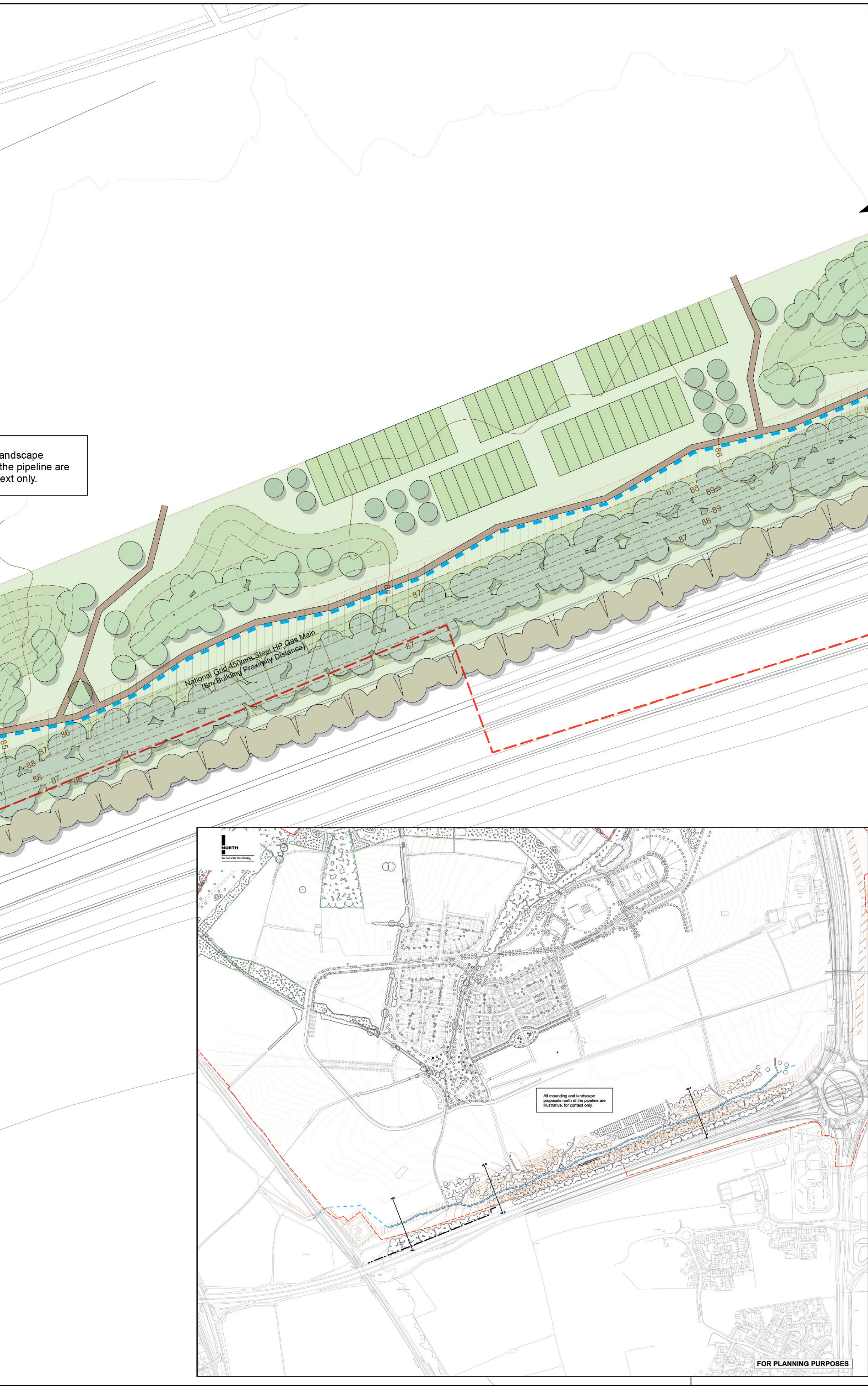

KEY

- Existing embankment along road
- Existing cut along road
- Existing contour
- Proposed contour
- Existing vegetation along road
- Existing hedgerow
- Proposed woodland planting
- Proposed parkland planting
- Proposed acoustic mound
- Proposed amenity mound
- Proposed footpath
- Proposed allotments / orchard
- Proposed acoustic fence
- Proposed bridle way

Notes:
1. Based on Brookbanks Consultation Section 38 Works Drawings 10223-100-03/04/05/06 rev A (15.08.2014) and Define Site Constraints drawing DE096 005
2. To be read in conjunction with m+w sections drawing no. 0638.029, 030 and 031

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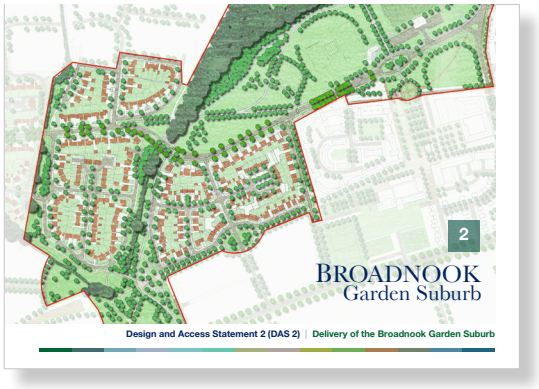
client	PALMER TOMKINSON TRUST & COOPER FAMILY
project	BROADNOOK GARDEN SUBURB
drawing title	Acoustic mounding exercise sketch landscape proposals option 1
drawing number	0638.041-
date	July 2016
scale	1:2500 @ A1
drawn	ZT / DM

Reference should also be made to the **Planning Statement** and **Design and Access Statement 2: Delivery of Broadnook Garden Suburb** for a comprehensive appraisal of the planning policy context and a full explanation of the details of the proposals for the northern landscape area and two initial detailed housing areas demonstrating the garden suburb design and layout virtues.



The plans demonstrate the conclusions of the **assessment – involvement – design iterations** which have led to the application proposals, accounting for;

(i) the policy priorities established by the planning documentation;

(ii) site analysis and identified constraints;

(iii) the environmental impact assessment process, findings and any mitigation measures recommended;

(iv) pre-application consultation with statutory and other consultees;

(v) the community engagement and involvement exercise with the nearby communities and their representatives.

Alternatives Considered (see Environmental Statement Chapter 5)

The EIA process has incorporated considerations of alternative forms of the development in order to define the optimum scheme to take forward. The design of the development has emerged through an analysis of a disposition of development that can be set out on the site to best meet the development objectives and policy imperatives whilst minimising effects on surrounding uses, users and features.

Construction Assumptions

The EIA assesses the effects that could arise during the construction as well as once completed (the 'operational' phase). The construction phases will, where relevant, be the subject of planning conditions and measures prescribed in a **Construction Environmental Management Plan (CEMP)** and include relevant regulatory references and industry best practice. The CEMP is important since it will be approved by the Borough Council following consultation and will prescribe and control the construction activities and prospective contractors. The proposals are also assessed on the basis that implementation will occur on a phased basis with construction effects mitigated and minimised appropriately and that physical and green infrastructure is secured in the optimum fashion. A preliminary phasing sequence is demonstrated on the following plan.


A1
A1
B1
1
2
3
4

Phasing Plan

The Environmental Issues

The iterative design process and consideration of alternatives has interacted with the EIA conclusions and community involvement. Recent revisions have included key landscaping changes to the western and north western flanks to increase woodland planting.

This design and evolution process took place as part of and in tandem with the **Core Strategy Examination** which concluded with clarification on location-specific issues. The independent Inspector was able to address the key technical and environmental issues (informed in part by the EIA process) in the knowledge of both the extensive and robust Core Strategy evidence base and the range of additional site-specific assessments.

In September 2015 he reached clear conclusions including important references to environmental considerations:

> *"The scale of development proposed is necessary to ensure an adequate and flexible supply of housing and to deliver the strategy of urban concentration. It will also enable employment opportunities and key infrastructure and social and community facilities to be brought forward comprehensively as part of the development, whilst maintaining a reasonable degree of separation from Rothley…*
>
> *There are no designated assets within the Direction of Growth and there would be sufficient distance between built development and nearby heritage assets including the Rothley and Rothley Ridgeway Conservation Areas to avoid any harm to them or their setting. There are no nature conservation designations within or close to the Direction of Growth. Subject to appropriate improvements and mitigation measures, the increased traffic from the Direction of Growth could be accommodated safely and without undue increases in congestion.*
>
> *Policy CS20 and other policies in the Core Strategy provide clear mechanisms for mitigation and safeguards in terms of the potential effects of the development.*
>
> *I am satisfied that there are no significant physical or other constraints to development and that mechanisms can be put in place to ensure that necessary infrastructure is provided as the development progresses…*
>
> *As submitted, Policy CS20 lacks… sufficient clarity as to the area being considered for development and its relationship with key physical boundaries. In addition, the Council accepted that there was no longer a justification or requirement for a link road from the A6 to the Wanlip Junction or a Wanlip bypass. Main Modification MM12 would also address these concerns…"*
>
> (Inspector's Report paras 130, 132-135 and 137)

A summary of the Environmental Statement in relation to the environmental issues is as follows:

Landscape Character and Visual Effects (ES Chapter 7)

The garden suburb site lies predominantly in National Landscape Character Area NCA 73 “Charnwood” and Local Landscape Character Area “Charnwood Forest”. The site area does not include any designated areas or features of national, regional or local landscape importance. There are no public rights-of-way across the garden suburb site.

The key characteristics of the location and its immediate setting have been subject to a landscape and visual impact assessment (LVIA) incorporating viewpoints over a very wide area. It has been carried out with regard to best practice methodology and guidance.

At an early stage in the consideration of alternatives for the North of Birstall location higher ground to the east of A6 was recommended for protection from built development. In the event the whole area in the A6/A46 north east quadrant is restricted to green infrastructure uses in compliance with the adopted Core Strategy.

The site of the built footprint of the garden suburb – west of the A6, north of A46 – is situated at the top of a low hill with slopes to the west, north and east.

Blocks of woodland and some significant hedgerow boundaries are prevalent to the west and north contributing to the character of the Charnwood Forest landscape area. These are all proposed to be retained and enhanced.

Main arterial road and rail routes cut through the wider topography forming embankments and cuttings which are generally well planted with mature vegetation which makes a strong impression.

The edge of the Principal Urban Area is apparent from new development at Hallam Fields to the south. Otherwise there is a semi-rural outlook to the east, north and west with glimpses or full views of settlement – at Thurcaston, Cropston and further afield Cossington and Syston. The views to Thurcaston and Cropston illustrate the successful integration of settlement with the surrounding well treed and wooded landscape and backdrop.

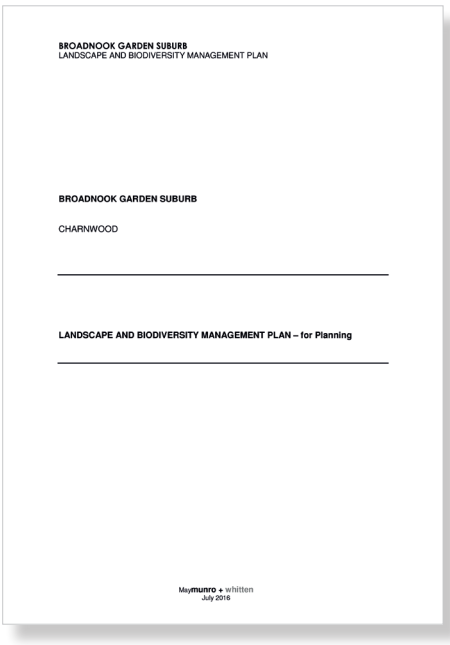
The dominant feature of the garden suburb is enhanced landscape which is its defining characteristic. The way in which this has been considered, designed and set out at Broadnook is explained in the **Framework Design and Access Statement (DAS 1)**.

The garden suburb incorporates a range of mitigation measures including substantial and structural new landscape areas. The Masterplan recognises the visual envelope of the site and establishes a coherent response in order to project a positive green image to the outside area. The objective of a clear dominance of green spaces and trees over built form, even at the early stages of development is evidenced by the details for the two housing areas forming important elements of the hybrid application. (see **Delivery Design and Access Statement (DAS2)**).

This balance of priorities is particularly relevant to the western flank of the garden suburb where the planting element is substantiated to soften views of new development from the west. Early structural planting in this area will be appropriate.

The proposals also include significant improved public access with new and diverted footways and cycleways, signage, interpretation and measures to ensure access for all.

A comprehensive **Landscape and Biodiversity Management Plan** also accompanies the application. It will be implemented to ensure the successful establishment and continued success of all the conserved and proposed landscape areas and features. Overall the landscape effects of the proposed development would be slight adverse at the outset of development, but would become beneficial in the short term given the extent of new planting and in the longer term more notable benefits will accrue as the landscape proposals mature.


BROADNOOK GARDEN SUBURB
LANDSCAPE AND BIODIVERSITY MANAGEMENT PLAN

BROADNOOK GARDEN SUBURB

CHARNWOOD

LANDSCAPE AND BIODIVERSITY MANAGEMENT PLAN – for Planning

Maymunro + whitten
July 2016

Ecology and Biodiversity (ES Chapter 8)

The areas to the west and east of the A6 have been the subject of five habitat surveys since 2008 – two carried out by the Borough Council as part of the Local Plan evidence base and three more on behalf of the applicants to inform the hybrid planning application, supplemented by specific species surveys for birds, bats, badgers and newts.

The assessment of the effects of the development on ecology has been undertaken in line with current guidance produced by the Institute of Ecology and Environmental Management (IEEM 2006). It consists of a number of stages;

(i) collection of existing data using information from national and local sources and from the series of surveys;

(ii) identification and evaluation of ecological receptors and classification according to scale and importance;

(iii) assessment of the potential for impacts with regard to whether the effect is positive/negative/neutral and then with reference to the magnitude, extent, duration, reversibility, timing and frequency and potential for cumulative impacts.

There are no sites on or adjoining the garden suburb site with a national or local designation for nature conservation value.

The overall conclusion from the survey work for the site is that in view of the intensive farming regime it has low nature conservation value. Important habitats are beyond the site to the north associated with the valley of the Rothley Brook. Broadnook Spinney is the key landscape feature on site and three corridors are identified as wildlife priorities – the Spinney, a second important hedgerow aligned south east to northwest and the Great Central Railway. The field pattern and more important hedgerows east of Broadnook Spinney are of poor ecological value with a limited species-mix and will be replaced by substantive new planting. The field pattern – geometric to the east of Broadnook Spinney, more informal to the west – presents a ready basis for considering a garden suburb layout and the prospect of a significant nett gain in green infrastructure.

There are no significant water bodies on the site. An unnamed watercourse flows across and adjacent to the Spinney in a north-eastern direction on its way to the River Soar.

The potential for creative nature conservation and enhancement has been given high priority in the evolution of the Broadnook proposals. In place of intensive agricultural activity large areas of open space, parkland, woodland and habitat creation form an intrinsic part of the garden suburb design characteristics. There is significant potential for the creation of habitats of value. A **Green Infrastructure Strategy** accompanies the application. Further evolution of the detail for significant areas both west and east of A6 in discussion with the Borough Council, Wildlife Trust and interested parties is underway.

The comprehensive **Landscape and Biodiversity Management Plan** is put forward to ensure immediate and long-term stewardship of the garden suburb. Those areas subject of the detailed submission are to be dealt with as priorities. Overall the proposals achieve significant beneficial change for the ecological resource.

Transport and Access (ES Chapter 9)

Primary access is achieved from the A6 with a two-way link to Loughborough Road compliant with Policy CS20 requirements. Traffic generation and distribution has been evaluated utilising the Leicester and **Leicestershire Integrated Transport Model** (LLITM). The outputs suggest junction improvements are required at the A6/A46, the A46 Anstey Junction and at the 'Red Lion' Hallfields Lane/Loughborough Road crossroads at Rothley.

The garden suburb is very well placed to secure high frequency bus services from the outset – from a diverted Arriva 126/127 Service and to benefit from extended Centrebus 22A/22B Services which currently terminate in north Birstall – one advantage of which will be to provide a bus service connection for Wanlip residents too. Additional services – including Kinchbus No. 2 and Skylink Services – also pass by the site and offer additional potential for local and key destination links. The Birstall Park and Ride is in close proximity.

National Cycle Route (Sustrans) No 6 which currently follows the A6 can readily be diverted into the site to offer a more attractive route whilst being a focus for new connections and part of an enhanced network of routes for walking and cycling both within and beyond the garden suburb.

The scale and proposed layout at Broadnook confirms the walkable neighbourhood credentials and the importance of a network for walking and cycling focusing on Central Walk and the Broadnook Centre.

Traffic associated with construction has been considered and effects will be minimised by the implementation of a Construction Environmental Management Plan.

Providing that the mitigation measures including a Travel Plan for the site which are deemed integral to the proposals are implemented the potential environmental effects are predicted to be negligible or minor beneficial.

Ground Conditions and Minerals (ES Chapter 10)

A Geo-environmental Phase 1 Desk Study Appraisal and Phase I and II Intrusive Investigation Studies have both been undertaken. No contamination risks have been identified and ground conditions support the proposed disposition of land uses. There are no significant impacts or constraints on the development proposals resulting from existing ground conditions.

It is important that a robust and comprehensive **Construction Environmental Management Plan (CEMP)** based on industry best practice is put in place to control construction activities and agreed with the planning and regulatory authorities. A framework CEMP is submitted with the application and will be important, inter alia, in safeguarding ecological, drainage and ground conditions interests as well as residential amenity.

The eastern part of the North of Birstall location lies within a sand and gravel **Minerals Consultation Area**. To review the potential for commercial deposits of aggregate minerals being present the entire site as far west as the Great Central Railway has been assessed, including desk top research and intrusive field investigation.

The area of particular interest from geological mapping is east of A6 where early draft proposals for built development and new road infrastructure were being considered. Investigation confirms that the majority of the sand reserve has been worked in the past (associated with highway construction) and remaining deposits are limited. In any event the only permanent uses proposed east of A6 in the application are concerned with green infrastructure – a small park, a garden suburb tree nursery, sports pitches and pedestrian/cycle links.

There are no deposits of any minerals of economic interest that would warrant safeguarding.

Overall the assessment of ground conditions concludes that there is not a significant risk to potential end users of the site or the controlled waters environment.

Archaeology and Heritage (ES Chapter 11)

Desk-based assessment and extensive fieldwalking and geophysical survey have informed the archaeological and heritage evaluation. The objectives of the research were to identify any constraints to development and in the iterative masterplanning exercise to examine the potential impact of the proposals on below-ground archaeology and the built heritage.

There are no designated heritage assets – Scheduled Monuments, Conservation Areas, Listed Buildings – within the boundaries or close to the application site. Distance, topography, mature vegetation and lack of intervisibility combine to ensure that there will be no impact on the heritage assets of Rothley, Rothley Ridgeway and Thurcaston Conservation Areas or their setting.

Three compact sites of known below-ground undesignated assets and a number of other areas of potential within the site have been identified by the assessment.

Any ground disturbance associated with construction works has the potential to have direct and indirect effects on archaeological remains. A staged programme of investigation is proposed to be undertaken of the relevant areas with archaeological potential within the development boundaries based on a programme of works composed by the University of Leicester Archaeology Service. The initial stage will cover the area subject to the detailed area of the hybrid planning application and associated infrastructure.

None of the known undesignated heritage assets require physical preservation in situ. Proportionate and targeted trial trenching will be undertaken to achieve preservation by record. When the additional fieldwork and post-excavation work has been completed, preservation by record will have been achieved. No archaeological mitigation will be required once the proposed development is occupied. As the records and finds from this work will be archived at a suitable institution the residual impact will be negligible and there will be no impact on designated heritage assets.

Drainage and Flood Risk (ES Chapter 12)

The application is supported by a **Flood Risk Assessment (FRA) and Surface Water Drainage Technical Guidance** and the garden suburb proposals have been the subject of an environmental impact assessment on the water environment.

In terms of the construction phases there are potential impacts associated with temporary and sequential activities as development progresses in phases.

In line with established good practice the Borough Council as local planning authority will require a **Construction Environmental Management Plan (CEMP)** to be prepared and approved. A Framework CEMP accompanies the application. The CEMP will define best practice methods of construction and site control including agreeing Method Statements with the Environment Agency and local authorities in order to avoid, minimise and mitigate any adverse effects including those related to the water environment.

The site lies wholly within **Flood Zone 1** – being an area of lowest probability of flooding outside both the 1 in 100 year and the 1 in 1000 year flood events – very much a preferred location for development.

The operational phases of development include sustainable drainage proposals where feasable which will result in significant betterment for the surface water drainage regime associated with the Rothley Brook Corridor and a positive effect on water quality will also be achieved. The surface water drainage proposals add to enhanced biodiversity across the application site.

Through the implementation of these comprehensive mitigation measures the proposed garden suburb development does not result in significant adverse environmental effects during either construction or operation phases. Indeed there will be significant and permanent benefit.

Community, Economic and Social Effects (ES Chapter 13)

National Planning Policy advocates the integration of homes, jobs and facilities in creating sustainable development and by reducing the need to travel.

These objectives will be achieved at Broadnook in a comprehensively planned scheme which includes

- a mixture of homes and densities to underpin and to meet the needs of a new community in a high quality environment;
- an appropriate mix of business and employment uses and a range of jobs at the Broadnook Centre.

People living within the development and nearby will have the opportunity to live close to work as part of the objective to reduce commuting.

The new community will benefit from access to a wide range of services and facilities including a two-form entry primary school, health care facilities and a community resource centre. The Broadnook Centre will combine community and commercial uses to provide a focal point for the community providing goods and services in a walkable neighbourhood.

These social and economic advantages will be achieved within an extremely attractive and healthy environment which will result in a significant nett gain in green infrastructure including important biodiversity advantages. The Broadnook Garden Suburb proposals are brought forward very much in the spirit established by the Garden City pioneer Ebenezer Howard who advocated the advantages of the "town-country" amalgam. In turn Government has recently repeated its endorsement for the approach to be pursued since;

> *"… attributes that most people value – such as quality design, gardens, accessible green space near homes, access to local employment and local amenities can be designed in from the outset"*

Whilst there are significant on-site advantages Broadnook is also located at the edge of the Leicester Principal Urban Area. The higher-order shopping and cultural facilities in the City are readily accessible by a range of transport modes including high quality bus service and the Birstall Park and Ride.

Clear, significant and permanent social, economic and environmental benefits will arise from the Broadnook proposal.

Air Quality (ES Chapter 14)

An air quality impact assessment has been carried out to assess both construction and operational impacts of the application proposals.

In the UK the Air Quality Standards Regulations (2010) consolidate European legislation with other national standards and sets various limits/standards for air quality. The Air Quality Strategy for England, Wales, Scotland and Northern Ireland sets out air quality limit values and a framework for improving air quality. The main controls with respect to dust are set out in Part III of the Environmental Protection Act (1990) which contains a legal framework for regulating statutory nuisances.

During the construction phase temporary and intermittent releases of dust and PM_{10} can occur as a result of site activities. Through good site practice and the implementation of appropriate mitigation measures controlled by the **Construction Environmental Management Plan** such releases can be effectively controlled and the resultant impacts are considered to be negligible. Construction mitigation measures have been identified.

A qualitative review of the potential for odour impacts to occur at proposed residential receptors within the site as a result of the operation of the Wanlip treatment works has been undertaken. Following consideration of separation distances, a review of meteorological data and detail of any complaints received by Charnwood Borough Council, it is considered unlikely that emissions from the treatment works will have significant impacts on future occupants of the application site.

The ADMS dispersion model has been used to predict the impact of traffic generated by the proposed development on NO_2 and PM_{10} concentrations at existing receptors and to predict concentrations across the development site. The assessment predicts an overall negligible impact on both pollutants at the existing receptors and concentrations across the site are well below the relevant maxima associated with national and local air quality objectives.

It is concluded that the development will not give rise to significant environmental effects and that air quality is not a constraint to development in accordance with established planning policy.

Noise and Vibration (ES Chapter 15)

Noise can be associated with construction activity, machinery and vehicles and occupied phases of development can be affected by ongoing progress and implementation of adjoining further phases.

In line with best practice it is anticipated that Charnwood Borough Council will require a rolling **Construction Environmental Management Plan (CEMP)** to be approved in order to control construction works throughout the phased delivery of the garden suburb. This will include restrictions on working hours, traffic routing, on-site working practices, noise suppression including temporary screening where necessary and so on. Reference should be made to the Framework CEMP submitted with the application

With the implementation of best working practices set out the noise and any vibration impacts of earthworks and construction phases will generally be negligible with brief periods of minor adverse temporary impacts in concentrated areas.

In terms of the operational phases of the development the ambient noise regime in limited areas is dominated by traffic noise generated by the A6 andA46 roads. The southern and eastern boundaries of the garden suburb are susceptible to adverse noise generation.

Standards from British Standard (BS) 8233:1999 and the World Health Organisation's "Guidelines for Community Noise" are used to inform the methodology used and the conclusions reached.

The Broadnook proposals incorporate noise sensitive uses including extensive residential areas and office elements of the employment areas. Baseline noise survey and prediction calculations have been considered in framing the Broadnook Development Framework Plan. The daytime and night-time contours indicate that the new uses in the southern and eastern peripheral areas fall into Noise Exposure Categories (NEC) A and B. The Framework Plan does not show residential development in areas categorised as NEC C. Notwithstanding that position mitigation measures are proposed to be incorporated into the southern site boundaries in the form of acoustic mounding and fencing. In addition the A6 stretch between the A6/A46 Junction and the proposed new Broadnook access is proposed to be the subject of a new speed restriction of 50 mph which will reduce noise levels significantly along this corridor. These measures have been modelled and improved daytime and night-time noise levels are achieved both for internal and garden/parkland outdoor areas. The detailed design of new residential and office buildings closest to the A6 andA46 boundaries will also account for any noise considerations.

With these mitigation and/or enhancement measures it is considered that the impact of the existing road traffic noise will not be a constraint to the proposed development.

Agriculture and Soils (ES Chapter 16)

Mitigation against permanent loss of agricultural land or sealing of soils by buildings is not possible but the effects on soil functions in the extensive landscape and amenity areas and gardens will be mitigated by using best practice in soil handling as part of the **Construction Environmental Management Plan**. The existing soil function can be retained or enhanced over a significant portion of the site.

The proposed development site is predominantly lower quality having regard to climate, soils, geology and topography. The agricultural land quality is classified as almost wholly Grade 3b. Only a very small area of best and most versatile land will be taken out of current agricultural production.

The potential effects on agricultural land use and resources are not considered to be significant.

Cumulative Effects

The environmental impact assessment accounts for development proposals identified in the Charnwood Core Strategy - which have also been addressed individually and collectively by the Borough Council and an independent Inspector in terms of sustainability and mitigation factors - and housing projects being completed at Birstall and Rothley. The Environmental Statement does not identify any significant adverse cumulative effects.

Summary of the Environmental Assessment and Conclusions

The findings of the Environmental Impact Assessment set out in the Environmental Statement demonstrate that the Broadnook Garden Suburb proposals have been carefully considered in terms of iterative design accounting for the assessments made, issues arising and recommendations forthcoming. Matters are dealt with in a positive way where necessary or desirable through a set of mitigation measures in order to bring forward the priorities established by national and Charnwood-specific planning policies and priorities.

The anticipated social, economic and environmental advantages put forward by the Borough Council in its adopted Core Strategy represent demonstrable positive planning benefits. They will produce a nett gain – in homes, jobs, facilities, green infrastructure and sustainable transportation and are capable of being enforced through planning conditions or a Section 106 Agreement in relation to the development.

The planning policy context for Broadnook Garden Suburb is clear, positive and supportive. The Borough Council has progressed its Core Strategy which has been tested at Examination. The development strategy has been supported and the Local Plan adopted. The North of Birstall proposal is one of three strategic priorities required to fulfill the Borough Council's development strategy for South Charnwood. That combination of proposals has been assessed at Examination and endorsed by an independent Inspector following Sustainability Appraisal.

Through the environmental impact assessment process which has been underway over a considerable period and the completion of an Environmental Statement – which informs and dovetails with the comprehensive documentation supporting the application – including the important Design and Access Statements – the applicant has ensured that extensive information on all relevant issues is provided. No cumulative effects are anticipated.

The Development Framework and Parameter Plans set out the conclusions of the integrated processes, accounting for important considerations in a balanced way, mindful of the Borough Council's spatial objectives and the response from community involvement.

In all it is considered that a high quality, attractive scheme has been brought forward centred around strategic green infrastructure. It will be locally distinctive and will secure a range of benefits.

The Environmental Impact Assessment confirms that the Broadnook proposals will not give rise to significant adverse environmental effects.

BROADNOOK

a new garden suburb

- a flagship scheme in South Charnwood in accordance with the Charnwood Local Plan 2011-2028