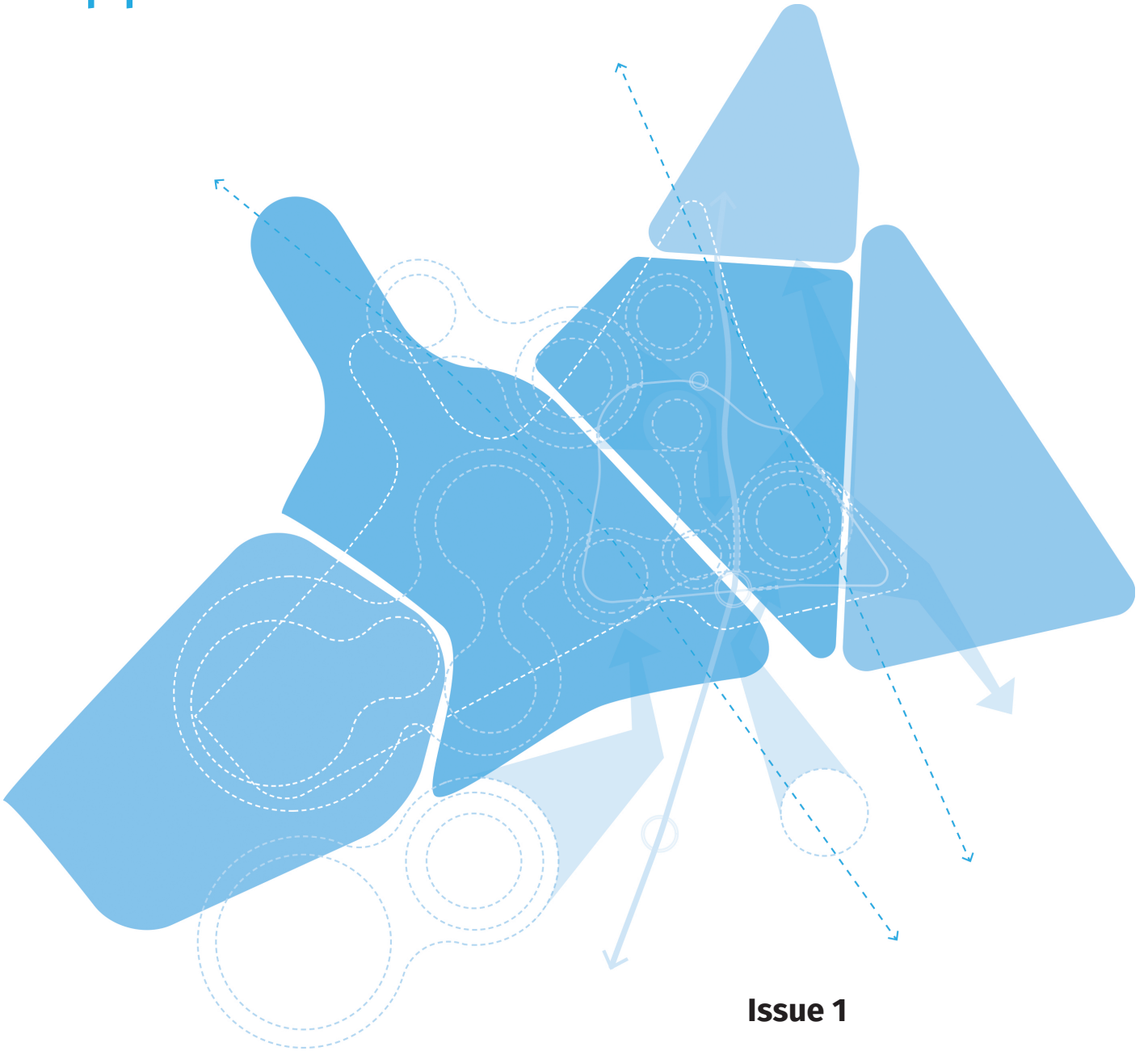


THE HUB

Framework Plan

Appendices



Issue 1

31st October 2017



Urban
Growth
Company

APPENDICES

THIS DOCUMENT IS AN APPENDIX TO THE HUB FRAMEWORK PLAN AND SHOULD BE READ IN CONJUNCTION WITH THE MAIN DOCUMENT.

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A TEMPORARY LAND USES

It is proposed that temporary land uses are employed ahead of, and in parallel to physical development within The Hub as part of an early delivery and place making strategy. A number of potential temporary land uses are explored below.

PLANTING

Both permanent and temporary planting could be used to provide a positive impact from day one. Distinct planting along rail and road corridors could be used to delineate The Hub from its context and give it striking presence among the many people passing through the area on a daily basis.

Temporary landscape can also be used to contextualise early phases of development and provide amenity for users before the larger public open spaces are built. Parts of the green and blue network, in particular the green corridors could be delivered early to improve connectivity and encourage place making.

PUBLIC OPEN SPACES

Key public open spaces could be delivered early to kick start development and to provide a sense of place and arrival. They should be located strategically, for instance close to the transport interchanges, to create a unique experience for users by providing a sense of place and arrival.

They can also set the character for the development and be a strong anchor for individual buildings and incremental development.

Public open spaces could also be built as a temporary measure to enhance the character of strategic locations and support key connections.

TEMPORARY LAND USES

Low cost constructions and temporary land uses can be used to create vibrancy and footfall around both permanent and temporary open spaces. These can include food and beverage or retail outlets which encourage people to spend more time in an area. They can become a destination in their own right and thus an attractive location for more permanent land uses.

Other temporary land uses such as shared workspaces could be used to test the suitability of the location for a certain target market. They can also provide flexible

employment space that caters for a range of businesses, including small and medium sized enterprises (SMEs) and start-ups. Location, connectivity, pricing and existing uses such as advanced manufacturing could be leveraged to attract innovative SMEs to create an innovation cluster.

PIONEERING INNOVATION

The Hub could embrace innovation and technology at all levels to become a test bed for future technologies and development. It should leverage the existing presence of advanced manufacturing on the site and provide opportunities for future innovation, research and development.

Linking plots awaiting development, temporary land uses and innovations in construction (i.e. modular construction or 3D printed houses) could be explored to test new methods in delivering The Hub. Once tried in the interim scale with the prospect of being applied at the larger scale, they could help to deliver The Hub more quickly. Digital platforms and apps could be leveraged to improve access and transport, better manage traffic and promote the local retail offer. They can also underpin car or space sharing schemes and support clustering and innovation.

EARLY UPGRADES

Key parts of the transport network, in particular walking and cycling routes, could be upgraded early. They could link early development phases with the early win projects outlined above. While delivering immediate benefits within The Hub, they could become stepping stones to delivering improved pedestrian and cycling connectivity between The Hub and its surrounding area. Upgrades could also include planting to improve the quality of existing routes or building bridges in strategic locations.

ART, FESTIVALS AND CELEBRATIONS

Cultural events and facilities can play a key role in establishing the character and identity of a place and can be used to support branding. Temporary art installations, festivals or regular events could be held to make use of key open spaces delivered early on. They could also make use of plots awaiting development and become an anchor along key routes. This could help to generate footfall and create vibrancy in key locations. They also have the power to create unforgettable experiences that people will associate with a specific location for years to come.

B LOCAL AND NATIONAL POLICY

Given the national, regional and local importance of The Hub, it is critical that the Framework and the proposals contained therein are thoroughly tested against both national and local planning policy.

The Framework therefore responds to the policy set out in the National Planning Policy Framework (NPPF) and to SMBC’s emerging Local Plan Review (LPR), including Policy P1, which relates specifically to The Hub. A review of relevant local and national policy was undertaken by the Urban Growth Company (UGC) consultancy team in May 2017. Relevant policies are outlined in Table B1 below.

THEME	DRAFT POLICY P1 OF THE SMBC LPR	OTHER DRAFT POLICY WITHIN THE SMBC LPR	THE NPPF
Sustainable Growth	<p>Secure sustainable economic growth to create jobs and prosperity.</p> <p>Contribute towards the growth aspirations of the area.</p> <p>Support the future aspirations of Birmingham Airport, the NEC, Arden Cross, Birmingham Business Park and Jaguar Land Rover in a holistic, well-connected way, together with the development of the HS2 Interchange Station.</p> <p>Encompass sustainable principles including support for growth and innovation, minimise the use of natural resources and incorporate low carbon and renewable energy principles.</p>	<p>The Borough will take advantage of the unique opportunity to maximise the economic and social benefits of the HS2 rail link and Interchange (Borough Vision - Overview).</p> <p>The Borough will ensure that the HS2 Interchange is well integrated to the key economic assets including Birmingham Airport, the NEC and Jaguar Land Rover to ensure that they capitalise on this potential (Borough Vision- Overview).</p> <p>Development will be expected to provide or contribute towards provision of measures to mitigate its impact on physical, social, green and digital infrastructure (Policy P21).</p>	<p>At the heart of the NPPF is a presumption in favour of sustainable development and therefore development, which is sustainable, should be approved immediately (Paragraphs 14 and 15).</p> <p>Pursuing sustainable development involves seeking positive improvements in the quality of the built, natural and historic environment and people’s quality of life. There are three dimensions to sustainable development: economic, social and environmental, these dimensions cannot be applied in isolation because they are mutually dependent. (Paragraph 7-9).</p> <p>The planning system should proactively drive and support sustainable economic development to deliver the homes, business and industrial units, infrastructure and thriving local places that the country needs (Paragraph 17).</p> <p>The Government is committed to securing economic growth to create jobs and prosperity, planning should encourage and not impede sustainable growth (Paragraph 18-19).</p>
Residential	<p>Develop strong, vibrant and healthy communities.</p> <p>Provide 1,000 new dwellings within The Hub during the plan period.</p>	<p>The Borough will contribute in a sustainable manner to the housing needs of its Housing Market Area (HMA) to enable residents to have access to a range and choice of quality accommodation (Borough Vision- Overview).</p> <p>A 50% contribution to affordable housing is required on residential sites of 11 units or more, or which have a maximum combined gross floor space of in excess of 1000 sqm to meet the housing needs of the Borough. SMBC will take into account the context of the site and will accept provision off-site where affordable housing is not feasible on-site (Policy P4 – Meeting Housing Needs).</p> <p>Provision of affordable housing on Green Belt land will be supported where the development is consistent with Village, Parish or Neighbourhood Plans or where there is evidence that people with a local connection have a housing need that cannot be met on allocated housing sites and the proposal is supported by the Parish Council or neighbourhood forum (Policy P4 – Meeting Housing Needs).</p>	<p>Housing applications should be considered in the context of the presumption in favour of sustainable development (Paragraph 49).</p> <p>Sustainable, inclusive and mixed communities should be created with a wide choice of high quality homes (Paragraph 50).</p> <p>The supply of new homes can sometimes be best achieved through planning for large scale development, such as new settlements or extensions to existing villages and towns (Paragraph 52).</p> <p>Local Plans should meet the full, objectively assessed needs for market and affordable housing in the HMA, including identifying key sites critical to the delivery of the housing strategy over the plan period (Paragraph 47).</p> <p>In rural areas, housing should be located where it will enhance or maintain the vitality of rural communities such as where there are groups of smaller settlements, development in one village may support services in a village nearby (Paragraph 55).</p>

THEME	DRAFT POLICY P1 OF THE SMBC LPR	OTHER DRAFT POLICY WITHIN THE SMBC LPR	THE NPPF
Residential		<p>SMBC has allocated specific sites for housing. New housing will also be supported on unidentified sites in accessible locations where they contribute towards meeting borough-wide housing needs and towards enhancing local character and distinctiveness (Policy P5 – Provision of Land for Housing).</p> <p>New housing will not be permitted in locations where access to employment, centres and a range of facilities is poor, unless in exceptional circumstances (Policy P5 – Provision of Land for Housing).</p> <p>Density of housing will make the most efficient use of land and higher densities will be more appropriate in the most accessible locations (Policy P5 – Provision of Land for Housing).</p> <p>Sites will not be released for housing development before they reach their specified phase outlined in the future submission version of the LPR, unless existing housing land supply falls below national planning policy requirements (Policy P5 – Provision of Land for Housing).</p> <p>SMBC seek a good standard of amenity for all existing and future occupiers of houses, businesses and other uses. This includes the following measures; high quality design, minimising visual, light, noise and air pollution; supporting development of electronic communication networks, safeguarding natural assets and tranquil and locally distinctive areas, and assessing and remediating any contaminated land (Policy P14 – Amenity).</p> <p>Residential development, shopping areas, community facilities and open space should be protected from bad neighbour uses. Development that would be significantly harmful because of smell, noise or atmospheric pollution will not be permitted and development that would be potentially harmful should incorporate appropriate attenuation, mitigation and compensatory measures (Policy P14 – Amenity).</p> <p>Residential or other sensitive development will not be permitted close to existing bad neighbour uses (Policy P14 – Amenity).</p>	
Commercial		<p>SMBC has allocated sites for employment uses which will be afforded protection for business class uses and waste management operations only; including land adjacent to Birmingham Business Park (Policy P3 – Provision of Land for General Business and Premises).</p> <p>Non-allocated employment sites will be protected for employment use and alternative uses may be allowed in certain circumstances (Policy P3 – Provision of Land for General Business and Premises).</p> <p>SMBC will encourage retention of small and medium size enterprises and the creation of new ones to facilitate growth in areas such as North Solihull (Policy P3 – Provision of Land for General Business and Premises).</p> <p>Proposals should demonstrate how they will help to meet local employment needs (Policy P3 – Provision of Land for General Business and Premises).</p> <p>Office, retail and leisure development should be directed to locations in town centres or other established locations including Birmingham Airport, Birmingham Business Park and the NEC (Policy P7 – Accessibility and Ease of Access).</p>	<p>Local planning authorities should support existing business sectors and where possible identify and plan for new or emerging sectors likely to locate in their area (Paragraph 21).</p>

THEME	DRAFT POLICY P1 OF THE SMBC LPR	OTHER DRAFT POLICY WITHIN THE SMBC LPR	THE NPPF
<p>Transport Infrastructure</p>	<p>Connectivity within and beyond the site should create an integrated approach to movement through The Hub.</p> <p>Encourage use of modes of travel other than the private car.</p>	<p>New development should be focussed in the most accessible locations and seek to enhance accessibility levels and promote ease of access (Policy P7 – Accessibility and Ease of Access).</p> <p>Development should:</p> <ul style="list-style-type: none"> ● Be accessible by a range of transport modes. ● Provide access to a bus service within 400m of the site. ● Provide on-site transport infrastructure. ● Provide or contribute to off-site infrastructure where appropriate and viable. ● Offer safe, attractive and suitable access for people by all modes. ● Align with other policies in the local plan, the spatial strategy to reduce the need to travel and ‘Solihull Connected’. ● Promote linked trips by encouraging mixed use development. ● Not result in the reduction of safety of the transport network. ● Take an evidence-based approach to car parking, trip rates, forecasted levels of car ownership etc. ● Not increase delay to vehicles, pedestrians or cyclists (Policy P7 – Accessibility and Ease of Access and Policy P8- Managing Travel Demand and Reducing Congestion). <p>SMBC will support proposals for local Park and Ride at appropriate railway stations, and Metro and Sprint along corridors that provide access to The Hub (Policy P8- Managing Travel Demand and Reducing Congestion and Policy P8A – Rapid Transit).</p> <p>SMBC will support off-site parking provision in association with economically important sites (Policy P8- Managing Travel Demand and Reducing Congestion).</p> <p>A number of strategic documents provide further transport guidance including Movement for Growth: The West Midlands Strategic Transport Plan; West Midlands Freight Strategy; and the HS2 Growth Strategy Connectivity Programme.</p>	<p>Patterns of growth should be managed to make the fullest possible use of public transport, walking and cycling, and significant development should be focussed in locations which are, or can be made sustainable (Paragraph 17).</p> <p>Transport solutions should support reductions in greenhouse gas emissions and reduce congestion (Paragraphs 29 and 30).</p> <p>Developments should incorporate opportunities for sustainable travel (to reduce the need for major transport infrastructure), provide safe and suitable access and make improvements necessary to limit significant impacts of the development (Paragraph 32).</p> <p>Development which will generate significant movement should be located where the need to travel will be minimised and the use of sustainable transport modes can be maximised (Paragraph 34).</p> <p>Opportunities for the use of sustainable transport modes for the movement of goods and people should be protected and exploited (Paragraph 35).</p> <p>Planning for airports not subject to a national policy statement should take account of their growth and role in serving business and leisure (Paragraph 33).</p>
<p>Utilities and other infrastructure</p>	<p>Contribute towards infrastructure provision and the strategic green infrastructure network.</p> <p>Do not impede provision of infrastructure necessary to support development occurring in other parts of The Hub, or prevent / hinder development occurring in other parts of The Hub.</p>	<p>The Borough will ensure that the HS2 Interchange is well integrated with green infrastructure (Borough Vision – Overview).</p> <p>SMBC will have regard to the needs of telecommunications operators including any technical constraints on the location of apparatus, the impact of the development on its surroundings and the design and appearance of the apparatus. Developers should demonstrate that there are no other technically suitable locations or design solutions to meet operational requirements and cause less environmental harm (Policy P14 – Amenity).</p> <p>Development on business sites should include the necessary infrastructure to accommodate high capacity digital communication (Policy P3 - Provision of Land for General Business and Premises).</p>	<p>Expansion of electronic communications should be supported, but masts and sites should be kept to a minimum and existing infrastructure used unless a new site has been justified (Paragraphs 42 and 43).</p> <p>Local planning authorities should work with other authorities and providers to assess the quality and capacity of existing infrastructure and take account of the need for strategic infrastructure (Paragraph 162).</p>

THEME	DRAFT POLICY P1 OF THE SMBC LPR	OTHER DRAFT POLICY WITHIN THE SMBC LPR	THE NPPF
<p>Design, place making and the public realm</p>	<p>Contribute to the place making aspirations of the area.</p> <p>Incorporate high quality design for both the development and public realm.</p>	<p>Development should contribute to or create high quality places and spaces which have regard to local distinctiveness to achieve high quality, inclusive and sustainable design. Design should comply with current guidance (Policy P15 Securing Design Quality).</p> <p>Development should contribute towards the enhancement of existing recreational facilities; children’s play and open space. Existing facilities will be promoted unless certain circumstances exist. Where existing provision is not being protected SMBC will require appropriate compensatory measures (P20 Provision for Open Space, Childrens Play, Sport, Recreation and Leisure).</p> <p>SMBC will seek new and improved open space as an integral part of new residential, commercial or mixed use development (over 1ha or 1,000 sqm). New housing will be required to provide / contribute to new open spaces or improvements to existing provision unless financial unviability can be demonstrated. Where there is an existing shortfall in local open space provision this should be accommodated as part of the new development. Where the minimum standards for children’s play and youth facilities is already met developments should provide additional enhancements (P20 Provision for Open Space, Childrens Play, Sport, Recreation and Leisure).</p> <p>SMBC will support development of new or improved sports and leisure facilities providing that it addresses any shortfall in provision, reflects a town centre first principle and is situated within an accessible location served by public transport (P20 Provision for Open Space, Childrens Play, Sport, Recreation and Leisure).</p> <p>SMBC will support proposals which encourage greater recreational and leisure use of the river and canal network providing that the historic and natural environment and purposes of the Green Belt is protected (P20 Provision for Open Space, Children’s Play, Sport, Recreation and Leisure).</p> <p>Development should promote and enhance physical and mental health and wellbeing. This includes providing opportunities for physical activity, recreation and play, walking and cycling. As well as creating a high quality environment and providing new and improved health services and facilities. Large scale housing and commercial developments require a Health Impact Assessment to be undertaken (Policy P18 Health and Wellbeing).</p>	<p>Good design is a key aspect of sustainable development and should contribute positively to making places better for people, high quality and inclusive design should therefore be planned for (Paragraph 56-57).</p> <p>Developments should function well, add to the overall quality of the area, establish a strong sense of place and comfortable places to live, work and visit. Developments should also establish an appropriate mix of uses, support local facilities and transport networks, respond to the local character and history and create safe and accessible places which are visually attractive (Paragraph 58).</p> <p>Permission should be refused for development of poor design which fails to improve the character and quality of an area (Paragraph 64).</p> <p>Planning policies should aim for a balance of land uses so that people are encouraged to minimise their journey lengths for employment, shopping, leisure and education. A mix of uses should also be promoted in larger scale residential developments and key facilities such as schools and shops should be located within walking distance (Paragraphs 37 and 38).</p> <p>Development should promote strong neighbourhood centres, safe and accessible environments providing legible pedestrian routes and high quality public space. (Paragraph 69).</p> <p>Existing open space, sports and recreational buildings and land should not be built upon unless certain circumstances exist and public rights of way and access should be protected and enhanced (Paragraphs 74 and 75).</p>
<p>Environment</p>	<p>Proposals should minimise the use of natural resources and incorporate low carbon and renewable energy principles.</p>	<p>Proposals should include measures that mitigate and adapt to the impacts of climate change at a strategic and site level (Policy P9 – Mitigating and Adapting to Climate Change).</p> <p>SMBC will seek to conserve, enhance and restore landscape, biodiversity and geodiversity features including designated sites, ancient woodland and priority habitats. SMBC will protect areas of national and local importance for biodiversity and geodiversity and development likely to have an adverse effect on a Site of Special Scientific Interest will be subject to special scrutiny. Development likely to have an adverse effect on a Local Nature Reserve will be permitted only if the reasons for the development outweigh the conservation or geological value of the site (Policy P10 - Natural Environment).</p> <p>Development likely to have a significant harmful effect on the natural environment must demonstrate that all possible alternatives have been considered and where development is permitted, appropriate mitigation measures will be required to deliver a net gain in biodiversity, habitat creation, landscape character and local distinctiveness (Policy P10 - Natural Environment).</p>	<p>Inappropriate development in areas at risk of flooding should be avoided and development directed away from areas of highest risk. Development should not increase flood risk elsewhere (Paragraph 100).</p> <p>Development should conserve and enhance biodiversity and significant harm should be avoided through locating development on an alternative site, incorporating mitigation and providing compensation (as a last resort). Special Protection Areas, possible Special Areas of Conservation, listed or proposed RAMSAR sites and sites identified / required for compensatory reasons should be given the same protection as European sites. Development should not cause a loss or deterioration of irreplaceable habitats including ancient woodland (Paragraphs 118 and 119).</p> <p>Great weight should be given to the conservation of designated heritage assets and the more significant the asset, the greater the weight should be. Substantial harm to, or loss of designated heritage assets should be wholly exceptional (Paragraph 132).</p>

THEME	DRAFT POLICY P1 OF THE SMBC LPR	OTHER DRAFT POLICY WITHIN THE SMBC LPR	THE NPPF
		<p>Development should be served by appropriate sewerage infrastructure and there should be sufficient sewerage treatment capacity. In addition, drainage systems shall deploy surface features for water quality purposes and all major development must include the use of sustainable drainage systems (Policy P11 – Water Management).</p> <p>Development should prevent the production of waste within the Borough and encourage prevention from existing buildings and uses. Management of waste shall seek to maximise the contribution to economic development and employment in the Borough and SMBC will seek to address the waste capacity gap within the Borough (Policy P12 – Resource Management).</p> <p>SMBC will safeguard the ‘best and most versatile’ agricultural land in the Borough (unless the overriding need for development outweighs the loss) and will seek to protect the character of the countryside (Policy P17 – Countryside and Green Belt).</p> <p>Development should conserve heritage assets in a manner appropriate to their significance, conserve local character, distinctiveness, create / sustain a sense of place or seek opportunities to enhance the contribution made by the historic environment. Heritage assets include Listed Buildings, Scheduled Ancient Monuments, Registered Parks and Gardens, Conservation Areas and non-designated assets including buildings, monuments, archaeological sites and landscapes (Policy P16 - Conservation of Heritage Assets and Local Distinctiveness).</p>	<p>Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be used in preference to that of a higher quality (Paragraph 112).</p>
Green Belt	<p>SMBC propose to remove land bounded by the M42, A452 and A45 (Arden Cross) and land to the north-east of the Jaguar Land Rover plant from the Green Belt.</p>	<p>Inappropriate development will not be permitted in the Green Belt unless very special circumstances have been demonstrated in accordance with the NPPF (Policy P17 – Countryside and Green Belt).</p> <p>A number of factors may be taken into account as very special circumstances. This includes the reasonable expansion of established businesses into the Green Belt where it would make a significant contribution to the local economy / employment and where appropriate mitigation can be secured (Policy P17 – Countryside and Green Belt).</p>	<p>Green Belt serves the following 5 purposes:</p> <ul style="list-style-type: none"> • To check the unrestricted sprawl of large built-up areas; • To prevent neighbouring towns merging into one another; • To assist in safeguarding the countryside from encroachment; • To preserve the setting and special character of historic towns; and • To assist in urban regeneration, by encouraging the recycling of derelict and other urban land (Paragraph 80). <p>Inappropriate development is harmful to the Green Belt and should not be approved except in very special circumstances. Substantial weight should be given to any harm to the Green Belt and very special circumstances will not exist unless the harm to the Green Belt is clearly outweighed by other considerations (Paragraphs 87-88).</p> <p>Once established, Green Belt boundaries should only be altered in exceptional circumstances through the preparation or review of a local plan. When drawing up or reviewing Green Belt boundaries the need to promote sustainable patterns of development should be taken account of (Paragraph 83-84).</p> <p>The Housing White Paper proposes several amendments to the NPPF including that local planning authorities should only amend Green Belt boundaries where they can demonstrate that they have fully examined all other reasonable options for meeting their development requirements.</p> <p>When undertaking a Green Belt review local authorities should look first at using any Green Belt land which has been previously developed and / or which surrounds transport hubs. Further, where land is removed from the Green Belt, the impact should be offset by compensatory improvements to the environmental quality or accessibility of the remaining Green Belt.</p>

TABLE B1- RELEVANT LOCAL AND NATIONAL POLICY



CONSTRAINTS ASSESSMENT – METHODOLOGY

METHODOLOGY

The Hub Growth and Infrastructure (HGIP) establishes ranges of development for each phase, set out in 5 year tranches, and the Framework tests the potential deliverability and suitability of such growth within The Hub area. It is considered that proposals for development in Solihull Metropolitan Borough Council’s (SMBC) future Submission Draft Local Plan Review (LPR) will require relevant and appropriate evidence to support the deliverability of development, the content of which will be considered at a future Examination in Public.

Therefore, a high-level assessment against key physical, policy and environmental criteria has been undertaken by the Urban Growth Company (UGC) consultancy team for both the Core Development Areas (CDAs) referred to as C01-C05, and the Potential Development Area (PDA) referred to as P01. The approach to undertaking the assessment has been devised with the UGC and various stakeholders. The methodology is organised into two stages and set out below.

STAGE 1 – SITE IDENTIFICATION

The CDAs have been defined by a combination of the draft site allocations in the Consultation Draft LPR and the land ownership boundaries of the National Exhibition Centre (NEC), Birmingham Airport, Jaguar Land Rover, Arden Cross Consortium and Birmingham Business Park.

To identify PDA P01 reference was made to Policy P1 (related specifically to The Hub) of the Draft Solihull LPR. The policy requires all development proposals to contribute towards the place making aspirations of the area including promoting connectivity, an integrated approach to movement and sustainable modes of travel throughout The Hub. Therefore, an ‘Area of Search’ was established based on proximity to the HS2 Interchange Station and Birmingham International Station, as shown in Figure C1, in Appendix C2.

Accessibility and connectivity are key and an initial search area was defined for site areas falling within 10 minutes travel time of the existing and proposed public transport stations.

A review of the Solihull Strategic Housing and Economic Land Availability Assessment (SHELAA) and the Schedule of Call for Sites Submissions was undertaken in order to

identify land that may be available for development. Using this information, P01 was identified.

Figure C2 (in Appendix C2) shows the CDAs and PDA, these areas combined are known as the ‘Framework Area’.

STAGE 2 – SITE ASSESSMENT

The CDAs and PDA identified in Stage 1 were assessed against a range of physical, policy and environmental criteria closely related to those used in the SHELAA for consistency with the emerging LPR. The criteria are also consistent with guidance in the National Planning Policy Framework (NPPF) and National Planning Practice Guidance (NPPG) and take into account the requirements of draft Policy P1.

The assessment sought to ascertain the suitability of the CDAs and PDA for development. A combination of publically available information and information received from SMBC was used to inform the assessment. A summary of the information used can be found in Figures C1 –C14 in Appendix C2¹ and all sources are listed in Appendix C3. All information was sourced between February and July 2017.

The areas were assessed against the following criteria:




- Policy (national and local planning policies including Green Belt designations);
- Environmental constraints (national / local designations, biodiversity, ground conditions, air quality, noise, flood risks, etc) within a 1km buffer;
- Availability (land ownership, call for sites submissions, SHELAA);
- Access and movement (connections to The Hub and the wider area by car, public transport, walking and cycling); and
- Proximity and access to amenities (including local centres, education, healthcare, public open spaces, recreation and leisure etc.).

There are a number of environmental conditions which apply to all areas, these are listed in Table C1 on page A12.

¹ INFORMATION RELATED TO HISTORICAL LANDFILL SITES IS NOT INCLUDED WITHIN FIGURES 1 TO 13. THIS CAN BE ACCESSED AT THE FOLLOWING LOCATION: ENVIRONMENT AGENCY, 2017, WHAT’S IN MY BACKYARD? AVAILABLE AT [HTTP://APPS.ENVIRONMENT-AGENCY.GOV.UK/WIYBY/](http://apps.environment-agency.gov.uk/wiyby/)

To ensure robustness, the assessment has been supplemented by results from the site appraisals undertaken as part of SMBC's SHELAA² and Sustainability Appraisal³.

A RAG (Red, Amber, and Green) rating system has been used to indicate how the respective area performs against each criteria:

-  Red - Major Constraint;
-  Amber-Moderate Constraint; and
-  Green- Minor Constraint.

Each assessment concludes with a summary of how well the area would contribute to The Hub, would conform with draft Policy P1 (in terms of connectivity, integration, sustainability and place making principles) and the area's suitability for development. All key constraints are also identified for consideration. The results of the assessment for the CDAs and PDA can be found in Tables C2-C7 in Appendix C1.

2 SMBC. (2016) SOLIHULL STRATEGIC HOUSING AND EMPLOYMENT LAND AVAILABILITY ASSESSMENT 2016 AND APPENDICES. AVAILABLE AT: [HTTP: // WWW.SOLIHULL.GOV.UK / LPR / EVIDENCE](http://www.solihull.gov.uk/lpr/evidence)

3 SMBC (2017) SOLIHULL LOCAL PLAN REVIEW INTERIM SUSTAINABILITY APPRAISAL REPORT AND APPENDIX C. AVAILABLE AT: [HTTP: // WWW.SOLIHULL.GOV.UK / LPR / EVIDENCE](http://www.solihull.gov.uk/lpr/evidence)

ENVIRONMENTAL CRITERIA	ASSESSMENT
Heritage	<p>Key heritage assets identified within the Framework area should be considered further in the development of proposals, including, for example, a limited number of listed buildings. Bickenhill contains a conservation area designated due to its historical interest, which is in proximity to the Framework area. One undesignated asset to note is the remnants of the Stonebridge Railway, Hampton Branch (UID:MWA427) located in the HS2 Interchange Station area.</p> <p>New development must respect the setting of and views from heritage assets through careful consideration of layout and design. Any direct works to designated heritage assets will require prior consent.</p>
Biodiversity	<p>There are no RAMSAR, Special Areas of Conservation, Special Protection Areas, National Nature Reserves statutory designated sites located within the Framework area.</p> <p>Three nationally important Sites of Special Scientific Interest (SSSI) have been identified within 1km of the study area, Coleshill and Bannerly Pools SSSI, the River Blythe SSSI and Bickenhill Meadows SSSI.</p> <p>Ancient Woodlands, UK Biodiversity Action Plan (BAP) priority habitats and Local Nature Reserves, such as Bickenhill Plantations, have also been identified within the Framework area.</p>
Landscape and visual	<p>The landscape of Solihull is characterised by the Natural England Arden National Character Area (NCA number 97). This NCA mainly comprises of former wood pasture and farmland scattered with a number of cottages and farm buildings. The Framework area does not fall within an Area of Outstanding Natural Beauty, but does lie within 1km of the Grade II* Listed Packington Hall Registered Park and Garden and associated listed buildings.</p> <p>Design and construction in the Framework area should take into consideration the local character during design stages with particular consideration for viewpoints into and out of the area, or within 1km.</p>
Water environment	<p>There are two Environment Agency (EA) designated watercourses and associated Flood Risk Zones 2 & 3 which intersect the Framework area: Low Brook and Hollywell Brook. These two watercourses flow into the EA designated River Cole and River Blythe respectively which are managed for compliance with the Water Framework Directive. The River Blythe is also designated as a SSSI along most of its length due to its lowland clay features. The Framework area does not overlay any groundwater source protection zones.</p> <p>Works in proximity to watercourses require stringent management and engagement with the EA (for designated main rivers) / or Local Authorities (for ordinary watercourses) in order to ensure the protection of the Water Framework Directive watercourses – the River Cole and River Blythe. Works within 8m of a watercourse will require a Flood Defence Consent.</p>
Noise and vibration	<p>The Framework area is embedded in an extensive infrastructure network of road, rail and air based transportation. Noise Important Areas have been highlighted as part of the DEFRA (Department for Environment, Food and Rural Affairs) Agglomeration Noise Action Plan (2014) to identify populations exposed to road traffic and railway noise in the Solihull District area. Meanwhile, Birmingham Airport's 2013-2018 Revised Noise Action Plan identifies areas north west and south east of the airport as being most affected by aircraft noise due to the orientation of the runway and flight paths.</p> <p>Location of noise and vibration sensitive receptors such as residential properties, schools and care homes should consider carefully the noise important areas associated with existing and future transport infrastructure.</p>
Air quality	<p>There are no Air Quality Management Areas across Solihull district. Due to its rural and sub-urban character, air pollution dispersal can be rapid, leading to low to moderate levels of NO₂. No locations have been identified which exceed levels set out in legislation.</p> <p>Areas in proximity to major transport routes such as the M42 and A45, Birmingham Airport or the railway network have potential for raised air pollution such as nitrous oxide from vehicles. This should be considered in the design process when locating sensitive receptors such as residential properties or facilities for the young and elderly.</p>
Transportation	<p>The Framework area is well connected by air, rail and road, with provision from Birmingham Airport, Birmingham International Station, the M42, A45 and A452. This area has a number of disjointed cycle routes, and few public rights of way (PRoW).</p> <p>With the advent of HS2, this area has large potential for the development of additional transportation networks particularly for low carbon public transportation.</p>
Waste and contamination	<p>There are a few historical and authorised landfill sites identified within the Framework area, including Middle Bickenhill Lane and Windbridge Nurseries. Within 1km of the Framework area lies a large authorised landfill, Packington Landfill Site, receiving inert, non-hazardous and hazardous waste</p> <p>Works within 250m of active authorised or historic landfill sites or works directly within areas of historical landfill may require additional investigation, special measures during development and / or remediation.</p>

TABLE C1 - ENVIRONMENTAL CRITERIA

C1 CONSTRAINTS ASSESSMENT - FINDINGS

CORE DEVELOPMENT AREAS

C01. JAGUAR LAND ROVER MANUFACTURING CAMPUS

CRITERIA	ASSESSMENT	SHELAA ASSESSMENT	SUSTAINABILITY APPRAISAL ASSESSMENT	RAG RATING
Description	<p>Area C01 is located north east of Solihull and south of Birmingham Airport. It is surrounded by a mix of uses including residential and employment. It is bound by Lode Lane to the west and Coventry Road to the east and includes the existing manufacturing plant and undeveloped land south of Birmingham Airport.</p> <p>Jaguar Land Rover is one of the West Midlands key economic assets, a major international business and one of the largest employers in the region. The Lode Lane plant in Solihull provides approximately 7,300 jobs which is set to increase.</p>	<p>Area C01 contains 7 sites assessed as part of the SHELAA- 65,95,189,190,191,226 (a very small section) and 228. All sites were assessed for employment uses with the exception of 226 and 228 which were assessed for housing.</p> <ul style="list-style-type: none"> Site 65- The site is currently used as the Solihull Moors Football Club pitch and training facilities and is adjacent to a built up area. Site 95-The site comprises former farm buildings now part used for scrap / storage, a car showroom and guest house, located adjacent to a built up area. Site 189- The site comprises vacant former farmland and buildings and is located adjacent to a built up area. Site 190- The site comprises semi-mature woodland and possibly contains one derelict small building. The site lies immediately east of the Elmdon Nature Reserve and is located outside of the built up area. Site 191-The site is comprised of open countryside land and storage facilities and is located outside of the built up area. Site 226- The site comprises greenfield land and is located within or adjacent to a settlement within the Major Urban Area. Site 228- Part of the site has been developed for car storage associated with the expansion of Jaguar Land Rover. The site is located within or adjacent to a settlement within the Major Urban Area. <p>Sites 65, 95 and 189 have good prospects for employment development. Development at site 65 will however be subject to overcoming the Green Belt and minor contamination constraints and development at site 189 could be limited given that 60% of the site is designated as a Local Wildlife Site.</p> <p>Site 228 performs well against suitability, availability and achievability criteria and has good marketability and / or viability. The site could be used to support the future expansion of Jaguar Land Rover or for residential uses.</p>	<p>Site AECOM94 and a very small part of AECOM78 were assessed as part of the sustainability appraisal and make up the undeveloped section of C01. The sustainability appraisal of AECOM94 has therefore been utilised for the purpose of this appraisal to ensure it is representative of the majority of the C01 area.</p>	

CRITERIA	ASSESSMENT	SHELAA ASSESSMENT	SUSTAINABILITY APPRAISAL ASSESSMENT	RAG RATING
Description		<p>Prospects for development of sites 190 and 191 are poor given that both sites are small and so less attractive to potential developers. In addition, site 191 is isolated from other employment uses.</p> <p>Similarly, site 226 performs well against availability criteria but faces some achievability constraints and significant suitability constraints given that the site is heavily wooded and in close proximity to the airport making it unsuitable for residential development. The site has moderate marketability and / or viability but its proximity to the airport may subdue values.</p>		
Policy	<p>SMBC's aspirations for the area are set out in Policy P1 of the draft LPR and it has been allocated for employment uses. Draft Policy P1 highlights SMBC's support for the development of Jaguar Land Rover within its boundary defined in the draft LPR. This will include a broad range of development needed to maintain or enhance the function of Jaguar Land Rover as a major manufacturer of vehicles.</p> <p>The north-eastern part of the area is located within the Green Belt. The 2016 SMBC Green Belt assessment indicates that this area performs only moderately in terms of its contribution to the Green Belt. The draft LPR proposes to release this area from the Green Belt.</p>	All sites are located within the Green Belt.		
Environmental constraints	<ul style="list-style-type: none"> The area is predominantly comprised of other land primarily in non-agricultural use / land predominantly in urban use (agricultural land classification). It partly lies within Grade 3 agricultural land (classification-moderate / good). Development should work to negate loss of moderate to good agricultural land by providing open green spaces in order to protect local soil resource. There are no designated heritage assets located within the area. However, within 1km of the area are five listed buildings – Church of St Nicholas (Grade II Listed Building), Elmdon Hall Lodge (Grade II Listed Building), Castle Hills Farmhouse (Grade II Listed Building), The Grange (Grade II Listed Building) and Main Barn at Whar Hall Farm (Grade II Listed Building). 	<ul style="list-style-type: none"> Sites 226 and 228 are comprised of Grade 5 agricultural land. The sites are not constrained by any heritage designations. A large proportion of site 189 and a small proportion of site 95 is identified as a Local Wildlife Site. Sites 65 and 190 are located adjacent to the Elmdon Nature Reserve, development could generate bad neighbour impacts depending upon the sensitivity of the reserve. Site 228 is not located within or adjacent to a Local Wildlife Site and site 191 is not constrained by any nature conservation designations. Sites 65, 95, 189, 190 and 191 would not impact a flood risk area and sites 226 and 228 are located within Flood Zone 1. Sites 65, 95, 189, 190 and 191 are not constrained by either an overhead line buffer or high-pressure gas pipeline and sites 226 and 228 do not lie within a high pressure gas pipeline zone. 	<ul style="list-style-type: none"> The site contains more than 20ha of agricultural land (classification 1-3b). Loss of more than 20ha triggers a requirement to consult with DEFRA / Natural England. It is considered that significant negative effects are likely and mitigation will be essential. Heritage assets are located more than 100m from the site. The site overlaps or contains a Local Wildlife Site and / or records of priority species and habitats. The site is of strategic scale to enhance ecological networks. The landscape has a medium sensitivity to change. Up to 50% of the site is in Flood Zone 2 or 3 and therefore impacts could be avoided or mitigated. The site lies outside of a minerals safeguarding area. There are sources of noise adjacent to the site that could affect amenity (A / B road, industrial park and agricultural processes). This is likely to result in negative impacts which will require mitigation. 	

CRITERIA	ASSESSMENT	SHELAA ASSESSMENT	SUSTAINABILITY APPRAISAL ASSESSMENT	RAG RATING
Environmental constraints	<ul style="list-style-type: none"> The area is within and in proximity to several Ancient Woodlands including Parkside Wood, Hampton Coppice, Barber's Coppice, and Ashbury's Coppice. Bickenhill Meadows (SSSI) and minor areas of UK Biodiversity Action Plan (UK BAP) Priority Habitat, Local Nature Reserve and Local Wildlife Sites associated with Elmdon Nature Park can also be found in the area. More detailed surveys and analysis is required to discern the local ecological baseline and potential impacts due to development in this area. The area contains an EA designated main river Hatchford Brook and associated Flood Zone 2 and 3 located to the north of the area. EA designated main river Low Brook and associated Flood Zone 2 and 3 intersect the area. Surface Water Flooding: Areas of High and Medium flood risk across part of the area. Medium water abstraction from ground water in the western part of the site (E: 415004 N:282200). The area is not within a Ground Water Protection Zone. Authorised landfill site within part of the area- Rover Group - Lode Lane Landfill Site. Historic landfill sites within / in proximity to the site – Low Brook and Castle Hills Farm (opposite Hargrave Cottages). Located in proximity to historic landfill sites to the east and north including opposite Church Farm and Glebe Farm, sports ground and Hargrave Farm respectively. Works within 250m of these sites or works within areas of historical landfill may require additional investigation, special measures during development and / or remediation. The area is in proximity to the airport and flight path and therefore should be considered with regard to noise impacts upon sensitive receptors. 	<ul style="list-style-type: none"> The sites are not constrained by ground conditions. A small part of sites 65 and 189 are subject to contamination and a large part of site 95 (60%) is subject to contamination and hazardous waste. Sites 190,191, 226 and 228 are not constrained by contaminated land or an historic landfill site. Sites 65, 189, 190 and 191 are not constrained by any hazardous installations but site 95 is subject to minor constraints related to hazardous installations. Sites 65, 95, 189,190 and 191 are not constrained by any bad neighbour impacts. Sites 226 and 228 are constrained by bad neighbour impacts and it is considered that impacts could be mitigated on site 228 but not on site 226. Site 189 is located just south of the airport runway and therefore could be subject to safeguarding and noise issues. 		
Availability	The area is available for Jaguar Land Rover specific growth.	<p>Sites 65, 189, 190 and 191 are immediately available.</p> <p>Sites 226 and 228 were identified through the submissions process and therefore it is assumed that the owner is willing to make the site available for development.</p> <p>Site 95 is owned by three separate parties and it appears not all are aware that the site is being promoted. It is however expected that the site will become available within the LPR plan period.</p>		

CRITERIA	ASSESSMENT	SHELAA ASSESSMENT	SUSTAINABILITY APPRAISAL ASSESSMENT	RAG RATING
Access and movement	<p>The area is located at the edge of The Hub. Part of the area is within 10 minutes reach of the airport and the proposed HS2 Interchange Station by public transport.</p> <p>Bus services 71, 71A, 72, 73, S10, 966, X2 and X12 provide access to the area.</p> <p>Pedestrian access is available via some existing pedestrian amenities on surrounding roads.</p> <p>The existing surrounding transport infrastructure provides good access and connections to Solihull. The proposed Sprint bus service to the airport will further enhance connectivity and access to the area.</p>	<p>Existing road access to sites 65, 226 and 228 is adequate. An access would need to be created for sites 95, 189,190 and 191, this is likely to be possible from the Damson Way / A45 junction and Old Damson Lane.</p> <p>Sites 65, 95, 189,190 and 191 are within 400m of a bus stop (s).</p>	<p>The site is located within 400m of an infrequent bus or train service (less than 3 bus services or 2 train services per hour) and 4m of a principal road network for access to employment sites.</p>	Green
Proximity to amenities	<p>The area is well integrated with Solihull and is therefore in close proximity and accessible to a number of amenities within Solihull.</p> <p>The site also benefits from good access links to the airport and train station. However, its location at the edge of The Hub means that it is not in close proximity to some amenities within The Hub and Marston Green.</p>	<p>Sites 65, 95, 189, 190 and 191 are not located near to local amenities.</p>	<p>The site is located:</p> <ul style="list-style-type: none"> • 1135m from the nearest primary school (Coppice Junior School). • 2345m from the nearest secondary school (Lode Heath School and Sports College). • 12m from areas of greenspace greater than 2ha and 20ha. • 1653m from a healthcare facility. • within 1200m of 11 leisure and play facilities. • 44m from employment land uses (road only). • 963m from local convenience stores / supermarkets. 	
Social context			<p>The site is located within the 60% least deprived area.</p>	
Conclusion	<p>The area is located in proximity to Solihull and The Hub (and their amenities) and can be accessed by Damson Parkway which serves the area. There are existing bus services but connectivity will be further improved by the proposed Sprint service.</p> <p>The area is constrained by environmental factors including the presence of Flood Risk Zones 2 and 3, ecological designations, Grade 3 agricultural land and a historic landfill site which may require further assessment and mitigation.</p> <p>In order to make the provisions required by Jaguar Land Rover within the LPR plan period SMBC proposes to release land north-east of Jaguar Land Rover from the Green Belt for Jaguar Land Rover operational needs. The regional economic importance of Jaguar Land Rover as one of the largest employers in the West Midlands is given as an exceptional circumstance to justify its release from the Green Belt. Furthermore, the land performs only moderately in the Solihull Strategic Green Belt Assessment 2016.</p> <p>Availability of the area for development will be subject to removal from the Green Belt and discussions with the land owners of SHELAA site 95.</p> <p>The existing Jaguar Land Rover plant is a key component of The Hub and the undeveloped land to the north-east provides a significant opportunity to contribute to achieving The Hub's growth aspirations and the growth referenced in draft Policy P1. In addition, development which relates to Jaguar Land Rover's operational needs or enables Jaguar Land Rover component suppliers to be located close to the existing plant will improve connectivity and minimise the need to travel in accordance with the sustainable objectives established in draft Policy P1.</p>			Orange

TABLE C2 - C01. JAGUAR LAND ROVER MANUFACTURING CAMPUS

CO2. INTERNATIONAL GATEWAY

CRITERIA	ASSESSMENT	SHELAA ASSESSMENT	SUSTAINABILITY APPRAISAL ASSESSMENT	RAG RATING
Description	<p>Area CO2 is located in a fairly built-up area, north-east of Solihull and adjacent to the NEC. The area accommodates Birmingham Airport including the runway, terminal buildings, parking facilities, and a number of other associated and complementary facilities.</p> <p>The surrounding area is mixed in character, with residential development to the north and also partly to the east and west, industrial and leisure uses to the west and undeveloped fields to the south.</p>	The area was not assessed as part of the SHELAA.	The area was not assessed as part of the Sustainability Appraisal.	
Policy	Policy P1 of the draft LPR sets out SMBC's aspirations / requirement for proposals within the airport. SMBC supports development that is needed for operational purposes such as passenger and freight facilities, terminals, transport facilities and other development that supports operational needs.			
Environmental constraints	<ul style="list-style-type: none"> The area comprises other land primarily in non-agricultural use (agricultural land classification). The area contains three listed buildings (Gatepiers at Marston Hall, Grade II Listed Building, Marston Hall, Grade II* Listed Building and The Main Barn at Whar Hall Farm, Grade II Listed Building). The area is located within 1km of Bickenhill Meadows SSSI, and ancient woodlands (School Rough and Alcott Wood), minor areas of UK BAP Priority Habitat and Local Nature Reserves. More detailed surveys and analysis is required to discern the local ecological baseline and potential impacts due to development in this area. The area contains EA designated main river Low Brook and associated Flood Zone 2 and 3 which intersect the area. This watercourse flows into the WFD watercourse River Cole. Works in proximity to watercourse require engagement with the EA. The area is not within a Groundwater Source Protection Zone. There are extensive areas of surface water flood risk associated with the airport. No record of historical landfill or active landfill within the area. In proximity to the airport and flight path and therefore should be considered with regard to noise impacts upon sensitive receptors. Area is also bound by A45 to the south, therefore potential for traffic noise. 			

CRITERIA	ASSESSMENT	SHELAA ASSESSMENT	SUSTAINABILITY APPRAISAL ASSESSMENT	RAG RATING
Availability	The area is operated by Birmingham Airport. The airport has specific development ambitions and is currently undertaking a review of its masterplan to identify what development the airport will require over the next 25-30 years.			
Access and movement	<p>The airport is accessible from the A45 Coventry Road.</p> <p>There are a number of public transport routes into the airport. Birmingham International Station is located within the airport grounds. There are also frequent bus services to Birmingham International Station including services 966, X12, X1, 91, 97 and 75. These buses provide connections to and from Solihull, Birmingham and Coventry.</p> <p>Pedestrian access is available from surrounding PRow's and pedestrian facilities along some adjoining key roads.</p> <p>The proposed Sprint bus service (from Birmingham to the airport and Solihull) and the HS2 Interchange will further improve access to and from the airport.</p>			
Proximity to amenities	The airport has access to amenities within Marston Green and Solihull. It is centrally located within The Hub and is therefore within close proximity to existing amenities within The Hub.			
Conclusion	<p>C02 is very well located with good links to the wider area. Its proximity to the HS2 Interchange Station will make it the UK's only HS2 connected airport.</p> <p>The area is constrained by the presence of listed buildings, Flood Zones 2 and 3 and noise impacts which may require further assessment and mitigation.</p> <p>The airport is integral to the realisation of the vision and growth ambitions of The Hub. The airport is currently undertaking a review of its 2007 masterplan to identify what development the airport will require over the next 25-30 years to facilitate the expected growth in passenger numbers. Development related to operational and ancillary facilities aligns with the objectives of draft Policy P1, particularly in terms of contributing to growth and connectivity at a local, regional and national scale. The Framework will need to respond to the masterplan when published.</p>			

TABLE C3- C02. INTERNATIONAL GATEWAY

C03.PENDIGO QUARTER

CRITERIA	ASSESSMENT	SHELAA ASSESSMENT	SUSTAINABILITY APPRAISAL ASSESSMENT	RAG RATING
Description	<p>Area C03 sits at the heart of The Hub, immediately adjacent to Birmingham Airport and south of Birmingham Business Park. The area is predominantly brownfield comprised of mostly leisure uses. It is bounded by the M42 to the east, the A45 Coventry Road to the south, and Bickenhill Lane to the west.</p> <p>The NEC is one of the UK's biggest major exhibitions, events, tourism and leisure facilities.</p>	The area was not assessed as part of the SHELAA.	<p>A small site within C03 has been assessed as part of the sustainability appraisal referred to as site AECOM16.</p> <p>The site comprises brownfield land, bounded by Morris Way to the south, Bickenhill Lane to the east and woodland to the north and east. It is identified as an employment site.</p>	
Policy	<p>SMBC's aspirations for the NEC are set out under Policy P1 of the draft LPR. The extent of C03 aligns with the NEC development area defined in the policy map of the draft LPR. SMBC will support development within the area which will enhance visitor offer, diversify facilities and increase international competitiveness. The policy further indicates that SMBC will support proposals that contribute towards the wider place making objectives including residential development and other business uses.</p>			
Environmental constraints	<ul style="list-style-type: none"> The area is comprised of Grade 3 agricultural land (moderate / good), however this does not reflect the well-developed nature of the site. Development should work to negate loss of moderate to good agricultural land by providing open green spaces in order to protect local soil resource. The area is bordered by an area located within the Green Belt. The area does not contain any designated heritage assets however, within 1km of the area (to the south-west) lies Bickenhill Conservation Area, including Church of St Peter (Grade I Listed Building) and Grange Farmhouse (Grade II Listed Building). The area is within 1km of Bickenhill Meadows SSSI and Coleshill and Bannerly Pools SSSI therefore any development should consider further impacts on these receptors. A small number of UK BAP Priority Habitats have been identified within the site and a Local Nature Reserve / Local Wildlife Site (Bickenhill Plantation). Ponds have been identified within the site, which raises potential for great crested newts (European protected species). More detailed surveys and analysis is required to discern the local ecological baseline and potential impacts due to development in this area. The area is not within a Flood Zone or a Ground Water Protection Zone. However, surface water flooding risk is defined by the EA as low-medium due to wide areas of hardstanding. The area is located in proximity to historic landfill sites including: Bickenhill Lane and Windbridge Nurseries. Works within 250m of these sites or works within areas of historical landfill may require additional investigation, special measures during development and / or remediation. 		<ul style="list-style-type: none"> The site contains less than 20ha of agricultural land (classification 1-3b). Heritage assets are located more than 100m from the site. The site does not contain any Local Wildlife Sites and / or records of Local Biodiversity Action Plan (LBAP) priority habitats and species. The site is located within Flood Zone 1. The site is located outside of a minerals safeguard area. There are sources of noise located adjacent to the site which could affect amenity (A / B road, industrial park, agricultural processes). This is likely to result in a negative impact which will require mitigation. 	

CRITERIA	ASSESSMENT	SHELAA ASSESSMENT	SUSTAINABILITY APPRAISAL ASSESSMENT	RAG RATING
Environmental constraints	<ul style="list-style-type: none"> The area is in proximity to the airport and flight path, bound by A45 to the south and M42 to the east, and railway tracks to the west and therefore should be considered with regard to noise impacts upon sensitive receptors. 			
Availability	The NEC has specific ambitions and directions for growth. It aspires to maintain its competitive position in the market but also intends to widen its product offer to encompass a wide range of major leisure and entertainment uses. Therefore, the area is available to meet the specific business needs of the NEC.			
Access and movement	<p>The area benefits from a central location within The Hub and good access links.</p> <p>The surrounding road infrastructure (M42, A45 Coventry Road, and Bickenhill Lane) provide good connections and accessibility to the surrounding and wider area including Solihull and Marston Green.</p> <p>Bus services 75, 75A, 91, 97A, 966, X1 and X12 provide regular services to the NEC, to and from Birmingham, Solihull and Coventry. The proposed Sprint service to the airport will further improve accessibility and connections between the area and Birmingham and Solihull.</p>		The site is located within 400m of a frequent bus or train service (more than three buses or two train services per hour) and 1085m from a principal road network for access to employment sites.	
Proximity to amenities	The NEC is centrally located within The Hub and is within walking distance of Birmingham Airport and Birmingham International Station, and will also be within walking distance of the proposed HS2 Interchange Station. It is also relatively close to the amenities within Marston Green.		<p>The site is located:</p> <ul style="list-style-type: none"> 2227m from the nearest primary school (Marston Green Junior School) which is considered an unreasonable walking distance and therefore mitigation will be required. 3469m from the nearest secondary school (Grace Academy). 449m from greenspace of more than 2ha and 3377m from greenspace of more than 20ha. This does not meet the standard outlined in the sustainability appraisal and therefore mitigation will be required. 2523m from a healthcare facility which is considered an unreasonable walking distance and therefore mitigation will be required. within 1200m of two leisure and play facilities. 84m from employment land uses (by road). 846m from a local convenience store or supermarket. 	
Social context			The site is located within the 60% least deprived area.	
Conclusion	<p>C03 is well integrated within The Hub and its amenities. There is also good existing road access to Solihull and Marston Green, and public transport access to Birmingham, Coventry and Solihull.</p> <p>C03 is constrained by the presence of Grade 3 agricultural land, ecological assets within and in proximity to the area and potential surface water flooding and noise impacts. In addition, the area is located in proximity to historic landfills and several heritage assets. These constraints may require further assessment and mitigation.</p> <p>In accordance with draft Policy P1 development at the NEC will contribute to growth and place making across The Hub area, especially given its location between the airport and Arden Cross. It will also provide opportunities to further integrate The Hub with Solihull and Marston Green and contribute to the development of strong and healthy communities where residents can live, work and play with minimal travel.</p>			

TABLE C4 - C03.PENDIGO QUARTER

C04. BIRMINGHAM BUSINESS PARK

CRITERIA	ASSESSMENT	SHELAA ASSESSMENT	SUSTAINABILITY APPRAISAL ASSESSMENT	RAG RATING
Description	<p>Area C04 is an established out of town business park known as Birmingham Business Park. The business park is located north of the NEC and east of Marston Green and bounded by the A452 and the B4438. The business park is also located close to junction 6 of the M42 and is approximately 3 miles from Birmingham Airport.</p> <p>The surrounding area is mixed in character with residential development to the west, leisure facilities within the NEC to the south and undeveloped greenfield land to the east. The business park is predominantly brownfield consisting of offices and some industrial uses.</p>	The area was not assessed as part of the SHELAA.	The area was not assessed as part of the sustainability appraisal.	
Policy	<p>The business park is allocated in the draft LPR. Policy P1 of the draft LPR sets out the SMBC's aspirations for the area:</p> <p>The Council will support and encourage the development of Birmingham Business Park within its boundary defined in this Local Plan to support its role as a prime employment location and enhance its important role as a high quality, managed business park.</p> <p>The Council will also support a broad range of ancillary or complementary uses needed to enhance the attraction of the business park to occupiers.</p> <p>Land immediately adjacent to the business park on the west is allocated in the draft LPR as an employment site.</p>			
Environmental constraints	<ul style="list-style-type: none"> The area is comprised of Grade 3 agricultural land (classification-moderate / good) and is bordered by an area within the Green Belt. Development should work to negate loss of moderate to good agricultural land by providing open greenspaces in order to protect local soil resource. There are no designated heritage assets located within the area. The area is located adjacent to identified UK BAP priority habitats. The area is also within 1km of Coleshill and Bannerly Pools SSSI (200m north-east). Ponds have been identified within the area, which raises potential for great crested newts (European protected species). More detailed surveys and analysis is required to discern the local ecological baseline and potential impacts due to development in this area. 			

Environmental constraints	<ul style="list-style-type: none"> The area is not within a Flood Risk Zone or a Ground Water Protection Zone. The area is not located in proximity to recorded historic landfill sites. The area is located in proximity to the A452 and M42 and therefore should be considered with regard to noise impacts upon sensitive receptors. 				
Availability	The area is available for development that supports the business park's role as a prime employment location.				
Access and movement Access and movement	<p>The business park is located in close proximity to the M42. The surrounding roads provide vehicular access to other parts of The Hub and the wider area. Its location in close proximity to Birmingham Airport and Birmingham International Station increases accessibility to the wider area.</p> <p>The business park is known to experience traffic congestion at peak periods.</p> <p>There is pedestrian access to the business park from Coleshill Heath Road.</p> <p>The proposed HS2 Interchange station at Arden Cross will be located in close proximity to the business park which will further enhance access. Its proximity to the airport means that the area will also be close to the proposed Sprint running from Birmingham to the airport and Solihull, further improving accessibility to the area.</p>				
Proximity to amenities	The business park is located at the eastern edge of Marston Green, North Solihull and therefore benefits from proximity to a number of amenities within Marston Green.				
Conclusion	<p>The business park is a key employment site within in the Midlands and will play an important role in achieving the overall growth aspirations of The Hub. Development falling within Business Use Classes and which complements these land uses will align with the objectives of draft Policy P1 in terms of contribution to growth, place making and development of strong and vibrant communities where residents can live, work and play with minimal travel.</p> <p>The area is fairly well connected to North Solihull and Birmingham Airport and there are opportunities for the area to contribute towards further integration of The Hub with Solihull and the wider area (including Chelmsley Wood and Marston Green).</p> <p>The area is comprised of Grade 3 agricultural land, located in proximity to several ecological assets and roads which may generate noise impacts. These constraints may require further assessment and mitigation.</p>				

TABLE C5 – C04. BIRMINGHAM BUSINESS PARK

CO5. ARDEN CROSS DISTRICT

CRITERIA	ASSESSMENT	SHELAA ASSESSMENT	SUSTAINABILITY APPRAISAL ASSESSMENT	RAG RATING
Description	<p>Area C05 consists of 350 acres of undeveloped land, located west of Solihull on junction 6 of the M42, adjacent to the NEC and Birmingham Airport. The area is bounded by the A45 Coventry Road on the south, M42 on the west and the A452 to the east.</p> <p>The majority of the area consists of undeveloped greenfield land but part of the area is currently in use for mineral extraction. The surrounding uses consist of a mix of leisure, industrial and business uses within the NEC and Birmingham Business Park to the west and north, and predominantly undeveloped greenfield land to the east and south.</p>	<p>Site 132 assessed for housing as part of the SHELAA comprises the majority of area C05.</p> <p>The site is comprised of predominantly greenfield land which is segregated by Middle Bickenhill Lane where several detached dwellings are located. The site is partially located within the safeguarding zone for HS2.</p> <p>The site has good marketability and / or viability and is therefore likely to come forward within the first five years. The site was identified within the Issues and Options Paper and received good public support.</p>	<p>Site AECOM95 assessed as part of the sustainability appraisal broadly aligns with area C05. The site is identified for mixed uses.</p> <p>The site performs well against availability and achievability criteria but faces some suitability constraints.</p>	
Policy	<p>The area is allocated in the draft LPR for mixed use development under proposed policy SLP Allocated Mixed Use Sites. The draft LPR states: 'The Council will support proposals that include passenger facilities, offices, and residential (together with associated ancillary uses (including retail developments of an appropriate scale)).</p> <p>The proposed HS2 route goes through the area and the HS2 Interchange Station will be located within the area.</p>			
	<p>The area is wholly within the Green Belt. The 2016 SMBC Green Belt review indicates that the area performs averagely in terms of its overall contribution to the Green Belt purposes. The draft LPR supports the release of the area from the Green Belt.</p>			
Environmental constraints	<ul style="list-style-type: none"> The area is comprised of Grade 3 agricultural land (classification-moderate / good). Development should work to negate loss of moderate to good agricultural land by providing open green spaces in order to protect local soil resource. There is a Grade II* Listed Building - Park Farmhouse (E:420647 N:284014) located within the area and Stonebridge Railway monument (non-scheduled) intersects the south-east of the area. Within 1km of the area lies Packington Park (Registered Park and Garden), the Rectory (Grade II Listed Building), Church of St Bartholomew (Grade II Listed Building), Pasture Farmhouse (Grade II Listed Building), Diddington Hall (Grade II* Listed Building) and Diddington Farmhouse (Grade II* Listed Building). 	<ul style="list-style-type: none"> The site comprises of Grade 5 agricultural land. The site does not include, nor is it adjacent to a nationally or locally Listed Building. The site is not within or adjacent to a Local Wildlife Site. Approximately 10-25% of the site lies within Flood Zone 3. The site is partially constrained by contaminated land / a landfill site (less than 50%). Treatment related to ground conditions is expected to be required for the majority of the site. The site does not lie within a high pressure gas pipeline zone. Approximately 11% of the site is impacted by an overhead line buffer. The site has bad neighbours with potential for mitigation. 	<ul style="list-style-type: none"> The site contains more than 20ha of agricultural land (classification 1-3b). Loss of more than 20ha triggers a requirement to consult with DEFRA / Natural England. It is considered that significant negative effects are likely and mitigation will be essential. The site contains a heritage asset which is likely to be lost as part of development. The site overlaps or contains a Local Wildlife Site and / or records of priority species and habitats. The site is not of the scale required to avoid sensitive habitats or to deliver strategic improvements to ecological networks and therefore development is likely to lead to a loss. The landscape has medium sensitivity to change. Some of the site is located within Flood Zone 2 or 3 (up to 50%) and therefore it should be possible to avoid and / or mitigate impacts. 	

CRITERIA	ASSESSMENT	SHELAA ASSESSMENT	SUSTAINABILITY APPRAISAL ASSESSMENT	RAG RATING
Environmental constraints	<ul style="list-style-type: none"> The area is located adjacent to UK BAP Priority Habitats, and contains a Local Wildlife Site (Denbigh Spinney). More detailed surveys and analysis is required to discern the local ecological baseline and potential impacts due to development in this area. The area has an EA designated main river Hollywell Brook and associated Flood Zones 2 and 3 intersect the area. Hollywell Brook watercourse flows into the River Blythe SSSI. Works in its vicinity should be stringently managed. The area is not within a Ground Water Protection Zone. The area contains potential contamination from historical landfill, a quarry and trailer park in the south of area. A historic landfill is located within the site: Middle Bickenhill Lane. Other historical landfill sites include to the north, Brackenlands Farm, and to the south, Jackson's Brickworks. Authorised Landfill Packington Landfill Site (receiving inert, non-hazardous and hazardous waste) is located to the north-east of the site across the A452 should also be considered during works. Works within 250m of these sites or works within areas of historical landfill may require additional investigation, special measures during development and / or remediation. The area is bound by the M42 to the west, A452 / 446 to the north east and A45 to the south, dominated by road traffic noise. This should be considered with regard to noise impacts upon sensitive receptors. 		<ul style="list-style-type: none"> The site is located within a minerals safeguard area. Development within areas safeguarded for minerals could lead to sterilisation of minerals, further assessment and mitigation would be required. There are sources of noise adjacent to the site which could affect amenity (A / B road, industrial park, agricultural processes) and will require mitigation. 	
Availability	<p>The area is available for mixed use development and is being delivered by a consortium of four land owners (Birmingham City Council, Packington Estate, Coleshill Estate and SMBC). Masterplanning is already underway for over 246,000 sqm of commercial space suitable for national and international occupiers, 2,000 new homes and complementary retail and leisure amenities. It is anticipated that an outline planning application will be submitted in 2018.</p>	<p>The site was identified through the submission process and therefore it is assumed the owner is willing to release the site for development.</p>		

CRITERIA	ASSESSMENT	SHELAA ASSESSMENT	SUSTAINABILITY APPRAISAL ASSESSMENT	RAG RATING
Access and movement	<p>The area benefits from its prominent location at the heart of key transport infrastructure. The surrounding key road networks provide both vehicular access and some pedestrian connections to The Hub and to the wider area (Solihull and Birmingham). The area is also within easy access of the M42, M40 and M6 motorways.</p> <p>The area is also located in very close proximity to Birmingham Airport and Birmingham International Station. At the heart of the area is the proposed HS2 Interchange Station which will be the first stop outside London on the new high speed rail line. This will further improve accessibility to the area at a local and regional level.</p> <p>In addition, the area's proximity to the airport means that it will be in close proximity to the proposed Sprint running from Birmingham to the airport and Solihull, further improving accessibility to the area.</p>	Existing road access is adequate.	The site is located within 400m of an infrequent bus or train service (less than three bus services or two train services per hour) and 2m from a principal road network for access to employment sites.	
Proximity to amenities	The area is centrally located within The Hub. It is in close proximity to amenities within the NEC, Birmingham Business Park, Birmingham Airport and Birmingham International Station.		<p>The site is located:</p> <ul style="list-style-type: none"> • 2214m from the nearest primary school (Bishop Wilson Primary School). This is considered an unreasonable walking distance and will therefore require mitigation. • 4010m from the nearest secondary school (John Henry Newman Catholic College). • 1547m from more than 2ha of greenspace and 3723m from more than 20ha of greenspace. This does not meet the standard outlined in the sustainability appraisal and mitigation will therefore be required. • 2427m from a healthcare facility. • 106m from employment land uses (by road). • 1927m from local convenience stores or supermarkets. This is considered an unreasonable walking distance and therefore mitigation will be required. <p>There are no leisure or play facilities within 1200m of the site. This does not meet the standard outlined in the sustainability appraisal and therefore mitigation will be required.</p>	
Social context			The site is located within the 60% least deprived area.	
Conclusion	<p>The proposals for the area require land to be taken from the Green Belt which is supported by SMBC in its draft LPR. SMBC advocate the significance of Arden Cross to the local and regional economy and explain that its role in addressing the needs of key economic assets represents the exceptional circumstances required to justify release from the Green Belt. The area will be bounded by main roads that provide strong defensible Green Belt boundaries.</p> <p>The area is well served by transport infrastructure which will be further enhanced by the HS2 Interchange Station and Sprint service.</p> <p>The area is constrained by the presence of heritage and ecological assets and landfill sites within and in proximity to the area, Grade 3 agricultural land, Flood Zones 2 and 3 and potential noise impacts. The area is also constrained by its distance to amenities including primary schools, greenspace, local convenience stores / supermarkets and leisure and play facilities. These constraints may require further assessment and mitigation.</p> <p>The area is located at the heart of The Hub and will play a vital role in contributing to the growth and place making aspirations of draft Policy P1. The draft LPR emphasises the importance of the area in maximising the economic growth and job creation potential of The Hub which is of national significance. The area also provides the opportunity to enhance connectivity, create an integrated approach to movement throughout The Hub and the wider area and develop strong and vibrant communities where residents are able to live, work and play with minimal travel.</p>			

TABLE C6 – C05. ARDEN CROSS DISTRICT

P01. INTERNATIONAL QUARTER

CRITERIA	ASSESSMENT	SHELAA ASSESSMENT	SUSTAINABILITY APPRAISAL ASSESSMENT	RAG RATING
Description	<p>Area P01 is comprised of five brownfield sites (P01.1- P01.5) bounded by Bickenhill Lane to the north and west, A45 Coventry Road to the south and the West Coast Main Line (WCML) railway to the east. The area is intersected by Bickenhill Lane, Airport Way, Station Link Road, Jetstream Road and other internal roads.</p> <p>P01.1, P01.2 and P01.3 are currently comprised of car parking areas. P01.4 and P01.5 are comprised of employment and leisure units (including Trinity Business Park and Arden Hotel and Leisure Club) and accompanying car parking.</p> <p>The surrounding area is characterised by Birmingham International Station adjacent to the east, the NEC, Genting Arena, Resorts World and associated hotels further east, beyond the WCML and Birmingham Airport to the West. Beyond the A45 to the south lies undeveloped greenfield land.</p>	The area was not assessed as part of the SHELAA.	Site AECOM 15 aligns with site P01.4 and was assessed within the sustainability appraisal. The site was identified for employment uses.	
Policy	<p>The area is not located within the Green Belt.</p> <p>P01.3 is allocated for Birmingham Airport uses in the draft LPR. P01.4 is allocated for employment uses and is located in proximity to land allocated for the NEC to the east (on the eastern side of the WCML).</p>			
Environmental constraints	<ul style="list-style-type: none"> The area is comprised of Grade 3 agricultural land (classification - moderate / good). Development should work to negate loss of moderate to good agricultural land by providing open green spaces in order to protect local soil resource. There are no designated ecological sites or heritage assets within or adjacent to the area. The area is not located within EA identified Flood Risk Zones 2 & 3 or within a Ground Water Protection Zone. Historical landfill site Windbridge Nurseries is located within the area. Works within 250m of these sites or works within areas of historical landfill may require additional investigation, special measures during development and / or remediation. The area is in proximity to Birmingham Airport, its flight paths and the WCML and therefore development layout should consider noise impacts upon sensitive receptors. 		<ul style="list-style-type: none"> The site contains less than 20ha of agricultural land (classification 1-3b). Heritage assets are located more than 100m from the site. The site does not contain any Local Wildlife Sites and / or records of LBAP priority habitats and species. The site is located entirely within Flood Zone 1. There are sources of noise adjacent to the site that could affect amenity (A / B road, industrial park, agricultural processes). 	
Availability	The area was not put forward in the Call for Sites however given the allocation of P01.3 for airport uses and P01.4 for employment uses it is expected that these sites will be unavailable for development which deviates from these uses. The availability of P01.1, P01.2 and P01.5 for development is unknown at this stage.			

CRITERIA	ASSESSMENT	SHELAA ASSESSMENT	SUSTAINABILITY APPRAISAL ASSESSMENT	RAG RATING
Access and movement	<p>The area is situated adjacent to Bickenhill Lane, Airport Way and A45 Coventry Road providing access to the remainder of The Hub, the M42 and surrounding areas including Bickenhill to the south, Elmdon to the south-west and Chelmsley Wood and Marston Green to the north-east and north-west respectively.</p> <p>The area is also located adjacent to Birmingham International Station and within approximately 1.5km of Birmingham Airport and the proposed HS2 Interchange Station.</p> <p>Birmingham International Station and the HS2 Interchange Station can be reached by bus within 10 minutes and by foot within 20 minutes. The area is served by several regular bus services (X1, X12, 75, 91, 97 and 966) providing access to The Hub, Birmingham city centre, Chelmsley Wood, Coventry, Erdington and Sutton Coldfield. In addition, the area will be in close proximity to the proposed Sprint service running from Birmingham and Solihull, further improving accessibility to the area.</p> <p>There are established pedestrian links within the area, providing access to the remainder of The Hub and the wider area including Marston Green and Chelmsley Wood. There are also a number of PRoWs in proximity to the area including along Bickenhill Lane and along the WCML towards Marston Green. There are also PRoWs located to the south of the A45 providing access towards Bickenhill, Elmdon, Hampton in Arden and Catherine-de-Barnes. However, this PRoW network is disjointed in parts.</p>		<p>The site is located within 400m of a frequent bus or train service (more than three bus services or two train services per hour) and 8m away from a principal road network for access to employment sites.</p>	Green
Proximity to amenities	<p>The area is located close to amenities within Birmingham International Station, the NEC, Resorts World and the airport, including shops, restaurants, leisure facilities and hotels. The village of Marston Green and neighbourhood of Chelmsley Wood are located within 4.5km north west and north east of the area respectively, providing access to a number of other amenities including schools, Solihull College, churches, Brooklands Hospital, Marston Green Library and Chelmsley Wood Shopping Centre.</p>		<p>The site is located:</p> <ul style="list-style-type: none"> • 3113m from the nearest primary school (George Fentham Endowed School). This is an unreasonable walking distance and therefore mitigation will be required. • 4702m from the nearest secondary school (Grace Academy). • 1928m from greenspace of more than 2ha and 2570m from greenspace of more than 20ha. This does not meet standards outlined in the sustainability appraisal and therefore mitigation will be required. • 3301m from a healthcare facility. • within 1200m of two leisure and play facilities. • 14m from employment land uses. • 1163m from a local convenience store or supermarket. 	
Social context			<p>The site is located within the 60% least deprived area.</p>	
Conclusion	<p>Area P01 is located at the heart of The Hub, surrounded by existing built form and has strong access links to the remainder of The Hub and the wider area, given vehicular access to the A45 Coventry Road and M42. There are also good public transport and pedestrian links to the remainder of The Hub and surrounding area. The area also benefits from its location within The Hub and proximity to Marston Green and Chelmsley Wood in terms of access to a variety of amenities. In addition, the area is not constrained by Green Belt designations or any statutory ecological or heritage assets.</p> <p>The area is constrained by the presence of an historic landfill site and Grade 3 agricultural land and potential noise impacts. These constraints may require further assessment and mitigation.</p> <p>Overall it is considered that there is potential for P01 to contribute towards the growth and place making aspirations of draft Policy P1, subject to collaboration with relevant land owners to determine whether sites within the area would be available for development and any necessary mitigation of environmental impacts.</p>			Orange

TABLE C7 - P01. INTERNATIONAL QUARTER

C2 CONSTRAINTS ASSESSMENT – BASELINE INFORMATION

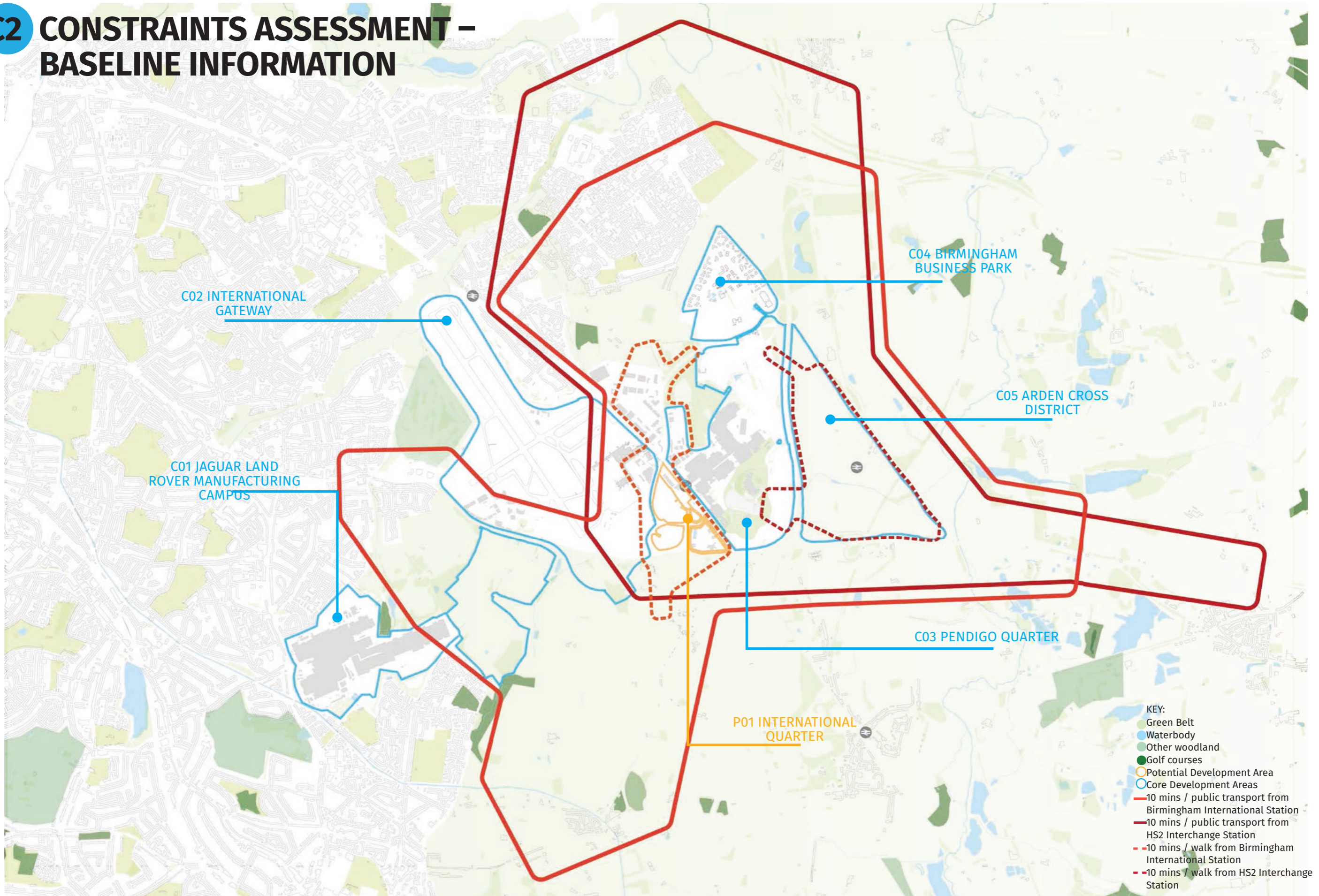


FIGURE C1 - POTENTIAL SEARCH AREA

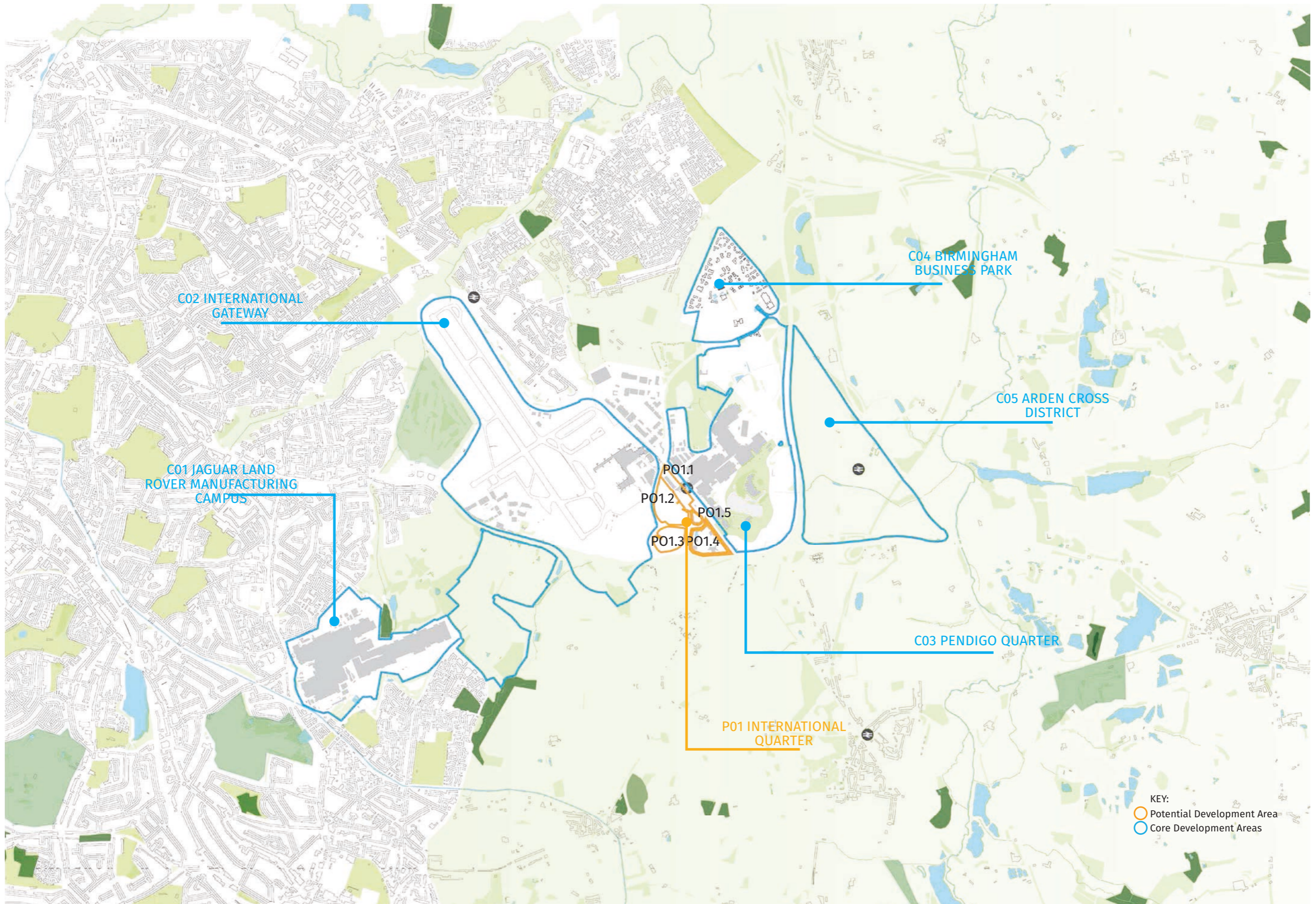


FIGURE C2 - CORE AND POTENTIAL DEVELOPMENT AREAS

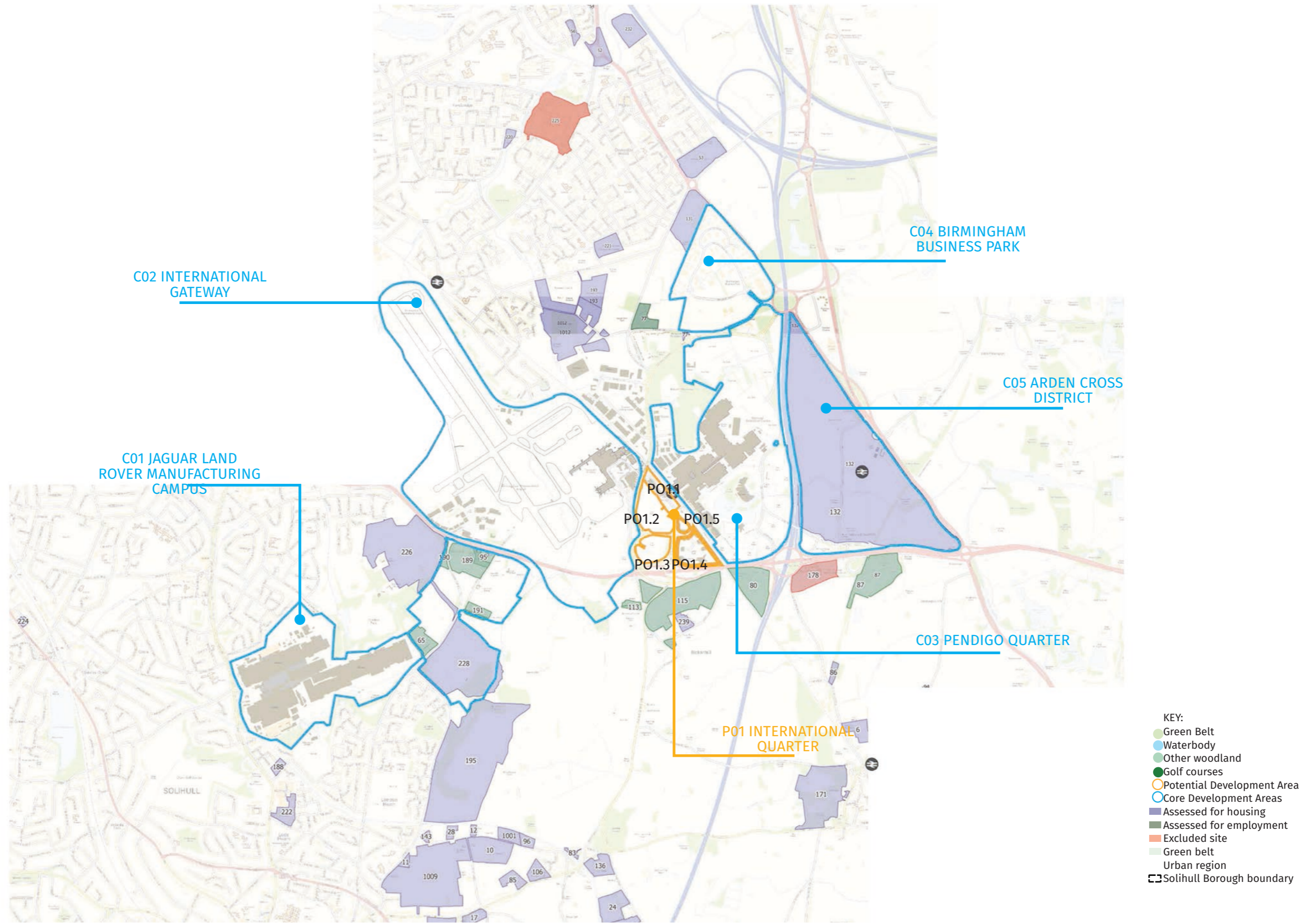


FIGURE C3 – SHELA RESULTS

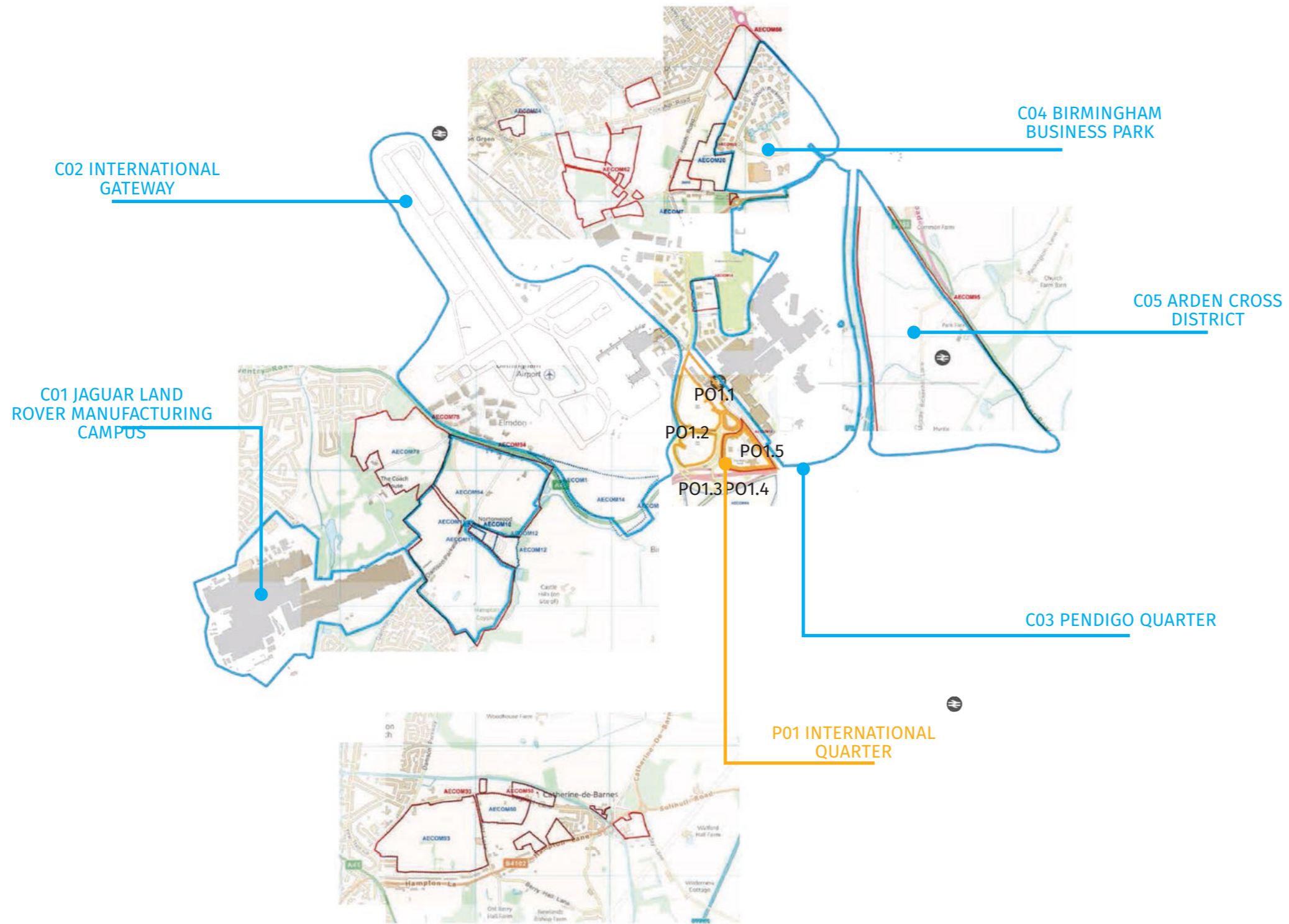


FIGURE C4 – SUSTAINABILITY APPRAISAL

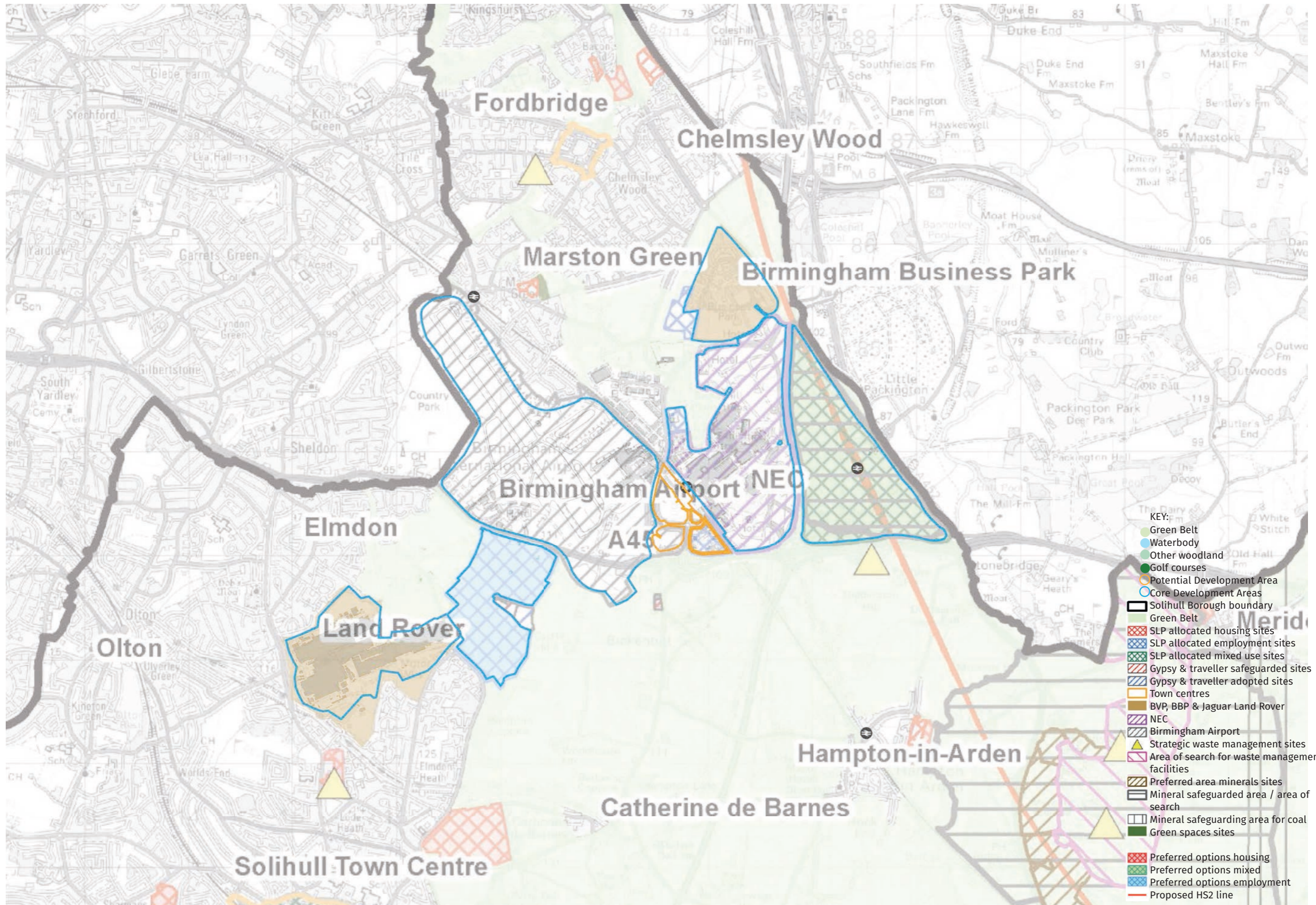


FIGURE C5 – DRAFT LOCAL PLAN REVIEW ALLOCATIONS

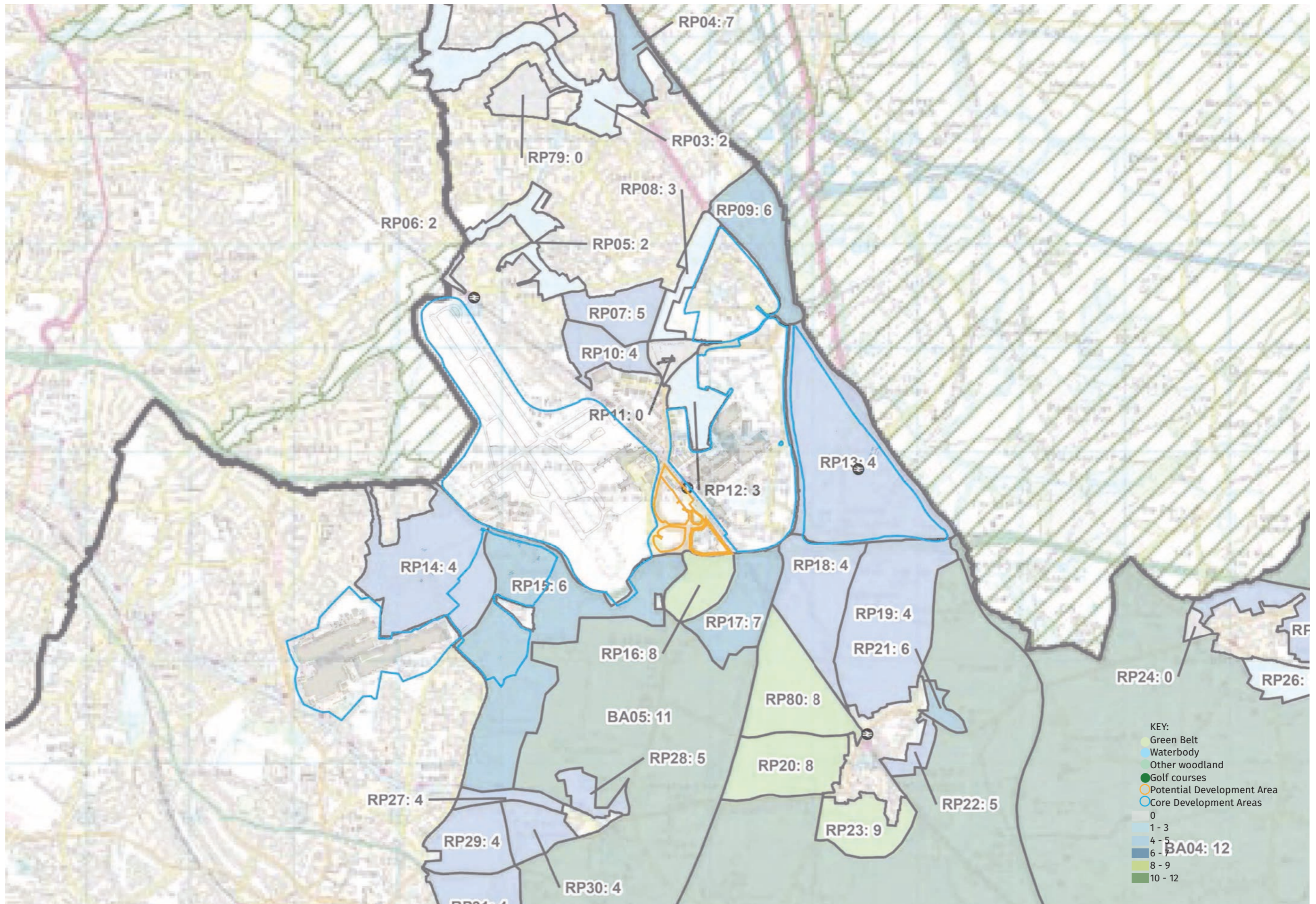


FIGURE C6- GREEN BELT ASSESSMENT COMBINED SCORE

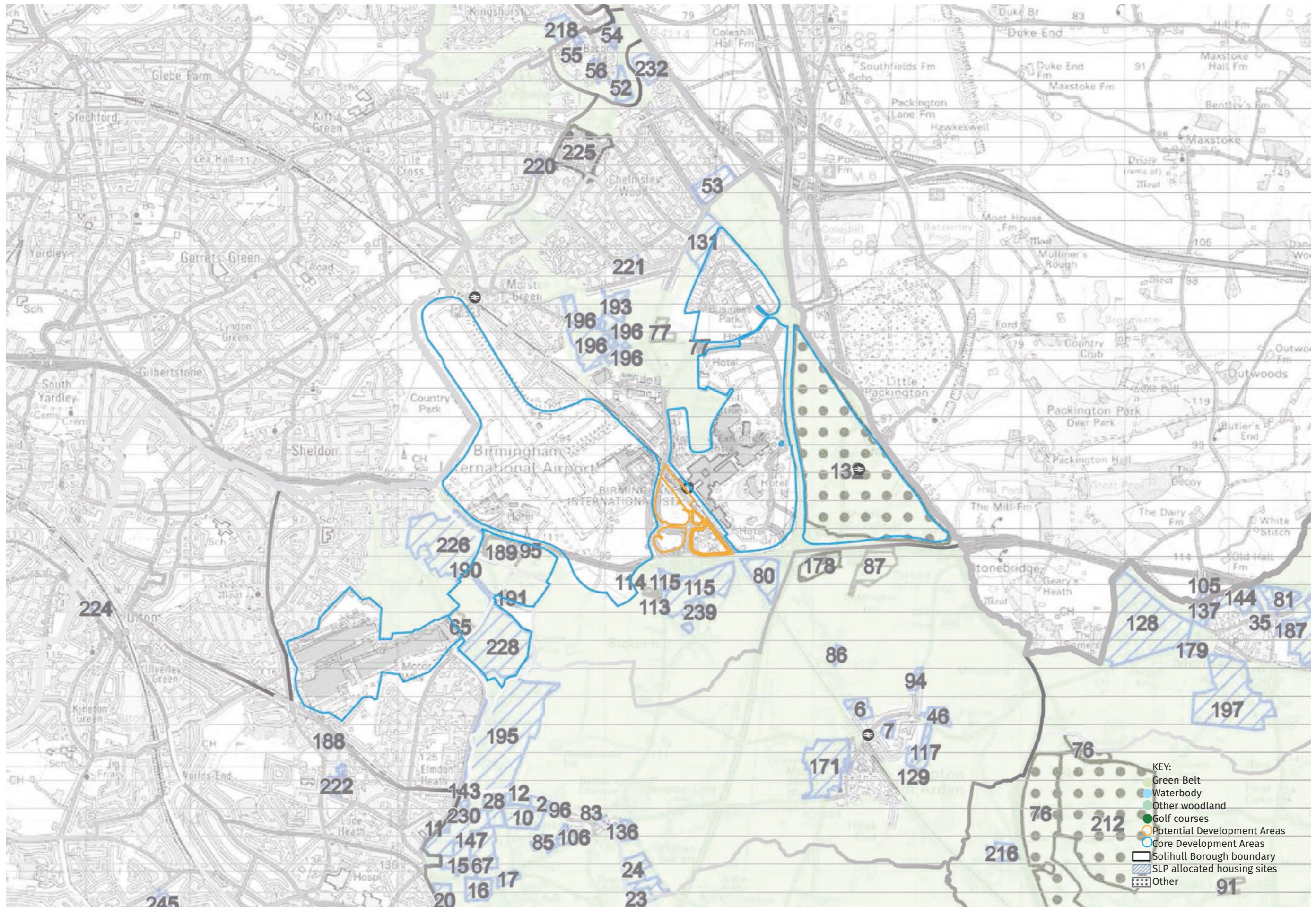
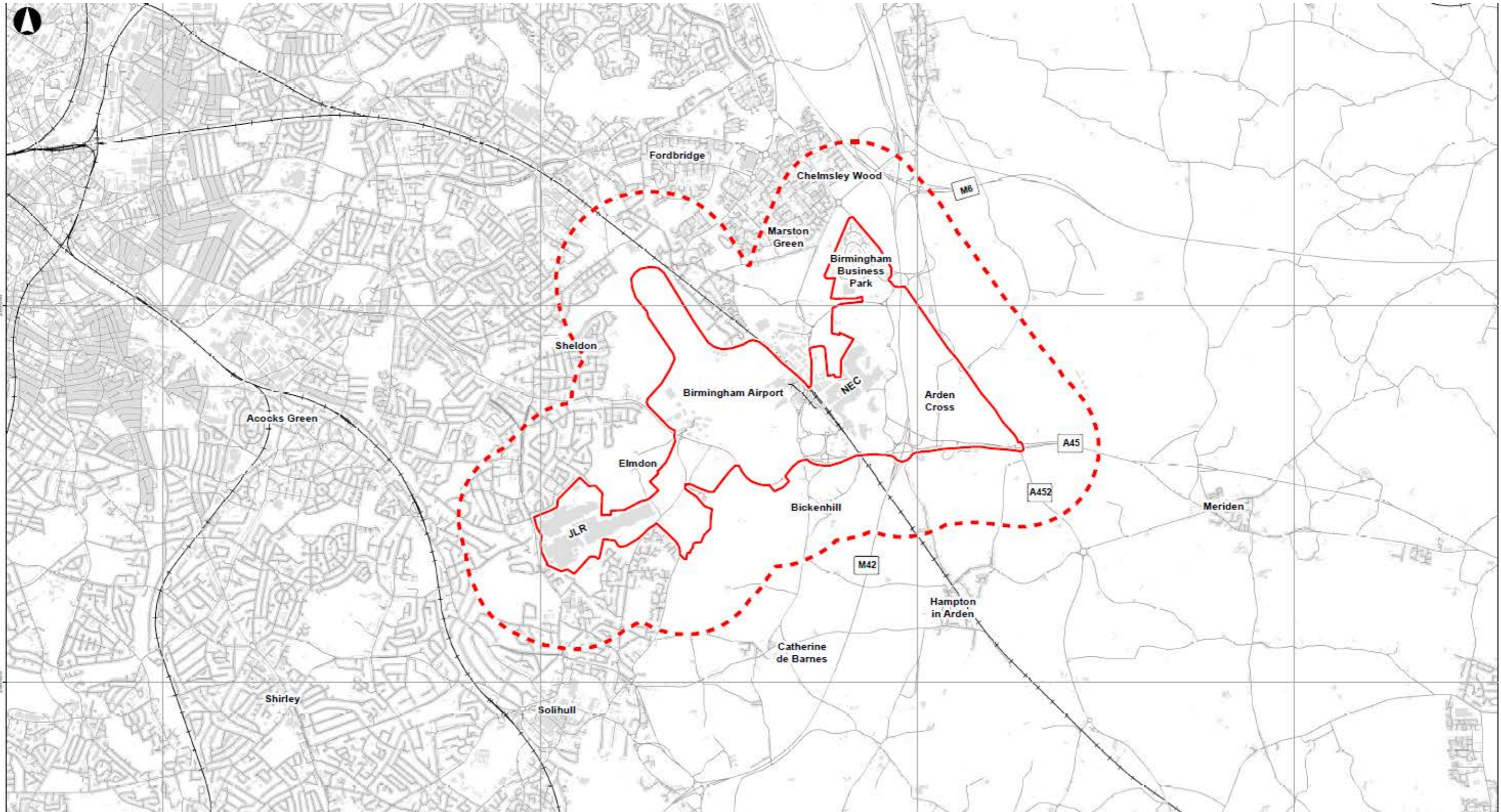


FIGURE C7 – CALL FOR SITES RESULTS



Legend:

Area of Interest

- Environmental constraints search area
- Environmental constraints search area buffer (1km)

Topography

- Railway
- Road
- Building

P02	11-07-17	FK	CP	DE
Issue	Date	By	Chkd	Appd

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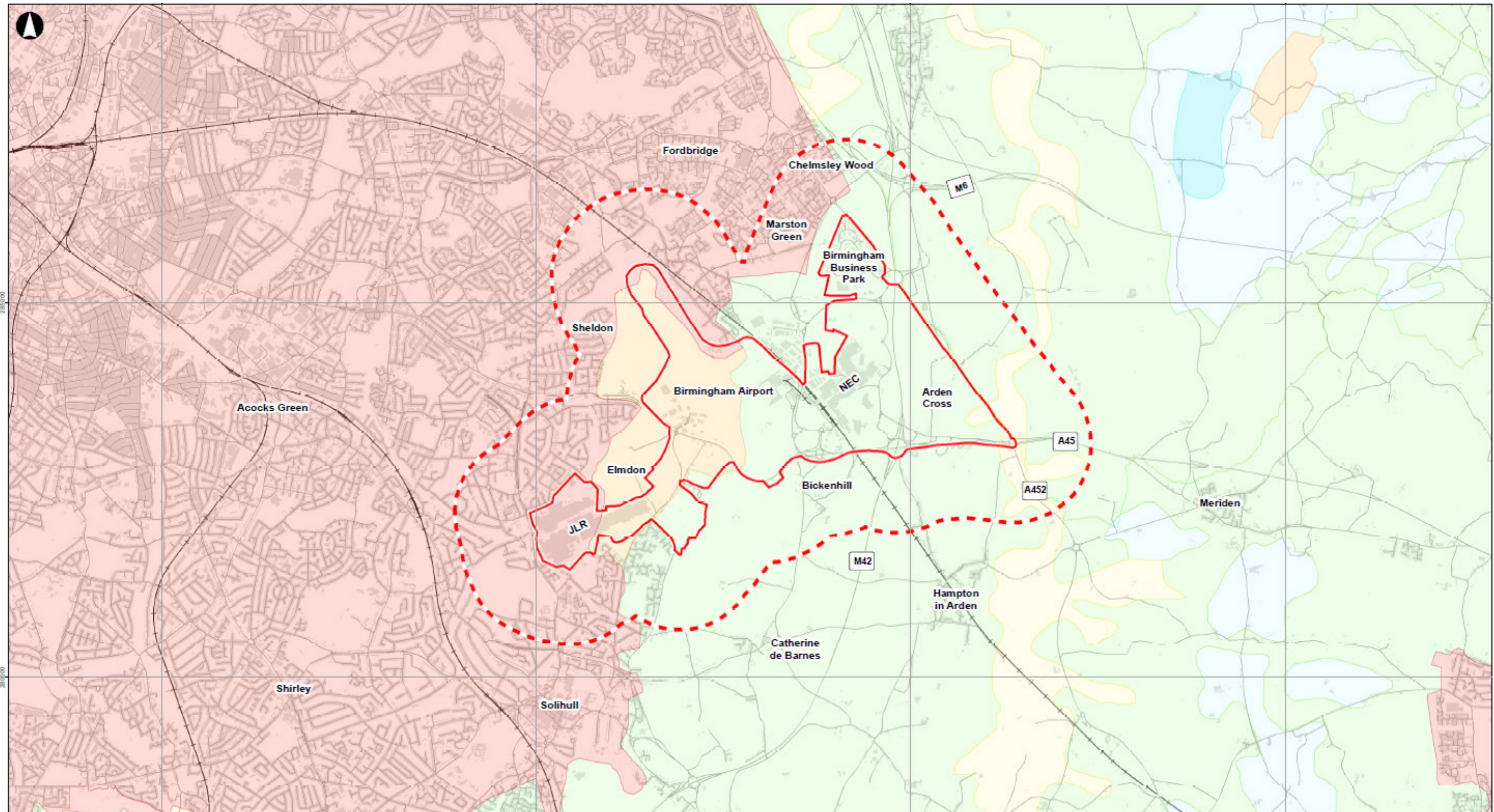
Job Title
Environmental Constraints Search Area

Environmental Constraints
 Search Area
 General Location

Scale at A3
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Job No 235380-00	Drawing Status Issue 2
Drawing No 235380-ARP-ECA-XX-001-P03	Issue P03

FIGURE C8 – ENVIRONMENTAL CONSTRAINTS FRAMEWORK AREA



Legend:

Area of Interest

- Environmental constraints search area
- Environmental constraints search area buffer (1km)

Topography

- Railway
- Road
- Building

Agricultural Land Classification

- Grade 1
- Grade 2
- Grade 3
- Grade 4
- Non Agricultural
- Urban

P03	11-07-17	FK	CP	DE
Issue	Date	By	Chkd	Appd

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Job Title
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Environmental Constraints

Search Area

Agricultural Land Classification

Scale at A3

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Job No

235380-00

Drawing Status

Issue 2

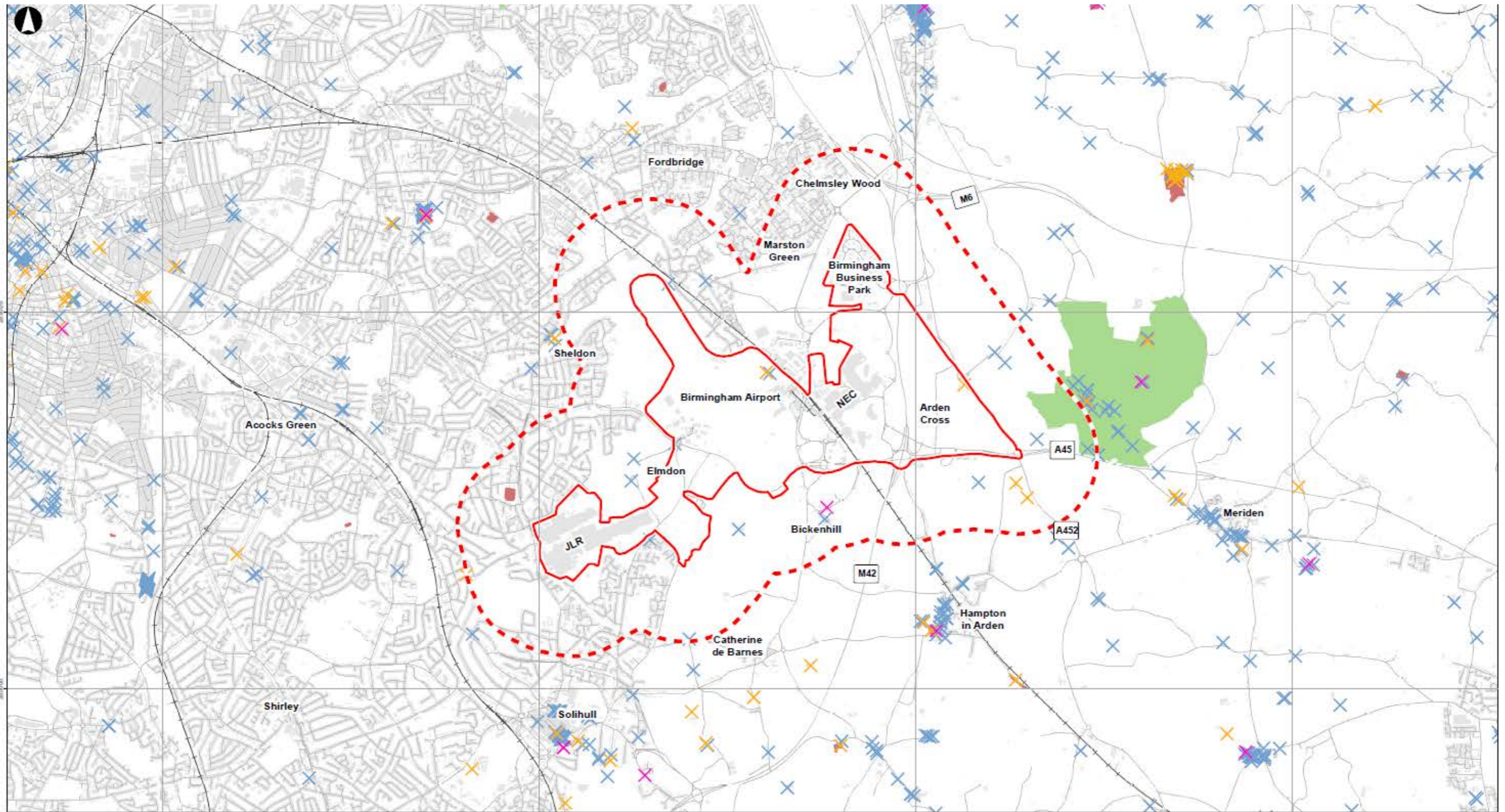
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235380-ARP-ECA-XX-002-P03

Issue

P03

FIGURE C9 – AGRICULTURAL LAND CLASSIFICATION CONSTRAINTS



Legend:

Area of Interest

- Environmental constraints search area
- Environmental constraints search area buffer (1km)

Topography

- Railway
- Road
- Building

Heritage Constraints

- X Listed building - Grade I
- X Listed building - Grade II
- X Listed building - Grade II*
- Park and Garden
- Scheduled monument

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Job Title
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Environmental Constraints

Search Area

Heritage Constraints

Scale at A3

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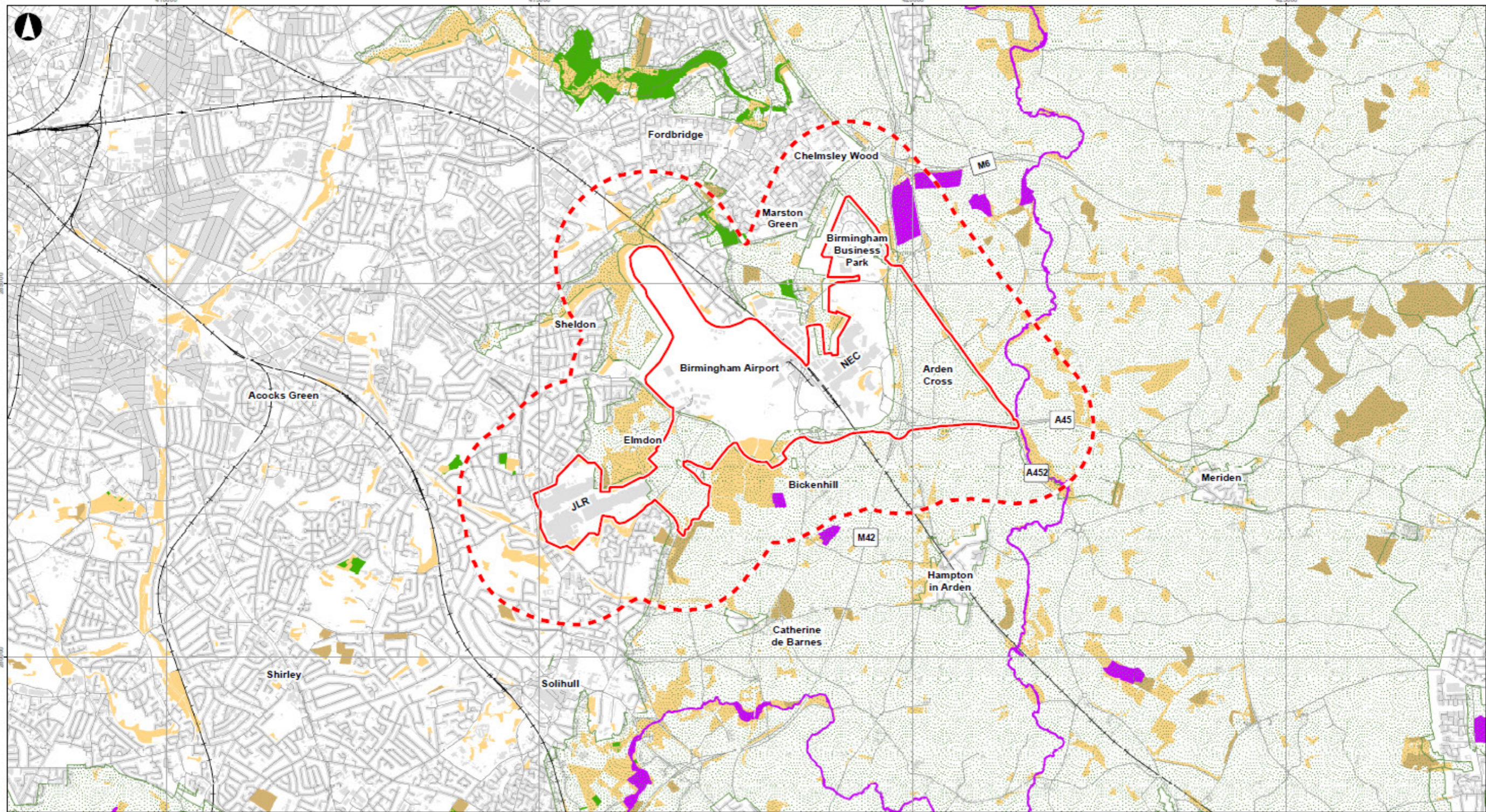
Job No
235380-00

Drawing Status
Issue 2

Drawing No
235380-ARP-ECA-XX-005-P03

Issue
P03

FIGURE C10 - HERITAGE CONSTRAINTS



Legend:

Area of Interest

- Environmental constraints search area
- Environmental constraints search area buffer (1 km)

Topography

- Railway
- Road
- Building

Environmental Constraints

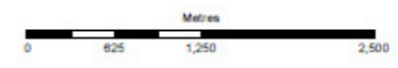
- Ancient woodlands
- Priority habitats
- Site of Special Scientific Interest (SSSI)
- Local Nature Reserves
- Green belt boundaries

P03	11-07-17	FK	CP	DE
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Job Title
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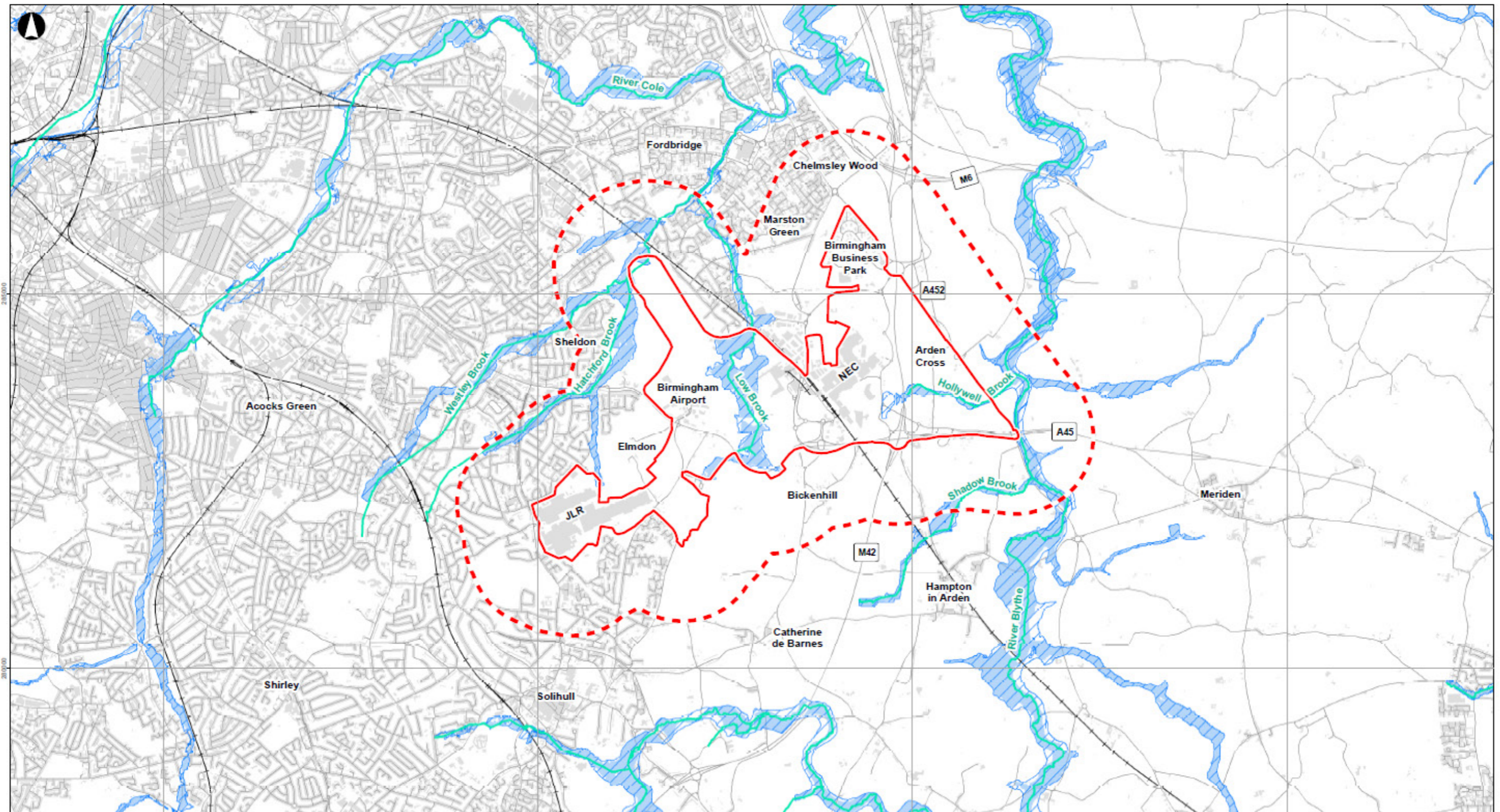
Environmental Constraints
 Search Area
 Biodiversity

Scale at A3

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Job No 235380-00	Drawing Status Issue 2
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Drawing No 235380-ARP-ECA-XX-004-P03	Issue P03
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Legend:

Area of Interest

- Environmental constraints search area
- Environmental constraints search area buffer (1km)

Topography

- Railway
- Road
- Building

Hydrology

- Main river
- Flood Zone 2
- Flood Zoon 3

P03	15-07-17	FK	CP	DE
Issue	Date	By	Chkd	Appd

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Job Title
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Environmental Constraints

Search Area
Hydrology

Scale at A3

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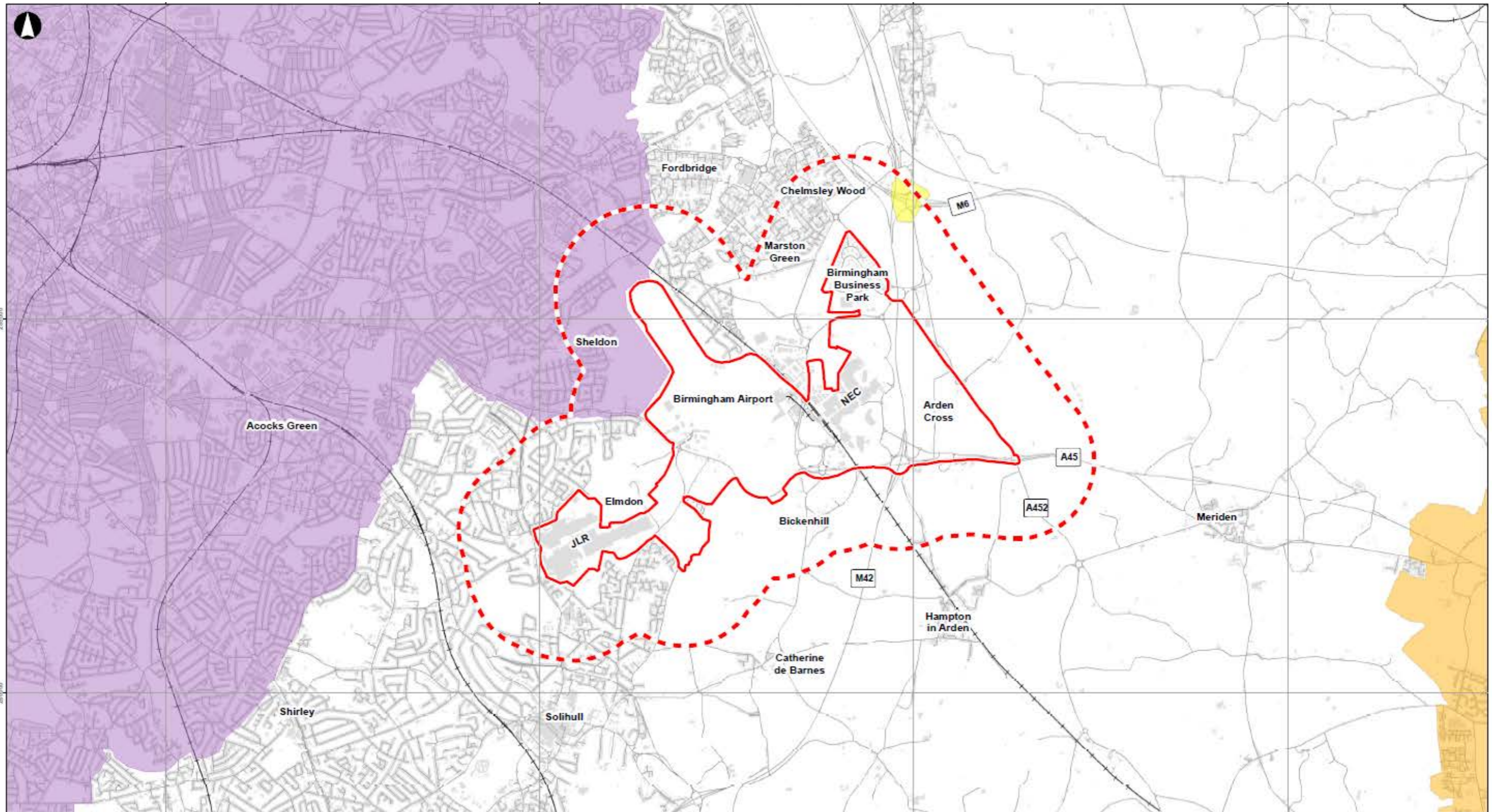
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235380-00

Drawing Status
Issue 2

Drawing No
235380-ARP-ECA-XX-007-P03

Issue
P03

FIGURE C12 - HYDROLOGY CONSTRAINTS



Legend:

Area of Interest

- Environmental constraints search area
- Environmental constraints search area buffer (1km)

Topography

- Railway
- Road
- Building

Air Quality Management Areas (AQMA)

- Birmingham
- Coleshill
- Coventry City-Wide

P03	15-07-17	FK	CP	DE
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Job Title
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Environmental Constraints

Search Area

Air Quality Management Areas

Scale at A3

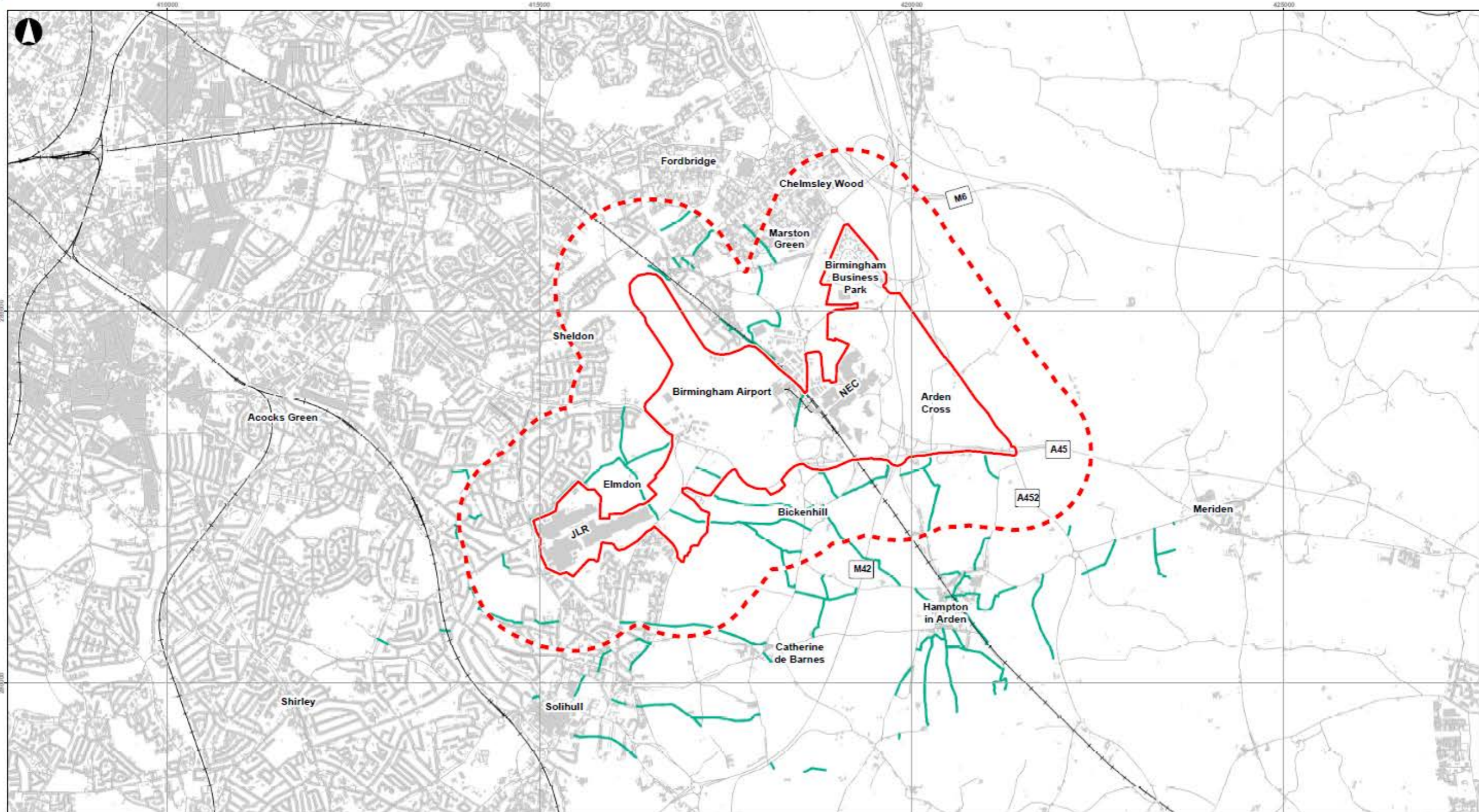
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Job No
235380-00

Drawing Status
Issue 2

Drawing No
235380-ARP-ECA-XX-003-P03

Issue
P03



Legend:

Area of Interest
 Environmental constraints search area
 Environmental constraints search area buffer (1km)

Topography
 Railway
 Road
 Building

Public Rights of Way (PROW)
 PROW path

P03	11-07-17	Pk	CP	DE
Issue	Date	By	Chkd	Appd

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Environmental Management

Job Title
Environmental Constraints Search Area

Environmental Constraints

Search Area

Public Right of Way

Scale at A3
1:50,000

Job No 235380-00	Drawing Status Issue 2
Drawing No 235380-ARP-ECA-XX-006-P03	

Issue
P03

MXD Location: I:\hubs\006\14\01\Projects\01\Drawings\235380-00_0001_The Hub - Framework Plan\04 Project\0602 GIS\02173711 UNC Environmental Constraints Check V3\Map\Append\Environmental Constraints TR.mxd

FIGURE C14 – PUBLIC RIGHTS OF WAY

C3 CONSTRAINTS ASSESSMENT- REFERENCE LIST

The following data sources were used to inform the constraints assessment:

Birmingham Airport Limited, 2013, Revised Noise Action Plan 2013-2018. Available at: https://www.birminghamairport.co.uk/media/1273/revised-noise-action-plan-2013_2018.pdf

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This market commentary has been prepared by Cushman & Wakefield (C&W) with reference to market comparable information, planning policy constraints and professional knowledge and judgement. The analysis was undertaken between February and April 2017.

RETAIL AND LEISURE

OVERVIEW OF RETAIL CAPACITY

For the purpose of assessing the potential retail capacity relating to the proposed developments in The Hub, we have considered the level of retail capacity identified in the adopted development plans for Solihull Borough and Birmingham respectively.

We have also looked at retail capacity issues in other nearby centres, namely Tamworth town centre and Coventry city centre. We note that North Warwickshire Borough lies to the east of The Hub and within its likely 'sphere of influence' in retail terms. However, (presumably) due to the small scale nature of the Borough's centres, no substantial retail capacity is identified in the Local Plan.

SOLIHULL LOCAL PLAN (DECEMBER 2013)

Policy P2 sets out forecast retail capacity in Solihull Town Centre as follows:

- About 57,000 sqm gross comparison goods floor space by 2026⁴.
- About 2,800 sqm gross convenience goods floor space by 2026.
- Limited additional retail capacity in other centres / locations (about 5,000 sqm gross comparison goods floor space by 2021).

The above figures take into account existing commitments at the time of the Solihull Retail Study Update 2011.

Since 2011, additional commitments have come forward in Solihull town centre. These are:

- Extension of Touchwood shopping centre (by Lend Lease). This scheme has full planning permission and includes about 7,000 sqm gross net additional A1 floor space (we assume about 5,000 sqm gross comparison goods floor space); and

- Redevelopment of Mell Square shopping centre (by IM Properties). This scheme is under construction but includes little or no net additional A1 floor space.

The consented scheme at Touchwood will account for a limited amount of forecast retail capacity in Solihull town centre. In simplistic terms, however, there will remain a requirement for over 50,000 sqm gross comparison goods floor space by 2026 in addition to the circa 5,000 sqm gross in other centres / locations across Solihull Borough.

BIRMINGHAM DEVELOPMENT PLAN (JANUARY 2017)

Policy TP21 sets out forecast retail capacity in Birmingham as shown in Table D1 (comparison goods floor space only).

Table D1 - Forecast retail capacity in Birmingham (over the period to 2026)

	CAPACITY FOR COMPARISON GOODS FLOOR SPACE (SQM GROSS) 2012-2026*
Birmingham city centre	160,000
Sutton Coldfield	30,000
District Growth Points (Perry Barr, Meadway, Selly Oak)	60,000
TOTAL	250,000

*Figures are inclusive of existing commitments (amounting to 142,000 sqm gross according to the Development Plan; with about 77,000 sqm gross focused in Birmingham city centre, Sutton Coldfield and the District Growth Points).

Even (crudely) deducting existing commitments from the total retail capacity identified in Table D1, there is residual capacity for over 100,000 sqm gross comparison goods floor space. That said, we have identified some planned schemes in Birmingham city centre and Sutton Coldfield town centre respectively which, if brought forward, would have implications for forecast retail capacity:

- Birmingham city centre will be the main focus for retail development in the city with planned schemes comprising the long term Martineau Galleries redevelopment and the redevelopment of Smithfield Markets site, a 26-acre site comprising the wholesale markets adjacent to the Bullring; and
- There are long term development proposals for Sutton Coldfield town centre with the extension of Gracechurch Shopping Centre and the redevelopment of the Red Rose Shopping Centre, which was recently purchased by the City Council.

⁴ ABOUT 34,000 SQM GROSS COMPARISON GOODS FLOOR SPACE BY 2021; AND ADDITIONAL 23,000 SQM GROSS BY 2026.

SUMMARY OF RETAIL CAPACITY IN SOLIHULL BOROUGH AND BIRMINGHAM

By 2026, forecast retail capacity (after commitments) amounts to over 150,000 sqm gross comparison goods floor space⁵. This figure does not account for planned schemes, which may or may not come forward. Retail capacity beyond 2026 is not identified.

OTHER NEARBY CENTRES

Centres beyond Solihull Borough and Birmingham are likely to be affected by a significant retail provision within The Hub. These include Tamworth town centre and Coventry city centre, both of which will benefit from significant population growth over the next 10-15 years. We provide a snapshot of retail capacity issues below.

Tamworth town centre: The adopted Local Plan (February 2016) identifies the Gungate redevelopment scheme comprising 20,660 sqm comparison goods floor space and proposed for completion by 2021. After 2021, capacity is identified for an additional 7,800 sqm comparison goods floor space and 2,900 sqm convenience goods floor space.

Coventry city centre: Capacity is identified for an estimated 78,000 sqm retail floor space up to 2031. This will be delivered within the city centre through the City Centre South scheme (56,000 sqm of main town centre uses) and the Friarsgate scheme adjacent to the rail station (up to 20,500 sqm of A1-A5 uses).

CAVEAT ON POPULATION GROWTH AND THE IMPLICATIONS FOR RETAIL CAPACITY IN THE STUDY AREA

The retail capacity forecasts for the study area, derived from adopted development plans, are based on currently planned housing growth. However, this position will significantly change over the next 2-3 years once each authority agrees to accommodate a proportion of Birmingham's under provision of housing (estimated at between 30,000 and 50,000 additional homes). Such population growth is likely to significantly change the catchment population and also increase the retail needs of the study area.

⁵ BROADLY SPLIT BETWEEN SOLIHULL BOROUGH (ONE-THIRD) AND BIRMINGHAM (TWO-THIRDS).

THE PROPOSED QUANTUM OF RETAIL

Table D2 sets out the quantum of mixed use (including retail) floor space proposed at The Hub.

TABLE D2- MIXED USE (INCLUDING RETAIL) FLOOR SPACE PROPOSED (SQM GROSS)

	PHASE 1 (2018-2022)	PHASE 2 (2023-2027)	PHASE 3 (2028-2032)	PHASE 4 (BEYOND 2032)	TOTALS
NEC	37,744	41,656	-	-	79,400
Arden Cross triangle site	-	8,079	7,258	22,663	38,000
CUMULATIVE TOTAL	37,744	87,479	94,737	117,400	

The level of retail capacity identified in Solihull Borough and Birmingham extends over the period to 2026 only (i.e. towards the end of Phase 2) and amounts to over 150,000 sqm gross comparison goods floor space. This figure takes into account commitments only (not planned schemes), while there is potentially further expenditure-based capacity available from nearby Tamworth and Coventry. This compares with the 87,479 sqm gross of mixed use floor space anticipated at the NEC and Arden Cross triangle site by the end of Phase 2 (2027).

Clearly, only a proportion of the mixed use floor space proposed will be A1, or even comparison goods floor space. A substantial amount will be dedicated to residential and commercial uses, or potentially non-A1 forms of retailing such as Brand Pavilions (as considered below). There is a difference in focus between the two sites:

- The NEC clearly has a strong brand and business model which may be able to include unusual (e.g. film studios) occupiers within this 'mixed use' definition. Also the extent to which there is comparison / convenience retail at this location is not currently defined. The mixed use provision is likely to be a 'destination' as is the existing NEC business.
- The Arden Cross triangle site mixed use floor space is not envisaged to be a 'destination' in itself but to support and enable the residential and commercial floor space in this location. We envisage that it will come forward gradually, correlated to the development of the office and residential space. For clarity, this figure excludes any retail within the HS2 Interchange Station.

QUALITATIVE COMMENTARY

Where there is sufficient expenditure-based capacity (i.e. need) to support new retail development, it would have lesser impacts on existing centres and stores than if the available capacity is insufficient to support it.

The capacity figures set out on page A44 (potentially in excess of 150,000 sqm gross comparison goods floor space by 2026) indicate that there is substantial 'headroom' for new retail development in this location – including the proposals for The Hub.

However, a principal restriction on the proposed scale of new retail development at the NEC and Arden Cross triangle site would be the type and nature of the retail floor space, because this would determine the degree to which it competes with (and therefore impacts) nearby centres and stores⁶.

The Hub proposals comprise a significant 'critical mass' of residential and commercial uses which, on their own, would have the potential to generate substantial expenditure-based capacity and self-sustain a magnitude of retail development. In reality, The Hub would also attract significant visitor numbers from further afield (linked into the HS2 Interchange Station) and this would translate into additional expenditure-based capacity to support new retail development.

Further work could be undertaken to assess a realistic quantum of retail development that could be sustained at The Hub in expenditure terms.

With regards to the type and nature of the retail floor space at the NEC and Arden Cross triangle site, we consider some options and comment in broad terms on their likely impacts (but not from a market demand viewpoint):

Ancillary Retail: Typically, small scale retail floor space as part of mixed use development, often comprising A1 retail services (e.g. dry cleaners, cafes, hairdressers) and shops selling convenience goods and, to a lesser extent, comparison goods. It therefore principally serves the day-to-day needs of local residents and / or workers. This form of retailing is unlikely to cause harm to nearby centres and stores, because it should not materially alter shopping patterns and therefore expenditure flows. We envisage that the majority of the retail provision at the Arden Cross triangle site will be of this kind.

⁶ THE NATIONAL PLANNING POLICY FRAMEWORK (NPPF) STATES THAT, WHERE PROPOSALS ARE LIKELY TO HAVE A 'SIGNIFICANT ADVERSE IMPACT' ON EXISTING CENTRES, THEY SHOULD BE REFUSED.

Non-Bulky / Fashion-Led Retail: This form of 'high street' retailing, of a scale capable of attracting major fashion-led / anchor retailers, would be likely to cause the greatest concern from an impact perspective. This is because such retailers are the principal driver of shopping activity in nearby centres such as Solihull, Birmingham, Sutton Coldfield and Coventry.

Bulky Goods Retail: Large format retailing (involving the sale of furniture, floor coverings, white goods, DIY and gardening products, etc.) is predominantly located on out-of-centre retail parks, and is not afforded any impact protection under the NPPF. This form of retailing is less likely to cause significant harm to nearby centres and stores.

Designer Outlet Centre (DOC): DOCs are bespoke forms of retailing for discounted designer and 'high street' brands. They therefore have the potential to draw trade from (and therefore impact) nearby centres and stores. A new DOC (Mill Green) near Cannock has recently been granted planning permission.

Brand Pavilions: A typically non-A1 (sui generis⁷) form of retailing where companies showcase and exhibit their latest products and global brands, ranging from cars to electronic products and sports equipment. Brand Pavilions are designed to address the trend for consumers to browse before making purchases online. The concept is relatively un-tested in the UK (a planning permission exists for Silvertown Quays, London) and is likely to cause some concern from an impact perspective. The NEC site would be an obvious location for this sort of provision.

EXPENDITURE-BASED CAPACITY FOR RETAIL FLOOR SPACE AT THE HUB

We have forecast expenditure-based capacity for A1 retail (convenience and comparison goods) floor space at The Hub. These capacity forecasts are outline and should be treated with some caution, not least because there is currently no defined retail scheme to test. It is also important to note that the further ahead the forecasting date, the less certain the forecast. Thus the forecasts up to 2032 are more reliable than those for 2046.

We have modelled capacity on the basis of an upper limit (i.e. retail scheme trading at lower end average sales density) and a lower limit (i.e. retail scheme trading at upper end average sales density). The actual performance and sales density of any retail scheme will depend on factors such as scale, format, mix and end occupiers.

⁷ USES OF LAND OR BUILDINGS WHICH DO NOT FALL INTO ANY USE CLASS OUTLINED WITHIN THE USE CLASSES ORDER.

Table D3 below provides capacity forecasts for convenience goods floor space and two broad typologies of comparison goods floor space – Local Retail and Destination Retail. The working assumption is that the former will predominantly serve localised shopping needs, while the latter will have the ability to attract a significant amount of expenditure from outside The Hub (i.e. from a wide, potentially one-hour drive time catchment area). In reality, there are a number of hybrid outcomes possible which mix the two typologies.

TABLE D3- OUTLINE RETAIL CAPACITY FORECASTS FOR THE HUB (SQM GROSS)

		UPPER LIMIT	LOWER LIMIT
Convenience Goods			
By 2032		2,750	1,400
By 2046		5,700	2,850
Comparison Goods – Local Retail			
By 2032		5,050	3,150
By 2046		13,550	8,500
Comparison Goods – Destination Retail			
By 2032		14,900	9,300
By 2046		40,450	25,300
All A1 Retail (Convenience and Comparison)			
By 2032	Local Retail	7,800	4,550
	Destination Retail	19,250	11,350
By 2046	Local Retail	12,850	7,700
	Destination Retail	32,800	19,850

NB: Floor space figures rounded to the nearest 50 sqm gross and are cumulative.

We have only prepared A1 retail capacity forecasts for convenience and comparison goods floor space. A significant element of the mixed use floor space proposed at The Hub could comprise A1 retail services, and of course a broader range of 'A' class / main town centre uses such as A2 (professional services), A3 (restaurants), A4 (drinking establishments) and A5 (hot food / takeaways). There is no standard methodology for assessing the capacity for such uses and they are not typically considered as the drivers for the creation of hub retail locations. Given the growth of the A3 sector over the last 10-15 years we consider that these uses will be prevalent and important elements in order to help create a 'sense of place' and to add amenity value to the potential developments.

COMMERCIAL DEVELOPMENT

OFFICE MARKET SUMMARY

Birmingham's principal out-of-town office market follows the M42 motorway on the eastern side of the city, primarily between the M6 interchange (Junction 7 of the M42) in the north and the M40 interchange (Junction 3a of the M42) in the south. The two ends of the M42 Corridor are anchored by Birmingham Business Park (the original and largest scheme) and Blythe Valley Park (the pre-eminent scheme in the market). It also includes Solihull town centre, which combines communications with the retail / leisure facilities of this affluent area. In practice, the majority of the market is located within the Metropolitan Borough of Solihull, not the City of Birmingham.

There are a number of characteristics that have contributed to the success and growth of the market:

- The proximity to Birmingham, the second-largest city in the UK, and position on the city's eastern side, closer to the centre of the country and London;
- The excellent motorway connections, with the M42 connecting the West and East Midlands, as well as linking directly with the M1 (for the North), M5 (for the South West), M6 (for East Midlands and North West) and M40 (for London and the South East);
- Birmingham Airport, which has scheduled and charter flights to 110 destinations across the UK, Europe, Middle East, North America and North Africa, is located adjacent to Junction 6 of the M42, in the heart of the market;
- Birmingham International Station, a principle stop for intercity services between Birmingham New Street and London Euston, is located adjacent to Junction 6 of the M42;
- There will be an interchange on the proposed HS2 high speed railway line between London and Birmingham (and then the North), which is due to open in 2026, within the vicinity of Junction 6 of the M42; and
- There are occupational savings, with prime rents being 30% lower than Birmingham city centre (which also results in Business Rates savings).

OFFICE MARKET SUPPLY

The M42 Corridor as described on page A46 has a total office stock of approximately 470,000 sqm. This figure has been constant since 2009, with no significant development since the onset of the global financial crisis (other than the on-going construction of Interserve's new headquarters on a sale and annuity leaseback basis).

Market conditions have made development (on anything other than a pre-let annuity lease) unviable for the past eight years. However, reducing availability and rental growth are starting to re-balance the development equation. While there are many proposed schemes, some with historic planning consents, C&W are of the opinion that the following developments are most likely, although construction is only likely to be triggered by specific occupier demand and on a piecemeal basis:

Blythe Valley Park	82,000 sqm
Birmingham Business Park	14,000 sqm
Fore	8,000 sqm

OFFICE MARKET DEMAND

As the economic recovery has gathered pace, take-up of office accommodation in the M42 Corridor has increased, almost consistently year-by-year and averaging circa 30,000 sqm per annum for the last 5 years.

Recent occupier demand has been driven by consolidation of smaller offices, the principal rationale, expansion and inward investment / re-location. Prime rents in the M42 Corridor are 30% below Birmingham city centre, which suggests potential for further growth. However, rents and the market in general in the M42 Corridor tend to be more volatile, like many business parks. Firstly, as seen during the global financial crisis and recession, the market is unduly hit during a downturn, with occupiers tending to retrench towards the city centre. Secondly, the success of a scheme is dependent on providing the space and environment that occupiers want, which is likely to be capital intensive over time as there are fewer barriers to new development than in a city centre. This is demonstrated locally by Blythe Valley Park usurping Birmingham Business Park, the original (and largest) development in the M42 Corridor, to become the pre-eminent scheme.

INDUSTRIAL MARKET SUMMARY

Industrial demand is strong in the M42 area with a number of schemes in the pipeline and an established demand profile. C&W consider that for B1b and B1c (R&D and Light Industrial) uses, a consistent take up of up to 15,000 sqm per annum is possible, assuming market acceptable development parameters. This is relatively conservative given recent market strength (in 2016, there were eight deals in the area around the M42, transacting in the order of 70,000 sqm). C&W consider there to currently be circa 300,000 sqm of pipeline industrial space in the M42 market area (including C&W's estimate of around 100,000 sqm at St Modwens 60-acre site at Tamworth). The overall pipeline in the Hub Growth and Infrastructure Plan (HGIP) to be delivered over circa 20 years and excluding the Logistics Operations Centre, is circa 300,000 sqm which is considered to be deliverable.

RESIDENTIAL DEVELOPMENT

Existing market dynamics in the vicinity of The Hub have some divergence with the type of units which are envisaged in the HGIP; most notably this relates to the growth in the apartment market in the Arden Cross area and (in more limited form) at the NEC. The number of units in the 'upper' case⁸ will require sustained demand in the wider area and additional sites in order to support development and new sources of such demand. In relation to the 'base' case⁹, the development of apartment schemes in 2028 onwards at the Arden Cross site may require some interventions to support the initial deliverability of these uses. Achieving this 'upper' case is likely to require:

- An element of residential demand from the development of employment space within The Hub;
- Demand from the wider West Midlands Combined Authority (WMCA) area; there is an outstanding requirement for 30,000-50,000 residential units which could provide some of the demand if appropriately channelled to The Hub. This would be in addition to any of this demand being met on additional sites within / adjacent to The Hub;
- Out commuting from this area – enabled by the services available from the HS2 Interchange Station; and
- 'Market interventions' by policy makers and key stakeholders such as the Urban Growth Company (UGC).

⁸ THE UPPER LEVEL OF FIGURES PUBLISHED IN THE HGIP.

⁹ THE LOWER LEVEL OF FIGURES PUBLISHED IN THE HGIP.

A more detailed analysis of the dynamics required to accommodate different types of residential development within The Hub is provided in Table D4. Table D5 subsequently provides a range of market intervention options to facilitate a change in market dynamics to support residential development within and in proximity to The Hub.

ARDEN CROSS

As the land is opened up for development by the enabling infrastructure, the initial market interest will be from residential developers looking to build a suburban product in zones away from the core area around the HS2 Interchange Station. This reflects the pattern at Ebbsfleet around the HS1 Station, where the initial phases were suburban development away from the HS1 station.

A number of European case studies have shown how high density residential development has been popular around high speed rail hubs. As with office development, however, this is typically due to the opportunities presented by the opening up of an area of the city by the infrastructure where there exists latent demand already by virtue of their central location (Lyon), or an underused but potentially attractive part of the city (Nantes), all in close proximity to existing city centre amenities. The environs of Zuidas (Amsterdam) were already inherently attractive as a residential location, the neighbouring areas were already established as mature and popular residential neighbourhoods, which the new residential development zones of Zuidas could integrate with. In contrast, the challenge for the Arden Cross triangle site is the creation of a new residential neighbourhood from scratch, and on this basis, Ebbsfleet may be a closer reference point.

Ebbsfleet is much larger in proposed scale than the Arden Cross triangle site, with the benefits that it may have in terms of critical mass. The development path has been restricted by the peripheral location from the commercial core of London and interest in Ebbsfleet as a commercial office location or for “apartment living” has been limited. The mainly suburban density of residential development proposed reflects the location being predominately viewed by the development industry as a brownfield site opened up by HS1. The perception is of a convenient and attractive commuting location in the Kentish countryside as opposed to a destination in its own right with the connectivity associated with high speed train travel.

The Arden Cross triangle site is different to the extent that the proximity and proposed links to the NEC and Birmingham Airport - an important part of a wider interconnected whole - is a key strength. This will also be a benefit and a unique selling point in the overall commercial proposition of the Arden Cross triangle site, although its precise role and fit alongside Birmingham city centre (which will have many sites coming forward over the next 20 years through the City Centre Enterprise Zone) requires careful consideration in order to ensure complementarity.

The overall quantum is ambitious in an immature and unproven location for such a product. In terms of access and the inherent benefits of proximity to the Central Business District (CBD), and the myriad of established cultural, social, and leisure facilities of the city centre, the location will present a different “offer” to the city centre. The city centre market is itself, relatively immature compared to that of Manchester, and is likely to get stronger.

Apartment schemes in smaller centres can be popular, including the 70 dwelling scheme by Elegant Homes in Dickens Heath centre which has sold very well. However, this development is on a much smaller scale than what is proposed at the Arden Cross triangle site, and in an already established and popular location. The large scale proposed at Arden Cross means that, to succeed, apartment development must play on the unique attributes of the location to a certain lifestyle. This should be a lifestyle which the city centre and established and attractive suburban centres in close proximity to the HS2 Interchange Station do not / would not cater for. For the successful delivery of higher density residential, significant interventions may be required in order to create an environment which is attractive to occupiers. However, apartment living is becoming more and more common in the UK. In addition, with the reduction in home ownership levels seen over the last decade forecast to continue, there is likely to be increased demand for rental tenures. This could lend itself to increased demand for the sort of development blocks which are suitable for institutionally owned rental stock (i.e. large blocks of purpose built flats).

The unique attributes over the city centre are the international connectivity provided by proximity to Birmingham Airport and the HS2 Interchange Station. On this basis a potential market segment is frequent international travellers looking for a high end specification with the emphasis on convenience, privacy, luxury (concierge, spa, swimming pool, gymnasium, etc), and accessibility. Apartments tend to be on the larger size, for example 1 bedrooms of up to around 61.3 sqm, 2 bedrooms up to and over 65 sqm whilst individual development schemes are likely to have a relatively high proportion of 3 bedroom units.

The scale and pace of development required at the Arden Cross triangle site would mean average prices achieved would be relatively low initially. In modelling the viability of the scheme, C&W has applied uplifts from these base values based on the scheme achieving critical mass at specific points during the development trajectory. This assessment produces (with delivery in tandem with other commercial uses) a positive land residual but cannot fund the wider infrastructure costs (outside of the basic servicing of the individual sites).

The traditional profile of residential development around this area is based on 2 storey dwellings at a density of circa 30 dwelling per hectare (dph). The product being developed at the Arden Cross triangle site is clearly very different and at a much higher density based on establishing a new urban centre around the station. Ensuring the delivery of a comprehensive scheme that positions the residential product as unique and different within the context of an urban environment is critical in order to ensure deliverability.

THE NEC

Medium density apartments in this location is not an established use but given the existing amenities on the NEC site, it has the ability to be sustainable. We consider that the development of circa 550 units is most likely to be in the form of an initial block sale to an investor as opposed to the standard sales model.

In 2017, there has been increased evidence of the pre-sale of residential blocks. This has been a change from Seven Capital overseas sales of individual units, to the sale of blocks of developments to investors for a discount. Recent examples include:

- Barratt agreeing a forward sale of circa 150 units on their Bristol Street site to Elevate with a discount of circa 20% for this upfront purchase.
- We have also seen Galliard come into the market and purchase blocks such as those at Park Central and also Soho Loop.

Therefore, we have assumed (for the proposed 550 units on the NEC site) a block sale of 150 units at the beginning of the project (sold at a discount of 10%) with an upfront receipt. We have then assumed a standard sales rate for the next 300 units and then a final block sale at the end of the scheme of 100 units.

When allowing a profit rate of 20% on Gross Development Value (a rate which allows for no interest within the appraisal) this produces a marginally positive land value.

We have examined the Solihull Strategic Housing Need Assessment against various occupational market segments and C&W's consideration of market drivers. This has allowed us to consider the implications for the Hub in terms of the ability to deliver residential accommodation for these respective market segments. Where we deem there to be an element of mismatch between the market drivers and the demographic information, we have outlined some of the potential changes which would be required to address this mismatch. Table D5 builds on this assessment by identifying potential interventions which could address this mismatch and enable the delivery of various market segments.

SEGMENT	MARKET DRIVERS	DEMOGRAPHIC DRIVERS	IMPLICATIONS FOR THE HUB	CHANGE REQUIRED
Family Housing	As The Hub area is opened up for development by the enabling infrastructure, the initial market interest will be from residential developers looking to build a suburban product in zones away from the core area around the HS2 Interchange Station. This reflects the pattern at Ebbsfleet around the HS1 Station, where the initial phases were suburban development away from the HS1 station.	The Objectively Assessed Needs (OAN) Assessment projects that 3 bedroom (33%) and 4 bedroom (43%) will account for over 75% of the required growth in housing stock (owner occupied), and if also including 2 bedroom housing that proportion rises to over 80%. Notably, the projected increase in requirement (13%) for houses of 4 or more bedrooms is nearly as high as the increase in requirement for 2 bedroom flats (15%), but from a much higher base (22,035 versus 3,869).	Local Plan allocations that can well serve the continued very high need of the family housing segment will have an important role, and in particular the continued very significant and growing need for 3, 4 and 5 bedroom housing The capacity of allocated sites will need to reflect the need for these sizes of homes, though assuming development densities that are commercially deliverable (no more than 40 dph) whilst serving this requirement.	The comparison to HS1 is instructive in that Ebbsfleet has very much become (for the time being) a commuter location with 4,000 (up to a potential 9,000) car parking space. For the initial phases of The Hub (i.e. those away from the immediate Arden Cross area) to be at a higher density and targeting not just family housing, there needs to be confidence, early evidence of success and belief in the vision for the HS2 Interchange Station.
Young Professionals	The European case studies previously considered by C&W have shown how high density residential development has been popular around high speed hubs. As with office development, however, this is essentially due to the opportunities presented by the opening up of an area of the city by the infrastructure where there exists latent demand already by virtue of their central location (Lyon), or an underused but potentially attractive part of the city (Nantes), all in close proximity to existing city centre amenities. The environs of Zuidas (Amsterdam) were already inherently attractive as a residential location, the neighbouring areas already established as mature and popular residential neighbourhoods, which the new residential development zones of Zuidas could integrate with. In contrast, the challenge for UK Central is the creation of a new residential neighbourhood from scratch apart from areas close to Jaguar Land Rover which have the potential to integrate into Elmdon Heath.	Household formation rates among young adults has decreased, linked with households of couples with non-dependent children increasing. In terms of the projected growth of households, the best fit household type for this market segment – “couple with no children” shows the smallest growth of all household types and with a projected decline in the share of all households overall from around 25% to 23%. Whilst the OAN Report projects an increase (relating to owner occupied accommodation) in demand for smaller accommodation (One bedroom flats, up 20% (2.3% of required change); One bedroom bungalows, up 32% (2.8% of required change); Two bedroom flats, up 15% (9.1% of required change); Two bedroom bungalows, up 25% (4.1% of required change); this is driven by increases in lone parent and single person households.	Young professionals are typically a key market segment for apartments. As such, The Hub faces a double difficulty because it lacks the existing cultural offer of a city centre location which attracts this demographic, whilst at the same time, this demographic is projected to decrease. In terms of access to, and the inherent benefits of proximity to the CBD, and the myriad of established cultural, social, and leisure facilities of the city centre, the location will be inferior to the city centre “offer”. The city centre market is itself, relatively immature compared to that of Manchester, and is forecast to strengthen. On this basis any significant residential target based on a high proportion of apartments predicated by an assumption of demand from this group, would be ambitious in an immature and unproven location for such a product, and would represent a significant development risk.	Young professionals are typically demanding in terms of the social and commercial offer in close proximity to their accommodation. Creating a viable environment for this sort of accommodation will require elements such as: <ul style="list-style-type: none"> • Early stage, significant uplift in the provision of commercial and other facilities in an ‘urban’ environment. • An emphasis (and investment in) on points of difference in terms of the provision of green space and leisure amenities. • Linked to a dynamic and deep employment market. • A significant price differential to Birmingham city centre. • Efficiencies in build process and costs in order to allow the construction of higher density apartments to be sold at a lower price point than Birmingham city centre.
Older People	Downsizers are an increasingly important market segment for apartment living, but are typically looking for convenient access to health and cultural facilities, and pleasant, established environs close to city centres appeal.	Solihull Borough has an aging population; since 2001 the number of people over 60 has markedly increased. This demographic driver is a key factor behind the projected further growth in one person households, already the largest group in 2014, it will have increased its share from 30 to 31% by 2033, all other groups except lone parents are either static or falling. The growth in the one person (driven by older people) and lone parent household groups will be the drivers for an increased projected demand for smaller accommodation: <ul style="list-style-type: none"> • One bedroom flats, up 20% (2.3% of required change). • One bedroom bungalows, up 32% (2.8% of required change). 	The key drivers behind the projected growth in demand for flats are households (single older persons, and lone parents) that may be best served close to existing centres with established amenities, and in locations in proximity to existing personal support networks. This is a major challenge to The Hub in terms of how it can meet these requirements. The immature and relatively isolated (in terms of proximity to established and familiar cultural and social facilities) environment of The Hub may mean that existing centres, such as Solihull town centre may have more appeal until and unless The Hub has an established offer.	Early stage amenity provision at multiple sites across The Hub to give a service offer to this demographic (medical facilities may act as a draw for instance). A significant price differential to Solihull town centre.

SEGMENT	MARKET DRIVERS	DEMOGRAPHIC DRIVERS	IMPLICATIONS FOR THE HUB	CHANGE REQUIRED
Older People		<ul style="list-style-type: none"> Two bedroom flats, up 15% (9.1% of required change). Two bedroom bungalows, up 25% (4.1% of required change). <p>The key drivers behind the projected growth in demand for flats are households (single older persons, and lone parents) that may be best served close to existing centres with established amenities, and in locations in proximity to existing personal support networks.</p> <p><u>Downsizers</u></p> <p>In terms of projected growth of households, the best fit household type for this market segment – “couple with no children” shows the smallest growth of all household types and with a projected decline in the share of all households overall from around 25% to 23%.</p>		
Lone Parents	Service provision and price point.	This group is projected to show the largest increase of all groups over the period 2014-2033, increasing its share from 11% to 15%.	<p>The key drivers behind the projected growth in demand for flats are households (single older persons, and lone parents) that may be best served close to existing centres with established amenities, and in locations in proximity to existing personal support networks.</p> <p>This is a challenge to The Hub in terms of how it can meet these requirements.</p>	Early stage amenity provision at multiple sites across The Hub to give a service offer to this demographic.
Frequent International Travellers	The unique attributes of The Hub over the city centre are the international connectivity provided by unique proximity to Birmingham Airport and the HS2 Interchange Station. On this basis a potential market segment is frequent international travellers looking for a high end specification with the emphasis on convenience, privacy, luxury (concierge, spa, swimming pool, gymnasium, etc), and accessibility. Apartments tend to be on the larger side.	The HS2 Interchange Station should drive an increase in connectivity and attract this demographic (although it is clearly a limited market in size terms).	<p>The large scale of apartment living proposed at the Hub means that it must play on the unique attributes of the location, which the city centre and established and attractive suburban centres in proximity to the HS2 Interchange station do not / would not cater for.</p> <p>With regard to mainstream provision, where the competition may be the city centre, the site must create a unique selling point. This should be based on good value, and this means larger (by around at least 4.6 sqm) apartment sizes than are generally typical in the city centre. This would mean average Net Internal Area (NIA) for a 1 bedroom apartment of around 51 sqm, and for a 2 bedroom apartment around 69.7 sqm.</p> <p>Allowance should also be made for some 3 bedroom apartments, and overall a large size of apartment should be assumed when modelling capacity (circa 61.3 sqm).</p>	Early stage infrastructure, delivered at pace to create an attractive environment.

TABLE D4 - RESIDENTIAL DEVELOPMENT MARKET SEGMENTS IN SOLIHULL

PRINCIPLE BEHIND INTERVENTION	CONSTRAINT & RATIONALE	HOW
<p>Direct involvement to facilitate alternative housing models focused on Private Rental Sector (PRS) housing and older persons living</p>	<p>The UGC could consider using investment, forward funding and selected land acquisitions to unlock, accelerate and de-risk housing delivery.</p> <p>This would be in areas where the development market would be unlikely to deliver (due to a view that this would create sub-optimal short term returns) and which would not cannibalise the new build housing market in terms of developer build out rates. The long term prospects for these housing models (specifically PRS and older persons living) is considered to be strong given:</p> <ul style="list-style-type: none"> • Growth in the elderly population; • The trend for a reduction in home ownership levels; and • Increased institutional interest in residential as an asset class. <p>This investment could relate to initial phases which act as 'demonstration projects' to signal to the wider development market what is deliverable.</p>	<p>The UGC could consider where investment, forward funding and selected land acquisition could unlock, accelerate and de-risk housing delivery. Investment would focus where there is potential to expand the type and tenure of housing product beyond what the market would deliver and the number of residential outlets can thus be increased or accelerated. A return on investment would be expected:</p> <ul style="list-style-type: none"> • Agree and publish a strategy for investment and return that uses public money or covenant to guarantee viability of unproven sectors but takes a long term approach based on a growing revenue stream. • Ensure investment is explicitly linked to the delivery of agreed UGC target typologies and tenures. This will include, but will not be limited to; <ul style="list-style-type: none"> ▪ Custom-build; ▪ Self-build; ▪ Starter Homes; ▪ Older Persons Housing; and ▪ PRS. • Ensure investment is explicitly linked to an agreed rate of delivery and completion. • Ensure investment is directly linked to a demonstrable increased level of supply. • Ensure investment is linked to development that can demonstrate a higher quality or level of innovation to help and facilitate a diverse supply and speed up delivery rates. • Ensure all investment can demonstrate good value for money through a competitive process.
<p>Strategic Land Acquisition</p>	<p>Acquisition of land where the UGC can improve viability through a different delivery mechanism and is willing to take on a greater risk profile than the standard developer model. This could include the use of a Compulsory Purchase Order (CPO).</p> <p>This would be over and above any 'selected land acquisitions' to facilitate alternative housing models.</p>	<ul style="list-style-type: none"> • Increase the pace of development through transferring more delivery risk to the public sector. • Through large scale, public sector, residential led 'pump priming', there is the potential to establish a distinct market in the area. • Gives more control to the UGC in terms of development trajectories.
<p>Brand The Hub as an 'urban' place and 'pump prime' commercial development</p>	<p>Achieving the upper levels of potential delivery is constrained by the lack of a cohesive central activity zone within The Hub area and other typical characteristics of an 'urban' environment.</p> <p>Through interventions to promote early stage commercial and general service provision, a quicker pace of development of residential units can be promoted and the long term development of higher density units may be enabled.</p>	<ul style="list-style-type: none"> • Promote, support and invest to create: <ul style="list-style-type: none"> ▪ A multifunctional hub for commerce, cultural and employment activity that represents exemplary development that drives a competitive and ambitious economy at the Arden Cross triangle site. ▪ Commercial services and facilities in an outward facing configuration at Birmingham International in order to support adjacent housing at the NEC site. • Green corridors / environments which support medium density housing. • Create a single branding strategy and vision for the whole Hub that conveys quality at The Hub level. This would accommodate a differentiated housing offer for the area and allow all constituent parts to benefit from a quicker pace of delivery. • Position The Hub within the market in order to increase the pace and quantum of development.

PRINCIPLE BEHIND INTERVENTION	CONSTRAINT & RATIONALE	HOW
Quality stipulations / design codes	Having design codes and requirements will make development more expensive and prima facie, less viable. However, over a longer period, having a more cohesive feel to The Hub area and minimum standards that need to be adhered to could help to create a premium in values and ensure that the location is attractive to residents and other occupiers.	<ul style="list-style-type: none"> Develop public realm design guidelines to deliver consistent character, identity and design quality across all emerging planning applications; ultimately this could be adopted as a Supplementary Planning Document. Establish a 'kitemark' for all new development to allow a benchmarking of housing quality (awarded to compliant developments and promoted by the UGC).
Upfront Infrastructure Investment	Early stage infrastructure funding and delivery.	<ul style="list-style-type: none"> Provision of both physical and social infrastructure in advance of development, should encourage the pace of housing delivery.
Establish a Hub Simplified Planning Zone	Reducing planning barriers for development. This does not currently exist for residential schemes.	<ul style="list-style-type: none"> Reduce barriers to development in terms of time and cost.
Accelerating the employment offer / development of The Hub	Housing development is likely to respond positively to an accelerated delivery of jobs within The Hub.	<ul style="list-style-type: none"> Build awareness amongst prospective corporate occupiers and with leading national and regional agents. Work to promote and support growth of indigenous companies within the area, building on existing economic clusters. Target companies in London, including public sector occupations that would benefit from more competitive land and property prices to enable them to expand. Develop a scheme to deliver business space demonstration projects in order to demonstrate occupier demand as early as possible. Develop a strategy for funding / de-risking speculative office buildings.
Supporting interim uses	The UGC could work in collaboration with landowners to support interim uses, particularly in the gateway areas of The Hub (Birmingham International, Birmingham Interchange, Birmingham Airport) as an effective way of increasing activity and vibrancy of the area, raising perceptions and managing the long development period to minimise disruption to residents.	<ul style="list-style-type: none"> Consider potential interim use strategies and identify potential providers to contact / collaborate with. Community uses. Temporary food and drink offers Commercial space.
Increasing the pace of construction	For higher density accommodation (over and above the standard housing market in the area) to be delivered, efficient construction methods and lower cost delivery will be required compared to city centre locations. A major drag on the pace of construction and its cost is the lack of modular house building in the UK or other techniques to reduce cost.	<ul style="list-style-type: none"> Exploration of the opportunities to trial modular house building in this location.
Long term stewardship of social infrastructure	The ongoing maintenance and control of social infrastructure is critical to establish and maintain a sense of identity in the area. It is also a drag on viability if developers are not able to find a solution in terms of adoption of public spaces etc.	<ul style="list-style-type: none"> Establish a strategy which facilitates independent stewardship models for individual developments. Promote the long term role for existing landowners (e.g. Jaguar Land Rover, the NEC, Birmingham Airport and Birmingham Business Park).
Promoting an accelerated build out rate	Developer build out rates will typically reflect their perceived risk in relation to the depth of demand which is required to support house prices. This can constrain build out rates in 'emerging' locations when individual private sector developers cannot evidence an immediate pool of strong demand.	<ul style="list-style-type: none"> Utilise the HCA Accelerated Construction programme to provide certainty to developers that any loss (caused by accelerating the build out rate) can be recouped.

TABLE D5 – MARKET INTERVENTIONS TO MEET NEED & FACILITATE A FASTER PACE OF HOUSING DELIVERY

E

Proposed Access and Highway Works with Potential Development Area 1

1.0 INTRODUCTION

Arup was commissioned by the Urban Growth Company (UGC) to produce a number of VISSIM models of the highway network in the vicinity of the Arden Cross triangle site area known as UK Central, in order to assess the impact of the development of The Hub on the strategic network and local road network. The Hub includes the triangle site, National Exhibition Centre (NEC), Birmingham Airport, Birmingham Business Park and Jaguar Land Rover, and flows associated with Potential Development Area (PDA) 1 and Core Development Areas (CDA).

Arup has applied a VISSIM Model that includes the airport runway extension, Resorts World, HS2 and UK Central developments. This VISSIM Model has been passed to Highways England (HE) for further refinement as part of their work on the M42 corridor. This report provides details of the AM peak hour VISSIM model outputs together with details of high level, indicative highway improvements that are put forward to mitigate the impact of the development on the road network.

2.0 DEVELOPMENT CONTENT

The development of the hub is proposed in phases, with the area separated into plots and sub-plots with different land uses. A trip generation exercise has been performed on these parcels using TRICS, in order to derive the total volumes of traffic entering and exiting the separate plots in the AM peak hour.

2.1 LAND USE SCHEDULE

Table E1 below provides details of the land uses for each of the areas A-I. Traffic flows associated with each of the land uses are shown for 2026 and 2041.

	Site	Land Use	By 2027 (sqm)	2033 onwards (sqm)	2026 Arrivals [vehs/h]	2026 Departures [vehs/h]	2041 Arrivals [vehs/h]	2041 Departures [vehs/h]
A	Jaguar Land Rover	Offices (Gross External Area - GEA)	4,000	4,000	19	2	19	2
		Industrial (GEA)	142,309	304,000	238	140	508	299
		Total				257	143	527
B	NEC	Offices (GEA)	55,700	55,700	267	34	267	34
		Industrial (GEA)	-	-	0	0	0	0
		Homes (Units)	550	550	89	167	89	167
		Mixed Use (GEA) - NEC	79,400	79,400	307	202	307	202
		Hotel (GEA)	18,100	18,100	59	51	59	51
Total				721	454	721	454	
C	Arden Cross triangle site	Offices (GEA)	18,000	182,745	86	11	874	111
		Industrial (GEA)	17,000	83,176	28	17	139	82
		Homes (Units)	-	2,482	0	0	400	755
		Mixed Use (GEA) - The Hub	784	38,000	15	12	746	605
		Hotel (GEA)	-	-	0	0	0	0
Total				130	40	2,159	1,552	
D	Birmingham Business Park	Offices (GEA)	14,100	14,100	67	9	67	9
		Total				67	9	67
F	PDA 1 (Network Rail)	Offices (GEA)	61,740	246,960	295	37	1,182	149
		Mixed Use (GEA)	1,960	3,920	0	0	0	0
		Hotel (GEA)	14,700	29,400	48	41	95	83
Total				343	79	1,277	232	
H	Airport	Offices (GEA)	-	-	0	0	0	0
		Industrial (GEA)	-	-	0	0	0	0
		Homes (Units)	-	-	0	0	0	0
		Mixed Use (GEA)	-	-	0	0	0	0
		Hotel (GEA)	-	-	0	0	0	0
Total				0	0	0	0	
I	Elmdon Trading Estate	N/A	-	-	0	0	0	0
		Total				0	0	0
Total					1,518	724	4,751	2,548

TABLE E1: LAND USE SCHEDULE

2.2 PLOT LOCATIONS

Figure E1 below shows the locations of the various CDAs across The Hub development.

2.3 GENERATED TRAFFIC FLOWS

Table E2 overleaf shows the total volumes of traffic that are generated in the 2026 and 2041 scenarios for each of the development areas, which are sub-plots of the larger site areas.

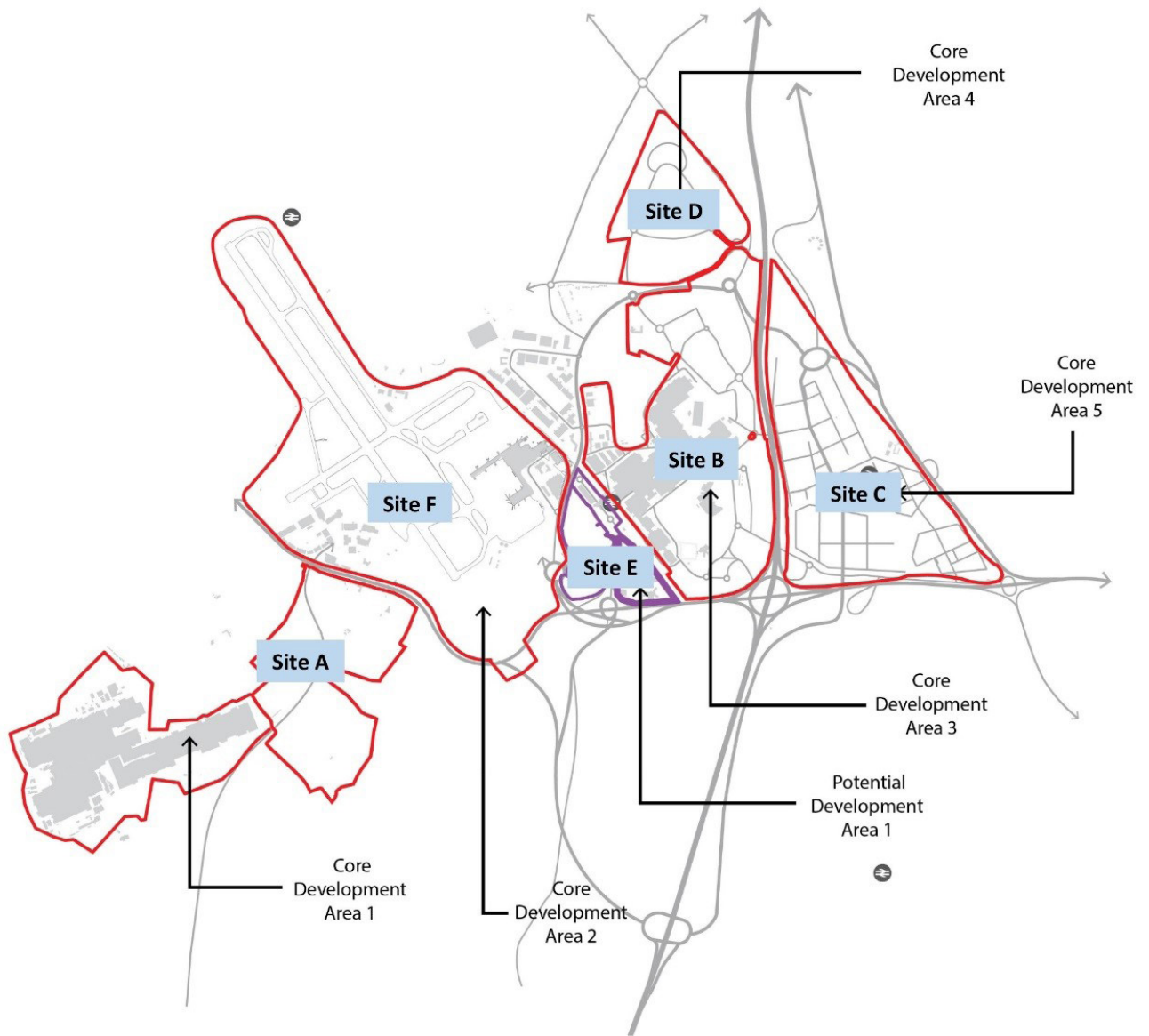


FIGURE E1: LOCATION OF THE HUB PLOTS

Site ID	Site	Site Name	2026 ARRIVAL veh/h	2026 DEPARTURE veh/h	2041 ARRIVAL veh/h	2041 DEPARTURE veh/h
F	FA 2.1	PDA 1 Birmingham International Station	42	10	158	29
	FA 2.2		85	20	318	58
	FA 2.3		54	12	202	37
	FA 2.4		80	18	300	55
	FA 2.5		80	18	300	55
	Total:			343	79	1,277
C	FA 5.1	Birmingham HS2 Interchange triangle site (Arden Cross)	130	40	2,159	1,552
	Total:			130	40	2,159
D	BO 1.1	Birmingham Business Park	67	9	67	9
	Total:			67	9	67
B	NE 1.1	NEC	390	245	390	245
	NE 1.2		331	208	331	208
	Total:			721	454	721
A	JE 1.1	Jaguar Land Rover Expansion Area	135	75	277	159
	JE 1.2		115	64	236	135
	JE 1.3		7	4	14	8
	Total:			257	143	527
H	BA 1.1	Birmingham Airport & Expansion Area	0	0	0	0
	BA1.2		0	0	0	0
	Total:			0	0	0
Total for Development sites:			1,518	724	4,751	2,548
Airport flows*			2,408	1,708	2,435	1,706
HS2 flows**			1,062	273	1,848	473
HGV flows***			3,664		4,453	
Background flows****			25,676		29,113	
Motorway Service Area (MSA) flows*****			757	754	843	844
Total traffic loaded to network:			34,328	2,705	42,600	4,727

TABLE E2: TRAFFIC VOLUMES FOR TESTED SCENARIOS

NOTES:

- * Analysis of employee travel patterns; Passenger travel patterns; Further details: Birmingham Airport – Runway Extension Transport Assessment – December 2007. Assumption for 2041 Airport flows is that more off-site car parks will be used, and the runway during peak hour is already full;
- ** Flows correspond with HS2 transport assessment. (Traffic Network 11 AP4.xlsx);
- *** Includes Background and HS2 HGV flows. Background HGV flows were calculated as background car trips; HS2 HGV flows correspond with HS2 transport assessment. (Traffic Network 11 AP4.xlsx);

**** Base flows were based on Automatic Traffic Count (ATC) surveys carried out in 2012. The base model was updated in 2015 using 2015 ATC survey results. The applied growth for future year scenarios are from a SATURN model; and

***** MSA flows were based on information from developers, and surveying existing service areas. Future flows were factored up using background traffic growth.

2.4 TRAFFIC DISTRIBUTION

Peter Brett Associates (PBA) defined the distribution of traffic flow to / from The Hub development areas, with further VISSIM zone splits discussed between PBA and Arup. The distribution percentages that have been used within the modelling exercise are shown in Figure E2 below.

Figures showing the number of arriving and departing vehicles were produced for both the 2026 and 2041 scenarios, for all of the sites listed within the land use schedule. These numbers are shown on Figure E3 and Figure E4.

FIGURE E2: TRAFFIC DISTRIBUTION

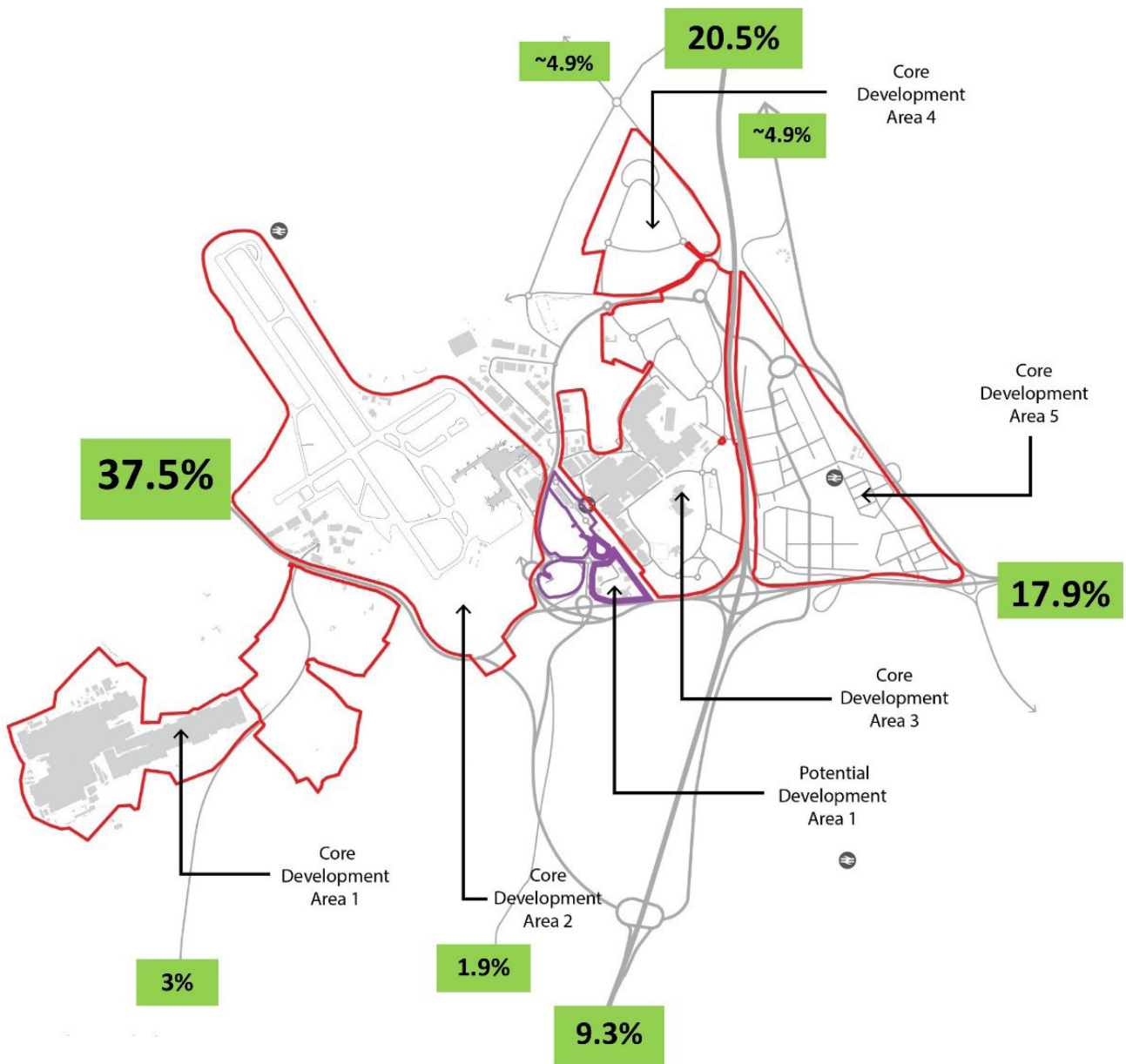


FIGURE E3: 2026 TRAFFIC GENERATION AND DISTRIBUTION

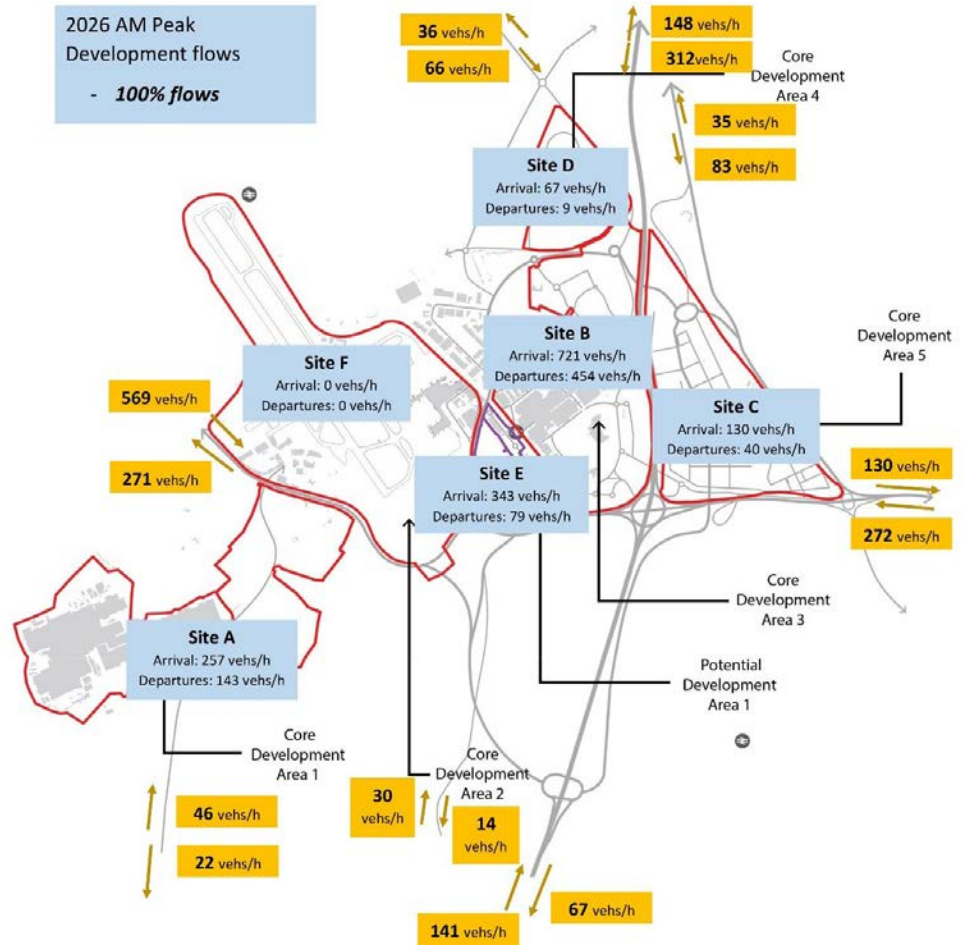
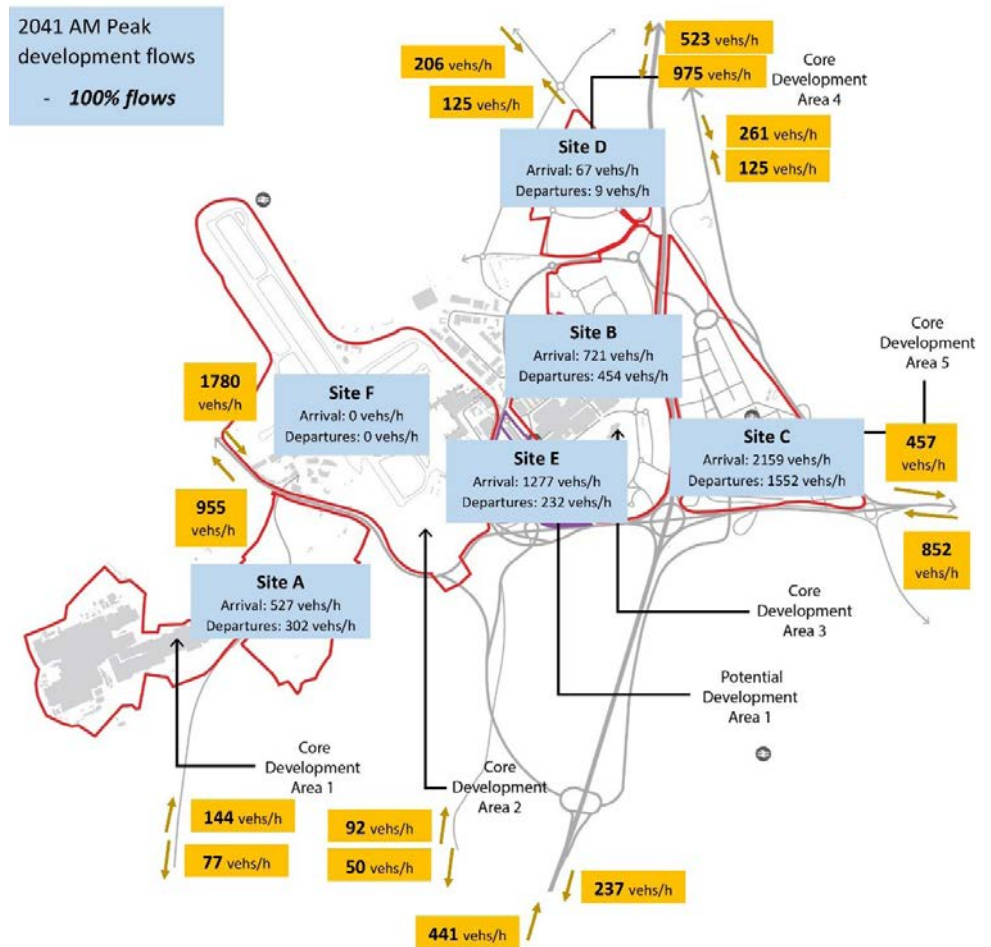


FIGURE E4: 2041 AM Peak development flows - 100% flows



3.0 HIGHWAY PROPOSALS / MODELLING METHODOLOGY

Details of the proposed highway layouts used for testing of the VISSIM scenarios are provided in the following sections. Note that a cumulative buildup of mitigation measures is indicated, with the full package of highway improvements required to be in place for the full 2041 Hub development buildout.

2026 DO NOTHING

As part of the 2026 Do Nothing (2026 DN) scenario, the following highway improvements are assumed to be provided:

- HE proposals to widen the M42 to five lanes in both directions between Junction 5 and Junction 7, reducing to four lanes through the junctions;
- A new junction on the M42 for the MSA is provided to the north of Solihull Road;
- A dual carriageway link is provided between the M42 MSA junction and Clock Roundabout, with a northbound merge link provided onto the Airport Way flyover and give-way priority access to Bickenhill village located midway along the new dual carriageway link;
- Segregated left turns forming the HE M42 Junction 6 Option 1 improvements are included; and
- The HS2 Hybrid Bill highway improvements along the A452 corridor (including changes to Stonebridge Roundabout) are incorporated.

HE are currently consulting on three possible options for improving the capacity of M42 Junction 6. For the purposes of this study we have assumed that Option 1 will be pursued, which includes segregated left turn facilities. The highway proposals as detailed above are shown within drawing CH001.

2026 DO MINIMUM

As part of the 2026 Do Minimum (2026 DM) scenario, the following highway improvements are assumed to be provided in addition to those shown for the 2026 DN scenario:

- A dual carriageway link is provided between Damson Parkway and the proposed western link between the MSA junction and Clock Roundabout, with a four arm roundabout giving access to Bickenhill village; and
- Conversion of the existing bus lanes along Bickenhill Parkway to general traffic lanes.

The highway proposals as detailed above are shown within drawing CH002.

2041 DO MINIMUM

As part of the 2041 Do Minimum (2041 DM) scenario, the following highway improvements are assumed to be provided in addition to those shown for the 2026 Do Minimum scenario:

- A dual carriageway link is provided between the M42 MSA junction and the Arden Cross triangle site, to the east of the M42; and
- Grade separation of the A45 / Damson Parkway junction.

The highway proposals as detailed above are shown within drawing CH003.

2041 DO SOMETHING

As part of the 2041 Do Something (2041 DS) scenario, the following highway improvements are proposed in addition to those shown for the 2041 Do Minimum scenario:

- Segregated left turn lanes are incorporated at the proposed M42 MSA junction, with an underpass link running between the northbound M42 off-slip and the northbound side of the western link running towards the A45 (W);
- A segregated left turn lane is provided on the dual-carriageway link from the MSA at the roundabout junction with Damson Parkway link road;
- A westbound-only link road is provided from the dual-carriageway link from the MSA junction onto the A45;
- Improvements to Clock Roundabout are shown including signalisation, bridge widening to increase the circulatory carriageway width, a segregated left turn from the westbound approach to the roundabout into the MSA link road, and widened approach lanes;
- A signalised junction is created at Bickenhill Lane / Station Approach Road junction including widening of approaches and segregated left turn lanes where appropriate;
- A widened carriageway and bridge deck is shown along the A45 westbound between M42 Junction 6 and Clock Roundabout, to mitigate potential merge / weave issues; and
- A widened carriageway and bridge deck is shown along the A45 eastbound between Clock Roundabout and M42 Junction 6 to mitigate potential merge / weave issues.

The highway proposals as detailed above are shown within drawing CH004.

3.1 LANE NUMBERS

The following colour coded figures show the proposed number of lanes along each link within the modelled network for the different scenarios.

Table E3 shows the key which has been used in the production of the network figures:

TABLE E3: LANE PROVISION KEY:

Colour code for number of lanes	Number of Lanes
Green	1 lane
Red	2 lanes
Blue	3 lanes
Orange	4 lanes
Yellow	5 lanes

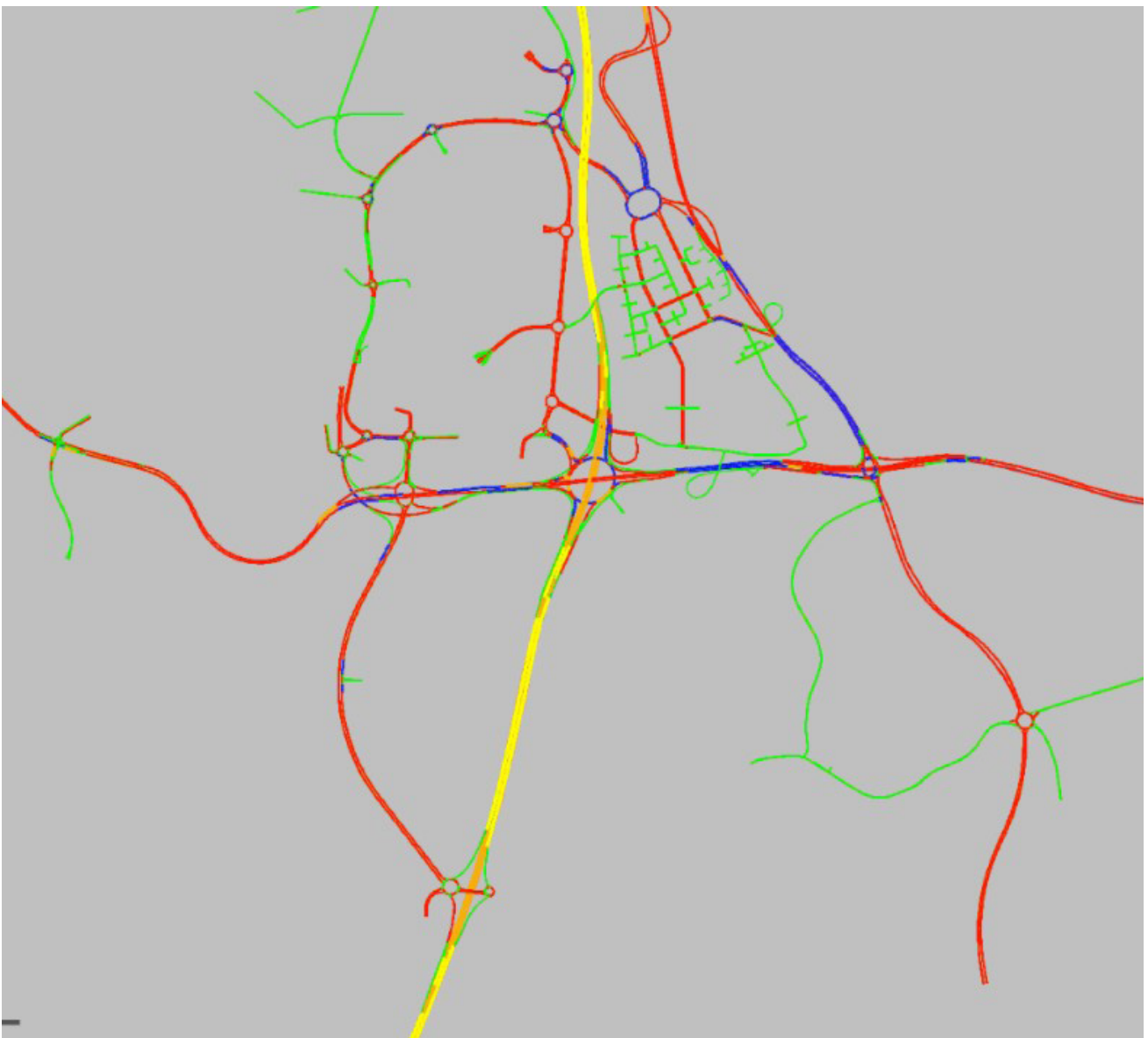


FIGURE E5: 2026 DO NOTHING NETWORK



FIGURE E6: 2026 DO MINIMUM NETWORK



FIGURE E7: 2041 DO MINIMUM NETWORK

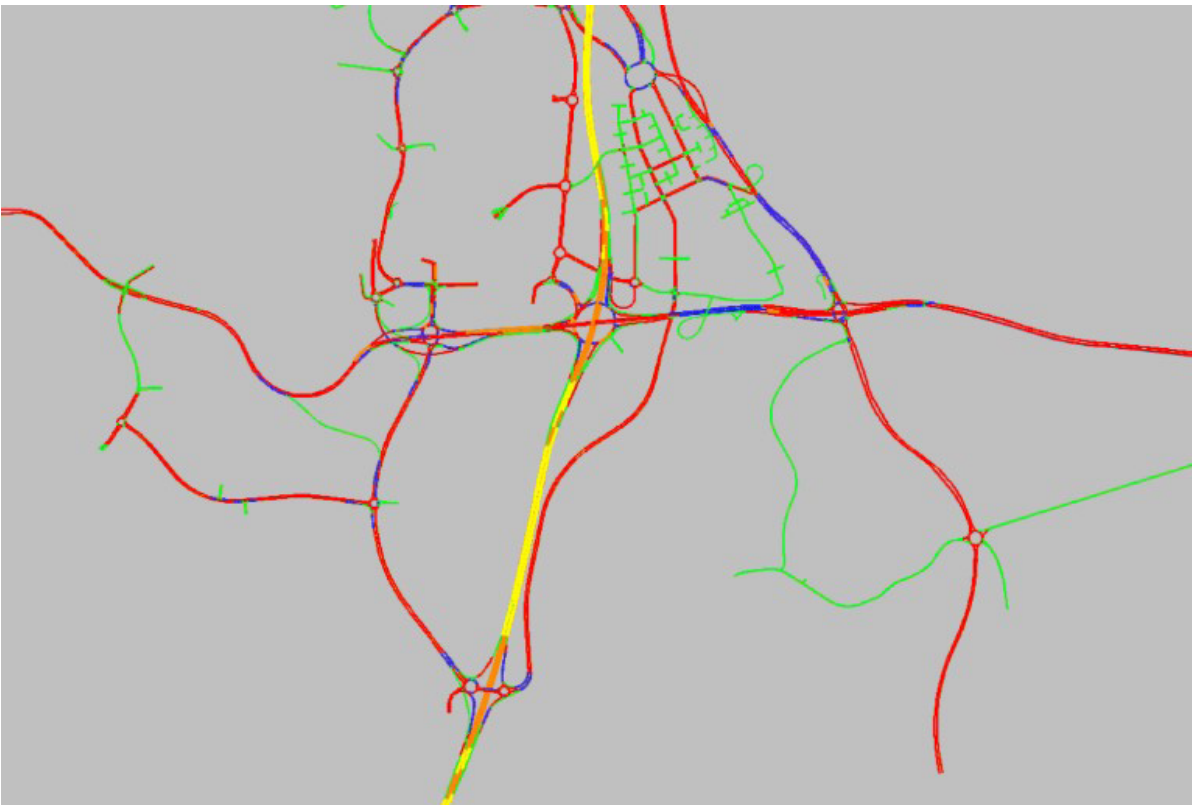


FIGURE E8: 2041 DO SOMETHING NETWORK

4 VISSIM MODELLING ANALYSIS

The following AM peak hour scenarios have been tested within VISSIM:

- **2026 Do Nothing:** This scenario uses the 2026 base year flows and HS2 traffic only. No development flows associated with The Hub are included within the model;
- **2026 Do Minimum:** In this scenario, the 2026 development flows associated with The Hub are added to the 2026 base year and HS2 flows;
- **2041 Do Minimum:** This scenario assumes the full Hub development buildout across all of the CDAs and PDA 1, on top of the 2026 base year and HS2 flows; and
- **2041 Do Something:** This scenario assumes the full Hub development buildout across all of the CDAs and PDA 1, and includes various highway improvements in order to mitigate the impact of the development traffic.

Each of the above scenarios assumes a different quantum of development buildup, and as such requires a staged approach to the highway mitigation. Note that for the purposes of this modelling exercise only the AM peak hour has been tested.

4.1 2026 DO NOTHING / DO MINIMUM

In this section of the report, the results of the VISSIM assessment for the 2026 Do Nothing and Do Minimum scenarios are described.

In addition to the base scenarios, a series of sensitivity tests based on percentages of total development were performed in order to inform the level of Hub development which could reasonably be accommodated without incurring unacceptable delays on the highway network. A summary of the modelling outputs for the various tests is provided in Table E4.

TABLE E4: 2026 DO NOTHING / DO MINIMUM VISSIM MODEL OUTPUT SUMMARY

	2026 Do Nothing	2026 Do Min 100% Development Flows
Average Delay per vehicle [s]	82.7	86.3
Average stops per vehicle	1.6	1.8
Average Speed [mph]	37.9	37.2
Total Delay [s]	3,294,722	3,485,205
Number of arriving vehicles	34,870	35,516
Number of vehicles which did not enter the network	1,124	1,413



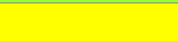



In the 2026 Do Nothing scenario the network is shown to be operating relatively well, with no major delays or congestion with the exception of the A45 on the eastbound approach to the Damson Parkway junction. Traffic is also shown to be slowing on the southbound approach to M42 Junction 6.

In the 2026 Do Minimum scenarios it is clear from the above results that up to 100% of the 2026 Hub development can be accommodated on the highway network without causing significantly increased delays or congestion when compared to the 2026 Do Nothing scenario. This suggests that the mitigation measures proposed as part of the Do Minimum scenario are effective at countering delay and congestion caused by the increased volumes of traffic created by the development.

We should note that the assessment does not take into account the potential opportunity for further modal shift, to be delivered through measures such as HS2 and improved public transport services (Sprint). It is reasonable to assume that this could deliver a further benefit of up to 15% in mode share improvements.

A series of figures, overleaf, highlight link performance for each of the scenarios based on colour coding (set out in Table E5).

TABLE E5: LINK FLOW COLOUR CODING KEY

Colour code for link performance	Description of link flow
	Free flow, low number of vehicles
	Near free flow
	Slower flow, medium number of vehicles
	Moderate flow, high number of vehicles
	Slow moving traffic, sensitive to disruptions, occasional queuing
	Frequent queuing

2026 DO NOTHING

It can be seen from Figure E9 below that the network largely operates well in the 2026 Do Nothing scenario, with free flow or near free flow conditions on the majority of roads within the study area. Moderate flow is predominant along the M42 corridor, with slower flow evident along the A45 between Damson Parkway and Stonebridge Roundabout. Some pockets of frequent queuing can be seen in the vicinity of the M42 Junction 6, with similar issues encountered to the west of Damson Parkway due to the constrained nature of the existing junction.



FIGURE E9: 2026 DO NOTHING NETWORK PERFORMANCE

2026 DO MINIMUM (100% DEVELOPMENT FLOWS)

It can be seen from Figure E10 below that there are no major differences to the operation of the 2026 Do Minimum (100% Development Flows) network when compared to the 2026 Do Nothing scenario. Free flow or near free flow conditions are evident on the majority of roads within the study area. Marginal worsening of performance is evident along the M42 corridor with moderate flow conditions, with slower flow also evident along the A45 on the eastbound approach to Damson Parkway.

In summary the network can be seen to operate in a largely similar manner to the 2026 Do Nothing scenario. This suggests that up to 100% of the 2026 development flows could be accommodated by the Do Minimum highway network in the AM peak period.



FIGURE E10: 2026 DO MINIMUM (100% DEVELOPMENT FLOWS), NETWORK PERFORMANCE

2041 DO MINIMUM / DO SOMETHING

Table E6 below shows the results of the 2041 Do Minimum / Do Something scenarios.

TABLE E6: 2041 DO MINIMUM / DO SOMETHING VISSIM MODEL OUTPUT SUMMARY

	2041 Do Minimum	2041 Do Something	2041 Do Something (15% flow reduction)
Average Delay per vehicle [s]	327.3	150.9	143.2
Average stops per vehicle	9.9	3.8	3.6
Average Speed [mph]	22.6	32.1	32.7
Total Delay [s]	15,767,547	7,512,212	6,897,955
Number of arriving vehicles	37,480	42,934	41,597
Number of vehicles which did not enter the network	5,409	3,817	4,338

In the 2041 Do Minimum scenario, severe congestion and delay is evident across the majority of the highway network. Average delay per vehicle is shown as 327 seconds per vehicle, which compares to 150.9 seconds per vehicle in the 2026 Do Something (100% Development) scenario.






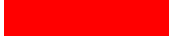
Average speeds of 22mph are also lower than those reported in the 2026 Do Something scenarios, with some 9.9 average stops per vehicle also shown in the 2041 Do Minimum scenario compared to 3.8 stops in the 2026 Do Minimum (100% Dev Flows) scenario. Total delays of over 15.7m seconds were reported, with some 5,409 vehicles unable to enter the network due to congestion and delay.

The 2041 Do Something scenario indicated significant improvement in network operation when compared to the 2041 Do Minimum scenario. A sensitivity test has been performed using a 15% reduction in development flows, in order to account for modal shift to public transport. This test highlights a further improvement in network operation, however there are still some 3,549 vehicles which are unable to enter the network due to congestion and delay.

This is indicative of the high volume of traffic using the highway network in the AM peak period.

A series of figures, overleaf, highlight link performance for each of the scenarios based on colour coding. The key in Table E7 below has been used to indicate flow conditions:

TABLE E7: LINK FLOW COLOUR CODING KEY

Colour code for link performance	Description of link flow
	Free flow, low number of vehicles
	Near free flow
	Slower flow, medium number of vehicles
	Moderate flow, high number of vehicles
	Slow moving traffic, sensitive to disruptions, occasional queuing
	Frequent queuing

2041 DO MINIMUM

In the 2041 Do Minimum scenario, the VISSIM results highlight a number of areas where congestion and delay are apparent. These areas include:

- The A45 eastbound between M42 Junction 6 and Clock Roundabout, where congestion problems are indicative of issues caused by the volumes of merging / weaving traffic within the short length of a three lane wide road between the two junctions;
- The M42 southbound carriageway on the approach to Junction 6. The model suggests that slow moving traffic is experienced between the merge point from the M6 and M42 J6, which is likely due to merge / weave manoeuvres and the volume of traffic exiting onto the A45;
- The M42 southbound on the approach to the proposed MSA junction;
- The M42 northbound on the approach to the proposed MSA junction;
- The Damson Parkway link, running between the MSA junction / A45 link road and Damson Parkway.

In summary, the 2041 Do Minimum highway network is shown to be unable to accommodate the full quantum of 2041 Hub development without a more significant package of highway mitigation measures being provided.

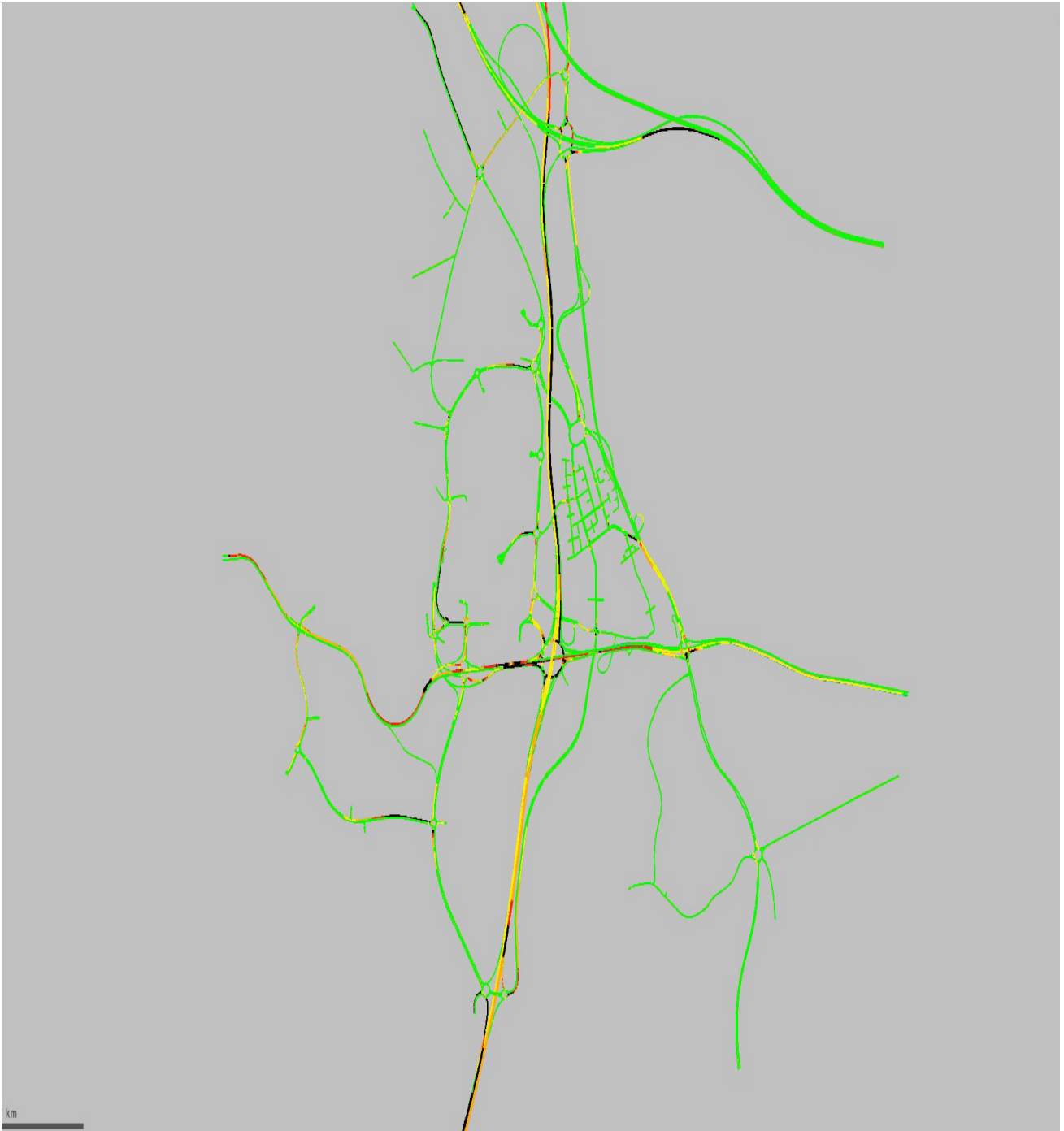


FIGURE E11: 2041 DO MINIMUM NETWORK PERFORMANCE

2041 DO SOMETHING

The results of the 2041 Do Something scenario show that many of the capacity issues highlighted in the 2041 Do Minimum scenario have been resolved or improved through the provision of highway improvement measures. The major areas where highway mitigation is proposed are described below:

- Segregated left turns are provided at the proposed M42 MSA junction;
- A segregated underpass from the M42 northbound off slip at the MSA junction, toward the western A45 dual-carriageway link;
- Bridge widening and signalisation of Clock Roundabout, together with widened approach roads and amendments to lane provision;
- A westbound segregated left turn is provided at the roundabout junction between the western link road and Damson Parkway link;

- Widening to the westbound carriageway of the A45 between M42 J6 and Clock Roundabout, to improve flow conditions by reducing the number of vehicles passing through the three lane wide merge / weave section;
- Widening to the A45 eastbound carriageway between Clock Roundabout and M42 J6; and
- The creation of a large, four-arm signalised crossroads at the junction between Bickenhill Parkway and Station Approach Road.

In total, these measures provide notable improvements to the operation of the highway network. In comparison to the Do Minimum scenario, the number of vehicles unable to enter the network is shown to reduce from 3,785 to 3,253, with reductions in average vehicle delay and improvements to average speeds.

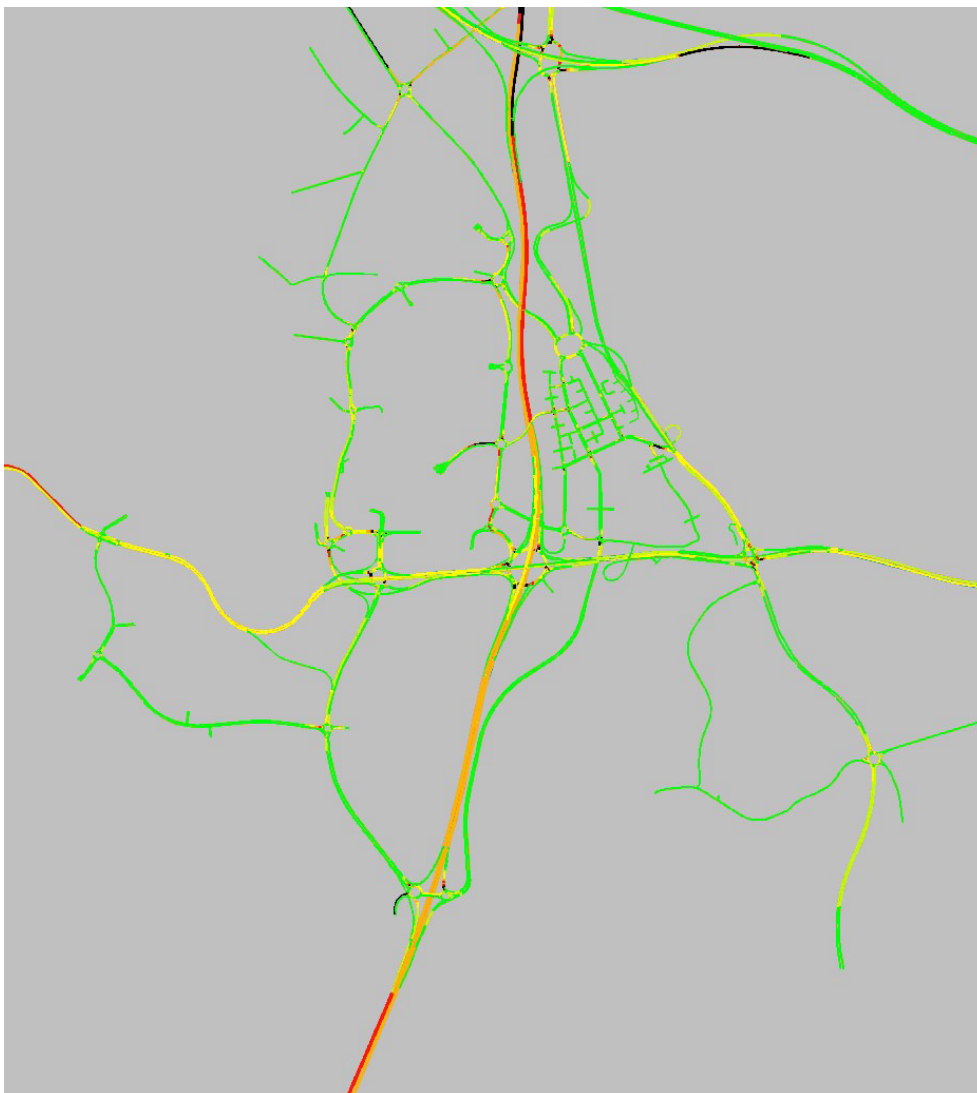


FIGURE E12: 2041 DO SOMETHING NETWORK PERFORMANCE

Whilst the M42 corridor is still shown as being busy with slow moving traffic and occasional queuing, this is likely to be indicative of wider network issues with not insubstantial improvements to congestion and delay shown over the 2041 Do Minimum scenario. Some limited areas of congestion and frequent queuing are still evident, however they are generally limited to the immediate approaches to junctions.

In particular, delays along the M42 southbound are reduced, with the overall amount of frequent queuing reduced across the network. Average delays per vehicle are shown to reduce from 135 seconds in the 2041 Do Something scenario to 124 seconds, with other reductions in total vehicle delay, average speeds etc.

2041 DO SOMETHING (15% DEVELOPMENT FLOW REDUCTION)

This sensitivity test reduces the development flows by 15% in order to replicate the effect of modal shift to public transport, with the results showing further improvements in network performance over and above the 2041 Do Something scenario, which is expected.



FIGURE E13: 2041 DO SOMETHING (-15% DEVELOPMENT FLOWS), NETWORK PERFORMANCE

5.0 MODELLING CONCLUSIONS AND RECOMMENDATIONS

The modelling performed as part of this study has been limited to the AM peak hour. As such, in order to progress this study further, additional work will be required including detailed junction analysis and testing of the network using PM peak hour flows.

It is important to note that the highway layouts and mitigation proposals shown within this report are high level and largely indicative in nature, with any layouts required to respond to the changing needs of the local area, for example in respect to the developing Birmingham Airport masterplan. This suggests that the form of the mitigation measures would need to be flexible.

A summary of the modelling exercise is shown in Tables E8 and E9 for all of the tested scenarios.

TABLE E8: VISSIM MODEL SUMMARY (2026)

Scenario	2026 Do Nothing	2026 Do Minimum (100% Dev)
Acceptable Network Performance?	YES	YES

It is clear from the modelling exercise that up to 100% of the 2026 Hub development can be accommodated in the 2026 Do Minimum network, without the network experiencing significant amounts of increased delay and congestion when compared to the 2026 Do Nothing scenario.

It is important however to recap that the assessment does not take into account the potential opportunity for further modal shift, through schemes such as HS2 and improved public transport services (Sprint). On this assumption, further benefits of up to 15% could be delivered in terms of mode share improvements, suggesting that congestion and delay could be further reduced.

TABLE E9: VISSIM MODEL SUMMARY (2041)

Scenario	2041 Do Minimum	2041 Do Something	2041 Do Something (-15% Dev)
Acceptable Network Performance?	NO	YES	YES

In the 2041 Do Minimum scenario, the highway network is shown to experience issues with congestion and delay, with the majority of roads within the study area subject to either slow moving traffic, frequent queuing or stationary traffic.

The highway improvements forming part of the 2041 Do Something scenario address many of the issues reported in the 2041 Do Minimum scenario, with the mitigation measures as tested resulting in significant improvements to queuing and delay along the majority of roads within the study area. However, despite the proposed improvements to the highway network, the VISSIM analysis highlights issues with regard to the number of vehicles unable to enter the network, which is likely to be indicative of wider network issues associated with the volume of traffic using the strategic network. The proposed 2041 Do Something network is shown in Figure E14.

A sensitivity test based on a reduction in 2041 development flows by 15% showed further improvements in average delay, average speeds and the number of vehicles able to enter the network. As such, this suggests that modal shift to sustainable methods of transport is anticipated to be a key factor in maximising the development potential across The Hub sites, in addition to the implementation of methods such as flexible working hours. The provision of improved transport measures such as HS2, Sprint and east-west connectivity between UK Central and the NEC / Birmingham International Station area are expected to play a key part in achieving this modal shift.



FIGURE E14 2041 DO SOMETHING HIGHWAY NETWORK

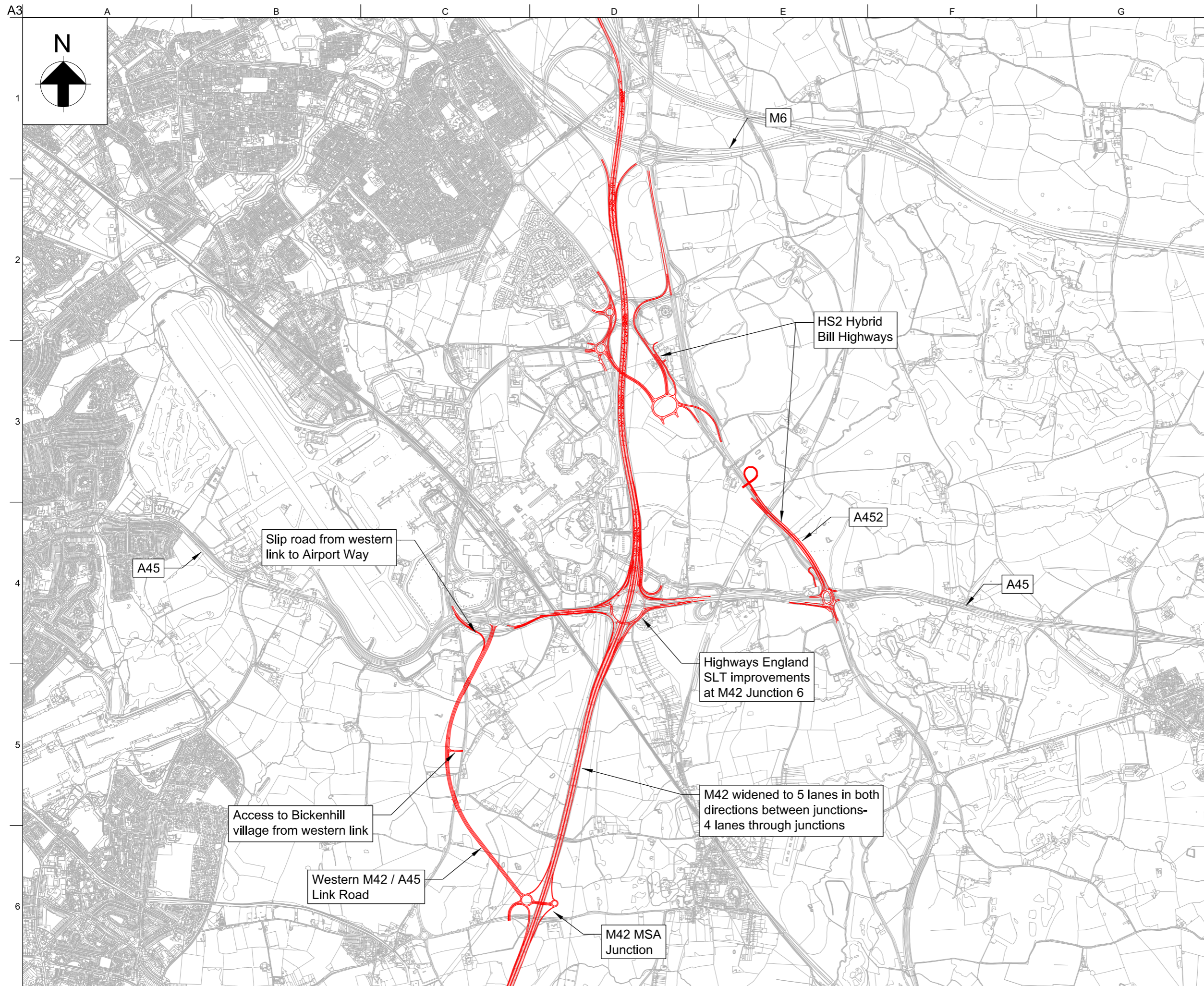
6.0 DRAWINGS

DRAWING 1: CH001- 2026 DO NOTHING HIGHWAY NETWORK

DRAWING 2: CH002- 2026 DO MINIMUM HIGHWAY NETWORK

DRAWING 3: CH003- 2041 DO MINIMUM HIGHWAY NETWORK

DRAWING 4: CH004- 2041 DO SOMETHING HIGHWAY NETWORK



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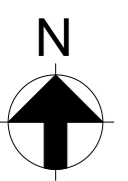
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M6

HS2 Hybrid Bill Highways

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A45

A45

Slip road from western link to Airport Way

Highways England SLT improvements at M42 Junction 6

Access to Bickenhill village from western link

Western M42 / A45 Link Road

M42 MSA Junction

M42 widened to 5 lanes in both directions between junctions- 4 lanes through junctions

01	21/03/17	NS	JO	JO
First Issue				
Issue	Date	By	Chkd	Appd

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Client
 UK Central

Job Title
 Proposed Highway Network

2026 Do Nothing Highway Network

Scale at A3 N.T.S.

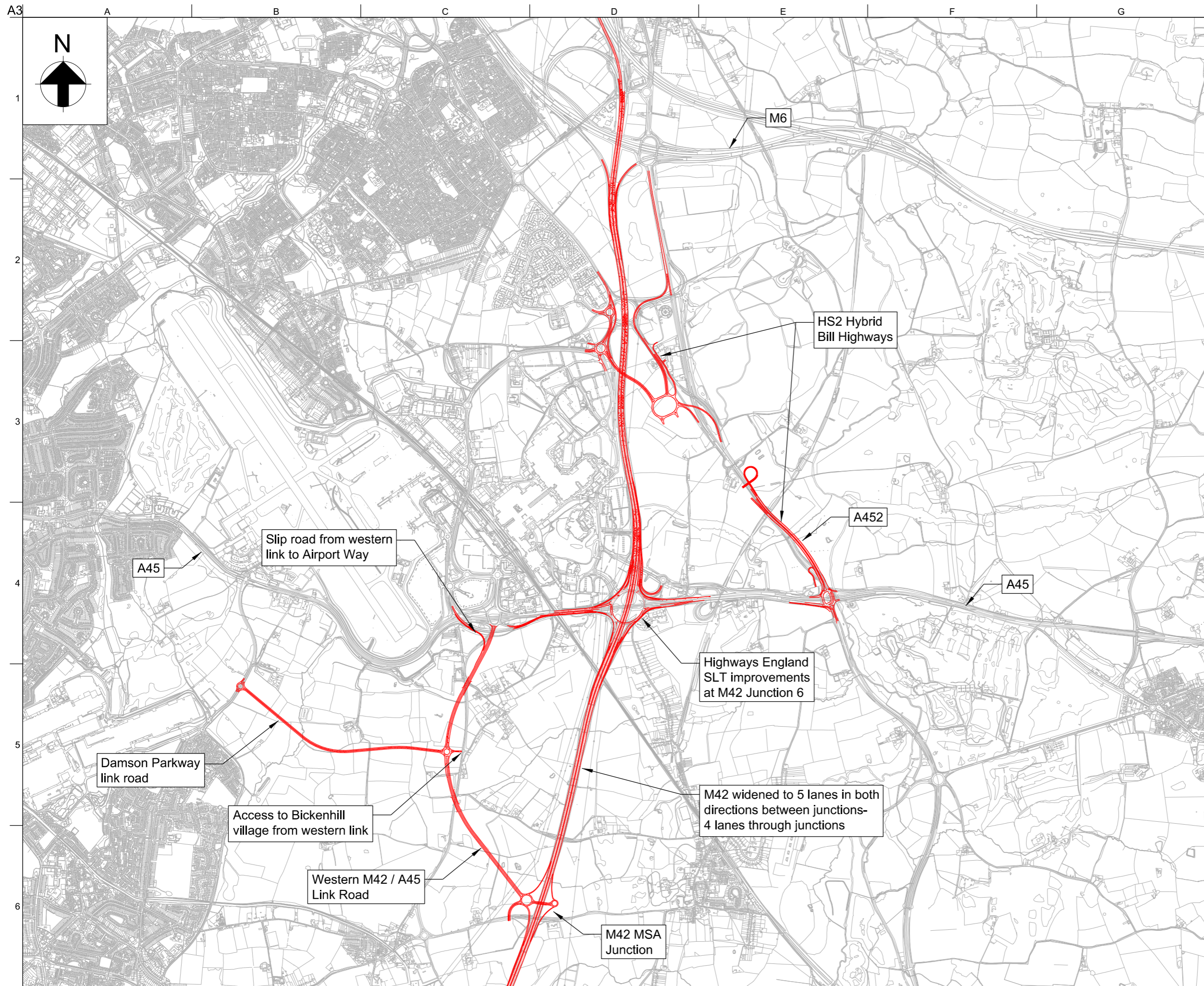
Discipline Transport Planning

Job No **235380-24** Drawing Status **Information**

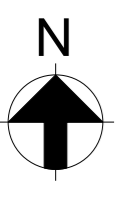
Drawing No **CH001** Issue **01**

Do not scale FIGURE E15: CH001- 2026 DO NOTHING HIGHWAY NETWORK

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Job Title
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2026 Do Minimum
 Highway Network

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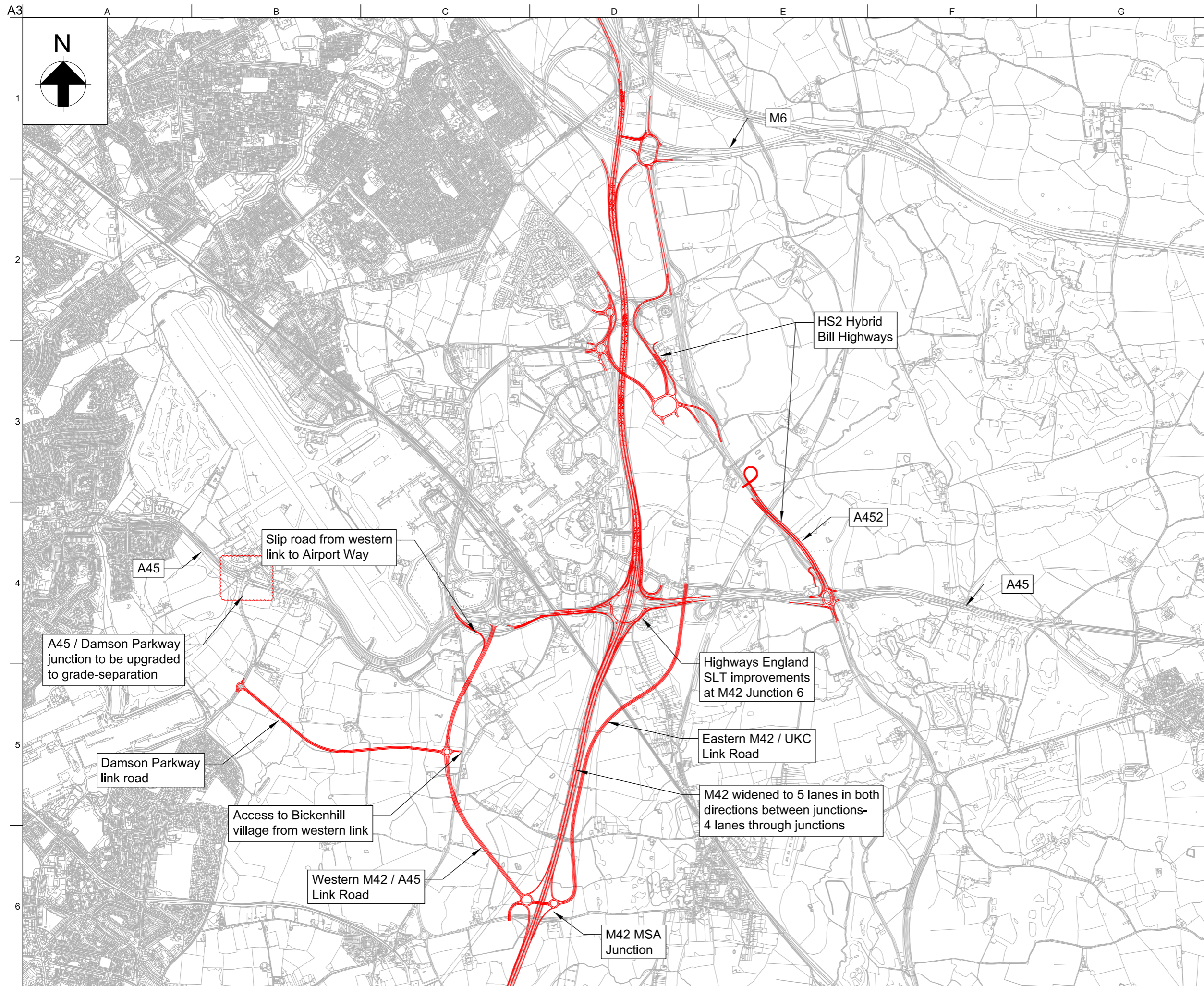
Discipline **Transport Planning**

Job No **235380-24** Drawing Status **Information**

Drawing No **CH002** Issue **01**

Do not scale **FIGURE E16: CH002- 2026 DO MINIMUM HIGHWAY NETWORK**

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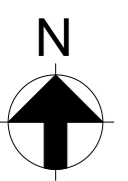
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First Issue				
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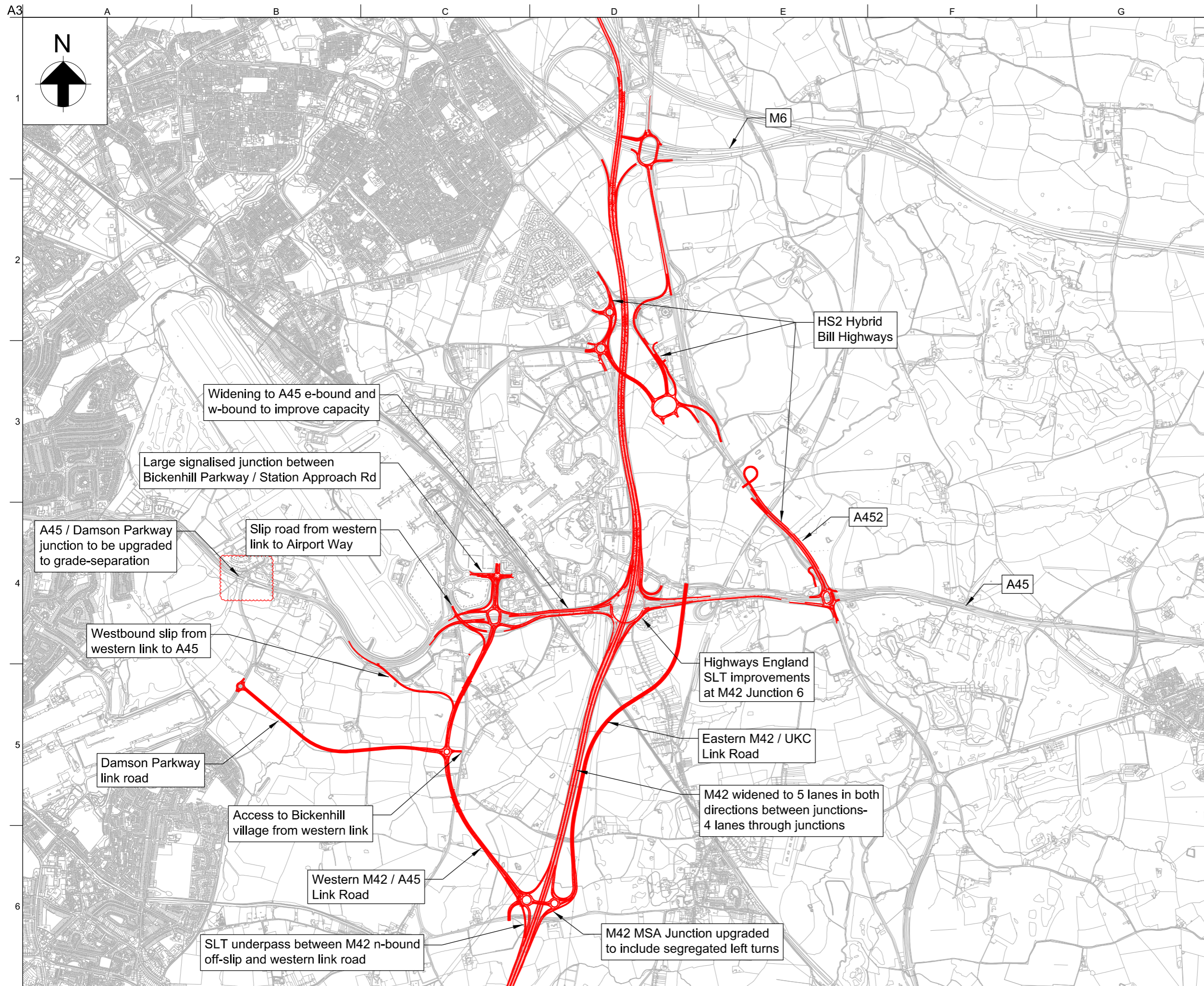
Job Title
Proposed Highway Network

**2041 Do Minimum
 Highway Network**

Scale at A3	N.T.S.
Discipline	Transport Planning
Job No	235380-24
Drawing Status	Information
Drawing No	CH003
Issue	01

Do not scale FIGURE E17: CH003- 2041 DO MINIMUM HIGHWAY NETWORK

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Widening to A45 e-bound and w-bound to improve capacity

Large signalised junction between Bickenhill Parkway / Station Approach Rd

A45 / Damson Parkway junction to be upgraded to grade-separation

Slip road from western link to Airport Way

Westbound slip from western link to A45

Damson Parkway link road

Access to Bickenhill village from western link

Western M42 / A45 Link Road

SLT underpass between M42 n-bound off-slip and western link road

M6

HS2 Hybrid Bill Highways

A452

A45

Highways England SLT improvements at M42 Junction 6

Eastern M42 / UKC Link Road

M42 widened to 5 lanes in both directions between junctions- 4 lanes through junctions

M42 MSA Junction upgraded to include segregated left turns

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First Issue				
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Discipline Transport Planning

Job No 235380-24 Drawing Status Information

Drawing No CH004 Issue 01

F INFRASTRUCTURE INVESTMENT APPRAISAL EXECUTIVE SUMMARY

This appendix comprises an executive summary of the Infrastructure Investment Appraisal (IIA) produced by the Urban Growth Company (UGC) consultancy team in September 2017. The IIA is a confidential document which accompanies The Hub Framework, Value Capture Framework and Strategic Business Case.

INTRODUCTION

The IIA sets out the infrastructure that it is envisaged will be required to deliver The Hub development. It is based on the development scenario outlined in The Hub Growth and Infrastructure Plan (HGIP) that was published in 2017.

SCOPE

The IIA considers the need for four types of infrastructure across The Hub area:

- Movement – including highways, bridges and public transport;
- Utilities – including electricity, gas, potable water and foul drainage provision; and
- Social and Community – including the need for public open space, education, fire, ambulance and health provision.

The IIA does not include all infrastructure associated with development, but considers the strategic need. Therefore, individual developers on-plot infrastructure is not included, as it is assumed that this is a normal cost of development.

PHASES

The IIA considers the infrastructure story across The Hub on the basis of delivery that is divided between four phases. These phases span the delivery of the HS2 Interchange Station in 2026 and beyond, and are intended to take account of the sequential development of The Hub sites over time as set out in the HGIP.

The phases essentially relate (at least in terms of the way the IIA considers them) to allowances of development and growth. Hence, this growth could be accelerated, or delayed, and broadly the same infrastructure requirements could be considered to be required at each stage of development completion.

For convenience, and to align with the delivery aspiration, these have been referenced into phases related to roughly five year periods:

- 2017 – 2022 – Phase 1
- 2023 – 2027 – Phase 2
- 2028 – 2032 – Phase 3
- Beyond 2032 – nominally to 2042 – Phase 4

MOVEMENT

The requirement for transport infrastructure has been assessed in two ways:

1. For highways and bridges, a traffic model has been developed that forecasts future background and development flows for the area, and this is used to derive the requirement for infrastructure; and
2. For public transport the schemes planned by the West Midlands Combined Authority (WMCA), Solihull Metropolitan Borough Council (SMBC) and other relevant transport authorities have been included in the IIA – typically on a pro rata basis relative to the proportion of the scheme that is within The Hub area.

This has allowed a comprehensive picture to be set out relating to the way that movement infrastructure will need to be delivered across The Hub over the four phases that are considered.

Within the Arden Cross triangle site development significant additional highway and bridge requirements are identified, consistent with the creation of a growth area around the HS2 Interchange Station. Elsewhere the highway and bridge schemes are predominantly outside of the main development sites and are strategic enhancements to the network to ensure operational characteristics are acceptable.

The public transport schemes include the East Birmingham and North Solihull Metro extension scheme, and the A45 and Solihull Sprint bus based rapid transit proposals. These are key provisions to allow The Hub growth to occur in a sustainable way. Additionally, localised support is allowed for local buses and upgrades to walking and cycling routes.

UTILITIES

The assessment of strategic (rather than site specific) utilities infrastructure has been based on discussions with the utility companies and reference to the schemes and records that are available for the area. This assessment is necessarily at a high level at this stage, as more detailed demand modelling and design would need to be undertaken once the land use mix and precise delivery profile for The Hub is defined.

However, the IIA provides an overview of what will be required, and considers the requirement for forward planning of provision to allow it to be ready for development to come forward.

The need for utilities infrastructure has been considered in three ways:

- Strategic network reinforcement to allow capacity to be made available to the wider Hub area;
- Localised network enhancement within The Hub area that is required to distribute provision across the sites; and
- Diversions and protection measures that are necessary to the network where development may directly impact existing parts of the network.

COSTS

The IIA has developed a cost profile for The Hub area, and has undertaken a broad assessment of when these costs are likely to be incurred relative to the phasing that has been assumed.

Overall the costs for the IIA schemes is £1,740 bn, with the majority needing to be committed in the early phases of development.

The majority of the expenditure is on movement infrastructure – with the public transport schemes being the most expensive.

Since the forecasting has suggested that the delivery of these schemes will need to occur early in the development process, it will be critical to ensure that design and procurement is undertaken quickly and in a timely way.

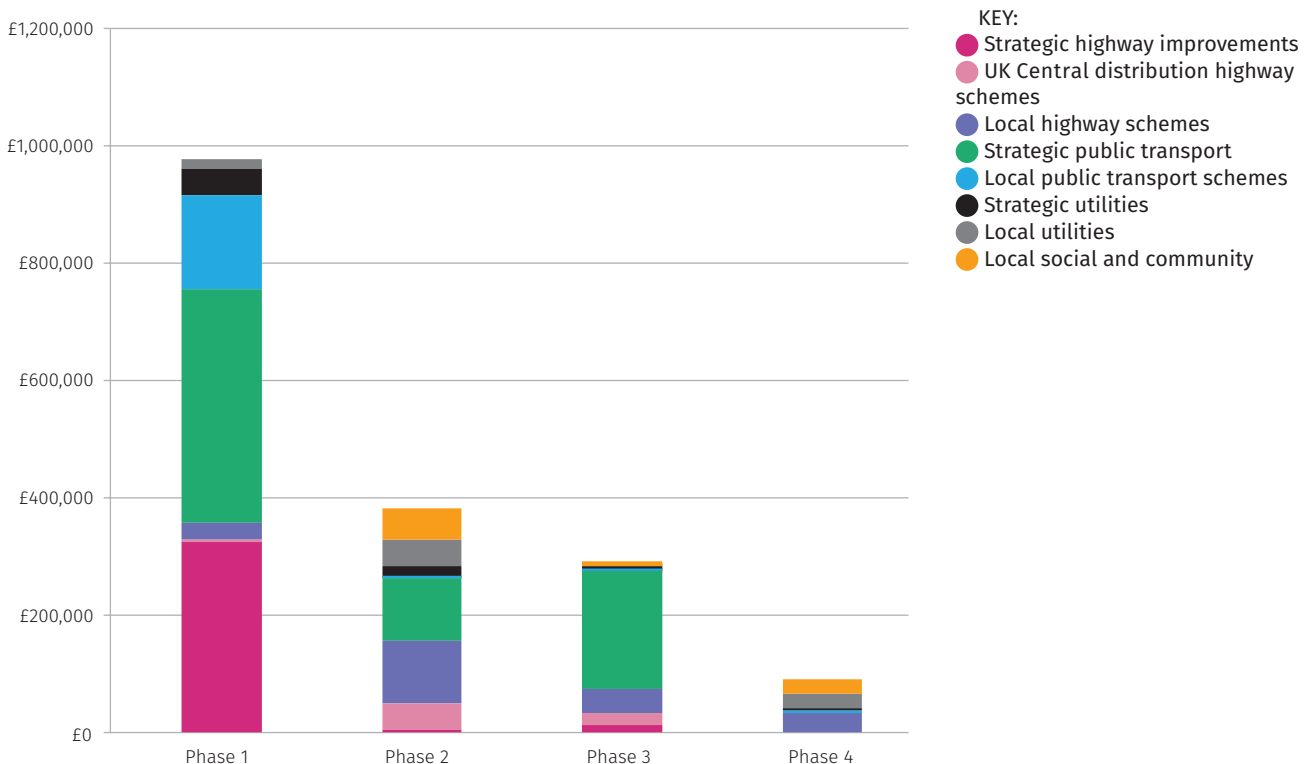


FIGURE F1: IIA SPEND BY PHASE AND INFRASTRUCTURE TYPE

FUNDING

The means to fund the infrastructure is considered in overview in the IIA, but the detail of how this is to be achieved is not resolved by the assessment undertaken. Consideration is given to where schemes already have committed funding – such as the M42 J6a scheme which Highways England has already committed funds towards, but this is only a small element of the overall total.

Overall, sources of funding are likely to comprise a range of possibilities:

- Department for Transport sources – such as the Road Investment Strategy programme for M42 J6a;
- HS2 connectivity package funding targeted at improving interaction with the new station;
- Devolution funds, channelled and allocated by the WMCA;
- Developer contributions through Community Infrastructure Levy, Section 106 and directly through Section 278 works and the like;
- Direct delivery through the utility companies – either through their asset management plans or other mechanisms.
- The UGC have also considered other sources of funding generation, through a series of Value Capture mechanisms, and it is likely that these will be important elements in the overall delivery of The Hub.

The IIA does give some consideration to the way that any individual element of infrastructure responds to development in a particular part of the Hub, and hence where benefits may be likely to accrue. This suggests that some schemes are likely to be especially beneficial to some parts of The Hub, and hence there would be an expectation that they would make contributions to these schemes – but the level of contribution needs to be part of more detailed work.

Overall the IIA takes a very cautious approach to funding, and only assumes that funding is available where it is already committed – as shown in blue in Figure 3 overleaf.

It is clear that a considerable level of funding will need to be secured for the remaining schemes – although the picture is not as gloomy as the orange areas in Figure 3 overleaf suggest.

Much of the public transport infrastructure identified by the IIA is progressing through the development of business cases and is likely to be funded through the WMCA. The utilities requirements will go through the statutory review process for price controls in this sector, and so opportunity will exist to secure funding for strategic schemes (so long as the utilities are engaged with the process and

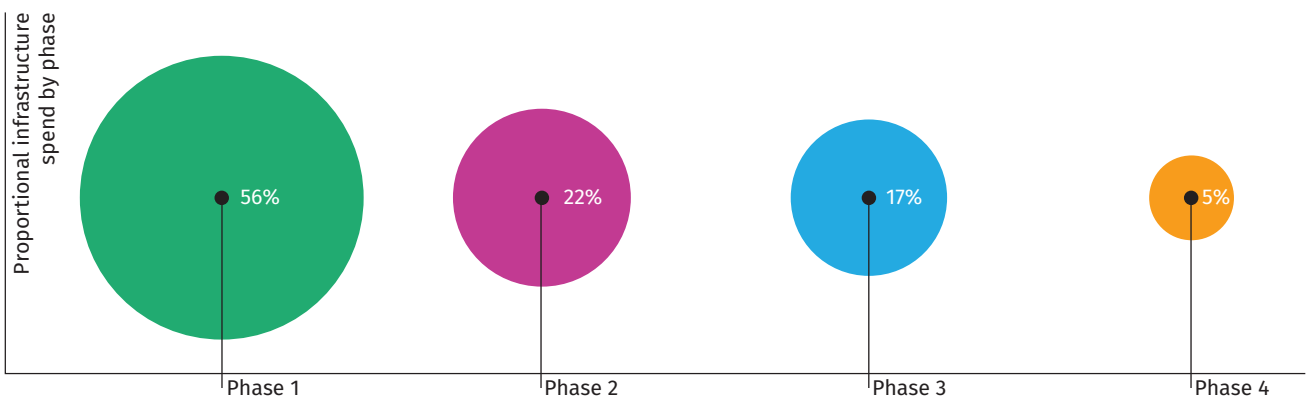


FIGURE F2: IIA SPEND BY PHASES

programme early enough). In addition, second-comer¹⁰ provisions and the like may be used to forward fund provisions and then recover the costs later.

Developer contributions will also be available – although this will be subject to the individual planning consents that are granted, and the mechanisms that are contained within them.

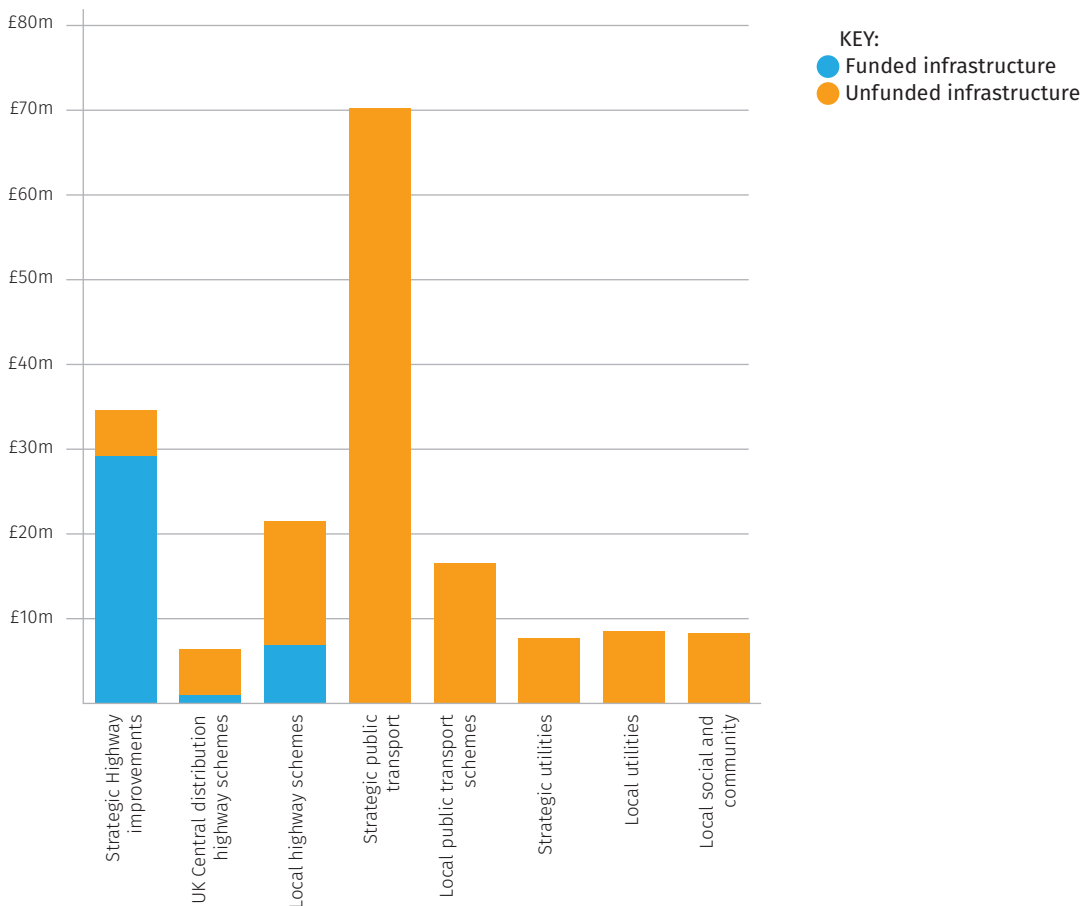
10 Refer to Section 16 of the Electricity Act 1989 and the Electricity (Connection Charges) Regulations 2002 for further information.

NEXT STEPS

The IIA identifies that a series of strategic steps led by the UGC should be taken in promoting the delivery of infrastructure in The Hub area, including:

- Developing further detail of the proposals and how they should be promoted and funded;
- Consider the programme and phasing of infrastructure schemes within the phases;
- Develop a key Risk Register for infrastructure schemes; Further develop traffic models across The Hub to refine and define highway schemes; and
- Develop close relationships with infrastructure delivery stakeholders to align procurement and delivery.

FIGURE F3: FUNDED AND UNFUNDED INFRASTRUCTURE





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