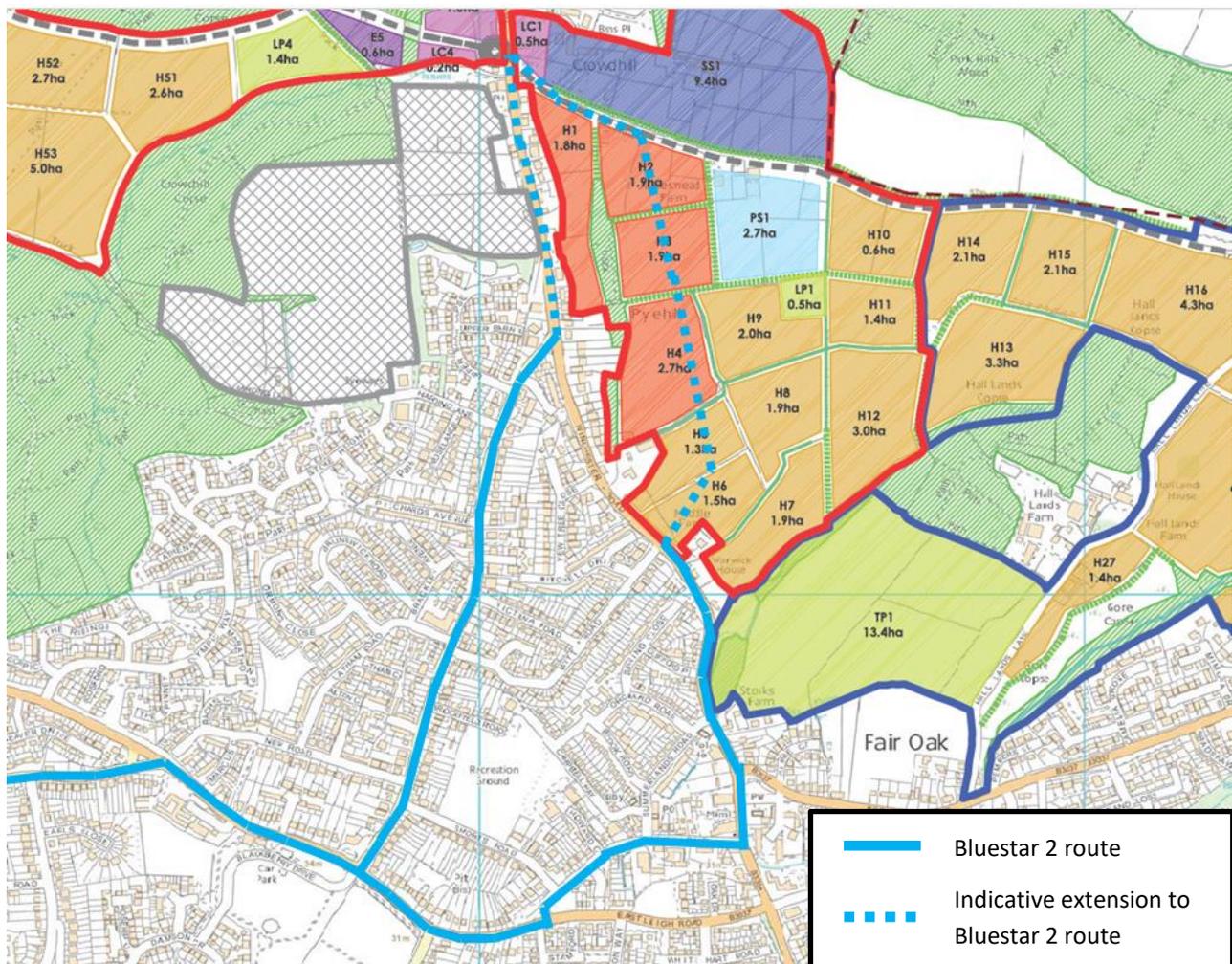
There may be some potential to modify the routing and/or frequency of these existing services to better serve the site. Diversion of Stagecoach 69 / Xelabus X9 along the site spine road between Crowdhill and Bishopstoke Lane/ Colden Common may be feasible although this would extend walking distances or deprive access to these services for existing users in Fisher's Pond and some parts of Colden Common (albeit a relatively small number) and may not be acceptable.

Alteration of Stagecoach 69 / Xelabus X9 to serve the parts of the site north/north east of Fair Oak (ie served by the proposed Winchester Road to Mortimers Lane spine road) would either deprive some important currently served areas (eg Mortimers Lane, Sandy Lane, Fair Oak square) of these services, or would require considerably more circuitous and lengthy routes in order to retain service to these areas. Thus diverting these services to serve the eastern part of the site could have significant negative impacts on many existing users and it is expected this would not be acceptable to the operators or Local Authorities.

There may be some scope to make moderate alterations to the route of the Bluestar 2 although this would be subject to agreement of the operators of this mostly commercially operated service. This route currently serves Fair Oak via a loop (Sandy Lane, Winchester Road & Fair Oak square/ Fair Oak Road). At its widest, the loop is about 500 metres "wide" and some parts of Winchester Road are less than 300m from some parts of Sandy Lane. Thus some parts of the catchment served by the loop overlap. Additionally, most of the part of Winchester Road served by Bluestar 2 has residential frontages along only one side.

There may be potential for the Fair Oak loop to be modified such that the service penetrates several hundred metres into the potential N Bishopstoke/ NE Fair Oak development, providing service to some

parts of the proposed development whilst still serving most or all of its existing catchment close to Winchester Road. This concept is illustrated in the figure below.



Whilst a layout for the N Bishopstoke/ NE Fair Oak development proposal has not been designed in detail, it is likely that the area “within reach” of a minor alteration to the Bluestar 2 loop could include some of the highest density housing as well as a significant local centre.

However given the importance of this service to the local area and the strong user base it has at present, it would be imperative that any changes which significantly negatively impacted on current users are avoided as it is unlikely these would be acceptable to the service operator. Any more significant detour into the development would be likely to result in an unacceptably extended loop around Fair Oak. The operator has also noted in consultation that their preference is to avoid serving narrow “estate roads” (which may expose buses to parking issues and other delays).

Therefore, if an extension of Bluestar 2 as indicated above is pursued, it would be necessary to ensure that the parts of the road network such an extension could operate over are built to a standard which permits fast and reliable operation of bus services. This could be just one design element of a site masterplan which could seek to arrange development in a pattern which works best for bus route provision.

In all cases, frequency increases to these existing services, as well as provision of improved evening & weekend services, would help to improve the attractiveness and potential for modal shift (and thus mitigation of development traffic impacts) offered by these services. In particular it is believed that the Bluestar 2 route has potential to support a 15 minute frequency in the medium term due to development

and demand growth elsewhere on its current route, although the operator has made it clear that such a frequency uplift would require “seed funding” in order to be initially viable. However without significant changes to routes (which, per previous paragraphs, would likely have unacceptable negative impacts on existing users), a majority of the proposed N Bishopstoke/ NE Fair Oak site would remain outside of a 400m walking catchment to a bus service and thus would be unserved by public transport.

Therefore it is likely that entirely new services would need to be implemented to adequately serve many parts of the development. As a relatively linear settlement, bus services routed along the development spine road would bring most (perhaps all) of the site within a 400m walking catchment. Beyond the site boundary, routing could largely match existing bus routes. Many options explored for new services could also serve the ~1400 homes at West Horton & Firtree Lane.

#### N Bishopstoke/ NE Fair Oak- options & viability for new services

In terms of travel demand, it is likely that key attractors of trips and travel demand which could be served by bus services from the site would be:

- Winchester city centre
- Eastleigh town centre
- Eastleigh/Barton Peveril College areas
- Southampton city centre

If a direct linkage was provided to the key employment area at Chandler’s Ford (eg Hants Corporate Park) it is likely a reasonable level of bus demand would exist to this area as well.

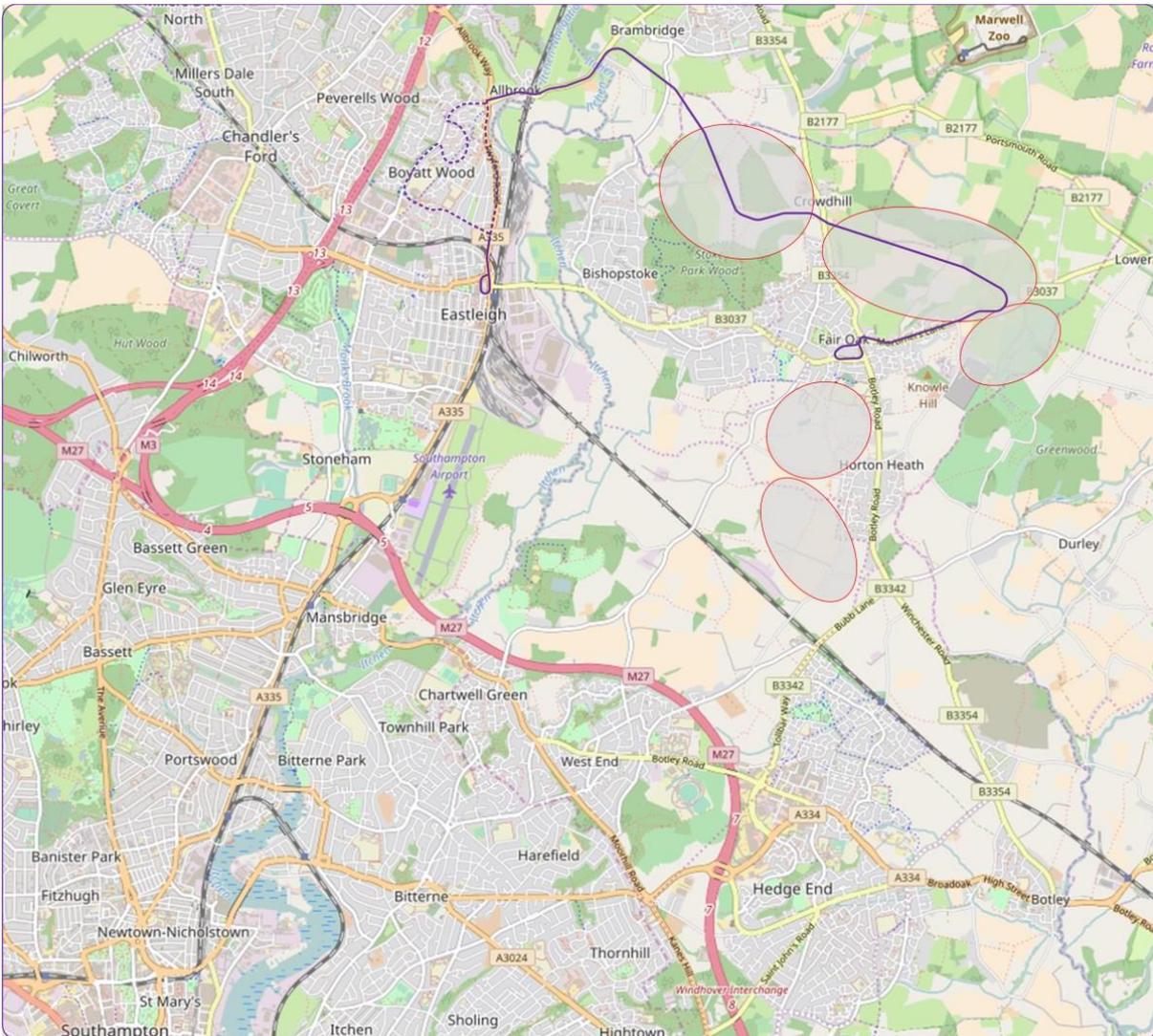
The proposed local centre and shopping facilities at the site may also act (depending on size and nature of the provision) to attract some “inward” trips to the new site which currently go to other destinations.

Although Hedge End superstores and employment areas would also be a major destination for travel demand, unconstrained car parking and other factors (eg layout of Hedge End) mean that it is unlikely that significant demand by bus to these destinations would occur.

Several options for serving these key flows are set out in the following viability estimates. The viability estimates (Peak Vehicle Requirement – PVR) are estimates of the numbers of peak vehicles that demand generated from the site could support. To make a viable service, if the PVR supported is lower than the PVR required to run the service, the service would need to generate sufficient additional demand elsewhere on its route (ie from outside the site) or perhaps abstract demand from an existing service (which may impact the viability that existing service) to make up the difference.

## Access to Eastleigh/ Southampton

Route 1A: Fair Oak- N Bishopstoke/ NE Fair Oak - Eastleigh



Service from Fair Oak square via Mortimers Lane, then along full length of development spine road and Allbrook to Eastleigh. Potential to route this service between Allbrook and Eastleigh via either:

- Twyford Road (more direct route but more limited catchment)
- Boyatt Wood (more circuitous route but would serve wider catchment). Potential to absorb the (commercially operated) half-hourly short journeys Eastleigh –Boyatt Wood on Bluestar 5 into this service pattern (thus capturing a “free” ~0.5PVR of existing demand).

There could be potential for some journeys (eg at peak college times) on this service pattern to extend to Chestnut Avenue to serve colleges there.

*Via Twyford Road- estimated end-to-end journey time approx.35 minutes*

| Frequency, mins | Estimated PVR required | Estimated PVR supported by development |                       |                       |
|-----------------|------------------------|--|-----------------------|-----------------------|
|                 |                        | 4000 unit development                  | 5000 unit development | 6000 unit development |
| 30              | 3                      | 1.8                                    | 2.2                   | 2.7                   |
| 20              | 4                      | 2.5                                    | 3.2                   | 3.8                   |

Via Boyatt Wood- estimated end-to-end journey time approx.40 minutes

| Frequency, mins | Estimated PVR required | Estimated PVR supported by development |                       |                       |
|-----------------|------------------------|--|-----------------------|-----------------------|
|                 |                        | 4000 unit development                  | 5000 unit development | 6000 unit development |
| 30              | 3                      | 2.3*                                   | 2.7*                  | 3.2*                  |
| 20              | 5                      | 3*                                     | 3.7*                  | 4.3*                  |

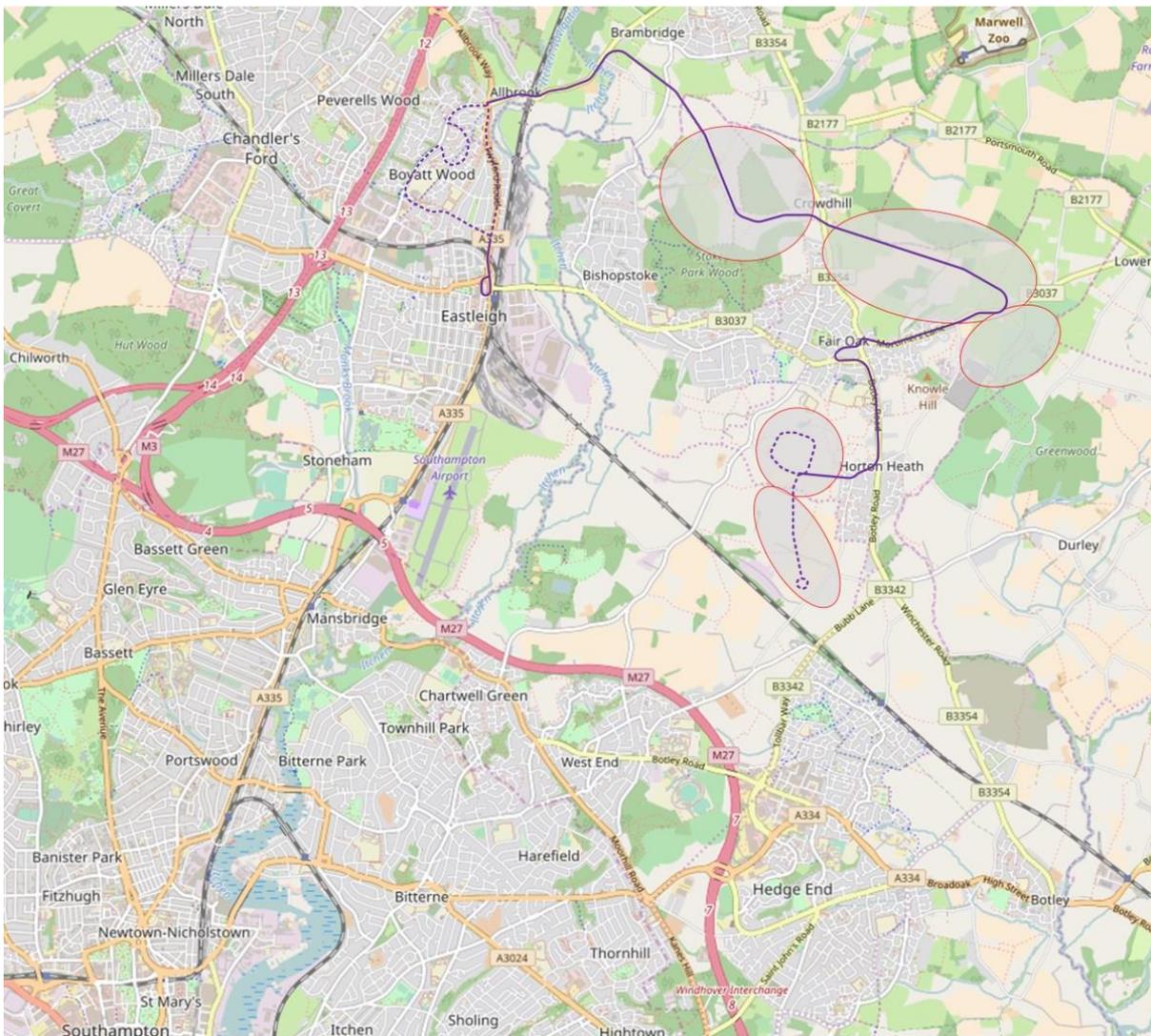
\* Includes additional 0.5 PVR from assumed absorption of Bluestar 5 Eastleigh-Boyatt Wood service

Discussion:

- With a 4,000 unit development, there would be a significant gap between estimated demand and estimated resource (vehicle) requirement on a route via Twyford Road at either 30 minute or 20 minute frequency. Operating via Boyatt Wood and absorbing the current Bluestar 5 route would reduce the size of this difference (such that a 30 min service may be borderline viable if a good level of growth can be achieved from existing markets elsewhere on the route) but a 20 minute frequency does not look realistic.
- With 5,000 units, viability improves for all options but significant gaps remain between required PVR and the PVR supported by demand from the development alone exist for all except a 30 minute frequency via Boyatt Wood.
- With 6,000 units, all of the options (20 or 30 minute frequency, via Boyatt Wood or Twyford Road) appear to be realistically viable or would viable with (probably) realistic levels of growth from existing markets.
- These estimates exclude any education travel demand. Based on current service patterns on comparable routes, if service to the colleges on Chestnut was provided at peak times, this could boost the PVRs supported by the proposed development by up to one vehicle (giving a reasonable chance of commercial viability for 20 minute frequencies, perhaps even from a 4,000 unit development size).

In their consultation response, an operator expressed a view that routing this service option via Boyatt Wood would be excessively circuitous and less preferable compared to routing via Twyford Road-despite the identified potential for routing via Boyatt Wood to better utilise some existing capacity.

Route 1B: West Horton-Fair Oak- N Bishopstoke/ NE Fair Oak -Eastleigh



Service from West Horton/Firtree Lane development via Fair Oak square Mortimers Lane, then along full length of development spine road and Allbrook to Eastleigh. Potential to route this service between Allbrook and Eastleigh via either:

- Twyford Road (more direct route but more limited catchment)
- Boyatt Wood (more circuitous route but would serve wider catchment). Potential to absorb the (commercially operated) half-hourly short journeys Eastleigh –Boyatt Wood on Bluestar 5 into this service pattern (thus capturing a “free” ~0.5PVR of existing demand).

There could be potential for some journeys (eg at peak college times) on this service pattern to extend to Chestnut Avenue to serve colleges there.

*Via Twyford Road-estimated end-to-end journey time approx.45 minutes*

| Frequency, mins | Estimated PVR required | Estimated PVR supported by development |                       |                       |
|-----------------|------------------------|--|-----------------------|-----------------------|
|                 |                        | 4000 unit development                  | 5000 unit development | 6000 unit development |
| 30              | 3                      | 2.4                                    | 2.8                   | 3.3                   |
| 20              | 5                      | 3.3                                    | 4                     | 4.6                   |

Via Boyatt Wood-estimated end-to-end journey time approx.50minutes

| Frequency, mins | Estimated PVR required | Estimated PVR supported by development |                       |                       |
|-----------------|------------------------|--|-----------------------|-----------------------|
|                 |                        | 4000 unit development                  | 5000 unit development | 6000 unit development |
| 30              | 4                      | 2.9*                                   | 3.3*                  | 3.8*                  |
| 20              | 6                      | 3.8*                                   | 4.5*                  | 5.1*                  |

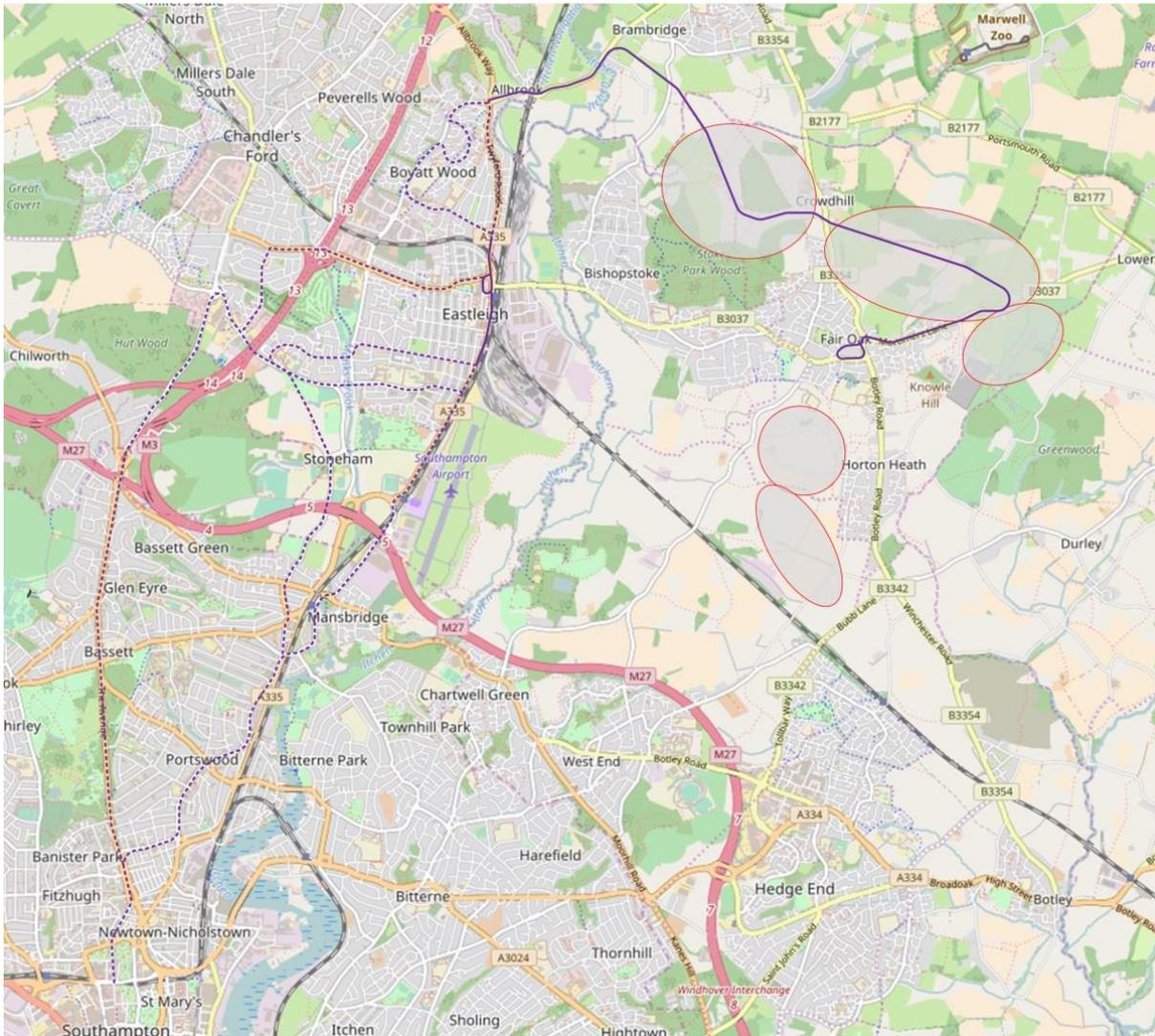
\* Includes additional 0.5 PVR from assumed absorption of Bluestar 5 Eastleigh-Boyatt Wood service

Discussion:

- Overall pattern of estimated demand versus resource requirement is similar to that for Route 1a, ie a 4,000 unit development will not support a 20 minute frequency service and would require fairly substantial growth (0.6 PVR, or around £110k p/a revenue/ approximately 32,000 additional return journeys per year) from existing markets to support even the most viable option (30 minute frequency via Twyford Road)
- With 5,000 units, estimates indicate a 20 min service remains unviable without ambitious growth from existing markets, although 30 min service via Twyford Rd is close to being viable from demand generated by N Bishopstoke/ NE Fair Oak development alone.
- 6000 unit development is estimated as supporting 30 minute frequency via either route from demand within the development alone, and is estimated as being close to supporting a 20 min frequency especially for shorter routing via Twyford Road
- Overall, these estimates suggest that extension of service to West Horton/ Firtree lane would not greatly aid viability- increased demand /patronage appears likely to be largely counteracted by increased journey times and higher PVRs.
- These estimates exclude any education travel demand. Based on current service patterns on comparable routes, if service to the colleges on Chestnut was provided at peak times, this could boost the PVRs supported by the proposed development by up to one vehicle (giving a reasonable chance of commercial viability for 20 minute frequencies from a 5,000 unit development size).

Again, consultation with an existing bus operator identified a view that routing via Boyatt Wood (and also routing West Horton Heath services to Eastleigh via the N Bishopstoke/ NE Fair Oak development) would result in an excessively circuitous route.

## Route 1C: Fair Oak- N Bishopstoke/ NE Fair Oak - Eastleigh-Southampton



Service from Fair Oak square via Mortimers Lane, then along full length of development spine road and Allbrook to Eastleigh; then onwards to Southampton city centre via one of a variety of possible routes. This service pattern is conceptually similar to the current arrangement on Bluestar 2.

The service could be routed via either Twyford Road or Boyatt Wood en route to Eastleigh. Routing via Twyford Road would reduce journey times, however routing via Boyatt Wood might give greater patronage growth opportunities through provision of a direct service to Southampton where none currently exists and could capture a “free” ~0.5PVR of existing demand by replacing the Bluestar 5 here.

Routing options between Eastleigh and Southampton could include:

- Direct route via Airport Parkway, Swaythling, Portswood (lowest PVR, fastest end to end journey times)
- Via existing Bluestar 2 route ie Derby Rd, Aviary Stoneham Lane & Portswood. However this may pose a risk of “over-bussing” these existing roads
- Via Leigh Road, Velmore & Chandler’s Ford business park (thus restoring a direct Velmore & Leigh Road to Southampton service, as well as providing direct connections to Chandler’s Ford employment areas)

- Via same route as Bluestar 5 to Chandler’s Ford Business Parks (ie directly serving the colleges) and then via the Avenue to Southampton city centre)

PVR requirements for the longest & shortest routes have been explored below. Demand / supported PVR estimates to Southampton suburbs presented here are not very granular (just a single generic demand estimate to all suburbs of the city which could potentially be served)-but could be made more granular if required. However demand to many of the Southampton suburbs is fairly limited anyway due to an absence of major shops and limited employment part from the university in these areas. Southampton city centre is the key destination in the city by a wide margin. The biggest difference between the various possible routings is whether the proven markets at the colleges on Chestnut Avenue and at Chandler’s Ford business parks are served (or not).

*Shortest routing (Via Twyford Rd & Parkway) -estimated end-to-end journey time approx.65 minutes*

| Frequency, mins | Estimated PVR required | Estimated PVR supported by development |                       |                       |
|-----------------|------------------------|--|-----------------------|-----------------------|
|                 |                        | 4000 unit development                  | 5000 unit development | 6000 unit development |
| 30              | 5                      | 2.7                                    | 3.3                   | 4                     |
| 20              | 7                      | 3.8                                    | 4.7                   | 5.7                   |

*Longest routing (Via Boyatt Wood, Chestnut Ave & Chandler’s Ford) -estimated end-to-end journey time approx.80 minutes*

| Frequency, mins | Estimated PVR required | Estimated PVR supported by development |                       |                       |
|-----------------|------------------------|--|-----------------------|-----------------------|
|                 |                        | 4000 unit development                  | 5000 unit development | 6000 unit development |
| 30              | 6                      | 3.2*                                   | 3.8*                  | 4.5*                  |
| 20              | 9                      | 4.3*                                   | 5.2*                  | 6.2*                  |

\* Includes additional 0.5 PVR from assumed absorption of Bluestar 5 Eastleigh-Boyatt Wood service

#### Discussion:

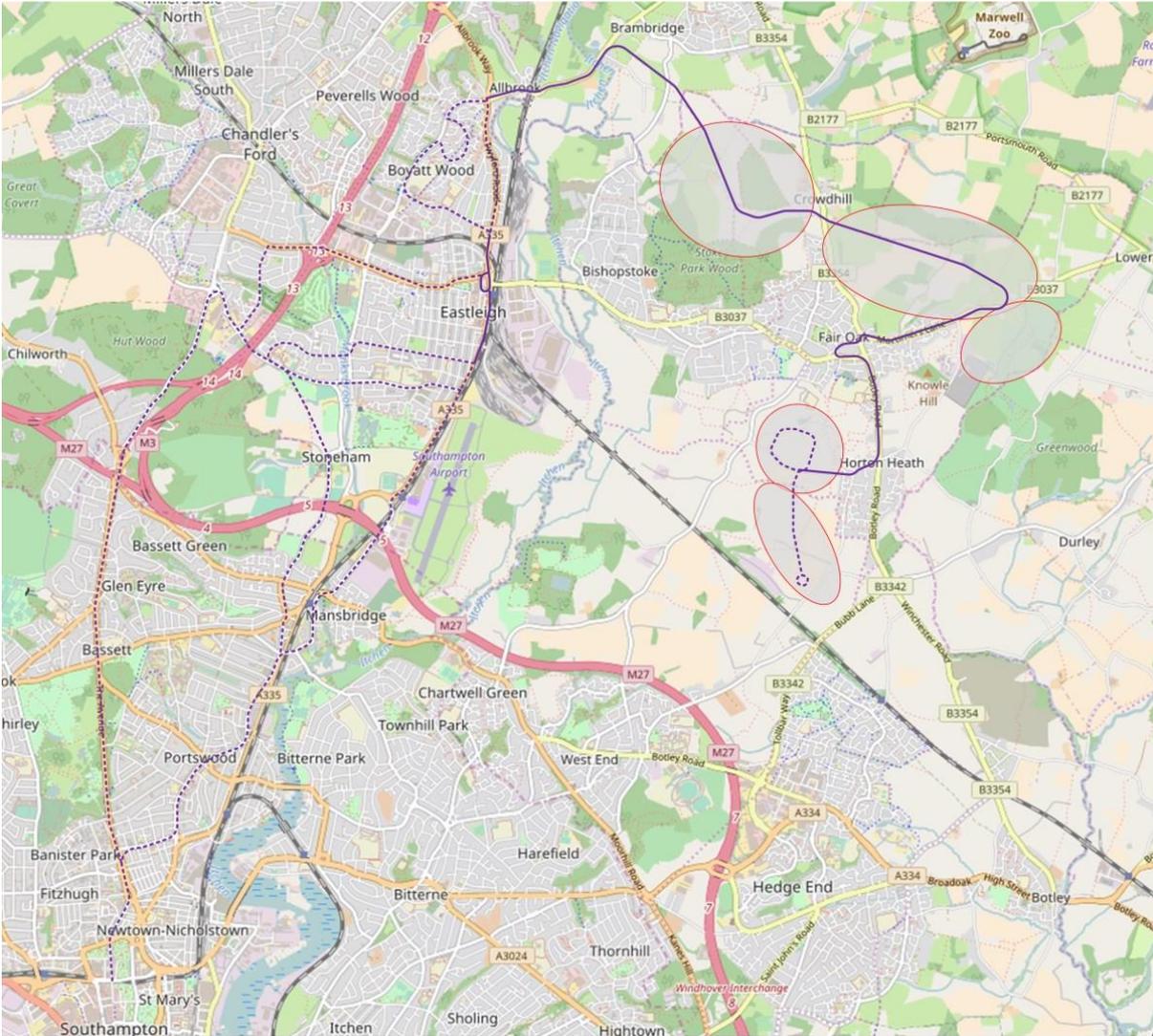
- These estimates indicate that none of these service options would be commercially viable (and most would not be close to viable) from patronage generated by the N Bishopstoke/ NE Fair Oak development alone, regardless of the size of development, the route taken, or the frequency operated. It appears that all of these options would (to a varying extent) need to grow markets outside the development, or abstract patronage from other routes in order to fully cover their own costs
- These estimates indicate that at best, a 6,000 unit development might need to generate ~1PVR (~£180k or 50,000 return journeys ~p/a) of new external demand (ie demand from areas not within or to/from the new development) to support a 30 minute frequency, 5 PVR service via the most direct route.
- Higher frequencies are indicated as being less self-supporting than lower frequencies despite the higher modal share they would be expected to capture.
- As would be expected, lower development quantum /densities are progressively less able to support any route to Southampton from internal demand alone.
- Longer routings (eg via Chandler’s Ford &/or Boyatt Wood) would serve more potential destinations from the N Bishopstoke/ NE Fair Oak site, as well as opening up new or previously

served markets e.g. Velmore& Boyatt Wood to Southampton (perhaps generating “new” external demand necessary to make such routes viable), but would also result in extended journey times particularly to Southampton that push up PVRs and would be less attractive for N Bishopstoke/ NE Fair Oak residents. This could result in trade-offs in demand (not covered in the estimates presented here).

- Ultimately, further investigation is required, but the key message here is that only higher quantum of development at N Bishopstoke/ NE Fair Oak are likely to support direct bus service to Southampton without requiring an unrealistic level of demand growth from existing areas which would be served en-route.
- As in previous route options, these estimates exclude any education travel demand, and demand to colleges on Chestnut Avenue in particular could add extra demand/revenue (up to ~1PVR worth?)- reducing the gap between estimated resource requirements and estimated income.

DRAFT

Route 1D: West Horton- Fair Oak- N Bishopstoke/ NE Fair Oak - Eastleigh-Southampton



As per route 1 C, but with the extension of the Fair Oak- N Bishopstoke/ NE Fair Oak - Eastleigh-Southampton service to the West Horton development potentially as part of that development's public transport access strategy.

Shortest routing (Via Twyford Rd & Parkway)- estimated end-to-end journey time approx.75 minutes

| Frequency, mins | Estimated PVR required | Estimated PVR supported by development |                       |                       |
|-----------------|------------------------|--|-----------------------|-----------------------|
|                 |                        | 4000 unit development                  | 5000 unit development | 6000 unit development |
| 30              | 5                      | 3.6                                    | 4.2                   | 4.9                   |
| 20              | 8                      | 5.1                                    | 6                     | 7                     |

Longest routing (Via Boyatt Wood, Chestnut Ave & Chandler’s Ford)- estimated end-to-end journey time approx.90 minutes

| Frequency, mins | Estimated PVR required | Estimated PVR supported by development |                       |                       |
|-----------------|------------------------|--|-----------------------|-----------------------|
|                 |                        | 4000 unit development                  | 5000 unit development | 6000 unit development |
| 30              | 6                      | 4.1*                                   | 4.7*                  | 5.4*                  |
| 20              | 9                      | 5.6*                                   | 6.5*                  | 7.5*                  |

\* Includes additional 0.5 PVR from assumed absorption of Bluestar 5 Eastleigh-Boyatt Wood service

Discussion:

- These estimates indicate that the extension of a Fair Oak- N Bishopstoke/ NE Fair Oak - Southampton service to the West Horton/ Firtree Lane development site could improve the viability of this route despite the additional PVR required to run such a frequency.
- In particular the estimates indicate that demand from a 6,000 unit development (plus the 1400 units at West Horton/Firtree Lane) would result in sufficient demand to (almost) independently support a 30 minute frequency service to Southampton via the shortest possible routing.
- The “gap” between PVR required to run 20 minute frequencies on either routing, and the level of demand likely to be generated by the development, does not appear insurmountable either for a 6,000 unit development.
- As with other route options, lower development quantum would require a greater level of patronage growth from external markets to make a Southampton service viable- a more commercially risky proposition.
- However the “gap” between required PVR for a 30 minute service on the most direct route, and estimated demand from a 5,000 unit development, is 0.8 PVR (probably not insurmountable?)
- As per comments for route 1C, the extended / circuitous routings particularly to Southampton (in order to access more potential users/ destinations) would result in unattractive journey times, particularly to Southampton for users at the Fair Oak/ Horton Heath end of the route. This would likely reduce usage compared to these estimates.
- Again, education demand (primarily to colleges) is not included in these estimates and, based on experience elsewhere, could generate another PVR worth of demand if colleges were directly served at appropriate times by this service option.

## Access to Winchester/ Hedge End

Route 2A: Fair Oak- N Bishopstoke/ NE Fair Oak - Winchester



Envisaged as an additional service to complement the Stagecoach 69 route. From Fair Oak square, serving full length of development spine road, then via same route as Stagecoach 69 to Winchester. There may be potential for certain journeys to extend to Peter Symonds college.

Estimated end-to-end journey time approx.45 minutes

| Frequency, mins | Estimated PVR required | Estimated PVR supported by development |                       |                       |
|-----------------|------------------------|--|-----------------------|-----------------------|
|                 |                        | 4000 unit development                  | 5000 unit development | 6000 unit development |
| 60              | 2                      | 0.8                                    | 1                     | 1.2                   |
| 30              | 4                      | 1.4                                    | 1.7                   | 2.1                   |
| 20              | 5                      | 2                                      | 2.4                   | 2.9                   |

Discussion:

- The estimates produced indicate that there would be a substantial gap between the PVR required for any of the service frequencies, and the amount of demand generated by the development.
- This gap lessens with higher density developments but even with 6,000 units remains substantial for 30 & 20 minute frequencies (1.9 and 2.1 vehicles respectively).
- Attempts to “fill” this gap with new demand from existing markets served en-route (captured through increased service frequency) may be difficult to achieve given the largely rural catchment served between the site and Winchester
- The smallest “gaps” between vehicle requirements and generated demand is for a 60 minute frequency service (which, combined with the current stagecoach 69 service, would give a 60 minute frequency to Winchester for the whole site and a 30 minute frequency from some parts).
- The above figures exclude any estimate of travel demand to colleges. Given the presence of Peter Symonds college just outside Winchester, this demand may be substantial, perhaps sufficient to significantly close the “gap” between required PVR and demand generated by the development particularly for the 60 minute frequency option at 4,000, 5000 and 6000 units.
- Given the apparently poor likelihood of viability of these service options, this may indicate that diversion of the existing Stagecoach service 69 along part of the spine road through the North Bishopstoke element of the development may be the most viable way of providing a link to Winchester from this part of the development. However, as identified on page 26, diversion of this existing service to also serve the North-West Fair Oak element of the SGO is more problematic.

Route 2B: West Horton- Fair Oak- N Bishopstoke/ NE Fair Oak - Winchester



Per route 2A, but extended to West Horton/Firtree Lane development site.

*Estimated end-to-end journey time approx.55 minutes*

| Frequency,<br>mins | Estimated<br>PVR required | Estimated PVR supported by development |                          |                          |
|--------------------|---------------------------|--|--------------------------|--------------------------|
|                    |                           | 4000 unit<br>development               | 5000 unit<br>development | 6000 unit<br>development |
| 60                 | 2                         | 1                                      | 1.2                      | 1.4                      |
| 30                 | 4                         | 1.7                                    | 2                        | 2.4                      |
| 20                 | 6                         | 2.5                                    | 2.9                      | 3.4                      |

- Like route 2A, estimated usage vs resource requirements indicate that anything other than a 60 minute frequency would require substantial (possibly unrealistic) external demand growth to be commercially viable.
- Extension to West Horton can be accommodated largely without additional vehicles (a 20 minute frequency would require one extra vehicle). This estimate suggests a modest uplift in demand (and viability) compared to that for route 2a.
- With demand to colleges (not included in these estimates) and some demand growth en-route, these estimates indicate there is a probability that a 60 minute frequency with a PVR of 2 could be commercially viable, particularly for a 6,000 unit development at N Bishopstoke/ NE Fair Oak.
- If deliverable, in combination with the current Stagecoach 69 service this would give a 60 minute frequency to Winchester for the whole SGO site and a 30 minute frequency from some parts of the development.

Route 2C: West Horton- Fair Oak- N Bishopstoke/ NE Fair Oak - Winchester



Per route 2B, but further extended to Hedge End station, superstores & town centre.

Estimated end-to-end journey time approx.80 minutes

| Frequency, mins | Estimated PVR required | Estimated PVR supported by development |                       |                       |
|-----------------|------------------------|--|-----------------------|-----------------------|
|                 |                        | 4000 unit development                  | 5000 unit development | 6000 unit development |
| 60              | 3                      | 1.4                                    | 1.6                   | 1.9                   |
| 30              | 6                      | 2.4                                    | 2.8                   | 3.3                   |

- Compared to routes 2A & 2B, extension to Hedge End (to serve likely demand to destinations in this area e.g. Hedge End station & superstores) from the N Bishopstoke/ NE Fair Oak and West Horton sites) appears to worsen the estimated viability of the route.
- Increases in PVR required to run this longer route are not estimated to be offset by increases in usage generated by linking the developments to additional destinations. Bus demand to Hedge End is generally fairly weak as a result of unconstrained car parking at destinations such as Hedge End superstores.
- At best, a 60 minute frequency service with a PVR of 3, running via a 6,000 unit N Bishopstoke/ NE Fair Oak site would need to find an estimated 1.1 PVR worth of external demand (more than 1/3<sup>rd</sup> of total revenue) to be commercially viable.
- Comments regarding potential demand to Peter Symonds college at Winchester are relevant here. There could be potential to merging this route with one of Stagecoach’s existing Peter Symonds routes (service 693 to Hedge End) which provides a single daily peak time journey. There is also potential that some of this demand “gap” could be bridged by serving new developments in the Hedge End area (eg Boorley Green/Boorley Gardens), but ultimately this could be viewed as a commercially risky proposition given competition with faster, more frequent rail services from these areas to Winchester. Additionally, serving such developments would then result in a less direct service.
- There could be potential for a Hedge End- West Horton/ Firtree Lane- Fair Oak- Option B+C- Winchester route, plus a West Horton/ Firtree Lane- Fair Oak- N Bishopstoke/ NE Fair Oak - Eastleigh route, to replace the existing (partly HCC-supported) Xelabus X9 route. Many of the same markets (eg Colden Common & Fair Oak to Hedge End) would be served, and a large proportion of the X9 route would be duplicated by these routes serving new developments.

## **Conclusions-N Bishopstoke/ NE Fair Oak site**

-These estimates indicate that 30 minute and possibly 20 minute frequency bus links to Eastleigh could be viable from this site. -Extending an Eastleigh only link to start from West Horton/Firtree Lane would only marginally improve viability.

-There are a variety of possible ways that a N Bishopstoke/ NE Fair Oak to Eastleigh service could be extended to Southampton, however these estimates indicate that all options have substantial gaps between the cost of operation and the level of patronage/income they would be likely to generate from the new development. However there may be opportunities to “bridge” some of this gap through serving new markets within Eastleigh.

-These estimates indicate that anything other than an additional hourly link between this proposed development site and Winchester would be unlikely to be viable; however in combination with the existing 69 route this could give a half hourly service to Winchester from some parts of the site.

-Extension of a Winchester link to West Horton/Firtree Lane is estimated to slightly improve viability of this service, whereas further extension as far south as Hedge End would appear to worsen the viability of the service.

-Overall, it appears that there is a good chance of a reasonably attractive level of service to Eastleigh and perhaps on to Southampton from this site being viable, together with an acceptable level of service to Winchester.

- It appears that all options would require site specific developer contributions in order to initiate services and support them during early phases of the development. In most cases, at least some growth in patronage from areas passed by en-route would also be needed in order for these services to become independently viable.

## Review of bus service options: South of Allington Lane (Option E) site

The promoters of the Option E site (hereafter referred to as “Allington Lane”) have provided some information on potential public transport linkages to this site in their “Allington Vision”<sup>19</sup> document This is contained in the access & movement strategy (pages 16 to 21).

It is stated that the site will:

*“utilise under-used rail capacity on the Eastleigh-Fareham railway line including improving links to Hedge End railway station and potentially enabling the future provision of a new railway station” (3.19)*

*“The proximity to the railway line combined with future visions for the upgrade of the Eastleigh- Fareham line suggest that a new station/transport hub could be delivered on site, with fast and frequent connections to Eastleigh and the wider network.” (3.16).*

The potential for a rail station to be delivered at the site is further discussed in this document on pages 9 to 14.

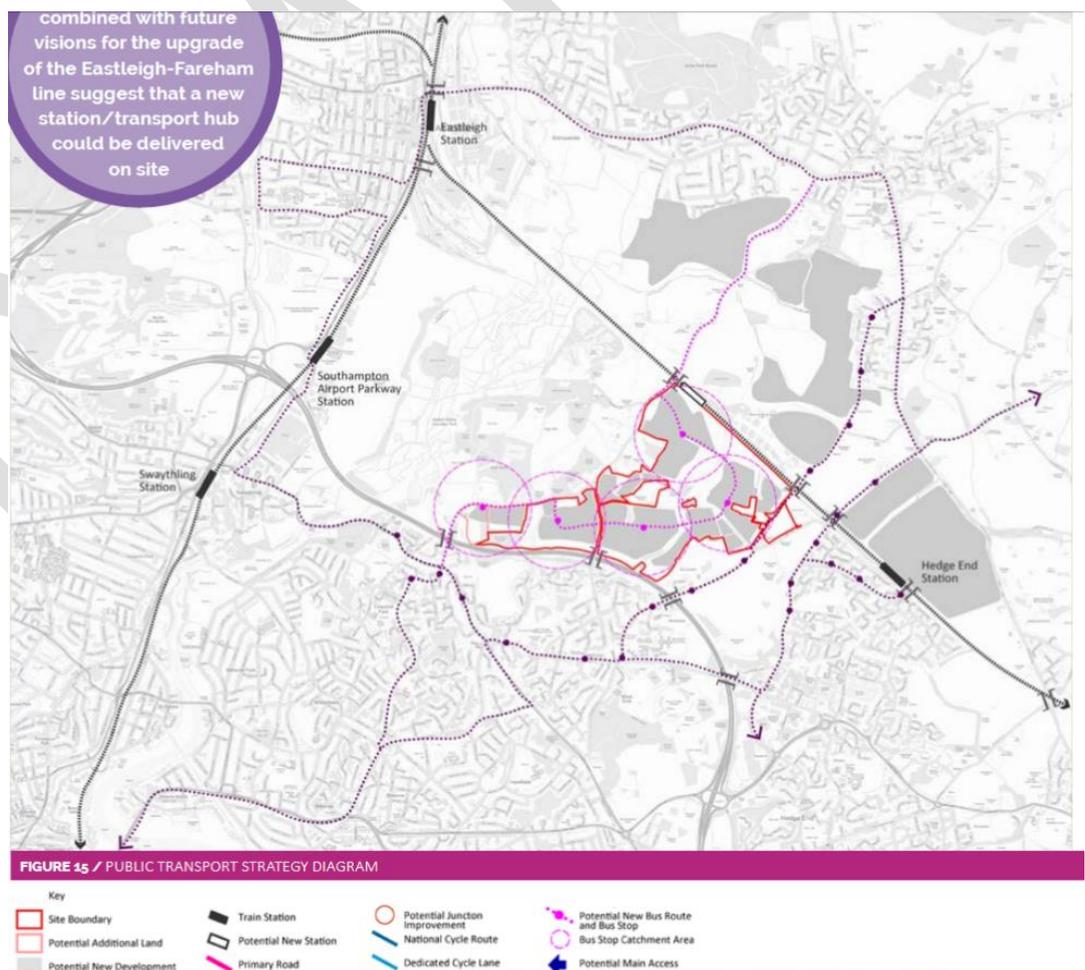
Regarding bus service provision, it is stated that:

*“The development will utilise under-used bus capacity within the area and provide new bus routes so as to provide direct and easy links to Eastleigh, Hedge End, Bishopstoke, Fair Oak, Horton Heath, West End and Southampton as well as Southampton Airport Parkway railway station.” (3.20)*

and

*“An extensive network of bus routes are already serving the areas adjacent to the site. Ongoing dialogue with current operators has identified the potential for route diversion and new routes through the site”. (3.25)*

The plan to the right (from the Allington Vision document) identifies the developer’s view of existing and potential future bus services serving the site



<sup>19</sup> Allington Vision document: <https://www.eastleigh.gov.uk/media/252255/26760-Allington-Lane-Vision-Document-committee-version-m.pdf>

and the area around it.

The supporting Appendix 7 “Transport Opportunity Report”<sup>20</sup> provides additional detail on the *developer’s proposals for bus services at the development:*

“

*6.5 The public transport improvements would be phased with development to ensure the long term viability. During the initial phase, it would be expected that the development would deliver a 30-minute peak time service between the site and Southampton, with reduced frequency during all off peak periods.*

*6.6 The routing of the bespoke service would be subject to discussions with local operators and the Council. The provision of a connection between rail and road based public transport is important to provide route choices for the future residents. Hedge End is circa five minutes away to the east of the site and is an important destination. Through initial discussions with the local operators it would be expected that at the very least the initial phase would support a route between the site, Eastleigh, Hedge End and then Southampton. Given the scale of development and proximity of the new community to existing transport networks, we would however anticipate a more bespoke service provision that is implemented during the construction process that provides more direct links to Southampton, Eastleigh, Southampton Airport Parkway and the surrounding communities. In the short to medium term, the proposed development will ensure good links to Hedge End station, which is within easy access of the new community.*

*6.7 Subject to viability, as the development/revenue increases, the services would be further enhanced to improve peak and off peak frequency. In the event that a reduced quantum is delivered, this could affect viability of public transport services and a reduced/alternative public transport service may need to be considered. This could include reducing off peak frequency.*

.....

*6.9 Through discussions with the several local operators, it is considered that the development can be served by a road based public transport strategy. A summary of the discussions with two of the operators is summarised below.*

*6.10 **Xelabus Limited:** The existing services do not lend themselves to diversion through the site, based on the existing routes and the nature of their procurement. A new bespoke service is recommended. This could serve Southampton, Bitterne, West End, Barbe Baker Avenue, New development, Burnetts lane, Bubb Lane, Maunsell Way to Hedge End Station. It is considered that two vehicles would be required to deliver hourly frequency, increasing to three vehicles for half hourly.*

*6.11 **First:** Current routes do not lend themselves to serve the site. For the size of the development, a new tailor made service would be considered the best option. This would serve the development, exit onto Allington Lane, and then run via Townhill Way into the Bitterne shopping centre, it could then run direct via Northam Road into the City Centre and then onto Southampton Central Station. It is considered that two vehicles would be required initially, potentially increasing to three.*

....

*6.13 In order to understand the long term viability, an assessment of the likely revenue against costs has been carried out. This has been based on the route being provided from first occupation, operating at an hourly frequency. The frequency will be increased following the third year. The cost estimate demonstrates that the route will be financially viable in year seven, requiring a contribution totalling £980,000.”*

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<sup>20</sup> Transport Opportunity Report <https://www.eastleigh.gov.uk/media/252299/Appendix-7-Transport Study.pdf>



(distance of stops at West End shops and Allington Lane roundabout to the nearest boundary of the Allington Lane development site).

Rerouting these services to serve the Allington Lane site would either mean being unable to serve West End shops (a key destination) and some residential parts of West End with good existing bus access (as well as potentially having to operate via roads which do not currently see bus services in order to access the development), or by adding a circuitous additional loop onto existing routes, extending journey times and inconveniencing existing users. Therefore (as has been identified in the developer's background information), it appears that additional bespoke new bus services would be required to provide adequate linkages to the site.

Some potential routes and service patterns for these, and estimates of viability for these, are discussed in the following section.

#### Allington Lane- options & viability for new services

In terms of travel demand, it is likely that important destinations for bus travel demand from the site would be:

- Southampton City Centre
- Hedge End
- Eastleigh town centre

There would also be some demand to Winchester city centre (our estimates suggest demand to central Winchester would be somewhat less than demand to Eastleigh town centre).

Although Hedge End superstores and employment areas would be a key generator of travel demand, unconstrained car parking and other factors (eg layout of Hedge End) means it is likely that bus mode share to these destinations would be low compared to mode share to destinations with more constrained car parking.

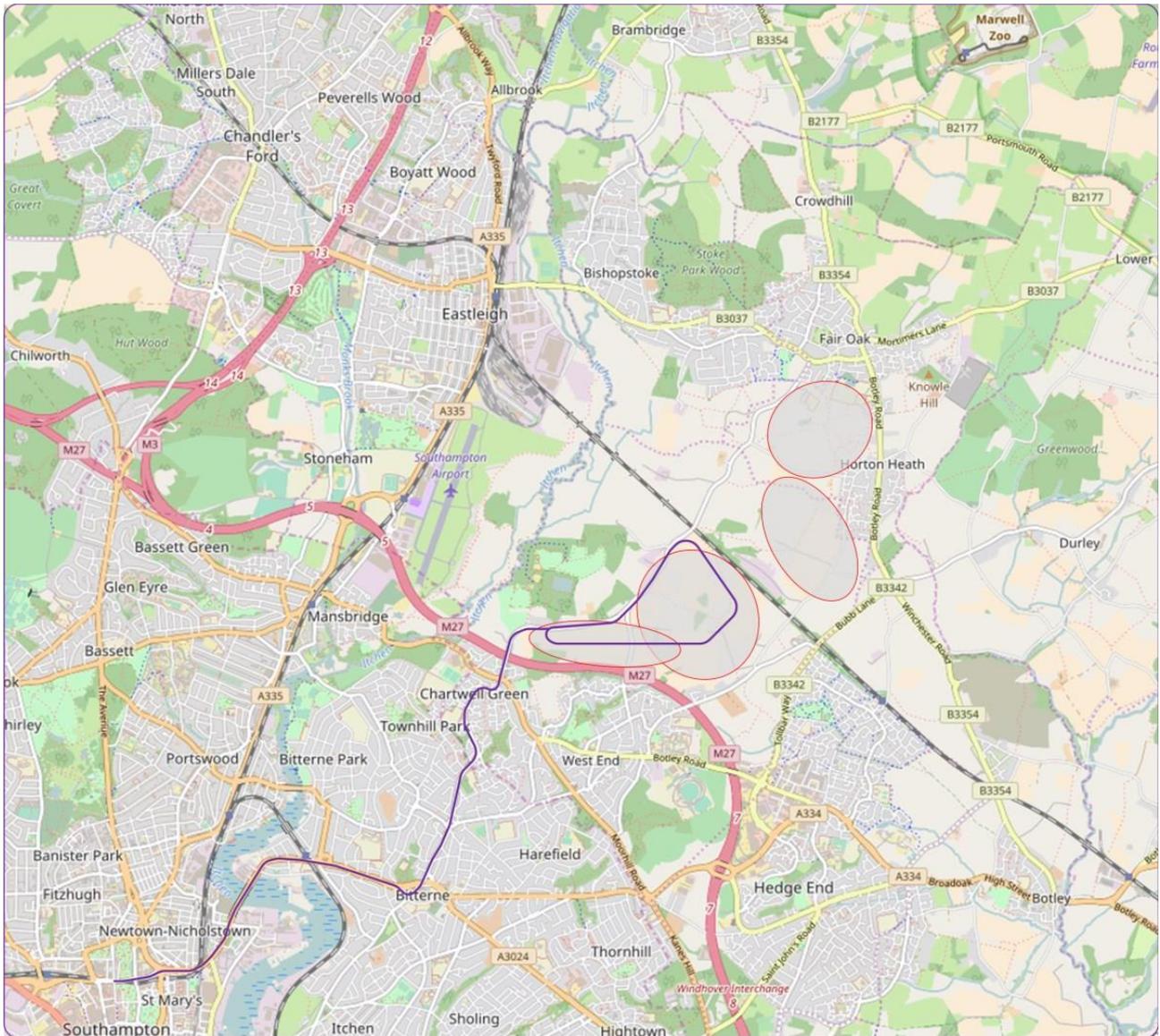
Some potential route options serving the Allington Lane site could extend northwards to serve the West Horton Heath/ Firtree Lane sites and potentially onwards to Fair Oak. This could include links to potential additional development in the Fair Oak area that could be required should Allington Lane development proceed (as it is believed that Allington Lane alone would not be able to deliver sufficient units to meet the Council's housing delivery requirements).

However the narrow railway bridge on Allington lane could constrain bus operations northwards from the Allington Lane site due to restricted width and also a potential grounding risk on the hump of the bridge.

Several options for serving these key flows are set out below. The viability estimates (Peak Vehicle Requirement – PVR) are estimates of the numbers of peak vehicles that demand generated from the site could support. To make a viable service, if the PVR supported is lower than the PVR required to run the service, the service would need to generate sufficient additional demand elsewhere on its route (ie from outside the site) or perhaps abstract demand from an existing service (which may impact the viability of the current level of service) to make up the difference. All these estimates are based on an Allington Lane development delivering 2,500 units as set out in the promoter's documentation.

## Access to Southampton/Hedge End

### Route 1A: Allington-Bitterne-Southampton



Service from Southampton, via Townhill Park, to Allington lane development site, terminating in a loop of the site (no link to Hedge End). This is a potential partial implementation of the promoter’s proposals (and is similar to that suggested by First, which it is suggested would require a PVR of 2 at an unattractive 60 minute frequency, or 3 for a 30 minute frequency).

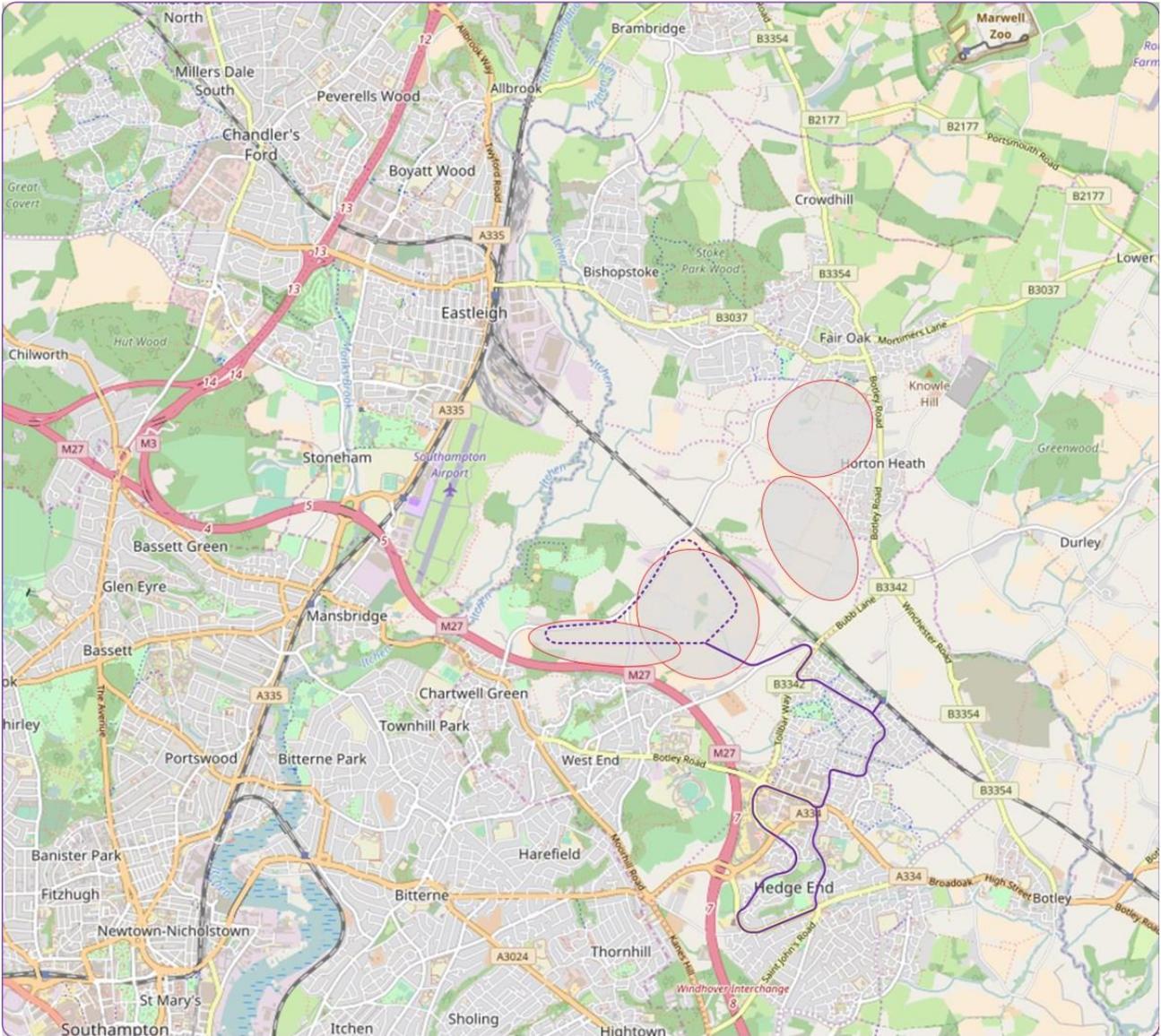
This service pattern would complement the current First 8 service between Allington Lane roundabout and Southampton City Centre.

*Estimated end-to-end journey time approx.40 minutes (Southampton to half way around Allington development loop)*

| Frequency | PVR required | PVR supported | Difference |
|-----------|--------------|---------------|------------|
| 30        | 3            | 1.8           | 1.2        |
| 20        | 5            | 2.5           | 2.5        |

- There is a significant gap between estimated demand and estimated resource (vehicle) requirements, particularly for a more attractive 20 minute frequency.
- For the half-hourly “standalone” service option to be viable it appears that it would need to generate at least 1 PVR worth of additional trade elsewhere on its route (eg through Townhill Park) in order to be viable. If operated in combination with the current half-hourly service 8, this would be a challenging but possibly not insurmountable level of growth in currently-served areas required to ensure viability.
- Our estimate of PVR requirement appears to accord with that made by Firstgroup.
- On the basis of this estimate, it appears that operating a “standalone” service at a 20 minute frequency (which would increase attractiveness of the service to those with access to a car) would require a possibly unrealistic level of patronage growth in existing areas to be viable- the new development would only generate about half of the income required to make this service viable.
- Alternatively, extension of an existing service terminating at Townhill Park might provide a way of reducing the additional PVR requirement to operate this service pattern. However the services currently terminating at Townhill Park (First CityRed 7 and Bluestar 16) terminate in a loop around Woodmill Lane and Meggeson Avenue- making extension to the SGO site potentially difficult to achieve without removing service from existing (healthy) markets. Also, both of these current services are high frequency routes running at 7 minute and 15 minute frequencies respectively. Extension of all journeys on these routes to an Allington Lane SGO site would be unlikely to be supported by the level of demand, whilst extension of only a proportion of all journeys would introduce complexities to timetabling and publicity/ public understanding compared to the current simple service patterns offered by these services.

Route 1B: Allington-Hedge End



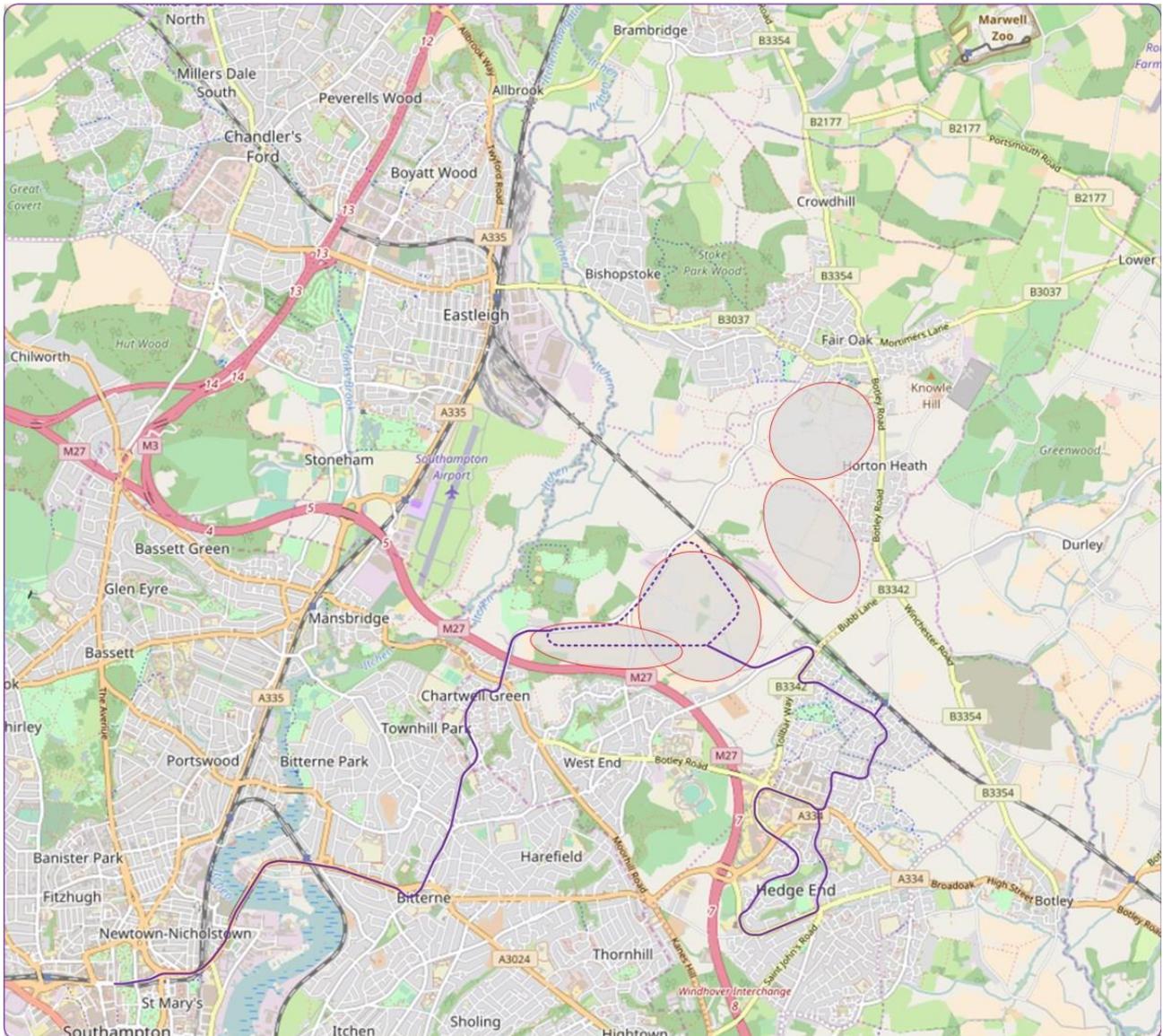
A standalone link between the Allington Lane development site and Hedge End station & superstores. This is a potential partial implementation of the promoter’s proposals.

*Estimated journey time approx. 55 minutes (one complete cycle of both loops) or approx. 30 mins for a typical “end to end” journey.*

| Frequency | PVR required | PVR supported | Difference |
|-----------|--------------|---------------|------------|
| 30        | 2            | 0.6           | 1.4        |

- There would be a considerable difference between the amount of demand generated by the development, and the number of vehicles required to operate this service pattern.
- This is indicative of the difficulties in generating good patronage in Hedge End because of car-oriented development patterns, free parking etc . Any link between the site and Hedge End (even if part of a longer route e.g. to Southampton or Eastleigh) would struggle with this issue.

## Route 1C: Hedge End- Allington-Bitterne-Southampton



Service from Hedge End town centre & superstores via Hedge End station, Allington Lane development (there are at least two possible routings through the development) , and Townhill Park to Southampton.

This is similar to proposals identified by the promoter of this site in the Allington Vision document and also similar to options identified by Xelabus and Firstbus in consultations with the site promoter, but with extension from Hedge End station to Hedge End town centre and superstores in order to provide links to these important shopping destinations .

As with route 1A, this could be delivered as a “standalone service” (as examined here) or might be achievable (albeit possibly subject to complexities identified on page 50) by extending a service currently terminating at Townhill Park.

This service pattern would complement the current First 8 service between Allington Lane roundabout and Southampton City Centre.

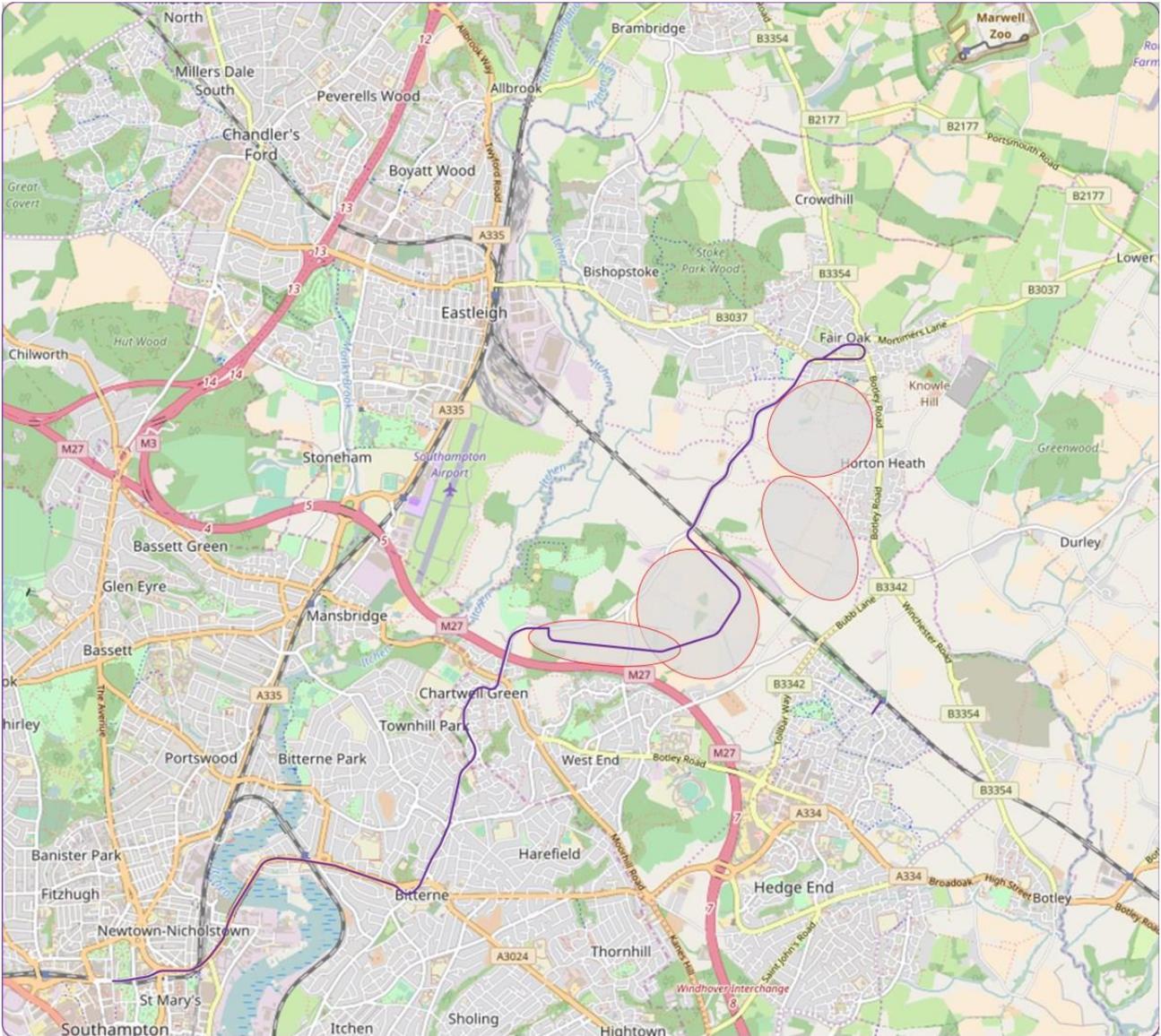
*Estimated end-to-end journey time approx. 65 minutes (Hedge End superstores or Town centre-Allington-Southampton)*

| <b>Frequency</b> | <b>PVR required</b> | <b>PVR supported</b> | <b>Difference</b> |
|------------------|---------------------|----------------------|-------------------|
| 30               | 5                   | 2.2                  | 2.8               |
| 20               | 7                   | 3.3                  | 3.7               |
| 15               | 9                   | 5.9                  | 3.1               |

- Our estimate is that each cycle on this route would take just over 2 hours (126 minutes) at a speed of 5 minutes per mile excluding adequate recovery time. Hence we estimate that to operate this route on a half-hourly frequency would require five vehicles.
- For comparison the current First 8 route takes 100 minutes to complete a shorter route, with a PVR of 4 at a half-hourly frequency.
- The extended journey times would be unattractive at the extremities of the route (ie Hedge End) where the route would also compete for passengers in the relatively weak Hedge End market against several other established routes.
- For all of these frequency options, there is a significant gap between demand/ estimated income generated, and estimated cost to operate the service. Thus in order to be viable, significant (probably unrealistic) growth in patronage from areas external to the development would need to be leveraged by new links and improved frequencies on existing links.
- Alternatively, there could be ways to reduce the vehicle requirements for this route, for example by cutting the route back to terminate at Hedge End superstores or rail station rather than the town centre (which would result in some loss of potential users). These options have not been tested.

**Access to Southampton/Fair Oak/(Winchester)**

**Route 2A: Fair Oak- Allington-Bitterne-Southampton**



Service from Fair Oak centre via Allington Lane development and Townhill Park to Southampton.

Figures 13 and 15 in the promoter’s Allington Vision document indicate potential routing of bus services along Allington Lane to Fair Oak.

This service pattern would complement the current First 8 service between Allington Lane roundabout and Southampton City Centre.

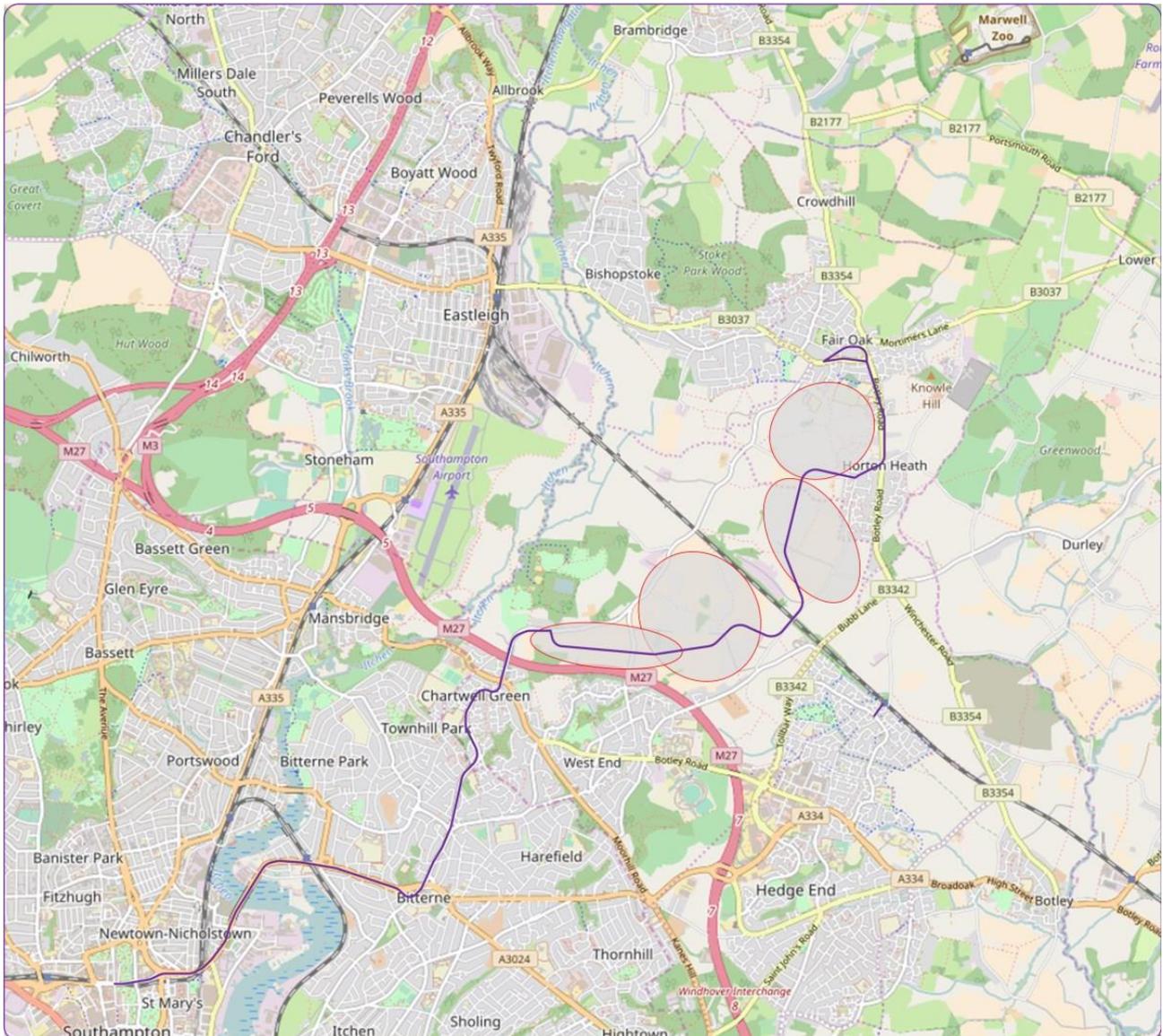
*Estimated end-to-end journey time approx. 50 minutes*

| Frequency | PVR required | PVR supported | Difference |
|-----------|--------------|---------------|------------|
| 30        | 4            | 1.8           | 2.2        |
| 20        | 6            | 2.5           | 3.5        |

- These estimates indicate a substantial gap between the PVR supported by the development alone, and the PVR estimated to be required to operate these service patterns
- In order to be viable, the service would need to generate substantial amounts of additional patronage from areas currently served, particularly from Townhill Park and also from Fair Oak
- As with routes 1 A and 1C, if this service were achieved by extension of an existing service terminating at Townhill Park, rather than on a “standalone” basis, this might improve viability. However this could be complex to achieve (see page 50).
- There is a risk that this could abstract patronage between Fair Oak and Southampton away from the existing Bluestar 2 route (particularly if a faster journey time via Allington was offered), potentially reducing the vitality of this important existing service.

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## Route 2B: Fair Oak- West Horton- Allington-Bitterne-Southampton



Service from Fair Oak centre via West Horton Heath/ Firtree Lane, Allington Lane development and Townhill Park to Southampton.

This could be an alternative means of extending the route to Fair Oak, avoiding a potentially problematic rail bridge and improving access to the West Horton development (and associated Firtree Lane development), helping to deliver the (as yet largely undeveloped) public transport strategies for these sites.

This service pattern would complement the current First 8 service between Allington Lane roundabout and Southampton City Centre.

Includes West Horton/ Firtree Lane development demand, but no other (potential additional) development sites around Fair Oak

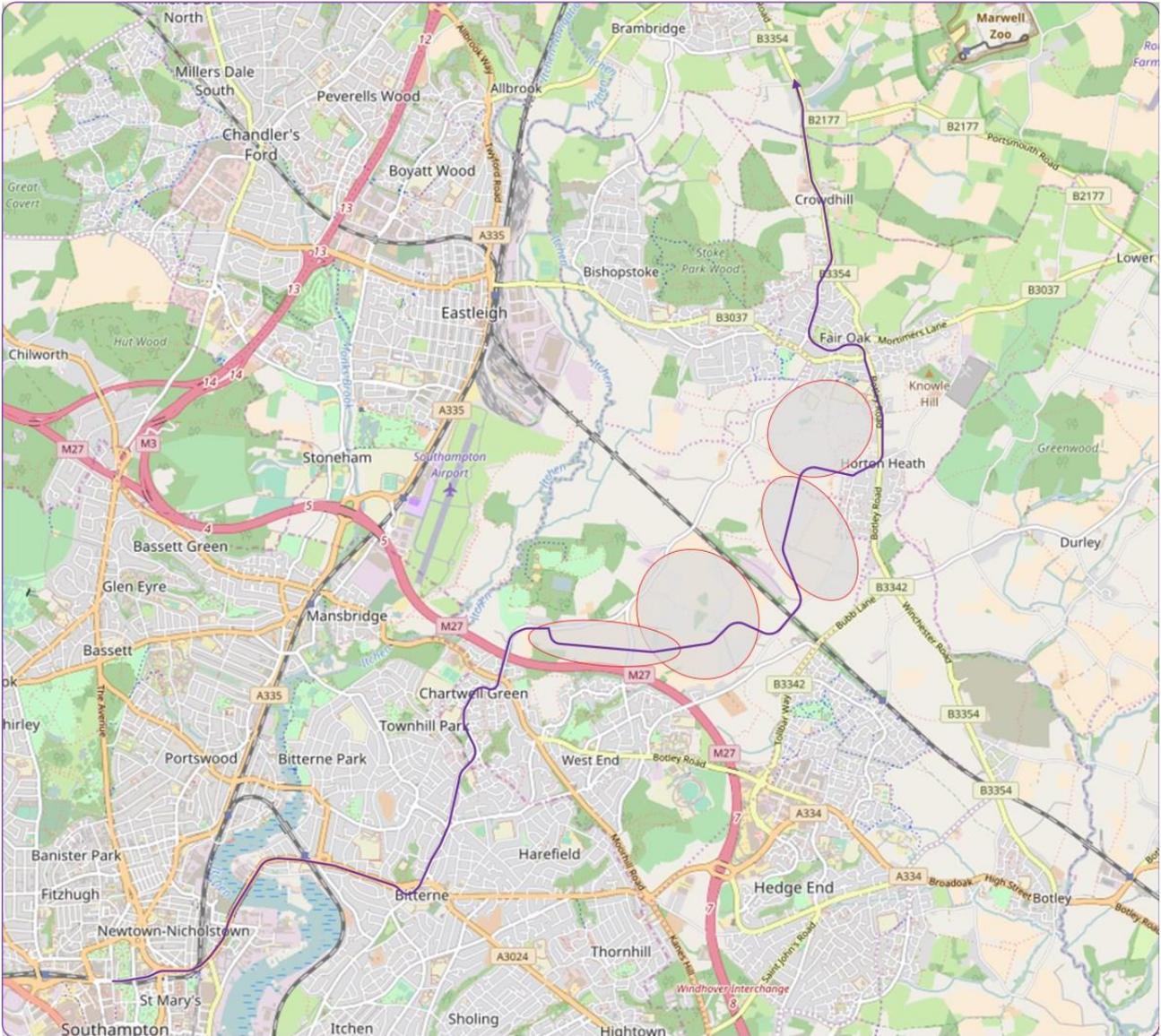
*Estimated end-to-end journey time approx. 55 minutes*

| <b>Frequency</b> | <b>PVR required</b> | <b>PVR supported</b> | <b>Difference</b> |
|------------------|---------------------|----------------------|-------------------|
| 30               | 4                   | 2.1                  | 1.9               |
| 20               | 6                   | 2.9                  | 3.1               |

- These estimates indicate that PVR does not increase relative to Route 2A (thus the West Horton & Firtree Lane sites could be served without extending journey times such that additional vehicles would be required)
- The estimates indicate that some additional patronage would be generated by serving these sites, however the overall difference in resource required to operate the service, versus estimated income, remains substantial, thus these routes would need to generate additional demand in areas away from the new developments if they were to be viable without subsidy in the long term.

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Route 2C: Winchester-Fair Oak- West Horton- Allington-Bitterne-Southampton



Service from Winchester via Fair Oak, West Horton Heath/ Firtree Lane, Allington Lane development and Townhill Park to Southampton.

This is a potential extension to route 2B to provide a link to Winchester from these new development sites (as there will be some demand to Winchester from these sites).

This service pattern would complement the current First 8 service between Allington Lane roundabout and Southampton City Centre.

Includes west Horton/ Firtree Lane development demand, but no other (potential additional) development sites around Fair Oak

*Estimated end-to-end journey time approx. 75 minutes*

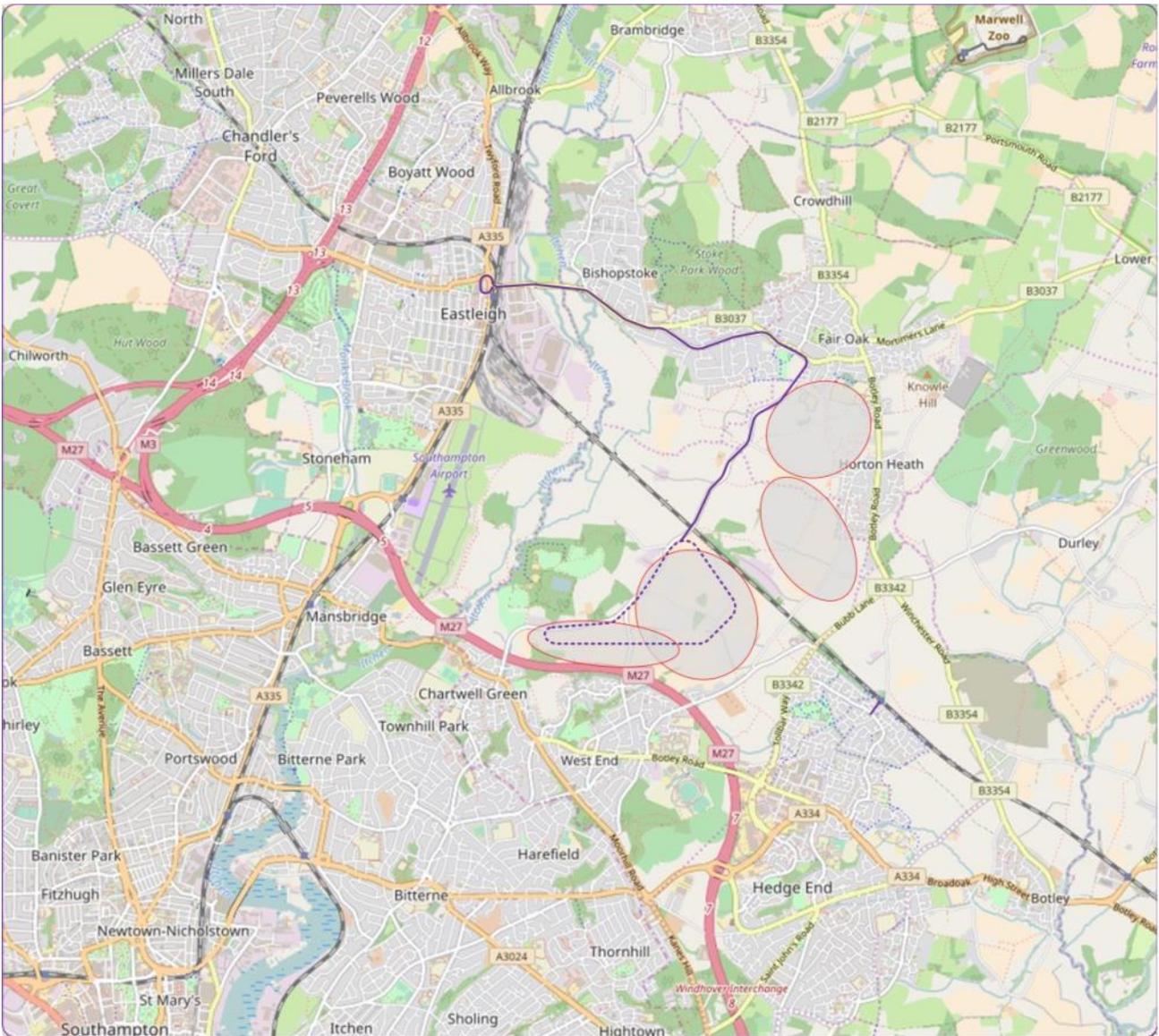
| Frequency | PVR required | PVR supported | Difference |
|-----------|--------------|---------------|------------|
| 30        | 6            | 2.4           | 3.6        |
| 20        | 8            | 3.4           | 4.6        |

- These estimates indicate a large difference between the level of income generated by this service pattern, and the level of resource that would likely be required to operate it.
- Significant further research would be required (probably to be undertaken by public transport operators) as to whether this level of demand could be generated from existing markets (eg Fair Oak to Southampton; Bittern/Townhill Park to Southampton and to Fair Oak/ Winchester).

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## Access to Eastleigh/Hedge End

### Route 3A: Eastleigh-Bishopstoke-Allington



Eastleigh to Allington site only, via Bishopstoke and Allington Lane.

Operation of bus services via Allington Lane towards Fair Oak has been indicated by the site promoters in figures 13 & 15 of their Allington Vision document.

This service pattern could potentially extend to Barton Peveril College at certain times of day.

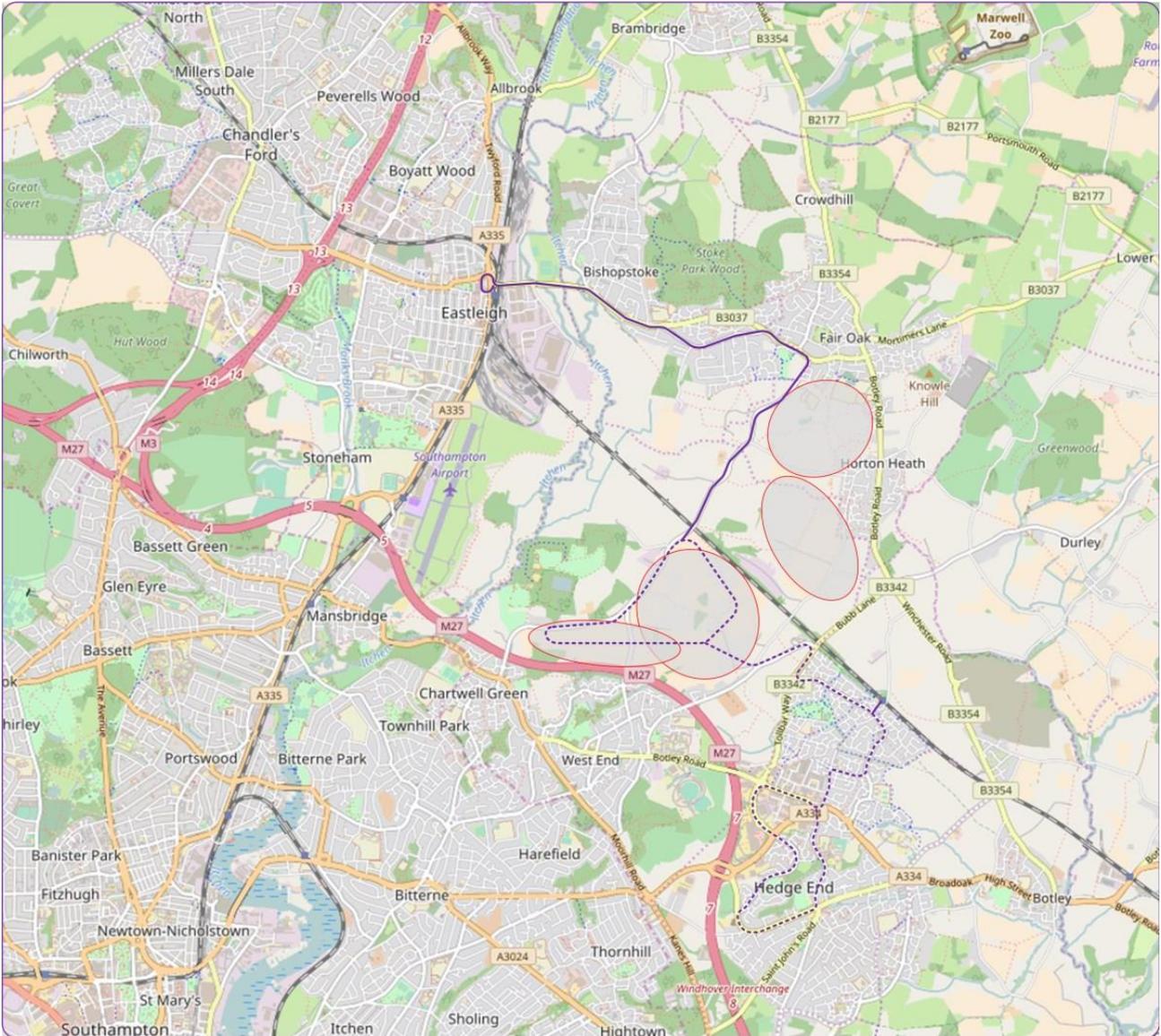
*Estimated journey time approx. 55 minutes (one complete cycle including loop) or approx. 25-30 mins for a typical "end to end" journey.*

| Frequency | PVR required | PVR supported | Difference |
|-----------|--------------|---------------|------------|
| 60        | 1            | 0.2           | 0.8        |
| 30        | 2            | 0.4           | 1.6        |

- These estimates of demand and PVR suggest that demand for travel between the site and Eastleigh town centre would be weak, and insufficient to support even an hourly service.
- It is possible that in combination with a peak hours link to the Colleges on Chestnut Avenue, this service pattern, particularly at an hourly frequency, could be made more viable (similar to how the viability of the current Xelabus X4 Eastleigh to Hedge End route is significantly boosted by weekday college travel demand)
- Demand to intermediate destinations (eg Bishopstoke) would be very limited- limiting the potential for viability of such a route to be improved through developing markets away from the development site itself.

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Route 3B: Eastleigh-Bishopstoke-Allington-Hedge End



Eastleigh to Hedge End, via Bishopstoke , Allington Lane, Allington Development site and Hedge End station.

This could be one way of providing connectivity from the site to both Eastleigh, and parts of Hedge End.

Operation of bus services via Allington Lane towards Fair Oak has been indicated by the site promoters in figures 13 & 15 of their Allington Vision document.

This service pattern could potentially extend to Barton Peveril College at certain times of day.

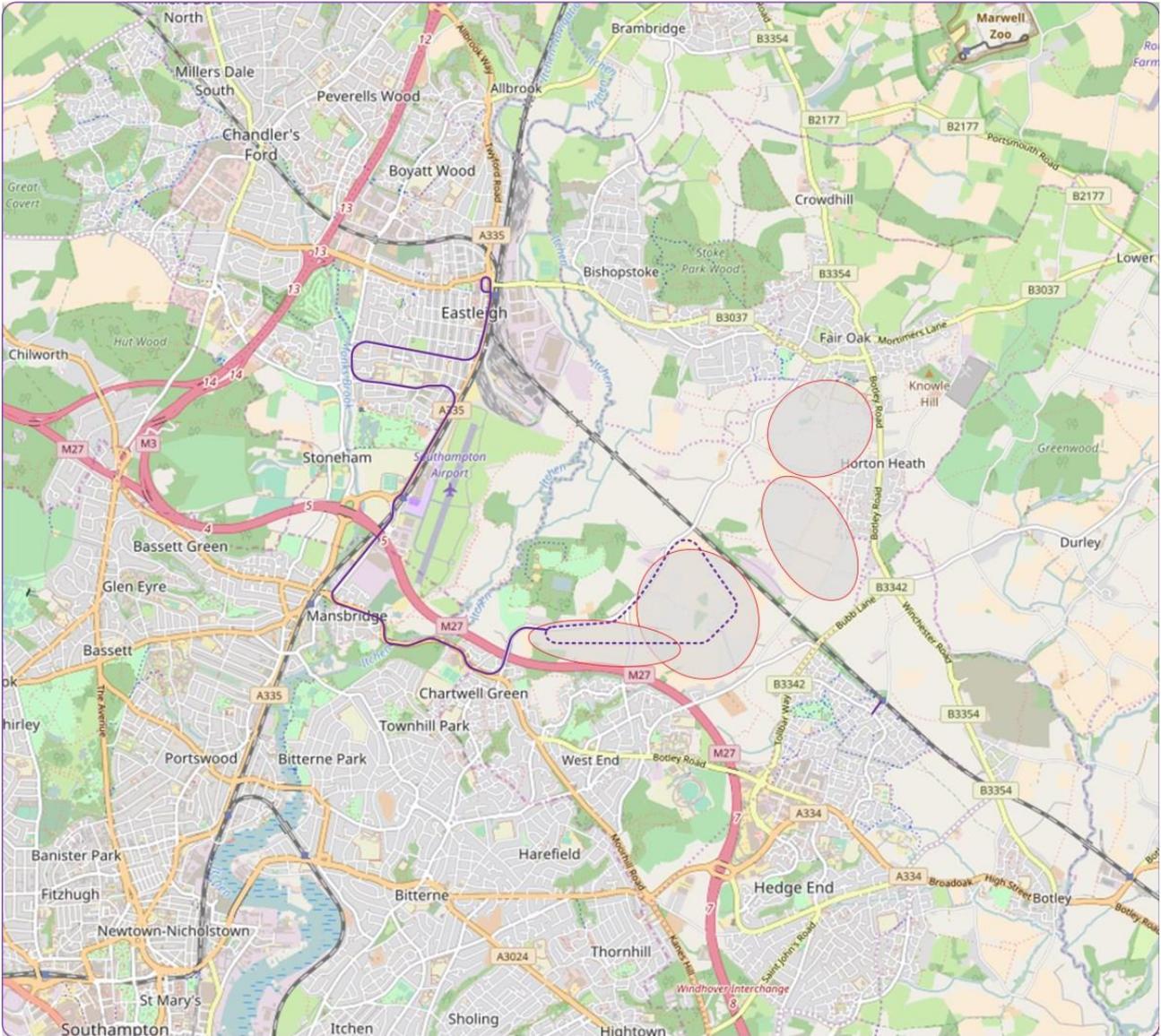
*Estimated journey time approx. 100 minutes (one complete cycle) or approx. 50 mins for a typical “end to end” journey.*

| Frequency | PVR required | PVR supported | Difference |
|-----------|--------------|---------------|------------|
| 60        | 2            | 0.7           | 1.3        |
| 30        | 4            | 1.2           | 2.8        |

- As with Route 3A, these estimates indicate substantial differences between levels of demand and likely levels of patronage/income.
- As with route 3A, in the case of a 60 minute frequency in particular, extension of certain peak journeys to Barton Peveril/ Eastleigh colleges might generate sufficient demand (~1PVR) to largely reduce this viability gap.

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Route 4A: Eastleigh-Mansbridge-Allington



Eastleigh to Allington site only, via Airport Parkway and Mansbridge

This could be another way of providing connectivity from the site to Eastleigh, and could be operated in parallel with the existing Xelabus X4 route between Allington lane roundabout and Eastleigh.

Figure 15 in the promoters’ Allington Vision document identifies bus routes via the Mansbridge, Swaythling and Parkway as being potentially relevant to the development’s public transport strategy and potential for Southampton Airport Parkway railway station are also mentioned (Para 3.20). This service pattern could operate via Barton Peveril /Eastleigh College.

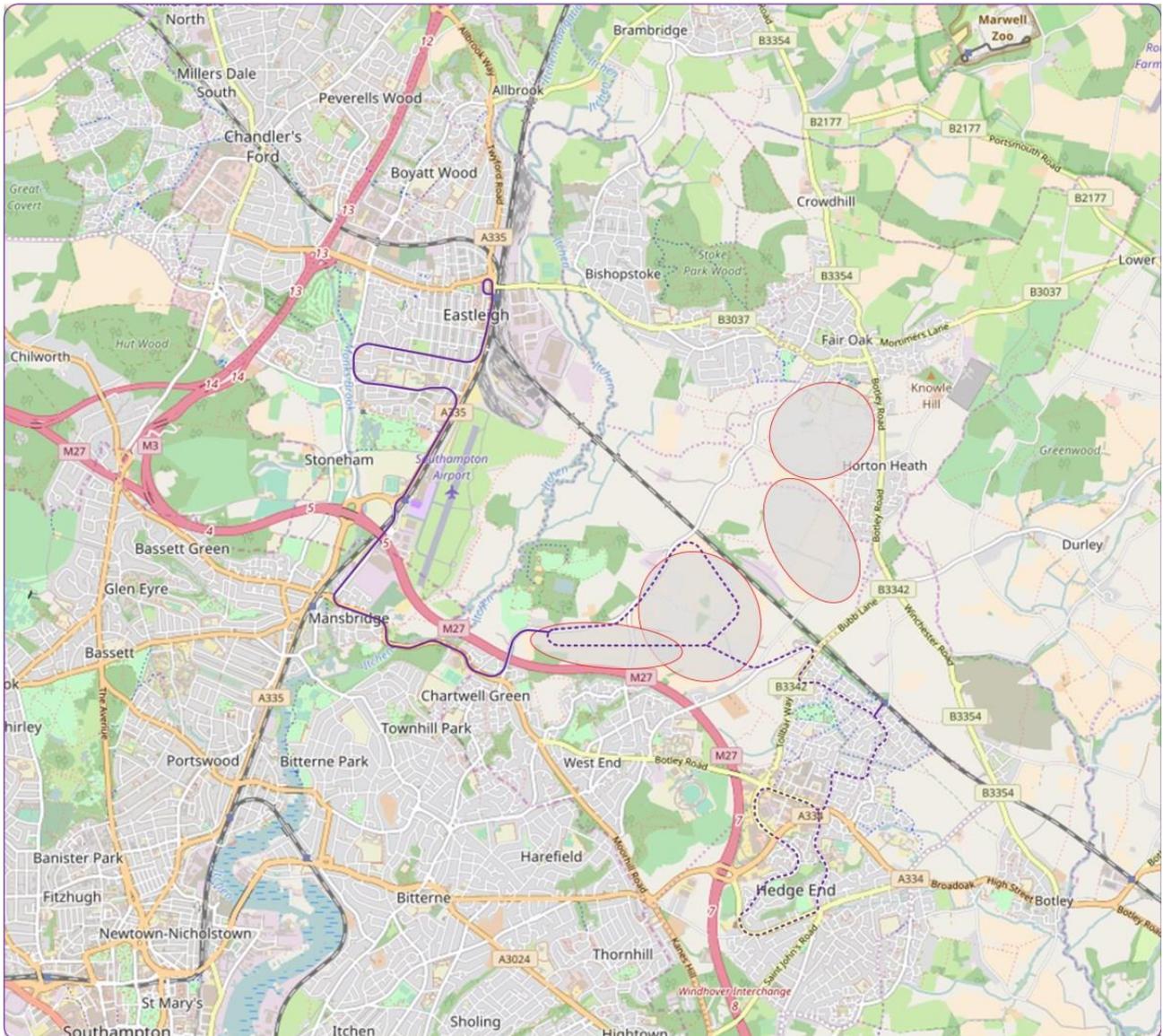
*Estimated journey time approx. 75 minutes (one complete cycle) or approx. 35-40 mins for a typical “end to end” journey.*

| Frequency | PVR required | PVR supported | Difference |
|-----------|--------------|---------------|------------|
| 60        | 1.5          | 0.2           | 1.3        |
| 30        | 3            | 0.4           | 2.6        |

- Similar to route 4A, these estimates of demand and PVR suggest that demand for travel between the site and Eastleigh town centre would be weak, and insufficient to support even an hourly service, despite some significant attractors en route (eg Airport, Airport Parkway station) .
- As with other possible options for linking the site with Eastleigh, integration with college bus services may provide a way of making this route more viable, especially at an hourly frequency.

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Route 4B: Eastleigh-Mansbridge-Allington-Hedge End



Eastleigh to Hedge End, via Airport Parkway , Mansbridge, Allington Lane site, and Hedge End station.

This could be another way of providing connectivity from the site to Eastleigh, and could be operated in parallel with the existing Xelabus X4 route between Allington lane roundabout and Eastleigh.

*Estimated journey time approx. 135 minutes (one complete cycle) or approx. 65 mins for a typical “end to end” journey.*

| Frequency | PVR required | PVR supported | Difference |
|-----------|--------------|---------------|------------|
| 60        | 3            | 0.7           | 2.3        |
| 30        | 5            | 1.2           | 3.8        |

- As with Route 4A, these estimates indicate substantial differences between levels of demand and likely levels of patronage/income.

- The longer route / journey time compared to route 3B (Eastleigh-Bishopstoke-Allington-Hedge End) indicates that this service pattern would require a higher PVR than route 3B and thus would be substantially less likely to be viable, even if integrated with college service at peak times.

### **Conclusions-Allington Lane SGO site**

- The most important links for this site would be towards Southampton. On the basis of estimates presented here, there would be gaps between demand and vehicle requirements for operation of a 30 minute service (the minimum acceptable frequency). The smallest difference between demand and vehicle requirements has been estimated as being for a basic Allington Lane-Townhill Park-Southampton service.
- Extension to Hedge End does not appear to improve viability of services to/from Southampton; however extension of these services to serve West Horton/ Firtree Lane developments may help to improve viability somewhat.
- There could be potential to extend some services between Southampton City Centre and Townhill Park as a means of making these service patterns more viable, however as set out on page 50, the current configuration and frequency of services terminating at Townhill Park could make this difficult to achieve.
- Demand for links to Eastleigh appears to be low, such that even a 60 minute frequency service on the shortest route (via Bishopstoke) would need to generate substantial external demand to be viable. However this ignores potential college student patronage which (as occurs with the existing Xelabus X4 route) could substantially aid viability.
- Again, extension of links between Allington and Eastleigh to Hedge End looks likely to worsen the gap between demand and vehicle requirements for this service
- Overall, it appears unlikely that any bus service of more than half hourly frequency would be likely to be supported by this development. The relatively low frequencies of bus service that this site could support would be unlikely to represent an attractive alternative to driving for many residents.
- Again, it is likely there would be a need for initial funding from the development to introduce bus services from early phases of a development, in order to maximise viability through building up bus usage habits amongst even the earliest residents of the development.