D|A|L|C|R|O|S|S

Smart Growth Masterplan

A masterplan for the A96 Corridor – Dalcross should provide for distinctive 'green' Highland places where people can chose to live, learn and earn successfully.

Collaboratively, all stakeholders will endeavour to deliver the masterplan through pioneering governance and commercial astuteness.

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Dalcross (A96 Corridor)
Smart Growth Masterplan

Phase 1 – Planning

Report

March 2005

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1. Introduction

1.1 This report provides an overview for the preparation of the Phase 1 – Planning for the Dalcross (A96 Corridor) *Smart Growth* Masterplan. The report is divided into 16 sections of:

- **Introduction.** This establishes the context and approach adopted. The over-all project objectives are set out.
- **Objectives.** This sets out the detail of objectives for this first part of the masterplan's development.
- **Method.** This section outlines the method adopted for Stage 1.
- **Stakeholder Expectations and Requirements.** This section reports on the key expectations stakeholders have for the masterplanning of the Corridor.
- **Technical Capacity Studies.** This section outlines the capacity of the Corridor with regard to infrastructure, transport, land use, landscape and urban design.
- **Case Studies.** Five case studies are outlined that provide a context for considering options for the masterplanning of the A96 Corridor.
- **Outcomes – Vision.** A shared vision for the project is developed in this section.
- **Outcomes – Development Principles.** This section provides the foundation for the development of a *Smart Growth* masterplan.
- **Outcomes – Urban Design Preferences.** The characteristics of what make good places are discussed in this section.
- **Outcomes – Development Model Options.** Options for the masterplanning of the Corridor are outlined in this section.
- **Testing Development Model Options.** This section examines the development model options and reports on the testing applied.
- **Smart Growth Conformity.** The preferred option is subjected to a test to ensure that the Smart Growth principles have been addressed.
- **Vitality and Viability of Place.** This section provides some practical advice on requirements relating to education, social services, community infrastructure, open space, health, worship and retail provision. All these contribute to the vitality and viability of place.
- **Traffic and Transport Considerations.** Further considerations relating to the accessibility considerations for the preferred masterplanning option are discussed.
- **The Dalcross (A96 Corridor) *Smart Growth* Masterplan.** A full description of the masterplan is provided in this section.
- **SUDS Assessment.** This section provides an initial assessment of the implications for a sustainable urban drainage system.

1.2 The purpose of the project is to prepare a masterplan for the long-term development of the A96 Corridor between Inverness and Nairn as a whole (see Site Plan). This requirement emerges from the Highland Structure Plan (approved 2001). The emerging Inverness Local Plan and City-Vision (2003) reinforces the importance of the Corridor to accommodate this growth through a chain of new settlements linked to business opportunities and long term land management.

1.3 The project will adopt a *Smart Growth* approach. *Smart Growth* is an approach for the development of new places and the establishment of new communities. *Smart Growth* has been developed as an antidote to current bland and undistinguished suburban development patterns. *Smart Growth* taps into community expectations to create sustainable places, a strong environmental ethic and more nuanced views of growth. The result is both a new demand for, and a new opportunity to create, places for people.

1.4 *Smart Growth* recognises connections between development and quality of life. It leverages new growth to improve the community. *Smart Growth* is place centred, is transit and pedestrian oriented and promotes a greater mix of housing, commercial and retail uses. It also preserves open space and many other environmental amenities. There is no "one-size-fits-all" solution. However, successful communities do tend to have one thing in common – **a vision** of where they want to go and of what things they value in their community – and their plans for development reflect these values.

Figure 1 – Site Plan

2. Objectives

2.1 The overall project objectives are to:

Collaboratively, prepare a masterplan for the long term sustainable development of the strategic A96 Corridor between Inverness and Nairn forming a comprehensive planning framework for the Corridor as a whole.

Establish a complete living environment for the A96 Corridor that is of the comparatively highest standard and best quality.

2.2 This is supported by objectives that seek to:

Identify suitable locations for the provision of new places to be provided over the long term.

Ensure that new housing development is linked to business, servicing and employment resources through public transport facilities.

Align long term land management with development opportunities through a *green* framework.

Promote extensive consultation and engagement with statutory bodies, regulators, development agencies and other parties whose roles and responsibilities impinge on proposed Corridor developments.

2.3 Phase 1 – Planning of the project has three stages of proofing the concept, capacity assessment and masterplan preparation.

2.4 Stage 1 – Proof of Concept objectives are to:

Test and scrutinise the development model for the Corridor against other alternatives.

Make fully-evidenced recommendations as to the most appropriate way forward.

2.5 Stage 2 – Capacity Assessment objective is to:

Bring forward a reasoned justification and recommendation regarding the capacity of the A96 Corridor to accommodate future population levels.

2.6 Stage 3 – Masterplan Preparation objectives are to:

Create a spatial database for the whole of the A96 Corridor.

Prepare a selection of land-use/transportation scenarios and comparative appraisal information.

Select suitable mapping of a preferred masterplan solution.

3. Method

3.1 The method adopted was founded on three elements. These were to:

- Use *Collaboration for Success* (CfS) to consider and generate outcomes from stakeholders.
- Undertake technical capacity assessments relating to infrastructure, landscape, transport, land use and urban design.
- Consult with community councils and an appropriate sample of local people through focus groups.

Collaboration for Success

3.2 CfS provides a framework for developing a culture of collaboration with stakeholders that is much more than a process of partnership. This allows agencies to work together to find solutions for the issues facing the masterplanning of the A96 Corridor. CfS was run through two sessions - *CfS*1 and *CfS*2. CfS1 involved parallel events for:

- Governmental and regulatory stakeholders (see Appendix 1 for attendees list).
- Business/developer/landowner stakeholders (see Appendix 2 for attendees list).

3.3 The CfS1 was spread over a day for each group. The programme covered:

- Introduction and establishment of the background to the project.
- Outline CfS approach.
- Undertaking a site visit along A96 Corridor.
- Stakeholders registering their expectations and requirements for the Corridor's master planning. These are reported in Section 4 below.
- Establishing a commitment of stakeholders to work collaboratively.
- Outlining case studies of best practice from Germany, Denmark and USA. These are outlined in Section 5 below.
- Facilitated urban quality workshops.
- Identify options for development models of the Corridor through facilitated workshops.
- Reporting from workshops.
- Next steps and questions.

3.4 10 stakeholder CfS workshops considered the challenges of masterplanning the A96 Corridor in relation to developing a shared vision, establishing development principles, identifying urban design preferences and promoting development options.

3.5 The CfS sessions were reviewed and outcomes established in relation to setting a vision for the masterplan, establishing development principles (in respect of output and process), indicating urban design preferences and identifying development model options. These outcomes are discussed below in Sections 7 – 10.

3.6 CfS2 brought all stakeholders together to consider development model options for the A96 Corridor. Appendix 3 provides an attendance list. Through workshopping sessions, the stakeholders sustainably assessed eight development model options and ranked them. This

involved the application of the *Smart Growth* Sustainability Appraisal Matrix (SGSAM) as shown below.

Sustainability criteria fall within the matrix as follows:

Accessibility
- Transport and Access
- Access and Accessibility

Economy
- Local Economy and Work
- Education & Lifelong Learning
- Development Capacity
- Marketability
- Infrastructure

Community
- Community Participation
- Social Justice
- Health and Safety
- Existing Development
- Adjoining Land Uses and Relationship with Surrounding Communities

Environment
- Pollution, Waste and Resources
- Energy
- Buildings, Urban Design and Land Use
- Open Spaces
- Site Characteristics
- Topography
- Landscape Features
- Wildlife and Habitats
- Views

Appendix 4 provides a full outline of the SGSAM. The outcomes from these considerations are discussed in Section 11.

3.7 Through CfS a full multi-agency understanding of the challenges facing the area was developed. The commitment of these stakeholders to the solutions developed was garnered as they were intimately involved in the process to identify them.

Technical Capacity Assessments

3.8 Technical capacity assessments relating to infrastructure, landscape, transport, land use and urban design were undertaken. The following paragraphs briefly outline the methodology of assessment for each.

3.9 An assessment of the capacity and implications for the new development relating to gas, water, drainage, electricity and telecommunications was undertaken. For each discussions were undertaken with the local supplier to determine the:

- Capability of the existing network.
- Actions required to accommodate increased population.

From this a *broad brush* statement of the current infrastructure system was established. Sufficient advice was also established to allow development options to be generated and evaluated.

3.10 This assessment allowed an infrastructure development model option for the A96 Corridor to be generated. It also provided the basis for assessing other options.

3.11 The landscape capacity assessment drew from the *Guidelines on Landscape and Visual Impact Assessment Second Edition* (Landscape Institute and Institute of Environmental Assessment, 2002) and in particular the *Inner Moray Assessment* (Sarah Fletcher, Scottish Natural Heritage Review No.90, 1998). Further reference has been made to recognised key publications

3.12 The assessment process was divided into four stages, as follows:

- A description of the existing landscape resource.
- A report on the assessment of landscape character surveyed within the A96 study area.
- An assessment of the sensitivity of landscape character to potential housing development.
- An assessment of landscape capacity of the study area for new settlements and future development.

3.13 The study area's boundary was treated as flexible and the landscape survey extended the area to include landscape contributing to the immediate visual setting for each settlement, as appropriate.

3.14 The existing (baseline) landscape resource and visual amenity formed a cornerstone of the assessment process and established the landscape context and sensitivity of the study area. This considered broad regional landscape character areas and landscape character types. This also included documenting landscape designations and other landscape features,

elements and landmarks contributing to the value and sensitivity of the landscape including topography, landscape designations, water courses, main areas of woodland, existing landscape character areas, tourist destinations, local landscape features or landmarks, areas of existing built development, main transport routes (into and out of the settlements), and existing (above ground) industry and utilities, including electrical transmission lines.

3.15 The character assessment survey was divided into three areas as follows:

- Landscape characteristics surveys of the area.

- Landscape and visual effects considered the potential landscape and visual effects of housing development in that area; particularly loss of rural landscape, vegetation and visual prominence on the skyline.

- Landscape capacity and sensitivity examined the capacity of the landscape to accommodate development. Landscape capacity is closely related to landscape sensitivity and this is determined by consideration of landscape value, quality and capacity for development.

3.16 From the above, it was possible to generate a development model option and test other options that were brought forward.

3.17 In considering the landscape's sensitivity to housing development, the likely and typical landscape and visual effects brought about by this form of development were considered as these will have a bearing on the sensitivity of one landscape type compared to another. The potential effects considered as part of this assessment and associated with potential housing development included:

- Changes to landscape character.
- Loss of rare or unique areas of local landscape character and elements.
- Skyline effects.
- Poor integration of urban fringe and urban edge areas.
- Visual effects from key viewpoints.
- Visual coalescence.
- Ribbon development.
- Effects on setting.

3.18 Assessment of traffic and transport implications involved:

- A review of the national and local policy context.

- Taking a broad overview of the existing transport situation relating to the road network, cycle network and public transport provision and infrastructure. This was placed in the context of existing and proposed development.

- Considering the travel demand characteristics of the long term development proposals in terms of road, public transport and walking/cycling.

- Examining the capacity of the existing transport infrastructure and considering options for managing new demand.

- Development of a preferred transport option for accommodating long term growth in the A96 Corridor. And testing alternative development models.

3.19 The land use assessment developed three areas of:

- Reviewing the national, regional and local land use planning policy context.
- Examining the detailed land use policies and proposals pertaining to the A96 Corridor and the places within it. This also identified a development option to accommodate long term growth.
- Testing other development options against the land use findings.

An extensive site visit was undertaken to establish the detailed land use potential and implications within the A96 Corridor.

3.20 Urban design guidance and advice has been prepared in respect of developing the planning for the long term growth of the A96 Corridor. This emerged from:

- Preparing case study information from best practice examples from Europe and the USA.
- Identified urban design assessment criteria and key benchmarks building on *Smart Growth* development principles established as part of CfS1
- Reviewed preferred development option to ensure conformity with the *Smart Growth* principles and urban design guidance, as appropriate.

Community Consultation

3.21 Consultation was undertaken with community councils and an appropriate sample of local people through focus groups in order to establish their views in respect of issues emerging from the development options to accommodate long term growth in the A96 Corridor.

3.22 Local people's views were established through two different approaches - one for the more informed and one for the less informed. These were:

- A consultative conference with key representatives of Community Councils and relevant Councillors.
- Focus groups with members of the public from communities along the Corridor.

3.23 The conference included:

- An opening presentation on the purpose of the day including the setting out of the planning context.
- An open session that discussed initial views on the key factors that could/should influence locational strategy from a community perspective.
- A further short presentation on a shortlist of possible strategic development options.

- A workshop that explored possible and preferred development options and discussed issues arising.

- A further open session that established the more informed community's preferred option(s).

3.24 The consultative conference was held on the afternoon of 27 November at the Highland Council headquarters in Inverness. Letters were issued to each Community Council and one residents association in the area, inviting 4 or more members of each organisation to attend.

3.25 12 Community Council members attended the conference, accounting for a range of Community Councils throughout the Corridor of:

- Ardersier Community Council
- Balloch Community Council
- Croy and Culloden Moor Community Council
- Nairn Suburban Community Council
- Smithton and Culloden Community Council
- West Nairnshire Community Council

3.26 Although the conference was intended for members of local community organisations it was made clear to those attending that they had been invited as 'informed' local people rather than to represent the official views of their organisation – there being opportunities later in the planning process for this.

3.27 For less informed 'ordinary' members of the public, focus groups are an appropriate and effective consultation method which allow people to express their views, concerns and priorities with respect to emerging development options. Focus groups offered a more relaxing and informal platform for people to air their views than other mechanisms.

3.28 Four facilitated focus group discussions were undertaken segmented by geography to obtain a mix of participants. The Corridor was divided into 3 areas for the purposes of recruiting focus group attendees, defined by local authority wards, as follows:

- Smithton/Culloden/Balloch area, incorporating Culloden, Westhill and Smithton and Balloch wards.

- West Nairn area, incorporating Nairn Altan and the majority of the Nairn Cawdor wards.

- A Central Ardersier/Croy/Petty area, incorporating Ardersier, Croy & Petty and small parts of Nairn Cawdor wards.

3.29 The electoral roll for the Corridor was split into these 3 areas and 300 individuals were randomly selected from each, giving a total sample of 900. Whilst not strictly proportionate in terms of the numerical distribution of households within the Corridor, stratifying the sample in this way ensured a good geographical spread.

3.30 From the 900 invites issued 51 individuals indicated that they would be able to attend. A total of 39 people actually attended the focus groups. Attendees were split 21 male/18 female and ages are estimated to have ranged from under 30 through to over 70, the majority being over 50 years of age. They represented most towns and villages in the Corridor.

3.31 In summary, the method for the project involved the following tasks:

1 Obtain and review a full set of datasets pertaining to the Corridor from Highland Council, major landowners and others

2 Review of ongoing commissions of significance to future development of the Corridor

3 Prepare case study information

4 Undertake *Collaboration for Success* session 1 that will identify development options for the Corridor

5 Identify urban design assessment criteria and key benchmarks

6 Establish constraints and opportunities for development within the Corridor building on the constraints datasets. And develop Specific assessment of capacity in respect of:
- Transport
- Land use
- Landscape/Environment
- Infrastructure

7 Apply *Collaboration for Success* session 2 as the foundation for a sustainability appraisal of the preferred development options.

8 Undertake community consultation/research to establish local people's views.

9 Review preferred development option to ensure conformity with *Smart Growth* principles and urban design assessment criteria / benchmarks

10 Development of masterplan for the A96 Corridor as a whole.

4. Stakeholder Expectations and Requirements

4.1 Verbal and written submissions have established expectations and requirements from stakeholders for the A96 Corridor Masterplan. These have been divided into categories relating to accessibility, economic development, social/community and environment.

Accessibility

- Establish effective public transport routes that can allow double-tracking of rail and a local bus route network with linear routes.
- Build and develop the long distance cycle route(s).
- Separate long distance road trips from local trips.
- Concerned about the long term capacity of the Raigmore Interchange (A9/A96).
- Support development of Inverness Airport.
- Non-car based accessibility should be promoted that links destinations with homes.
- Get infrastructure and public transport services right before development.
- Double-tracking of rail should improve routes to Elgin.
- Place walking and cycling accessibility to forefront of thinking.
- Adopt a *home zone* approach whenever possible.
- Dualling of the A96 and construction of the Nairn By-Pass are important.

Economic Development

- Growth supports Inverness and its region as strategic economic driver for Scotland.
- Opportunity for a mixed development approach.
- Promote the regeneration of Ardersier Village.
- Support development of business park in Corridor.
- Look at opportunity to accommodate university campus.
- Ensure governmental stake in infrastructural investment.
- New settlements need to be of a sustainable size to provide self-contained servicing.
- Proposals must be commercially viable and deliverable through the market.
- Smaller communities in the Corridor should be expanded.

Social/Community

- Ensure crime prevention is addressed from the beginning of masterplanning for growth to create safer communities.
- Integrate housing developments with employment opportunities
- Avoid suburbanisation.
- Linear/Grid development; no cul-de-sacs
- Ensure growth does not undermine viability of smaller communities in northern Scotland.
- Create inclusive communities
- Must be public sector/community led to ensure paradigm changes are promoted.
- Ensure social infrastructure (e.g. schools, community centres, libraries, sports facilities, parks, etc.) are planned in order to create inclusive communities.
- Create choice in housing and lifestyle.
- The natural gas main should be respected.

Environment

- Protect archaeological remains and buried sites.
- New water treatment infrastructure will be required to be privately funded.
- Sewerage provision should be confirmed prior to development proceeding.
- Flood risk should be assessed.
- The natural environment of the Corridor should be protected.
- Improved environmental awareness should be promoted.
- Environmental quality and landscape should be incorporated into development.
- Set standards of excellence in environmental and design quality.
- Existing environmental designations should be retained and enhanced through beneficial management.
- Water bodies should not be deteriorated through engineering.
- Development proposals should promote waste minimisation and recycling in their construction and operation.

4.2 In addition, written submissions were received from Moray Estates, Inverness Estates and the Cawdor Estate promoting various options for accommodating all or some of the Corridor's projected growth. The proposals these raised and their accompanying issues have been addressed through the considerations outlined in this report.

5. Technical Capacity Assessments

5.1 The capacity of the Corridor to accommodate new development has been tested through a series of technical assessments relating to infrastructure, transport, land use and landscape. Urban design considerations have also been made. These are discussed below.

Infrastructure

5.2 A full copy of the infrastructure assessment can be found in Appendix 5. The following provides a summary.

5.3 In respect of the existing service infrastructure the following can be reported:

- **Gas** - The existing gas network within the Corridor consists of a high transmission line which runs from east to west approximately parallel to the A96. Medium and Intermediate pressure network extend from this to cover the suburban areas of Nairn and Inverness. There is a minimum exclusion zone of 12m around the high pressure transmission main.

- **Water** - There is an extensive existing mains water network within the Corridor with large size mains running on an east-west axis. The Corridor is supplied from two reservoirs and a water treatment plant which are located outside the study area. These reservoirs and the treatment plant also serve the wider Inverness and Nairn area.

- **Drainage** - Mains drainage exists in the built up areas close to Inverness (i.e. Culloden/Balloch, Croy, Newlands, Ardersier and the Airport). There are wastewater treatment works at each of these locations within the study area. There is also an extensive urban drainage network in Nairn with the associated treatment plant outside the study area. The treatment plant in the eastern approaches to Inverness is under the administration of a PFI contract. The implication of this is that it is not possible, for contractual reasons, to use this water treatment plant to handle any increased growth in the Corridor.

- **Electricity** - The electricity network is served from a 132kV supply system from East to West in the southern part of the study area. The High Voltage (HV) cables run above ground on overhead pylons between main grid substations located in Inverness and Nairn. These grid substations supply the local urban areas and the Corridor. The HV network from these substations is concentrated around the Inverness and Nairn areas. The network within the study area is less extensive and is derived ultimately from one or other of the two grid substations mentioned above.

- **Telecommunications** - A core fibre network runs parallel to the A96 and also along a southerly route through the Newland/Croy area. Core fibre also extends into the Ardersier area. This gives extensive coverage of the Corridor and allows considerable flexibility for future expansion.

Figure 2 shows the existing infrastructure.

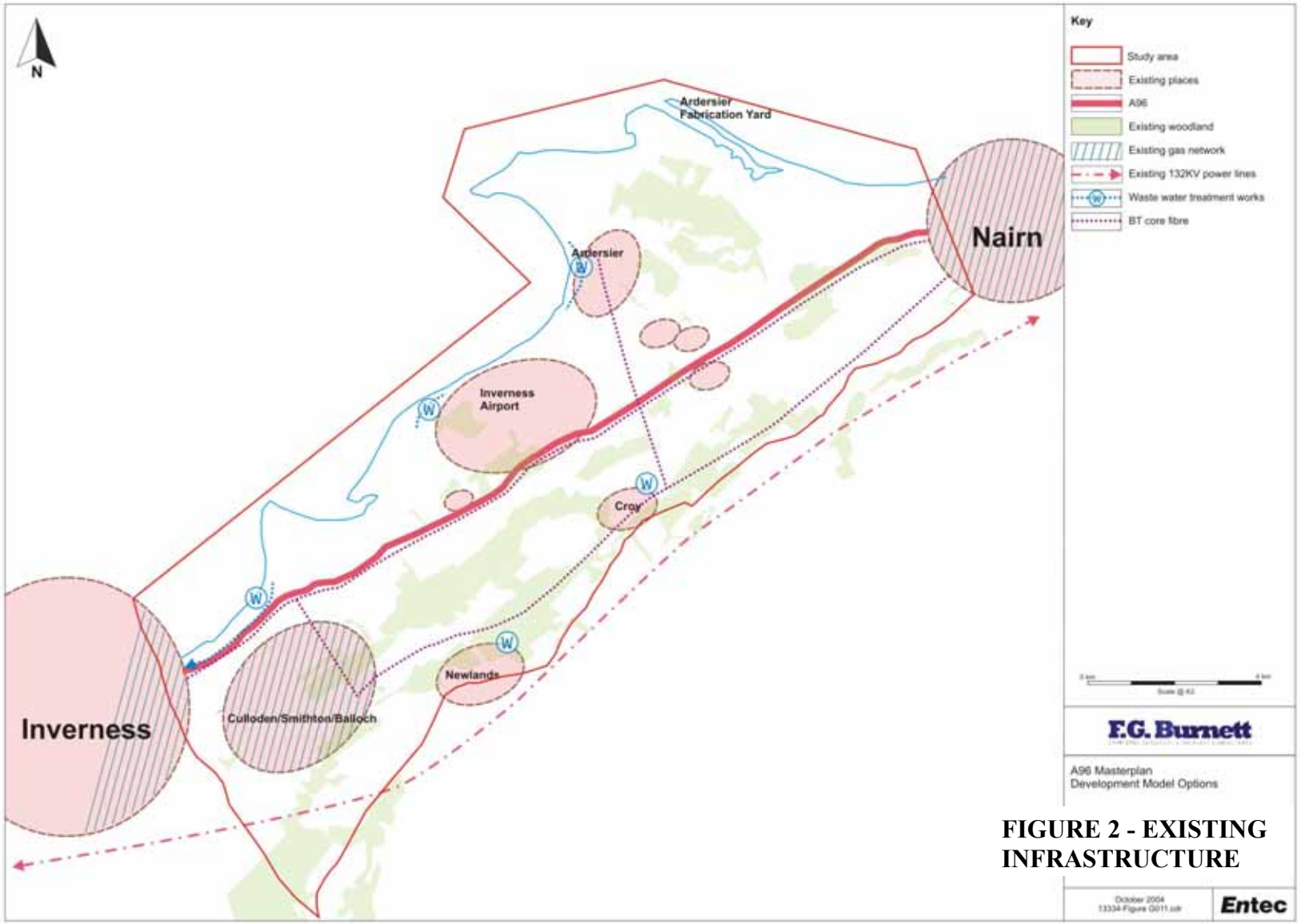


FIGURE 2 - EXISTING INFRASTRUCTURE

5.4 The utility infrastructure capacity of the Corridor is assessed in the following paragraphs.

Gas

5.5 A gas capacity assessment has concluded that the peak gas demand for an additional 10,000 dwellings is estimated to be in the order of 60 MW. However, a typical demand would be approximately 30MW. The high pressure gas main passes from East to West across the Corridor. The medium/low pressure distribution network is concentrated in the suburban areas of Inverness and Nairn. There is little low/medium pressure infrastructure in the central area. Both of the suburban low/medium pressure networks and the main transmission line are operating close to full capacity. Consequently, significant reinforcement of the high pressure trunk main will be necessary to support long term development of the Corridor. This could be phased over a long period of time as the settlement growth develops.

5.6 It would be preferable to extend their existing network into the central area of the Corridor that currently has no low/medium pressure gas distribution. This would provide a more extensive and flexible network.

5.7 It is not anticipated that any major diversion works to the medium pressure mains would be required due to the development of the Corridor; all localised settlement growth should be developed to avoid the existing medium pressure pipeline. The extensive exclusion zone around the high pressure transmission main (12m minimum) must be taken into account when developing detailed proposals.

Water

5.8 The increased domestic water loading is estimated on the basis of 200 litres/person/day. This gives an increased loading in the Corridor of 4500-5000 m^3/day. The Corridor is currently served by an extensive below ground water pipework network and this network could be adapted and reinforced locally to serve long term growth.

5.9 The source of the domestic water supply is more problematic. The capacity of the reservoirs and water treatment works that serve the wider area are already causing Scottish Water some concern as current growth in the Inverness area is loading the system close to its maximum capacity. The proposed A96 Corridor expansion could bring about the need to provide an additional water treatment plant and possibly a new source of water for the network. Scottish Water is extremely cautious about this, not only because of the cost and timescale implications but also, because the Scottish Environmental Protection Agency (SEPA) have already raised their own concerns with Scottish Water regarding their long term water sources and usage rates. **Therefore, there is a water supply problem that will require a full infrastructure modelling exercise to establish the long term supply strategy for the North of Scotland of which the A96 Corridor's development potential would form part.**

Drainage

5.10 Domestic mains drainage capacity is assessed on the basis of 0.5m^3/dwelling per day. This gives a total additional load of 5000m^3/day. The provision of mains drainage is restricted by the capacity and location of the wastewater treatment plants and as with the domestic water supply there are concerns over the ability of the existing network to accommodate the

increased drainage discharge. The existing mains drainage around the Nairn area is currently operating at maximum capacity and any growth at the east side of the Corridor could not be supported from this network. There is some capacity on the main drainage network at Inverness but the current growth already underway in this area is already loading up the network in this area. The waste treatment plant that serves this area is currently administered under a PFI. Further settlement in this area could not be accommodated by this treatment plant.

5.11 The other existing wastewater treatment plants in the area of the Airport, Newland, Croy and Ardersier will require upgrading to accommodate the additional wastewater loading from settlements in the central zone of the Corridor. It may also be necessary to create a completely new water treatment plant within the Corridor area.

5.12 It is not possible at this stage to identify a most favoured option for drainage. Scottish Water is cautious of any expansion of the existing mains drainage in the area. SEPA have already directly communicated their concerns to Scottish Water that increased drainage demand must be accommodated in an acceptable manner. **The feasibility of upgrading the existing water treatment plants and the cost implications associated with this will require a detailed drainage modelling exercise to be carried out**.

Electricity

5.13 The increased loading on the electricity networks is assessed on the basis of approximately 4kW per dwelling (where dwellings use gas for heating). The total increased loading is in the order of 40MW. Although the 132kV tower lines run parallel to the Corridor, the main grid substations which supply the local infrastructure networks are located west of Inverness and east of Nairn. Although the overall increase of capacity can be accommodated on the 132kV network, the local HV networks fed from the existing grid substations could not take the increased capacity. The existing grid substations are poorly placed to allow for increased growth in the A96 Corridor. **The long term expansion would require the electricity supplier to create a new central grid substation within the Corridor.**

Telecommunications

5.14 The Corridor is served by an extensive fibre network that gives a great deal of flexibility in their ability to accommodate long term growth. No significant problem in serving the expanded settlement capacity within the Corridor from their existing infrastructure network is anticipated. The network would require upgrading in a phased manner to accommodate the expansion.

Transportation

5.15 Appendix 6 contains a copy of the transportation analysis for the A96 Corridor. The following paragraphs provide a summary.

Road Network

5.16 On the eastern edges of Inverness, existing traffic count data indicates peak hour traffic flows of 1,559 vehicles (0800-0900 hours) travelling westwards along the A96 towards Inverness and 1,113 vehicles (1700-1800 hours) travelling eastwards along the A96 from Inverness have been established. On the western edges of Nairn peak hour traffic flows of 464 (0800-0900 hours) on the A96 travelling eastwards to Nairn and 686 (1700-1800 hours) on the A96 travelling westwards from Nairn have been identified. The east to west flow ratio (shown in Table 5.1) consistently shows that in the AM peak approximately 60% of traffic is travelling west and 40% east.

Location	**24 hour**	**AM Peak (8.00- 9.00)**			**PM Peak (17.00-18.00)**		
		East	**West**	**E/W (%)**	**East**	**West**	**E/W (%)**
Nairn – Delnies	13239	299	464	39/61	686	497	58/42
Gollanfield - Newton of Petty	11764	281	524	35/65	620	402	61/39
Newton of Petty to Balloch	16215	400	567	41/59	694	590	54/46
Balloch - Smithton	15467	371	588	39/61	687	458	60/40
Smithton - West Seafield	26681	546	1157	32/68	1292	829	61/39
West Seafield – Raigmore	32488	661	1113	37/63	1559	1177	57/43
All Locations	**115854**	**2558**	**4413**	**37/63**	**5538**	**3953**	**58/42**

Table 5.1 - Existing A96 Traffic Levels

5.17 There are a number of key difficulties experienced on the A96 between Raigmore and Nairn, including:

- The mix of vehicles using the A96, and prevalence of tourists, farm vehicles and HGVs, can result in slow moving traffic.

- Overtaking can be difficult due to the single carriageway nature of the majority of the A96 and absence of long and straight sections of road. Particular problems occur when slow vehicles such as tractors use the road, resulting in queuing traffic.

- The merging of dual carriageway to single carriageway to the east of the Raigmore Interchange (eastbound) increases the accident risk.
- Congestion at the A96 / A9 junction at Raigmore Interchange presents difficulties during the AM and PM peak periods.

5.18 In addition, Nairn suffers from congestion and has many tight, narrow roads which are not designed to accommodate large volumes of traffic. The mini-roundabout on the A96 in Nairn is unlikely to operate satisfactorily with additional traffic pressures.

5.19 Discussions between Highland Council and the Scottish Executive are currently ongoing regarding the potential to construct a Nairn By-Pass and to dual the A96 to Inverness

Airport. In particular, a fast-track study examining the dualling of the A96 has been commissioned.

5.20 Current accident statistics for the A96 show that in total 99 personal injury accidents (PIA) occurred in the last 5 years. The accident rate per million vehicle kilometres for this section of road is 0.152. The average accident rate per million vehicle kilometres for a typical rural single carriageway road with a lane width of 10m is 0.212. Therefore, the A96 has a lower than average accident rate.

5.21 There are no formal Park and Ride facilities on the A96 Corridor. However Park and Ride sites are proposed for Seafield and Nairn.

Cycle Network

5.22 National Cycle Route One passes through a section of the study area. Within the study area, this route forms a link from Beechwood at the Inverness city boundary, eastwards to cross the A9 and pass through Culloden and Balloch to Cumberland's Stone off the B851 where it then leaves the study area. That section of route between Inverness and Culloden is a traffic-free route and that section east of Culloden is an on-road route. No future National Cycle Routes are proposed in study area.

5.23 The existing east-west route does not facilitate effective connection between the main settlements and key destinations, such as the Airport, and the business and retail park. There are also no specific cycling facilities associated with the A96 between Inverness and Nairn.

Rail

5.24 The rail service in this area is essentially inter-urban providing a city to city service between Aberdeen and Inverness. Existing rail stations associated with the study area are located within Inverness town centre and to the south of Nairn town centre. Within the study area, the predominant trip destination/origin is Inverness. The total number trips to/from Inverness and the other stations on the line are shown in Table 5.2. This demonstrates the importance of the end-to-end trips, but also the use of Elgin, Forres and Nairn as commuting stations. Other data shows that the total usage of Nairn rail station in 2003/04 was 77,569 passenger journeys.

Station	**Passenger Journeys 2003/04**
Nairn	50,578
Forres	36,348
Elgin	50,123
Keith	4,802
Huntly	3,240
Insch	1,593
Inverurie	7,470
Dyce	18,514
Aberdeen	94,317

Table 5.2 - Passenger Journeys to/from Inverness

5.25 Currently, Monday to Friday, there are ten full workings arriving and departing from Inverness. These are supplemented by one short working to and from Elgin each day. Whilst the services are typically each hour, they are not at regular times, due to the limitations of the track capacity. On Sundays there are five services between Aberdeen and Inverness, operating between 1000 and 2100. Additionally, there are two short workings from Inverness to Elgin. These services are broadly two-hourly. Within this timetable, there are only two suitable arrivals into Inverness suitable for commuters, and only two suitable departures.

5.26 Rail travel times are on a par with journeys by car. The journey time from Aberdeen to Inverness is approximately 2 hours 15 minutes, and the journey time for that section of the route between Nairn and Inverness is about 18 minutes.

5.27 The majority of the railway is single track with passing loops, and as such, track occupancy is at a premium. This has constrained the development of more frequent commuter services to Inverness, and has also constrained the development of additional stations – due to the impact additional stops have on increasing journey times, and increasing track occupancy.

5.28 The long signalling blocks on the line and limited "run-round" opportunities have also constrained the development of freight facilities on the line. Due to capacity constraints, this has favoured the strategic promotion of Inverness as a single regional focus for rail freight.

5.29 Future proposals and aspirations for the railway are:

- Increased operational flexibility improvements - A package of improvements has been identified for the railway. The include:

  - passing loop at Orton;
  - passing loop at Forres Station;
  - improvements to Forres Station; and
  - other line speed improvements.

  This will provide options to facilitate increased timetabling flexibility on the route.

- New Station at Inverness Airport - The development of a new rail station at Inverness Airport, has been proposed. This would complement a proposal for a freight facility and business park at the Airport. Whilst this scheme is included within Highland Council's Development Plan, firm proposals have yet to be drawn up for its development. However, several factors mitigate against its early realisation. Principally, these include:

  - relatively low levels of demand to and from the Airport within current levels of Airport operation; and
  - the current difficulty in achieving a sufficiently frequent rail service to provide travel times which are more convenient than alternative modes.

- Additional Local Rail Halts - Highland Council, within their Local Transport Strategy, their Structure Plan, and the Nairnshire Local Plan state a desire for improved local rail services between Nairn and Inverness, including additional rail halts. However, the provision of additional train halts between Nairn and Inverness would dilute the benefits from the operational flexibility improvements proposals by increasing journey times, and using up any additional capacity generated.

Bus

5.30 Within the study area, there is a mixture of bus services. These range from express coach services operating to the Central Belt; longer distance regional coach services linking Inverness with Aberdeen along the A96 and local suburban services.

5.31 The express coach services do not particularly provide any local connections within the study area. Longer distance regional services along the A96 provide a 2 per hour daytime frequency. The combination of services provides frequent services along the A96, and from the villages of Westhill, Culloden and Balloch. Less frequent services are provided to the Airport and Ardersier. Finally, the more remote villages in the Corridor, such as Cawdor and Croy rely on public transport connections with relatively low frequencies.

Ferry

5.32 Despite the proximity of the Moray Firth, there are currently no local ferry routes operating.

5.33 The following paragraphs considers the travel demand characteristics of the proposed long term development of 10,000 households within the study area. It then considers the capacity of the existing transport infrastructure.

Household Travel Characteristics

5.34 Table 5.3 presents household travel characteristics for travelling to work. This demonstrates the importance of bus in towns surrounding Inverness (e.g. Balloch and Culloden), and also highlights that car use is below regional and national averages. Cycling is also frequently used as a mode of transport to work/study.

	Population travelling to work or study	Underground, tube, metro or light rail	Train	Bus, minibus or coach	Taxi or minicab	Driving a car or van	Passenger in a car or van	Motorcycle, scooter or moped	Bicycle	On foot	Other
Scotland	3,063,206	0.4%	3.0%	16.5%	1.0%	41.1%	12.1%	0.4%	1.3%	23.4%	0.8%
Highland	122,198	0.0%	0.4%	13.4%	1.0%	43.0%	12.7%	0.5%	3.3%	24.7%	1.0%
Inverness	34,299	0.0%	0.7%	10.5%	0.9%	46.4%	12.0%	0.6%	4.9%	23.5%	0.5%
Nairn	4,141	0.0%	0.3%	7.8%	0.8%	33.9%	12.6%	0.1%	8.6%	35.3%	0.6%
Culloden	1,909	0.0%	0.2%	22.4%	0.5%	24.0%	13.2%	0.3%	3.6%	35.1%	0.7%
Balloch	522	0.0%	0.4%	16.1%	0.4%	22.8%	22.6%	0.4%	2.9%	33.0%	1.5%
Ardersier	271	0.0%	0.4%	9.2%	4.1%	34.7%	6.6%	0.0%	0.7%	43.2%	0.7%

Table 5.3 - Method of Travel to Place of Work or Study by % of Population Travelling to Work or Study

5.35 Typical trip characteristics show that for all household trips, almost 75% are car based. Of the remaining 25%, walk (16%) and bus (6%) are important. The varied mix of trip types is also important to consider. Traditionally the emphasis has been placed upon commuting trips, however these account for only 25% of a household's trip making patterns. Also of note is the length of trip. Trips within an easy walking distance make up 34% of the trips made; trips within 5km make up 48% of the trips made, and over such distance the bicycle can be a realistic option (see Table 5.4).

Mode of Transport	16% Walking 58% Car or Van Driver 16% Car of Van Passenger 1% Bicycle 6% Bus 1% Taxi/Minicab 1% Rail 1% Other - i.e. underground, motorcycle etc
Trip Purpose	23% Commuting 4% Business 2% Education 22% Shopping 2% Health related 6% Other personal business 12% Visiting Friends and Relatives 3% Eating/Drinking 6% Sport/Entertainment 4% Holiday/Day trip 6% Other / Not Known 9% Escort
Trip Length	34% Less than 2km 48% less than 5km 65% less than 10km 76% less than 15km 83% less than 20km 17% greater than 20km
Car Availability	28% 0 cars 49% 1 car 20% 2 cars 3% 3 or more cars

Table 5.7 - "Accessible Small Town" Trip Characteristics

5.36 Across Scotland, a typical household can be assigned the following characteristics based on car ownership:

- 0 cars – 2.31 trips per day;
- 1 car – 5.49 trips per day; and
- 2+ cars – 10.73 trips per day.

5.37 A weighted average trip rate is 5.8 trips per day per household. Applying the mode share above, we can also estimate the modal split of these trips:

- 4.3 trips per day, car based
- 1.0 trips per day, walking/cycling
- 0.4 trips per day, bus/train
- 0.1 trips per day, other (e.g. taxi or motorcycle)

5.38 As an alternative to using information from the Scottish Household Survey (SHS), information on car-based trip rates is available from national trip rate databases (TRICS). Car-based trip rates are established at 7.37 car trips per household. Given the *Smart Growth* principles to be applied, the TRICS car based trip rates should form the upper bound of any

car based trip rate. The use of the SHS derived trip rates may not prove to be sufficiently robust. Accordingly, the following trip rates should be used for the ongoing analysis, with the understanding that they be continuously reviewed and revised as the study progresses, and more details become available. These are based on a 30% uplift to the SHS results:

- **Total household trip rate 7.5**
- Car, van, taxi, motorbike based trip rate 5.7
- Bus, Train 0.5
- Walking/Cycling 1.3

Capacity Assessment - Road Network

5.39 Critical to the assessment of the Corridor's capacity is the impact of the proposed level of development upon the A96 between Raigmore and Nairn, the impact on Raigmore junction itself and the impact within Nairn itself[1].

5.40 The Design Manual for Roads and Bridges[2] (DMRB) indicates that for single two-lane roads a flow of up to 13,000 vehicles per day is appropriate. For dual two-lane roads, a flow of between 11,000 and 39,000 vehicles is suggested. Existing flows on the single two lane sections of the A96 vary along the Corridor from 11,000 to 16,000. Flows on the dual two-lane section peak at 32,500 vehicles. Parts of the A96 already exceed optimal provision.

5.41 It will be a number of years before the proposed development will begin, and thereafter be completed. In the meantime, background levels of traffic are forecast to continue rising, even without the proposed development. National Road Traffic Forecasts 1997 provide three estimates of future levels of traffic growth – a high growth, a central growth, and a low growth scenario. Assuming a central growth scenario, future traffic flows at different locations along the A96 in ten and twenty years (without taking into account long term development growth proposals) are shown in Table 5.4.

Location	Description	Optimal Flow Range	2004	2014	2024
Nairn – Delnies	Single two-lane	Up to 13,000	13,239	15,467	17,463
Gollanfield - Newton of Petty	Single two-lane	Up to 13,000	11,764	13,744	15,517
Newton of Petty to Balloch	Single two-lane	Up to 13,000	16,215	18,944	21,389
Balloch - Smithton	Single two-lane	Up to 13,000	15,467	18,070	20,402
Smithton - West Seafield	Dual two lane	11,000-39,000	26,681	31,172	35,194
West Seafield - Raigmore	Dual two lane	11,000-39,000	32,488	37,956	42,854

Table 5.4 - Existing Traffic Levels and Baseline Growth in Ten and Twenty Years

[1] The size and location of development will have a important bearing on the impacts on the main road network. A single large settlement will be able to support a larger range of facilities than a number of smaller settlements. Accordingly, many of the trips generated in a larger settlement can be contained within that settlement, without generating additional trip onto to the external road network. Similarly, settlements located close to either the west or the east of the study area will have a greater impact on Raigmore junction and Nairn, respectively. Given that Inverness acts as the major strategic centre, total trip length will be reduced if the settlements are situated to the west of the Corridor, as opposed to the east of the Corridor.

[2] Design Manual for Roads and Bridges, Volume 5, Section 1, Part 3, Traffic Flow Ranges for Use In the Assessment of New Rural Roads

5.42 Without any long term development, all single two-lane sections of the A96 will be beyond their optimal traffic flow range by 2014. Furthermore, by 2024, the dual two-lane sections leading to Raigmore junction will also be beyond their optimal flow range.

5.43 Within Nairn, the current maximum peak hour flows are 464 vehicles per day travelling west between 0800 and 0900 hours and 686 travelling east between 1700 and 1800 hours. Assuming central growth, as above, in ten years' AM peak hour flows travelling west will be 542, and 612 by 2024. 2014 PM peak hour flows will be 801 and 905 by 2024. DMRB[3] also provides guidance on traffic capacity in urban areas. For the trunk road through Nairn a traffic capacity flow of 1110 vehicles per hour, in the direction of greatest flow has been established. Therefore without any long term development, the trunk road within Nairn will operate within capacity during peak times until 2024.

5.44 One arm of the Raigmore junction has already been signalised. This tends to suggest that the junction is beginning to operate at capacity during peak times. Furthermore, the fact that the A96 link onto Raigmore junction is forecast to be operating beyond its optimal capacity in 2024 also highlights a specific problem at this location.

Assigning Development Traffic

5.45 A development of 10,000 houses could generate 57,000 additional car trips per day. A successfully designed settlement layout would maximise the amount of these trips that could be contained locally, and minimise the number of trips that would be applied to the strategic road network. 25% of car based trips are typically less than 2km. Accordingly, it can be assumed that at least 14,250 total car trips would be internal to the development.

5.46 Of the remaining 42,750 daily car trips there would be a 60:40 split between Inverness and Nairn respectively. Depending on the layout and spatial locations of the proposed settlements, a maximum additional flow on the A96 towards Nairn would be 17,100 vehicles, and towards Inverness 25,650 vehicles. Table 5.5 illustrates the potential full impact of this level of traffic, tested for 2014 and 2024 future year flows, assuming a single location for the development mid-way along the Corridor.

Location	**Description**	**Optimum Capacity**	**2014 + development**	**2024 + development**
Nairn - Delnies	Single two-lane	Up to 13000	32567	34563
Gollanfield - Newton of Petty	Single two-lane	Up to 13000	30844	32617
Newton of Petty to Balloch	Single two-lane	Up to 13000	44594	47039
Balloch - Smithton	Single two-lane	Up to 13000	43720	46052
Smithton - West Seafield	Dual two lane	11000-39000	56822	60844
West Seafield - Raigmore	Dual two lane	11000-39000	63606	68504

Table 5.5 - Traffic Levels in Ten and Twenty Years with Long Term Development

[3] Design Manual for Roads and Bridges, Volume 5, Section 1, Part 3, Traffic Capacity of Urban Roads

5.47 The results of this initial analysis highlight that full assignment of the long term development's external car trips onto the A96 cause all links to operate beyond their optimum capacity. A dual three lane carriageway has an optimum flow capacity of 23,000 - 54,000. Even this level of provision may not be sufficient.

5.48 6% of total daily car trips made in the AM peak will depart the development. 5.7% of total daily trips will arrive at the development during the PM peak hour. If these peak hour percentages are applied to a daily trip rate of 5.7 for cars approximately 0.36 departure trips per household in the AM peak hour and 0.33 arrival trips per household in the PM peak hour would be generated. Assuming a 60:40 ratio of traffic flow in favour of the west in the AM peak and east in the PM peak, Table 5.6 outlines the additional traffic forecast in the peak hour.

	AM peak departures		**PM peak arrivals**	
Trip Rate	0.36		0.33	
Direction (% of flow)	East (40)	West (60)	East (60)	West (40)
Additional Flow	1440	2160	1980	1320

Table 5.6 - Peak Hour Traffic Flows with Long Term Development

5.49 Applying these additional development flows to the base network establishes the impact of the development upon the trunk road through Nairn. This is shown in table 5.7.

Location	**Description**	**Peak hour Capacity**	**2014 + development**	**2024 + development**
Nairn - am peak, westbound	Single two-lane	1100 vph	1982	2052
Nairn – pm peak, eastbound	Single two-lane	1110 vph	2120	2224

Table 5.7 - Peak Hour Traffic Flows with Long Term Development on A96 Within Nairn

The results of the analysis highlight that with full assignment of the development's external car trips through the A96 in Nairn cause the current link to operate beyond its peak capacity.

5.50 **Hence, in summary, the following can be concluded:**

- **Without any long term development traffic, the main A96 link between Inverness and Nairn is likely to operate beyond its capacity by 2024.**
- **Without any long term development traffic, the peak hour capacity through Nairn on the existing road network will be reached, though not exceed.**
- **The Raigmore junction is currently beginning to operate a capacity during peak periods.**
- **With the full assignment of the long term development's external car trips onto the A96, all links will operate significantly beyond their optimum capacity.**

- **With the full assignment of the long term development's external car trips on to the A96, and assuming a 40% distribution of traffic through Nairn, the peak hour capacity of the trunk road through Nairn will be exceeded.**

Rail Capacity

5.51 Trip generation for 10,000 new homes is estimated to be 7.5 per day per household. Nationally, an average of 1% of household trips are rail travel, therefore an additional 750 trips per day could potentially be generated for the rail network. This is probably an upper limit, as census data revels that for journeys to work or study, Nairn and Inverness are below national averages.

5.52 The main capacity constraint on the rail network would occur during the am and pm peak periods. Across Scotland, during the am peak period (07.00 to 09.30) 26% of rail trips are undertaken; during the pm peak period (16.30 to 18.30) 28% of rail trips are undertaken. During these periods, there are two trains into Inverness in the am period, and two trains departing Inverness in the pm period. Accordingly, the development proposal could generate up to 195 rail trips in the am peak period to be accommodated on two trains, and 210 trips in the pm peak, again to be accommodated on two trains.

5.53 No information is currently available on typical train occupancies during the peak periods. This would be required in order to estimate a potential requirement for revised peak period train formations arising from the proposed long term development. However, it is known that there is no current restriction due to platform lengths in providing longer trains (up to six coaches). However, there are significant difficulties in providing increased frequencies.

5.54 In relation to the development of additional stations the population required to justify the provision of a new rail station as shown in Table 5.8.

New Station Type	Number of Weekday Ons and Offs Required	Population Within 800m Required
Single platform	81	2,550
Small double platform	125	3,900
Larger double platform	177	5,500

Table 5.8 - Population Required to Justify a New Rail Station

5.55 In this area settlements as little 1,500 population have a rail station, and stations could possibly be justified at settlements with just 2,550 population, particularly if Park and Ride facilities could be used to increase a station's catchment. However, this apparent capacity for additional stations does not take account of the capacity constraint that currently exists on the line, which places track occupancy at a premium. This demands that the most efficient use is made of the existing infrastructure.

5.56 Rail works best as a transport mode when it provides the following:

- Fast, long-distance passenger services between principal cities and towns.
- Commuter services on busy Corridors into large cities.
- Services to major airports.
- Rail freight services for regular high-volume flows.

In addition, it is recognised that rail has a "high fixed-cost base and so thrives on carrying high volumes".

5.57 Additional local rail stations, over and above that proposed for the rail station at Inverness Airport would begin to compromise the above criteria, by slowing strategically important rail trips between Aberdeen and Inverness. It will also increase track occupancy, making the possibility of any future frequency increases, or rail freight services particularly difficult to achieve.

5.58 The economic case for the substantial capital improvements in signalling and track capacity required to service a local rail service with a string of rail stations, combined with the additional revenue support would be particularly difficult to make within the current national context. It is highly unlikely that the overall benefits would even begin to approach the sum of the operating and capital costs.

5.59 However, a rail station at Inverness Airport and business park may become more viable if easily accessible to the proposed development, supported by a multi-modal park and ride facility.

5.60 **Hence, in summary of rail capacity provision the following can be said:**

- **There are significant capacity constraints in terms of increasing frequency of service.**
- **There is currently capacity to extend existing train lengths.**
- **There is limited capacity to add further stations without compromising the integrity of the inter-urban route.**
- **The development of any local services would require capital investment that would be difficult to justify.**

Focussing upon a single additional station, supported by park and ride facilities, at Inverness Airport provides the prospect of combining commuting trips with Airport related trips. This would help to increase the feasibility of such a facility.

Bus Capacity

5.61 In comparison to rail transport, bus services are more flexible and relatively inexpensive to operate. At present, there is an extensive network of buses operating within Inverness and serving nearby towns, villages and the Airport. These services are able to serve not only the principal destination (Inverness town centre) but also a number of intermediate destinations such as the Inverness retail and business park.

5.62 10,000 new homes would have a household trip generation of 7.5 trips per day. Up to 5% of this could be bus travel, meaning 3,750 trips per day extra demand. Furthermore, the local settlements of Culloden and Balloch have high mode share for trips to work or education by bus of 22.4% and 16.1% respectively. This presents evidence that there is a strong base upon which to grow.

5.63 There are few constraints in providing additional bus capacity. Express style limited stop services, park and ride services aimed at drivers, and more traditional local based service

patterns can all be developed, targeted at specific markets and locations. The two constraints to achieving an appropriate and attractive level of service are to ensure a high frequency, and also to provide competitive, reliable journey times in the context of congestion on the road network.

5.64 Achieving a high frequency of service means seeking to maximise potential revenue along the whole route of the service. A high frequency route between Nairn and Inverness may be possible if it could be directly and efficiently routed through the new long term development areas. A range of origins and destinations can be provided, most notably the retail and business park at Raigmore, as well as the town centres, hospital and employment areas. There is also the potential to provide Park and Ride facilities.

5.65 The second constraint is that of congestion on the road network slowing the bus service. Dedicated bus priority and road treatments can be applied to overcome this problem – these can range from guided bus solutions, to more traditional bus only lanes with camera enforcement.

5.66 **In summary bus capacity conclusions are that:**

- **There is considered to be an opportunity for bus patronage levels to be greater than national averages.**

- **An initial estimate of daily bus patronage is around 3,750 trips per day.**

Ferry Service

5.67 Initial consideration has been given to the capacity to develop a passenger ferry service along the Moray Firth into Inverness town centre. There are few physical restrictions to developing such a service. However, the main problems with such a service would be in generating sufficient passenger revenue in order for a robust business case to be developed. Most successful ferry operations work on a cross-estuary basis where there are no other feasible means of transport. In the case of the Moray Firth, there is the full range of land based transport options to compete with, including a subsidised rail service, bus links, and an extensive road network.

5.68 Secondly, any ferry is likely to be slower and more expensive than any of the competing forms of transport. For the majority of the catchment, the journey to the ferry terminal would be a deviation away from their typical route. Furthermore, the location of the ferry terminal at Inverness is unlikely to be convenient for many employment locations.

5.69 **It is consider that there is little merit in considering the ferry option.**

Walking and Cycling

5.70 This area of the Highlands experiences higher than average cycling mode share with 4.1% of travel to work and education by bicycle. Similarly, within the small towns contained within the study area, there is evidence of high levels of walking compared to national averages.

5.71 Many of the walking and cycling trips generated are likely to be short distance trips within the proposed long term settlements. A critical element is in designing successfully for such

trips, not only with respect to the standard and routing of cycle paths and footpaths, but also with respect to the locations, densities, and ranges of facilities provided.

5.72 Cycling for longer distances can also be encouraged, both for its utility value (i.e. trips to work and study) and recreational value. Such trips are currently constrained due to the lack of safe and attractive provision along the A96 Corridor, between Nairn and Inverness.

5.73 **High quality cycle routes can be developed. To work effectively, they should link settlements with key leisure, retail and employment destinations along the Corridor.**

Land Use

5.74 Appendix 7 contains a copy of the land use study report for the A96 Corridor. The following paragraphs provide a summary.

Policy Framework

5.75 The principles for development in the A96 Corridor must take cognisance of the existing policy framework set by national, regional and local policy. This allows the establishment of where opportunities for long term development lie and understanding of how best future development might fit with policy.

5.76 National planning policy is guided by The National Planning Framework and Scottish Planning Policies (SPP). Planning Advice Notes (PAN) provide advice on good practice and other relevant information.

5.77 The National Planning Framework (NPF) guides the spatial development of Scotland to 2025. Of Inverness the NPF notes, at paragraph 36, that:

> *"Inverness is the main administrative, medical, retail and leisure centre for the Highlands. It has grown a lot in recent years, its population increasing by a third since the 1970s. The environmental resources of the Highlands support a substantial tourism industry and make Inverness a city able to offer a high quality of life. Sectors such as retailing, public administration and business services have expanded significantly. However, the city's economic base remains relatively narrow and there is a need to diversify and attract a wider range of high quality jobs."*

5.78 It further notes, at paragraph 100, that:

> *"The cities are the hubs of wider regional economies and their surrounding towns and rural areas can offer attractive locations for a wide range of economic activities. In the Highlands and Islands Enterprise (HIE) area, Inverness and Inner Moray Firth is a zone with* (such) *characteristics."*

This area is illustrated on Map 15 of the NPF.

5.79 The NPF also seeks to secure room for the potential expansion of Inverness Airport, particularly through an extension to the runway.

5.80 The NPF does not present any landuse restrictions in the A96 Corridor, other than an aspiration to extend the runway at Inverness Airport. Indeed the A96 Corridor is promoted as an area within which to concentrate development and economic activity.

5.81 The government's policy, SPP3 - Planning for Housing, sets out aims in relation to new housing and its contribution to the surrounding environment. The policies are broken into several areas:

- The creation of a quality residential environment, which includes design, energy efficiency, form, density & landscape and tenure mixture.
- The guiding of development to the right places, which involves sustainable settlements, accessibility, location of housing, settlement extensions, rural housing and new settlements
- Delivering housing land, involving the creation of development and housing land audits, affordable housing, planning agreements, and the determination of planning applications.

5.82 For new settlement proposals the SPP states that:

> *"A new settlement may have a part to play in meeting housing requirements as part of a long-term development strategy where:*
>
> - *there are substantial physical, environmental or infrastructural constraints to the further growth of existing settlements, or it forms part of a strategy for promoting rural development and renewal;*
> - *it could assist in reducing development pressure on the greenbelt or areas of attractive countryside;*
> - *it can be readily serviced by public transport;*
> - *it will not have a significant adverse effect on any natural or built heritage interest safeguarded by a national or international designation; and*
> - *it will not result in other significant environmental disbenefits.*
>
> *Where a planning authority considers a new settlement a necessary part of their development strategy, the development plan should specify its scale and location."*

5.83 In general terms SPP3 recommends that new housing should be accommodated in the least environmentally damaging locations. New housing should also be located away from existing land uses likely to be detrimental to the amenity of occupants. Most importantly, housing must not be located on areas where flooding is frequent at certain times of the year. Furthermore, housing should be located in areas which are well served by transport options.

5.84 A range of planning advice notes are pertinent to the project. These are:

- PAN 36 – Siting and Design of New Housing in the Countryside;
- PAN 38 – Housing Land;
- PAN 44 – Fitting New Housing into the Countryside;
- PAN 52 – Planning and Small Towns;
- PAN 57 – Transport and Planning;
- PAN 61 – Planning and Sustainable Urban Drainage;
- PAN 67 – Housing Quality;
- PAN 69 – Planning and Building Standards Advice

These should be and have been taken into account, together with other appropriate policy, in developing options for the long term development of the Corridor (see Section 10).

5.85 Development Plan policy is determined by the Highland Structure Plan, Nairn Local Plan (Adopted) and Inverness Local Plan (Deposit Draft).

5.86 The Highland Structure Plan supports a new settlement(s) in the Inner Moray Firth Area, following further detailed study. Policy H2 frames the context for this study:

> *Policy H2: New Settlements*
> *"The Council will support proposals for the establishment of comprehensively planned new settlements in meeting future housing demand in the Inner Moray Firth area which accord with the General Strategic Policies."*

The structure plan further notes that:

> *"The forthcoming review of the Inverness Local Plan will need to explore the identification of suitable land to meet housing demand for longer term needs. The A96 Corridor provides an option of linking new housing development to business opportunities associated with the Airport and rail link to Inverness and Nairn."*

5.87 In the Nairn Local Plan there are allocations for housing and leisure and recreational uses on the western edge of Nairn. This is seen as 'rounding off' the western edge of Nairn (see below).

5.88 In common with national and regional policies, the Inverness Local Plan sets the context for new development proposals. It also allocates significant amounts of land for particular uses within the A96 Corridor. This has been the subject of a Public Local Inquiry for which a report is expected in early 2005.

5.89 The A96 Corridor is noted for its development potential and a phased approach to development through the plan and future plans is envisaged incorporating:

- Early release of land for business and industrial use around the Airport with the creation of a transportation 'hub' and priority for the re-use of land at Ardersier Fabrication Yard and the promotion of the area around Morayhill.
- New settlements of 3-5000 people each, post 2011 (number subject to need).
- The improvement of road and public transportation infrastructure, including possible dualling of the A96 and upgrading of rail services.
- Improvements to natural and built heritage resources and recreational opportunities, in the area.

5.90 Policies tend to guide development away from sensitive areas and toward existing settlements and their fringes, except at Inverness where a green wedge is, in part, proposed to prevent coalescence with Culloden. The proposed green wedge would also accommodate recreational opportunities for eastern Inverness and environs. The vision:

> *"Embrac(es) the municipal landfill area together with agricultural units adjacent to the eastern approaches and through to Culloden. This is an opportunity to capitalise on the City's seafront with a major links/country park/nature reserve overlooking the Natura 2000 habitats. Utility Corridors are protected. These areas could embrace key features of the lowland landscapes of the Inner Moray Firth and a championship Golf Course; together with the elevated pastoral/afforested lands south of Culloden."*

The local plan contains a number of policies that would control the form of development within the area. In particular, policy GP1 sets standards for new development relating to creating places for people, making connections, mixed use, landscape integration, managing investment and flexibility.

5.91 The Local Plan contains a specific section on the A96 Corridor. It is reiterated that the area is seen as holding longer term development potential. In the meantime, sites are promoted for business and industrial uses in particular and the Airport expansion is promoted. It notes that:

> *"The most fertile land, major blocks of forestry and important stands of native woodlands together with a wider range of habitats will provide a setting for longer-term development. Important recreation areas could be opened up in the future including strategic walks by the coast and a higher level inland route towards Nairn and Cawdor. Protecting the international nature conservation value of the Firths will be a prerequisite."*

5.92 Land releases and aspirations for development of note include:

- 32.1Ha of housing land at Culloden.
- The potential for a business park and/or hotel and conference centre near Culloden.
- 1.1Ha of housing land in the A96 Corridor.
- Airport expansion.
- Business Park near the Airport.
- Freight village and transport interchange near the Airport.
- 15.4Ha of housing land to the west of Nairn.
- Proposed new golf course to the west of Nairn.
- Redevelopment of Ardersier Fabrication Yard with business and industrial use.

5.93 Much of the study area is covered by high quality agricultural. Policies within the Development Plan for the area seek to protect this land from development, where possible.

5.94 Much of the study area contains forestry and woodland of mixed type and age. There are a number of substantial stands of commercial forestry plantation. A significant amount of the woodland within the area is protected by ancient woodland, tree preservation order, conservation area, designed landscape and more extensively, semi natural woodland designation. The woodland forms the context for much of the existing built environment in the area and also provides a recreational resource to the current occupiers of the area.

Settlements - Their Opportunity

5.95 This section provides a detailed description of the land use policy and allocations for each settlement or place within the A96 Corridor. An assessment of the capacity for these places to accommodate growth in the longer term is provided. The places considered are:

- Nairn (West)
- Ardersier Village
- Ardersier Fabrication Yard
- Flemington House, Gollanfield and Lochside
- Inverness Airport
- Tornagrain
- Morayhill

- Croy
- Culloden Moor
- Culloden District (including Smithton, Culloden and Balloch)

5.96 The Nairnshire Local Plan sets out proposals and allocations for the expansion of Nairn to the west. These are set within priorities that seek to provide new housing by consolidating the built-up area. Priorities also seek to establish an accessible business park, a golf course and other facilities. The Plan promotes a by-pass for the town. Better sports and recreational facilities are also prioritised. Structural landscaping around the urban fringe is established as important. The opportunity to *round-off* the town is highlighted. These considerations are promoted through a Framework Plan for Nairn (West).

5.97 The allocations for Nairn (West) are:

- 16.6 hectares for 165 houses (on six sites).
- 4.5 hectares for a business park (of which 2 hectares can be for a tourist use).
- 66 hectares for a golf course.
- 7.4 hectares (on two sites) for open space/park.
- 1 hectare for community uses including a primary school
- 22 hectares for structural tree planting.

Hence, 117.5 hectares of land have been allocated for the expansion of Nairn to the west. This includes substantial landscaping through tree planting, playing fields and the provision of a golf course. This represents a *rounding off* of Nairn (West). It establishes the extent of viable expansion. Consequently, **the opportunity to further expand Nairn to the west does not present itself.**

5.98 The Inverness Local Plan clearly establishes Ardersier Village's long term future as being linked to strategic development opportunities along the A96 Corridor in the longer term. Allocations in the local plan identify:

- 5 hectares for the expansion of the village for housing.
- 2.5 hectares for industrial use.

The Plan recognises the urban quality of Ardersier's core. It also highlights the limitations for expansion to the east. However, there is an opportunity to build on the strengths of Ardersier Village and to realise its potential and opportunity through expansion to the north in the longer term. Expansion along and around the B9006 northward that would respond to the traditional urban form of the area. This expansion would also promote investment in the public facilities of Ardersier Village and provide a mechanism for delivering and/or promoting the outcomes of the Plan; in the longer term. Around 22 hectares of land could be made available for a northern expansion that would still be within walking distance of the village's core. At a density of around 30 dwellings per hectare (gross) this would provide for about 660 dwellings.

Ardersier Village Opportunity – 660 Additional Dwellings

5.99 The Inverness Local Plan identifies Ardersier Fabrication Yard as a strategic industrial location that should be safeguarded. The Plan implies a long term commitment to this policy context. However, the "*Review of Ports and Sites in the Inner Moray Firth*" is

currently assessing the appropriate land use designations for the Yard within a strategic appraisal for the long term use of the seven facilities within the area.

5.100 Flemington House, Gollanfield and Lochside are small settlements within the A96 Corridor. Essentially they are rural farming communities that offer little growth opportunity.

5.101 Allocations in the Inverness Local Plan establish a long term framework for development at Inverness Airport. These are:

- 52 hectares to the south of the Airport for a business park (incl. hotel).
- 6.5 hectares for a rail interchange facility including distribution and a station.
- 26.5 hectares identified for industry, storage and distribution uses located to the south and west of the existing terminal facilities and industrial estate.
- Allocations for long term expansion of Airport and Airport related uses.

These allocations are to be developed through an appropriate masterplan. Given these allocations set the long term development context around Inverness Airport and the need to ensure that the Airport can reach it full potential as a gateway hub for the Highlands; it would be inappropriate to consider allocating land for housing.

5.102 A loose grouping of around 20 houses represents Tornagrain. The Inverness Local Plan seeks to secure Tornagrain and restricts development opportunities.

5.103 Morayhill is the location of the Nexfor timber processing facility. The Inverness Local Plan allocates 12 hectares to the east of this facility for industrial use; particularly where this can support and add value to the timber processing by Nexfor. This policy approach establishes the industrial nature of Morayhill for the long term.

5.104 The Inverness Local Plan sets out a strategy for *rounding-off* Croy during the Plan period. In addition, the plan recognises and makes allocations for the long term that would allow growth of Croy to the west. In essence, the land use approach for Croy promotes low density residential sites with growth focused in the west of the village and community park provision to be targeted to the east. Housing densities are particularly low. Allocations to round-off Croy promote an average density of 2.7 dwellings per hectare (gross). Expansion allocations are based on a gross density of 10 dwellings per hectare. This represents a disjointed and low density approach to the planning of Croy.

5.105 In the long term there is an opportunity to promote a more co-ordinated and higher density response to the land use requirements of Croy that can also provide a substantial growth opportunity. This would involve:

- Increasing densities in housing allocations to around 30 dwellings per hectare (gross). This would give an increased dwelling yield of around 275 houses within *rounding-off* allocations and 50 houses in the expansion area.

- Establishing the appropriateness for substantial long term expansion allocations (at an average gross density of 20 dwellings per hectare around all of Croy. This would involve crossing the B9091 (*Croy By-pass*) which is a concern raised in the Inverness Local Plan. However, it can be appropriately addressed in the context of a substantial expansion. The scale of this expansion would be in the order of 170 hectares representing a dwelling yield of around 3,500.

Hence, from a land use perspective there is substantial growth opportunity at Croy. This could generate a dwelling yield of about 3,825. The total population of Croy could be around 8,500.

Croy Opportunity – 3,825 Additional Dwellings

5.106 The Inverness Local Plan establishes that the immediate development potential of Culloden Moor is limited. However, long term growth is recognised, particularly toward the north. Growth could be predicated on the establishment of a village centre (incl. rail halt) which is allocated in the Local Plan. 21.2 hectares to the north of Culloden Moor on either side of the railway has been allocated for long term growth. With a gross average density of around 30 dwellings per hectare this could generate a dwelling yield of around 650 houses. Further allocations over the longer term could be made beyond these allocations. There may also be some opportunity to allocate long term expansion to the south. This could represent as much as 150 hectares of land providing an additional dwelling yield of 4,500 homes. This total yield of 5,150 houses would generate a population of about 10,000.

Culloden Moor Opportunity – 4,500 Additional Dwellings

5.107 The Inverness Local Plan (Deposit Draft) sets out the land allocations for the Culloden District. The district itself has an existing capacity for around a further 700 dwellings. Broadly the Local Plan seeks to reinforce and establish these communities. 57.6 hectares are allocated to the Culloden District to allow for development to 2010. This is distributed across the neighbourhoods of the district. As a consequence there is little opportunity to provide for further growth.

Landscape

5.108 Appendix 8 contains a copy of the landscape assessment report for the A96 Corridor. The following paragraphs provide a summary.

Landscape Character

5.109 The existing landscape character is mapped in Figure 3 and described below.

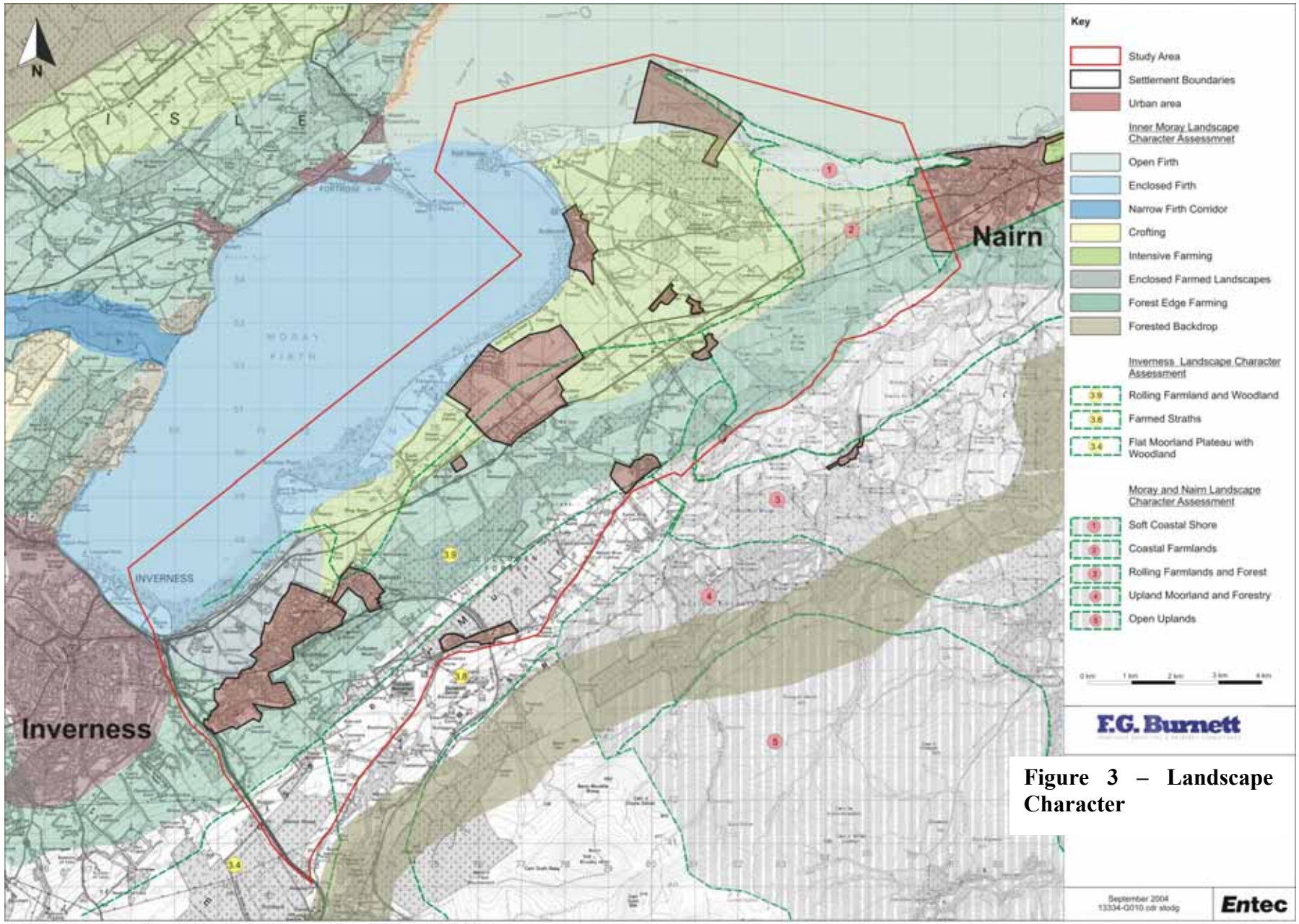


Figure 3 – Landscape Character

Landscape Character Type	Description
Forest Edge Farming	The area comprises of gently undulating land and convex slopes, which is characterised by a framework of coniferous woodland and rectilinear field patterns. This landscape forms a distinct wedge between Inverness and Nairn separating the hills and high ground of Moray with the coastal farmland areas. Typical settlements of this landscape are farm holdings with some small villages including Tornagrain and Croy. Views are generally restricted due to the existing forestry although there are some areas with expansive views.
Intensive Farming	The area comprises of generally flat to undulating landform composed of large arable fields interspersed with forestry plantations. The simple wide horizontal landscape and lack of structural elements gives it an overriding expansive scale. Large farm holdings are typical of this landscape often associated with mature trees and forestry. Views are open with extensive views to Moray Firth and Black Isle.
Enclosed Farmed Landscapes	The area comprises of flat to gently undulating lowlands, of firths and flood plain with remnants of estate woodland, scattered mature trees and open fields. Farm holdings within this landscape are often enclosed by mature trees and development expansion at Inverness and Culloden has encroached on the landscape. Views are generally semi enclosed with some views to the Moray Firth and Black Isle.
Enclosed Firth	This is a coastal landscape type with a variety of shorelines and intertidal areas with the edge of the firth often characterised by complex natural patterns including mudflats. Industrial and urban features are prominent features along the coastline. Views are open to the Moray Firth and Black Isle.

Open Firth	Open Firth is a flat to gently undulating coastal landscape with large expansive areas of sand and shingle beaches. The coastal edge consists of natural landscape patterns and characteristic vegetation is low lying and salt tolerant. Existing settlements are located at river mouths, back dune systems or on rocky headlands where there is access to deep water. Views along the coastline and to the Black Isle are expansive.
Rolling Farmland with Woodland	This landscape has been strongly influenced by human occupation and is characterised by rolling landform with hill slopes and plateaux with a diverse mix of open agricultural land and woodland. The woodlands vary in character from dense coniferous plantations to mature broad-leaved, together creating varying patterns of openness and enclosure. The main form of settlement occurs as small farms or small villages, which are typically associated with road junctions and bridging points. Expansion of Culloden and Balloch has encroached into this landscape.
Farm Straths	This landscape consists of broad, flat to gently undulating landform edged by the steep, rocky, side slopes of the surrounding uplands. The character varies from high exposed rough pasture to sheltered improved pastures in low-lying areas. Typical settlements of this landscape are farm holdings and estate buildings. Views are semi enclosed with wider views to the hills and uplands to the south.
Flat Moorland Plateau with Woodland	The area comprises of flat to gently undulating moorland plateau and is characterised by open heather moorland creating a uniform open landscape. The scale of the landscape is large and there is a general feeling of openness with some areas of plantation forestry. This landscape is largely uninhabited and settlements are concentrated on outer edges and adjacent landscape character types. Plateau areas are open with expansive views of the uplands and distant hills. However, plateau side slopes restrict visibility of adjacent lower areas.

Rolling Farmland and Forest	This landscape is made up of diverse range of landform including rounded hills, broad and narrow incised valleys and undulating upper slopes. The gently rolling landscape has a visual balance of open farmland and woodland, the mix of native and coniferous woodland and hedgerows form dominant enclosing features within the agricultural landscape. Typical settlements of this landscape are traditional farm holdings with some small villages. Recent housing associated with some traditional settlements tends to dominate the landscape due to differing scales and contrasting layout patterns. This landscape character type overlaps with the Forest Edge Farming landscape character area
Coastal Farmlands	This is an expansive coastal plain landscape consisting of flat to undulating arable fields with a mixture of broad-leaved woodland and coniferous forestry. The bands of coniferous planting creating a strong backdrop to the large fields
Soft Coastal Shore	This area is a flat to gently undulating coastal landscape with large expansive areas of sand and shingle beaches. The coastal edge consists of natural landscape patterns and characteristic vegetation is low lying and salt tolerant. Existing settlements are located at river mouths, back dune systems or on rocky headlands where there is access to deep water. Views along the coastline and to the Black Isle are expansive This landscape character type overlaps with the Open Firth character.
Upland Moorland with Forestry	This landscape character area is located on the boundary of the study area and comprises of largely inaccessible areas of broad, rounded hills and upland plateaux.
Open Uplands	This landscape character area is situated to the south of the study area and consists of rounded hills and gentle undulating plateaux.

5.110 Dalcross Castle is listed in the inventory of Gardens and Designed Landscapes

Landscape Capacity

5.111 The following assesses the capacity of the different landscape characters with regard to:

- Landscape sensitivity.
- The potential of new elements to strengthen positive attributes and ameliorate the impact of elements which detract from the overall integrity of the landscape.
- The interplay of natural features and topography in the landscape.
- Capacity to absorb new development.
- Capacity to absorb further development.
- Ameliorating the impact of existing developed areas.

Open Firth and Soft Coastal Shore

Open Firth is a flat to gently undulating coastal landscape with large expansive areas of sand and shingle beaches. The coastal edge consists of natural landscape patterns and characteristic vegetation is low lying and salt tolerant.

Statutory Designations

Significant areas of this landscape character type are designated for protection because of scenic, environmental and ecological importance, resulting in a policy of no change or positive management in these areas.

Existing Settlements and Historical Context

Nairn is the largest town within this character area with a population of approx. 9000 and located on the eastern edge of the study area. The town had grown by the 1880s its place on the Victorian railway network of north Scotland had ensured its rapid growth as a seaside resort. The urban form of Nairn is generally nucleated with the historic core and commercial centre situated to the west of the river

The Clava Cairns dating from the early Bronze Age also represent much earlier history locally.

There is also the Ardersier Fabrication Yard. Oil fabrication activity has ceased.

Character Assessment Development Guidance

The Soft Coastal Shore is **highly sensitive to change**, particularly changes associated with built development, where the low lying and open character of the landscape allows little scope for screening. The dynamic nature of geomorphological systems working on the coast are also sensitive to disturbance by human activities while the fragile ecosystem and the overall natural qualities and sense of remoteness experienced within parts of the landscape, are important characteristics which should be conserved.

Due to the nature of the predominantly mobile coastal edge, with unsuitable ground conditions for building, and a lack of existing infrastructure, built development tends to be placed on the periphery of an existing settlement, or falls into a neighbouring character type. In this latter case the visual impact of housing on the Open Firth landscape can still be one in which the built form dominates as a ribbon sprawl along a roadside.

Open Firth / Soft Coastal Shore

Enclosed Firth

This is a coastal landscape type with a variety of shorelines and intertidal areas with the edge of the firth often characterised by complex natural patterns including mudflats.

Existing Settlements and Historical Context

The main coastal settlements are Fort George and Ardersier.

Fort George is a substantial fortress built on a peninsula jutting out into the Moray Firth. It is an artillery fortress built between 1748 and 1769. It was built as a direct result of the battle of Culloden, when the nervous government ordered a large fort to be built. It survives today as the best preserved 18th century military fortification in Europe. The immense scale of the place can only be seen from within, since from the outside, the fort appears flat.

Ardersier is a small coastal village wedged between coastline and steep escarpment and was formed along with Fort George in the aftermath of the Battle of Culloden. In the 1750's the parish of Ardersier was sparsely populated and only small scattered hamlets would have existed in the area. The village expanded in the 19th Century as a residential area for Fort George as a fishing village. The village is designated a conservation area and the urban form is one of a linear settlement reflecting the constraints imposed by the firth landscape.

Character Assessment Development Guidance

A feature of the settlement in this character type is the density of the huddled urban form, integrated into the strongly natural coastline. Added housing can cause additional sprawl outwith this immediate setting and along the coastline, whilst housing placed further up-slope can visually and physically impact on the landscape setting, reducing the inherent unity of the settlement.

In some areas reclamation of land to the seaward, creates a sharp transition between land and sea, giving an artificial edge to the firth and reducing the sense of interconnection between the water and the shifting mobile coast.

Additional housing must first respect the shape and density of the existing settlement so that it is seen as part of the urban fabric, and reads as a group. Sensitively sited housing will not conflict or compete with the strong landform of the setting.

Intensive Farming

Inverness Airport is a prominent feature within this landscape and the boundary adjoins the neighbouring Forest Edge Farming landscape character area.

The remnants of estate, policy woodlands are a feature of this landscape and often associated with farm settlements such as Gollanfield.

Character Assessment Development Guidance

The urban edge of a settlement tends to be seen as a pale band within the strong horizontal composition of this landscape character type. Although the intensive farmland is one of the few landscape types that can actually absorb the larger scale of urban expansion, the openness of the relatively flat landscape provides no obvious cues to creating a sense of place and strong setting for the new housing. The characteristic exposure of this landscape requires a design which creates shelter and enclosure at a scale that reflects the surrounding landscape whilst not dominating the human scale of the residential area.

Within such an open landscape, where there is an obvious lack of a setting for new houses, maximum use should be made of the positive aspects of the location, namely the wide open views into the surrounding landscape. The structural properties of woodland and forestry can be used to create a setting for housing, which helps to modify the microclimate on the one hand, but retain the views on the other.

The design of woodland should be of a scale that complements the surrounding landscape and seeks to link the urban forms to farmland. The relationship between the built form and woodland edge can follow a strong linear form.

It is important that visual and physical access into the surrounding landscape is considered in the layout of places so that people's experiences of the landscape become a part of its sense of place.

Coastal Farmlands

This landscape extends west of Nairn and overlaps the Intensive Farming and Forest Edge Farming character types.

Existing Settlements and Historical Context

Small settlements include Clephanton and Lochside, which are both on the boundary of the character assessment areas. Remnants of old estates and policy woodlands are evident throughout this landscape which provides visual interest. The urban edge of Nairn is a prominent feature in this landscape.

Character Assessment Development Guidance

The urban edge of many of the settlements in the area tends to be seen as a pale band within the strong horizontal composition of this landscape. Although the Coastal Farmland is one of the few landscape character areas which, as a result of its scale, can accommodate urban expansion, the openness of the relatively flat landscape provides no obvious cues for the creation of a sense of place. The characteristic openness of this landscape of this landscape requires design, which would create shelter and enclosure at a scale, which would reflect that of the surrounding landscape, without dominating the human scale of the residential area.

Within such an open landscape, where there is an obvious lack of setting for new houses, maximum use should be made of the positive aspects of the location, namely the wide, open views into the surrounding landscape. The structural properties of woodland and forestry should be used to create a setting and backdrop for housing, which helps to visually 'tie in' development to landscape on the one hand, but retain the views on the other. Planting of new woodland, when appropriate, should be undertaken ahead of development taking place.

The design of new woodlands should be of medium to large scale, thus complementing the surrounding landscape, and should aim to link new built development with surrounding open farmland. The relationship between the built form and the woodland edge should follow a strong geometric form in the flatter parts of the landscape. The grading of woodland margins in order to increase visual diversity should be considered as an integral part of the design of new planting. It is important that visual and physical access into the surrounding landscape is considered in the layout of new places.

Coastal Farmlands

Enclosed Farmed Landscapes

The area comprises of flat to gently undulating land with remnants of estate woodland, scattered mature trees and open fields.

Existing Settlements and Historical Context

Culloden and Smithton that adjoin the eastern edge of Inverness; along with Balloch and Cradlehall – Westhill are the existing settlements in the area.

Culloden, located to the east of Inverness, comprises a sizeable commuter settlement. Culloden and Smithton have expanded sine the 1970s and have developed around the railway A96 and B9006 roads and form the main urban edge to this landscape and are separated from Westhill area by the railway. The overall structure of Culloden is linear with a mixture of 70's local authority and private housing.

Development and expansion of East Inverness has encroached into this landscape.

Remnants of designed landscapes and estate woodlands are evident forming strong visual barriers and features throughout this landscape.

Character Assessment Development Guidance

The sense of enclosure and structure that the trees bring to this landscape by their vertical presence is in areas of urban expansion replaced by a mass of built forms with a seemingly random scatter of garden shrubs and trees. The overriding similarity of the housing estate with single buildings in small plots and uniform access roads creates a chaotic patchwork effect which contrasts strongly with the geometry of the surrounding fields and woodland elements.

This chaotic layout and the demise of strong tree lines create visual confusion, as there are no longer prominent feature on which to focus, and to aid orientation.

Development growth should be incorporated into the existing geometric pattern of fields with mature tree lines being retained, and/or new lines incorporated. This will not only give an overriding sense of order, but also provide a sense of place and continuity to the newer settlement within the older pattern. The stark contrast between rural and urban environments is also reduced as the strong presence of trees will still be the main focus of attention and reduce the impact of the built forms.

Enclosed Farmed Landscapes

Forest Edge Farming/Rolling Farmland and Woodland

This landscape extends the length of the study area from Inverness to Nairn and overlaps with the Rolling Farmlands and Woodland and the Coastal Farmlands character types.

Existing Settlements and Historical Context

Typical settlements of this landscape are farm holdings and villages with the forest edge and mature trees providing a backdrop and landscape features alongside the buildings.

Croy is located on the edge of the study area and consists of traditional stone dwellings and local authority housing.

Dalcross Castle is a Historic Garden and Designed Landscape within the character area. It was built in 1621. It is a grade A listed building with many fine rooms.

Character Assessment Development Guidance

Housing development that are placed on settlement peripheries often lead to a loss of point features within the areas of open farmland, which are characteristic of the traditional dispersed settlements.

Where the landform enables the ready creation of a setting, the vertical qualities of the forest and shelterbelts can be used to provide structure to the edges. The sizes of the existing woodland blocks can be used as a template from which new blocks can be based upon according to sites and scales of planting.

When there is demand for housing within rural areas, the small-scale expansion of villages where services and infrastructure can cope, may be the more favourable option in landscape terms. This would respect the dispersed pattern of settlements within the landscape and could create focal points of interest within the forest structure.

Landscape Capacity Conclusions

5.112 There is some capacity within the landscape for development east of Inverness and north of Culloden, the existing woodland features have the potential to form a visual barrier and enhance the setting to development. The issue of settlement coalescence between Inverness and Culloden/Smithton would have to be considered. There would be capacity to develop recreation and open space features in this landscape. The existing woodland adjacent to the firth edge and urban areas would provide a valuable backdrop and setting to any new proposals.

5.113 Development proposals for any new growth near Gollanfield would require a landscape strategy due the openness of the landscape.

5.114 Capacity for development exists south of Inverness Airport. The existing forestry and woodland near Tornagrain and North of Croy providing visual containment for new development. The mature forest edge and woodland will create strong visual barrier and a valuable starting point for an integrated landscape framework within the settlement.

5.115 Development at Morayhill could be accommodated within the landscape using the existing topography to contain the settlement. Steeper topography south of A96 and future felling of any forestry will have to be considered when considering size and location of any new settlement.

5.116 There is some capacity to develop near the coast at Redhill although the location of a new settlement may be constrained by intervisibility between landscape character areas and skyline development issues. Views from flat ground to south and west as well as views from Black Isle would have to be considered.

5.117 The overall landscape capacity is favourable at Mosshall to the west of Nairn, the existing woodland to the north of the site acting as valuable containment and backdrop to a small settlement.

5.118 There is capacity to expand Ardersier Village that can avoid conflict with existing landform and designations in this area.

5.119 The concentration of existing woodland and forestry would allow some settlement growth at Croy and Tornagrain pending future forest management.

5.120 The overall landscape capacity of the A96 Corridor is illustrated in Figure 4.

Figure 4 – Landscape Capacity

Landscape Conclusions - Sensitivity

5.121 The following principles set guidelines to integrate development into the existing landscape.

5.122 Visual access into the surrounding landscape would have to be considered in the location and layout of new places. Physical access could be designed to link into the boundary areas between woodland, countryside and the built edge, with footpaths, shelterbelts and hedges extending from the core of the built-up area out into the woodland and countryside. This should be considered as part of an overall cohesive design approach.

5.123 The assessment has identified broad areas suitable for development and settlement growth within the A96 Corridor and areas that are not suitable for development in landscape terms. Three main questions have been examined covering landscape capacity for new settlement development, future expansion and development of existing settlements and landscape conservation.

5.124 The first of these questions deals with existing landscape character areas and their capacity to sustain growth.

> *Can Potential development be accommodated within the landscape without having detrimental landscape and visual effects on the rural and coastal setting?*

5.125 This should examine how existing forestry, woodland and topography influence location and mitigation measures of development within the countryside. A requirement for a new landscape strategy addressing open space, screening and integration with the surrounding landscape has been established.

5.126 The second question deals with the capacity for future growth of existing settlements and impact on the surrounding landscape. Development guidelines or planning strategies may be developed to address.

- Future forestry felling and management.
- Landscape treatment of urban edges.
- Townscape and urban integration.
- Creation of new settlement boundaries and community woodland strategies.

5.127 The final question deals with how landscapes identified as not suitable for development, may be protected and managed. Each of these areas will require development of a more detailed landscape strategy and policy framework.

5.128 The areas of landscape protection are:

- Culloden Battlefield – Scheduled Ancient Monument.
- Culloden Forest and associated areas to the north east – Ancient Woodland.
- Dalcross Castle – Historic Garden and Designed Landscape.
- Whiteness Head and coastline west of Nairn – Area of Great Landscape Value and SSSI.
- Carse Wood – Ancient Woodland.
- Tornagrain Wood – Ancient Woodland.
- Delnies Wood – Ancient Woodland.
- Kildrummie and Loch Flemington – SSSI.

Figure 5 - Landscape Protection highlights the strategically sensitive landscape areas.

5.129 Many areas of existing woodland and forestry are protected by the local plan policies and are an important asset for future development and recreational requirements. The development of managed community woodland may be one approach to provide physical reinforcement of policy.

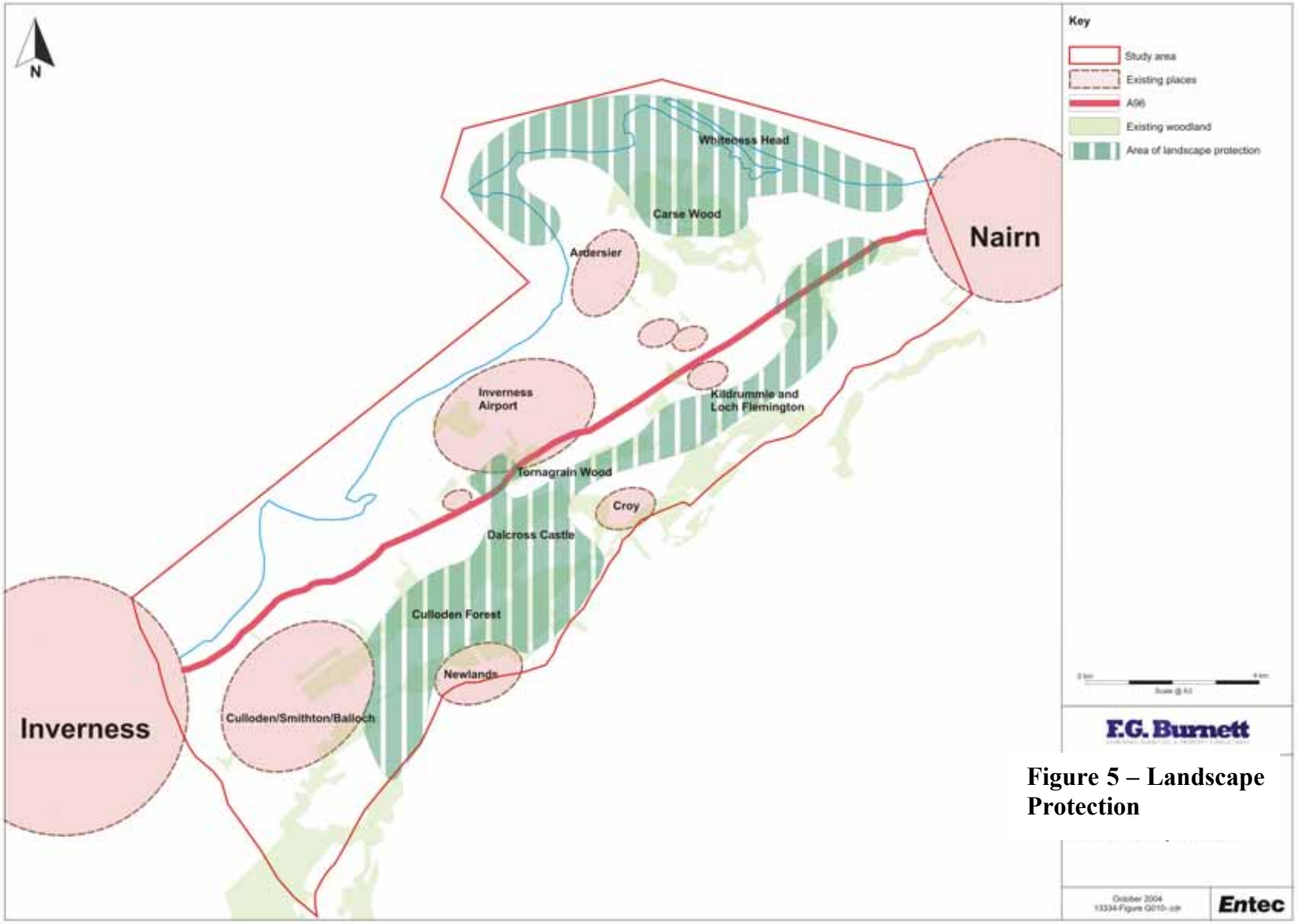


Figure 5 – Landscape Protection

Urban Design

5.130 Appendix 9 contains a copy of the urban design guidance report for the A96 Corridor. The following paragraphs provide a summary.

General Guidance

5.131 The following urban design guidance draws extensively on the principles of *Smart Growth* outlined in paragraph 8.2 below. The application of these principles will ensure that new development is markedly different from bland and undistinguished suburban developments which characterise much current fringe development.

5.132 High quality urban design guidance and design codes[4] will ensure that the new settlements will be physically different from contemporary suburbs. It will also guide the creation of communities with a strong sense of place and identity.

5.133 The new settlements must be vibrant places with activity during the day and at night. They must have a mix of uses including attractions which will draw people from outside to visit the new settlements.

5.134 The key to creating successful places is very high quality design which responds to local characteristics and is proactive in defining the shape and ambience of the town, not merely finding the best technical or economic solution to a given problem. This overarching principle must guide the technical requirements of any individual component, whether that is transport, energy efficiency or economic competitiveness.

5.135 Urban design must be place specific and therefore detailed consideration of the application of urban design principles and preparation of urban design codes can only be carried out when specific site(s) have been chosen. However, certain principles can be laid down and should be taken into consideration in the selection of the preferred site. Table 5.8 takes each of the *Smart Growth* principles and links this to a number of design issues at the level of the individual building, the neighbourhood and the settlement as a whole to aid this

[4] Design codes can be used to control density and phasing, ensure attractive and functional urban form, protect and enhance surrounding habitats and preserve and enhance the quality of the landscape setting. Design codes can also ensure that a local vernacular architectural style is developed which is appropriate and specific to the A96 Corridor.

Table 5.8 – Principles for Consideration in Selection of Development Options

Principle	Settlement	Neighbourhood	Building	Other
Sensitive to Highland environment	Sheltered location Consider combined heat and power	Sheltered public spaces Consider neighbourhood heating schemes	Develop contemporary vernacular based on traditional design principles High levels of insulation and thermal performance Sheltered outdoor space	Take account of traditional highland land use patterns Use indigenous plant species
Use site to maximum advantage	Integrate natural assets such as views and natural features Ensure all uses within walking distance of public transport and central services - limit extent of settlement boundaries	Minimise land take for roads and non functional open space SUDS within each neighbourhood	Make use of existing buildings and landscape features Buildings generally to be located near to street edge to maximise private garden size and create clear definition of public space	Consider integration of energy generation, such as solar panels on new buildings Integrate mixed use to maximise intensity of site usage day and evening
Density related to accessibility	Maximum distance of 0.5km from centre to edge of settlement to ensure all uses within 10 minute walk of public transport	Phasing to ensure that different densities achieved in balance	Develop compact dwelling types with private outdoor space Integrate potential for mixed use within buildings	Ensure access to public transport is an attractive option for all users through short, well overlooked and attractive links, high quality infrastructure and reliable service
Range of housing opportunities	House types should seek to provide a range of dwelling types which moves the local profile in the direction of national averages. Numbers of dwellings should therefore be provided in the following proportions : Detached 26% Semi-detached 25% Terraced 23% Flats 26%	Neighbourhoods to have wide range of house types and option of working and learning from home.	Develop housing types for high, medium and low density with range of sizes in all densities and types	Consideration should be given to possibilities of self build options Affordable housing should be provided for low income workers and people with special needs
Walkable places	Compact settlement not extending beyond around 80 hectares (radius from centre ca. 475m) for a population of around 5 000 or 140 hectares (radius of ca. 650m from centre) for a population of 10 000	No part of the settlement more than 10 minutes walk from the centre along attractive and safe routes	High quality of design with buildings overlooking pedestrian routes and streets to give a high degree of passive surveillance	Ensure that all houses are close to pedestrian/ cycle routes Maximise permeability of blocks for pedestrians and cyclists

Table 5.13 – Principles for Consideration in Selection of Development Options - Continued

Principle	Settlement	Neighbourhood	Building	Other
Mixed use	The neighbourhood should provide a range of different types of employment space	Residential neighbourhoods should not exclude small scale non housing activity which is compatible with residential amenity	Homes should be designed to permit working and learning from home Designs should be flexible to permit changes of use within the building's lifetime	Mixed use can make combined heat and power cost effective Mixed use will reduce the need to travel long distances to work
Preserve natural features and open space	Locational choice for development should take into account the natural setting of the new settlement(s)	Natural features should be used as much as possible to shape development areas	Open space should be overlooked by dwellings	A settlement with a high degree of biodiversity will be an attractive place to live
Strengthen existing communities	New settlements should be easily accessible from surrounding existing centres of population	The mix of housing types should compliment the range of housing types available locally to improve choice	If existing buildings are present these should be incorporated into the overall design	
Accessibility	All parts of the centre of the development, where most services will be located, should be equally accessible to mobile and non-mobile residents and visitors	Neighbourhood design should maximise permeability for pedestrians and cyclists	All buildings should be built to be adaptable for people with special needs or mobility problems Provision should be made for homes for people with special needs	Public transport infrastructure (bus shelters, bus termini and railway stations) should be designed to a very high standard with warm sheltered waiting facilities and reliable information
Predictability	An overarching design code for the settlement as a whole should give clear guidance and promote deliverability	Design codes in each neighbourhood will control and direct development	Design guidance on buildings will give clear guidance on mandatory and optional elements of building design	Mechanisms will be put in place to ensure the balanced development of the settlement and secure funding for community facilities and maintenance of the environment

5.136 Building on these principles and the preferences identified in the facilitated *CfS* workshops the following characteristics emerge for new settlement(s) in the A96 Corridor

Settlement Characteristics

5.137 For different parts of a settlement certain key characteristics should apply. These are:

- The heart of the settlement.
- The core of the settlement.
- The middle ring of the settlement.
- The edge of the settlement.
- The settlement's paths and green wedges.

The following outlines characteristics for each.

5.138 A vibrant public space at **heart of the settlement**, with the following characteristics:

- Wind and rain sheltered spaces.
- Spaces fully open to public access.
- Easily accessible by public and private transport.
- Pedestrian priority area.
- Mix of uses along the edges of the public space with predominantly residential uses on upper floors.
- Connected to pedestrian links to surrounding neighbourhoods.
- Active ground floor frontages.
- Continuous built frontages within blocks.
- Dimensions determined by social distances i.e. maximum 30m wide and 70m long.
- Useful landscaping – e.g. fruit bearing trees, hedges for shelter, permeable surfaces for natural drainage.
- Landmarks which are visible from the A96 and railway. Open vistas from the edge of the town will not be permitted as these will encourage wind infiltration.
- Minimum building height of 3 storeys or 10m.

These characteristics are illustrated in Figure 6.

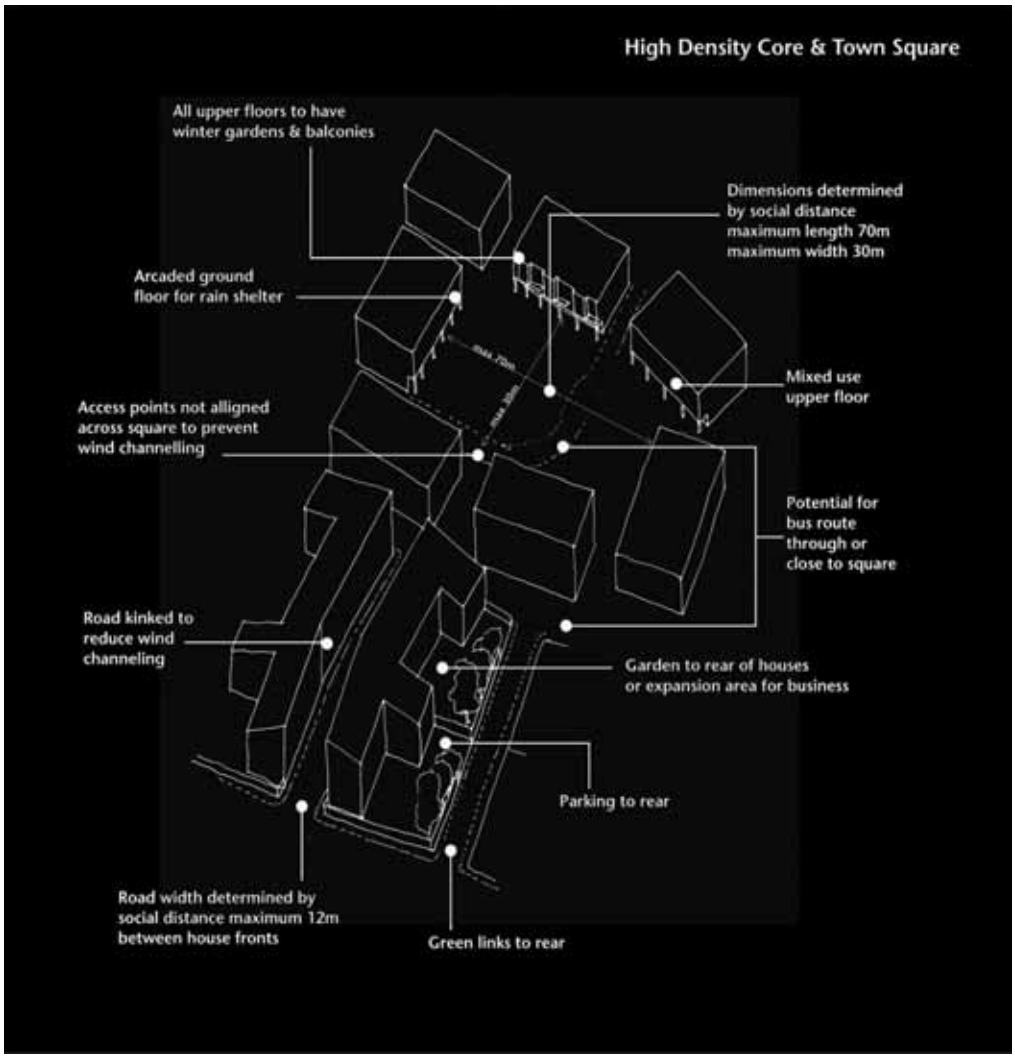


Figure 6 – Indicative Illustration of Settlement Heart Characteristics

5.139 A high density **core** surrounding a central public space on 3 sides, with the following characteristics:

- Minimum densities set for development parcels between 60 - 80 dwellings per hectare (dph).
- Low to medium rise development – predominantly 2-3 storeys with maximum height 4 storeys.
- Range of house types including flats and courtyard clustered houses.
- All dwellings to have an element of private outdoor space.
- All dwellings to have a winter-garden designed to maximise passive solar gain and reduce heat loss.
- Wind sheltered streets and lanes connecting to the central space.

- Distance between building frontages controlled by social distances – maximum width for residential streets 12m.

- Traffic calming on residential streets and use of home zone environments.

- Streets and lanes designed for environmental shelter (i.e. narrow kinked streets in preference to straight streets).

- Maximise frontage onto streets and paths and ensure passive surveillance of public spaces.

- Useful landscaping (e.g. fruit bearing trees of appropriate scale).

Figure 7 illustrates these

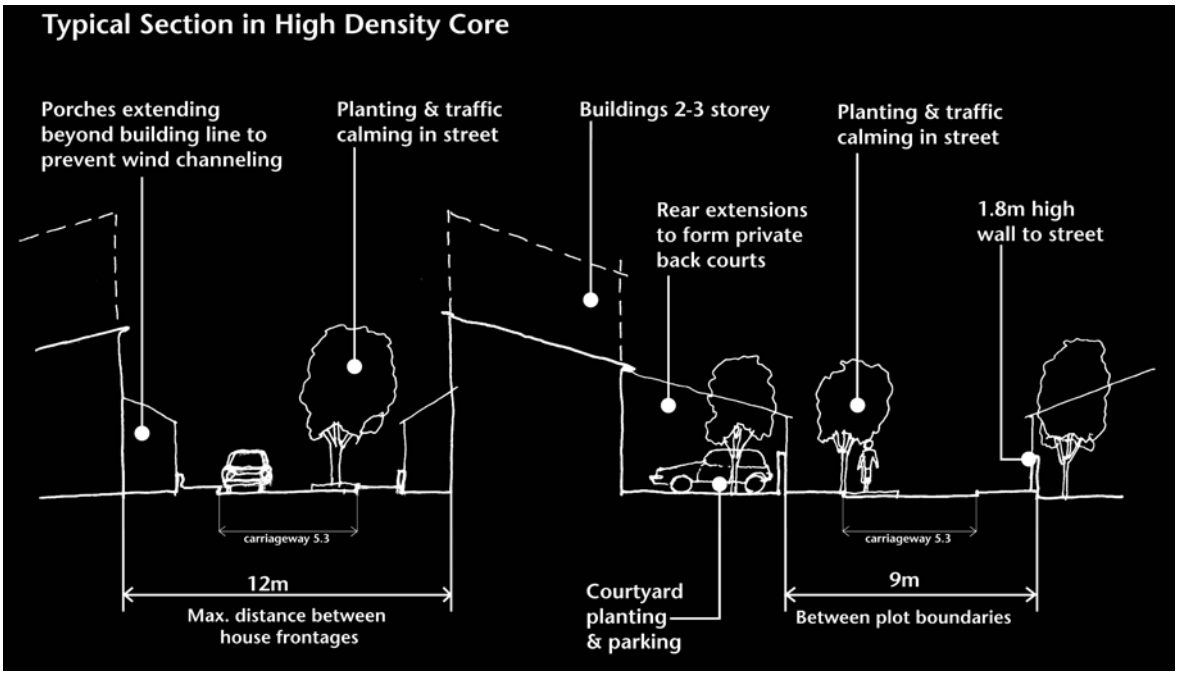


Figure 7 – Indicative Illustration of Settlement Core Characteristics

5.143 A medium density **middle ring** with the following characteristics:

- Minimum densities set for development parcels between 30 - 40dph.

- Low to medium rise development – predominantly two storeys with maximum height 3 storeys.

- Range of house types.

- All dwellings to have an element of private outdoor space.

- All dwellings to have a winter-garden designed to maximise passive solar gain and reduce heat loss.

- Wind sheltered streets and lanes connecting to the central space or to green wedges.

- Distance between building frontages controlled by social distances – maximum width for residential streets 18m between building frontages
- Maximise permeability of blocks and ensure passive surveillance of public spaces.
- Traffic calming on residential streets and use of home zone environments.
- Streets and lanes designed for environmental shelter.

5.141 A very low density **edge** with the following characteristics:

- Maximum densities set for development parcels between 8 - 10 dph with buildings separated from each other by large distances.
- Low rise development – predominantly two storey, maximum height 3 storeys.
- Range of house types.
- All dwellings to have a winter-garden designed to maximise passive solar gain and reduce heat loss.
- Wind sheltered streets and lanes connecting to the central space.
- Traffic calming on residential streets.

5.142 Network of **paths and green wedges,** with the following characteristics:

- Connect from edge of settlement to centre.
- Contain range of landscapes including SUDS.
- Overlooked by houses on adjoining land.
- No blank fences to edges of green wedges.
- Cycle and pedestrian paths with street lighting.
- Contain equipped play areas.
- Planting for biodiversity.

5.143 Figure 8 illustrates the overall structuring principles for the new settlement:

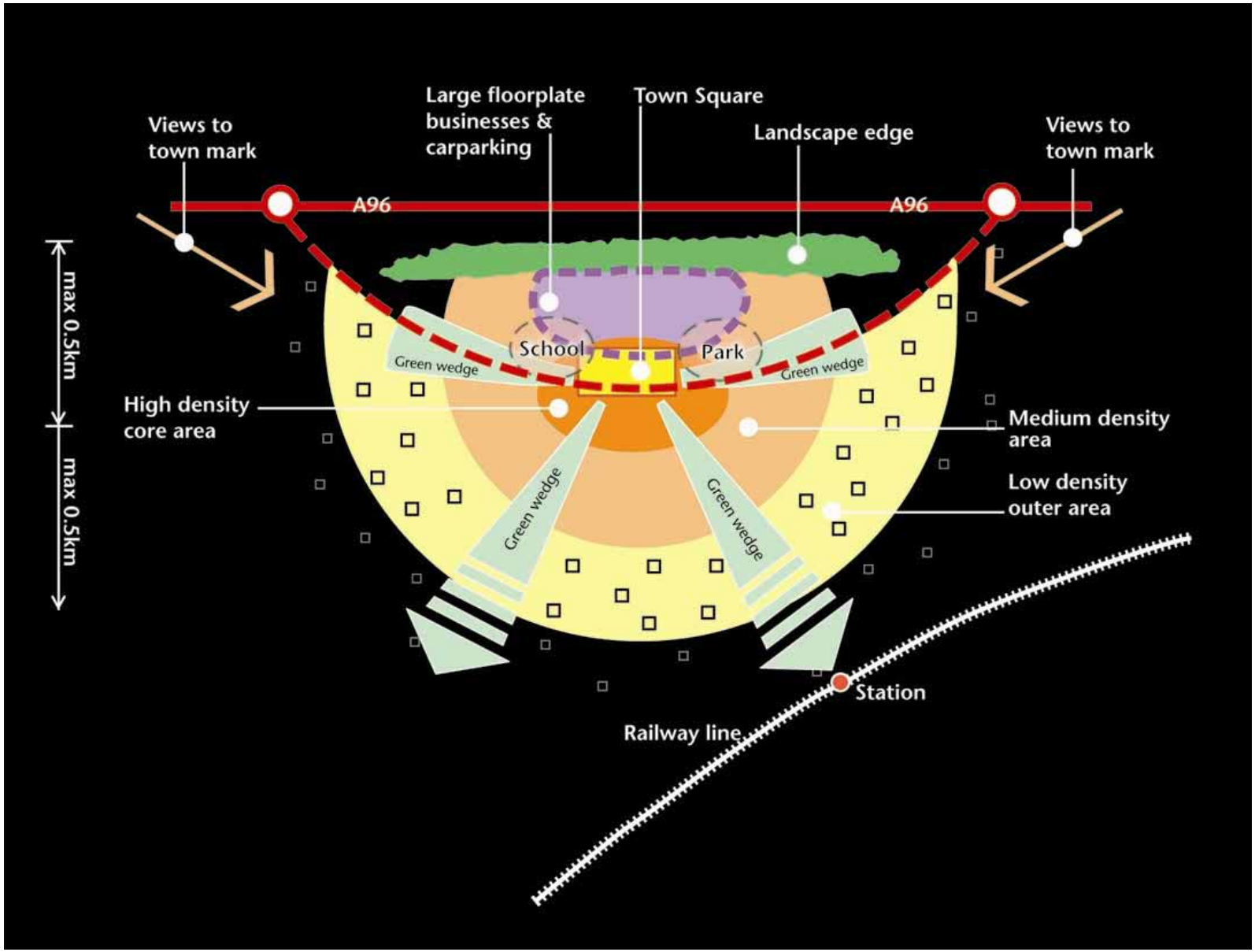


Figure 8 – Indicative Illustration of Settlement Structure Principles

6. Case Studies

6.1 Four case studies from the United States of America and northern Europe were undertaken. This highlighted best practice in developing new communities. These case studies were:

- Kentlands, Washington DC, USA.
- Ballerup, Copenhagen, Denmark.
- Gelsenkirchen, Emscher Park, Germany.
- Vauban, Freiburg, Germany.

6.2 In addition to the above, Forres, Moray was selected as a case study in order to provide a familiar context for the consideration of the case studies.

6.3 Table 6.1 provides a comparative summary of the key elements for each case study. Details for each case study follow.

Element	Area	Pop.	Density	Delivery Mechanism	Planning Approach
Case Study					
Kentlands	142 hectares	4,582	32.3 pph	Community Trust	Masterplan & Design Codes
Ballerup	1,025 hectares	13,566	13.2 pph	Council	Agenda 21 Action Plan
Gelsenkirchen	875 hectares	32,637	37.3 pph	Co-ordinating agency	Project development through regional strategy
Vauban	42 hectares	5,000	119 pph	*Forum* – NGO	Masterplan
Forres	425 hectares	9,000	21 pph	Council	Local Plan

Table 6.1 – Summary of Key Elements from Case Studies

6.4 All the case studies have taken a planned approach that has placed an emphasis on sustainability. Densities range considerably within these places. This indicates that a high quality living environment can be delivered in the context of a range of densities. Variation would seem to be the common factor. Local control of development is strongly emphasised in all case studies; with two providing formal mechanisms for citizen decision making.

A96 CORRIDOR MASTERPLAN
Strategic Urban Design Case Studies

KENTLANDS (USA)

Town Profile

AREA:	142 hectares (352 acres)
Population:	4582
Households:	1400
Density:	9.8 dph
	32.3 pph
Facilities:	Retail centre 72,464 sqm (780,000 sqft)
	Conference centre
	Arts centre
	Primary school
	Church
	Childcare centre
	Corner shops
	Office accommodation
Mix of House Types:	Detached houses
	Terraced houses
	Flats above shops & offices
	Specified sevice accommodation

Vision

Kentlands was designed & planned to function as a small town. Streets are narrow & interconnect. Housing opportunities are intermingled, built to foster neighbourliness as well as to allow individuals of all generations & various income levels to live in the same neighbourhood.

Delivery Mechanism

- Masterplan
- Design codes
- Management by Community Trust

Context

- 30km (20 miles) from Washington DC
- Towns & cities connected by high quality rail network
- Buses link neighbourhoods
- Planned town built 1985-95

URBAN DESIGN CHARACTERISTICS

KENTLANDS (USA)

Discreet parking

Service lanes behind houses for parking & refuse collection & green routes

Integrates existing historic buildings

Kentlands Mansion converted to conference facility for local business

Integrates natural features

Chain of lakes around Kentlands Mansion retained as landscaped park

Mixed use core

Flats above shops & businesses in town centre

Employment opportunities

Town includes employment uses as well as residential

Local facilities

Size of town sufficient to support primary school & other facilities

URBAN DESIGN CHARACTERISTICS

KENTLANDS (USA)

Flats above shops & offices (High density)

High density living attractive to young & old & makes a walkable neighbourhood possible

Flats (High density)

Flats attractive to young singles, couples & older people

Pedestrian friendly street design

Streets close to house fronts, overlooked & with on-street parking

Detached houses (Low density)

Lower density housing further from centre

Townhouses (High density)

Higher density nearer centre

Walkability

Most dwellings within 5-10 min walk of centre

A96 CORRIDOR MASTERPLAN
Strategic Urban Design Case Studies COPENHAGEN/BALLERUP (Denmark)

Town Profile

AREA:	1,025 hectares (Greater area 3,400 hectares)
Population:	13,566 (greater area 45,000)
Households:	
Density:	13.2 pph
Facilities:	Municipal offices Conference centre Cultural centre 3 municipal libraries Secondary schools Shopping centres Range of employers
Mix of House Types:	Detached houses Terraced houses Multi-dwelling low rise blocks High rise flats

Vision

Ballerup is a modern municipal authority with a lively cultural scene and an innovative business community. Well known for its dynamic, progressive policies, it has a record of willingness to back unconventional, innovative projects. The authority is also known for giving its residents a high standard of service in all walks of life.

Delivery Mechanism

- Sub-regional municipality with elected council.
- Mix of private sector and municipal investment

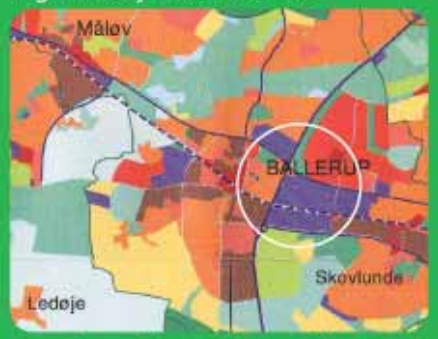
Context

Ballerup is located about 12 kms from the centre of Copenhagen. It is a new town built up as part of the Copenhagen 'Finger Plan' of 1946 in an area where there were previously a group of small villages.

Greater Ballerup has a population of about 45,000 which is continuing to grow. Development is guided by the 'Agenda 21 action plan' and includes various projects focusing on the built environment and energy saving. Ballerup continues to develop innovative architectural concepts for residential and community areas.

URBAN DESIGN CHARACTERISTICS COPENHAGEN/BALLERUP (Denmark)

High density mixed use core



Central area with mix of uses within 1km of sustainable population

Rail link to Copenhagen

Integrated with Copenhagen metropolitan rail network

Integrates natural features

Landscape wedges separate urban neighbourhoods

Low energy housing

Neighbourhoods planned to minimise energy use and maximise solar gains

Employment opportunities

Employment and transport integrated in neighbourhood

Local facilities

Former village core as mixed use centre for neighbourhood

URBAN DESIGN CHARACTERISTICS COPENHAGEN/BALLERUP (Denmark)

Industrial and commercial uses

Industrial and commercial uses built around traditional street patterns

Public spaces

Buildings grouped to create pedestrian friendly public spaces

Variety of architectural styles

Some neighbourhoods have varied designs within traditional grid

Parking

Parking on street close to houses - more vibrant street scene

A96 CORRIDOR MASTERPLAN
Strategic Urban Design Case Studies

GELSENKIRCHEN (Germany)

Town Profile

AREA:	875 hectares (Greater area 10,485 hectares 30% countryside, 70% developed)
Population:	32,637 (Greater area 274,000 hectares)
Households:	13,500
Density:	37.3 pph (26.13pph in greater area)
Facilities:	Theatre Museum Football arena (FC Shalke) Schools Research & industry Further education facilities
Mix of House Types:	Detached houses Terraced houses Multi-dwelling low rise blocks Upgraded older properties Amenity & special needs housing

Vision

An integrated environmental, economic and community regeneration set in a naturalistic landscape to create a high quality setting for business, leisure, transport and living. An important aspect of the regeneration is the use of the traditional German 'Stadtwald' concept, the 'city forest' to provide a green lung for industrial towns and a place for employment, living and leisure.

Delivery Mechanism

- Regional Development Agency
- National + EU funding
- Private sector

Context

In 1988 the area was selected to be the focus of a strategic ten year project to put into practice the most innovative thinking on ecological, economic and social regeneration of former industrial regions. Between 1989 and 1999 over 17 towns and many more businesses, communities, regional and local agencies collaborated to deliver 120 projects with the aim of transforming an entire former industrial area into a dynamic and competitive sub-region equipped to meet the challenges of the 21st century. Gelsenkirchen is one of the sub regional towns in the Emscher Park Region.

URBAN DESIGN CHARACTERISTICS GELSENKIRCHEN (Germany)

Self built housing

Child friendly environment in affordable self built grouping

Integrates existing historic buildings

Landmark structures retained and reused as part of the 'Path of Industry' tourist route

Pedestrian friendly urban street

Home zones in inner city area

Terraced family housing

Low energy, low rise high density housing

Local facilities

Community school on low energy principles

Sustainable transport

Advanced guided bus transit system links neighbourhoods

URBAN DESIGN CHARACTERISTICS GELSENKIRCHEN (Germany)

Pedestrian friendly suburban streets

Pedestrian lanes between front of houses, parking to rear

Employment opportunities

New technology and research facilities in attractive landscape settings

Landscape framework

National Garden Show as impetus for investment

Landmark buildings and structures

Innovative design of infrastructure - canal bridge as link and landmark

Sustainable housing

New housing developments reinforcing existing settlements

A96 CORRIDOR MASTERPLAN
Strategic Urban Design Case Study

FREIBURG/VAUBAN (Germany)

Town Profile

AREA:	42 hectares
Population:	5,000
Households:	1,362
Density:	119 pph
Facilities:	Local shops
	Employment space for 600 people
	School
	Kindergarten
Mix of House Types:	Houses and flats in converted barracks
	Detached houses
	Terraced houses
	Multi-dwelling low rise blocks
	Co-op housing with shared communal facilities
	Amenity & special needs housing

Vision

'Sustainable model district - Vauban' to define and implement, in a participatory way, a concept for a community meeting ecological, social, economical and cultural requirements.

The project aims to set high standards of energy saving, traffic and waste reduction and social integration.

Delivery Mechanism

- 'Forum Vauban' - extended citizen participation NGO.
- Self build co-operatives.

Context

Former barracks in south western quarter of the City of Freiburg purchased by City Council in 1993 for new mixed use district for 5,000 inhabitants and 600 workplaces.

The prime objective has been to offer high quality homes for young families within the city to counter suburban sprawl. A dense urban design concept, low energy requirements, access to green space, local facilities and good public transport have been part of the plan from the beginning.

URBAN DESIGN CHARACTERISTICS FREIBURG/VAUBAN (Germany)

Dense neighbourhood within city

High density neighbourhood on brownfield site within city

Integrates existing historic buildings

Existing barracks re-used - enabled self build co-operatives to carry out renovation work for themselves

Community facilities

Community school at heart of neighbourhood and near to shops and businesses

Mix of house types

Houses, townhouses and flats mixed throughout the site

Home zones

Residential streets with traffic calming can be used by children for play near to home

Varied architectural styles

Architectural style varies from plot to plot in some areas

URBAN DESIGN CHARACTERISTICS FREIBURG/VAUBAN (Germany)

Integrated infrastructure

New streets with ducted infrastructure and tram lines.

Traffic free links

Network of pedestrian and cycle paths link to city-wide network

Phased devlopment

Three phases to devlopment with community facilities and transport in first phase

Public transport node

All homes within 200m of tram route or 750m of new rail station

A96 CORRIDOR MASTERPLAN
Strategic Urban Design Case Studies

FORRES (Scotland)

Town Profile

AREA:	425 hectares
Population:	9,000
Households:	3,800
Density:	21 pph
Facilities:	Local shops and trades
	Business park at Greshop East
	Secondary school
	Primary schools
	Health centre
	Major employers in locality (RAF base)
	Museum
Mix of House Types:	Detached houses
	Terraced houses
	Flats in converted detached houses
	Flats above shops
	New-build flats
	Amenity & special needs housing

Vision

Forres has a reputation as a desirable residential location. The town has an attractive setting between the floodplain of the River Findhorn and the wooded slopes of the Cluny and Sanquhar hills. Renowned for its parks and gardens, the town has developed with an interspersion of open space, woodland and built up areas. (Moray Local Plan 2000)

Delivery Mechanism

Forres is a historic town which became a royal burgh in 1140. It has grown organically over time respecting historic development patterns

Context

Forres is one of the principal town of Moray district in terms of its services, housing supply and employment opportunities.

Forres is a traditional market town and service centre for a farming hinterland. A significant influence on the town is the RAF base 5km away. The town is also close enough to Inverness (35km) for some to commute to the city.

URBAN DESIGN CHARACTERISTICS

FORRES (Scotland)

Traditional architecture

Traditional high street with small plot size, commercial frontage and flats on upper floors

Detached stone villas

Detached stone villas in large gardens with mature landscape backdrop

Local facilities within settlement

Local facilities such as schools, shops etc within walking distance in the settlement

Public spaces

Flats above shops & businesses in town centre facing public space

Range of housing types

High density terraced houses

Mixed use core

Flats and businesses above shops on traditional high street

URBAN DESIGN CHARACTERISTICS

FORRES (Scotland)

Green fingers

The town structure is characterised by green fingers of mature landscape and areas of park within the town

Development off high street

Housing is developed in lanes off the high street - close to all amenities and transport links

Industry

The industrial area is located to the north of the bypass and is cut off from the residential areas

Discreet parking courts

Parking close to houses but not dominating the townscape

Flats

Demand for single person accommodation is in short supply and can be provided in flats

7. Outcomes – Vision

7.1 The stakeholders considered an appropriate vision for the A96 Masterplan through the facilitated workshops. The key elements for a vision were:

Sustainability	Choice	Place	Environment
Social and economic development	A place to live, learn and earn	Mixed use	Natural setting / Environmentally sensitive
integrating environmental, community and economic issues	Good transport links / public transport	Linked to existing places (i.e. Nairn and Inverness)	Outstanding landscape setting
Planned	Lifestyle choice	Sense of place	Provides for habitat creation
Balanced and inclusive communities	Deliverable/phased	Desirable place to live/places for people	Responds to coastal location
Commercially astute	Delivered through strong community involvement (formal)	Promotes innovation	Energy Efficient.
Safe and secure	Collaboratively delivered	Compact/walkable	Green lungs/fingers
Work in regional context		Functional	High quality developed setting
Employment		Lively Cultural Promote neighbourliness Permeability Distinctive Highland places	

7.2 There was a clear expectation from all stakeholders that the vision should be clear, unambiguous, local in its values and written in plain English. Taking this into account the following vision is suggested:

A masterplan for the A96 Corridor should provide for distinctive 'green' Highland places where people can chose to live, learn and earn successfully.

Collaboratively, all stakeholders will endeavour to deliver the masterplan through pioneering governance and commercial astuteness.

8. Outcomes – Development Principles

8.1 *Smart Growth* is predicated on a number of development principles. These are:

- **Take advantage of environmentally sensitive building design.**
- **Ensure land use is appropriate and that development uses sites to maximum advantage.**
- **Relate development density to accessibility.**
- **Create a range of housing opportunities and choice (through variety, type and tenure).**
- **Deliver walkable places that are distinctive and attractive with a strong sense of place through legible and permeable design.**
- **Promote a mix of land uses.**
- **Preserve and enhance open space, natural features and critical environmental areas.**
- **Strengthen existing communities through the provision of services and opportunities for the wider community.**
- **Ensure accessibility through mobility choice.**
- **Make development decisions predictable, fair and cost-effective.**

8.2 Consideration of these principles within the context of the masterplan vision and the cultural values of the Highlands has allowed their refinement. This ensures that the development principles meet local expectations. Refined principles are to:

- **Take advantage of environmentally sensitive building design that respects and responds to the Highland vernacular and materials. And is energy efficient.**
- **Ensure land use is appropriate and that development uses sites to maximum advantage emphasising sustainable development.**
- **Relate development density to accessibility to help ensure viable public transport services.**
- **Create a range of housing opportunities and choice (through variety, type and tenure) to suit a range of needs and promote a range of housing density to achieve choice.**
- **Deliver walkable and cycle friendly places that are distinctive and attractive with a strong sense of place through legible and permeable design. Cultural and recreational services that are accessible within 10 minutes for the majority of residents should be provided early in development phasing.**

- **Promote a mix of land uses that allows houses and jobs to be closely related and the mix to be more varied toward the centre of places.**

- **Maintain and enhance open space, natural features and critical environmental areas and ensure these are provided within settlements and integrated into development that maximise there recreational contribution to the quality of life.**

- **Strengthen existing communities through the provision of services and opportunities for the wider community.**

- **Ensure accessibility through mobility choice by actively promoting attractive public transport.**

- **Make development decisions predictable, fair and cost-effective through developing a clear masterplanned (including design codes) context and straightforward processes delivered by a stakeholder process (including exploring private/public partnerships to deliver infrastructure and services timeously). Understand market trends & demands and developer interest in order to ensure a commercial framework for realistic deliverability over time.**

8.3 New development principles that emerged to help guide the preparation of the masterplan and its implementation included:

- **Provided ducted infrastructure to ensure maintenance in the longer term does not undermine urban quality.**

- **Address key road challenges including the Raigmore Interchange and appropriateness of the Nairn by-pass.**

- **Every new dwelling should have a new job created.**

- **Ensure that the masterplan can be flexible enough to change over time as circumstances change.**

9. Outcomes – Urban Design Preferences

9.1 A review of the urban design characteristics from the case studies discussed above has identified some preferences that could be applied to the development of the A96 Corridor. These preferences were:

Vauban Home Zones

Pedestrians prioritised through traffic calming measures

Children's play areas overlooked by homes

Street as outdoor room for houses and ground floor flats

Forres Centre

Active street frontages

Flexible mixed use buildings offices/flats above shops

24 hour occupancy and activity

Gelsenkirchen Community Facilities

New school on sustainable design principles

Pupil involvement in school design

School facilities available to whole community

Gelsenkirchen Innovative Design

Innovative design acting as tourist attraction

Futuristic design as landmark

Innovative design adding value

Vauban Housing Mix

Varied street elevations

Mix of house types and sizes within street structure

Mix allows for lifetime homes concept

Ballerup Integrated Natural Features

Existing lakes and mature trees as setting for new development

Landscape used for cycle paths and walking routes

Kentlands Walkable Streets

House frontages close to pavement for passive surveillance

Parking to rear of houses

Streets linking to places people want to go to

Clear edge to street

Kentlands Higher Density Housing

Accommodation for younger and older residents

Variety of urban form

Discreet parking solution at rear of building

Vauban Traffic Free Links

Pedestrian routes well overlooked

Good lighting

Attractive landscape environment

Forres High Density Housing

Traditional appearance

Use of locally available materials

Clearly defined urban space

10. Outcomes – Development Model Options

10.1 The stakeholders' workshopped development model options for the masterplanning of the A96 Corridor. Using a base that established the constraints on development (see Figure 9) four development options were identified:

- Development Option 1: Eastern Growth
- Development Option 2: Polar Growth
- Development Option 3: Island Growth
- Development Option 4: String of Pearls

These represented the stakeholders' options for the long term development of the A96 Corridor.

10.2 **Development Option 1: Eastern Growth** (see Figure 10) focuses growth in a chain of settlements running from Nairn to Ardersier Village in the east of the Corridor. It includes substantial growth of Ardersier Village. This option also includes a substantial new settlement located on the western part of the Ardersier Fabrication Yard. These settlements would sit within a landscape and recreational setting linked through a local distribution network.

10.3 The eastern part of the Fabrication Yard would be a new employment area to serve these new communities.

10.4 In relation to transport this option promotes the construction of the Nairn By-Pass, dualling of the A96 and a new connection from the A96 to the A9 by-passing the Raigmore Interchange.

10.5 Public transport provision is primarily bus focused.

10.6 **Development Option 2: Polar Growth** (see Figure 11) promotes substantial growth at both ends of the Corridor. At the eastern end a large extension of Nairn is proposed.

10.7 The Fabrication Yard is retained for industrial use.

10.8 At the western end of the Corridor a substantial extension of Inverness is envisaged. An employment designation is made. Otherwise a new settlement is proposed to follow and straddle the A96 filling the gap known as the *Golden Mile*. There are options in this area to exchange new settlements with proposed recreational land. However, the broad approach is unaffected.

10.9 In relation to transport this option proposes the by-passes suggested above. However, there is significantly more emphasis on the rail line as providing a focus for public transport provision. Three new rail halts are proposed to serve the new settlements. Continuous west-east recreation routes for walking and cycling are proposed both to the north and south of the A96.

10.10 **Development Option 3: Island Growth** (see Figure 12) proposes a series of independent new settlements to accommodate growth. The first is the Fabrication Yard. Heading westward the development of Ardersier Village is identified. A new settlement to the south of Ardersier Village is identified. Croy and Newlands of Culloden are promoted for

expansion. Two new settlements to the west of Inverness Airport (straddling the railway line) are identified.

10.11 New recreational provision is proposed to the west of Inverness Airport.

10.12 In relation to transport the polar by-passes are promoted. Again, rail is seen as the focus for public transport with five rail halts proposed to serve the new settlements.

10.13 **Development Option 4: String of Pearls** (see Figure 13) promotes a more closely integrated approach than the Island Growth option. This option promotes a string of new settlements focused on the rail line. Six new settlements along the length of the Corridor focused on the railway line each served by a rail halt. The *Golden Mile* is promoted as a further new settlement. The Fabrication Yard is identified for employment

10.14 In undertaking technical assessments of the Corridor four further options were developed:

- Development Option 5: Land Use
- Development Option 6: Transport
- Development Option 7: Landscape
- Development Option 8: Infrastructure

The following paragraphs outline these options and their development.

10.15 **Development Option 5: Land Use** (see Figure 14) builds on the land use trend established through the Inverness Local Plan and other land use opportunities. This option promotes substantial growth at Newlands and Croy. A significant expansion of Ardersier Village northward along the Firth is also promoted.

10.16 The justification for this option directly emerges from the land use capacity assessment discussed above and detailed in Appendix 7.

10.17 **Development Option 6: Transport** (see Figure 15). This focuses development into a new settlement in the centre of the Corridor to the south of the Airport and the A96. The option also includes the western expansion of Nairn and some growth at Balloch. Transport proposals include the dualling of the A96, a bus transit way, a Nairn by-pass, a southern connection to the A9 from the A96, a park 'n' rides (one with a rail halt) facility and other proposals.

10.18 The option emphasises a sustainable transport solutions to create a functional and attractive environment.

10.19 The preceding capacity review has highlighted some of the key transport capacity problems facing the study area (see above). One of the first considerations is the optimum location and size for new settlements. In searching for additional development locations, a focus on the main existing public transport Corridors (A96 and rail line) is desirable. The proposed rail halt at the Airport provides a principal focus – a settlement in this area will help to maximise the potential contribution of this station, and help to off-set the disbenefits of slower end-to-end journey times.

10.20 Developing settlements within the A96 Corridor between Nairn and Inverness also provides opportunities to directly support the existing express bus services. The combination of the

existing patronage, and new development related patronage could support a much higher frequency service and a greater range of services.

10.21 In terms of a settlement pattern that minimises the generation of car trips onto the strategic road network, the settlement size should be of a size that can support facilities such as supermarkets, a secondary school, range of retail and leisure opportunities, etc. Ensuring such facilities are locally accessible, by walk, cycle and bus, as well as by car, can help to minimise trip generation onto the adjacent strategic road network. This is best addressed through a discrete larger settlement.

10.22 The impact of long term growth on the strategic road network is significant. However, significant increases in road capacity will tend to undermine objectives to encourage a sustainable development pattern or address congestion developing within Inverness. Minimising the impact of the proposed development on the strategic network can be achieved through creating settlements that are largely self-contained in terms of many facilities, but where many facilities can be accessed through walk, cycle and public transport.

10.23 The dualling of the A96 between Raigmore and Nairn appears necessary to maintain the strategic function of the A96. Such improvement is considered desirable with background traffic growth and is necessary with the application of long term growth.

10.24 Due to the adverse environmental and economic impact of congested traffic within the centre of Nairn, long term growth is one further factor supporting the development of the Nairn bypass.

10.25 At Raigmore junction, there is limited opportunity for physical expansion, due to the constrained nature of the site. Strategic relief to the roundabout can be achieved by linking the A96 at the retail park to the A9 at Beechwood.

10.26 It is considered that an alternative route be developed which did not wholly rely upon the A96 trunk road. Dependent upon the location of the settlements, an upgrading of the B9006 and B9091 beyond Westhill is recommended. Upgrading this route to a regional distributor road would bring benefits for network flexibility, and public transport operation and reliability. It would also remove existing road safety problems on the route, and help to distribute development traffic between different routes.

10.27 In terms of public transport provision, a new rail station is proposed to be constructed at Inverness Airport to serve the Airport and the proposed business development. The benefits of this new rail station can be further enhanced if it was easily accessible from any new areas of settlement – by walk, cycle, bus, and car with a park and ride facility.

10.28 The transport option outlines a high frequency bus services principally between Inverness to Nairn via a new settlement in the proximity of the Airport, wholly to the south of the A96. The option includes the provision of bus priority on the approach to Raigmore junction in order to provide competitive and reliable journey times.

10.29 Promoting Park and Ride facilities at Inverness Airport Rail Station and near the Inverness retail park on the A96 can help to relieve the operation of the Raigmore junction, and traffic flow within Inverness. The park and ride can help to extend the catchment of the station, for those who would find the rail service convenient.

10.30 The park and ride on the A96 by the retail park can have several advantages. Firstly, it can help relieve some congestion in the area of Raigmore. Secondly, by locating the facility near to the retail facilities this can help to facilitate trip-linking.

10.31 **Development Option 7: Landscape** (see Figure 16) proposes 11 small settlements scattered through the Corridor. In addition, new recreational space or landscape is proposed adjacent to Nairn and Inverness. There are also similar proposals to the north of Ardersier Village.

10.32 This option has been formulated where potential landscape and visual effects of housing development were considered. This led to the following conclusion for the areas of the Corridor:

Ardersier - In landscape terms capacity exists to the south and north of Ardersier for development.

Croy - Landscape capacity exists to extend the village to the west and north east.

Tornagrain - There is landscape capacity for development within a small plot to the west on the northern side of the A96 road using the existing forestry as visual containment. There is also capacity to the east towards the disused quarry on the undulating farmland, the forestry to the north and south providing potential visual containment and setting.

Milton of Gollanfield - There is landscape capacity for development centred on Milton of Gollanfield farm north of the A96 road.

Morayhill - Landscape capacity for development exists within the flat landform between Wester Dalziel in the north and Morayston in the south centred on the A96 road. This would utilise the steeper landform to the north and south to contain the new settlement preventing visibility of the town spilling out across the wider countryside.

Redhill - Landscape capacity for development exists at the coastline with possibilities for a small settlement set back from the firth edge south of Breckneish.

Culloden/Balloch - Landscape capacity for development exists north of Culloden and Smithton, the existing woodland would reduce the visual impact and provide a framework for new landscape structure planting with any new proposals. Landscape capacity also exists to the north east of Culloden adjacent to Balloch for some small development utilising existing trees on the urban edge as a basis to create new landscape strategy for the area.

Recreation and Amenity - The existing forestry management and creation of new woodlands offers potential for new recreational facilities. The coastal areas also are popular for informal recreation and general access to the waters edge. There are opportunities and capacity for new recreation and enhancement measures.

10.33 **Development Option 8: Infrastructure** (see Figure 17) proposes two large settlements in the centre of the Corridor. One to the east of the Airport and the other to the south-west of the Airport. A new grid electricity sub-station is also proposed.

10.34 Having taken into account the physical constraint and the capacity considerations of the existing infrastructure services, the Infrastructure Option was been developed. This represents the settlement distribution which will be easiest to serve by the utility suppliers in term of physical constraints.

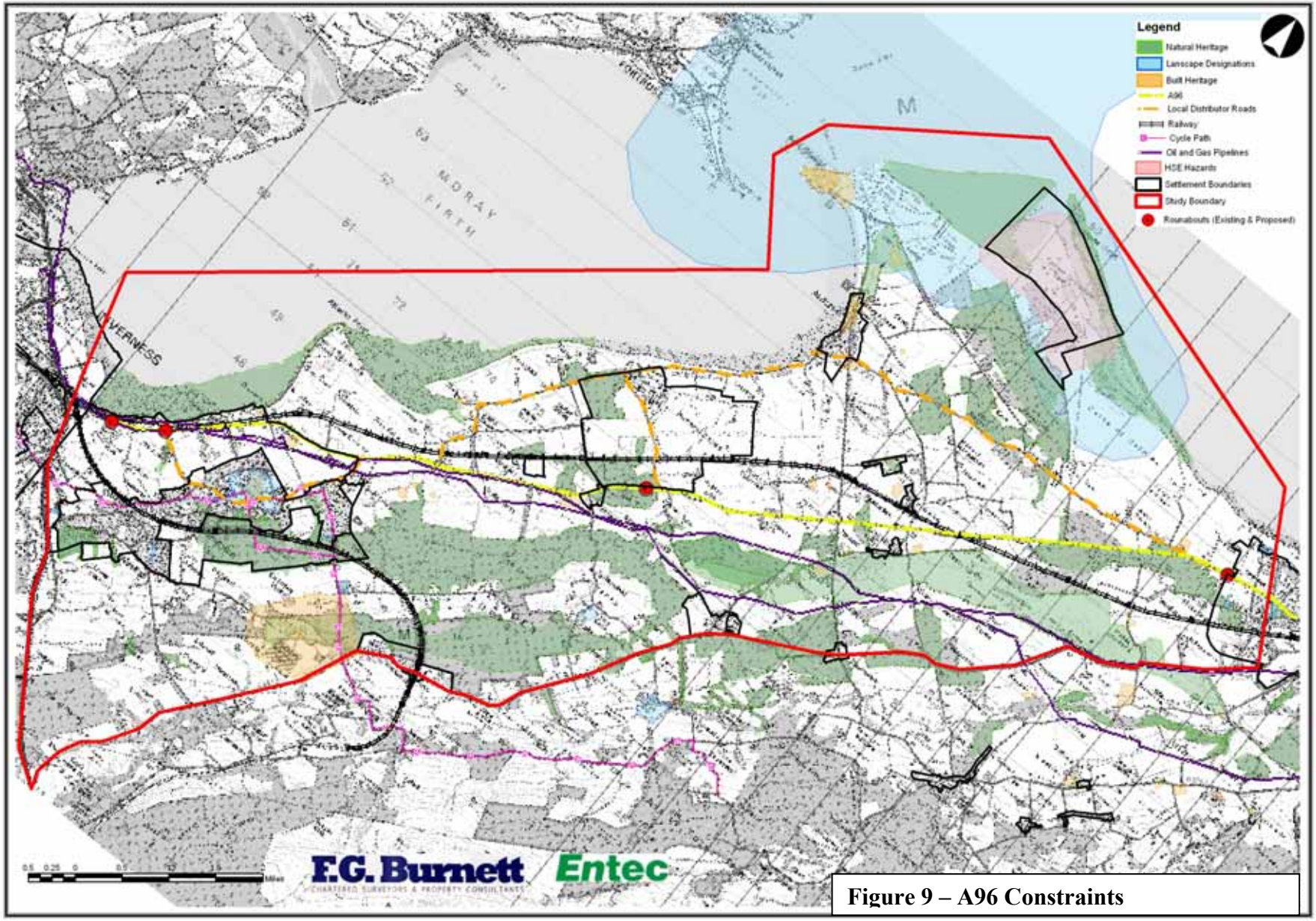


Figure 9 – A96 Constraints

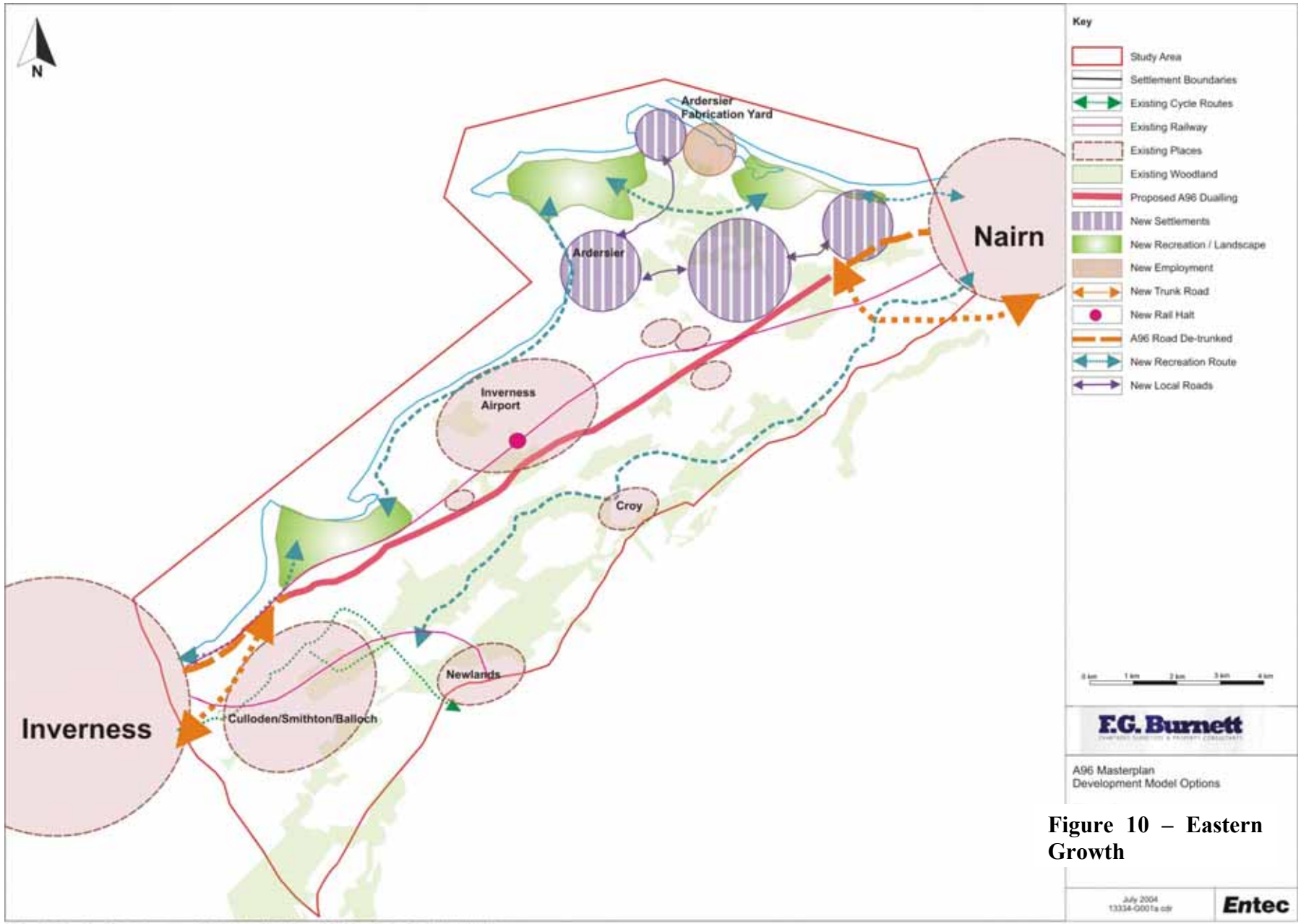


Figure 10 – Eastern Growth

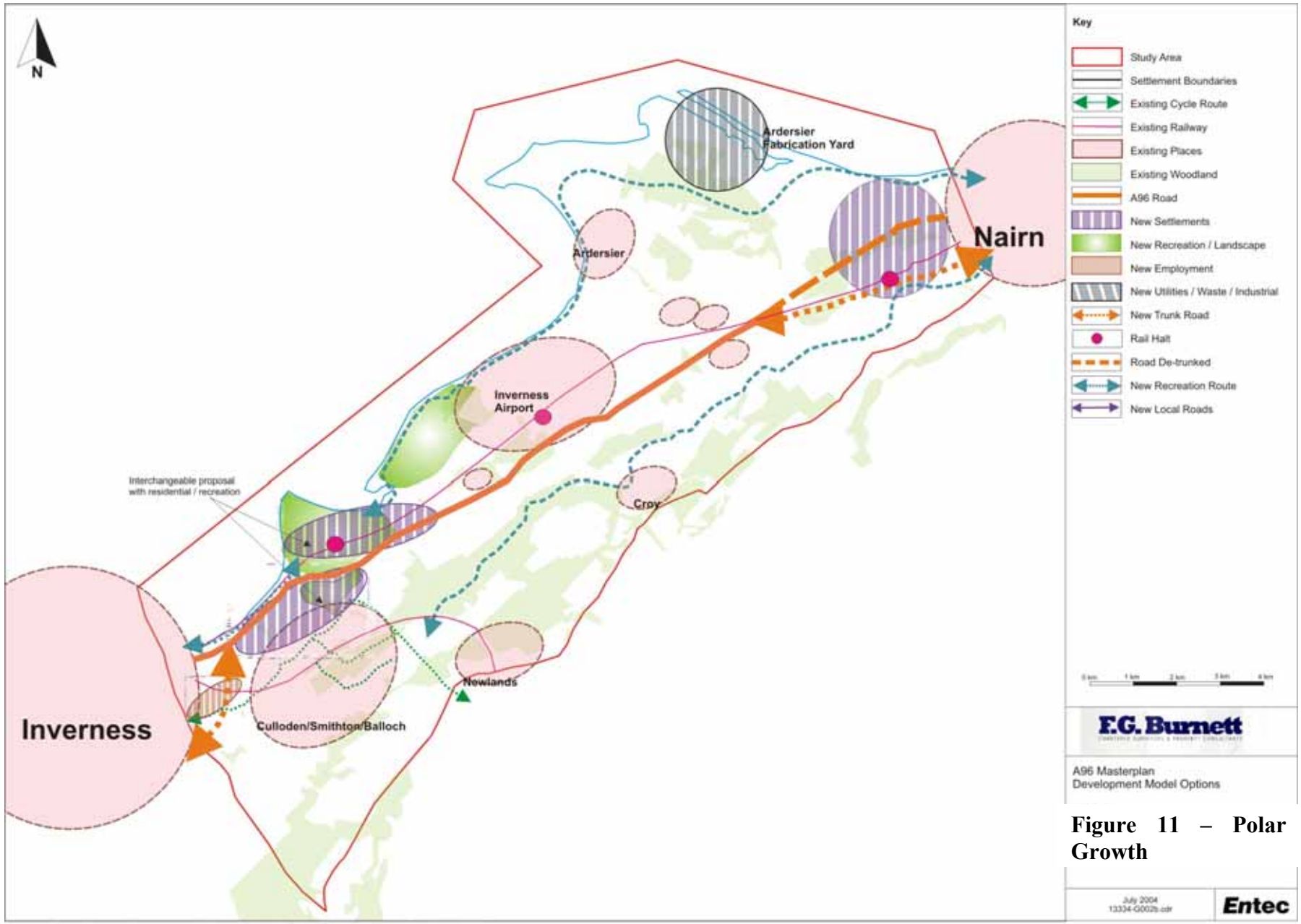


Figure 11 – Polar Growth

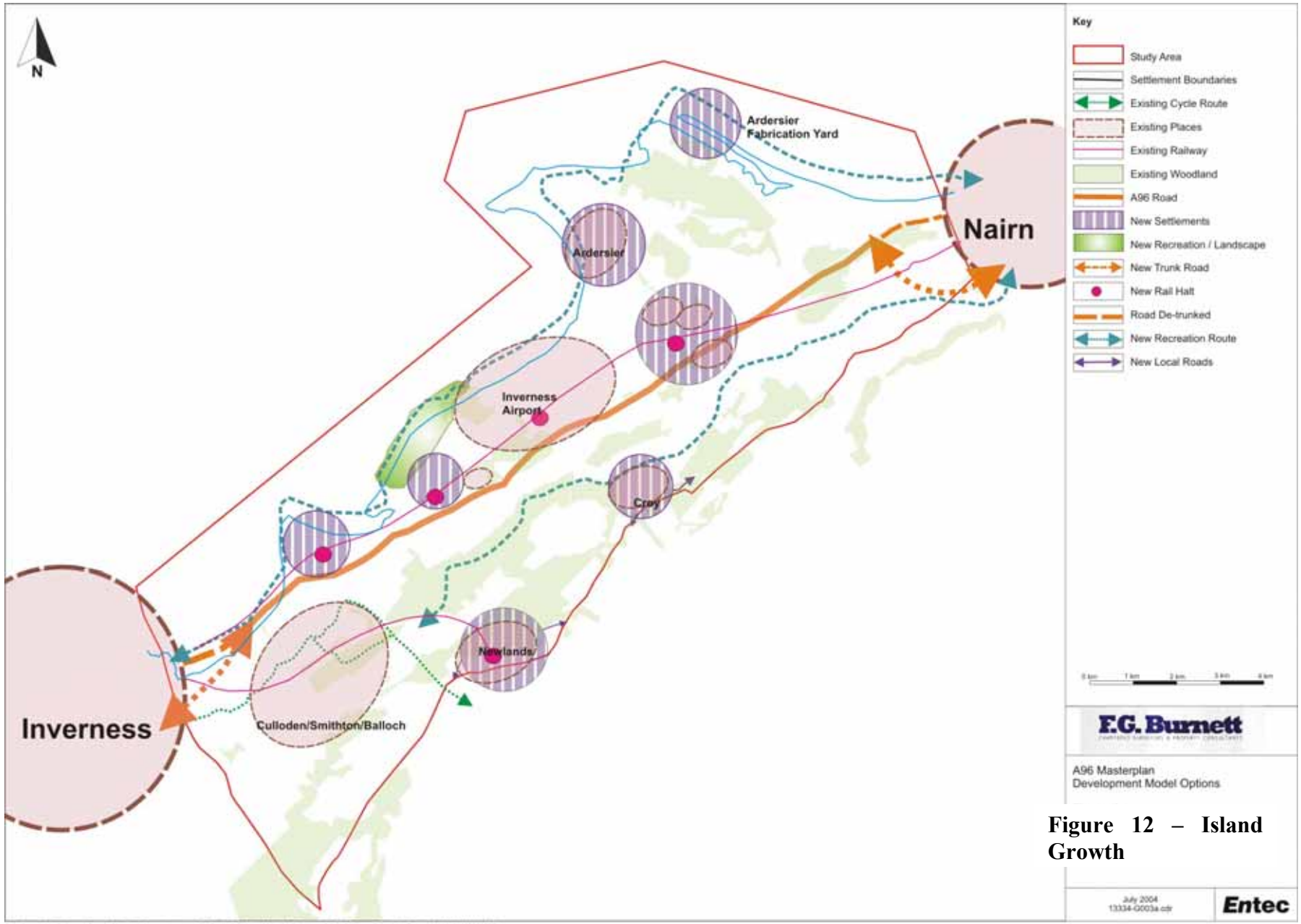


Figure 12 – Island Growth

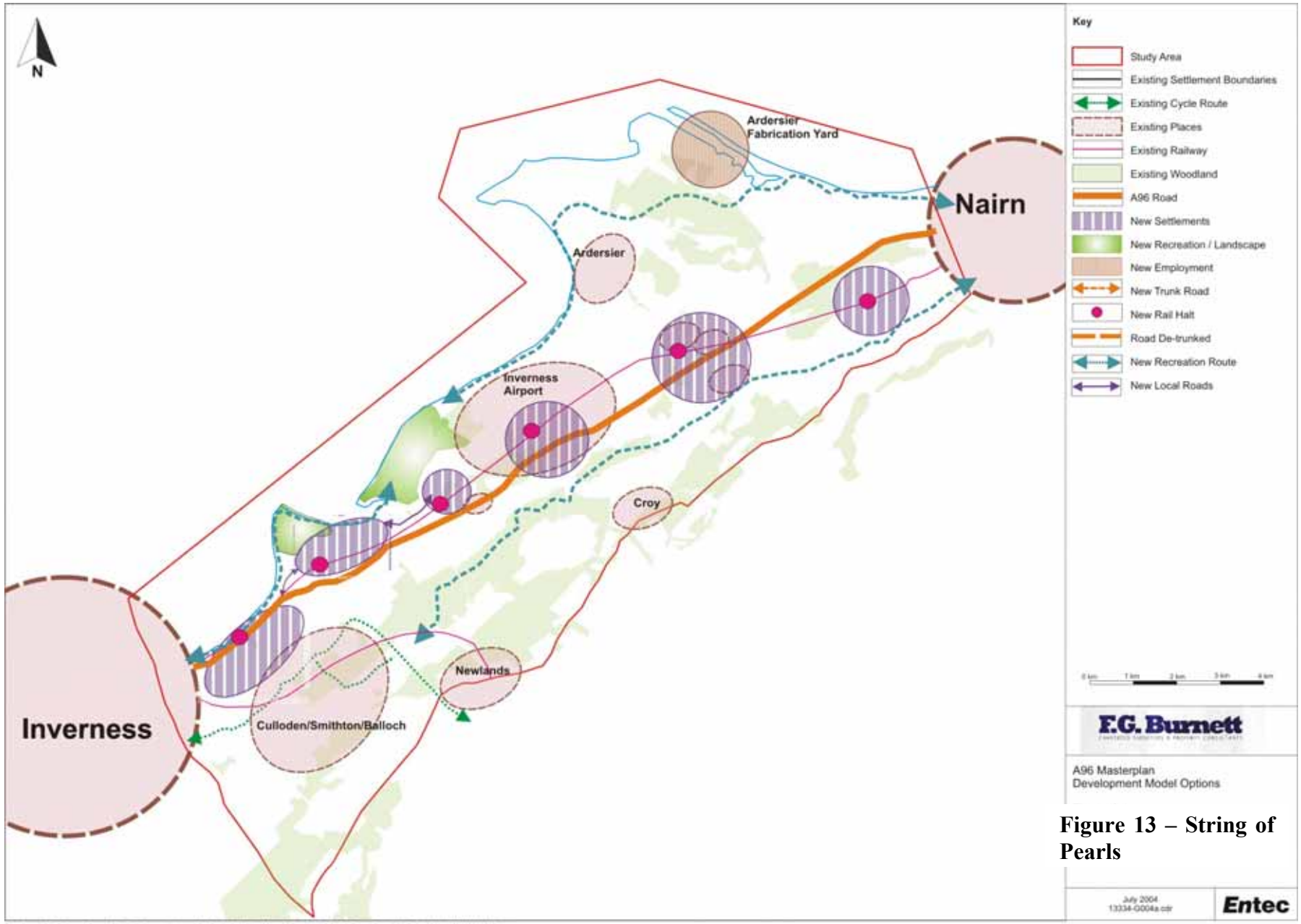


Figure 13 – String of Pearls

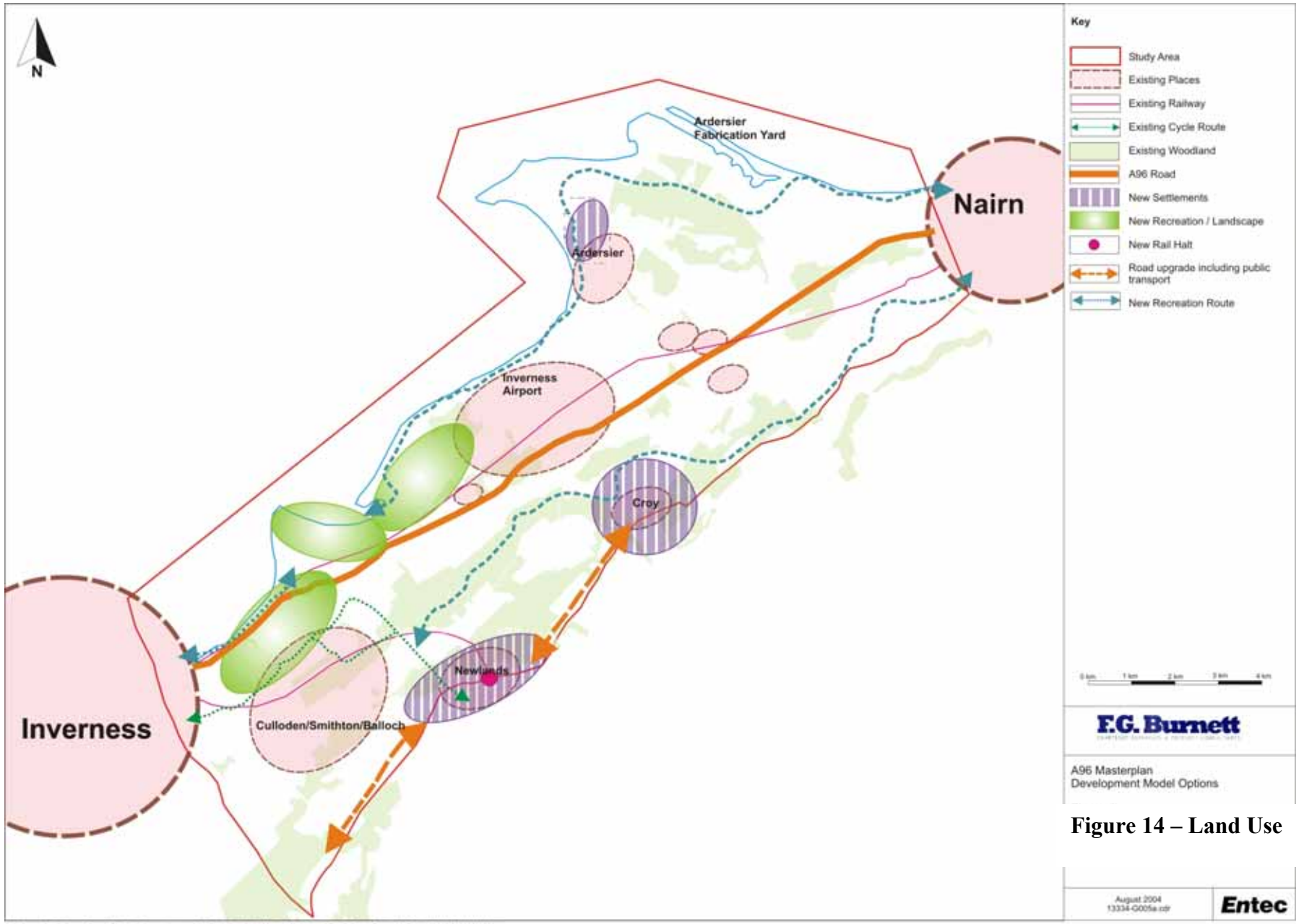


Figure 14 – Land Use

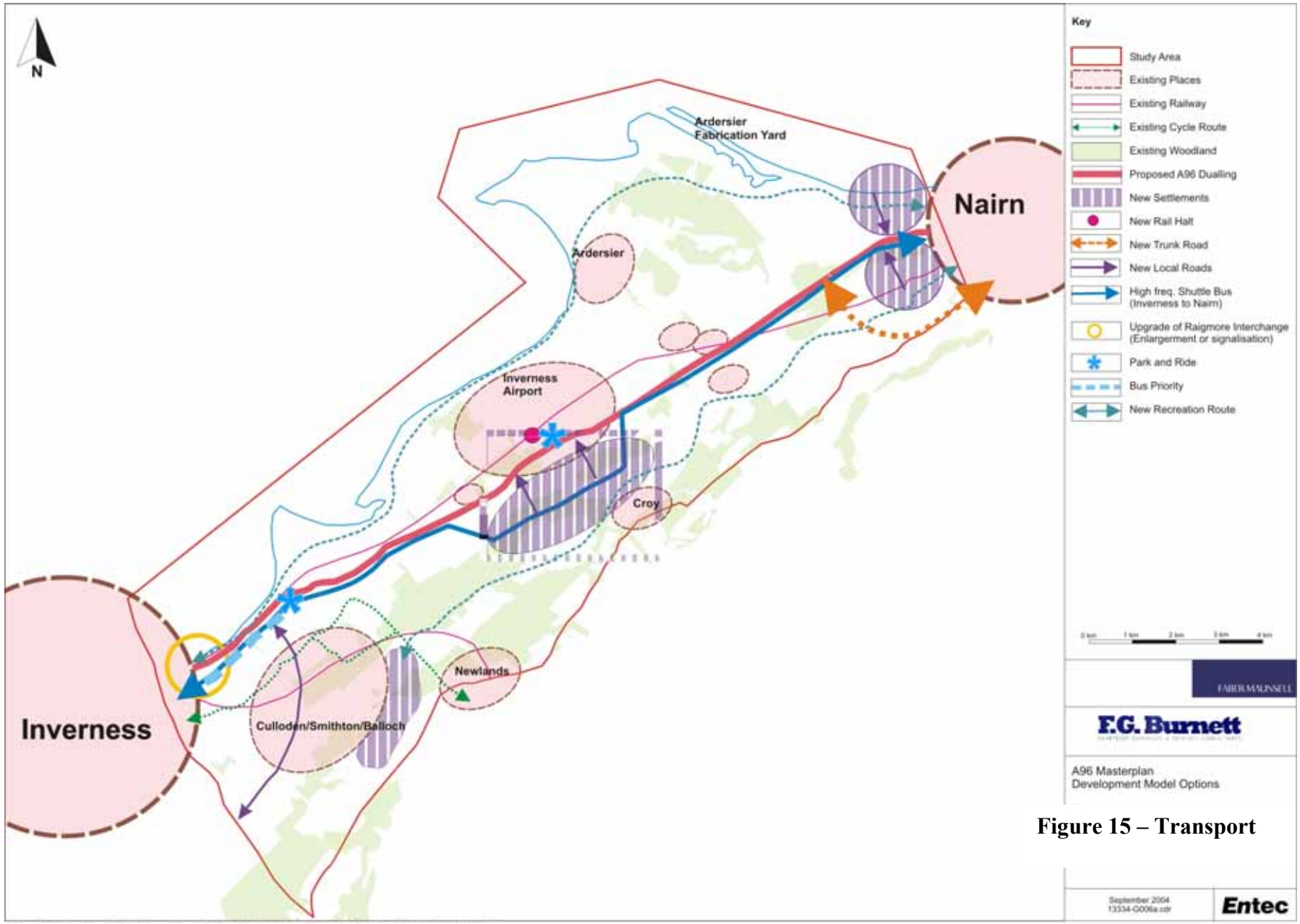


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Figure 15 – Transport

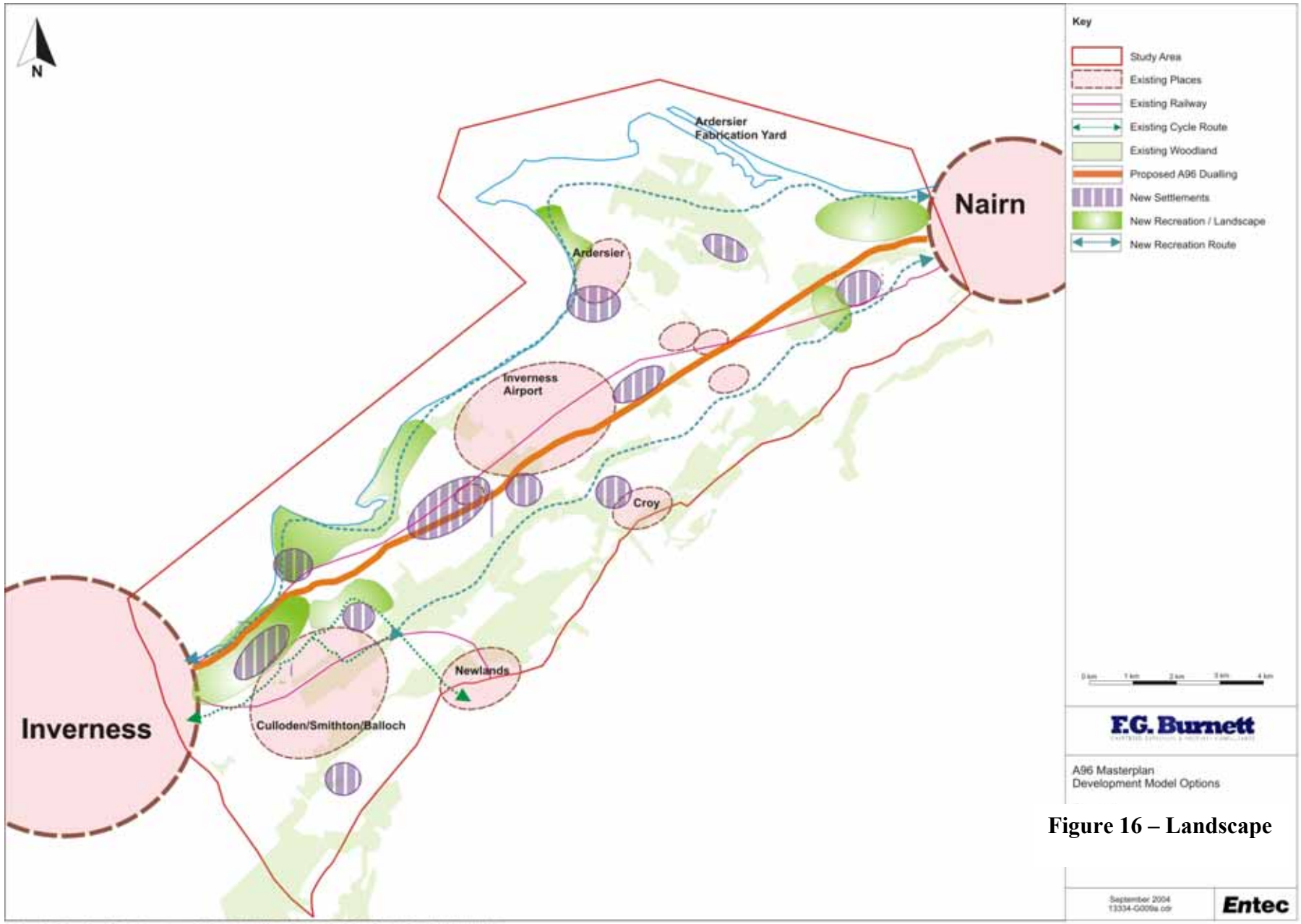


Figure 16 – Landscape

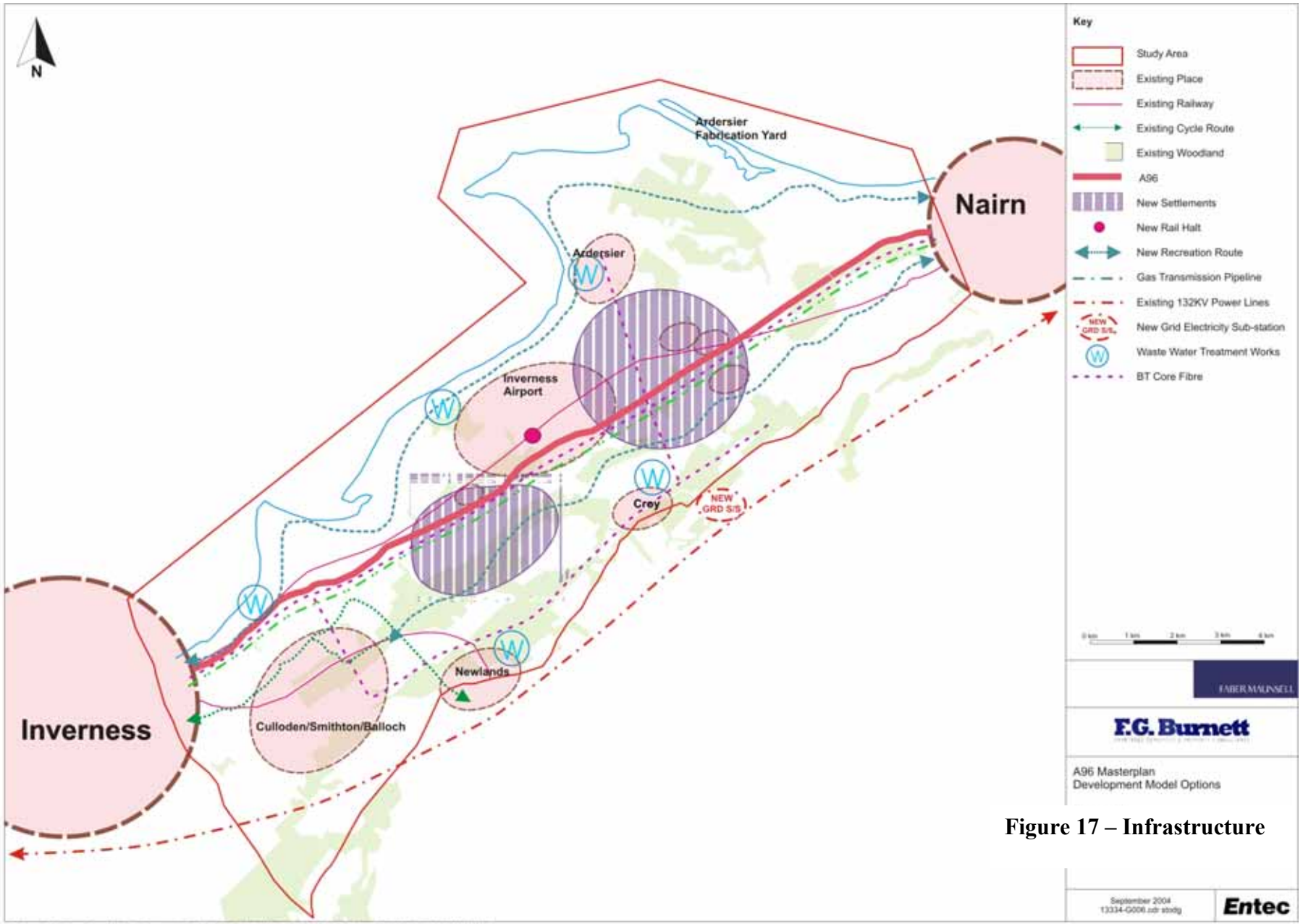


Figure 17 – Infrastructure

11. Testing Development Model Options

11.1 Testing of the development model options was developed through three independent processes of:

- Technical assessments of each option (other than their own option) in the context of transport, land use, landscape and infrastructure considerations emerging from the capacity assessments discussed in section 5 above.

- A sustainability appraisal of the development model options undertaken by the stakeholders in a *Collaboration for Success* session.

- Community consultation/research to establish local people's views focused through a community councils' conference and focus groups.

This approach is outlined in more detail in section 3 above. These considerations are discussed in the following paragraphs.

11.2 A final consideration relating to the impact of Inverness Airport and its long term expansion requirements is provided.

Technical Assessment – Transport

11.3 The following assesses the seven relevant options with regard to considerations relating to:

- Development location and size.
- Road impacts.
- Rail impacts.
- Bus impacts.
- Walking/Cycling impacts.

An overview for each option is taken.

Development Option 1 - Eastern Growth

11.4 Development Location and Size. This option outlines three new settlements and an extension of Ardersier Village to the north west of Nairn. This 'small and many' type of development may generate a high number of trips since local amenities are not immediately available. In addition, the locations of the settlements are conducive to longer trips since Inverness is the main destination in the Corridor. Therefore, this is not complementary with transport objectives of minimising the number and length of car based trips.

11.5 Road Impacts. Analysis of road capacity has shown long term growth along the A96 Corridor would result in extra demand for road capacity of such volume that dualling of the A96, Nairn By-Pass and improvements at Raigmore interchange would be necessary. This eastern growth option supports these requirements, and in addition promotes by-passing of Raigmore interchange to the south.

11.6 Rail Impacts. In terms of travel by rail this option denotes one rail station located at Inverness Airport on the Aberdeen-Inverness line. This is favourable with the rail capacity

analysis. Although this station is strategic in its location in terms of business and industry, its distance from new and existing settlements would mean minimal supporting residential patronage. Therefore, it is that felt without patronage from all industry, Airport and residents the viability of the rail halt may be threatened.

11.7 Bus Impacts. The main bus movement is between Inverness and Nairn in this area. Any new bus services would be more suitably placed on this route in order to provide a high frequency service. If settlements are situated away from this main Corridor, bus services will have to cover a greater area and will be unable to sustain a high frequency. This option is not favourable with a sustainable bus service since the two of the four proposed settlements are located away from the A96, towards the end of existing bus routes, and would result in difficulties with operating a fast, reliable, attractive service.

11.8 Walking and Cycling Impacts. The option proposes recreational routes for walking and cycling connecting Inverness and Nairn to the north and south of the A96 which support transport objectives.

11.9 **Development Option 1 Eastern Growth - Transport Overview. The option is not desirable.** Whilst the level of infrastructure proposed appears appropriate, the locations of the settlements would not:

- Minimise trip generation and length.
- Support the proposed rail halt.
- Support a high frequency bus service.

Development Option 2 - Polar Growth

11.10 Development Location and Size. This option is compatible with transport objectives in terms of location and size of new settlements. The new settlements are an extension of the two main trip destinations of Inverness and Nairn and are close to local amenities. This option supports minimised trip generation and length of car based journeys and maximum use of public transport.

11.11 Road Impacts. The option promotes dualling of the A96, Nairn By-Pass and south by-pass of Raigmore Interchange. This supports transport analysis that shows the addition of 10,000 new homes in this area would seriously jeopardise the efficiency of the trunk road network; without road improvements.

11.12 Rail Impacts. Analysis of rail capacity considered that within the constraints of existing infrastructure, the economic justification for additional rail halts, and operational feasibility for new rail halts were problematic. Substantial new infrastructure would be required to support additional local services, or longer distance services would have to stop at the halts – slowing journey times, and reducing service frequencies. In both cases, the costs are likely to far outweigh the overall benefits.

11.13 Bus Impacts. This option promotes new settlements straddling the A96 which is conducive with the Nairn to Inverness bus service. It would be relatively easy to introduce an attractive, reliable and high frequency bus service.

11.14 Walking and Cycling Impacts. The option outlines recreational routes for walking and cycling connecting Inverness and Nairn to the north and south of the A96 and linking new and existing settlements which are favourable.

11.15 **Development Option 2 Polar Growth - Transport Overview. The option is an attractive and broadly feasible option** that builds upon the existing settlements, and encourages sustainable transport patterns. The only element that is impracticable is the aspiration for three new rail halts. However, the settlements to the west of Nairn and east of Inverness would work well without the proposed rail halts, provided that frequent and reliable bus links could be developed.

Development Option 3 - Island Growth

11.16 Development Location and Size**.** The high number of small settlements is not sympathetic with transport objectives. It promotes high trip generation as residents will have further to travel to get to essential amenities. This option will promote a high number of car based trips.

11.17 Road Impacts. This option is compliant with transport measures in terms of road infrastructure improvements.

11.18 Rail Impacts**.** This option promotes five new rail halts, four of which are on the Inverness to Aberdeen line and one is on the Inverness to Perth line. This is not compatible with rail capacity.

11.19 Bus Impacts. In the main, bus services could be supported by this development option. However, the new settlement at the Ardersier Fabrication Yard is not desirable in terms of bus services. In addition, the sporadic nature of these settlements and their relationship to the A96 would be less favourable to high frequency bus services.

11.20 Walking and Cycling Impacts. The option indicates recreational routes for walking and cycling connecting Inverness and Nairn to the north and south of the A96 and linking new and existing settlements which are favourable.

11.21 **Development Option 3 Island Growth - Transport Overview. This option is unattractive** due to the dispersed nature of the settlements proposed that would tend to maximise trip generation, and limit opportunities for the provision of high frequency public transport options; given the constraints on the existing rail infrastructure.

Development Option 4 - String of Pearls

11.22 Development Location and Size. This option is likely to contribute to a high number of car-based trips. In addition, the developments are distributed along the Corridor, causing longer trips to the main destinations of Inverness and Nairn.

11.23 Road Impacts. This development option promotes no improvements to the trunk road. This is an optimistic assumption, as the road capacity analysis showed that trunk road improvements would have to be made. However, assuming that these would be undertaken the proposal would be compliant.

11.24 Rail Impacts. The option is based around six developments straddling the length of the track between Inverness and Nairn, each with their own rail halt. It is unrealistic to suggest that such a number of stations could be justified without significant improvements to the rail infrastructure to maintain its integrity as a long distance, inter-urban route. In addition, these local services would only operate successful with significant ongoing subsidy which is

unlikely. Furthermore, the range of destinations, and trip purposes suited to rail, means a significant mode switch from road to rail would be required.

11.25 Bus Impacts. In terms of travel by bus this development option supports the introduction of a high frequency, reliable bus service. With each of the new settlement bordering the A96 existing Nairn to Inverness direct bus services could be enhanced.

11.26 Walking and Cycling Impacts. The option shows recreational routes for walking and cycling connecting Inverness and Nairn to the north and south of the A96 and linking new and existing settlements which are favourable.

11.27 **Development Option 4 String of Pearls - Transport Overview. This option could be feasible**, with a more realistic expectation of the potential of the rail service, increased emphasis on a high quality bus-based solution and trunk road improvements.

Development Option 5 - Land Use

11.28 Development Location and Size**.** This option promotes the extension of the settlements at Newlands/Culloden Moor, Croy and Ardersier. This supports transport objectives for fewer and shorter car based trips since it promotes larger settlements with existing amenities.

11.29 Road Impacts. The option promotes no improvements to the trunk road. This is not sympathetic with the road capacity conclusions. However, assuming that these would be undertaken the proposal would be compliant. The option does promote road upgrades to the B9006 and B851 south of the A96 linking Newlands/ Culloden Moor and Croy with the A9. These would require further enhancement as would improvements to local roads at Ardersier Village.

11.30 Rail Impacts. The option promotes a new rail halt at Newlands on the Perth – Inverness line. Similar considerations affect this location, as on the Inverness-Aberdeen line, due to resolving the conflict between providing fast and frequent inter-city connections (which generate higher revenue) and providing slower, more local services (which require significant subsidy support). Given the frequency of service that would be possible from such as station, and range of destinations served, and the limited catchment of the station (mainly residential) we would suggest that the feasibility of such an additional rail halt is marginal.

11.31 Bus Impacts. Bus services could be supported by this development option. The extension of the settlements at Newlands/Culloden Moor, and Croy could be served by extending existing high frequency local services. It may be more difficult to provide a high frequency service for Ardersier Village. This option does outline public transport improvements on the B9006 and B851 with could be in the form of bus priority in order to make bus services more attractive.

11.32 Walking and Cycling Impacts. The land use technical option shows recreational routes for walking and cycling connecting Inverness and Nairn to the north and south of the A96 and linking new and existing settlements which are favourable for promoting sustainable travel.

11.33 **Development Option 5 Land Use - Transport Overview. This option is feasible in transportation terms.**

Development Option 7 – Landscape

11.34 Development Location and Size. This option promotes a high number of car based trips through the high number of small developments. It is not favourable with transport objectives since residents will have to travel outwith the settlements to get to essential amenities.

11.35 Road Impacts. Through the development of appropriate road improvement proposals, this option can comply with the conclusions on road capacity.

11.36 Rail Impacts. This option outlines no rail improvements. An opportunity to introduce a rail halt at Inverness Airport could be taken in order to provide a sustainable transport option for the settlements surrounding the Airport and proposed business park.

11.37 Bus Impacts. In terms of travel by bus this option supports the introduction of a high frequency, reliable bus service along the A96 due to the number of new settlements located on the trunk road Corridor. The settlements extending Culloden District, Croy and Ardersier Village could be served by existing bus services which could be improved due to higher demand. The other settlements, isolated from the A96 and other existing towns/villages cause more difficulty since new bus services would have to be started up; perhaps taking some frequency away from existing services.

11.38 Walking and Cycling Impacts. The option indicates recreational routes for walking and cycling connecting Inverness and Nairn to the north and south of the A96 and linking new and existing settlements which are favourable.

11.39 **Development Option 7 Landscape – Transport Overview. Some elements of this option are feasible.** A greater consolidation of settlement would improve its desirability in transport terms.

Development Option 8 Infrastructure

11.40 Development Location and Size. This option supports two large new settlements concentrated around the Airport and A96. This is conducive with transport objectives since larger developments create smaller internal trips and fewer, longer car based trips.

11.41 Road Impacts. Through the development of appropriate road enhancement proposals, this option could comply with the conclusions of road capacity findings.

11.42 Rail Impacts. The option promotes one new rail halt on the Aberdeen - Inverness line at Inverness Airport. It is likely this station would have sufficient patronage from the new settlements, the Airport and surrounding business park. In addition, the station could benefit from Park and Ride facilities for those residents out with the 800m walking catchment and from existing communities further a field. Therefore this option supports transport objectives for promoting travel by public transport with a feasible new rail halt.

11.43 Bus Impacts. In terms of travel by bus, this option supports the introduction of a high frequency and reliable bus service. With each of the new settlement bordering the A96 existing Nairn to Inverness direct bus services could be enhanced with relative ease.

11.44 Walking and Cycling Impacts. The option shows recreational routes for walking and cycling connecting Inverness and Nairn to the north and south of the A96 and linking new and existing settlements which are favourable.

11.45 **Development Option 8 Landscape – Transport Overview. This option is feasible,** particularly with appropriate road enhancement.

Transport Assessment Conclusions

11.46 Table 11.1 provides a summary of the different options and their performance against transport criteria.

Table 11.1 – Summary of Options Against Transport Criteria

		Transport Criteria				
		Development Size and Location	**Road**	**Rail**	**Bus**	**Walking /Cycling**
Development Model Options	**1. Eastern Growth**	×	✓	×	×	✓
	2. Polar Growth	✓	✓	×	✓	✓
	3. Island Growth	×	✓	×	✓	✓
	4. String of Pearls	×	✓	×	✓	✓
	5. Land Use	✓	✓	×	✓	✓
	7. Landscape	×	✓	✓	×	✓
	8. Infrastructure	✓	✓	✓	✓	✓

11.47 If concerns about rail impact are discounted from considerations on the basis that bus provision can meet public transport need, it is apparent that **the following development model options, in addition to Development Option 6 - Transport, are satisfactory:**

- **Development Option 2 - Polar Growth.**
- **Development Option 5 - Land Use.**
- **Development Option 8 - Infrastructure.**

Technical Assessment - Land Use

11.48 This section takes each of the relevant development model options (Eastern Growth, String of Pearls, Island Growth, Polar Growth, Transport, Landscape and Infrastructure) and tests them against the principles established by the land use capacity study. In this way, an understanding of whether an option fits with the land use context of the area can be established.

Development Option 1 - Eastern Growth

11.49 **Development Option 1 - Eastern Growth generally fits** with the Land Use option because:

- The areas identified for development are generally undesignated, or development can be promoted to fit around designations.

- The majority of areas promoted are adjacent to existing settlements or on brownfield land.

- The option promotes the re-use of the Ardersier Fabrication Yard.

A better fit with the land use option could be generated by deleting the proposed additional housing adjacent to Nairn. Existing allocations for the area round the town off and the area is promoted through the local plan for golf course/recreation.

Development Option 2 - Polar Growth

11.50 **Development Option 2 - Polar Growth does not fit** with the land use context of the area because:

- The areas proposed to the east of Inverness would occupy an area which is planned to be retained for recreational use and would result in the coalescence of Culloden and Inverness.

- The areas proposed to the west of Nairn would conflict with existing designations and allocations. Existing allocations round Nairn off and there is limited capacity for further development at this location.

Development Option 3 - Island Growth

11.51 **Development Option 3 - Island Growth fits** with the land use context of the area because:

- By fitting proposed development around existing centres you meet with national, regional and local planning policy aspirations to maintain vital and viable communities.

- The option avoids sensitive areas.

A better fit with land use would be generated by removing proposed allocations to the north of Culloden and adjacent to Morayhill.

Development Option 4 - String of Pearls

11.52 **Development Option 4 - String of Pearls generally fits** with the land use context of the area in that:

- Promoted sites are in the main not within designated areas.

- Sites are close to transport routes providing the opportunity for sustainable transport options.

A better fit with the land use context of the area could be generated by removing the proposed development to the north of Culloden, which is in an area proposed for recreational use.

Development Option 6 - Transport

11.53 **Development Option 6 - Transport does generally fit** with the land use context for the area because the large central development proposal is not within an area of significant constraint for development. The proposed allocations at Nairn and Culloden, for the reasons stated above, are not compatible with the land use context.

Development Option 7 - Landscape

11.54 **Development Option 7 - Landscape is mixed in its appropriateness in land use terms.** In general those allocations in the east and centre of the study area fit with the land use context of the area because they can be accommodated within land use constraints. Proposed allocations to the west of the study area, in particular around Culloden, do not fit with the land use context in that they may prejudice attempts to create a recreational resource in that area.

Development Option 8 - infrastructure

11.55 **Development Option 8 - infrastructure fits** within land use constraints, given they are not within an area of significant constraint for development.

Land Use Assessment Conclusions

11.56 In summary, the development model options tested against land use considerations concluded that **the following options, in addition to Development Model Option 5 - land Use, are generally appropriate:**

- **Development Model Option 1 - Eastern Growth.**
- **Development Model Option 6 - Transport.**
- **Development Model Option 8 - Infrastructure.**

The following options would fit with amendments:

- Development Model Option 3 - Island Growth.
- Development Model Option 4 - String of Pearls.
- Development Model Option 7 - Landscape.

Development Model Option 2 - Polar Growth would not fit with the land use context for the area

Technical Assessment - Landscape

11.57 This section examines relevant development model options (Eastern Growth, String of Pearls, Island Growth, Polar Growth, land Use, Transport and Infrastructure) in the context of their landscape impact that emerges from the technical analysis.

Development Option 1 - Eastern Growth

11.58 Development Option 1 - Eastern Growth. This option focuses growth within Open Firth and Intensive Farming character types. It includes substantial growth of Ardersier. This option

also includes a substantial new settlement located on the northern part of the Ardersier Fabrication Yard. These settlements would sit within a landscape and recreational setting linked to the local distribution network.

11.59 Landscape Capacity: Open Firth/Soft Coastal Shore. The landscape quality is generally high with distinctive coastal features and natural landscape patterns. The capacity for settlement growth and development in this area will be limited as much of this landscape has unique characteristics that would be sensitive to change. There is also strong intervisibility with other landscape character areas including the views from Black Isle that would have to be considered.

11.60 Landscape Capacity: Intensive Farming / Coastal Farmlands. Overall the landscape quality is medium. The landscape has the potential to accommodate urban expansion and new settlement growth. However there is a lack of setting in some areas for potential new development due to the openness of this landscape and landscape design addressing issues of shelter and enclosure as well as maximising views would have to be undertaken

11.61 Ardersier Village is a linear settlement squeezed between land and water in a narrow setting with a mixture of traditional stone dwellings, post war local authority housing and industrial units. The steep escarpment to the east of the village would constrain development in this area. In landscape terms, there is capacity for growth to the south and north along the coastline.

11.62 **The potential and overall capacity of the landscape to accommodate Development Option 1 - Eastern Growth is limited** within coastal areas due the sensitivity and quality of the landscape. The location of the existing Ardersier Fabrication Yard within the coastal landscape makes it a prominent landmark and capacity to redevelop this area would be limited by the quality of the coastal landscape at Whiteness Head. There is some capacity for settlement growth within the farmed landscape near Carse Wood incorporating the structural qualities of existing forestry into the development. Other development in open farmed areas would require a strong landscape strategy.

Development Option 2 - Polar Growth

11.63 Development Option 2 - Polar Growth. This option impacts on the following landscapes.

11.64 West of Nairn - Coastal Farmlands/Intensive Farming. This landscape adjoins the coastline and forms the border between the natural coastal edge and the farmed landscape. The landscape has uniform topography composed of large open fields with some scattered woodland features adjacent to the urban edge. **The capacity for settlement growth west of Nairn near Sandown would be limited** to areas adjacent to existing woodland and forestry, which would enhance the setting and limit intervisibity with the coastal landscape character.

11.65 West of Nairn - Forest Edge Farming. This is generally a flat to undulating landscape with a range of spatial experiences due the variety of forestry and tree cover. The overall landscape quality is medium. Landscape capacity for a new settlement exists within the flat landform west of Mosshall as the forestry would contain views and provide a setting to development on the north. The railway would act as a boundary with the SSSI.

11.66 East of Inverness - Enclosed Farmed Landscape. This is predominantly made up of flat open fields with scattered trees and mature woodland features. The landscape is undesignated and the overall landscape quality is medium. **Some capacity for**

development exists on the northern edge of Culloden as the existing woodland and trees would provide valuable features and provide setting to new housing area. Development would have potential to combine and integrate with a coastal recreational feature.

Development Option 3 - Island Growth

11.67 Development Option 3 - Island Growth. This option impacts on the following landscapes.

11.68 Gollanfield - Intensive Farming. The strong horizontal scale of this landscape has the potential to accommodate urban expansion and new settlement growth. However **there is a lack of setting in some areas for potential new development** due to the openness of this landscape and landscape design addressing issues of shelter and enclosure as well as maximising views would have to be undertaken.

11.69 Croy - Forest Edge Farming and designated conservation area. The landscape to the north east is designated a SSSI and runs from Loch Flemington near Lochside to the woodland to the north of the village. Parts of the woodland are designated as Ancient Woodland and valued locally for recreation. The existing forestry and woodland creates a strong visual backdrop to the village. **Landscape capacity for extension to the village exist**s to the north and west on flatter ground utilising the existing forest to structure new planting within the development. There are greater landform constraints to the north east.

11.70 Culloden Moor - Rolling Farmlands/Woodland Landscape. Landscape capacity for extension to the village would be minimal to the south without a landscape strategy, as the character of the landscape becomes more open. There are also topographical constraints towards the River Nairn. **There would be some capacity for extension of the village to the north** pending future felling and forest management.

11.71 Morayhill - Intensive Farming/Forest Edge Farming. The overall landscape quality is medium. **Landscape capacity for development exists** within the flat landform between Wester Dalziel in the north and Morayston in the south centred around the A96 road. This would utilise the steeper landform to the north and south to contain the new settlement preventing visibility of the town spilling out across the wider countryside.

11.72 Redhill - Open Firth/Intensive Farming. The Redhill area is located to the north west of Culloden between the A96 and the Moray Firth, the landscape is generally open with views to the Black Isle. There are also views towards Inverness with detracting industrial features at the coastline. The shoreline is designated for its ecological value but has limited accessibility and recreational value. The topography is flat to undulating with higher ground at the former quarry site at Alturlie Point. Land use is mainly arable and grazing and the overall landscape quality is medium. **Landscape capacity for development exists** at the coastline with possibilities for a small settlement set back from the firth edge south of Brecknish.

Development Option 4 - String of Pearls

11.73 Development Option 4 - String of Pearls. This option impacts on the following landscapes.

11.74 Mosshall - Forest Edge Farming. The existing forestry and woodland restricts distant views and forms a green buffer between the A96 and the Mosshall area. There is a working quarry located within the forestry adjacent to the A96 road. The overall quality of the landscape is medium**. Landscape capacity for a new settlement exists** within the flat landform west of

Mosshall. The forestry would contain views and provide a setting to development on the north and the railway would act as a boundary with the SSSI.

11.75 Gollanfield - Intensive Farming. The strong horizontal scale of **this landscape has the potential to accommodate urban expansion and new settlement growth.** However there is a lack of setting in some areas for potential new development due to the openness of this landscape and landscape design addressing issues of shelter and enclosure as well as maximising views would have to be undertaken.

11.76 Inverness Airport - Intensive Farming/Forest Edge Farming. The landscape to the east of Airport is open and exposed with large field patterns. The topography gently rises to the south beyond the A96 where the coniferous woodland forms a strong visual barrier. **Landscape capacity for development exists** south of the Airport utilising the existing forestry at Tornagrain Wood and further south towards Croy as visual containment.

11.77 Morayhill - Intensive Farming/Forest Edge Farming. Morayhill is on flat to gently sloping landform with higher ground to the north and south. The landscape is generally open with views of the Black Isle. The higher ground and forest edge forms a visual barrier to views to the north. Land use is mainly arable and grazing and the overall landscape quality is medium. **Landscape capacity for development exists** within the flat landform between Wester Dalziel in the north and Morayston in the south centred around the A96 road. This would utilise the steeper landform to the north and south to contain the new settlement preventing visibility of the town spilling out across the wider countryside.

11.78 Redhill - Open Firth/Intensive Farming. This option shows growth of a new settlement centred around Redhill farm and extending to the east towards Lonnie farm. Intervisibility between adjacent landscape character areas including views from the Black Isle will have to be considered. The topography is gently undulating to the east of Redhill and there is potential for new development to be viewed against the sky, when viewed from the south and west as the landform is flat. The openness of the landscape in this area would also require structure planting incorporated with the development proposal that may create incongruous features when viewed from other coastal locations. As a consequence, **capacity for development is limited.**

11.79 East Inverness - Enclosed Farmed Landscape**.** This landscape wedged between Inverness, Culloden and the Moray Firth is a mixture of open flat agricultural land, estate woodland and mature shelterbelts. Farm settlements and woodland features are indicative of this landscape and are prominent features between Culloden and the edge of the firth. Views are open in some areas with the Black Isle often being viewed in the context of mature trees in the foreground of the view. The overall quality of the landscape is medium. Recent development including housing, retail and infrastructure projects has encroached into this landscape. **Landscape capacity for development exists north of Culloden and Smithton**, the existing woodland would reduce the visual impact and provide a framework for new landscape structural planting with any new proposals.

Development Option 5 - Land Use

11.80 Development Option 5 - Land Use. This option proposes the expansion of existing settlements at Croy, Ardersier Village and Culloden Moor. The landscape considerations for these locations are discussed below.

11.81 **There is capacity for development extension of Ardersier Village** to the north and south along the coastal edge. Constraints on development include the SSSI designation to the north east and the steep escarpment topography to the east.

11.82 **There is capacity for expansion of Croy to the north and west** on flatter ground utilising the existing forest to structure new planting within the development. There may be scope for some development to the south pending future woodland/forest felling and management.

11.83 **Culloden Moor has minimal landscape capacity for extension** to the south as the character of the landscape becomes more open. There are also topographical constraints towards the River Nairn. There would some **capacity for extension of the village to the north** pending future felling and forest management.

Development Option 6 - Transport

11.84 Development Option 6 - Transport**.** This option shows the extension of Nairn to the west, a new settlement located between Croy and Inverness Airport and the extension Culloden/ Smithton to the south east. The landscape impacts are discussed below.

11.85 West of Nairn - Coastal Farmlands/Intensive Farming**.** This landscape adjoins the coastline and forms the border between the natural coastal edge and the farmed landscape. The landscape has uniform topography composed of large open fields. **The capacity for settlement growth west of Nairn near Sandown would be limited** to areas adjacent to existing woodland and forestry, which would enhance the setting and limit intervisibity with the coastal landscape character.

11.86 West of Nairn - Forest Edge Farming**.** This is generally a flat to undulating landscape with a range of spatial experiences due the variety of forestry and tree cover. Some of the coniferous forestry is designated as ancient woodland. The overall landscape quality is medium. **Capacity for extension of Nairn to the south west is limited** as ground is low lying and has the potential to be overlooked by existing houses.

11.87 New Settlement between Croy and Inverness Airport**.** The landscape to the north east of Croy is designated a SSSI and runs from Loch Flemington near Lochside to the woodland to the north of the village. Dalcross Castle to the east is a designated Historic Garden and Designed Landscape and some of the woodland is designated as Ancient Woodland. The landscape to the south of Airport consists of undulating farmland and large blocks of coniferous woodland including Tornagrain Wood indicative of the Forest Edge Farming character type. Much of the forestry and woodland is designated Ancient Woodland and the areas to the north of Croy adjoin the SSSI. The topography gently rises to the south of the Airport beyond the A96 where the coniferous woodland forms a strong visual barrier. **Landscape capacity exists south of the Airport for development**; utilising the existing forestry at Tornagrain Wood and further south towards Croy as visual containment. As discussed previously, there is **capacity for expansion of Croy to the north and west** on flatter ground utilising the existing forest to structure new planting within the development.

There may be **scope for some development to the south** pending future woodland / forest felling and management.

11.88 Expansion of Culloden**.** Much of this landscape is designated Ancient Woodland and encompasses parts of Culloden Wood and valued locally for walking and cycling. **Landscape capacity for development would be limited** due to the topography as it gradually rises in this area and there would be potential skyline issues with any development.

Development Option 8 - Infrastructure

11.89 Development Option 8 - Infrastructure. The scale of the development shown in this option would have significant landscape and visual effects on landscape within the Corridor. **Development potential is limited.**

Landscape Assessment Conclusions

11.90 In summary, the development model options tested against landscape considerations concluded that **the following options, in addition to Development Model Option 7 - Landscape, are generally appropriate:**

- **Development Model Option 5 - Land Use.**
- **Development Model Option 6 - Transport.**

11.91 With amendment, the following options could be accommodated:

- Development Option 3 - Island Growth.
- Development Option 4 - String of Pearls.

11.92 Development Option 1 - Eastern Growth, Development Option 2 - Polar Growth and Development Option 8 - Infrastructure have limited landscape capacity for development.

Technical Assessment - Infrastructure

11.93 This section examines relevant development model options (Eastern Growth, String of Pearls, Island Growth, Polar Growth, land Use, Transport and Landscape) in the context of infrastructural capacity.

11.94 None of the options for distribution of the settlements are more advantageous than any other with respect to the gas provision. However, Transco would prefer to extend their existing network into the central area of the Corridor which currently has no low/medium pressure gas distribution. This corresponds most closely to the Transport Option. Polar Growth, which proposes expanding the existing Culloden and West Nairn urban areas is also a possibility.

11.95 The existing mains drainage around the Nairn area is currently operating at maximum capacity and any growth at the east side of the Corridor could not be supported from this network. There is some capacity on the main drainage network at Inverness but the current growth already underway in this area is already loading up the network in this area. The waste treatment plant which serves this area is currently administered under a PFI contract and Scottish Water advise that further settlement in this area could not be accommodated by

this treatment plant. This effectively rules out the Polar Growth option and places restrictions on the western settlements which are proposed in this area as part of the Island Growth, String of Pearls and Landscape options.

11.96 The other existing wastewater treatment plants in the area of the Airport, Newland, Croy and Ardersier will most likely require upgrading to accommodate the additional wastewater loading from settlements in the central zone of the Corridor. It may also be necessary to create a completely new water treatment plant within the Corridor. The Eastern Growth and Transport options will affect the Ardersier treatment works primarily. The Land Use option mainly affects the small plants at Culloden Moor and Croy. The Island growth, String of Pearls and Landscape options distribute the load more evenly around all the available treatment plants.

11.97 The existing grid substations are poorly placed to allow for increased growth in the A96 Corridor. Long term expansion would require the electricity supplier to create a new grid substation within the Corridor. A central location that would allow the supplier flexibility would be appropriate. This would support the Transport option which favours concentration of the new settlements in the central part of the Corridor. Island Growth, String of Pearls, Land Use and Landscape are possible, but represent more technical challenges in extending the distribution network to the new settlements. Eastern Growth and Polar Growth (where the additional load is concentrated close to Inverness and/or Nairn) are the least favoured by the electricity supplier.

11.98 The Corridor area is served by an extensive BT fibre network with core fibre running along the line of the A96 as well as to the South between Balloch, Croy, Cawdor and Nairn. This gives a great deal of flexibility in their ability to accommodate any proposed expansion.

Infrastructure Assessment Conclusions

11.99 Based on the above, the infrastructure constraints indicate that**, in addition to Development Model Option 8 - Infrastructure:**

- **Development Model Option 1 - Eastern Growth and**
- **Development Model Option 5 - Land Use**

can be accommodated alongside phased upgrading of the existing infrastructure, while

- Development Model Option 3 - Island growth
- Development Model Option 4 - String of Pearls
- Development Model Option 6 - Transport
- Development Model Option 7 - Landscape

can be accommodated with minor amendments to the settlement distribution.

11.100 Development Model Option 2 - Polar growth represents the most challenges in terms of infrastructure provision. The existing systems in these areas are approaching their maximum capacity and physical constraints limit the ability of the utility suppliers to locally expand them to meet the growth pattern.

11.101 The infrastructure assessment of each option is summarised in Table 11.2.

Table 11.2 – Summary of Infrastructure Assessment

		Utility Type				
		Gas	Water	Drainage	Electricity	Telecom
Development Model Options	1. Eastern Growth	✓	✓	✓	✓	✓
	2. Polar Growth	✗	✓	✗	✗	✓
	3. Island Growth	✓*	✓	✓*	✓*	✓
	4. String of Pearls	✓*	✓	✓*	✓*	✓
	5. Land Use	✓*	✓	✓	✓	✓
	6. Transport	✓*	✓	✓*	✓*	✓
	7. Landscape	✓*	✓	✓*	✓*	✓

✓ can be accommodated
✓* can be accommodated with minor amendment to settlement distribution**.**
✗ not favourable due to infrastructure constraints

Technical Assessments - Overview

11.102 Technical assessments of the eight development model options have been made. An overview of the conclusions from these considerations is provided in Table 11.3.

Table 11.3 – Technical Assessment Overview of Development Model Options

		Technical Assessment			
		Transport	Land Use	Landscape	Infrastructure
Development Model Options	1. Eastern Growth	✗	✓	✗	✓
	2. Polar Growth	✓	✗	✗	✗
	3. Island Growth	✗	✓*	✓*	✓*
	4. String of Pearls	✗	✓*	✓*	✓*
	5. Land Use	✓	✓	✓	✓
	6. Transport	✓	✓	✓	✓*
	7. Landscape	✗	✓*	✓	✓*
	8. Infrastructure	✓	✓	✗	✓

✓ Supported by technical assessment
✓* Technically supportable with amendment
✗ not technically supportable

11.103 **Development Model Option 5 - Land Use is supported by all technical assessments as best addressing the capacity of the A96 Corridor.**

11.104 **Development Model Option 6 - Transport can be supported if infrastructural issues relating to gas, drainage and electricity can be addressed.**

11.105 The remaining development models have sufficient and insurmountable technical limitations to make their development unattractive. Development Model Option 1 - Eastern Growth has technical constraints relating to transport and landscape capacity. Development Model Option 2 - Polar Growth has limitations in all technical areas, other than transport. Development Model Options 3 - Island Growth, 4 - String of pearls and 7 - Landscape have major limitations relating to sustainable transport. Development Model Option 8 – Infrastructure has technical limitations relating to landscape capacity.

Stakeholders' Sustainability Appraisal

11.106 Paragraph 3.6 outlined the approach adopted in the stakeholders' sustainability appraisal of the eight development model options. Six workshops used the *Smart Growth* Sustainability Appraisal Matrix - SGSAM (see Appendix 4) to rank the development model options. This is summarised in Table 11.4. Each workshop had stakeholders who brought a degree of experience and knowledge in respect of accessibility, economy, community or environmental issues.

Table 11.4 – Development Model Options' Rankings from CfS2 Session

		Stakeholders' Workshops						
		1	**2**	**3**	**4**	**5**	**6**	**All**
Development Model Options	**1. Eastern Growth**	5th	3rd	4th	7th	6th	7th	**5th**
	2. Polar Growth	1st	1st	2nd	2nd	2nd	1st	**1st**
	3. Island Growth	4th	4th	5th	4th	4th	5th	**4th**
	4. String of Pearls	7th	5th	3rd	6th	5th	6th	**5th**
	5. Land Use	3rd	6th	3rd	5th	1st	3rd	**3rd**
	6. Transport	2nd	2nd	1st	1st	2nd	1st	**1st**
	7. Landscape	8th	8th	6th	8th	8th	8th	**8th**
	8. Infrastructure	5th	7th	7th	3rd	7th	4th	**7th**

11.107 In assessing each option, the workshops applied the SGSAM as shown below

11.108 The workshops considered sustainability criteria by considering a number of guiding questions. These criteria were:

- Accessibility
  - Transport and Access
  - Access and Accessibility

- Community
  - Community Participation
  - Social Justice
  - Health and Safety
  - Existing Development
  - Adjoining Land Uses and Relationship with Surrounding Communities

- Economy
  - Local Economy and Work
  - Education & Lifelong Learning
  - Development Capacity
  - Marketability
  - Infrastructure

- Environment
  - Pollution, Waste and Resources
  - Energy
  - Buildings, Urban Design and Land Use
  - Open Spaces
  - Site Characteristics
  - Topography
  - Landscape Features
  - Wildlife and Habitats
  - Views

11.109 **Development Model Option 2 - Polar Growth and Development Model Option 6 - Transport clearly emerged as the top ranked options** from the sustainability appraisal undertaken by the stakeholders.

11.110 **Development Model Option 5 - Land Use performed well** and secured the third ranked place.

11.111 The remaining development model options failed to secure sufficient performance across the *Smart Growth* Sustainability Matrix as a whole to allow there continued consideration.

The Community View

11.112 Appendix 10 provides a full report of community consultation outcomes in considering development model options and other issues in respect of accommodating growth in the Corridor. The following provides an overview relating to key common issues, views on key growth features and views on development model options.

Key Common Issues

11.113 Key common issues arising from the consultation were:

- Scale and pattern of growth.
- Transport links and other infrastructural issues.
- Employment.
- Profile of new housing development.

11.114 Future plans for growth were presented as requiring to accommodate up to an additional 30,000 people that would involve the building of up to 12,500 houses or more in new or expanded communities in the A96 Corridor.

11.115 Whilst relatively few people were unaware of plans for some degree of future growth, there was considerable surprise at the scale of growth planned. Overall reactions to the planned growth ranged from a number of individuals who were very unhappy about the proposals to a majority who were somewhat resigned to the fact that growth was going to take place.

11.116 A number of participants expressed concern about the potential threat of Inverness expansion on the surrounding A96 Corridor area, in particular concern that the environment and general quality of the area would be spoilt to meet the needs of the expanding city. There was also some feeling that the need for growth should be focused on the city itself to preserve the character of the Corridor. However, other participants felt that previous expansion of Inverness had polarised the area to the detriment of the Corridor in terms of the quality and development of local facilities and services, and that centring more development on Inverness would exacerbate this problem.

11.117 Consultees identified a range of potential constraints affecting the locations proposed for development in the options which they felt might affect the overall feasibility. The key constraints identified included:

- The loss of good agricultural land.
- Poor drainage and difficult terrain.
- Proximity to flight paths around Inverness Airport, particularly given the proposed expansion of the Airport.
- Sensitive natural environments and valued green belt/recreation land.
- Proximity to existing sewerage works (north of A96 between the Airport and Inverness).

11.118 There was some difference of opinion regarding whether growth should be delivered through the creation of new settlements or the expansion of existing communities. Significant concern was expressed that the expansion of existing settlements (e.g. Land Use option) would completely change the character of those settlements, destroying the basis of their attraction for current residents.

11.119 However a bigger issue was whether the Council could successfully deliver new sympathetic communities of a high quality. There was also an expectation that no matter what, developers will build what they want to. Participants found it difficult to envisage a successful new community of a scale equivalent to ‘at least a new Nairn’ with expectations being in part determined by negative perceptions of new towns in general (e.g. Livingston or Cumbernauld) and more locally on experience of the development of Culloden, Smithton and Balloch.

11.120 Central to people’s concerns was an anxiety surrounding the extent to which the required infrastructure and amenities would be provided, and in particular whether they would be provided timeously. Most recognised that it may not be feasible to provide all relevant services early on; but it was felt that the success of any new communities would depend on the delivery of a core of infrastructure and amenities early in the development process. This core included roads, schools and other local services.

11.121 The alternative of focusing development on the extension of larger existing settlements of Inverness and Nairn had some support partly because this pattern of growth would not require the same infrastructure (most facilities already being available and accessible) and that it would not 'destroy' the character of other settlements. In particular there was some support for the extension of Nairn or development near Nairn based largely on the potential to counterbalance (what some saw as detrimental) effects of Inverness's recent growth on the Corridor.

11.122 However, concerns were expressed by some - in particular Nairn residents - about the effect of significant new development on the character of the town. Whilst it was agreed that Nairn could absorb substantial development more easily than smaller settlements there was some reluctance to see it grow from a small town to somewhere much more substantial.

11.123 The A96 itself was clearly a major cause of concern and frustration and proposals to upgrade the A96 to dual carriageway between Inverness and Nairn were met with universal approval. Most felt that upgrading was long overdue and would be required irrespective of any new development. Indeed it is no exaggeration to say that everyone had the view that any more development on a significant scale in the Corridor would be unacceptable until this issue is addressed.

11.124 Whilst the dualling of the A96 and the provision of by-passes at either end of the Corridor seemed to be the major local transport issues; there was a more general concern that the road network, as a whole, could not support the increase in traffic. Local roads would need to be improved to handle the additional traffic volume generated by the proposed growth.

11.125 There was also support for the possibility of improvements to public transport infrastructure as part of a strategy to handle the increase in traffic volume. However it was clearly felt that services would need to be more sensitive to users' needs than existing services and be properly co-ordinated to be successful.

11.126 There was some concern about the capacity of existing sewerage and waste management facilities and the perceived lack of appropriate sites for the provision of new facilities. However, the most pressing concern was that sufficient new schools and hospital/other health facilities would be provided to service any increase in population.

11.127 Participants felt that local primary and particularly secondary schools were at capacity with the current population, and there was a strong feeling that new schools would be required. Similarly there was concern that Raigmore Hospital was struggling to handle current demand for services and would not be able to cope with any increased need for services.

11.128 The Airport was felt to be central to any plans for major growth in the area; but there was a lack of clarity regarding plans for extension to the Airport; and any arising business or employment opportunities. The possible impact of flight paths and related noise on proposals for major development, particularly north of the A96 between Nairn and Ardersier, was a factor in participants' views.

11.129 The issue of employment was a major factor in participants' reaction to the proposed scale of growth in the area. Some clearly felt that the Inverness city region could not provide sufficient employment opportunities to sustain up to 30,000 additional people.

11.130 All felt that there was a need to focus on developing employment opportunities in the Corridor parallel to any housing development. The prospect of employment growth focused

exclusively on Inverness was not welcomed and was viewed as potentially merely adding to traffic and transport problems on the A96 as well as being environmentally unsustainable by encouraging people to travel longer distances to work.

11.131 Some participants had concerns over the profile of new homes likely to be built in the Corridor. While they were reassured that the intention would be to provide a mix, ranging from social rented housing through to the luxury end of the private housing market, there were strong views that there should be a strong 'affordable housing'.

Key Growth Features

11.132 The A96 itself was the single biggest issue. Its dualling was one of the few features that was universally supported. Indeed, all felt that the dualling was needed irrespective of any future growth and that the issue would need to be addressed before further major development could begin.

11.133 The majority of participants welcomed proposals for the provision of by-passes as part of any A96 upgrading, in particular at Nairn. There were significant concerns about the volume of traffic being taken through Nairn by the A96 (especially in light of the central location of schools in the town) and it was felt that a by-pass west of Nairn was "long overdue".

11.134 The wider local road network was also a cause for concern. While there was support for the provision of new roads to serve new and expanded settlements few felt that local roads between Croy and the A9 south could be upgraded.

11.135 There was general support for proposed public transport upgrades as part of a strategy to minimise increases in traffic flows. The majority supported the provision of a new rail halt at the Airport and felt that this could result in a significant reduction in traffic but that significant parking would be required. There was less enthusiasm for other proposed new rail halts.

11.136 The proposal to provide a park and ride service (bus and rail) at the new Airport halt was also popular. Some felt that a rail park and ride would be more popular than a bus only service, and the proposal for another (bus only) service towards Inverness was not so widely supported.

Views on Development Model Options

11.137 The consultation presented four development model options for community consideration of:

- Eastern Growth
- Polar Growth
- Land Use[5]
- Transport[6]

11.138 Opinion was varied regarding the creation of a new central settlement in the Corridor (Transport Option). Some participants preferred the creation of a new settlement(s) to the

[5] Presented as *Smaller Settlement Growth*
[6] Presented as *Mainly Central Growth*

expansion of existing communities and felt that this could be an attractive option. However, there was widespread scepticism regarding the likely success of a "new town" - experience of Culloden, Smithton and Balloch and wider concern about the ability to provide the required infrastructure was a major factor. There were some suggestions that the creation of a series of smaller new communities (e.g. Eastern Growth Option) may be a less risky approach.

11.139 Opinion was split regarding the merits of expanding existing settlements (Polar Growth). There was some concern that expanding the largest settlements (in particular Inverness) could "polarise" the area further. However, the potential to revitalise Nairn through new development was particularly popular and there was widespread concern that the town had become 'stagnant' in recent years. In light of this, proposals for further expansion of Inverness were less popular overall.

11.140 The need to minimise the impact on neighbouring smaller communities and on the environment was seen as critical to most.

11.141 A number of participants, including residents, supported the limited growth of Ardersier Village but there were reservations about the large scale growth proposed in Eastern Growth. It was agreed that the Village needed "something to be done" and that new facilities and services were required, but that some of the village's rural appeal needed to be maintained. Most felt that development at Ardersier Fabrication Yard could help to rejuvenate the Village.

11.142 There was little general support for the Land Use Option with local residents opposed to any large-scale growth of Croy or Newlands/Culloden Moor. The main concern was the impact on the rural appeal of the villages and the destruction of existing communities. There was also wider concern about the destruction of the surrounding environment, the impact on tourism and about capacity of local roads to handle traffic, even given plans for upgrading.

11.143 Although not as strong as opposition to the large scale growth of Croy and Newlands, there were concerns about any growth at Culloden, Smithton and Balloch, most notably from local residents. Residents are keen to remain distinct from Inverness and are opposed to the erosion of the green wedge between Culloden District and the A96.

11.144 Almost all participants supported some form of new development at Ardersier Fabrication Yard. The site was seen as an important potential source of employment for the Corridor. In terms of specific proposals for development there was some support to include some housing provision. However, concerns were expressed about the site's distance from main transport routes and the feasibility of locating housing and industry/employment in such close proximity. The possibility of a marina development incorporating tourism, recreation and up-market housing or even holiday accommodation had some support from participants who valued the area's natural environment. However, others suggested that it may be preferable to maximise employment opportunities by developing the land exclusively for industry and employment. A number of participants opposed any proposal to locate waste disposal and other infrastructural services in the area and suggested that this would compromise the surrounding environment, although some others could see the benefit of the site for this purpose if proper screening was provided.

11.145 Support for proposed recreation and landscaping areas, and related recreation routes, was almost universal. All participants felt that extensive landscaping and recreation facilities would need to be provided irrespective of the pattern of development. Landscaping areas

were seen as particularly important to minimise the visual impact of major new development, in particular to shield Croy from a new central settlement and to maintain the green area around Culloden, Smithton and Balloch.

11.146 Hence, in general, there was clear community support for:

- **Development Model Option 1 – Eastern Growth**
- **Development Model Option 6 – Transport**

Inverness Airport Impact

11.147 The *National Planning Framework for Scotland* clearly indicates that land should be safeguarded for runway extensions at Inverness Airport.

11.148 The White Paper *'The Future of Air Transport'*, published on 16 December 2003, sets out a strategic framework for the development of airport capacity in the United Kingdom over the next 30 years. It does not itself authorise or preclude any particular development, but sets out a policy framework which will inform decisions on future planning applications, and against which the relevant public bodies, airport operators and airlines can plan ahead. It sets out the conclusions of the Government, and of the devolved administrations where appropriate, on the case for future expansion at airports across the country.

11.149 At Inverness, the forecasts suggest the Airport may have the potential to grow to beyond 1million passengers per annum. The White Paper also concludes that there are no local environmental or other constraints that should prevent this. An extension of the runway may be required to cater for larger planes and longer sector lengths. Additional terminal capacity will also be required, probably before 2015.

11.150 A meeting with Highlands and Islands Airports Limited (HIAL) in September 2004 allowed details to be established in respect of the long term expansion plans for the Airport. In particular, it was confirmed that expansion of the runway eastward by up to 200m could be anticipated.

11.151 The World Health Organisation's advice on noise exposure from airports indicates that an average maximum noise exposure of 55 decibels is acceptable – known as the 55 dBA Leq contour. Residential development within the contour would be inappropriate and constitute significant community annoyance.

11.152 Figure 18 provides the application of the 55 dBA Leq contour around an expanded runway at Inverness. This shows the area within which residential development would not be permitted. Of the preferred options that have emerged from technical, stakeholder and community assessments, it is Development Option 1- Eastern Growth that would be impacted by the growth of the Airport. Consequently, it has been concluded that this option cannot be progressed.

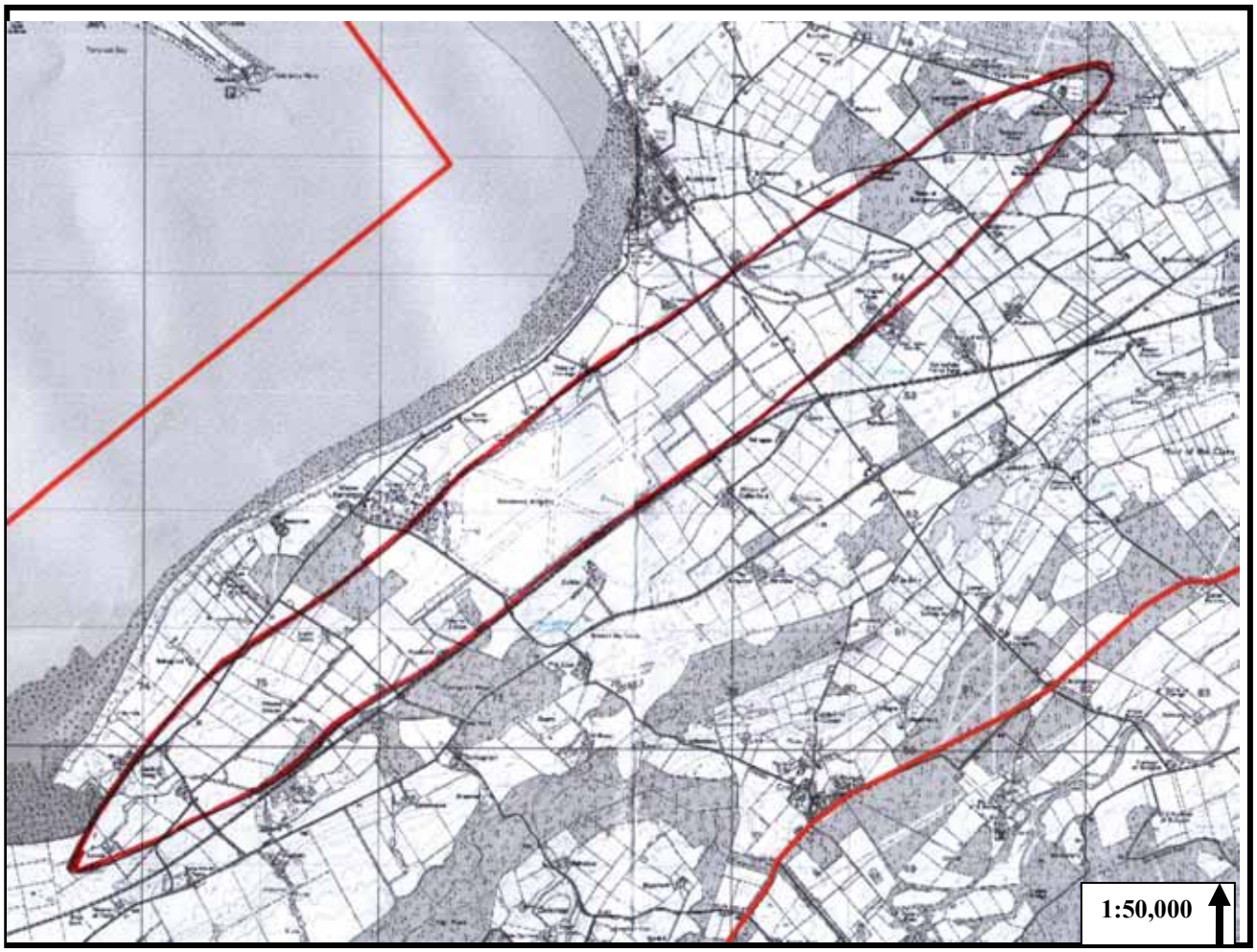


Figure 18 – 55 dBA Leq Contour for an Expanded Inverness Airport

Development Model Option Testing – Overview

11.153 The eight development model options outlined above were tested and assessed technically, by stakeholders through a sustainability approach and by community representatives. As a consequence, 4 options emerged as having a level of support. These were:

- Development Model Option 1 - Eastern Growth
- Development Model Option 2 - Polar Growth
- Development Model Option 5 - Land Use
- Development Model Option 6 - Transport

However, technical assessments relating to planning policy, infrastructural capacity and Airport growth impacts indicate that the Eastern Growth and Polar Growth options have limitations that would make them non-viable.

11.154 Other issues emerging from community considerations included:

- Support for appropriate growth of Ardersier Village
- Support for the redevelopment of Ardersier Fabrication Yard on a mixed use basis that could meet local housing, tourism and employment needs.
- A reluctance to support the growth of smaller settlements as this could create dormitory towns

11.155 Table 11.5 provides an overview of the assessment for the eight development model options.

Table 11.5 – Overview of Development Model Options Assessment

		Assessment Type		
		Technical	**Stakeholder**	**Community**
Development Model Options	**1. Eastern Growth**	X	X	✓
	2. Polar Growth	X	✓	X
	3. Island Growth	X	X	**n/a**
	4. String of Pearls	X	X	**n/a**
	5. Land Use	✓	✓	X
	6. Transport	✓	✓	✓
	7. Landscape	X	X	**n/a**
	8. Infrastructure	X	X	**n/a**

This shows that the land use and transport options have a strong level of support from the technical and stakeholder assessments. However, when community considerations are factored into the assessment it is clear that the broadest supportable option is Transport.

11.156 Before taking the Transport option forward for further consideration and development, it would be appropriate to ensure that it can conform to the requirements of *Smart Growth.* The following section considers this.

12. *Smart Growth* Conformity

12.1 This section examines the Transport Development Model Option to ensure that it can meet the requirements of *Smart Growth*. This will be achieved by comparing and contrasting the option with:

- Stakeholder expectations and requirements as outlined in Section 4.
- Urban design settlement characteristics developed in Section 5.
- Highland *Smart Growth* development principles drawn out in Section 8.

Appendix 11 provides detailed schedules for each of these areas.

Stakeholder Expectations and Requirements Conformity

12.2 As Schedule 1 in Appendix 11 shows, the Transport Option provides a high degree of conformity with stakeholder expectations and requirements. Of the 41 identified expectations and requirements, 4 are not directly addressed through the Transport Option. These are:

- Concerned about the long term capacity of the Raigmore Interchange (A9/A96).
- Double-tracking of rail should improve routes to Elgin.
- Promote the regeneration of Ardersier Village.
- Smaller communities in the Corridor should be expanded.

12.3 It is recognised that the proposal is likely to generate traffic that will test the capacity of the Raigmore Interchange in the long-term and the A96 (as would any of the other seven development model options with the possible exception of Land Use). Alternative solutions require investigation and development. This could include the upgrading of the B9006 and B851 that runs parallel to the A96.

12.4 The transport assessment concluded that double tracking of rail is non-viable. Consequently, this expectation will not be addressed through the masterplanning of the A96 Corridor.

12.5 Proposals for ensuring the vitality and viability of Ardersier Village should be developed in progressing the Masterplan. There is no contradiction with the over-all approach for the masterplanning of the A96 Corridor based on the Transport Option and addressing regeneration and development opportunities at Ardersier Village.

12.6 Proposals to expand smaller communities should be investigated. This does have some technical support as expressed through the Land Use option. Significant community opposition was expressed to this concept. Consequently, any proposals for the expansion of smaller communities within the Corridor will require a strong case.

Urban Design Settlement Characteristics

12.7 As Schedule 2 in Appendix 11 shows, the Transport Options promotion of a central settlement south of the A96 conforms to the high level urban design settlement characteristics. The assessment does indicate that significant benefits could come to Croy from the provision of a central settlement. In the light of community concern about the future of Croy, this issue will require careful and sensitive consideration as the masterplan develops.

Highland *Smart Growth* Development Principles

12.8 As Schedule 3 in Appendix 11 shows, the Transport Option provides a high degree of conformity with Highland *Smart Growth* development principles. At this level of development the proposal is clearly delivering on these outcomes. Nonetheless, it would appear appropriate to ensure that job creation proposals to be developed in the Corridor in future years will provide sufficient employment opportunities for future residents. With this in mind, it would be appropriate to develop this element of considerations during Phase 2 – Delivery.

Overview

12.9 Hence, a consideration of the Transport Option's conformity with *Smart Growth* is very positive. The proposal successfully manages to balance social, environmental and economic considerations whilst ensuring that accessibility is retained as a key fundamental of the approach promoted.

13. Vitality and Viability of Place

13.1 With the identification of the preferred development option for the A96 Corridor as a new place in the centre of the A96 Corridor - Dalcross, it will be possible to identify the key provision required to ensure the development of a vital and viable place. The vitality and viability of places is established through delivering:

- Social/community facilities for a sustainable community.
- Centres that provide services and retailing to meet local needs.

13.2 To establish the requirements for building a socially sustainable community engagement with key service providers relating to:

- Education
- Social services
- Community infrastructure (including leisure)
- Open space and play
- Health
- Worship

have been undertaken.

In addition, consideration has been given to the threshold for retail and commercial provision.

Education

13.3 Discussions with Hector Robertson, Area Education Manager indicate that Highland Council assume 0.2 pupils per house for primary education. Given that Dalcross could contain around 10-12,000 houses; this suggests that primary provision would be required for 2,000-2,400 pupils. This would require around 7 primary schools[7] to be provided. Further, capacity in the Corridor at Ardersier Fabrication Yard (AFY) would see a requirement for a primary school to accommodate about 350 pupils. Primary schools would incorporate pre-school provision.

13.4 Around 2,500 primary school pupils will feed through to a secondary requirement for approximately 1,900 students. It is likely that pupils from other local places (e.g. Ardersier and Croy) would fall within the catchment of this secondary requirement. Highland Council has traditionally provided secondary school up to a maximum of 1,000 pupils (Culloden Academy has 1,050 students). Consequently, 2 secondary schools with a capacity of around 1,000 students each would be required.

13.5 With respect to space requirements for 8 primary schools and 2 secondary schools the following specifications have been established. These have been developed by Highland Council and are based on the Department for Education and Skills' "Building Bulletin 98 – Briefing Framework for Secondary School Projects" and "Building Bulletin 99 – Briefing Framework for Primary School Projects."

[7] The exact provision of primary school would be determined by the development of neighbourhoods in the new place. Each neighbourhood should be served by a primary school.

13.6 7 primary schools with an average of about 300 pupils each will require a minimum of 2.2 hectares each. This would incorporate one full sized football pitch. This equates to a requirement for 15.4 hectares within the proposed settlement. A 350 pupil school at AFY would require an allocation of at least 2.7 hectares.

13.7 2 secondary schools with 1,000 students each would require a total of 17.2 hectares (8.6 hectares each). Assuming team playing fields are located adjacent to the school building this space requirement includes a 4.5 hectares per school allocation for them.

13.8 Consideration should be given to joint use, if appropriate, of community outdoor sports provision (see below) by schools as this may make a contribution to meeting the above playing field requirement.

Social Services

13.9 Discussions with Harriet Dempster, Director of Social Work have indicated that services are developed and provided in response to need. This makes the identification of requirements at this stage difficult. However, some baseline needs can be identified. These are:

- Provision for children and youth including a youth club and café.
- A Council service point.
- Open access housing/housing for life.
- Extra-care housing.
- Flexible community facilities incorporating day service provision for the elderly.
- A children's unit to accommodate around 5 children.

Community Infrastructure (including Leisure)

13.10 Douglas Wilby, Community Learning and Leisure Manager indicated that community and leisure facilities should be linked with local schools (see above). As such the resources associated with schools can become accessible to the broader community outside of school hours. Indications of the community requirements are for a:

- Theatre with a minimum of 500 seats.
- Two stocked and resourced libraries with a minimum *lending* floorspace of 400m^2 each.
- Two leisure centres with 4 badminton court halls, a dance studio, fitness suite and 25m swimming pool (with toddler pool).

13.10 It may be appropriate to consider the establishment of a Knowledge Fund. This would provide funding to promote equitable access to information and communication technology (ICT) through providing resources. For example, the Knowledge Fund could provide a quality PC for each new home constructed. This would facilitate access through broadband to the web. It is crucial that a contemporary and sustainable community of the future is well placed to take advantage of the opportunities afforded by ICT change.

13.11 Commercial proposals relating to leisure services for AFY would ensure an appropriate provision of community infrastructure.

Open Space and Play

13.12 On 22 November 2004, the Planning Policy, Development, Europe and Tourism Committee adopted "Guidelines for the Provision of Open Space and Play Areas within Residential Developments in Inverness Area." This establishes a clear framework for considering open space requirements for the preferred development model option. Based on an assumption of 12,000 dwellings the following requirements will be applied:

- 10.2 hectares of neighbourhood equipped play areas with each house being within 600m.
- 21.6 hectares of local equipped play areas with each house being within 240m.
- 9.6 hectares of informal child-friendly play space with each house being within 60m.
- 19.2 hectares of outdoor sports provision with each house being within 600m.

13.13 This represents a total requirement of 60.6 hectares. There will also be a need for the provision of a park in the order of 11.4 hectares in order to ensure a full range of open space and play provision.

13.14 A further 24 hectares would be required for amenity and landscape open space. This should take into account the settlements setting and context.

13.15 Opportunities to combine provision across the above requirements should be taken. In addition, joint use of school playing field facilities, if appropriate, can make a contribution to meeting the above requirement.

13.16 Hence, total open space and play provision is 96 hectares appropriately distributed across Dalcross. Opportunities to integrate with the surrounding landscape should be taken as this could make a significant contribution to this requirement. This supports a flexible approach to the standards' application depending on urban design considerations, joint use, setting, topography, etc. Proposals for Ardersier Fabrication Yard should address these requirements.

Health

13.17 A discussion with Nigel Small, General Manager, South-East Highland Community Health Partnership established the health service requirements for Dalcross. This would focus on the combined provision of 3 GP practices that would eventually be located within the same building[8]. This would facilitate the provision of a full range of health services including dentistry, community nursing, podiatry, etc. These GP practices would provide around 5-6 doctors. A population of around 9,000 would be required to meet the threshold for one practice. A second practice would become viable at around 16,000 people and the third practice would establish as population flattened out at around 23,000. The development of a combined super practice would be the desired outcome in the longer term. However, short term solutions involving flexible building provision to accommodate practices over the medium term will be required.

13.18 Space provision for a super practice is likely to be in the order of 2 hectares, assuming that a multi-storey building is appropriate.

[8] Again this assumes a high dwelling yield of 12,000.

13.19 Consideration would also need to be given to the expansion of facilities at Raigmore Hospital to address the growth in demand for acute medical need.

Worship

13.20 Application of Census 2001 indicated that the following religious grouping would emerge at Dalcross:

Church of Scotland	6,250
Roman Catholic	1,829
Other Christian	2,885
Other	124

This would support the provision of one Church of Scotland church and a Roman Catholic church. Each church would require around 0.2 hectares.

Retail and Commercial

13.21 The proposed new settlement could have a population of around 25,000. This will be significant in context of other towns in the North of Scotland; as it would be the second largest after Inverness and larger than Elgin, Peterhead, Fraserburgh, Inverurie, Dingwall and Forres, all of which are strong local towns serving a considerable hinterland.

13.22 In the past new towns in Scotland have been created by expansion of an existing small settlement; the current proposal is to commence the formation of a new town from a greenfield site with no infrastructure or facilities (the nearest facilities being a single shop at Croy and those at Inverness Airport. There are, of course, shopping resources toward Inverness and at Nairn.

13.23 Consideration by Angus MacCuish of FG Burnett's of the market response indicates that once Dalcross has reached a population threshold of around 1,500 it will be of interest to a convenience store operator and at 3,000 people some specialised retailers such as a hairdressers, chemist, a newsagent, public house operator, fast food takeaway, etc. would become interested Independent butchers, bakers, greengrocers are no longer viable entities as people purchase this type of product during their weekly/twice weekly visit to a main stream supermarket.

13.24 As the town expands it will at a certain point become a viable proposition for a main stream supermarket operator such as Asda, Tesco and Sainsburys. This is currently a very competitive sector as evidenced by experience in other market towns[9].

13.25 Based on experience, at around 7,500 population, Dalcross will be capable of being self sufficient sustaining a supermarket of around 2,500m^2 (gross) and a range of specialised

[9] e.g. Elgin has 3 major supermarkets/superstores (to be noted that Elgin's catchment is significant at just less than 100,000). Peterhead has an existing Safeway with a proposal for extension. The existing Co-op store has been purchased by Asda and a large extension proposed. Reports that Tesco have purchased a site with a view to establishing a new store of 30/3,500m^2 have emerged. Inverurie has large Tesco store with reports of a desire to extend beyond current 5,500m^2. There is also a large Morrisons store.

retail units. This viability threshold will be affected by the amount of retail spend from Dalcross directed to the supermarket at Seafield and other locations within Inverness and Nairn.

13.26 Given the context with a major supermarket at Seafield and the anticipated growth of internet food shopping it is unlikely that there will be a requirement to increase the size of the supermarket at Dalcross as it grows. However, should a requirement emerge the existing operator will look to extend the existing store and this eventuality should be accommodated.

13.27 In terms of planning policy for the development of these services there are two key considerations. These are:

- A mixed use approach be adopted that allows a range of uses to develop and that significant residential uses (e.g. on upper floors) are promoted.

- A flexible approach be adopted that allows the centre to develop at its own pace in response to market opportunities. Appropriate use of the Use Classes Order can facilitate this flexible approach.

Conclusion

13.28 The above has outlined the range of facilities and services that would be required by Dalcross as it grew to its target population. This will require careful and considered planning to ensure that the viability and vitality of place is maintained.

13.29 AFY's development will meet the requirements relating to school provision and open space. Opportunities for retailing will seek to service local convenience needs. Proposals for leisure development and speciality retailing will contribute to community infrastructure and the vitality of the area.

13.30 Opportunities to combine facilities and resources to maximise their effectiveness should be grasped.

14. Traffic and Transport Considerations

Introduction

14.1 Supplementary traffic and transportation analysis following the identification of the preferred development scenario has been undertaken in order to inform the following:

- A96 dualling.
- Raigmore Junction.
- Potential transit technologies.
- Settlement access – Dalcross.
- Settlement access – Ardersier Yard.

14.2 Work, commissioned by Highland Council, is currently ongoing for the development of a strategic simulation model of the road network across the wider Inverness area, including the A96 corridor. This model will in the future provide a tool for the development of more robust analysis of capacity requirements.

A96 Dualling

14.3 Previous analysis confirmed the requirement to increase the capacity of the A96 between Nairn and Inverness through a dualling of the existing route (including by-passes to Nairn and Raigmore Interchange).

14.4 The potential dualling of the A96 between Inverness and Nairn provides an opportunity to consider the optimum alignment of the route, with reference to the planned future development proposals.

14.5 One option would be to undertake the dualling along the existing alignment of the A96. Potential advantages of this option include the directness of the route and the limitation of environmental impacts as the route would be within the existing transport corridor. However, potential disadvantages include the increased difficulty of undertaking the construction *on-line* with associated additional traffic management costs, disruption, delays, and increased safety risks.

14.6 With respect to the proposed new development- Dalcross in the context of the proposed business park at Inverness Airport the existing trunk road effectively severs the two developments. This could limit a substantial opportunity for real integration of land uses and the encouragement of local access by bus, cycle and for pedestrians as the two developments would be divorced from each other by the A96.

14.7 A second option would be to consider a new, *off-line* alignment, passing to the south of the proposed development. This would enable greater integration of land uses and limit potential severance. It would also assist in the creation of a more sustainable location, with more opportunities for local trips to be undertaken by bus, cycle or walking. Disadvantages of this option may relate to the less direct nature of such an alignment and the introduction of new environmental impacts. Potential advantages stem from *off-line* construction, which allow greater efficiencies to be achieved with less overall disruption.

14.8 **A full Scottish Transport Appraisal Guidance (STAG) appraisal would be required to assess these options**.

Raigmore By-Pass

14.9 Initial considerations concluded that a by-pass to the Raigmore Interchange would be appropriate. The development of a southern bypass of Raigmore linking to the main southern distributor road could be appropriate. However, the potential for a northern bypass is attractive as this would provide a direct linkage to the Longman Industrial Area and open up development opportunities at Longman Bay. Furthermore, by linking this route into the established Longman roundabout, the resultant trip re-distribution may provide an operational performance at this junction, due to a better balancing of demand from each arm of the roundabout. In comparison with a southern bypass, such a route would also avoid encroachment upon the proposed *Green Wedge* which is identified within the development plan for amenity uses.

14.10 Construction constraints suggest that the northern option would be more expensive and complex than a southern option. However, whilst a southern option may be feasible in engineering terms, its effectiveness in improving the overall operation of the road network may be more limited, particularly considering the peak period network capacity constraints currently associated with the Inshes Junction.

14.11 A third option may involve an upgrading of the Raigmore interchange to achieve substantial increases in its capacity.

14.12 The scope of the project does not provide the opportunity to determine the feasibility of these options. However, the development of a strategic traffic model will provide the opportunity to assess the traffic network performance of the options under consideration.

14.13 **A full STAG appraisal would be required to appraise these options.**

Potential Transit Technologies

14.14 Previous considerations highlighted the preference for a bus-based public transport system that provided a high quality, high frequency and attractive link between new settlement areas and existing key destinations. **A range of potential technologies are available, and could be considered within a more detailed option appraisal.** These technologies include:

- Light rail.
- Ultra light rail.
- TramBus
- Guided bus.
- Conventional bus priority.

Each option is briefly considered below.

Light Rail

14.15 Conventional Light Rail provides an attractive, although particularly expensive option for the corridor. Dedicated track-way removes problems of on-road congestion, although on-street running is possible to achieve maximum penetration in urban situations. Light rail can have the feel and image of train, and are popular. However, relatively high costs associated with construction, maintenance and operation demand high patronage levels and urban densities to enable the scheme to be financially viable. Despite the scale of development envisaged for Dalcross, it is doubtful whether such a scheme could be demonstrated to be economically viable. Furthermore, a successful scheme would be required to access key destinations within Inverness and Nairn.

Ultra-Light Rail

14.16 Ultra-light rail is a novel concept involving self powered units, with up to 20 passengers. These can run on less expensive track and infrastructure. Currently, the application has not been associated with any commercial applications which may be due to the limiting factor of viability due to the low number of passengers capable of being transported in any one unit.

TramBus

14.17 In order to overcome the perceived poor image of conventional buses, bus manufacturers have been developing new "concept" vehicles, generically known as Trambus. The aim has been to provide the step-change in vehicle image, and passenger comfort, associated with urban tram or light rail systems, whilst maintaining the basic principle of conventional buses (i.e. driver operated, requiring no additional on-road infrastructure).

14.18 The First Group have begun testing the market with such vehicles, but have stated that such vehicle would only be suitable for high frequency urban routes, where high levels of priority have been provided. Fundamentally, there would appear to be no reason why such vehicles could not be adapted for use within a guided busway system, described below.

Guided Bus

14.19 Guided busways provide an intermediate step in technology between light rail systems and conventional bus systems. Special buses can utilise the existing road network or utilise specifically reserved busways which are separate from the main carriageway. The schemes can be associated with a high quality of vehicle, and correspondingly higher perceived image.

14.20 The attractiveness of guide bus is its ability to provide a high quality system, with specific opportunity for segregation along specific links, as well as the flexibility and penetration for on-street running. Combined with lower patronage to make the system viable, such a system could form the most appropriate technology, subject to further appraisal.

Conventional Bus Priority

14.21 This solution would see the application of more conventional *on-carriageway* bus priority measures at specific points on the highway network. Whilst providing cheap and proven

technologies, which are now potentially enforceable through cameras, such systems do not provide opportunity for a perceived paradigm shift in transportation provision. Consequently, such provision would not necessarily attract high levels of patronage and mode shift desired.

Settlement Access – Dalcross

14.22 If a new alignment for the A96 that takes it to the south of Dalcross is proposed, a traditional *by-pass* access arrangement would provide an optimal arrangement. This would be through grade separated or at grade junctions to the east and west of the settlement. Whilst **subject to detailed transport assessment**, it is considered that, in the context of the strategic nature of the dualled A96, junctions providing access into the new settlement should be provided at distances no less than 2km apart. This would allow for three accesses. To limit the severance impact of any new alignment to the south of the settlement, secondary accesses should be considered for the surrounding minor road network, such as the B9090 and B9101.

14.23 If the A96 continues to be routed on the existing alignment, then junction arrangements are potentially more complex and numerous with associated adverse safety implications. This would arise from the requirement to co-ordinate junction access to both the airport and airport business park to the north of the trunk road, with two or potentially three access to the new development to the south. In such a scenario, it is likely the at-grade roundabout access could be utilised, subject to minimum junction spacing requirements, likely to be greater than 1km.

Settlement Access – AFY

14.24 The new development at AFY provides the most challenging access considerations. AFY is accessed by a 2km+ two-lane access road on a straight alignment. Two issues are raised by this arrangement. Firstly, the necessity to provide an alternative access into the proposed new settlement to ensure that access onto the A96 can be provided by a secondary means. An additional point of access is highly desirable; as a single access could limit the development potential of the area. The second issue relates to the suitability of the existing link road's alignment. There will be safety concerns regarding the length and straightness of the road, which would tend to potentially encourage high speeds. The opportunity to introduce a more varied horizontal alignment may require to be considered.

14.25 Appendix 12 contains a full copy of the technical report in respect of the above considerations.

15. Dalcross (A96 Corridor) *Smart Growth* Masterplan

15.1 The Dalcross (A96 Corridor) *Smart Growth* Masterplan provides a strategic planning framework for the area as a whole. The masterplan emerges from the considerations outlined above. The key areas of the masterplan are:

- Vision and Smart Growth Principles
- New settlement options.
- Access and transportation.
- Landscape.
- Recreation.
- Other matters

These are discussed below.

Vision and *Smart Growth* Principles

15.2 The vision for the masterplan is that:

> ***A masterplan for the A96 Corridor – Dalcross should provide for distinctive 'green' Highland places where people can chose to live, learn and earn successfully.***
>
> ***Collaboratively, all stakeholders will endeavour to deliver the masterplan through pioneering governance and commercial astuteness.***

15.3 In developing the masterplan cognisance has been taken of delivering the Highland *Smart Growth* principles established through *Collaboration for Success*. These are:

- Take advantage of environmentally sensitive building design that respects and responds to the Highland vernacular and materials. And is energy efficient.

- Ensure land use is appropriate and that development uses sites to maximum advantage emphasising sustainable development.

- Relate development density to accessibility to help ensure viable public transport services.

- Create a range of housing opportunities and choice (through variety, type and tenure) to suit a range of needs and promote a range of housing density to achieve choice.

- Deliver walkable and cycle friendly places that are distinctive and attractive with a strong sense of place through legible and permeable design. Cultural and recreational services that are accessible within 10 minutes for the majority of residents should be provided early in development phasing.

- Promote a mix of land uses that allows houses and jobs to be closely related and the mix to be more varied toward the centre of places.

- Maintain and enhance open space, natural features and critical environmental areas and ensure these are provided within settlements and integrated into development that maximise there recreational contribution to the quality of life.

- Strengthen existing communities through the provision of services and opportunities for the wider community.

- Ensure accessibility through mobility choice by actively promoting attractive public transport.

- Make development decisions predictable, fair and cost-effective through developing a clear masterplanned (including design codes) context and straightforward processes delivered by a stakeholder process (including exploring private/public partnerships to deliver infrastructure and services timeously). Understand market trends & demands and developer interest in order to ensure a commercial framework for realistic deliverability over time.

- Provided ducted infrastructure to ensure maintenance in the longer term does not undermine urban quality.

- Address key road challenges including the Raigmore Interchange and appropriateness of the Nairn by-pass.

- Every new dwelling should have a new job created.

- Ensure that the masterplan can be flexible enough to change over time as circumstances change.

New Settlement Options

15.4 The preferred development model option promotes a new settlement in the middle of the Corridor. Consideration of this requirement established that the key constraints were:

- Operational requirements of Inverness Airport in the context of its expansion proposals.
- The impact on residential amenity from the airport
- Surrounding landscape protection designations.
- Exclusions around infrastructural pipes.
- Impacts on the efficient operation of the A96 and the influence of the road.
- Delivery of balanced sustainable outcomes.

Further, the deliverability of the new settlement was a consideration.

15.5 Two options of merit for further consideration have emerged. These are Dalcross South and Dalcross North. Dalcross South is a proposal located to the south of the A96. Dalcross North is a proposed settlement to the north of a re-aligned A96. These are discussed below.

15.6 300 hectares have been identified for a possible new settlement of Dalcross South. This is located in the centre of the A96 Corridor to the south of Inverness Airport. Its northern boundary is defined by the A96. The southern boundary is defined by the Culloden Forest and Carse Wood. The settlement boundary extends to the west as far as Tornagrain and to the woods at Lochside in the east.

15.7 550 hectares have been identified for a possible new settlement of Dalcross North. This is located to the south of Inverness Airport bonded by the railway line on its northern boundary. Dalcross North's western boundary is determined by the proposed business park at this location. The southern boundary is defined by a re-aligned A96 road. The site has a limited eastern boundary as this has been determined by the point where the A96 and the railway line meet.

15.8 Dalcross South would involve the dualling along the existing alignment of the A96. Potential advantages of this option include the directness of the route and the limitation of environmental impacts as the route would be within the existing transport corridor. However, the A96 would effectively sever Dalcross South from the proposed airport business park and rail halt. This could limit a substantial opportunity for real integration of land uses and the encouragement of local access by bus, cycle and for pedestrians. Dalcross South also limits the opportunity to drive forward mixed use proposals to integrate the proposed business park with other uses in Dalcross South. In addition, concern has arisen to the effectiveness of access arrangements from a dualled A96 (on its existing alignment) in the context of the proposals around Inverness Airport.

15.9 In order to address the disadvantages of Dalcross South, Dalcross North proposes a new, *off-line* alignment for the A96, passing to the south of the proposed development. This would enable greater integration of land uses and eliminate potential severance. It would also assist in the creation of a more sustainable location, with more opportunities for local trips to be undertaken by bus, cycle or walking. A realigned dualled A96 allows for efficient operation of the road at this location that can accommodate strategic requirements and access needs to Dalcross North. The existing A96 at Dalcross would be retained in order to ensure a strong bus/cycle route through the east-west axis of the town and a core route for local distribution. The location and position of Dalcross North could allow integration with the proposed railway station at Inverness Airport (subject to the proposed location for the railway station being relocated eastward). This will bring significant benefits in terms of improving accessibility choice and increasing the patronage of the new railway station. There are also advantages for the development of Dalcross North in relationship to implementation from re-aligning the A96 to the south. Disadvantages of this option relate to the less direct nature of the re-aligned and the introduction of new environmental impacts. In addition, Dalcross North is located closer to Inverness Airport. Although Dalcross North conforms to World Health Organisation's advice on noise exposure from airports as it is located outside the 55 dBA Leq contour; there may be a perception that parts of the settlement are too close to the airport.

15.10 **Through application of *Collaboration for Success* and technical assessments consideration should be given to these options for delivering Dalcross.**

15.11 Consideration of the future of the Ardersier Fabrication Yard (AFY) has concluded that this would be best promoted for a new settlement despite existing land use policy constraints. The strengths of the AFY as a major development site are incontestable. It represents a strategic asset whose future use needs to be nurtured in the context of its attributes that include location, topography, infrastructure and status. The site can be developed without imposing visually on the surrounding landscape.

15.12 Around 94 hectares of the fabrication yard should be allocated for development. Housing numbers at this location should be a maximum of around 1,750. This has been determined as the appropriate scale to allow a new primary school to be constructed. There will also

be opportunities at this location to promote a substantial recreational and leisure development that can take advantage of the site's assets and location. The promotion of the site for this type of development raises accessibility issues. These are discussed below.

15.13 It will be expected that the development of AFY will require contributions to public infrastructure, services and resources across the entire A96 Corridor.

15.14 Appendix 14 contains some indicative urban design schemes for one of the Dalcross options and the AFY site.

Access and Transportation

15.15 A key fundamental for the success of the masterplan will be accessibility and its relationship to land use. The following outlines the masterplan's proposals in this area.

A96

15.16 For the Corridor to accommodate the development proposed it is essential that the A96 is dualled its entire length between Inverness and Nairn. This should incorporate a bus transitway (guided bus) that provides a strategically significant and substantial public transport asset. Discussion above has indicated that there are two options for the alignment of a dualled A96 – either on its existing line or re-aligned southward.

By-Passes/Interchange Upgrade

15.17 The efficient development of the road network will require the introduction of by-passes to Nairn in the east and the Raigmore Interchange (A96/A9) in the west or a substantial capacity upgrade of the Interchange. **Both these by-passes and the interchange option will require further detailed analysis to determine their appropriateness.**

15.18 Two options present themselves for by-passing the Raigmore Interchange. These are a southern option and a northern option. The southern option could be developed in association with development proposals for Ashton as outlined in the Inverness Local Plan. Further development pressure could emerge in support of a new by-pass at this location. This option is attractive as it would be straightforward to construct, it would connect with Inverness's southern distributor road and it could be funded from development at Ashton. However, other considerations including the long-term commitment to a country park in this location, the capacity of the Inches junction and preferred traffic flows toward Inverness centre suggest that a northern by-pass may be appropriate. This option is also supported by development proposals for Longman Bay. However, the northern by-pass could be more expensive to construct as there are more uncertainties associated with the capacity of the land.

15.19 An alternative proposal that should be investigated would be to undertake substantial capacity upgrading of the Raigmore Interchange that would negate the need to construct a by-pass.

15.20 **Further detailed cost-benefit analysis of the Raigmore Interchange by-pass or upgrade options should be undertaken.**

Roads

15.21 In order to support the redevelopment of AFY it will be necessary to establish an alternative access to the site. For this reason it is proposed to establish a good quality road parallel to the existing access road on an established road line. Appropriate *calming* works on the existing and proposed roads will be required.

15.22 Key principles for the development of an internal road layout are to enable:

- High levels of accessibility to the different elements of the proposed development, especially pedestrians and cyclists.
- The safe and convenient movement of all types of transport.
- The provision of a coherent urban framework.
- The provision of viable and attractive sustainable transport options.

15.23 Highland Council's road development guidelines recommend that the internal road network should be based on a defined and standard road hierarchy consisting of:

- District Distributor Roads – for strategic traffic flows.
- Local Distributor Roads, linking District Distributor Roads to Access Roads. Typically, these serve around 1,000 dwellings, have 6.0m minimum width (7.3m on bus routes), with segregated footways preferred. Typically, no frontage access permitted, with the roads forming the main spine routes in the development.
- General Access Roads, serving 3 to 200 dwellings, 6.0m wide, with frontage access permitted.
- Short cul-de-sacs and Minor Access links

15.24 Historically, the adoption of housing development layouts geared towards the safe and convenient movements of motor vehicles has been commonplace. Although typical layouts based initially on the requirements of the internal road layout provide benefits, they can lead to restrictions of movement and permeability, especially for cyclists and pedestrians and an over-reliance on cars. It can also remove from the development a sense of place and local character. More varied forms of housing development, based on pedestrian streets, squares, terraces, closes, courtyards, etc. can help deliver a more sustainable and permeable development with good quality accessibility for all.

15.25 Design advice[10] suggests that the design of new developments should be based primarily on a network of spaces rather than a hierarchy of roads; a layout of development in which roads play their part but are not dominant. Priorities for movement should be clearly defined; firstly by foot, also by bicycle, public transport and car. The needs of disabled persons should receive particular attention.

15.26 **The extent to which more best practice design guidance should be adopted within the development should be agreed at an early stage through discussions with officers of Highland Council.**

[10] DETR 1998 "Places, Streets and Movement – A companion guide to Design Bulletin 32, Residential roads and footpaths"

Public Transport

15.27 As indicated above, the development of the A96 would incorporate a dedicated bus transitway. This will provide efficient and effective public transport provision for the Corridor. As part of the transitway there will be three transit hubs to act as a focus for using it. These are located at:

- Seafield/Ashton
- Dalcross town centre
- Delnies (at the intersect from bus provision to AFY).

The transitway will also facilitate access to Inverness Airport.

15.28 The other key bus route that requires to be established would link the transitway to AFY.

Cycle/Walkway

15.29 The importance of making the Corridor attractive for cycling, walking and horse riding is clear. A strategic network to accommodate this that builds on existing provision around Culloden needs to be developed. Two east-west links are proposed. The first would be a coastal route running from East Longman at Inverness through Castle Stuart and Ardersier. The second route would be located in the southern section of the Corridor. It would build from existing provision. Sitting within or adjacent to the wooded parts of the Corridor it would run straight through to Nairn.

15.30 Importantly, new north-south links would also be required. These would seek to link destinations within the Corridor and provide an effective network. The key north-south links would be:

- Parallel to and in association with the Nairn by-pass. This would provide links between the east-west routes at the Corridor's eastern end.
- Ardersier Village-Dalcross-Croy/Cawdor Castle. This is a link providing access to Dalcross from the northern and southern east-west routes.
- A link that incorporates Castle Stuart.
- East Longman-Culloden District. This link would connect the southern and northern east-west routes at the western end of the Corridor.

Linkages into the National Cycle Network around Culloden will be important.

Landscape

15.31 *Green* infrastructure is fundamental to establishing a place that can offer a high quality of life. The masterplan has carefully considered this and the following outline proposals.

Landscape Protection

15.32 Key sensitive landscapes have been identified at:

- Culloden Battlefield.
- Culloden Forest.
- Dalcross Castle.
- Carse Wood.
- Tornagrain Wood.
- Delnies Wood.
- Whiteness Head/Carse of Denies.
- Kildrummie and Loch Flemington.

These have been identified as key landscape resources and their protection is fundamental to the environmental quality of the Corridor.

Structural Landscaping

15.33 In order to ensure that Dalcross can be well defined and integrated with its surroundings structural landscape proposals should be developed. These should focus on defining the eastern and western ends of the settlement.

Landscape Strategy and Action Plan

15.34 Building on the above, it is important to establish a strong landscape strategy and action plan for ensuring suitable protection, enhancement and development of landscape resources in the context of the Corridor as a whole. This represents the *green* infrastructure for the Corridor. Consequently, the masterplan proposes that a landscape strategy and action plan be prepared to achieve this. This would address issues including:

- Forest management.
- Natural heritage.
- Built heritage.
- Bio-diversity.
- Recreation.
- Access.
- Interpretation.

Recreation

15.35 Closely related to landscape considerations are those for recreation. There are opportunities within the Corridor to build formal and semi-formal recreational resources to take advantage of the unique opportunities presented. This builds on proposals currently identified in the Inverness Local Plan and the Nairnshire Local Plan for East Longman and Delnies, respectively. Proposals are also beginning to emerge for recreational provision to

the north and north-west of Castle Stuart. These have been incorporated into the masterplan.

15.36 These recreational areas offer a full resource for a city region running from Inverness to Nairn. This combined with proposals emerging from the landscape strategy offer the highest standards in strategic recreational provision and an effective *green* infrastructure for the Corridor, as a whole.

Other Matters

15.37 There are a range of other matters that are addressed through the masterplan. These are outlined below.

15.38 In the light of recent government initiatives, **investigations should be undertaken to examine rail freight opportunities associated with the Nexfor facility at Morayhill.** This should be considered in the context of freight proposals within the Inverness Local Plan for Inverness Airport.

15.39 Further housing proposals at other places within the A96 Corridor should be limited to brownfield and rounding-off proposals. In addition, there should be a strong presumption against housing proposals in the open countryside. These requirements will ensure that appropriate housing development can occur that makes a positive contribution across the Corridor whilst ensuring sufficient restriction to promote the development of Dalcross and AFY over the longer term.

15.40 Landscape strategies for Tornagrain Wood and Carse of Ardersier will be required to ensure that these existing woods are incorporated into development proposals at Inverness Airport and Ardersier Fabrication Yard respectively.

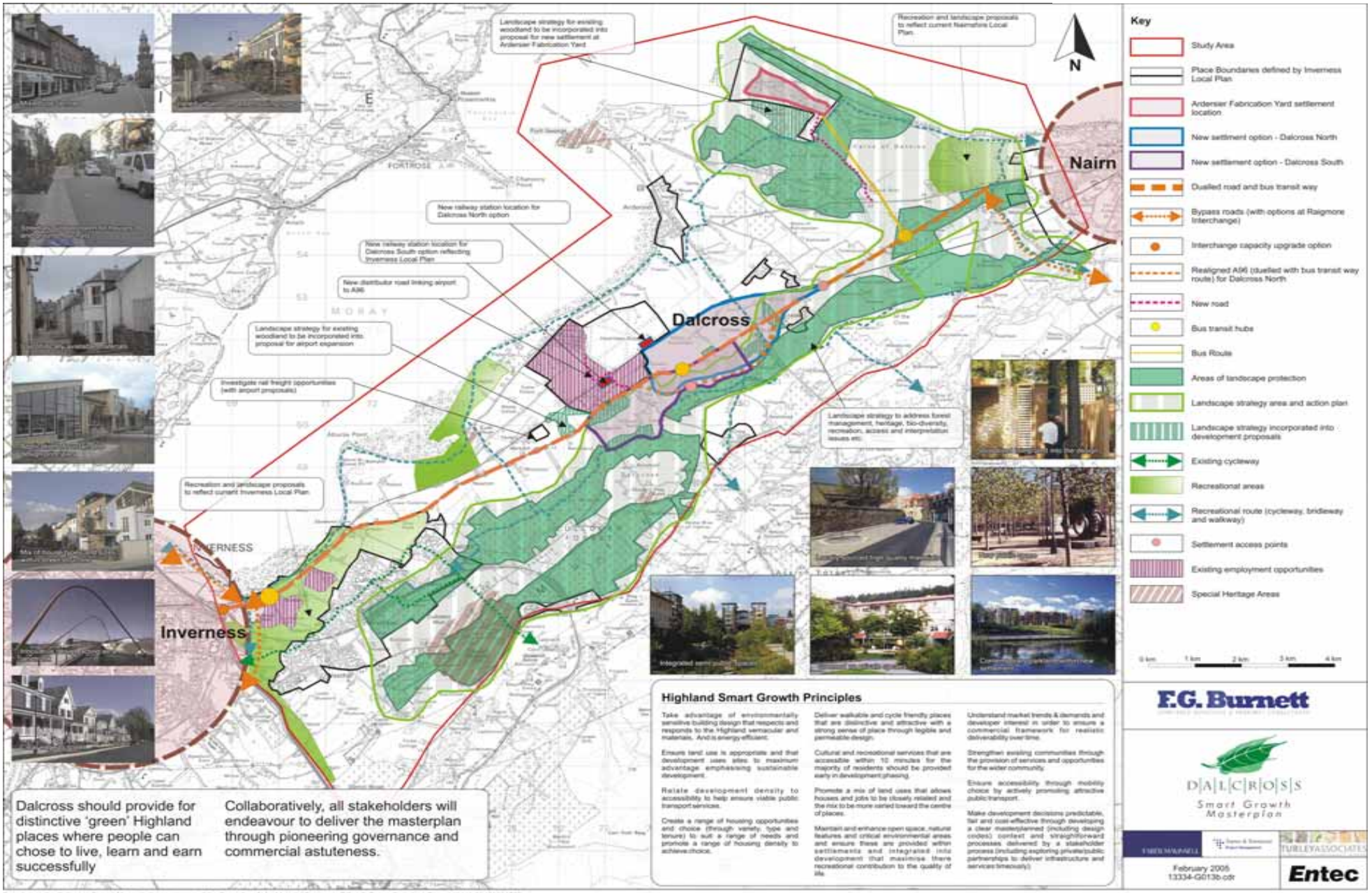
15.41 The heritage and cultural importance of Culloden Battlefield and Fort George make a valuable contribution to the uniqueness of the area. Castle Stuart and Dalcross Castle are important heritage landmarks as well. The masterplan designates these as special heritage areas. **A heritage strategy should be developed that secures and develops these heritage resources for future generations.** Such a strategy would also seek to identify other heritage and archaeological resources in the area and develop appropriate co-ordinated management proposals for them.

15.42 **Investigations should be undertaken to establish if mineral deposits at Dalcross are of commercial interest.** In the event that this is the case, these resources should be extracted prior to development in an appropriate phased approach. This may offer an opportunity to secure early funding for community infrastructure.

15.43 Retained farmland within the Corridor has been identified to ensure that viable farm holdings can be maintained and developed.

15.44 Figure 19 outlines the Dalcross *Smart Growth* Masterplan.

Figure 19 – Dalcross *Smart Growth* Masterplan



16. SUDS Assessment

Introduction

16.1 This report is concerned with the drainage aspect of the water utility, in particular the use of Sustainable Urban Drainage Systems (SUDS). The feasibility or otherwise of several types of SUDS will be investigated, together with estimates of the likely proportions of water to be drained using different types of SUDS.

16.2 The effective use of SUDS requires a holistic approach to the whole implementation process. CIRIA C523[11] notes that to encourage use of SUDS on developments, it is important to have an awareness of the complete range of issues and the concerns of all the stakeholders involved.

16.3 Inverness Airport and the Civil Aviation Authority (CAA) have expressed concern over the use of large expanses of water as part of the drainage system. This is because such bodies of water attract birds to the area, which are hazardous to aircraft. The design of any SUDS systems must take this fully into consideration, as well as plans for future development of Inverness Airport.

16.4 Scottish Water has expressed concerns over the ability of the existing network to accommodate the increased drainage discharge. SEPA have already communicated their concerns to Scottish Water that increased drainage demand must be accommodated in an acceptable manner.

16.5 In the case of draining water from the development to natural watercourses, SEPA normally require that the water is of satisfactory quality and that there is no increase to the risk of flooding downstream or elsewhere as a result of the development. Run-off rates are normally restricted to *Greenfield* or pre-development run-off rates. This can be done by attenuating flood peaks by providing storage areas.

SUDS Assessment

Overview

16.6 Sustainable Urban Drainage Systems (SUDS) aim to emulate natural drainage systems as practicably as possible through permeable surface infiltration. SUDS attenuate the flow rate of surface waters by allowing percolation as opposed to increasing run-off generated off hard, impermeable surfaces. Planning Advice Note 61: Planning and Sustainable Urban Drainage Systems (PAN 61), states that "the overall objective is to return excess surface water to the natural water cycle with minimal adverse impact on people and the environment". Further, PAN 61 details that SUDS work on the following principles:

[11] Sustainable Urban Drainage Systems Design best practice manual for England, Scotland, Wales and Northern Ireland; CIRIA C523; March 2000

- Manage surface water run-off on-site as near to source as possible.
- Slow down run-off.
- Naturally treat run-off.
- Release good quality surface water to watercourses or groundwater.

Forms of SUDS

16.7 SUDS fall into one of four categories. These are:

- Basins and ponds.
- Permeable surfaces.
- Filter strips and swales.
- Infiltration devices.

Each of these subgroups is described below.

16.8 Basins and Ponds - Areas of open water are a part of the natural drainage pattern. The difference between basins and ponds is that basins are temporary water features and ponds are permanent water bodies. There are many different types of these forms of SUDS. Basins and ponds are advantageous over other forms of SUDS because they are a cost-effective means of storing large amounts of water. These may cause problems to aircraft in the form of bird strikes if they are positioned too closely to the aerodrome. Also of fundamental importance is how any water bodies are positioned relative to the direction of the runways.

16.9 Permeable surfaces - These can vary in type and appearance. They include:

- Gravelled areas.
- Solid paving blocks with gaps between the blocks.
- Porous paviors or continuous surfaces that have a system of voids.

The surface is only part of the drainage device. The layer below the surface (sub-base) should be very porous to allow the flow of water.

16.10 Filter strips and swales - These types of SUDS are constituted of sloping vegetated areas either in the form of a strip off ground that water can run across (filter strip) or a broad shallow channel. Filter strips are a type of source control, whereas swales are both a source control and a means of conveying run-off.

16.11 Infiltration devices - These allow for the infiltration of water, its temporary storage and gradual release. Soakaway and infiltration trenches allow underground storage. Infiltration basins detain water above the ground, which can then slowly infiltrate into the ground.

Overview of Development Drainage Requirements

16.12 The proposed development could be the second largest settlement in the Highland Region. An effective SUDS system should incorporate all of the aforementioned methods of sustainable urban drainage. For example, car parks and other large areas of flat, concrete covered land should be built with permeable covers that drain to underground tanks.

16.13 The road system could be drained using offlet kerbs, French drains, filter drains and swales, which could discharge into larger storage areas.

16.14 Discussions with the Civil Aviation Authority (CAA) revealed several key points in the use of SUDS in the vicinity of an airport. The safeguarding around a number of listed aerodromes for planning purposes changed recently. This is dealt with by Office of the Deputy Prime Minister circular ODPM 1/2002. This signaled the change from the CAA managing safeguarding centrally to a devolved system administered by each of the 40 or so officially safeguarded aerodrome licensees. Inverness is one of these Aerodromes. Therefore, any planning application up to 13 km away from the mid point of the main runway, subject to its height relative to protected surfaces, has to be submitted to the aerodrome by the local authority planners. Should the aerodrome object, but the local planning authority feel minded to approve, the CAA has to be informed and can "call in" the application for review.

16.15 The CAA indicated that the assessment should address the following considerations:

- Where is this development in relation to the airport?
- What size/shape/depth/use of water features is envisaged?
- Is it urban, suburban or rural?
- Will this generate flight lines to other water that take flocks near or over the runway?
- What species are likely to be attracted?
- Feeding of wildfowl by the public can and will increase their numbers well above the natural carrying capacity and may generate bird traffic to and from feeding sites.
- Use a Risk Assessment methodology, bearing in mind that the worst possible outcome is catastrophic (i.e. loss of life in an aircraft accident).

16.16 CAP680 Aerodrome Bird Control, Part 4, Chapter 5 highlights several issues that must be taken into consideration in order to minimize bird activity in the vicinity of airports. Discussions with officials at Inverness Airport revealed that if placed correctly, expanses of water could have a beneficial effect on the existing bird situation by making existing nesting areas for birds less attractive by comparison. The existing areas may be causing problems to the airport at present.

16.17 The proposed development at Dalcross and AFY fall within the 13 km radius from Inverness Airport’s main runway, therefore plans will have to be approved by either Inverness Airport or the CAA.

Modelling the Drainage System

16.18 The SUDS design for this development will represent one of the largest sustainable drainage solutions in the UK. Winter Rainfall Acceptance Potential (WRAP) maps were consulted in order to determine the permeability of the local soil, which is important to run-off rates and storage requirements. Table 16.1 shows the WRAP classification system, and Table 16.2 shows the classification and potential destinations for controlled discharge of the excess run-off.

Classification	WRAP	Permeability	SOIL
1	Very high	Very low	0.15
2	High	Low	0.30
3	Moderate	Moderate	0.40
4	Low	High	0.45
5	Very low	Very high	0.50

Table 16.1 - WRAP Classification

Section	WRAP Classification	Potential drainage route
Dalcross	3	Agricultural drains/Moray Firth
AFY	1	Moray Firth

Table 16.2 – Site WRAP Classifications and Drainage Routes

16.19 A very basic study was undertaken whereby Dalcross and AFY were treated as an entire sub-catchment. This was done to give an early indication of attenuation requirements. Two model runs were carried out, one with a rural land use assumed for all areas and one with a likely urban land use, with roofed, paved and permeable surfaces designated at 7, 23 and 70 percent respectively. The water storage requirement for Dalcross and AFY are summarised below.

Development	200 year event peak flow (m^3)		Storage requirement (m^3)
	Pre-development	Post-development	
Dalcross	0.804	2.38	38599
AFY	0.260	0.465	5031

Table 2.3 – Peak Flows and Storage Requirement for Dalcross and AFY

16.20 At the 200 year event, there is a requirement to attenuate to pre-development levels as shown in the table above for each site. In total, this translates to a storage requirement of approximately 44,000m^3. The SUDS would require to attenuate flows to pre-development levels using a combination of the methods described previously.

16.21 The majority of the development is in Dalcross, which has limited drainage potential at present, consisting entirely of agricultural drainage ditches. These may have to be enlarged in order to cope with additional run-off, but it is impossible to confirm their capacity until a survey is carried out.

16.22 As AFY is on the coastline of the Moray Firth, there is no question of increased risk of downstream flooding, and water can be released directly to the sea provided it is of the required standard of quality. SUDS can be used to attenuate flows until they reach the capacity permitted to discharge into the sea[12].

Other Methods

Rainwater Collection

16.23 The storage and use of rainwater for domestic dwellings allows a significant saving in water that needs to be supplied, but more importantly, from a drainage point of view, decreases the amount of water that needs to be stored in a communal drainage system.

16.24 If 10,000 houses use rainwater tanks this reduces the amount of excess water that requires to be stored by 530,000m^3 per annum[13]. This water can be used for washing machines or flushing toilets and has the additional benefit of reducing public water demand. By harvesting rainwater, the percentage of roofed surfaces would decrease which in turn would reduce the demand for attenuation by SUDS.

16.25 As with all forms of SUDS, continual maintenance is important in order to ensure they are reaching their design potential. Although most designs rainwater collection tank designs will have low maintenance demands, the technology and procedures will be in place for making the most out of these products over their design lifetime.

Conclusion

16.26 There is opportunity to use SUDS as the dominant form of drainage for a large new development along the A96 between Nairn and Inverness. The scale of the development is large covering an area of approximately 7km^2. The drainage design will incorporate different SUDS methods as well as efforts to reduce the amount of storage required, such as rainfall collection.

16.27 The presence of Inverness Airport means that the use of expanses of water must not cause increased bird activity around the Aerodrome. Through intelligent siting of SUDS and other methods that are detailed in CAP680, it will be possible to utilise sustainable urban drainage systems that do not present an increased threat to aircraft. Indeed, they could even be of net benefit by attracting birds away from the airport that may be causing a nuisance at present.

16.28 Appendix 13 contains a full copy of the SUDS assessment.

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[12] Note that this investigation is intended only to give a rough idea of storage requirements, and further analysis must be much more thorough. This should involve ground models, a detailed drainage network, a comprehensive account of the area's soil type, and detailed information concerning present and proposed land use for each section of development.

[13] Note that this is considered as a very rough estimate, based on all households using a tank size of 3180 litres, and other parameters being only estimates.

Appendix 1

Governmental and Regulatory Stakeholders Attendees

Collaboration for Success One

Session – 22 June 2004

Representatives from:

The Highland Council, Roads
Scottish Executive Development Department
Highland and Islands Fire Board
Northern Constabulary
Scottish Executive Trunk Road Network and Maintenance Division
The Highland Council, Housing
Scottish Executive, Enterprise, Transport and Lifelong Learning Department
The Highland Council, Architecture
Inverness and Nairn Enterprise
The Highland Council, Planning
Scottish Water
Highland Access Project
Scottish Natural Heritage
Highlands and Islands Strategic Transport Partnership (HITRANS)
Moray Council
Albyn Housing Association

20 individuals attended.

Invitees who did not attend were:

CAA Directorate of Airspace Policy
Scottish Environment Protection Agency
Forestry Commission
Scottish Executive Development Department
Scottish Natural Heritage
BEAR Scotland Ltd
Health and Safety Executive
National Trust for Scotland
Historic Scotland
Communities Scotland
Highlands and Islands Enterprise
TRANSCO
Scottish & Southern Energy
Scottish Ambulance Service
sportscotland
Defence Estates
Royal Mail Group
NHS Highland
Highland Rail Partnership Strategic Rail Authority
ScotRail Network Rail

Appendix 2

Business/Developer/Landowner Stakeholders Attendees

Collaboration for Success One

Session – 23 June 2004

Representatives from:

Scotia Homes
Cawdor Estates
Inverness Estates
Moray Estates
Highlands and Islands Airports Limited
G. U. Goodbody
G. Philip
Elphinstone Group
Homes for Scotland
C. Allenby
E. Williams
Scottish Executive Land and Property Division
Robertson Homes
A. Torrance
I. MacLennan
Stackpole Farms Ltd.
J. Mackintosh
Tulloch Group
O. MacKintosh
R. Gordon
Allenby of Nairn
D. Williams
A. Strachan
R. Pottie
Harcus
Bruce and Partners
I. William
J. Cattell
J. Forbes
J. Collins

40 individual attend.

121 invitations were issued.

Appendix 3

Stakeholders Attendees

Collaboration for Success Two

Session – 20 September 2004

Representatives from:

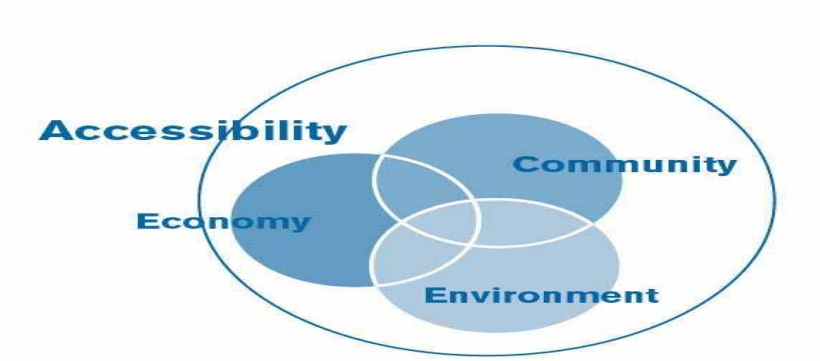
Scotia Homes
Cawdor Estates
Inverness Estates
Moray Estates
Highlands and Islands Airports Limited
Elphinstone Group
Homes for Scotland
Robertson Homes
Stackpole Farms Ltd.
J. Mackintosh
Tulloch Group
R. Gordon
D. Williams
G. Strachan
B and E Harkness
J. Cattell
J. Forbes
The Highland Council, Roads
Scottish Executive Trunk Road Network and Maintenance Division
The Highland Council, Housing
Scottish Executive, Enterprise, Transport and Lifelong Learning Department
The Highland Council, Architecture
Inverness and Nairn Enterprise
The Highland Council, Planning
Scottish Water
Scottish Natural Heritage
Highlands and Islands Strategic Transport Partnership (HITRANS)
Albyn Housing Association

48 individual attend.

163 invitations were issued.

Appendix 4

Smart Growth Sustainability Matrix Criteria



Sustainability criteria fall within the matrix as follows:

Accessibility
- Transport and Access
- Access and accessibility

Economy
- Local Economy and Work
- Education & Lifelong Learning
- Development capacity
- Marketability
- Infrastructure

Community
- Community Participation
- Social Justice
- Health and Safety
- Existing development
- Adjoining land uses and relationship with surrounding communities

Environment
- Pollution, Waste and Resources
- Energy
- Buildings, Urban Design and Land Use
- Open Spaces
- Site characteristics
- Topography
- Landscape features
- Wildlife and habitats
- Views

Sustainability criteria include:

- Community Participation
  Would proposals
  - be conducive to community involvement?
  - allow people, groups and partner organisations to be actively involved in identifying problems and delivering solutions?
  - Encourage community and stakeholder collaboration in development decisions?

- Local Economy and Work
  Would proposals
  - attract employment opportunities suited to local people?
  - facilitate accessing knowledge opportunities so that every living centre can be an earning centre?
  - promote local shops and facilities?

- Education & Lifelong Learning
  Would proposals
  - promote life-long learning and encourage the adoption of sustainable lifestyles and practices?
  - provide well located and appropriate schools and other educational resources (incl. libraries)?

- Access and Accessibility
  Would proposals
  - establish permeability of the urban fabric?
  - provide accessibility choices?
  - maximise accessibility for people with disabilities?
  - integrate access with adjoining communities?

- Transport and Access
  Would proposals
  - reduce the number and length of car journeys?
  - encourage walking and cycling links with adjoining areas?
  - be accessible to public transport routes?
  - increase use of public transport?
  - provide a variety of transportation choices?

- Pollution, Waste and Resources
  Would proposals
  - enable the efficient use of resources?
  - be suited to a Sustainable Urban Drainage System that contributes positively to the area?
  - minimise the potential for increased pollution?
  - recycle water?
  - re-use appropriate buildings?
  - maximise existing infrastructure?
  - promote efficient and effective waste disposal and the use of recycling?

- Energy
  Would proposals
  - allow for the generation of energy from renewable sources or waste?
  - minimising energy use?

- Buildings, Urban Design and Land Use
  Would proposals
  - help provide for or enhance local amenities?
  - protect or enhance the visual landscape and local character?
  - conserve built/cultural resources?
  - facilitate design quality in relation to the built and natural environment?
  - take advantage of compact building design that is also sensitive to the environment?
  - ensure that land use is appropriate and that any development uses a development site to its best advantage?
  - allow a relationship between density of development and accessibility?
  - help relate accessibility demand to location of development type?
  - meet needs locally through ensuring access to local services and facilities?
  - ensure an adequate supply and range of good quality housing?
  - facilitate the creation of workable neighbourhoods?
  - foster distinctive, vibrant communities with a strong sense of place distinctive to Inverness/Nairn?

- Landscape Features
  Would proposals
  - respect the established landscape framework?
  - provide visual highlights in new urban areas?
  - respond to and enhance the setting of key buildings?
  - Protect / enhance open land / countryside / landscape quality?
  - Preserve/enhance heritage and local identity?

- Marketability
  Would proposals
  - deliver marketable development sites, particularly for housing?
  - present attractive neighbourhoods for investment in the longer term?

- Infrastructure
  Would proposals
  - maximise the utilisation of existing infrastructure?
  - promote infrastructural investment that contributed to enhanced quality of life?

- Development capacity
  Would proposals
  - ensure that development proposals were appropriate to the capacity of the A96 Corridor?
  - Provide a framework to meet demand for development?

- Existing development
  Would proposals
  - respect existing developments that provide character and context?
  - acknowledge investment that has brought sustained renewal and regeneration?

- Adjoining land uses and relationship with surrounding communities
  Would proposals
  - complement adjoining land uses (existing and proposed)?
  - provide support and opportunities for surrounding communities?

- Open Spaces
  Would proposals
  - create open space opportunities to benefit communities?
  - establish or develop public access to quality open space?
  - preserve and enhance critical environmental areas?

- Social Justice
  Would proposals
  - strengthen existing communities?
  - address the needs of under-represented groups and less well off households?
  - offer good potential for affordable housing?
  - reduce inequalities and improving facilities, access and opportunities?
  - reduce occurrence of crime and anti-social behaviour?
  - reduce fear of crime?

- Topography
  - Would proposals
    - take advantage of the area's natural topography?

- Site characteristics
  - Would proposals
    - promote development proposals that responded positively to site characteristics?
    - Build on the positive aspects of sites and locations?
- Wildlife and habitats
  - Would proposals
    - protect/enhance wildlife habitats (open spaces, trees, hedgerows, private gardens, some buildings, designated sites) and their connectivity
    - increase tree cover, especially broad-leaved woodland
    - improve/maintain public access to open spaces, wildlife areas and the countryside

- Views
  - Would proposals
    - ensure that quality views were developed and created?
    - Identify existing views and retain them?

- Health and Safety
  - Would proposals
    - provide an environment conducive to physical and mental health and wellbeing?
    - provide good accessibility for emergency vehicles?
    - ensure medical services to meet population requirements?

Appendix 5

A96 Corridor Capacity – Service Systems Report

Appendix 6

A96 Corridor Capacity – Transportation Analysis Report

Appendix 7

A96 Corridor Capacity – Land Use Study Report

Appendix 8

A96 Corridor Capacity – Landscape Assessment Report

Appendix 9

A96 Corridor Capacity – Urban Design Guidance at A96 Corridor

Appendix 10

A96 Corridor Masterplan Community Consultation Report

Appendix 11

***Smart Growth* Conformity Schedules**

Schedule 1 – Transport Option's Conformity with Stakeholder Expectations and Requirements

Stakeholder Expectations and Requirements	Option Conformity	Notes
Accessibility		
Establish effective public transport routes that can allow double-tracking of rail and a local bus route network with linear routes.	Conforms	Double tracking of rail has been assessed as generally non-viable.
Build and develop the long distance cycle route(s).	Conforms	Transport option provides a destination/attraction for long distance cycle route.
Separate long distance road trips from local trips.	Conforms	The size of settlement and the opportunity to provide a full range of local services and facilities will promote local trips to be contained within the settlement.
Concerned about the long term capacity of the Raigmore Interchange (A9/A96).	Non-Conformity	The proposal is likely to generate traffic that will test the capacity of the Raigmore Interchange in the long-term. Alternative solutions require investigation and development.
Support development of Inverness Airport.	Conforms	The option can be delivered in the context of the Airport's long term development. Further, the proximity of the new settlement to the Airport offers the opportunity for mutually beneficial proposals to be developed.
Non-car based accessibility should be promoted that links destinations with homes.	Conforms	The size of the new settlement promotes the provision of a range of local facilities and services. This will allow walking and cycling access to be an integral part of proposals.
Get infrastructure and public transport services right before development.	Conforms	These matters will be considered in more detail as part of Phase 2 – Delivery.
Double-tracking of rail should improve routes to Elgin.	Non-Conformity	Double tracking of rail is considered non-viable.

Place walking and cycling accessibility to forefront of thinking.	Conforms	A single large settlement allows walking and cycling accessibility to be fully integrated as a defining element of the proposal.
Adopt a *home zone* approach whenever possible.	Conforms	Best practice in urban design will be a fundamental for the proposal.
Dualling of the A96 and construction of the Nairn By-Pass are important.	Conforms	The dualling of the A96 and providing a Nairn By-pass are recognised asa requirement.
Economic Development		
Growth supports Inverness and its region as strategic economic driver for Scotland.	Conforms	Option provides a cohesive focus for property investment in the region.
Opportunity for a mixed development approach.	Conforms	The size of settlement will facilitate a mixed use approach to development.
Promote the regeneration of Ardersier Village.	Non-Conformity	Proposals for ensuring the vitality and viability of Ardersier Village should be developed in progressing the Masterplan.
Support development of business park in Corridor.	Conforms	The development of a central settlement adjacent to the emerging proposal for a business park at Inverness Airport will provide a wider context for each that will contribute to general vitality and viability.
Look at opportunity to accommodate university campus.	Conforms	Land allocations can be considered in developing detailed masterplan proposals.
Ensure governmental stake in infrastructural investment.	Conforms	The option does not preclude a government stake in infrastructural investment. Opportunities for this will be addressed in Phase 2 – Delivery.
New settlements need to be of a sustainable size to provide self-contained servicing.	Conforms	The size of settlement will ensure a full range of local services and facilities.
Proposals must be commercially viable and deliverable through the market.	Conforms	Discussions with active developers indicate that the option is achievable in the market. This should be considered in greater detail during Phase 2 – Delivery.

Smaller communities in the Corridor should be expanded.	Non-Conformity	Proposals to expand smaller communities should be investigated. This does have some technical support as expressed through the Land Use option. Significant community opposition was expressed to this concept.
Social/Community		
Ensure crime prevention is addressed from the beginning of masterplanning for growth to create safer communities.	Conforms	Safety will be a key consideration in the design of the settlement.
Integrate housing developments with employment opportunities	Conforms	The location of the Transport option adjacent to Inverness Airport will allow proposals to be developed to complement the Airport's growth and the development of the proposed business park.
Avoid suburbanisation.	Conforms	*Smart Growth* is predicated on an approach that provides an antidote to current bland and undistinguished suburban development patterns to create sustainable places with a strong environmental ethic and more nuanced views of growth.
Linear/Grid development; no cul-de-sacs	Conforms	As above
Ensure growth does not undermine viability of smaller communities in northern Scotland.	Conforms	The option promotes a development that will be self-sufficient in the provision of local services and facilities. It will sit in a regional hierarchy that will access *higher order* services from Inverness. This should ensure that the smaller communities of Highland are not undermined. Nevertheless, further work should be undertaken, during the detailed design stages, to ensure this.
Create inclusive communities	Conforms	Proposals will be developed to ensure a full range of housing type and tenure. Further, the appropriate provision of local services and facilities will ensure help ensure

		accessibility for all. A collaborative approach through the development and implementation of the project also helps promote inclusiveness.
Must be public sector/community led to ensure paradigm changes are promoted.	Conforms	The masterplanning of the A96 Corridor is led by The Highland Council.
Ensure social infrastructure (e.g. schools, community centres, libraries, sports facilities, parks, etc.) are planned in order to create inclusive communities.	Conforms	Phases 2 – Delivery will develop proposals for the timeous provision of social infrastructure.
Create choice in housing and lifestyle.	Conforms	*Smart Growth* promotes the provision of a range of housing type and tenure to allow for choice.
The natural gas main should be respected.	Conforms	The line of the gas main has been established. The 12m exclusion zone will be respected as proposals are developed.
Environment		
Protect archaeological remains and buried sites.	Conforms	The management of any archaeological resources will be actively considered as proposals develop.
New water treatment infrastructure will be required to be privately funded.	To be determined	The funding of infrastructure will be addressed during Phase 2 – Delivery.
Sewerage provision should be confirmed prior to development proceeding.	Conforms	Development proposals will not be able to proceed without appropriate sewage provision. Phase 2 – Delivery will address appropriate provision.
Flood risk should be assessed.	Conforms	Flood assessment will underpin detailed masterplanning design.
The natural environment of the Corridor should be protected.	Conforms	Development of the option will take into account the outcomes and proposals of the Landscape Assessment.
Improved environmental awareness should be promoted.	Conforms	The integration of the option with the natural environment will be a key consideration in detailed masterplanning. This will help promote environmental awareness. Furthermore, best practice in sustainable design,

		construction and management will be introduced.
Environmental quality and landscape should be incorporated into development.	Conforms	The scale of development proposed will ensure that there are opportunities to ensure quality in landscape design.
Set standards of excellence in environmental and design quality.	Conforms	As above.
Existing environmental designations should be retained and enhanced through beneficial management.	Conforms	The opportunity to address the needs and resource of environmental designations in or adjacent to the option will be considered through masterplan development.
Water bodies should not be deteriorated through engineering.	Conforms	A sustainable urban drainage system (SUDS) will be applied as the masterplan develops.
Development proposals should promote waste minimisation and recycling in their construction and operation.	Conforms	Best practice in sustainable management will be applied.

Schedule 2 – Transport Option's Conformity with Urban Design Settlement Characteristics

Urban Design Settlement Characteristics	**Option Conformity**	**Notes**
Sensitive to Highland environment	Conforms	Development would use surrounding trees and contours to maximise shelter. Development should use local materials and labour to reduce embodied energy from long distance transport.
Use site to maximum advantage	Conforms	Integrate natural assets such as views and natural features
Density related to accessibility	Conforms	Highly accessible site. Ensure maximum distance of 0.5km from centre to edge of settlement to ensure all uses within 10 minute walk of public transport. Linear nature of settlement could promote creation of a central pedestrian friendly and sheltered spine through the town. Street could accommodate public transport.
Range of housing opportunities	Conforms	House types should seek to provide a range of dwelling types which moves the local profile in the direction of national averages for

		proportion of flats, terraced and detached houses. Opportunities should be provided for self-build homes.
Walkable places	Conforms	Linear nature of settlement could promote creation of a central pedestrian friendly and sheltered spine through the town. Street could accommodate public transport.
Mixed use	Conforms	The neighbourhood should provide a range of different types of employment space as well as residential. Potential to link in to airport employment activities and services.
Preserve natural features and open space	Conforms	Location is in one of the least sensitive areas and can be partially contained within existing mature plantations. A compact settlement will protect more open space than a low density sprawl.
Strengthen existing communities	Conforms	A new community near to the airport will strengthen the daytime community at the airport and encourage more activity in both the new settlement and at the airport. Significant benefit to Croy which will have sufficient size to retain and expand local businesses and services.
Accessibility	Conforms	Location is highly accessible by road, rail, cycle path and plane. Alternative access also available via Croy.
Predictability	Conforms	A flexible development framework, sensitive to the landscape setting and strong design guidance will assist.

Schedule 3 – Transport Option's Conformity with Highland *Smart Growth* Development Principles

Highland *Smart Growth* Development Principles	Option Conformity	Notes
Take advantage of environmentally sensitive building design that respects and responds to the Highland vernacular and materials. And is energy efficient.	Conforms	The development of the masterplan will promote sensitive building design and energy efficiency.
Ensure land use is appropriate and that development uses sites to maximum advantage emphasising sustainable development.	Conforms	The Transport Option represents the most appropriate approach to accommodating growth within the A96 Corridor.
Relate development density to accessibility to help ensure viable public transport services.	Conforms	The development of a central settlement will maximise opportunities for public transport provision.
Create a range of housing opportunities and choice (through variety, type and tenure) to suit a range of needs and promote a range of housing density to achieve choice.	Conforms	The approach adopted for the development of the masterplan will seek to establish a full range of housing choice.
Deliver walkable and cycle friendly places that are distinctive and attractive with a strong sense of place through legible and permeable design. Cultural and recreational services that are accessible within 10 minutes for the majority of residents should be provided early in development phasing.	Conforms	The creation of a central settlement will provide a significant opportunity to create a distinctive and accessible place with a full range of local services and facilities.
Promote a mix of land uses that allows houses and jobs to be closely related and the mix to be more varied toward the centre of places.	Conforms	A mixed use approach to the development of the masterplan will be adopted. The close proximity of the Transport Option to business proposals associated with the Airport provides a bedrock on which to build.
Maintain and enhance open space, natural features and critical environmental areas and ensure these are provided within settlements and integrated into development that maximise there recreational contribution to the quality of life.	Conforms	The detailed masterplan emerging from the selection of the Transport Option will seek to promote environmental quality and ensure integration between the built and natural environments.
Strengthen existing communities through the provision of services and opportunities for the wider		The development of local services and facilities within a single settlement will allow for

community.	Conforms	some sub-regional provision. There will also be the opportunity to locate some services and facilities within a new settlement for the benefit of Airport and business park workers.
Ensure accessibility through mobility choice by actively promoting attractive public transport.	Conforms	The provision of a single central settlement will allow proposals to be developed that will make walking, cycling and public transport attractive mobility choices.
Make development decisions predictable, fair and cost-effective through developing a clear masterplanned (including design codes) context and straightforward processes delivered by a stakeholder process (including exploring private/public partnerships to deliver infrastructure and services timeously). Understand market trends & demands and developer interest in order to ensure a commercial framework for realistic deliverability over time.	Conforms	Preliminary discussions with developers have indicated that the Transport Option could provide a realistic and attractive framework for making development decisions. Through Phase 2 – Delivery more detail will be developed to ensure that the masterplan will be attractive to the private sector.
Provided ducted infrastructure to ensure maintenance in the longer term does not undermine urban quality.	Conforms	Through detailed masterplanning proposals best practice in infrastructure provision can be applied.
Address key road challenges including the Raigmore Interchange and appropriateness of the Nairn by-pass.	Conforms	The Transport Option highlights and addresses movement challenges across the Corridor. It promotes walking, cycling and effective public transport. The dualling of the A96 is proposed are is a by-pass for Nairn. Further road upgrade should be considered.
Every new dwelling should have a new job created.	Conforms	The development of a central settlement adjacent to the Airport and its proposed business park provides a focus for job creation. This combined with employment growth in Inverness and Nairn, industrial development opportunities at Ardersier Fabrication Yard and employment in local services

		and facilities within the new settlement will provide sufficient jobs. This should be confirmed through an appropriate economic development/potential study associated with Phase 2 – Delivery.
Ensure that the masterplan can be flexible enough to change over time as circumstances change.	Conforms	In implementing the masterplan an approach will be developed to monitor and review its progress.

Appendix 12

A96 Corridor Capacity Assessment – Transportation Analysis (Supplementary Report)

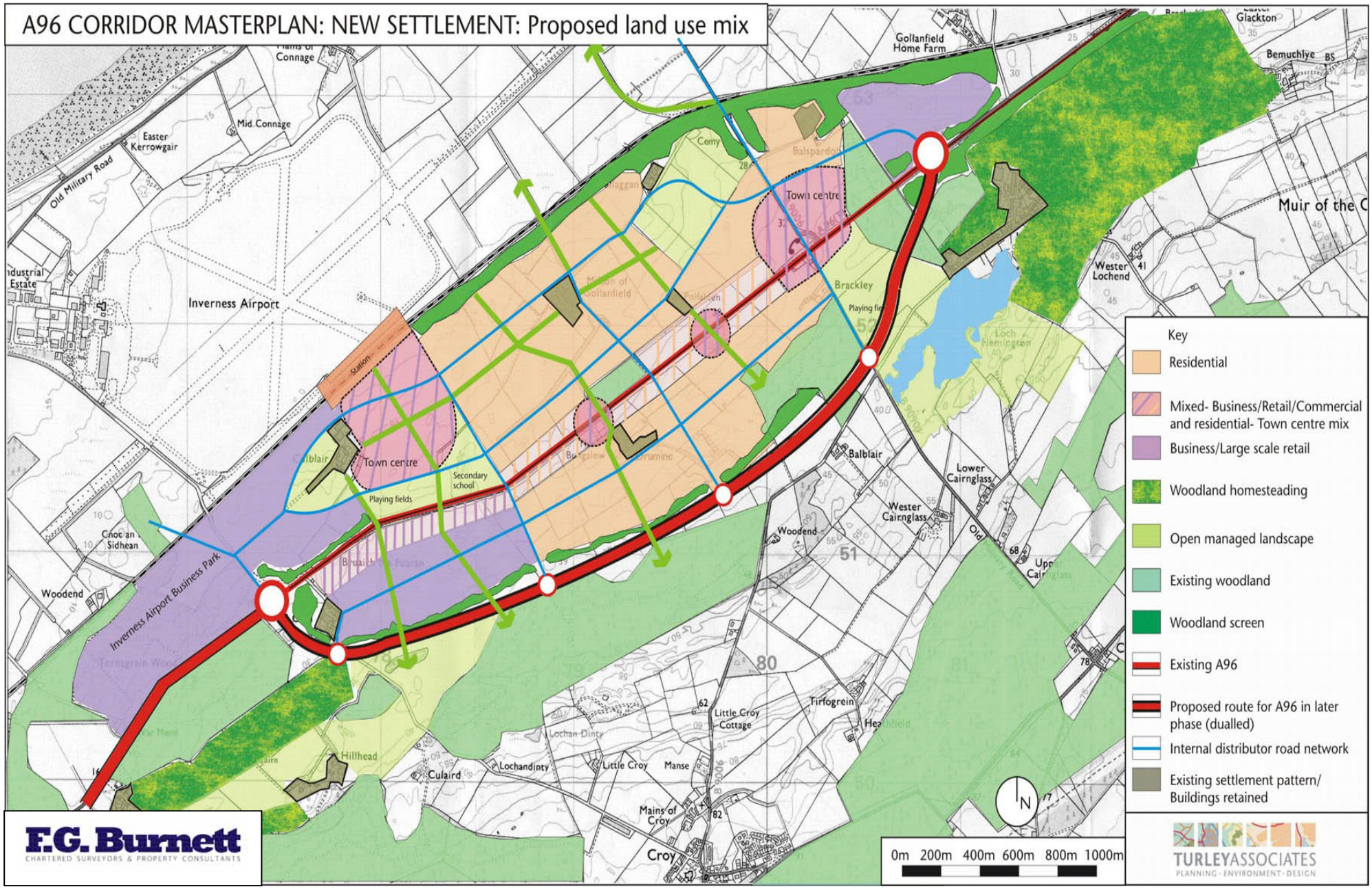
Appendix 13

A96 Corridor Development – SUDS Assessment

Appendix 14

Indicative Urban Design Schemes

A96 CORRIDOR MASTERPLAN: NEW SETTLEMENT: Proposed land use mix



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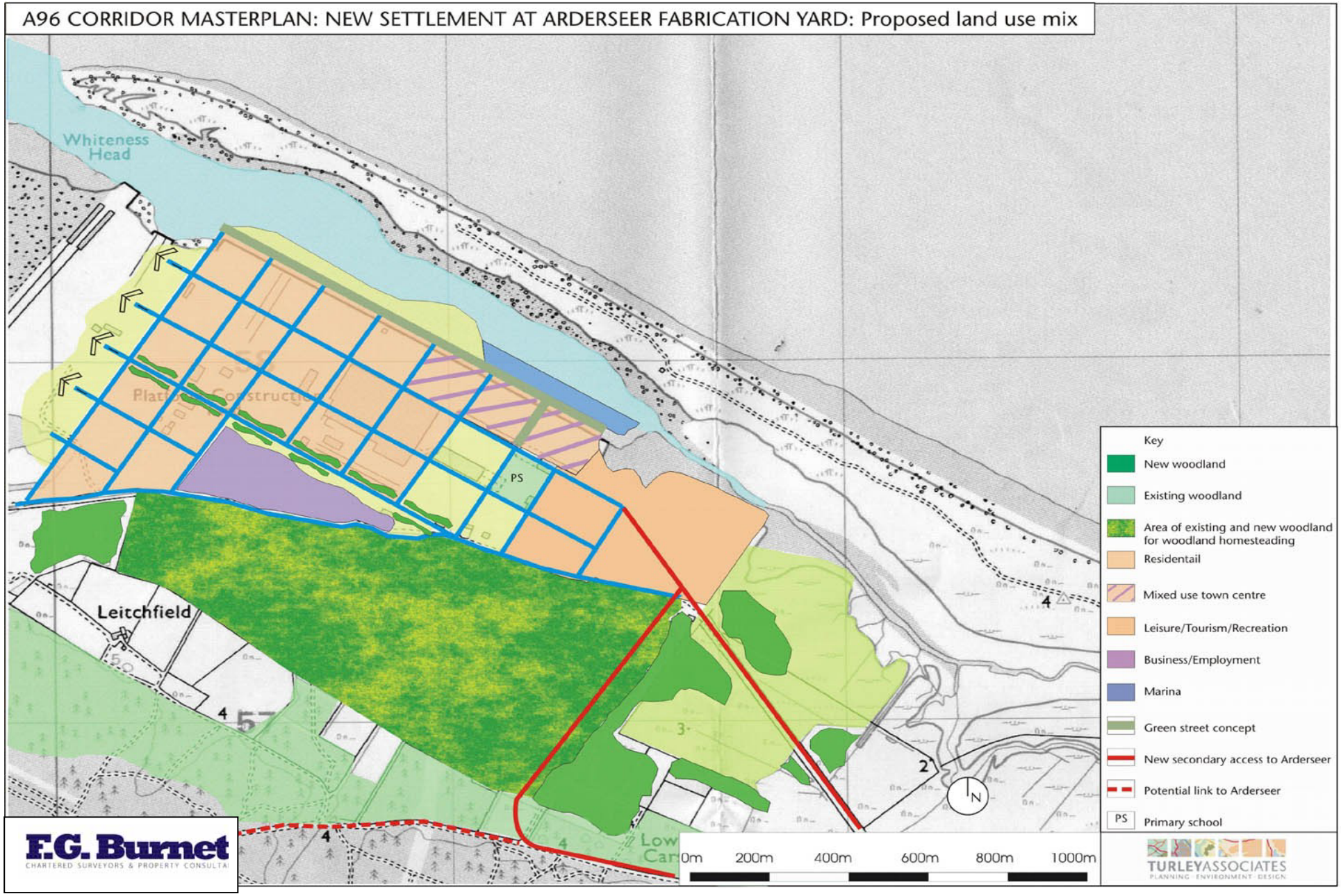
A96 CORRIDOR MASTERPLAN: NEW SETTLEMENT AT ARDERSEER FABRICATION YARD: Proposed land use mix



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