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Acute Hospital Project  
Forth Valley NHS Board

# Environmental Statement: Non-Technical Summary

March 2005

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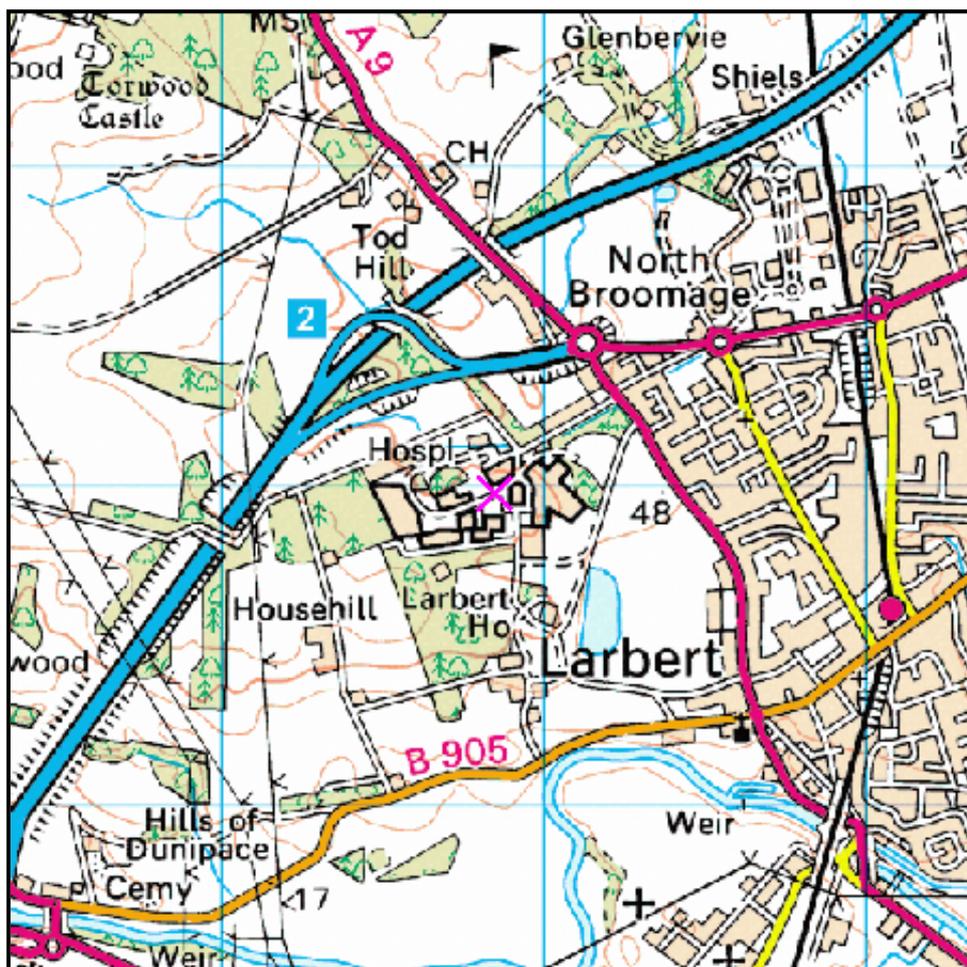
## 1.1. Project Introduction and Background

Mott MacDonald was commissioned in September 2004 by Forth Valley National Health Service (NHS) Board to undertake an Environmental Impact Assessment (EIA) of the proposed new Acute Hospital for the Forth Valley area located at the former Royal Scottish National Hospital (RSNH) site in Larbert. This is the Non Technical Summary (NTS) of the Environmental Statement (ES) which has been prepared to accompany the Outline Planning Application (OPA) for the proposed development.

Forth Valley NHS provides health services to a population of approximately 277,000 in a geographical area stretching from the Trossachs in the north-west to the outskirts of Edinburgh in the south-east. Following extensive public consultation and stakeholder engagement an Integrated Healthcare Strategy for the area was agreed by the NHS Board in July 2003 and the strategic direction for the Forth Valley approved by the Minister for Health and Community Care in November 2003. The current situation where services are divided between Stirling and Falkirk Infirmaries is no longer considered sustainable. The decision to centralise acute services on one site, supported by enhanced primary care and community services across the area, marked the end of a long period of uncertainty and met with broad public and political support from across the Forth Valley area.

The site is strategically placed in the central belt of Scotland, broadly equidistant from Edinburgh and Glasgow, and has direct motorway links with both cities. It is an exceptional site, in a largely parkland setting, extending to some 115 hectares (ha). Around 29ha have been identified as the area within which the new hospital would be developed.

**Figure 1:** Site Location Plan



Procurement of the scheme is being considered through Private Finance Initiative (PFI), a process where a private developer finances the provision of a public facility (i.e. the hospital) and leases it back to the public operator (Forth Valley NHS Board). At the time of writing this ES the pre-qualification stage is nearing a close, with the market set to be invited to enter the tendering phase in April 2005. It is anticipated that Falkirk Council will be involved in the evaluation of responses from potential developers.

Due to the extensive nature of the site, the NHS Board worked jointly with Falkirk Council as Planning Authority to agree a Development Framework for the whole site. This identifies other zones on the site outside the area required for the new hospital where there would be the opportunity for other associated developments to be considered.

Falkirk Council recently concluded a public consultation exercise on the draft Development Framework and the outputs were considered in late November/early December 2004. The Development Framework was subsequently approved in December 2004 and forms the basis of the application for Outline Planning Consent.

The aim of the ES is to describe the nature of the proposed scheme, the existing baseline environment and to identify and assess those impacts likely to be significant as a result of the scheme and identify measures to mitigate these effects. The ES will also identify any residual impacts. The indicative design has been used, where appropriate, to assist in this process and the points revealed will inform the development of the detailed design to be undertaken by the successful Bidder.

## 1.2. Site and Project Description

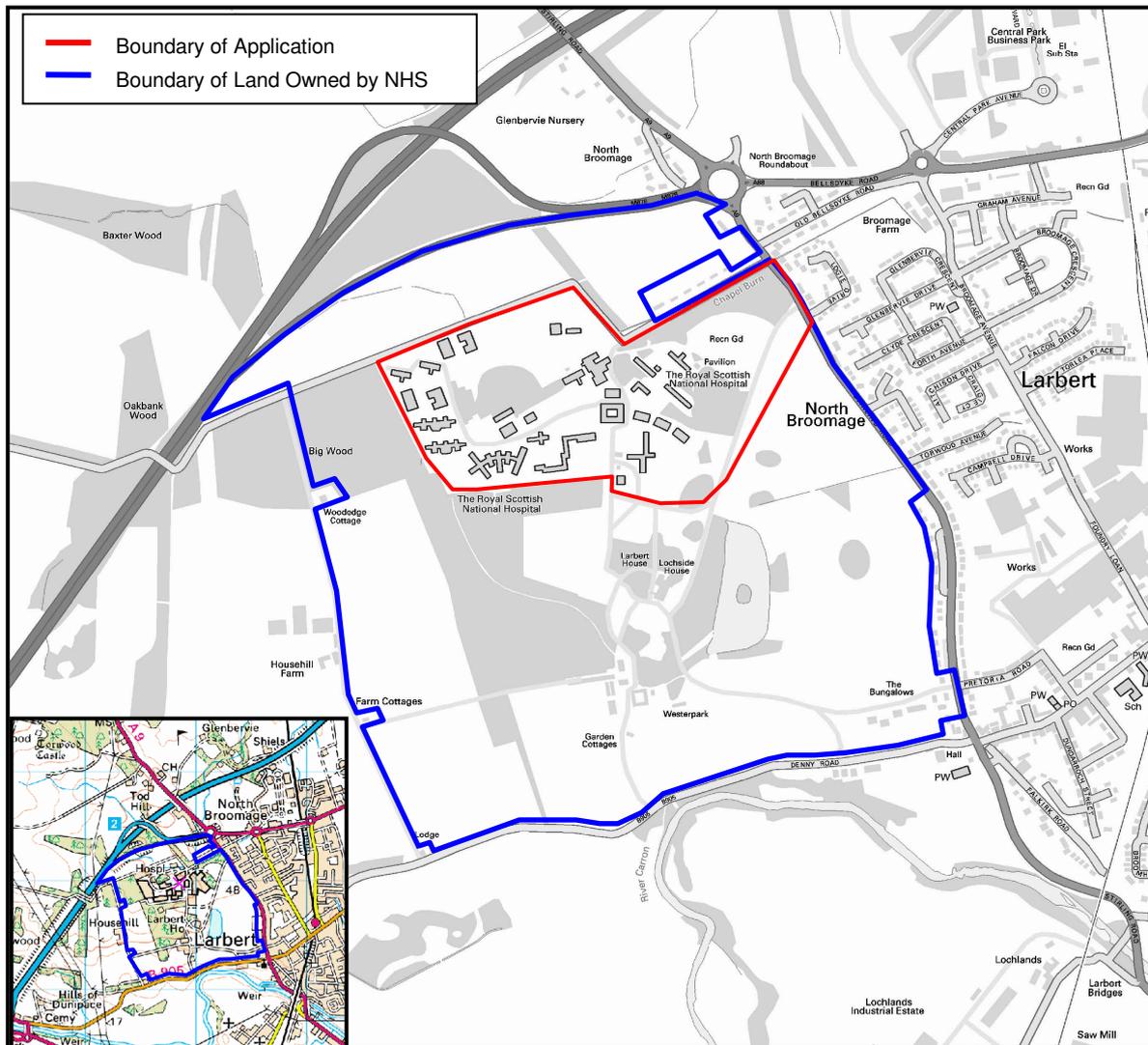
The former RSNH site is located in the countryside to the north of Falkirk and east of Larbert and Stenhousemuir. It is an area of land of approximately 115ha bounded to the north by the M876 motorway, to the west by a field boundary, to the east by Stirling Road and to the south by B905 Denny Road. The site itself comprises an extensive and attractive parkland setting including the listed Larbert House and its environs. The centre of the site is at National Grid Reference NS 852 828.

Although all land is owned by NHS Forth Valley, a 29ha brownfield area in the north of the site is proposed to be used for the hospital development, as shown in Figure 2 below. This part of the site was previously occupied by a 1000-bed mental health institution and the intention is to redevelop it to provide modernised acute services for the Forth Valley area.

Forth Valley NHS's vision is to provide acute inpatient services in a single, centralised location with a range of non-acute inpatient beds together with the facilities for daycase, outpatient and diagnostic services being provided from a number of community and district hospitals throughout Forth Valley. The new acute hospital is anticipated to contain the following services and associated department provision:

Emergency Care	Emergency Centre
Complex Services	Intensive Care Unit / High Dependency Unit, Coronary Care Unit, Generic Inpatient Ward
Ambulatory Care	Outpatients, Day Unit, Oncology, Renal Unit, Sexual Health
Rehabilitation & Intermediate Care	Rehabilitation Unit, Acute Stroke Unit, Day Hospital, Neurology Department, Therapy Department
Women's & Children's Services	Maternity Outpatients, Maternity Inpatients, Obstetric Inpatients, Gynaecology, Paediatrics.
Clinical Support Services	Area Sterilisation & Disinfection Unit, Operating Theatres, Radiology, Laboratory Services, Pharmacy, Mortuary.
Non-Clinical Support Services	Main Entrance, Corporate Offices, Staff Facilities, Etc.
Mental Health	Acute Adult Inpatient, Old Age Psychiatry Inpatient, Intensive Psychiatric Care Unit

**Figure 2:** Extent of Forth Valley NHS land ownership (blue) and core hospital site (red)



### 1.3. Alternatives Considered

A number of sites were considered and evaluated in detail before the site of the former RSNH hospital at Larbert was selected as the preferred location for the new hospital. A former mental institution, the RSNH was deemed surplus by Forth Valley NHS in the late 1990's following a steady decline in the number of residents. This reflects the view that long stay hospital care is no longer the most appropriate environment for people with learning disabilities while developments in community services offer more appropriate support for people with disability and their carers.

## 1.4. Policy and Planning Framework

The RSNH site is identified within Falkirk Council Structure Plan (June 2004) as a Strategic Development Opportunity (Policy ECON1). Proposed uses identified include office, industry, distribution, residential, community facilities, leisure and tourism (ancillary to business). The Structure Plan notes that priority must be given to the sensitive treatment of the existing landscape and buildings on the hospital sites.

The Falkirk Council Strategic Environmental Assessment Local Plan Consultative Draft (June 2004) states under Larbert and Stenhousemuir that “The development at RSNH of a new Forth Valley acute hospital will have very significant environmental impacts on the area, particularly in terms of increased traffic generation. The development should benefit from the reuse of brownfield land and will allow flooding problems on the Chapel Burn to be addressed. The site is a sensitive one and will require careful masterplanning to ensure development is integrated successfully into the high quality landscape setting.”

**Figure 3:** Former RSNH Hospital, Larbert (to be demolished)



**Figure 4:** Existing buildings, roads and car park (to be demolished)



## 1.5. Approach and Methods

The ES has been written in accordance with the following statutory requirements and guidelines:

- *The Environmental Impact Assessment (Scotland) Regulations 1999* ('the Regulations');
- *The Environmental Impact Assessment (Scotland) Regulations 1999 Circular 15/1999* ('the Circular'); and
- *Planning Advice Note (PAN) 58 Environmental Impact Assessment* ('PAN 58').

The range of environmental topics addressed in the assessment is referred to as its technical scope. Schedule 4 Part 1 of the EIA Regulations which is titled "Information for inclusion" identifies aspects of the environment which should be considered - population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the inter-relationship between the above factors. This list has been refined and adapted with reference to good EIA practice and covers the following:

- Transport and Access;
- Recreation and Non Motorised User Access;
- Noise and Vibration;
- Flora and Fauna;
- Geology, Soils and Contaminated Land;
- Water Quality and Resources;
- Air Quality and Climate;
- Cultural and Archaeological Heritage; and
- Landscape and Visual Amenity.

In assessing the magnitude and significance of impacts due to the lack of detailed design information available at this stage of the PFI process a precautionary approach has been adopted and assumptions have been made where appropriate. Where there has been the need to make assumptions to undertake the assessment of particular impacts these have been described and explained in the different impact sections.

## 1.6. Transport and Access

A Transport Assessment (TA) was originally undertaken by Atkins and an Addendum was produced by Colin Buchanan in March 2005. The study comprises an analysis of road capacity in the Larbert site area using forecast base traffic flows. The study has demonstrated that several junctions will experience significant operational problems. The TA and an associated Travel Plan (TP) provide advice on mitigation measures for the highway network, maximising the use of sustainable transport modes and ensuring that the TP continues to be a live and flexible tool. The following points can be concluded from the Addendum TA and TP:

- It is essential that the site is penetrated by frequent public transport services;
- A frequent bus link between the hospital site and Larbert train station will be necessary if travel by rail is to be a viable option;
- Access to the site for all vehicles will be via a new roundabout on Stirling Road;
- Provision will be made in the detailed design of the roundabout to retain adequate access to adjacent residential property;
- The site will be permeable by foot and bicycle;
- Detailed investigation should be undertaken with a view to extending existing cycle networks to serve the site;
- Parking provision required for the hospital is estimated to be in the region of 1,700 spaces;
- 95% of staff live within 25km of where they work;
- 82% of staff drive to work;

- 65% of patients drive to the hospital with a further 22% arriving as car passengers;
- The walking catchment of the site is currently limited with 2% of staff living within 2km of the site;
- 13% of staff live within a 5km cycle of the site;
- 12% of staff live within 800m of rail stations that would serve Larbert;
- 32% of staff live within 400m of a bus route;
- 63% of staff live within 400m of all direct and frequent connecting bus services;
- Mode share targets have been set and based on observed mode shares and the Falkirk Local Transport Strategy;
- A travel plan will have to be in place prior to the opening of the hospital to educate and influence staff, patient and visitor travel with respect to options available for travel to the new site;
- A comprehensive threshold analysis revealed that North Broomage, Bellsdyke Road / Broomage Avenue, Inches, Larbert Cross, Camelon, Antonshill, Tryst Road and Kirk Street / Kirk Avenue junctions all required to be analysed in detail;
- The threshold analysis also highlighted that Bowtrees Roundabout and South Bellsdyke Roundabout would require further consideration in the context of the hospital proposal. This is not included in this assessment; and
- Detailed analysis indicated that Bellsdyke Road / Broomage Avenue, Inches, Larbert Cross, Camelon and King Street/Kirk Avenue junctions all require to be mitigated to cater for proposed hospital traffic.

## 1.7. Noise and Vibration

Potential exists for the proposed development to cause noise issues in the local area during both the construction and operational phases. Impacts can be minimised by using appropriate construction methods and site management and adopting relevant codes of practice during the construction phase. The operational phase of the hospital will not be inherently noisy and careful design of the development will ensure noise disruption is kept to a minimum. Traffic moving to and from the site will have a small impact on the noise climate of the area but this will be mainly during the working day when background noise is generally higher and disruption is likely to be minimal.

It was established that existing facilities on the site are only used to a limited extent and much of the area is used recreationally by the local population for activities such as walking and cycling. Consequently, the site is described as quiet and tranquil. The site is largely bordered by agricultural land with residential areas mostly on the eastern boundary. There is no history of noise complaints regarding the site but during consultation on the Development Framework, some concerns were expressed about noise impacts on residents of Stirling Road.

Potential noise impacts from the construction phase were identified as construction activities and vehicle movements on and around the site. The nearest sensitive receptors, approximately 100 metres from the site boundary, are most likely to be affected. The operational phase noise impacts include traffic entering and leaving the site and heating, ventilation and air conditioning plant on site. Residents of Stirling Road are most likely to be affected by the traffic noise.

Mitigation of construction phase noise impacts will be achieved by using best practice in the selection of construction techniques. Additionally Section 61 of the Control of Pollution Act 1974 allows for consent to be drawn-up between the contractor and Falkirk Council which establishes the construction techniques to be used and the methods that will be adopted to minimise noise impacts of the construction process. Adoption of this approach would be subject to consultation and agreement with Falkirk Council. Reference will be made to British Standard 5228 (Noise Control on Construction and Open Sites) for guidance on noise control techniques which are likely to include specifying the hours of operation with no night time working except in exceptional circumstances.

Noise mitigation of the operational phase will be addressed at the design stage by ensuring potentially noisy plant are located and installed in such a manner as to minimise the impact on local receptors. Impacts from traffic generated by the new facility will be minimised by design of the access road to ensure smooth flow which generates less noise.

Overall, there are likely to be some adverse noise impacts from both the construction and operational phases of the project. However, construction impacts will be temporary, controlled and managed. The most significant impacts from the operational phase are likely to be from traffic entering and leaving the site. These impacts will be limited to day time hours when background noise levels are higher and disturbance is less likely.

## 1.8. Recreation and Non-Motorised User Access

The RSNH estate is currently well used by local people for informal recreational activities. The proposed Carronshore – Larbert West Strategic off road route will run along the southern boundary of the development area and the Old Denny Road, along the north of the site, is an important link for horse riders and walkers to the open country north west of the estate. It is estimated that approximately 14% of hospital staff could potentially live within cycling and walking distance of the new hospital. The same percentage applies to patients and hospital visitors (though in practice patients may need transport to get to the hospital). There is currently no controlled crossing between the Stirling Road and the hospital grounds. There is a disused recreation ground on the east side of the hospital grounds.

The new hospital will generate significant volumes of motorised traffic by day and night. A new system of footpaths and cycle paths, linking up with historic paths and the proposed long distance off road route will be required to encourage safe walking and cycling to work and improve recreational access to the hospital estate. Controlled crossings will be required across Stirling Road. Benefits of the development may include: better management of the estate landscapes leading to improved recreation facilities, an improved footpath and cycle path system to encourage safe walking and cycling and better footpath and cycle path links to the countryside. A new recreation facility will be provided, to replace the existing one, which will be accessible to local residents

Consultation should be undertaken with the Ramblers Association, Open Space Society, British Horse Society, Cyclists Touring Club and other local walking, cycling and equestrian recreation groups to establish their requirements and views on proposed mitigation measures.

## 1.9. Flora and Fauna: Ecology

The developments main negative impacts arise primarily through loss of existing semi-natural woodland and potential disturbance and displacement of breeding birds, bats, badgers amphibians, reptiles, water voles and other small mammals. No international, national, regional or, local sites for nature conservation value exist within or adjoining the site.

Construction impacts are considered to be of short term duration through initial site clearance resulting in minor noise and pollution disturbance. Mitigation measures would reduce habitat loss by re-planting woodlands. However, semi-natural woodland would take a longer time to reach the maturity of the existing habitat.

Further ecological surveys are required to fully appraise the impacts of development on habitats and species of ecological value. The overall balance of the development is considered potentially beneficial in terms of general conservation impacts as the scheme would allow positive opportunities for ecological management, restoration and enhancement of the surrounding hospitals biodiversity.

## 1.10. Geology, Soils and Contaminated Land

The site comprises a mix of agricultural land, landscaped grounds and woodlands associated with the existing RSNH Hospital and Larbert House. The review of historical maps indicates the original hospital development has occupied the site since the 1930's when it was bought by the Colony Royal Scottish National Institution to establish a community for the care of adults with learning disabilities. The hospital has historically and is currently used as a care centre rather than a facility carrying out significant medical procedures. In addition, a number of the buildings on site are offices and used for administrative purposes. Prior to the development of the hospital the area comprised parkland surrounding Larbert House together with arable fields.

A review of historical information and a series of site inspections have indicated little evidence of contaminating activity having occurred at the site. Some potential localised sources of contamination such as an above ground un-bunded fuel storage tank to the rear of the former Larbert House and two boiler houses (one of recent construction) have been identified. Small quantities of contaminated material may be present in such hotspots across the site which should be removed during the construction phase. Asbestos should be removed prior to demolition by an appropriately qualified person. However given the proposed end use of the site, it is considered such hotspots are unlikely to pose a significant risk to future site users

Based on the current level of design and layout information available at this stage no special mitigation or remedial measures are anticipated and no further environmental studies are anticipated for contamination purposes.

## 1.11. Water Quality and Resources

The hydrological resources at, and in the vicinity of, the site are as follows:

- Chapel Burn;
- River Carron; and
- Loch Larbert.

**Figure 5:** Chapel Burn at Bridge on Old Denny Road



Development of the Larbert site for the new Forth Valley Acute Hospital could lead to water impacts but these are expected to be limited and not permanent. Impacts during the construction phase will be time limited and controlled by the use of appropriate pollution prevention techniques and by compliance with relevant procedures and requirements imposed by Falkirk Council and Scottish Environmental Protection Agency (SEPA). Water impacts during the operational phase are likely to be limited to and related to rainfall run-off which will be mitigated by the careful design of sustainable urban drainage systems (SUDS) and flood alleviation schemes.

**Figure 6:** Loch Larbert



## 1.12. Air Quality and Climate

Development of the Larbert site for the proposed hospital has the potential to impact on both local air quality and the wider climate. There are two phases to be considered; the construction phase and the operational phase. Both phases include activities which may impact on air quality.

Current baseline conditions were assessed using evidence and data available from Falkirk Council and on the national air quality database ([www.airquality.co.uk](http://www.airquality.co.uk)). An assessment was carried out which indicated that currently air quality in the area of the proposed development is good. Falkirk Council confirmed that there is no likelihood of air quality becoming an issue if the existing conditions continue.

Potential construction phase air quality impacts were identified as dust generation from activities such as excavation and materials handling and emissions from plant and vehicles working on the site or accessing the site from the local road network. Sensitive receptors for dust and plant emission impacts were identified to the north east of the site on Old Denny Road. Sensitive receptors for emissions from vehicles accessing the site are on Stirling Road to the east of the site.

Adoption of best practicable means for dust control and effective site management during the construction phase should ensure dust and emission impacts are minimised. A number of mitigation measures are suggested which focus on the establishment of a construction phase environmental management plan which will set out intended dust and emission control processes and techniques. Traffic flows during the construction phase are estimated to be less than 5% of the existing traffic flows on the local road network and therefore perceptible adverse impacts on air quality are unlikely.

Two areas of potential air quality impact are identified for the operational phase of the project; staff, patients and visitors accessing the site increasing traffic flows on local roads and emissions from the heating boiler plant on site.

To assess the increased road traffic air quality impacts a number of scenarios were assessed and scenarios included situations both with and without the development in 2010 and 2020. Baseline traffic flow data for 2003 was obtained from Falkirk Council and estimates of the increase in traffic flows with and without the development were calculated from data extracted from the traffic study completed for the project. Three local receptors were chosen as representative of the highest exposure to road traffic related pollutants, nitrogen dioxide (NO<sub>2</sub>) and particulate matter less than 10 microns in diameter (PM<sub>10</sub>). Whilst levels of both NO<sub>2</sub> and PM<sub>10</sub> will increase with the new hospital development none of the scenarios considered are predicted to lead to exceedances of objectives.

A number of suggestions were made for potential additional environmental improvements that could be incorporated into the design of the building. Travel management options were also suggested to reduce the impact of increased road traffic on the local road network.

The overall conclusion is that some adverse air quality impacts are inevitable but they should be minimal. During the construction phase impacts are likely to be temporary and well controlled. During the operational phase there should be a marginal negative air quality impact from the operation of the heating boiler and a marginal negative impact from the increase in road traffic. Nationally set air quality objectives for NO<sub>2</sub> and PM<sub>10</sub> are unlikely to be breached as a result of the development.

### 1.13. Cultural and Archaeological Heritage

There are no scheduled ancient monuments on the site, though remains of a large Roman Camp immediately west of the estate have been found. A civil war battle was fought in the valley below Larbert House. The house, category B listed, and its estate together form a good example of a designed landscape, typical of the area. Larbert House sits on a promontory of land surrounded by woodland and is a local landmark, clearly visible from the east. The existing hospital is well screened by woodland.

**Figure 7:** Larbert House



It is possible that further archaeological remains could be found during development. The new hospital building will be taller and occupy a far larger area of land than the existing buildings. Much of the woodland that currently screen the development site will be lost and the landscape setting of Larbert House when viewed from the east, will be diminished by the close proximity of the much larger hospital building. Replanting the original estate tree belt around the perimeter of the estate will, in the long term,

help to screen the new hospital. The development may make it easier to find new uses for Larbert House, the stables and the walled garden, thus ensuring their long term future.

## 1.14. Landscape and Visual Amenity

The RSNH estate falls into two landscape character types: the East Touch Fringe (rolling farmland; mixed woodland, tree clumps and avenues typical of policy landscapes; low walls and hawthorn hedges) and the Falkirk Denny Urban Fringe (gently rolling hills; river valleys; farmland on the edge of settlement; Roman settlements and trunk roads and power lines). The development is well screened from the south, west and north by mixed woodlands. It is currently partly screened from the east by clumps of trees and woodland. Larbert House and its environs are a great asset to the landscape character and quality of the area. The mixed woodlands of the estate and the loch are in need of management.

The development will increase the density of building on the northern part of the site. Large areas will be required for car parking and the development zone will be lit at night. The new building will be clearly visible from the east because the existing tree screen will be felled and this will detract from the local landscape character. The new roundabout and access road will reduce the area of farm land surrounding the estate. Benefits of the scheme will include the improved management of the estate woodlands and opportunities to replant some of the original 19th century planting layout which will in time help to screen the development.

**Figure 8:** Southern Pasture



## 1.15. Conclusions

This ES has been prepared as part of the EIA process, in accordance with *the Environmental Impact Assessment (Scotland) Regulations 1999*, in order that the likely effects of the new Acute Hospital development on the environment are fully understood and taken into account before the proposals are allowed to go ahead. The assessment process so far has investigated the existing conditions and identified and evaluated the likely significant environmental effects of the proposed development and measures required to mitigate any which are adverse. The EIA process also identifies any residual impacts following the introduction of mitigation measures.

The key topic areas where significant adverse environmental affects are likely are considered to be:

- Traffic and transportation; and
- Landscape and visual amenity.

It is considered that there are likely to be adverse environmental effects for the following:

- Flora and Fauna: Ecology;
- Geology, soils and Contaminated Land;
- Water Quality and Resources;
- Air Quality and Climate;
- Noise and Vibration; and
- Cultural and Archaeological Heritage.

Additionally it is anticipated that there could be beneficial non motorised user access and planning impacts when reviewed against the prevailing planning policy framework..

The EIA process will enable environmental factors to be given due weight along with the wider economic, social and policy issues as the planning application progresses. Both positive and negative impacts have been identified.