

Norwich Research Park Development Brief

Consultation Draft

PREPARED FOR SOUTH NORFOLK DISTRICT COUNCIL
BY LAND USE CONSULTANTS

May 2007

Contents

Part 1: Introduction	I		
Purpose of the Development Brief	3	Specific design principles for Colney Hall	34
Vision and objectives	3	Part 4 summary: Developer's checklist	36
Components of NRP	4	Part 5: Use Class Variations	37
Preparation of the Development Brief SPD	4	Introduction	39
Structure of the Development Brief SPD	7	Viability of research and development	39
Part 1 summary	7	Ancillary uses	39
		Part 5 Summary	39
Part 2: Context	9	Appendix 1: Non-Technical Summary of the Sustainability Appraisal Report for NRP Development Brief SPD	41
Introduction	11		
Landscape context	11		
Existing development at NRP	11		
The Core Area	12		
Colney Hall	13		
Part 2 summary	14		
Part 3: Towards an illustrative masterplan	15		
Introduction	17		
Core Area	17		
Core Area phasing	20		
Colney Hall	22		
Plot ratios	24		
Combined NRP illustrative masterplan	25		
Part 3 summary	25		
Part 4: Design Principles	27		
Introduction	29		
BREEAM	29		
Climate change	29		
Building performance	29		
Building layout	30		
Size and massing of buildings	30		
Building materials	31		
Landmark elements and spatial variation	31		
Landscape within plots	32		
Parking, service access and services	33		
Sustainable drainage	33		
Lighting and security	33		

Figures

Figure 1.1	Current extent of Norwich Research Park	2
Figure 1.2	Purpose of the Development Brief	3
Figure 1.3	Allocated land at NRP	4
Figure 1.4	The SPD preparation process	5
Figure 1.5	Transportation infrastructure improvements	6
Figure 2.1	Key environmental elements	10
Figure 2.2	Landscape Character Areas	11
Figure 2.3	Topography	12
Figure 2.4	Colney Hall landscape constraints	12
Figure 3.1	Core Area landscape framework	17
Figure 3.2	Circulation Plan	18
Figure 3.3	Core Area illustrative masterplan	19
Figure 3.4	Core Area Phase 1A	20
Figure 3.5	Core Area Phase 1B	21
Figure 3.6	Colney Hall development envelope	22
Figure 3.7	Colney Hall illustrative masterplan	23
Figure 3.8	Plot ratios	24
Figure 3.9	Allocation and 'No Build Zones'	24
Figure 3.10	Combined illustrative masterplan	25
Figure 4.1	Energy use in the UK	29
Figure 4.2	Principles of climate change adaptation	29
Figure 4.3	Layout flexibility	30
Figure 4.4	Size and massing	30
Figure 4.5	Creating flexible space	30
Figure 4.6	Foiling and silhouette	31
Figure 4.7	Climate control	31
Figure 4.8	Simplicity of form	31
Figure 4.9	Landscape strategy	32
Figure 4.10	Containment	32
Figure 4.11	Useable environment	32
Figure 4.12	Potential future building expansion	33
Figure 4.13	Sustainable drainage systems	33
Figure 4.14	Security	33

Photos

Photo 1.1	Existing NRP and its landscape setting	4
Photo 1.2	The Gerome Centre, JIC	4
Photo 1.3	Juxtaposition of urban edge and existing NRP	4
Photo 2.1	Yare Valley Urban Fringe	11
Photo 2.2	Yare Tributary Farmland with Parkland	11
Photo 2.3	Milestone Plantation	12
Photo 3.1	Milestone Plantation: high landscape value, poor habitat value but capable of significant improvement	19
Photo 4.1	The Hall and its setting	34
Photo 4.2	Colney Hall Drive: a fine historic approach whose character should be retained	34
Photo 4.3	The Rose Garden site	35
Photo 4.4	Pump House area	35
Photo 4.5	The Walled Garden	35
Photo 4.6	The Plantation	36
Photo 4.7	Bowthorpe from the north east woodlands	36
Photo 4.8	The clearing and plantation	36

Part I:
Introduction

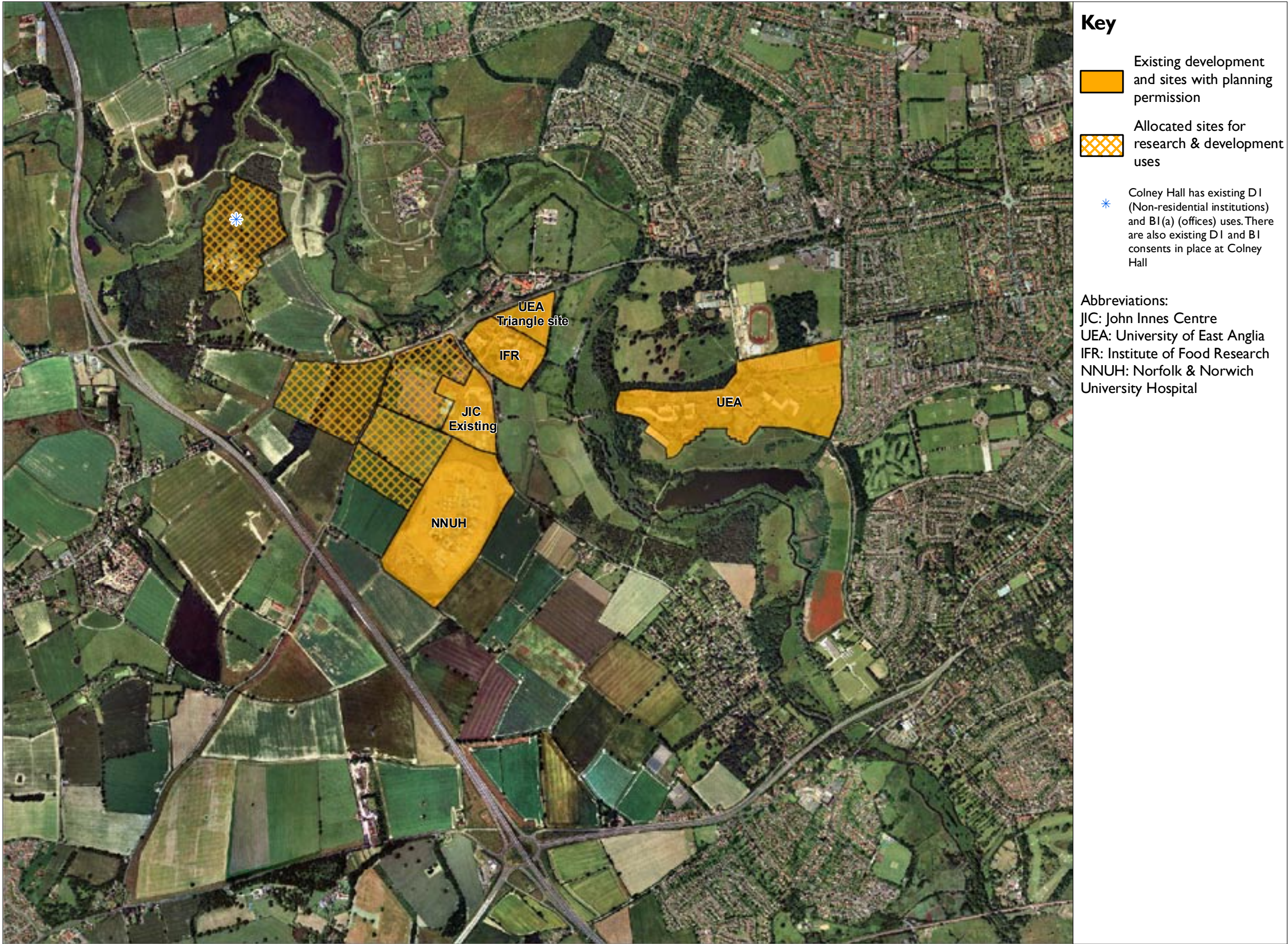


Figure 1.1 The current extent of Norwich Research Park and additional areas allocated for research and development uses

Purpose of the Development Brief

1.1 Development Briefs provide a stepping stone between the provision of planning policy and the form and detail of a planning application. This Development Brief has been prepared to guide and co-ordinate the form of development on land allocated as an extension to Norwich Research Park (NRP) in local planning policy. It will also be applicable to any new development that is proposed as part of the existing components of NRP.

1.2 The Development Brief will be adopted by the Council as a Supplementary Planning Document (SPD). As a SPD, it will not form part of the statutory Development Plan, but will be a material consideration in determining planning applications. It will therefore be used by the Council in its determination of detailed planning applications for NRP. All matters covered in a SPD must relate to policies in a development plan document or a saved policy in a Development Plan. The role of this Development Brief and the policies in the South Norfolk Local Plan (adopted 2003) on which it expands are set out in Figure 1.2.

1.3 The Development Brief SPD provides the parameters within which detailed planning applications for NRP will be prepared. The Brief acknowledges that demand for research and development facilities is not strong and that the take-up of plots and the rate of build are likely to be slower than that of pure commercial developments. The Brief acknowledges that changes in wider society, the environment (in particular climate change) and in the field of research and development are inevitable. It therefore opts to set principles and expectations rather than rely on undue levels of restriction.

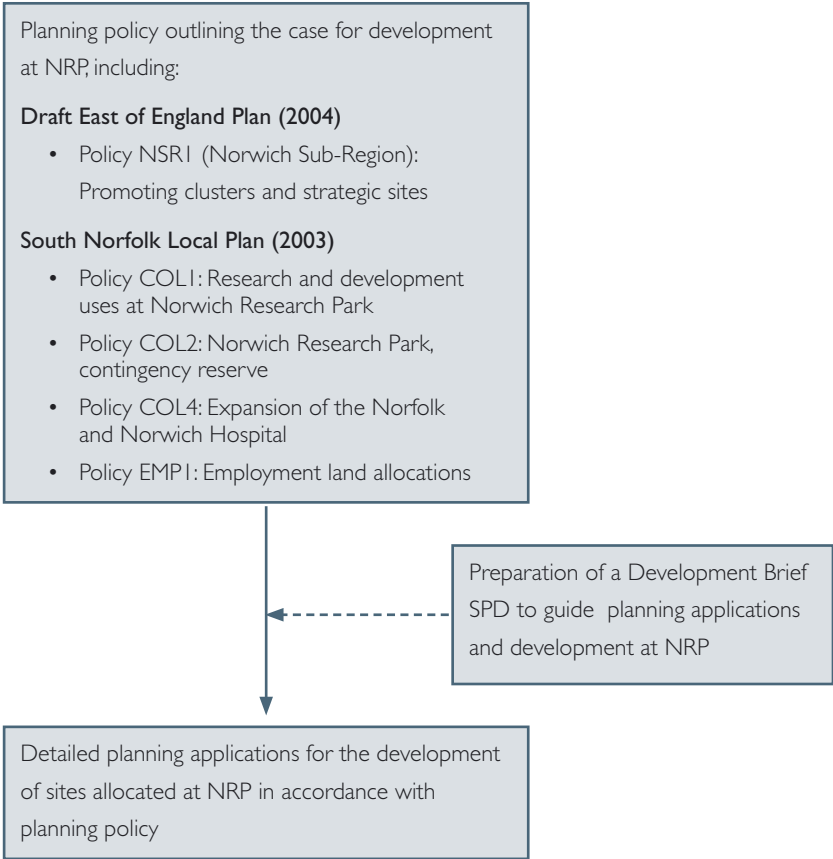


Figure 1.2: Purpose of the Development Brief

1.4 This SPD expands on Local Plan policies as set out above. However, South Norfolk Council is in the process of reviewing its Local Plan, which will be replaced by a Local Development Framework (LDF). It is anticipated that this SPD will be incorporated in the LDF and supplement policies therein.

1.5 This document is a consultation draft of the Development Brief for NRP. Comments on this consultation draft are welcome by 17:00hrs on Friday 29th June 2007. We have set out a number of questions throughout the document to guide your responses. You can either answer the questions on line at www.south-norfolk.gov.uk/planning/1766.asp or complete the paper questionnaire inserted in this document and return it to us in the prepaid envelope provided. Representations can also be sent to:

Alan Gomm, Planning Policy Manager
South Norfolk Council
South Norfolk House
Swan Lane, Long Stratton
Norfolk, NR15 2XE

Vision and Objectives

Vision

The extension to NRP will underpin the international presence of Norwich as a centre of excellence in providing research and training particularly in biological, chemical and environmental sciences. In acting as a magnet to, and fully serving the diverse needs of, a wide range of indigenous companies and inward investment opportunities, NRP will significantly contribute to the economy of Norwich and the wider area.

NRP will be an exemplar for the sustainable development of research and development parks. It will embrace good, innovative design and contribute to the quality of life of local people, by improving provision of local services and facilities. It will make a major contribution to tackling climate change, one of the greatest challenges of this century, by incorporating energy efficient design and techniques, offsetting carbon emissions and aspiring to carbon neutrality over the life-time of the development.

Objectives

The overall objectives of the Development Brief SPD are to:

- Implement allocations and land uses in the Local Plan;
- Provide developer and landowner certainty over development at NRP;
- Enhance the efficiency of the planning process and the processing of planning applications;
- Promote high-quality design and innovation; and
- Reflect physical constraints and opportunities in the area.

Question 1

Do you agree with the Vision and Objectives? If you disagree please explain what you think we should change.

1.6 Taking into account the Vision Statement and Objectives outlined above, four overarching principles have been identified that NRP should seek to promote and that specific development proposals should seek to achieve. These are:

- **Modal split:** encouraging a modified modal split through the provision of sustainable transport facilities in particular enhanced cycling facilities, bus services and safe and pleasant pedestrian links.
- **Design approach:** encouraging the use of approaches such as informal Environmental Impact Assessments, Sustainability Appraisals and Design and Access Statements to foster early awareness of NRP's character and context in addition to environmental issues and impacts.
- **BREEAM targets:** requiring developers to achieve "Excellent" or at least "Very Good" standards where appropriate.
- **Carbon reduction:** encouraging energy efficient design aiming to minimise carbon dioxide emissions from development at NRP. The overall aspiration of NRP is to achieve carbon neutrality over the life-time of development.

1.7 The importance of enhancing a linkage between existing NRP and the extension to NRP is considered essential to facilitating development of the new allocations and their sustainable transport links. This linkage should be between new and existing allocations and between existing parts of NRP on either side of the River Yare.

Question 2

Have we identified the correct overarching principles that all development at the NRP should seek to promote and achieve? If we haven't, please tell us what you would add or change to make them better.

Components of NRP

1.8 NRP has largely developed in its present location as a result of the existence of the University of East Anglia (UEA). The UEA is recognised both nationally and throughout the world for its position and role as provider of higher education and research. The UEA is likely to continue to act as a major catalyst for research opportunities, and as a source of highly qualified individuals for employment at NRP.

1.9 The location of NRP, its existing constituent organisations and the allocated sites for additional development are presented in **Figure 1.3**. The areas of existing development and allocated sites define the geographic extent of this Development Brief SPD. For the purposes of the Brief, NRP is divided into three main components, including:

- **Existing development at NRP**, including the UEA, the Norfolk & Norwich University Hospital (NNUH), John Innes Centre (JIC), Institute of Food Research, the Sainsbury Laboratory, and companies working out of NRP. Existing development at NRP is shown in **Photos 1.1 to 1.3**.
- The three allocated sites south of the B1108, Watton Road, which are considered sufficiently similar to be grouped together and are referred to as the '**Core Area**'.
- The **Colney Hall** site which has specific guidance because of its separate location and different environment.

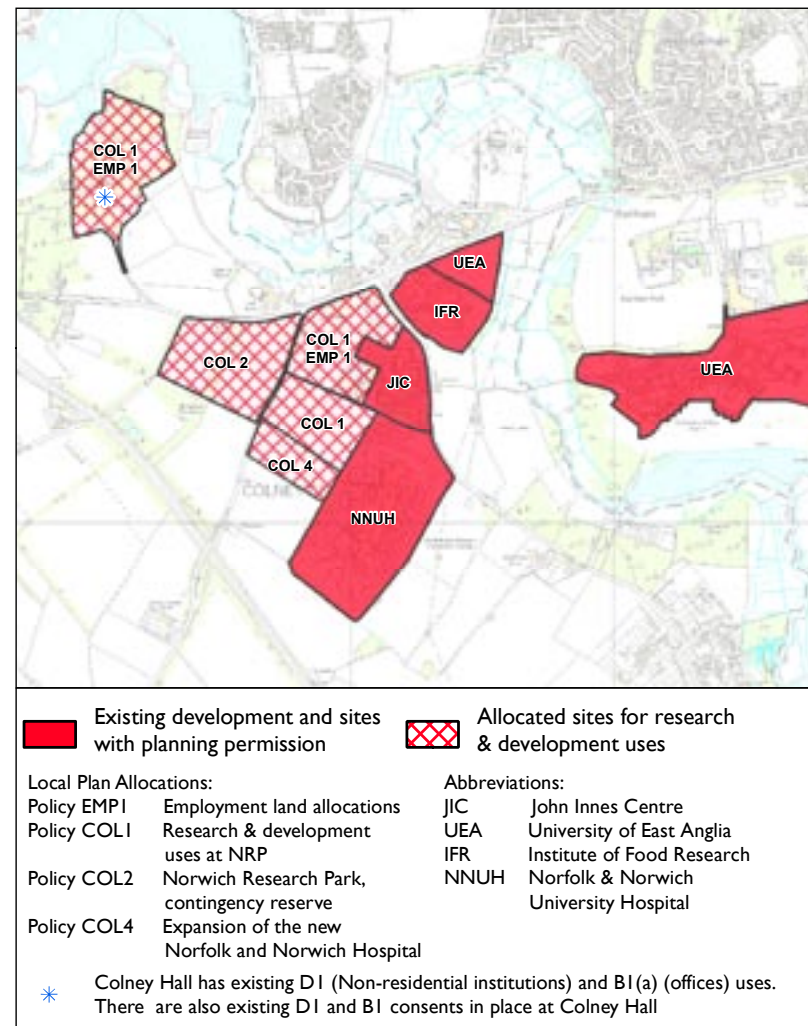


Figure 1.3: Allocated land at NRP

Preparation of the Development Brief SPD

1.10 The key stages in the process that were undertaken to prepare this Development Brief are illustrated in **Figure 1.4**. The SPD has also been subject to a Sustainability Appraisal (SA), as required by the Planning and Compulsory Purchase Act 2004 and a Habitat Regulations Assessment (HRA), as required by the Draft Conservation (Natural Habitats &c) (Amendment) (England and Wales) Regulations 2006. It was also informed by a Transport Assessment to better understand the transport implications of additional development at NRP and to identify appropriate measures to minimise this impact. More information on these assessments is provided below.

Sustainability Appraisal

1.11 SA aims to promote sustainable development by helping to integrate social, environmental and economic considerations into the preparation of plans. It is an integral part of good plan-making, involving on-going iterations to identify significant effects of the plan and the extent to which sustainable development is likely to be achieved.

1.12 The SA of the SPD was completed in accordance with the requirements of European Directive 2001/42/EC (known as the Strategic Environment Assessment, or SEA, Directive). The objective of SEA is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans (Article 1, SEA Directive). The SEA and SA were integrated and completed as a single assessment process as recommended by government guidance¹.

1.13 The non-technical summary to this SA Report is included in **Appendix I** to this Development Brief and describes the method that was followed and sets out the key findings of the SA. More information on the SA/SEA process can be found in the SA Report (January 2007), which has been published for consultation alongside this Consultation Draft Development Brief. The SA Report:

- Characterises NRP and describes the key sustainability issues relevant to South Norfolk and NRP.
- Sets out an appraisal framework which describes the SA objectives for assessing the NRP Development Brief SPD.
- Describes the appraisal findings of the options considered for development at NRP, including alternative transport strategies to access NRP, plot ratios and layouts for development.
- Documents the likely significant effects of development at NRP in accordance with the SPD and recommends ways to mitigate adverse effects and maximise benefits.
- Provides recommendations for monitoring the sustainability effects of the NRP Development Brief SPD

1.14 The preparation of the Development Brief has been informed by the findings of the SA. Key recommendations identified in the SA Report to mitigate potentially significant negative impacts and to maximise potentially significant positive impacts of development at NRP have been incorporated into the Brief where appropriate. Changes that have been made to the Development Brief as a response to the SA are documented in Chapter 7 (Appraisal of the NRP Development Brief SPD) of the SA Report.

¹ Sustainability Appraisal of Regional Spatial Strategies and Local Development Documents. Office of the Deputy Prime Minister, November 2005.



Photo 1.1: Existing NRP and its landscape setting



Photo 1.2: The Genome Centre, JIC



Photo 1.3: Juxtaposition of urban edge and existing NRP

Habitat Regulations Assessment

1.15 HRA aims to determine whether or not a plan is likely to have a significant effect on the integrity of Natura 2000 and Ramsar sites. Natura 2000 is a Europe-wide network of sites of international importance for nature conservation established under European Council Directive 92/43/EEC ('Habitats Directive'). Ramsar sites support internationally important wetland habitats and are listed under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention, 1971).

1.16 A HRA Screening Report on the Development Brief has been completed to identify whether a full HRA is required prior to adoption of the SPD. The Screening Report:

- Describes the NRP Development Brief SPD.
- Identifies Natura 2000 and Ramsar sites that could potentially be affected by the SPD, summarising the conservation objectives and potential sensitivities of each site to adverse impacts.
- Describes other plans which could have 'in-combination' effects when implemented in conjunction with the SPD.
- Contains a Screening Assessment which sets out the likely significance of the effects of the SPD on Natura 2000 and Ramsar sites, alone and in-combination, and recommends amendments to the SPD to avoid any significant adverse effects on the integrity of these sites.

1.17. Given the range of good-practice principles set out in the Development Brief and the distance of Natura 2000 and Ramsar sites from NRP, the Screening Report concludes that the majority of potential impacts on these sites would be avoided. However, a potential impact upon The Broads/ Broadlands Special Area of Conservation, Special Protection Area and Ramsar site was identified, which related to the potential contamination of the River Yare during the construction phase of NRP. To overcome this potential impact, a number of mitigation measures have been incorporated in the Development Brief, e.g. using best practice construction procedures to prevent significant impacts.

1.18 Natural England has been consulted on the HRA Screening Report. They agree that *'the integrity of the Natura 2000 and Ramsar sites will not be compromised by the activities associated with the Supplementary Planning Document'*². A number of recommendations suggested by Natural England have been incorporated into the Development Brief.

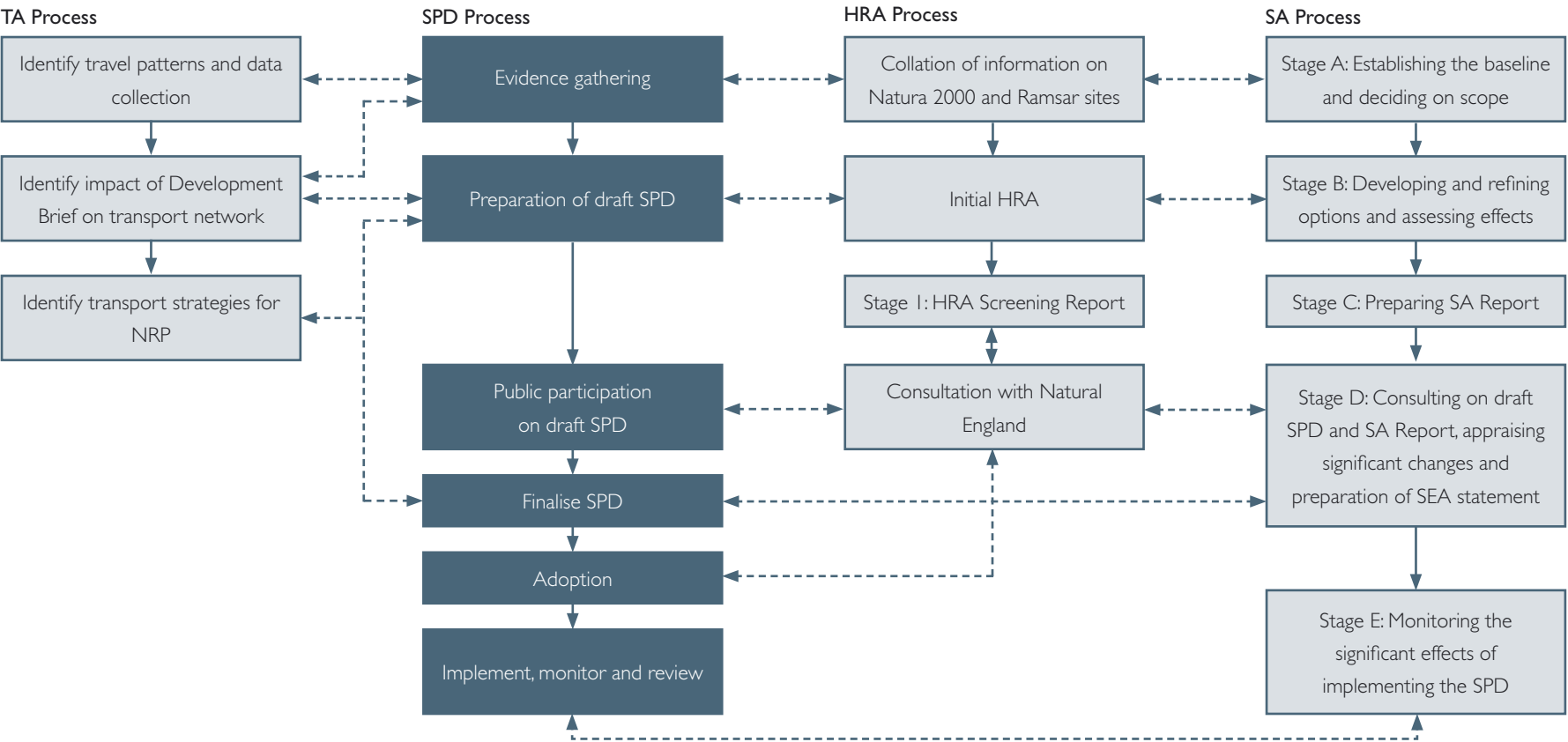


Figure 1.4: The SPD preparation process

² Letter received from Natural England 19th January 2007.

Transport Assessment

1.19 Critical to the development of NRP is the impact of increased traffic generation and the consequent need for highway improvements. A transport assessment has been undertaken to better understand these implications. This assessment modelled the traffic impacts of various development scenarios with the aim of achieving the most realistic balance between new development and expenditure on new transport infrastructure and facilities.

1.20 Three scenarios were developed to identify different transport strategies to cater for additional traffic generation. These scenarios comprised:

- A public transport focused access strategy, in which car-use would be constrained with minimal parking and extensive additional sustainable transport facilities provided by way of compensation;
- A car-dependant access strategy, which followed the typical existing NRP access and parking arrangements, with limited additional sustainable transport facilities; and
- A mixed public transport and car access strategy, in which car use would be modified through a combination of reduced parking ratios and added sustainable transport facilities.

1.21 These scenarios were all assessed as part of the SA. The public transport focused access strategy was not considered a reasonable alternative as it did not provide employee parking which was expected to threaten the viability of NRP. The findings of the SA showed that the mixed public transport and car access strategy had a higher number of significant positive effects and a lower number of significant negative effects compared to the car-dependant access strategy. The transport improvements within the mixed scenario have been taken forward to allow development at NRP.

1.22 The key improvements which make up the mixed public transport and car access strategy are set out below and illustrated in **Figure I.5**.

Mixed public transport and car access strategy

- Creation of a new junction on the B1108 at the foot of Colney Hall Drive. This will provide access to both the Colney Hall allocation (using the drive modified as required) and to a new Link Road.
- A new 6.5m wide Link Road connecting the new B1108 junction with Hethersett Lane.
- Good quality pedestrian and cycle links within the NRP extension and connections to the existing NRP and beyond including a sustainable link between UEA and NNUH/ NRP.
- Additional bus services including a new sustainable transportlink to the NNUH from the west.
- Closure of the B1108/Hethersett Lane junction to car traffic.
- Local road improvements (mainly for safety) including work on the B1108 and on Hethersett Lane.

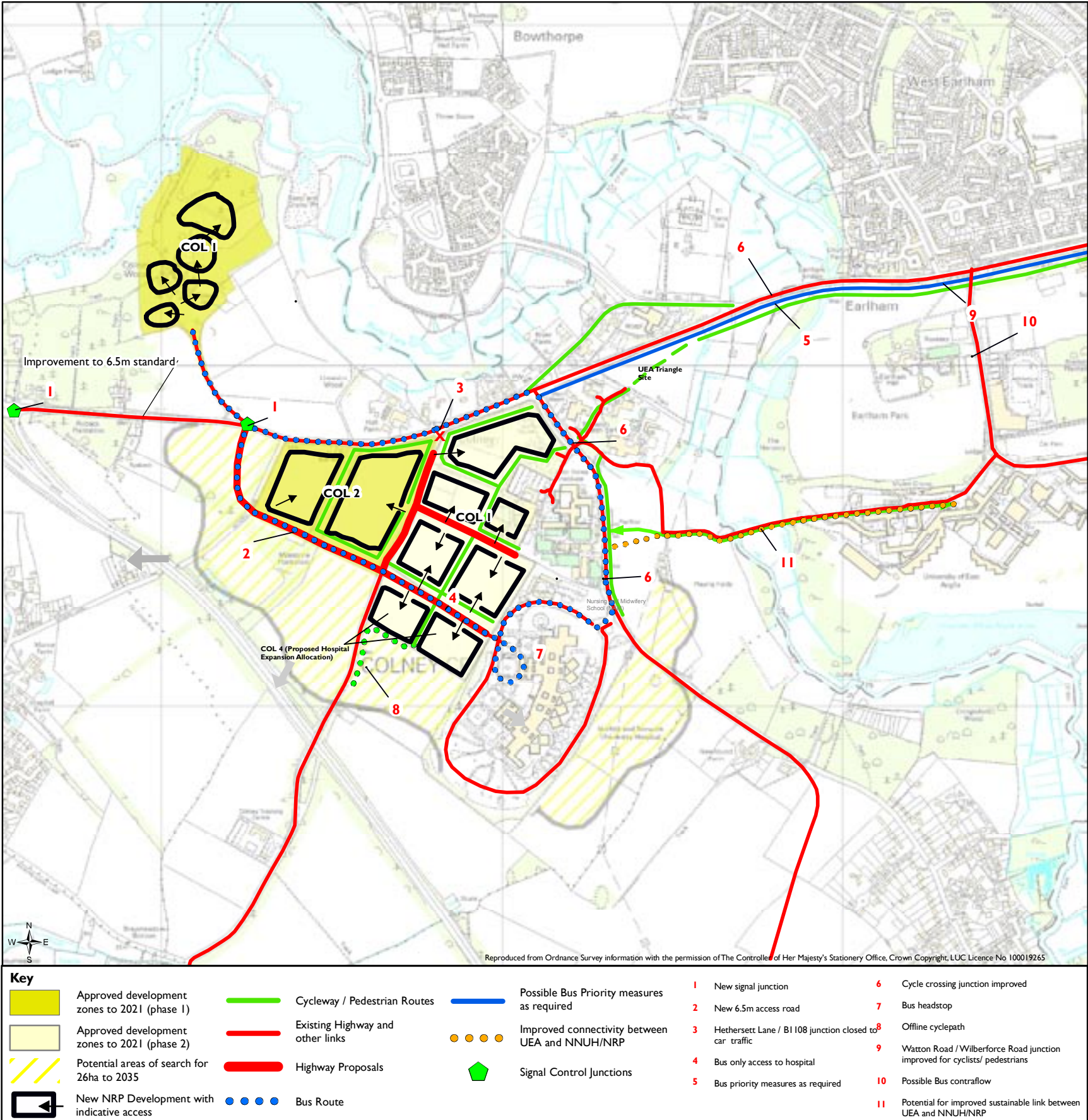


Figure I.5:Transport infrastructure improvements for the mixed public transport and car access strategy

Question 3

Are we right to concentrate on a mixed public transport and car access strategy for the NRP? Please let us have your comments about the planned transport infrastructure improvements shown in Figure 1.5.

Structure of the Development Brief SPD

1.23 The remainder of the Development Brief is structured into the following parts:

Part 2: Context, describes the existing components of NRP, the Core Area and Colney Hall site.

Part 3: Towards an illustrative masterplan, depicts the key features anticipated for the Core Area and Colney Hall site.

Part 4: Design principles, sets out generic design principles to guide development in the Core Area, the Colney Hall site and any new development that is proposed as part of the existing components of NRP. It then provides design principles specific to Colney Hall given its different environmental setting.

Part 5: Use class variations, sets out information on ancillary uses at NRP.

Part I summary

This Development Brief has been prepared to guide and co-ordinate the form of development on land allocated as an extension to NRP. It will also be applicable to any new development that is proposed as part of the existing components of NRP. The Brief provides the parameters within which detailed planning applications for NRP will be prepared.

The Development Brief will be adopted by South Norfolk Council as a SPD, setting out supplementary information to extant Local Plan policies. It is anticipated that it will be incorporated in the Local Development Framework, once it has been prepared to replace the Local Plan, and will supplement policies therein.

The Development Brief SPD has been subject to a Sustainability Appraisal and Habitat Regulations Assessment and has also been informed by a Transport Assessment. Changes have been made to the Development Brief SPD as a response to these assessments.

Part 2:
Context

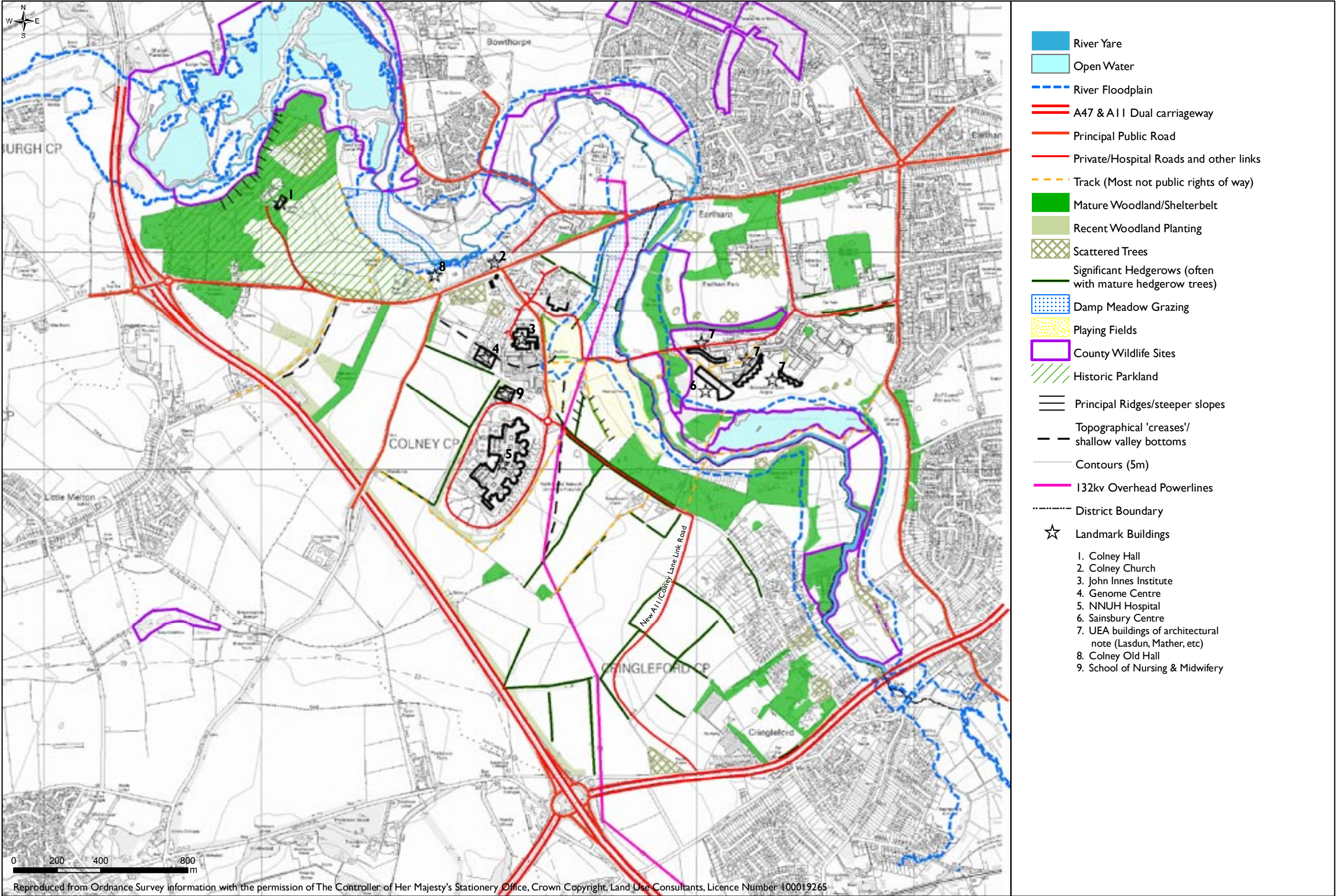


Figure 2.1: Key Environmental Elements

Introduction

2.1 The key elements of NRP are described below for existing NRP, the Core Area and the Colney Hall site. The landscape context is described for the area as a whole as many of its characteristics are shared between different components of NRP. It also helps to determine the location and form of development within each of the allocations.

Landscape context

2.2 The South Norfolk landscape has been described as one of subtle contrasts and restrained beauty with landscapes ranging from the exhilarating openness of the farmed plateaux to the peaceful rural quality of the valleys. The Landscape Character Assessment for South Norfolk (2001) identifies Landscape Types (which are generic and share common combinations of geology, topography, vegetation and human influences) and Character Areas (which are single and unique, discrete geographical areas of a landscape type).

Landscape Types and Character Areas

2.3 NRP falls within two Character Areas set within two different Landscape Types. These are shown in **Figure 2.2** and are described below:

Yare Valley Urban Fringe Character Area within the Valley Urban Fringe Landscape Type: This accounts for the north eastern part of NRP. The area is significant in that it provides an open and distinctive boundary with the City boundary. Particular characteristics include its valley form, which is relatively unusual for South Norfolk, and its woodland and waterways (although no waterways are within the NRP area). A typical view within this character area is illustrated in **Photo 2.1**.

Yare Tributary Farmland with Parkland within the Tributary Farmland with Parkland Landscape Type: This is characterised by arable landscapes, intermittent long views to the city of Norwich and a gently undulating topography. A typical view within this character area is illustrated in **Photo 2.2**.

Landscape character

2.4 The Core Area in particular is characterised by its open nature, agricultural uses, broad views and relatively little sense of enclosure.

2.5 Colney Hall has a more complex character stemming from a combination of more varied terrain and woodland cover providing a generally more intimate landscape, although the Hall and its immediate environs enjoy a fine south-easterly prospect.

2.6 Both areas have a strong integrity of landscape character, a feature that is continued in much of the existing NRP and the UEA where the integration of development and landscape has been given high priority in most cases. This results in high environmental quality and some fine settings despite featuring substantial and varied buildings and styles.

Existing development at NRP

2.7 Existing development at NRP comprises four principal elements:

1. The Norfolk and Norwich University Hospital (NNUH) which has a single, dense and well-organised design. It consists of a building core with peripheral access roads and parking. It is located to the south-west of sites allocated for new development at NRP, adjacent to allocations COL1 and COL4.
2. The John Innes Centre (JIC), which has undergone organic growth over time. Its organisation is seemingly ad-hoc, having a range of types and scales of buildings, and lacking clarity of circulation. It is located in the centre of NRP providing the link between existing development and sites allocated for research and development uses.
3. The Food Research Centre site has a similar organisational design to the NNUH site. It contains substantial buildings at a lower density. It is set in a 'landscaped' context with a relatively high quality environment. The Food Research Centre is located to the East of the Core Area, adjacent to the BI 108 Watton Road. The triangle site to the North is awaiting development and has road and other infrastructure already in place.
4. The UEA lies to the East of the River Yare and is connected to the remainder of NRP by a link across the River Yare. The university features a range of building styles and types and includes nationally known buildings such as Lasdun's 'Ziggurats' and Foster's Sainsbury Centre. Environmental quality is generally good with landscapes integrated within development.

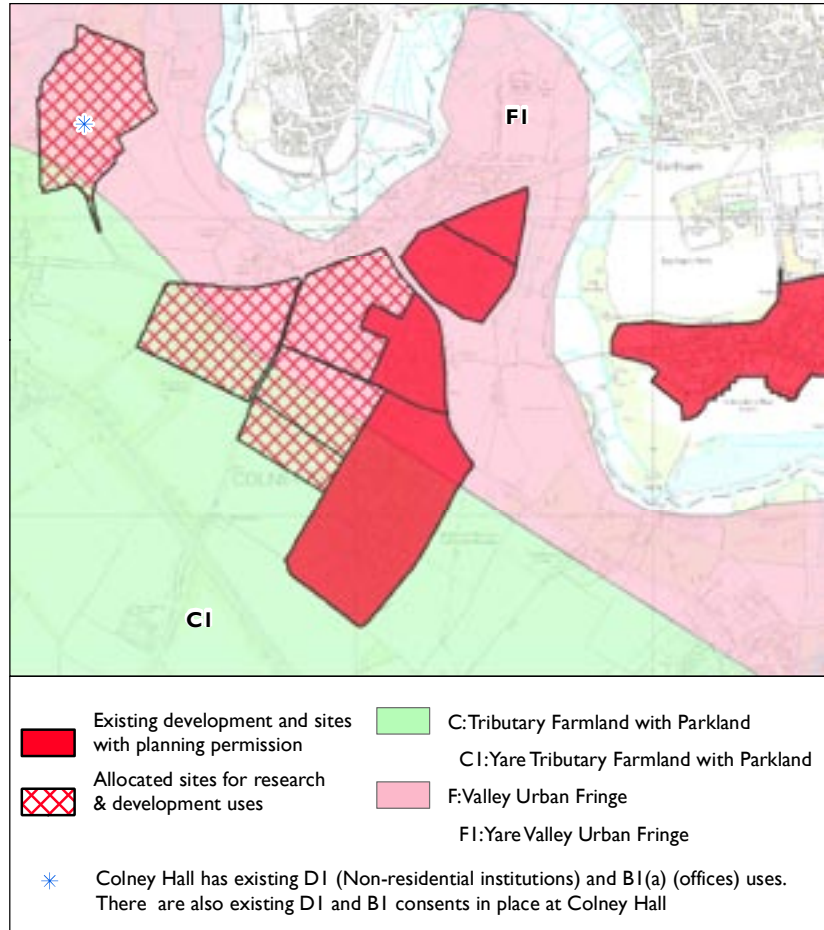


Figure 2.2: Landscape Character Areas



Photo 2.1: Yare Valley Urban Fringe



Photo 2.2: Yare Tributary Farmland with Parkland

The Core Area

2.8 The Core Area is characterised by its open nature and relatively little sense of enclosure. This is exacerbated by the open gently rolling topography, relatively large fields and an absence of significant hedgerows. Its character is essentially agricultural although there is awareness of adjacent development – the NNUH and JIC visually, and the A47 and to a lesser extent the Watton Road, acoustically. Despite its urban fringe location, the site has a quiet integrity.

2.9 The east and southern boundaries face onto agricultural land of similar quality although road noise becomes an issue closer to the A47. The landscape south and west of the A47 is also agricultural and feels remarkably rural given the proximity of the city.

Structural elements

2.10 The principal structural elements within the Core Area are the shelter belts and, to a lesser extent, the hedgerows. These elements have greater significance because of the openness of the landscape.

2.11 The shelter belts are generally dense mixed woodland of a single age. Milestone Plantation running north-south through the Core Area is the principal element. The Milestone Plantation is shown in **Photo 2.3**. However there is a further network of belts planted adjacent to the A47 and to the west of Milestone Plantation. Although recently planted, these belts will have increasing significance in the landscape as they mature. Shelter belts are shown on **Figure 2.1**.

2.12 Elsewhere specimen mature oaks with or without hedgerows provide a secondary structure giving a strong and distinctive ‘countryside’ character. A belt of poplars towards the north end of Hethersett Lane is significant but has lower value and a shorter expected lifespan.

2.13 These elements have the effect of dividing the main site into a major portion east of Milestone Plantation (with a sub area to the rear of the JIC); and a smaller area west of Milestone Plantation hemmed in between recently planted belts. These shelter belts are the result of efforts to mitigate the strong winds of the area.

Topography

2.14 The Core Area is characterised by gentle slopes, typically 1 in 30 (**Figure 2.3**). Whilst not a determinant of building form or location, the shallow side valleys to the Yare are significant in terms of surface water drainage.

Visibility and views

2.15 The highest point is in the vicinity of Hethersett Lane and offers broad views north, east and south-east across the Core Area and beyond. This sense of openness is given structure by the shelter belts which provide the main visual barriers. There are no critical specific views either in or out of the core area. Local landmarks are shown on **Figure 2.1** but do not raise issues of setting. Developers should note however the significance of building silhouette in such an open landscape particularly as much of new development in the core area will be at levels above that of existing landmarks and development generally.

Habitats

2.16 The majority of the Core Area is actively farmed and there are limited habitats of value. There are no sites designated for nature conservation significance. Owing to its density, Milestone Plantation has a poorly developed ground flora but will undoubtedly be important for bird life. Other immature belts could constitute grassland/glade habitats of some interest.

2.17 The River Yare is located some 200 metres to the East of the Core Area at the closest point.

Soils

2.18 Soils are generally light and free draining. Consequently there are few ditches or water courses.

Access

2.19 The site is accessed by the Watton Road and its side roads, Hethersett Lane and Colney Lane. The Watton Road is characterised by relatively high traffic volumes particularly at peak times when it is close to capacity. Eastern parts of this road have been improved with signalised junctions and have an urban character. The western part is a relatively unimproved lane with adjacent hedgerows. There are plans to undertake minor safety-related improvements to this section.

2.20 Hethersett Lane is an unimproved lane and suffers from excess vehicle speeds and a ‘difficult’ junction with the Watton Road. Colney Lane has been upgraded as far as the NNUH entrance east of which the lane is a bus only route. A recently constructed road provides access to the Cringleford roundabout on the A47.

2.21 The current cross valley link provides access between UEA and JIC/IFR/ NNUH and the NRP core area. There is a cycle path along the Watton Road to the Colney Lane junction and on parts of Colney Lane north. There are no formal or established rights of way across or adjacent to the core area.

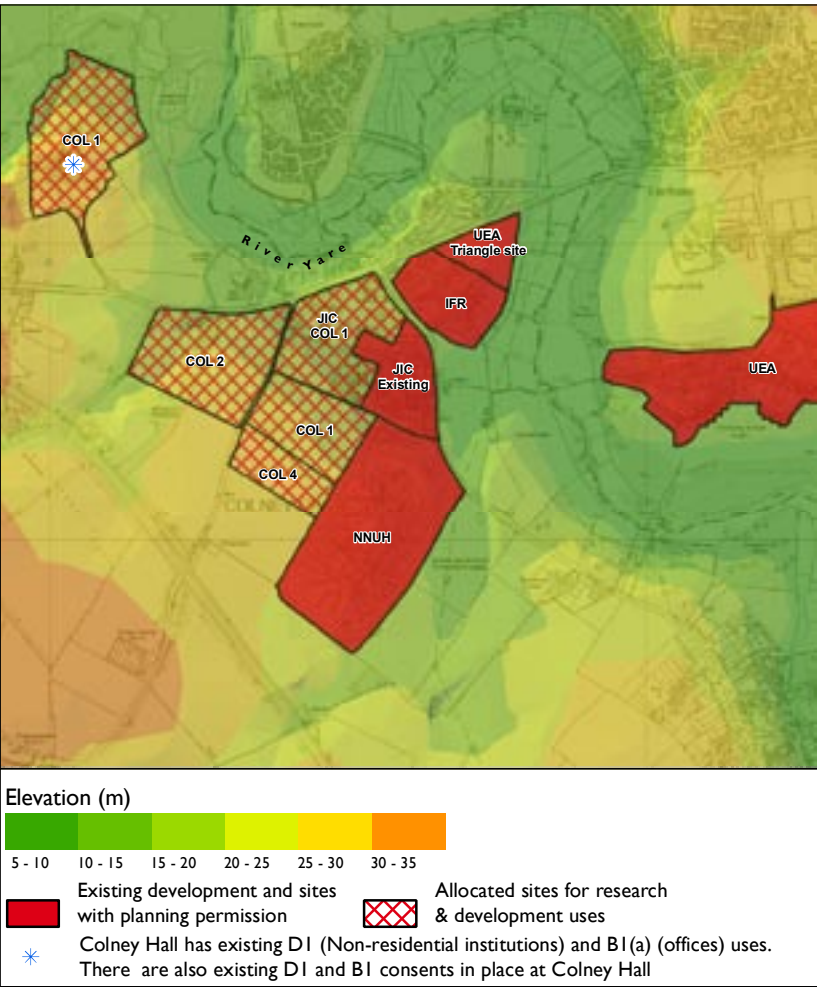


Figure 2.3: Topography



Photo 2.3: Milestone Plantation: Gentle topography principal landscape components

Colney Hall

2.22 Colney Hall estate and context has a more complex surrounding character than the Core Area and existing development at NRP. This stems from a combination of more varied terrain and woodland cover providing a more intimate landscape, although the Hall and its immediate environs enjoy a fine south-easterly prospect.

Landscape structure and elements

2.23 At Colney Hall, woodland forms the principal landscape structure providing a dense envelope to the north and eastern half of the site. The quality of this woodland is variable with the plantation area at the centre being of significantly lower value. The western part of the site is characterised by the remnants of the Hall's designed landscape and includes a number of significant specimen trees, exotics and strategically placed tree groups.

2.24 Broadly speaking this divides Colney Hall into two landscape areas – those more open areas closer to the Hall; and areas of dense woodland to the north and east. The landscape constraints are illustrated on **Figure 2.4**.

Topography

2.25 Colney Hall site is located on a south-east facing ridge with a relatively steep scarp slope descending to the Yare. Gradients on this scarp would preclude large-scale development.

Visibility, views and landmarks

2.26 Colney Hall orients towards the east and south. The wooded character of the Yare Valley provides a pleasant middle ground to these views whilst awareness of the city beyond is fairly restricted. The most significant landmark per se is Colney Hall itself (more because of its position than its architectural value). Within the wooded area, particularly the plantations east of the Hall visibility is very restricted forming an inward facing environment heavily screened from inward views.

Valued habitats

2.27 Colney Hall was subject to an ecological assessment in 2001. This concluded that the higher value areas were the water meadows adjacent to the Yare, some areas closer to the Hall and to the west, and woodland in the north-east corner of the site immediately outside the allocation boundary. This last area known as The Heronry is designated a County Wildlife Site. Large areas of the plantations and sycamore dominated woodland to the east of the Hall, the walled garden and surroundings and the area around the Pump House were all concluded to be of low habitat value. A protected species, the Long Eared Bat, was believed in 2001 to be established in the area immediately to the west of the Hall.

2.28 The River Yare is immediately adjacent to the land allocated for development. However, the actual development envelope lies over 200 metres from the river.

Heritage

2.29 The Hall is a Grade II listed building set within the remnant of a historic landscape. Although the historic landscape is not on English Heritage Register of Parks and Gardens, it is on the Norfolk County Council local list. As such the Hall and all structures within its curtilage, principally the Walled Garden, are protected. This protection also extends to issues of potential impacts on

the setting of the Hall. Given the extensive modifications to the Hall which has arguably led to a significant erosion of its heritage value, issues of setting and curtilage may be of greater weight than those attached to the Hall itself.

2.30 Some of the parkland trees and exotics in the Hall's vicinity have additional heritage value. The walled garden and remains of ornamental rockwork east of the Hall have heritage value with parts of the former predating the current Hall. The most significant historic element is, in many ways, the south-easterly prospect from the Hall.

Access

2.31 Colney Hall is accessed by a relatively narrow and attractive private drive from the Watton Road. There are no known rights of way across the site.

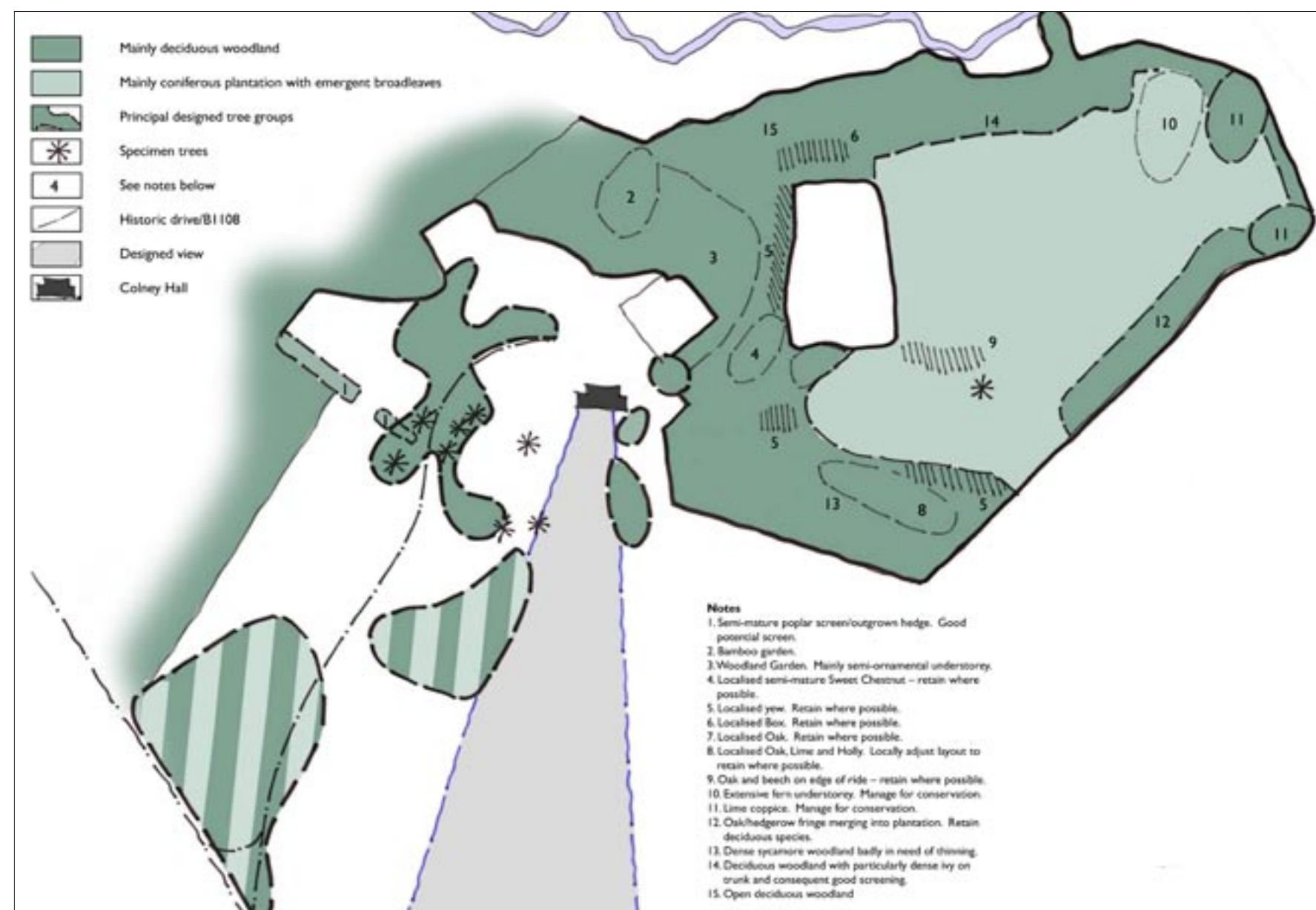


Figure 2.4: Colney Hall landscape constraints

Part 2 summary

This Development Brief divides NRP into three main components; the existing parts of NRP, the Core Area and the Colney Hall site. Part 2 of the Brief describes the key elements of these components.

Existing development at NRP comprises four principal elements; the Norfolk and Norwich University Hospital, the John Innes Centre, the Food Research Centre and the University of East Anglia. It also includes companies working out of NRP.

The Core Area is characterised by its open nature with an essentially agricultural character. Its principal structural elements are the shelter belts and, to a lesser extent, the hedgerows. The shelter belts provide the main visual barriers. Building silhouette would therefore have a significant impact on such an open landscape.

Colney Hall has a more complex character than the Core Area. Woodlands form the principal landscape structure. The River Yare is immediately adjacent to the Colney Hall allocation, although the actual development envelope lies over 200 metres from the river. The Hall and all of its structures are protected.

Part 3:
Towards an illustrative masterplan

Introduction

3.1 The allocations within the Core Area are in relatively open and large scale landscapes with few key landscape elements that are likely to determine the location and form of development. The exception is the network of mature and recently planted shelter belts.

3.2 By contrast the environment at Colney Hall is far more varied, complex, sensitive and smaller scale. These attributes result in stronger locational constraints and requires an approach that is far more site specific both over the whole estate and within identified sub-areas.

3.3 Both the Core Area and Colney Hall possess significant opportunities arising from their environmental qualities. The Core Area with its proximity to the existing NRP, UEA and the urban fringe; its existing and proposed road infrastructure and its larger developable areas, lends itself to bigger developments possibly with more specific layout requirements. Colney Hall with its strong sense of place, limited vehicular access, comparative isolation and closer 'grain' is likely to attract development that will respond to its setting and be sufficiently flexible to be able to cope with the higher level of physical constraints. The fact that the NRP is able to offer two such distinctive alternatives is an opportunity in itself.

3.4 Illustrative masterplans are presented separately for the Core Area and Colney Hall site. A combined illustrative masterplan is then presented.

Core Area

Landscape framework/No Build Zone

3.5 Although the Core Area has few key landscape elements, the network of shelter belts are of significance and help to provide visual containment in an open landscape. The existing landscape components are shown in dark green on **Figure 3.1**.

3.6 The development of the NRP extension will also need additional new landscape corridors to:

- Provide buffers between development and along road corridors.
- Accommodate sustainable transport routes.
- Locate attenuation ponds and the like.

3.7 The suggested location of these corridors is shown in pale green on **Figure 3.1**.

Question 4

Do you agree with the location of additional new landscape corridors on the Core Area site (as shown in Figure 3.1)? Please tell us if you think these should be changed in any way.



Figure 3.1: Core Area Landscape Framework

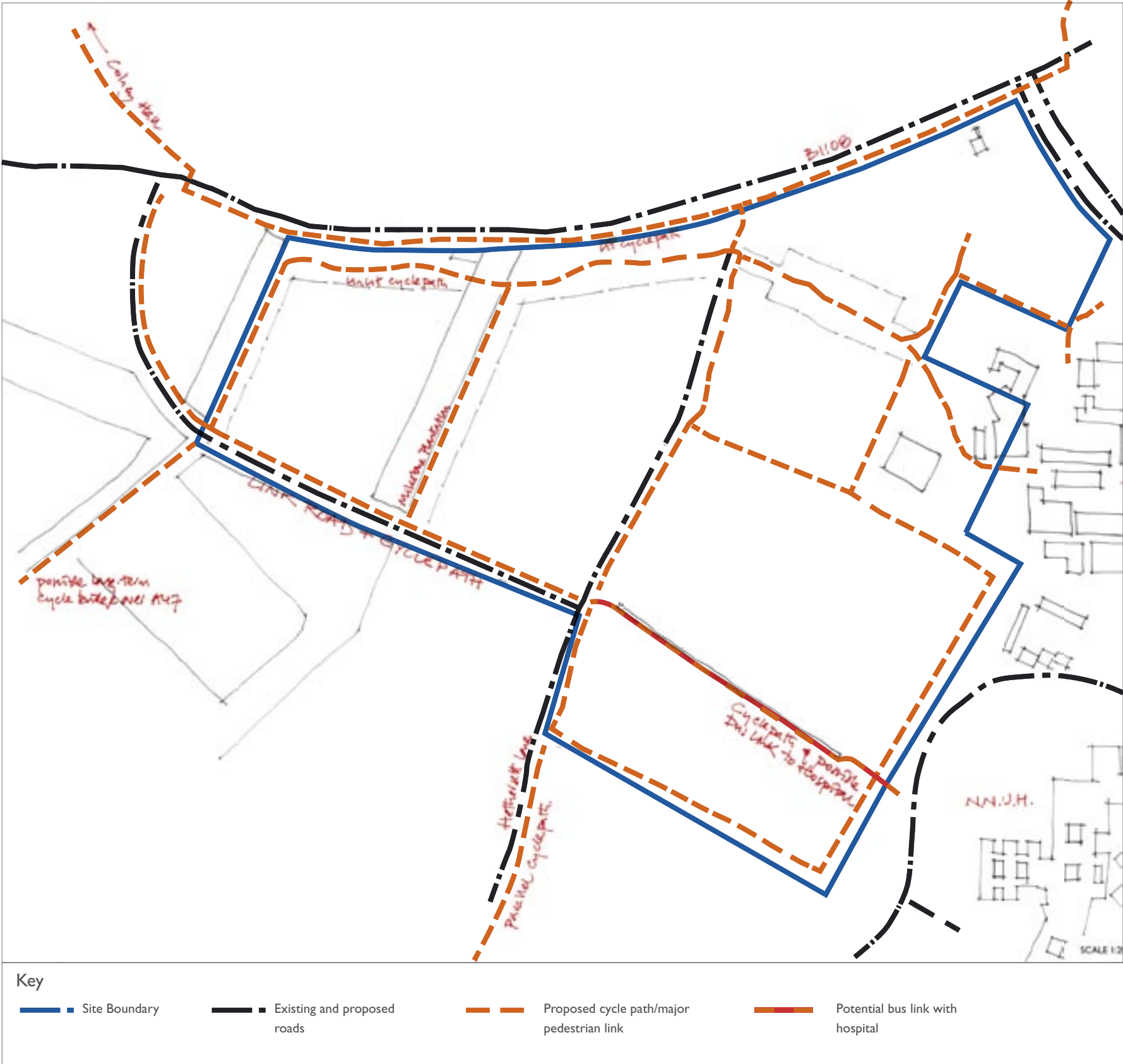


Figure 3.2: Circulation Plan

3.8 It is proposed that these elements will form the basis of the landscape infrastructure on the Core Area acting as multi-functional buffers and movement corridors developed to an integrated design. Their location and extent has been determined partly by existing topography and the need for these corridors to contain drainage systems. These will consist of ditches, attenuation ponds and possible reed beds for grey water treatment. The intention is for these corridors to be:

- Semi-natural creating areas rich in bio-diversity and managed for nature conservation.
- Capable of safe use for informal recreation.
- A pleasant context for the cycle paths and pedestrian network that will run through them.

3.9 Given the importance of the landscape framework and its need to be in locations suitable for surface water drainage systems, it is proposed that their position be fixed and that the area they occupy considered a 'No Build Zone'. Variations in width will be permitted provided that the total extent of 'No Build Zone' remains the same for each allocation area. In a limited number of locations it may be appropriate for landmark or ancillary buildings to be located in the 'No Build Zone'.

Circulation

3.10 The transport strategy (Figure 1.5) requires the provision of a comprehensive network of convenient, safe and attractive routes both within the NRP extension and linking the Core Area to Colney Hall, and both areas to the existing NRP and beyond.

3.11 Figure 3.2 shows an illustrative primary circulation network where existing and proposed public highways are fixed, and the principal cycle and pedestrian network is indicative. These principal cycle/pedestrian routes are expected to be shared surfaces built to best practice (3m minimum width) with appropriately designed road crossings. At least some of these routes will be lit. Where routes connect to the existing NRP, paths should link into suitable existing routes or identify and establish new links.

3.12 Where these links are to be used by local bus services they are to be designed accordingly.

Question 5

Do you agree with the illustrative circulation network for the Core Area (as shown in Figure 3.2)? How do we ensure that development in the Core Area is linked to Colney Hall, the existing NRP and beyond?

Core Area Illustrative Masterplan

3.13 The illustrative Masterplan, **Figure 3.3**, depicts the Core Area on completion. Points to note are:

1. Buildings are optimally orientated.
2. Notional building blocks employ a uniform width of 15m (for reasons of cooling and daylighting).
3. Parking is at an average of 1:60m² located in car parks shared between buildings.
4. Car parks are generally accessed from public highways via short link roads or by other roads that double as service access routes.
5. Landscape corridors are included which provide structure, visual containment and a setting for sustainable transport links.
6. There is clear distinction between building fronts and backs with buildings generally fronting onto open space with service access to the rear.
7. There is use of a limited number of landmark buildings/focal sites.
8. Inclusion of small ancillary/support hubs.

Question 6

Do you have any other comments about the illustrative masterplan for the Core Area?



Photo 3.1: Milestone Plantation: High landscape value, poor habitat value but capable of significant improvement



Figure 3.3: Core Area Illustrative Masterplan



Figure 3.4: Core Area Phase 1A

Core Area Phasing

3.14 Figures 3.4 and 3.5 show indicative phasing of the Core Area. Phases have been predicated by the need to minimise advance expenditure on road infrastructure. This phasing has been developed and tested as part of the Transport Assessment (described in Part 2 of the Development Brief). The sequence of phasing is expected to be:

Phase 1A

3.15 Construction of a new junction on the B1108 providing access to both Colney Hall drive and to a new Link Road into the Core Area. The length of link road constructed can be as short as that shown on Figure 3.4 in which case only plots west of Milestone Plantation can be developed. Hethersett Lane would still exit onto the B1108 at its existing junction. The landscape corridor south of the B1108 would be developed to provide run off attenuation and cycle path links to the eastern, existing, parts of the NRP. The western-most plot immediately adjacent to the new junction on the B1108 is not included in the current NRP allocation.

Phase 1B

3.16 The Link Road is extended to Hethersett Lane where a new junction would be formed. This would open up plots east of Milestone Plantation allowing access from both the new Link Road and from the northern portion of Hethersett Lane. The junction of Hethersett Lane and the B1108 would be closed to all traffic except emergency services, bus services and cycles. A second cycleway is developed adjacent to the Link Road extending to the Hospital following field boundaries. All traffic to the new plots is now routed via the Link Road and its junction with the B1108 at the foot of Colney Hall drive.

Phase 2

3.17 Plots east of Hethersett Lane are developed with the previously constructed cyclepaths now being absorbed into broader landscape corridors. If possible development plot boundaries should follow existing field boundaries and should allow continuation of farming in plots awaiting development.

3.18 Limited development of plots adjacent to the existing NRP may be possible independent of the above preferred phasing. Limits would be set by estimated traffic generation and the possible triggering of required improvements to road infrastructure in addition to the new Link Road and planned works to the B1108.

Further future expansion

3.19 Future expansion beyond the current allocation is envisaged as generally being to the south and west of COL 2, to the south of COL 4 and to the east of the NNUH but will be the subject of further investigation at a later date.

Question 7

Have we adopted the best approach to phasing the development of the Core Area? Do you think the development could be phased in a better way?



Figure 3.5: Core Area Phase 1 B

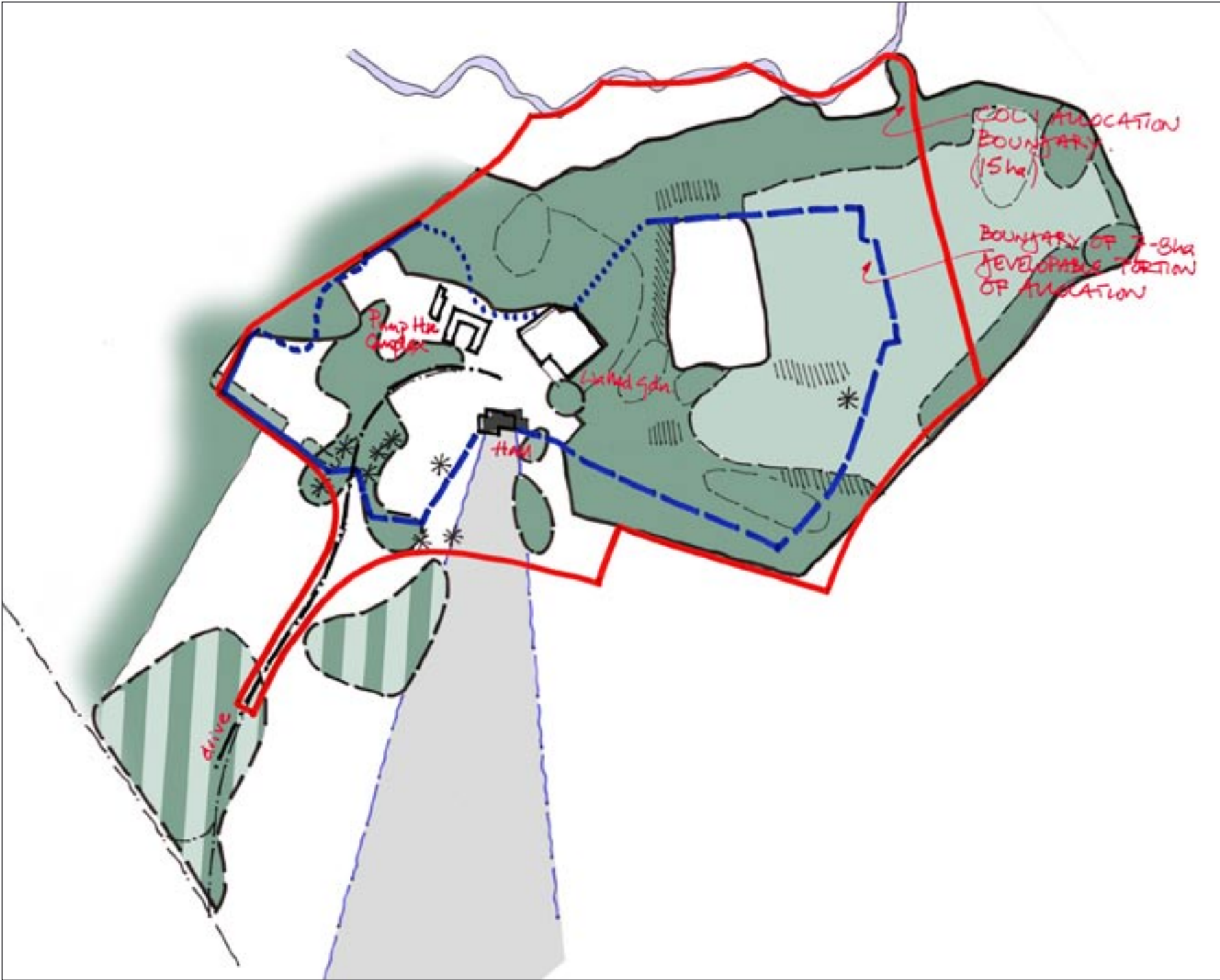


Figure 3.6: Colney Hall Development Envelope

Colney Hall

Development Envelope

3.20 Although the area of the COL I policy allocation for Colney Hall totals 15ha, the policy acknowledges that "It is likely that, on taking account of the location and the aim to produce a high quality of building and landscaping, only 6 to 8 hectares may be developed".

3.21 Analysis of the site suggests that development would be best located in an envelope as shown in **Figure 3.6**. This envelope has been selected on the basis of least environmental impact with key limiting factors being:

- Designed views to and from the listed Hall;
- Slopes;
- Remnants of a designed landscape in particular specimen trees;
- Higher value deciduous woodland;
- Sensitivities attached to the walled garden; and
- Visual intrusion and sensitivities on the Yare Valley corridor.

3.22 This envelope is given as guidance. Detailed applications will be considered using these criteria and others that might be appropriate.

Question 8

Are we correct to show a Development Envelope for Colney Hall?
Do you have any comments regarding the extent of this area as shown on Figure 3.6?

Development Quantum

3.23 The quantum of development at Colney Hall will be principally limited by plot ratios on the allocation area.

3.24 The nature of the Colney Hall site means that development has significantly more constraints than the Core Area. However these constraints also offer significant opportunities for the creation of high quality development blending buildings with a 'special' environment. To achieve this will require an understanding of the local environment and a sensitive development with proposals tailored to the site. This is unlikely to be achievable using 35% plot ratios. It is recommended instead that a 24% plot ratio be adopted for an assumed 8ha of developable land, yielding a development area of 19,200m². Traffic modelling of this quantum of B1(b) class uses shows this level of development to be capable of single access from the proposed B1108 junction. Further justification for plot ratios within allocations of Colney Hall and the Core Area are set out in **Figure 3.9**.

3.25 Further analysis of the suggested developable area shows there to be up to five potential development hubs: An extension to the Hall, the Rose Garden, the Pump House, the Walled Garden, and the Plantation.

3.26 Of these all but the Plantation have limits on potential development quantum set by likely acceptable impacts and the difficulty of fitting buildings and parking within a scatter of sensitive elements. Levels of acceptable development in each area is expected to be very broadly in the order of:

Hall extension	1,000m ²
Rose Garden	2,500m ²
Pump Station	1,500m ²
Walled Garden nominal	200m ²
Plantation	14,000m ²
Total	19,200m²

3.27 These figures have been calculated on the assumption of mainly two storey buildings and parking ratios of 1:60 in common with the Core Area and are for guidance only. However proposals that deviate substantially from these figures will need to be fully supported by the developer who will need to demonstrate that the site's sensitivities and assets are not unacceptably damaged as a result of the development.

3.28 It is clear from this analysis that the principal development opportunity lies within the Plantation.

Question 9

Do you agree with the broad locations and levels of development suggested at Colney Hall? If you disagree please tell us what you would change.

Colney Hall Illustrative Masterplan

3.29 The illustrative masterplan **Figure 3.7** shows how the quantum of development might be arranged within the identified developments hubs within the recommended developable envelope.

3.30 Key to successful development at Colney Hall will be site sensitive design with an understanding of the character and attributes of the site and the opportunities and constraints presented.

3.31 Development should understand the heritage, landscape and ecological sensitivities of the site and should 'tread lightly' with regard to these sensitivities. The adoption of a development approach that minimises environmental impacts and provides mitigation and enhancement would seem particularly appropriate.

3.32 This strength of environmental character allied to the current owner's aspirations offer significant opportunities to create development proposals which exemplify the qualities of the NRP – innovation, sustainability and quality of environment.

Question 10

Do you have any other comments about the illustrative masterplan for Colney Hall?

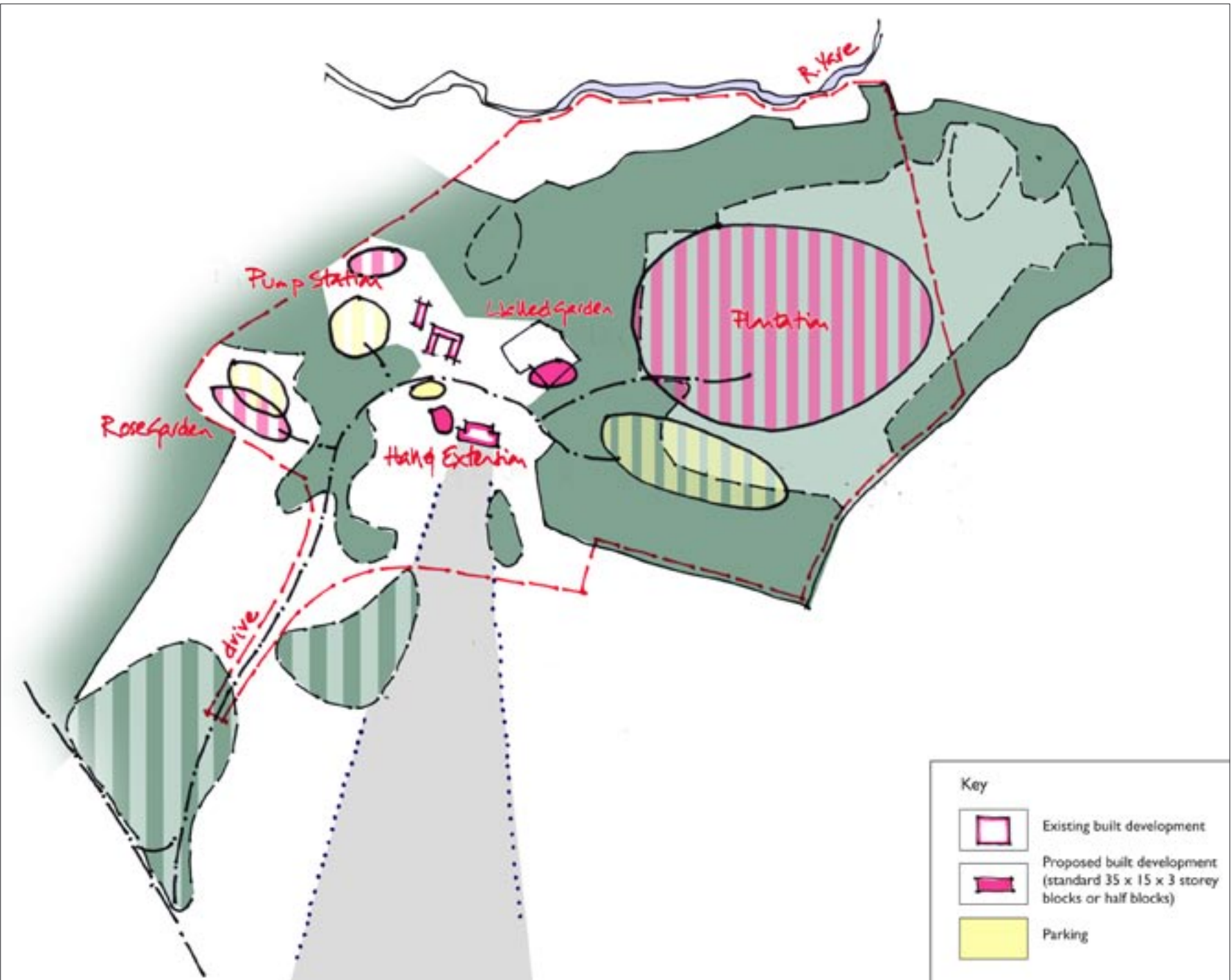


Figure 3.7: Colney Hall Illustrative Masterplan

Plot Ratios

3.34 Careful consideration has been given in the preparation of this guidance to the appropriate density of development for NRP. The conclusions are expressed in terms of 'Plot Ratios' which are defined as the allowable gross internal area (excluding roof plant) in square metres per square metre of available land.

3.35 The overall plot ratio for the main site is defined as 24% and this is to be seen as an average. The proposed landscape framework and 'No Build Zones' will restrict the construction of buildings to specific parts of the site and on each of these open areas the plot ratio will effectively become denser than the 24%. The factors that feed into the plot ratio are presented in **Figure 3.8**. Some trade offs in plot ratio will be permitted to create denser areas of development in some areas leaving other areas more open. Typically it is not anticipated that an area would be developed to a greater plot ratio than 35% unless there is an exceptional case to be made, perhaps a major use requiring a building of over 10,000 m². **Figure 3.9** shows how plot ratio will vary across NRP to give a plot ratio of 24% over the complete allocation area.

3.36 The illustrative examples of the master plan are all based on two storey buildings with an assumption that they would have a third storey or roof area available for plant.

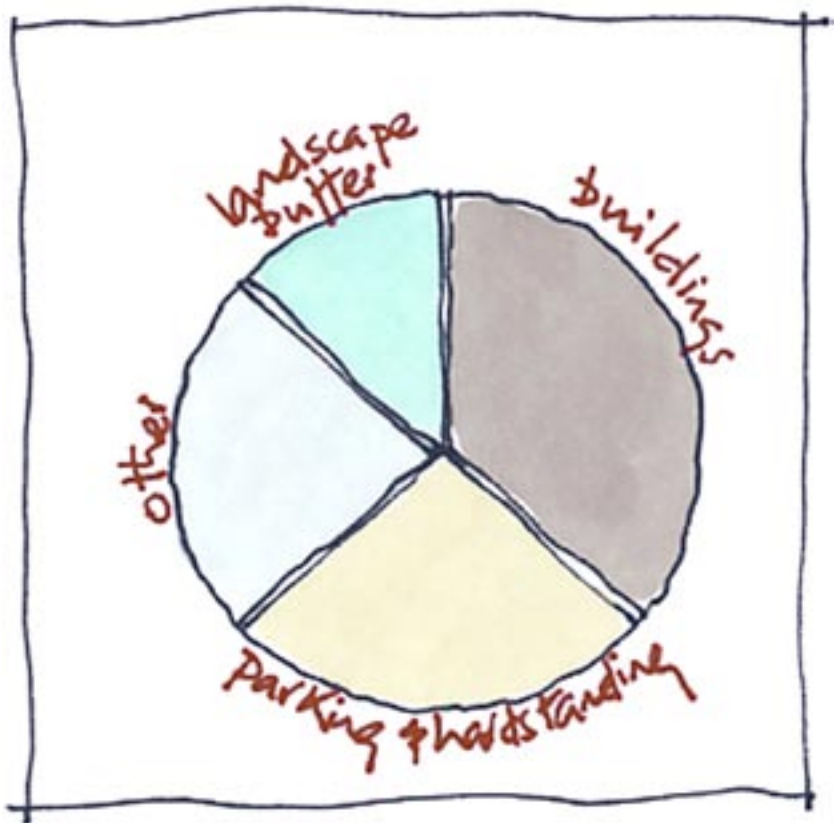


Figure 3.8 Plot Ratios

Allocation	Allocation area ha	Reduction for existing constraints	Reduction for landscape/drainage corridors	Revised area and % of total allocated area	Development area @ 35% plot ratio
Main Site					
COL 1 (Area 6 JIC)	11.4	10% / 1.1ha	2.0ha	8.3ha (73%) (see note 2)	29,050m ²
COL 2 (Area 9 Kemp)	14.0	10% / 1.4ha	2.75ha	9.85ha (70%)	34,475m ²
COL 1 (Area 7 Kemp)	8.6	2.5% / 0.2ha	0.85ha	7.55ha (88%)	26,425m ²
COL 4 (Area 10 Kemp)	5.0	2.5% / 0.1ha	0.9ha	4.0ha (80%)	14,000m ²
Colney Hall					
COL 1 (Area 8 Boddy)	15.0 total 8.0 available	0 See note 3	0 See note 4	8.0 (100%)	At 24% 19,200m ²
Total	54.0ha (47.0ha)	2.8ha	6.5ha	37.7ha	123,150m ² See note 5
Notes 1. Assumes optimum 3 storey building 35x15m, with two floors accommodation, 1 floor plant. Total area 1575m ² 2. 1.3ha of the allocation is already developed as buildings or car parking 3. Landscape elements not possible to quantify. Assume 24% plot ratio over total 8.0ha. 4. Proposed landscape corridors less relevant. Assumed that areas outside those available for development (i.e. within the 15ha but outside the 8ha areas for development) are in effect landscape corridors. Therefore no reduction from 8.0ha. 5. Compares to Mott MacDonald total of 123,800m ²					

Figure 3.9 Allocation and 'No Build Zones'

Question 11

Have we taken the correct approach when working out the developable area for the different parts of the NRP? Do you agree with the overall plot ratio of 24% for the main site? Please tell us what changes you would make.

Combined NRP illustrative masterplan

3.37 Using the existing landscape framework at NRP and proposed circulation network, illustrative masterplans have been set out for both the Core Area and the Colney Hall site. **Figure 3.10** combines these masterplans to show how the two areas relate to each other; development that already exists at NRP and the wider area.

Part 3 summary

The Core Area is located close to existing NRP development, has existing and proposed road infrastructure and has larger developable areas. In contrast, Colney Hall has a strong sense of place, comparative isolation and a closer 'grain'. These attributes have resulted in more specific layout requirements for the Core Area compared to more flexible requirements for Colney Hall in order to allow it to cope with its higher level of physical constraints.

Existing and additional landscape corridors form the basis of the landscape infrastructure for the Core Area, acting as multi-functional buffers and movement corridors. This infrastructure and circulation network provided the basis for the illustrative masterplan for the Core Area.

Five potential development hubs have been identified for Colney Hall - an extension to the Hall, the Rose Garden, the Pump House, the Walled Garden, and the Plantation. Levels of acceptable development in each hub has been defined in Part 3. This provided the basis for the illustrative masterplan for Colney Hall. Key to successful development in these hubs will be site sensitive design with an understanding of the character and attributes of the site and the opportunities and constraints presented.



Figure 3.10: Combined illustrative masterplan

Part 4:
Design Principles

Introduction

4.1 Part 4 sets out the generic design principles that will guide development in the Core Area, the Colney Hall site and any new development that is proposed as part of the existing components of NRP. It then provides design principles that are specific to Colney Hall given its different environmental setting.

BREEAM

4.2 The aspiration of NRP is that each building should achieve an 'Excellent' rating under BREEAM. Whilst there will be continuity factors from decisions made regarding site layout, travel plans and other broader assessment criteria, it is expected that, as each building or group of buildings is designed and constructed, careful consideration is given to sustainability factors, such as the orientation of the buildings, and the appropriate provision of shading. There is a clear preference for natural ventilation to be used wherever possible. More details of BREEAM can be found at www.Breeam.org.uk.

4.3 **BREEAM Plus:** BREEAM, although widening its scope, is still strongly focused on building performance. Designers are encouraged to extend the BREEAM aspirations to external treatments to provide an external environment that is low on resource consumption but delivers a high quality external environment. It should anticipate issues of climate change and maintenance resources/costs at the same time as maximising the useability of that external environment. This is particularly important at NRP given its location, aspirations and the proposed use of shared car parks with deliberately extended walking distances to buildings.

Climate change

Carbon reduction

4.4 We have to reduce our emissions of greenhouse gases. At the Kyoto Conference of the United Nations Framework on Climate Change (1997), the UK agreed to reduce emissions of greenhouse gases to 12.5% below 1990 levels over the period 2008-2012. In 1998, the UK Government set itself a domestic target for reducing carbon dioxide emissions beyond these commitments - to reduce carbon dioxide emissions to 20% below 1990 levels by 2010. To contribute to this target, occupiers at NRP should sign up to the UEA's Carbon Reduction (CRed) programme to reduce carbon emissions.

4.5 It is important to minimise energy use from buildings as they make up a large proportion of total energy consumption in the UK (**Figure 4.1**). Developers should seek to design buildings to achieve a high standard of energy efficiency and energy conservation through consideration of siting, design, density, materials, orientation, landscaping and layout. The planning authority would expect any planning application to include a full **energy audit** of their proposals, specifically measuring embodied energy, energy used in construction and energy used in operation. The energy audit should demonstrate mitigation measures to reduce carbon emissions from these three energy uses.

4.6 As part of the energy audit developers should apply the National Calculation Method of energy use in a proposed building to demonstrate compliance with Part L2A of the Building Regulations 2000 (2006). This requires the development to reduce carbon dioxide emissions (reduction target being dependant on characteristics of the building) compared to a notional building compliant with Part L of the 2002 Building Regulations.

For developments being proposed from 2010, developers should improve on the carbon dioxide reduction target by a further 5%, and after 2015 by an additional 5% over and above the 2010 reduction. Should subsequent revisions to the Building Regulations or other relevant control mechanisms require greater reductions than those set out above these will apply in their place. Meeting these carbon reduction targets will contribute to savings in operating costs.

4.7 The overall aspiration of development at NRP is to achieve carbon neutrality over the life-time of the development.

Climate change adaptation

4.8 Buildings should also make allowance for anticipated climate change to avoid premature obsolescence or prohibitively expensive refitting. Studies show that it is best to build in a combination of adaptability and actual mechanisms anticipating climatic change. The three principles to follow are:

- Achieving the correct building shell and footprint.
- Building to a higher initial standard (better insulation, higher quality materials etc).
- Providing the means to be able to upgrade buildings at a later date (especially adding cooling and renewable energy provision).

4.9 These principles are illustrated in **Figure 4.2**.

4.10 Climate change will increase the demand for water and reduce supply, particularly in summer. Developers should seek to maximise water conservation in buildings at NRP. The consumption of water should be minimised through the introduction of efficient fittings and fixtures (e.g. low flow water taps, low flush toilets, etc). Where practicable, developers should consider water systems that harvest water, through rainwater collection, and recycle and reuse water using grey water systems.

4.11 Buildings should also be designed to allow for and make best use of natural ventilation². However, ventilation should not be designed so as to compromise security, ambient noise levels and air quality.

4.12 Buildings should be designed to be able to maintain comfortable internal temperatures during heat waves, which are likely to get more frequent due to climate change. However, this does not mean that air conditioning has to be used. Passive design, such as solar shading, thermal mass and the proper use of ventilation, will be instrumental in the way buildings adapt to climate change impacts. Where cooling systems are used, they should be powered by renewable energy sources (see section on carbon reduction above).

Building Performance

4.13 Whilst there will be a wide range of users/occupiers there will be some significant areas that require closely controlled environmental conditions, high levels of air extraction or other energy dependant systems. To enable this within a sustainable research environment it is suggested that each building is zoned to provide areas where these activities can take place, whilst leaving other parts of the buildings to be naturally ventilated wherever possible.

4.14 Reduced energy demand is a prime target for the NRP and developers are expected to explore innovative methods to meet and beat current best practice in the use of renewable energy sources. High levels of thermal fabric insulation will be expected and solar shading will also be widely exploited.

³ The Greater London Authority (2005). Adapting to climate change: a checklist for development. Guidance on designing developments in a changing climate.

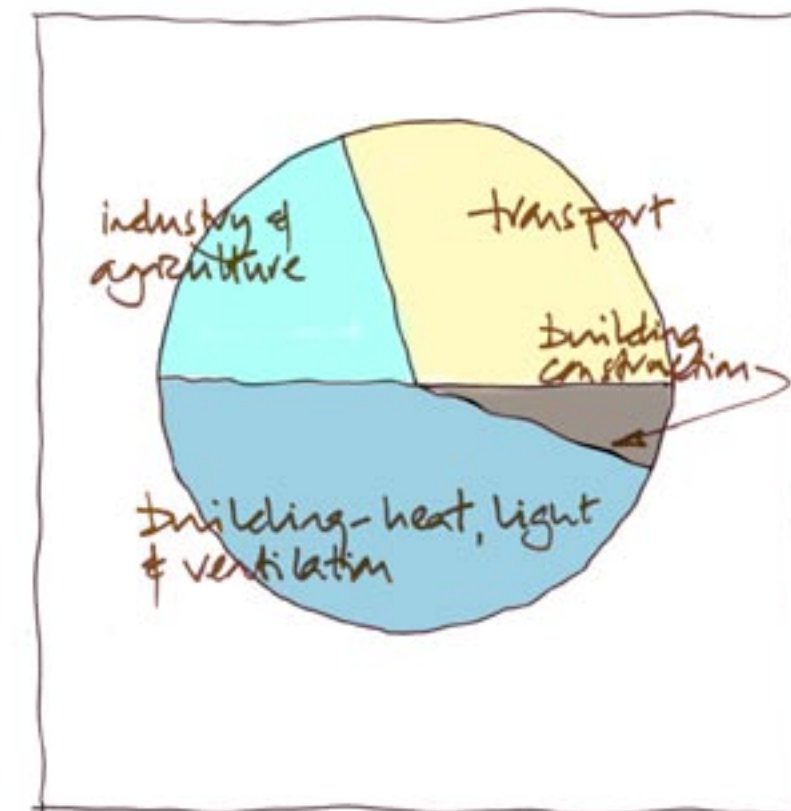


Figure 4.1: Energy use in the UK

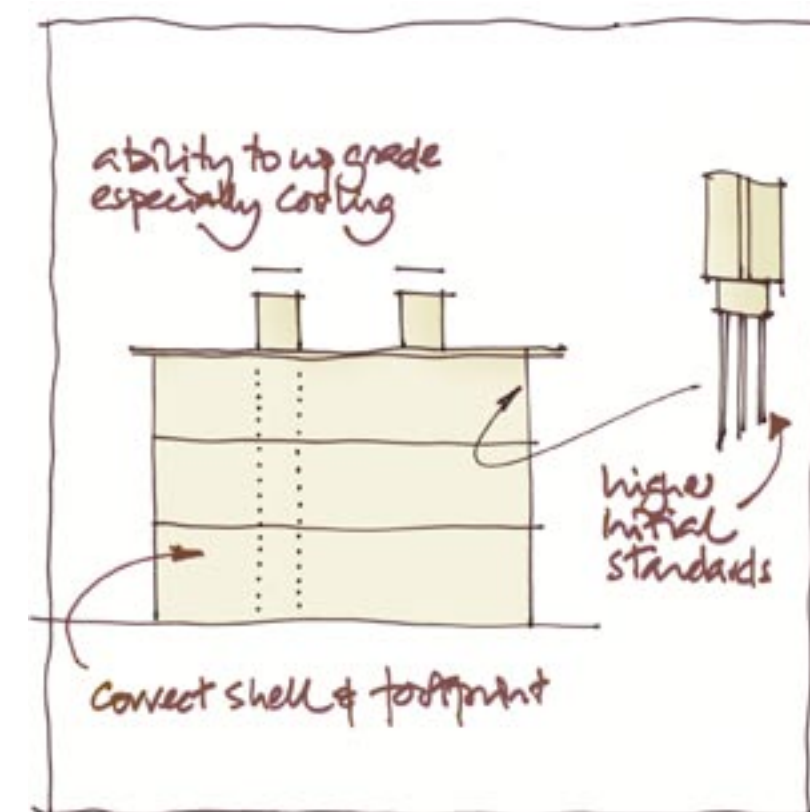


Figure 4.2: Principles of climate change adaptation



Figure 4.3: Layout flexibility

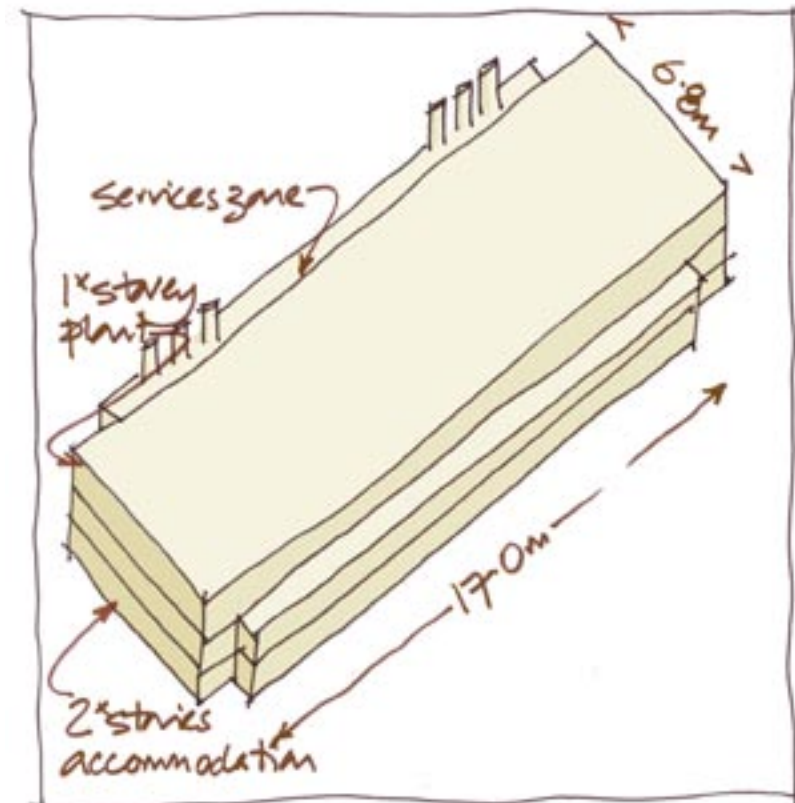


Figure 4.4: Size and massing

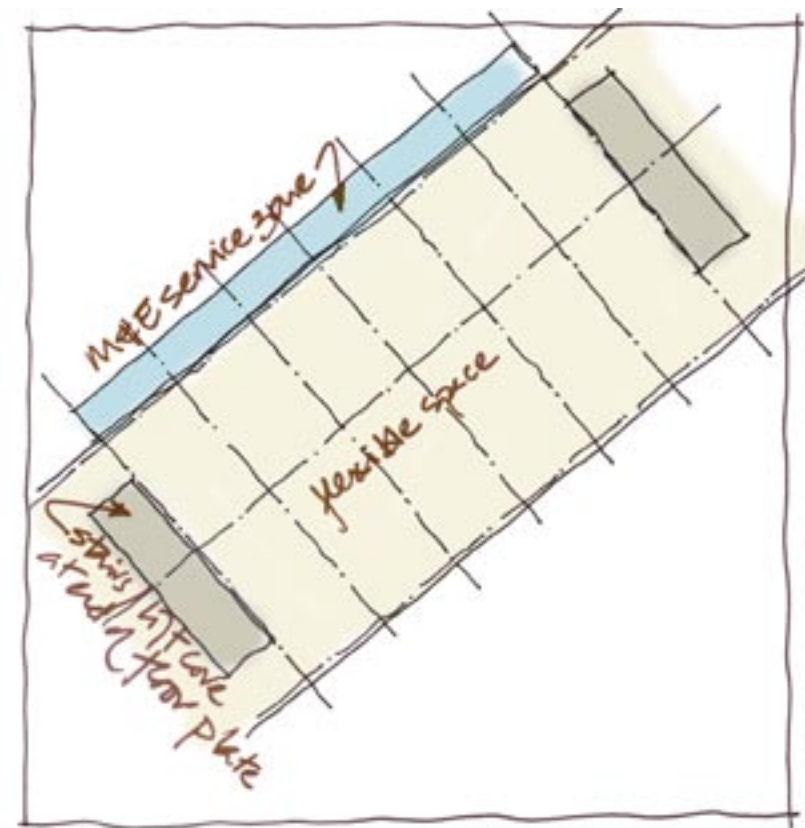


Figure 4.5: Creating flexible space

Building Layout

4.15 A number of options may be adopted for the layout and relationships of the buildings and these will be appropriate in different circumstances.

4.16 Where it is anticipated that a group of buildings on a 'plot' or in a particular area of the site will be multi occupied by a series of relatively small tenants, it is important that a sense of community is created. This can be achieved by orientating and placing the buildings in a manner that encourages the various occupiers to interact or meet either within the buildings or in the open spaces created between them or as a focus or 'common area' to a cluster of buildings. This is seen as a particularly important feature of the planning to enable the potential of NRP to be realised by attracting tenants who will want to benefit from this interaction with others involved in related scientific research.

4.17 Where single occupier buildings are anticipated and in circumstances where the occupiers may wish to have the option to expand their operation over time, it is important that buildings are related to each other both in a way that would allow them to be linked at a future date, or to enable expansion in at least one direction by extending any one of the buildings (subject to Plot Ratio issues set out above).

4.18 A major occupier wishing to develop a single building for their initial use should consider carefully a potential 'exit strategy' that would allow for future multi occupancy of the building.

4.19 It is important that building flexibility is incorporated in building layout. Flexibility is about ensuring that fixed elements do not impede future re-arrangement of the individual spaces. Fixed elements include the structural grid, building service ducts, furniture servicing (e.g. plugs and light switches), location of stairs and lifts, etc. Examples of layout flexibility are provided in **Figure 4.3**.

Size and Massing of Buildings

4.20 The general principle adopted for the buildings in the illustrative material is that they will be two stories plus a 'roof storey' for the plant accommodation. The buildings would typically be approximately 17m wide and consist of structural bays of 6.8m which would make a basic module of 3.4m by 17m, ie 58m² approx. for a minimum sized starter unit on a single floor. By taking adjoining bays, tenants can have a variety of spaces in multiples of 58m² on either one floor or two. This size and massing of buildings is shown on **Figure 4.4**.

4.21 The assumed bay width is based on certain assumptions regarding the type of research to be undertaken and would only come under pressure should engineering research with larger equipment be using the building. The building width allows a subdivision of the space into zones both for the single user of a whole building or floor and for the tenant of a single bay. It provides primary laboratory space, associated secondary labs, office/write up and circulation. The creation of this flexible space is shown in **Figure 4.5**.

4.22 It will be important to orientate the buildings on site to maximise the benefits of natural day light throughout the year whilst at the same time seeking to reduce the effects of solar gain. The judicious use of shading devices will be important in seeing energy efficiency for each building as part of the overall sustainability objectives. Techniques for climate control are illustrated in **Figure 4.7**.

Building Materials

4.23 There will be no single prescribed style for the whole Research Park. There is an expectation that the building sizing will be within certain limits particularly dictated by the suggested two storeys of accommodation throughout the development. This scale of building means that a wide variety of aesthetic solutions are applicable and whilst it is anticipated that the buildings will be steel framed, the cladding solutions can be drawn from a range of options.

4.24 Each cluster of buildings will be expected to have a common aesthetic and where this is to be multi tenanted floorspace, the appearance of the buildings needs to be appropriate to attract these potential tenants. Where possible, consideration should be given to the sourcing of local materials to both support the local economy and also to reduce the environmental impact of transportation.

4.25 Some of the buildings will require air extraction which may necessitate the use of flues that need to rise above the general level of the buildings. Where a single occupier is using a whole building, it is expected that this can be carefully organised. For multiple occupancy buildings there may be a demand for 'random' flue installation. Whilst these will always be the subject of detailed planning applications, the use of 'fan assisted' flues will always be preferred to ensure that the overall height is minimised.

Landmark Elements and Spatial Variation

4.26 The manner in which a group of buildings on a particular plot are organised will depend on a number of factors all dealt with elsewhere in this document. It may be that within a particular group of buildings the design of a special or landmark building is considered. This landmark might occupy the central position within a group and include some distinguishing architectural features. It might also have a special relationship to the open spaces created by the group of buildings. If such a landmark is created this could reflect the function of the building as a hub for the group of buildings, or indeed a broader scale for the Research Park as a whole.

4.27 Of the various options for master planning that are illustrated some are better suited to the inclusion of a landmark building than others. The most suited would be a solution that includes an anchor or major occupier on a single plot. This gives the opportunity for a solution whereby the overall design of the Research Park can revolve around this building as a focus. The image created may well become a symbol for the park as a whole.



Figure 4.6: Foiling and Silhouette



Figure 4.7: Climate control

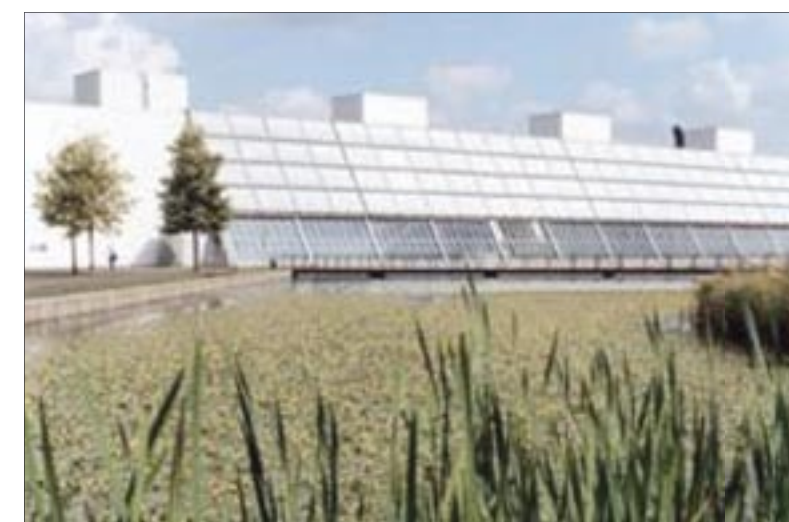


Figure 4.8: Simplicity of form

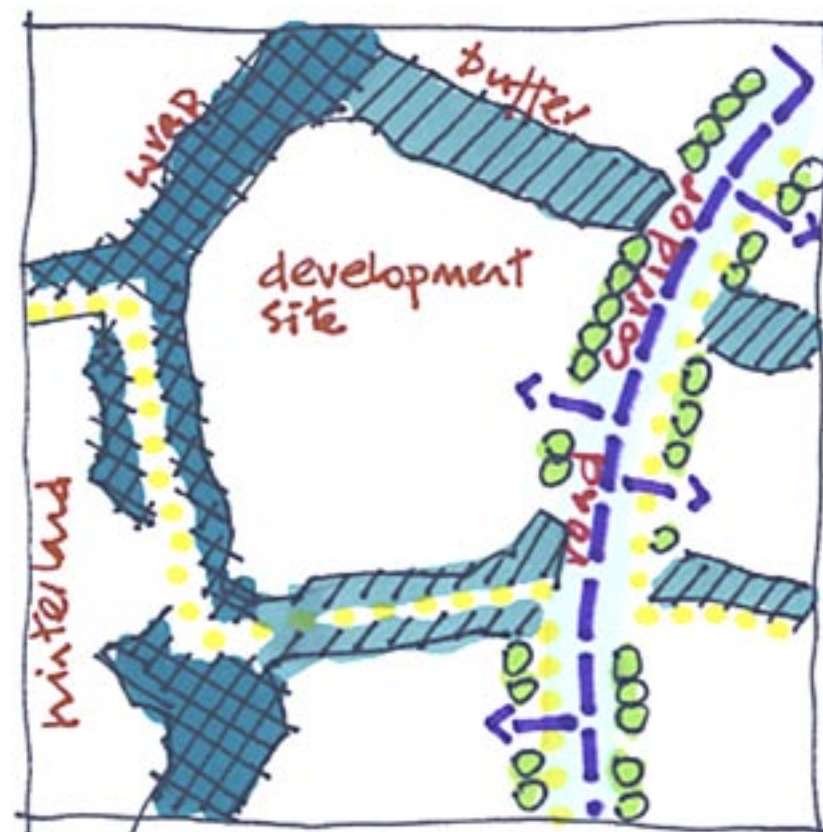


Figure 4.9: Landscape Strategy

Landscape within plots

4.28 All detailed planning applications will require a landscape plan. This should be fully integrated with the overall site plan to maximise landscape synergy with the cross-site landscape infrastructure and corridors. Layouts should be clear and legible. Landscape elements should be co-ordinated and avoid being reduced to fillers for left-over space. A landscape strategy should set out landscape objectives and clear functions of each part of the site. (Figure 4.9). Particular attention should be paid to:

- Control/containment of views/screening of ancillary uses (service yards, etc.) as illustrated in Figure 4.10;
- Reinforcement of circulation routes;
- Creation of shelter/shade/aspect to modify climate and create useable exterior environments as illustrated in Figure 4.11;
- Integration with adjacent plots/landscape infrastructure; plot boundary treatment;
- Consideration of changes in levels/integration of building platforms;
- Potential future building expansion as illustrated in Figure 4.12.

4.29 Materials palettes should consider sustainability issues and environmental impacts in production, transport, construction and maintenance. Locally sourced materials should be considered and the character and style of landscape should be appropriate in scale, simple but elegant, and capable of sustainable maintenance. Native planting is likely to predominate. All landscapes should anticipate likely climate change. Successful schemes are likely to respond to existing landscape character and key landscape elements either reinforcing this character or consciously contrasting with it.



Figure 4.10: Containment



Figure 4.11: Useable Environment

Parking, service access and services

4.30 Proposals should give appropriate consideration to all means of access and should avoid undue weight being given to vehicular access. Despite reduced parking ratios and shared car parks separate from the buildings, parking will have a significant development footprint and even greater potential environmental impact. Disability parking will continue to be provided at ratios compliant with parking standards.

4.31 Parking ratios are to be 1 space per 60m² of floor area excluding plant. These figures are to be considered as averages across an allocation. It is accepted that early phases of development may have ratios lower than 1:60 to reflect the fact that some sustainable transport facilities such as bus services will take some time to be effective or be economically viable. Later phases should compensate by having ratios above 1:60.

4.32 Shared parking areas should be sited:

- To combine effective service to proposed and future buildings and minimum environmental impact.
- Be part of a clear circulation system with logical approach roads and user-friendly pedestrian feeds to buildings.
- Have pedestrian connections designed as part of the landscape expression of the site and as a positive experience so that walk times of up to five minutes are acceptable.

4.33 The car parks themselves should provide:

- Safe and secure parking.
- Have good perimeter screening (without detriment to personal safety).
- Use simple materials.
- Resolve issues such as run-off, contamination, light spillage, etc.

4.34 Parking areas have particular potential to use recycled materials. Overflow or rarely used car parks should consider use of unmetalled surfaces, naturally binding gravels, etc.

Service access

4.35 Service routes and services yards should be planned to avoid issues of safety, visual intrusion and disturbance. Where possible service routes should double as broad shared surfaces on which pedestrians have priority.

Services

4.36 Research based development could have higher than average needs for provision of utilities, communications, etc. Developers should identify service corridors and where possible use a common duct approach with adequate spare capacity.

Sustainable drainage

4.37 Sustainable drainage system (SuDS) principles will be adopted throughout NRP. Designs will be required to minimise and attenuate surface water run off through the use of porous surfaces, swales, attenuation ponds and the like (Figure 4.13). Where possible these elements should be designed to provide biodiversity and landscape benefits. Rainwater harvesting from suitably cleaned roof and hard surface run off should be considered. Where appropriate surface water should be conveyed via open ditches (new or renovated field ditches). Sizing of drainage systems should anticipate more violent rainfall events predicted through climate change.

4.38 Foul water and grey water systems should adopt appropriate measures to maximise water conservation and recycling of water. Reed bed cleaning of grey water could be considered as part of the proposed landscape corridors.

4.39 All drainage issues must be considered from project inception to ensure maximum design integration.

Lighting and security

4.40 These elements can be critical aspects of the character of new developments such as the NRP. Lighting on this urban fringe site adjacent to open countryside and the Yare Valley will need to be carefully controlled to minimise light spillage and glare. All fittings should have maximum vertical cut-off and where appropriate operate on demand.

4.41 Security of research establishment is an important aspect and the site will need to be capable of providing adequate reassurance without undue environmental impact. Preference will be given to schemes that treat the building elevations as the principal secure line. Where access to the perimeter needs to be controlled, designers should consider the use of naturalised features such as ditches/water bodies; or landform, ha-has, hedges and woodland strips which incorporate and conceal any perimeter fence (Figure 4.14). These secure lines should be fully integrated into the overall site/plot layout and its landscape treatments.

Question 12

Does the Brief cover all the main design principles that should guide development at NRP? If not, what else should we include?

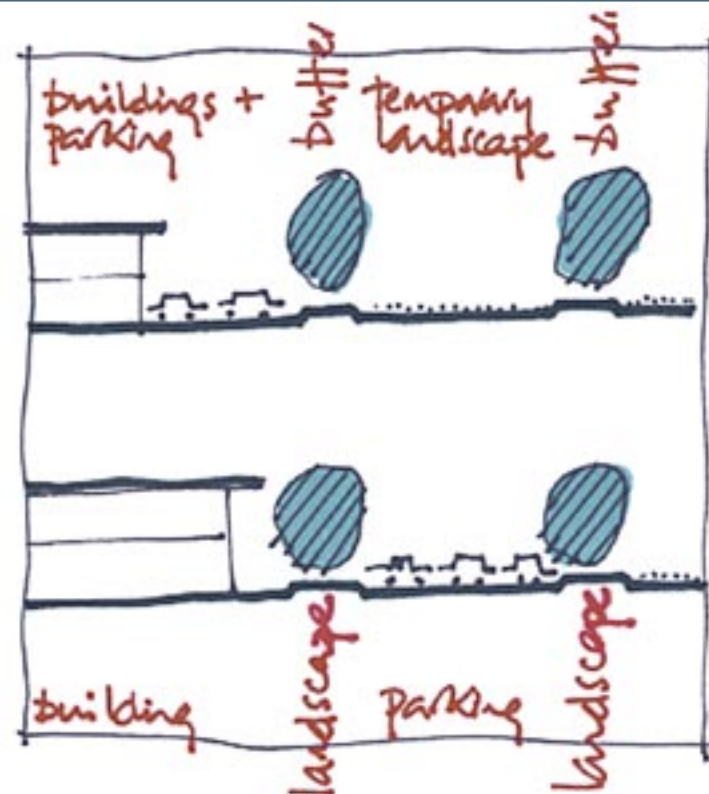


Figure 4.12: Potential future building expansion

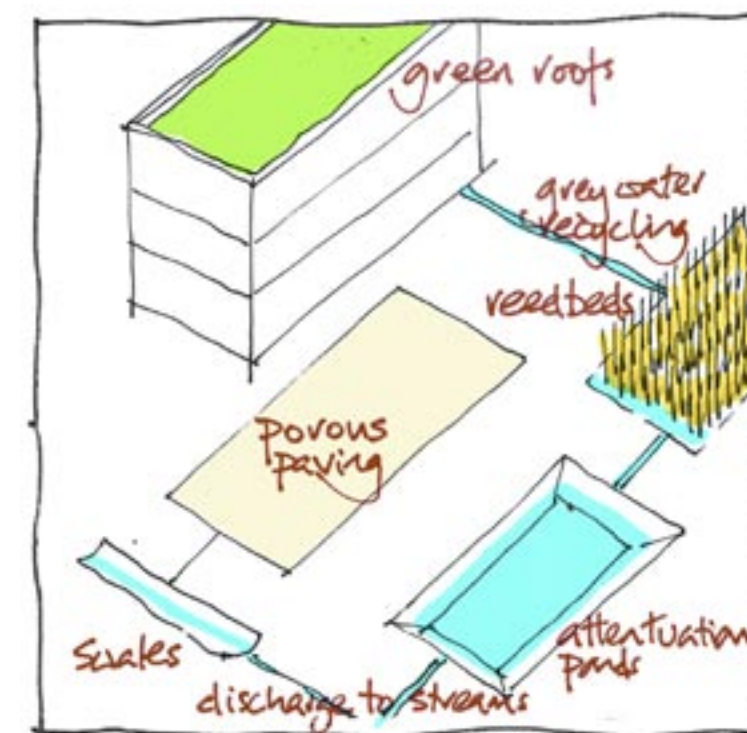


Figure 4.13: Sustainable drainage systems



Figure 4.14: Security



Photo 4.1: The Hall and its setting



Photo 4.2: Colney Hall Drive: A fine historic approach whose character should be retained

Specific design principles for Colney Hall

4.42 This section of Part 4 sets out design principles that are specific to Colney Hall given its different environmental setting. The Hall and its setting is shown in **Photo 4.1**.

4.43 Layouts, buildings, external works and landscape should generally work in tandem with the existing character of Colney Hall estate. Particular attention should be paid to achieving clarity of expression and simplicity of externals allowing the existing environment/landscape to speak for itself and flow right up to the elevations.

4.44 The complexity of the site will require detailed topographic, ecological and historic studies so that proposals can be site sensitive. In some cases such information already exists and may need updating.

4.45 This understanding will need to be informed by baseline studies including those on landscape, heritage, visibility and ecological issues. The latter will be particularly important given the likely changes in habitat value across the site since 2001 and recent requirements for full ecological survey data to be provided with planning applications⁴.

4.46 Proposals should be generated in accordance with a previously agreed master plan rather than piecemeal. This plan will be more detailed than the illustrative plan overleaf and will be drawn up to accord with this SPD.

4.47 The master plan should be accompanied by a Management Plan for the whole site which sets out the objectives for each of the identified development and non-development areas and broad brush proposals for reaching these objectives. Woodland management will be an important component of this Management Plan. Unless there is historic precedent plantations should be gradually replanted with native broad leaves and woodland managed for nature conservation (e.g. erection of nesting boxes for birds and bat boxes where 'natural' provision does not exist). Special efforts should be made to ensure the continued and increased diversity of woodland with specific management for particular components such as the lime coppice, fern colonies, bamboo garden and semi-ornamental understorey of the woodland gardens. An enhanced Phase I ecological survey will be a prerequisite of this Management Plan as will detailed specialist surveys recommended by the Phase I survey.

4.48 Construction work has the potential to cause significant damage at Colney Hall. Design proposals should be based on good site information; be realistic; involve specialists such as arboriculturists and architectural conservation specialists where appropriate. It should include adequate and workable protection measurements, control mechanisms and monitoring for all aspects of construction. Tree protection, stand off zones and dealing with compaction will require early involvement of arboriculturists.

4.49 Clearance and earthworks should be carried out in phases to match the building programme and so retain the woodland character at all stages of completion.

4.50 The River Yare is immediately adjacent to land allocated for development. There is also an adjacent County Wildlife Site - The Heronry and Violet Grove (Ref: 1446). Consultation on possible impacts on this site should be undertaken with the Norfolk Wildlife Trust. However, the actual development

envelope lies over 200m from the river and the County Wildlife Site.

4.51 Part 3 of the Development Brief identifies five potential development hubs at Colney Hall: an extension to the Hall, the Rose Garden, the Pump House, the Walled Garden and the Plantation. Specific design principles for each of the hubs are now presented.

Hall extension

4.52 Any extensions to the Hall will need to be fully sympathetic to:

- Its listed status;
- Impacts on its setting;
- Potential protected species issues;
- Visibility and impacts on the designed view (both inwards and outwards from the Hall); and
- Impacts on specimen historic trees.

4.53 Given these constraints opportunities are likely to be limited. Proposals that adopt the following approach are likely to be the most successful:

- Location to the south west of the building;
- Roof sitting well below the backdrop of retained mature trees within the Pleasure Grounds;
- Retention of the open prospect from the Hall across the designed parkland;
- Consideration of the relationship to the Hall and the opportunity to undertake works to improve its external appearance particularly previous unsympathetic additions/loss of balance on the principal elevation; and
- Careful design and layout of access and parking retaining historic vegetation to provide appropriate screening and retention of the landscape experience of the Drive.

4.54 Careful consideration will be required of both the future function of the existing Hall and the functional and design resolution of the relationship between the existing Hall and the proposed extension. Full use should be made of the south facing aspect across parkland.

4.55 Impacts on bat roosts in existing outbuildings would need special consideration and must comply with Natural England requirements.

⁴ Natural England suggest that these should include trees, protected species (in particular bats, badgers and barn owls), breeding birds and Priority Norfolk Biodiversity Action Plan Species and Habitats.

Rose Garden

4.56 The Rose Garden is shown in **Photo 4.3**. This area has good potential given its good existing access, good visual screening particularly on the south side and flat terrain. Development should:

- Be located close to the southern perimeter to maximise area available for parking to the north;
- Retain the existing hedge and tree belt along the southern boundary to reduce visual impacts on views from the drive;
- Retain existing mature historic trees (mainly oaks);
- Carefully plan vehicle access routes;
- Parking areas should be informally designed to retain major trees using flush kerbs, gravel surfacing, and maximum vertical cut-off lighting with operation on demand; and
- All carriageways should be designed as low speed shared surfaces.

4.57 Retention of more recent Birch and Cherry is not required.

Pump House area

4.58 The sensitivity of this Pump House area (**Photo 4.4**) centres mainly on possible visual intrusion on the Yare valley corridor. Other issues include:

- Achieving a satisfactory relationship with existing new/refurbished buildings functionally and visually;
- Creating appropriate circulation, shared parking and pedestrian access areas; and
- Retaining the important group of trees adjacent to the drive (which are part of the designed landscape).

Walled Garden

4.59 The Walled Garden (**Photo 4.5**) is considered of heritage significance and parts are likely to predate the Hall. It is listed Grade II and contains brickwork of considerable conservation interest. Any development in the vicinity would need to be:

- Sensitive to the scale, layout and materials of the walls and the space that it encloses;
- Small scale, principally single storey; and
- Of limited intrusion onto the enclosed space.

4.60 Ancillary development such as parking and access should be wherever possible kept out of the enclosed space and any such development between the Hall and the Walled Garden should take care not to further fracture the visual and spatial relationship between the two elements.



Photo 4.3: The Rose Garden Site: Level and well screened with good potential access from the Drive. The wall and gates should be retained if possible.



Photo 4.5: The Walled Garden: Sensitive heritage with very limited scope for development.



Photo 4.4: Pump House area: Potential for further development over and above recent community rooms (conversion and new build).



Photo 4.6:The Plantation: Low in landscape and habitat value.



Photo 4.7: Bowthorpe from the north east woodlands: Visibility issues of new development will require retention of a sustainable buffer.



Photo 4.8:The clearing and Plantation (right): The best location for the bulk of the allocation.

Plantation

4.61 The Plantation (Photos 4.6-4.8) has low heritage, landscape and ecological value and benefits from good existing woodland screening. It has the capacity to absorb considerable development but should avoid overpowering its woodland context. There are real opportunities to create new development within a woodland setting where vegetation comes close to the elevations and the ‘woodland experience’ is maximised. Developments should:

- Be generally two or three stories;
- Respond to the unusual context in its massing and materials;
- Take care in resolving level changes across the area with development generally following the slope;
- Carefully designed vehicle access and parking and consider forming detached parking cut into low value woodland to the south of the Plantation; and
- Factor in treatment of surface water run off (attenuation/potential for habitat creation) given the large volumes anticipated, the absence of existing drain infrastructure and the sizeable land take of these facilities.

4.62 The overall treatment of this part of the site should be in keeping with its woodland context. Some degree of formalisation of the spaces partially enclosed by buildings may be appropriate but the overall character should be of buildings set in woodland. Detailed tree surveys will be required at an early stage so that significant trees can be identified and layouts formulated which ensure their retention where appropriate.

Question 13

Can you suggest any other design principles specific to development at Colney Hall due to its different environment and landscape setting? If so, please let us know.

Part 4 summary

Developer’s checklist for all development at NRP

- Plot ratio data.
- BREEAM submission details and anticipated BREEAM score.
- Energy audit.
- Site plan with building layout, access, parking etc.
- Floor plans, elevations and materials.
- SuDS proposals.
- Lighting and security proposals.
- Construction methodology including cut and fill details
- Management plan and after care proposals

Additional developer’s checklist for development at Colney Hall

In addition to the material required above for all development at NRP, applications for development at Colney Hall should include:

- Baseline studies including ecological baseline survey and any habitat/species specific surveys, tree/woodland surveys, historic landscape surveys, architectural surveys and condition surveys.
- Masterplan for complete site with supporting report.
- Full set of proposals for the development seeking detailed planning permission including all surveys/conservation works/enhancements to heritage elements including the drive.
- Landscape and woodland management plan.
- Ecological impact assessment including mitigation.
- Tree protection proposals and impact statement together with proposals for watching brief by arboriculturist.

Question 14

Do you agree with the developer’s checklist for all development at the NRP? If you disagree please tell us what you would change or add to make the checklist better.

Question 15

Is it a good idea to have an additional developer’s checklist for Colney Hall? Would you change or add anything to this checklist?

Part 5:
Use Class Variations

Introduction

5.1 Land allocated as an extension to NRP is covered by Policy COL1 of the extant Local Plan. Policy COL1 allows for the development of 'research and development' at NRP, defined by reference to Class B1 Class II (b) of the Schedule to the Town and Country Planning (Use Classes) Order 1987. Class B1 Class II (b) is described as:

'Use for research and development of products and processes...capable of being carried out within a residential area without detriment to the amenity of the area due to noise, vibrations, smell, fumes, smoke, soot, ash, dust or grit' (Town and Country Planning (Use Classes) Order 1987).

Viability of research and development

5.2 It is important that development at the NRP accords with the policy in the Local Plan, however in exceptional circumstances other material planning considerations relevant to a specific proposal may on balance outweigh the provisions of the Local Plan to such a degree as to indicate that a different planning decision should be taken contrary to Local Plan policy.

5.3 It is widely acknowledged that developments based purely on research and development use are difficult to establish. Demand for these uses in Norwich, as well as in many other centres in the UK, has been identified as fragile.

Ancillary uses

5.4 The Development Brief SPD recognises that demand for purely research and development facilities is not as strong as that for pure commercial developments. The Brief therefore acknowledges the evolving nature of employment demand and sets out a range of uses that would be acceptable where supplementary to research and development facilities. To ensure compliance with Local Plan policy COL1, it is important to emphasise that these uses must be **ancillary** to the main research and development use at the site. It is considered quite possible that a major focus for growth may involve health related activity. Local Plan policy COL4 refers to 5ha of land between the Norfolk and Norwich University Hospital and Hethersett Lane which is allocated for hospital and hospital related activities in addition to research and development uses permitted by policy COL1 at NRP.

5.5 Where these ancillary uses are proposed, the developer will need to demonstrate that they are:

- Supportive and essential to the proposal's core function;
- Compatible with the objectives of this Development Brief SPD; and
- Contribute to the achievement of the Vision Statement.

5.6 Provided that these requirements can be met, the planning authority will consider the following ancillary uses acceptable as part of the wider mix of employment uses:

- Use Class B1: Business (which include offices, research and development, light industry appropriate in a residential area).
- Use Class C1: Hotels (which include hotels, boarding and guest houses where no significant element of care is provided).
- Use Class C2: Residential Institutions (which include residential care homes, hospitals, nursing homes, boarding schools, residential

colleges and training centres).

- Use Class D1: Non-residential institutions (which include clinics, health centres, crèches, day nurseries, day centres, schools, art galleries, museums, libraries, halls, places of worship, church hall, law court, non-residential education and training centres).
- Uses that are ancillary to existing buildings and uses.

5.7 Examples of appropriate ancillary uses include patient hotels, education and training facilities and residential institutions where they link to the research and development uses on the site. The planning authority will not consider other types of development outside these Use Classes appropriate to NRP, especially Use Class C3: Dwelling houses.

Question 16

What ancillary uses do you consider would be appropriate at the NRP?

Part 5 summary

Land allocated as an extension to NRP allows for the development of Use Class B1 (b): Research and Development uses. However, this Development Brief recognises that demand for these uses may not be as strong as that for pure commercial developments. It therefore sets out a range of uses that would be acceptable where **ancillary** to research and development uses. These include development within Use Classes B1, C1, C2 and D1.

**Appendix I:
Non-Technical Summary of the
Sustainability Appraisal Report for NRP
Development Brief SPD**

NON-TECHNICAL SUMMARY

INTRODUCTION

1. The South Norfolk Local Plan¹ allocates land to the west of Colney Lane, which is adjacent to existing research and academic institutions and the new Norfolk and Norwich University Hospital, for additional research and development uses as an extension to Norwich Research Park (NRP). 15 hectares of land at Colney Hall is also allocated for these uses. The Local Plan requires a Development Brief to be prepared for the extension to NRP, which will set the principles the principles and parameters for development. The Development Brief will eventually be adopted as a Supplementary Planning Document (SPD).
2. The preparation of the NRP Development Brief SPD is being subject to a full Sustainability Appraisal (SA) in line with the Planning and Compulsory Purchase Act 2004 and current planning policy guidance (PPS12). The SA will also be in accordance with the requirements of European Directive 2001/42/EC (known as the Strategic Environment Assessment, or SEA Directive).
3. The difference between SA and SEA is that where SEA is more focussed on environmental impacts, SA includes wider ranging considerations, extending to the social and economic impacts as well as the environmental impacts. This joint SA/SEA was undertaken in line with the ODPM guidance on SA². Throughout the report, SA is used to mean 'sustainability appraisal incorporating the requirements of SEA'.
4. The purpose of SA is to promote sustainable development by helping to integrate social, environmental and economic considerations into the preparation of plans³. It should be viewed as an integral part of good plan-making, involving ongoing iterations to identify and report on significant effects of the plan and the extent to which sustainable development is likely to be achieved.

NRP DEVELOPMENT BRIEF SUPPLEMENTARY PLANNING DOCUMENT

5. Development Briefs provide a stepping stone between the provision of planning policy and the form and detail of a planning application. The NRP Development Brief has been prepared to guide and co-ordinate the form of development on land allocated as an extension to NRP. It will be used by the Council in its determination of detailed planning applications for the site.
6. The overall objectives of the NRP Development Brief SPD are:
 - To implementing allocations and land uses in the Local Plan;
 - To provide developer and landowner certainty over development at NRP;

¹ Adopted in 2003 and runs until mid 2006. South Norfolk Council is currently preparing their Local Development Framework which will eventually replace the South Norfolk Local Plan.

² *Sustainability Appraisal of Regional Spatial Strategies and Local Development Documents*. Office of the Deputy Prime Minister, November 2005.

³ *Sustainability Appraisal of Regional Spatial Strategies and Local Development Documents*. Office of the Deputy Prime Minister, November 2005.

- To enhance the efficiency of the planning process and the process of planning applications;
- To promote high-quality design and innovation; and
- To reflect physical constraints and opportunities in the area.

7. The Vision Statement for the NRP Development Brief SPD has been defined as:

The extension to NRP will underpin the international presence of Norwich as a centre of excellence in providing research and training particularly in biological, chemical and environmental sciences. In acting as a magnet to, and fully serving the diverse needs of, a wide range of indigenous companies and inward investment opportunities, NRP will significantly contribute to the economy of Norwich and the wider area.

NRP will be an exemplar for the sustainable development of research and development parks. It will embrace good design and contribute to the quality of life of local people, by improving provision of local services and facilities. It will make a major contribution to tackling climate change, one of the greatest challenges we are facing, by incorporating energy efficient design and techniques, offsetting carbon emissions and aspiring to carbon neutrality over the life-time of the development.

METHODOLOGY

8. The ODPM SA Guidance specifies a number of stages of work that have to be undertaken. The first three stages of the SA have been completed and are documented in this SA Report (i.e. Stages A, B and C). These involved the following:

Stage A: Setting the context and scope

9. The first stage of the SA/SEA culminated with a Scoping Report (June 2006). This report included a review of other plans, strategies and studies relevant to the preparation of the NRP Development Brief SPD, collecting baseline information to characterise South Norfolk and NRP, identifying of key sustainability issues for NRP, and identifying an appraisal framework.
10. The review of other plans, strategies and studies identified plans relevant to the NRP Development Brief SPD at the international, national, regional, county and district level. The review identified the key objectives associated with these plans.
11. To maximise consistency between the appraisal process of the South Norfolk Local Development Framework (LDF) and the NRP Development Brief SPD it was decided, following a review of the SA Framework for the SA of the South Norfolk LDF, that the same SA Framework should be applied in the SA of the NRP Development Brief SPD. The sustainability objectives provided the main tool for assessing the Development Brief SPD, and comprised 22 objectives:

SA objective	
Environment	
ENV1	To maintain and enhance biodiversity, geodiversity, species and habitat quality, and avoid habitat fragmentation
ENV2	To reduce vulnerability to climate change, including minimising the risks from flooding.
ENV3	To maximise the use of renewable energy solutions and reduce contributions to climate change.
ENV4	To reduce the effect of traffic on the environment
ENV5	To improve air quality and minimise noise, vibration and light pollution
ENV6	To maintain and enhance the distinctiveness and quality of landscapes, townscapes and the historic environment
ENV7	To minimise the loss of undeveloped land and conserve and improve the quality of soil resources
ENV8	To improve water qualities and provide for sustainable sources of supply and sustainable use
ENV9	To minimise the production of waste and increase recycling.
Social	
S1	To provide everybody with the opportunity to live in a decent, suitable and affordable home.
S2	To reduce poverty, inequality and social exclusion.
S3	To offer opportunities for all sections of the population to have rewarding and satisfying employment.
S4	To improve accessibility to essential services, facilities and the workplace, particularly for those most in need.
S5	To improve the education and skills of the population overall.
S6	To improve the health of the population overall.
S7	To encouraging local community identity and foster mixed communities with co-operative attitudes, helping to reduce anti-social activity.
S8	To improve the quality of where people live.
Economic	
EC1	To encourage sustained economic growth
EC2	To encourage and accommodate both indigenous and inward investment promoting a positive image of the District.
EC3	To encourage efficient patterns of movement in support of economic growth.
EC4	To improve the social and environmental performance of the economy.
EC5	To improve the economic performance in rural areas

Stage B: Developing and refining options and assessing effects

12. The options for the NRP Development Brief SPD and the document itself were appraised against the SA objectives in the SA Framework. The sets of options/ components that were appraised as part of this SA include:

- Broad options which focused on alternative plot ratios for development within NRP and transport strategies that are used to access the site.
- Detailed options which explored alternative ways of expressing the preferred broad option (in terms of layouts of development at NRP). Given the physical separation and specific environment of Colney Hall compared to the remainder of NRP, separate expressions of development were prepared for development at the 'Main Site' and Colney Hall.
- The Vision, Objectives and Design Principles of the preferred option which comprises the consultation draft Development Brief SPD (which accompanies this SA Report)

13. **Figure 1** below describes each of these appraisal stages setting out what was appraised, how the results of the appraisals were used and how this fed into the preparation of the Development Brief.

Stage C: Preparing the Sustainability Appraisal report

14. This is the non-technical summary of the full SA report, which follows this document. The SA report includes the SA findings on the likely significant effects on the environment, and social and economic factors of the NRP Development Brief SPD, and outlines the reasons for selecting the alternatives/options dealt with. It also sets out the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects or maximising the positive effects on the environment of implementing the plan. The SA report has been written to meet all the requirements of the SEA Directive, and these are signposted in the SA report.

Stage D: Consulting on the SPD and SA report

15. The output from Stages A to C is the SA report. It has been prepared for consultation alongside the consultation version of the NRP Development Brief SPD. Consultation responses will be taken into account in developing the final version of the SPD, and any comments received on the SA will be considered and addressed in further iterations of the SA.

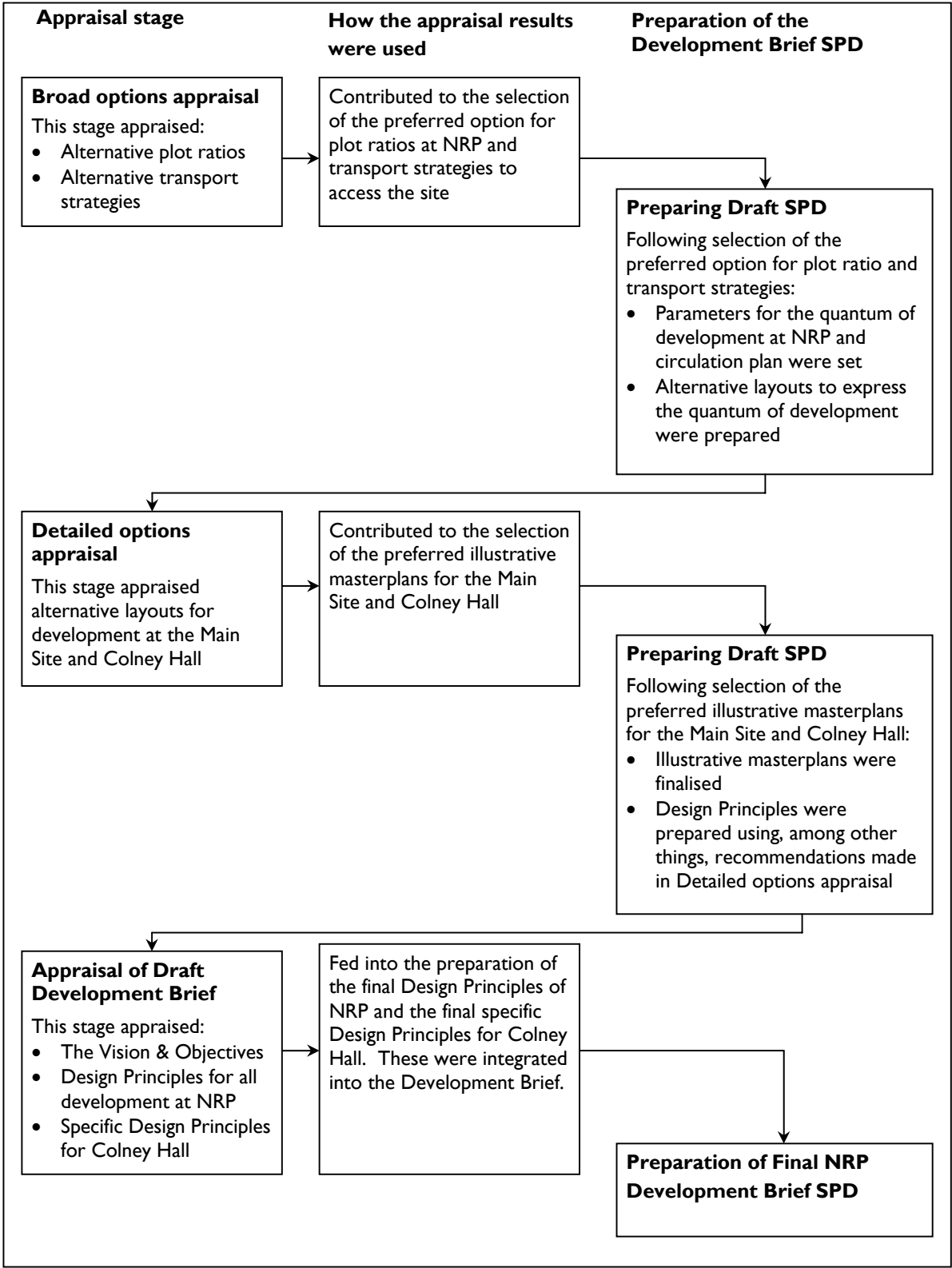
Stage E: Monitoring and Implementation of the NRP Development Brief SPD

16. This SA report sets out recommendations for monitoring the sustainability effects of the NRP Development Brief SPD. It also provides recommendations for a process for dealing with adverse or unexpected effects.

SUSTAINABILITY CONTEXT OF NRP

17. NRP is located on the urban fringe of Norwich city and lies immediately outside the city boundary on the south-west side of the River Yare opposite the University of East Anglia campus. There are two components which make up NRP, namely existing developments and those additional areas allocated for research and development uses as part of the South Norfolk Local Plan.

Figure 1: The appraisal stages of the SA and how the results fed into the preparation of the Development Brief



18. The sustainability characteristics of the area include:

- **Landscape:** the main site is characterised by its open nature with broad views and relatively little sense of enclosure. This is exacerbated by the open gently rolling topography, relatively large fields and an absence of significant hedgerows. Its character is essentially agricultural although there is an awareness of adjacent development. Colney Hall has a more complex character stemming from a more varied terrain and woodland cover providing a more intimate landscape. The Hall and its immediate environs enjoy a fine south-easterly prospect.
- **River valley and flooding:** NRP is located within the Yare Valley and so is located close to the river floodplain. However, none of the existing developments or allocated sites are within flood risk areas.
- **Nature Conservation:** there are 9 species featured in the Norfolk Biodiversity Action Plan which have been identified in the local area by the Norfolk Biological Records Centre (NRBC). Whilst there are no designated habitats of national or European importance that are in close proximity to NRP, the area includes a range of habitats that are important to the local area. These include five locally-significant County Wildlife Sites, meadow grazing which borders sections of the River Yare, and scattered trees, plantations and hedgerows.
- **Heritage:** Colney Hall is a Grade II listed building set within the remnant of a historic landscape. Some of the parkland trees and exotics, the walled garden, and remains of ornamental rockwork east of the Hall have heritage value. The most significant heritage element is the south-easterly prospect from the Hall.
- **Water consumption and water resources:** the current water supply network in the area around NRP has reached capacity.
- **Access to recreational facilities and open space:** UEA is located next to Earlham Park and the UEA playing fields, both of which have public access. These areas are important for quality of life and health of the surrounding population.
- **Access:** allocated sites are accessed principally by the Watton Road and its side roads, Hethersett Lane and Colney Lane. Colney Hall is accessed by a private drive from the Watton Road. The Watton Road is characterised by relatively high traffic volumes particularly at peak times when it is close to capacity.
- **Employment:** most of the land in the south of the District is used for agriculture and food related industry, giving this sector great influence despite employing only 15% of the workforce. However, NRP also plays a significant role in the South Norfolk and greater Norwich economy, e.g. the Norfolk and Norwich University Hospital directly employs 5,400 people and indirectly supports 1,000 jobs. The importance of NRP to the region as a whole is acknowledged within the draft Regional Spatial Strategy, being classified as a 'strategic employment site' in draft policy NSR1 and E4.
- **Inward investment:** the District has one of the fastest growing economies in the UK, which is largely building on its strengths in science and technology, healthcare, engineering and food science.

DEVELOPING AND REFINING OPTIONS

Broad options

19. The broad options for the NRP Development Brief SPD focus on alternative plot ratios for development within NRP (at 16, 19 and 24% plot ratios) and alternative transport strategies to access new development at NRP (including a car-dependant, and a mixed public transport and car access strategy).
20. The broad option that was taken forward by South Norfolk Council as the Preferred Option was the mixed public transport and car access strategy with development at 24% plot ratio. This was considered by the Council to be the most beneficial option that balances optimal economic growth, employment creation, improved education and skills with practical, considered environmental mitigation. The findings of the SA were considered in arriving at this decision and recommendations made through the appraisal of the preferred broad option were incorporated in the preparation of the detailed options and Development Brief where appropriate.

Detailed options for the Main site

21. Three expressions of the preferred broad option formed the detailed options for the Main Site. The detailed options comprised a conventional approach to site layout, a parkland style of development and a hybrid option between the conventional and parkland style approaches.
22. The detailed option that was taken forward by South Norfolk Council was the hybrid development option. This was considered by the Council to be the most beneficial option given its economic performance and good environmental standards. The findings of the SA were considered in arriving at this decision and recommendations made through the appraisal of the preferred detailed option for the Main Site were incorporated in the Development Brief where appropriate.

Detailed options for Colney Hall

23. Three expressions of the preferred broad option also formed the detailed options for Colney Hall. The detailed options comprised varying amounts of development in different parts of the estate.
24. The detailed option that was taken forward for the expression of development at Colney Hall by South Norfolk Council comprised an extension to the Hall, development in the rose garden, walled garden, at the pump house, and within the coniferous plantation. This was considered by the Council to be the most beneficial option given its concentration of development in existing developed areas, its potential for integrating opportunities for wildlife and its reduced effect on nearby County Wildlife Sites and River Yare compared to the other options. The findings of the SA were considered in arriving at this decision and recommendations made through the appraisal of the preferred detailed option for Colney Hall were incorporated in the Development Brief where appropriate.

NRP Development Brief SPD

25. Taking the Development Brief SPD as a whole, a number of significant cumulative impacts in relation to the SA objectives have been identified. The potential significant positive cumulative impacts of the SPD include:
 - Maximising the use of renewable energy solutions;
 - Reducing contributions to climate change;
 - Providing working accommodation for a range of future users/occupiers to support long-term employment;
 - Improving accessibility to the workplace and essential services and facilities;
 - Improving the education and skills of the population in the area owing to the nature of employment that would be located at NRP which is likely to encourage the provision of highly skilled jobs;
 - Improving the health of the population by improving access to Norfolk and Norwich University Hospital and providing open spaces which are likely to contribute to the health of those who work at NRP and live nearby;
 - Improving the quality of where people live;
 - Encouraging sustained economic growth; and
 - Encouraging and accommodating indigenous and inward investment promoting a positive image of the District.
26. The potentially significant negative cumulative impacts of the SPD in relation to the SA objectives include:
 - Reducing the effect of traffic on the environment; and
 - Minimising the loss of undeveloped land and conserving and improving the quality of soil resources.
27. The SA report concludes by making recommendations for the approach to monitor the sustainability effects of the Development Brief SPD.

NEXT STEPS

28. The SA Report is now being published for consultation to provide the statutory environmental bodies and stakeholders, including the public, with an opportunity to express their opinions on the SA Report and to use it as a reference point for commenting on the Development Brief. Please send your comments by Friday 29th June to:

Alan Gomm, Planning Policy Manager
 South Norfolk Council
 South Norfolk House
 Swan Lane, Long Stratton
 Norfolk, NR15 2XE

Email: AGomm@s-norfolk.gov.uk
 Fax: 01508 533625