5.0 Environmental Appraisal

5.1 Introduction

5.1.1 Context

This section of the Planning Scheme comprises an Environmental Appraisal and details information relating to the likely significant effects of the development on the environment.

In accordance with the Planning and Development Act 2000, a Strategic Development Zone (SDZ) Planning Scheme must include

"Proposals relating to minimising any adverse effects on the environment, including the natural and built environment, and on the amenities of the area". In addition the Planning Scheme must also include "information on any likely significant impacts on the environment of implementing the Planning Scheme as prescribed under Section 177 of the Planning and Development Act 2000 in so far as such information is relevant to the detail contained in the scheme".

A full statutory Environmental Impact Statement (EIS) is not required for an SDZ under the above Act. The completion of the Planning Scheme does not however preclude or negate the necessity for an EIS to be prepared for individual developments within the SDZ if they are prescribed above the threshold requirements listed in the Schedules to the 'Environmental Impact Assessment' (EIA) Regulations implementing EC Directives 85/337/EEC ad 97/337/EU.

5.1.2 Environmental Appraisal Scope

The scope of this Environmental Appraisal is to present an appraisal of the 'likely significant cumulative' impacts of the full development of the SDZ. Where applicable, impacts during construction are also discussed, together with recommendations on mitigation measures as appropriate.

The Environmental Appraisal Report is divided into the following sections: -

- Services and Infrastructure – Section 5.2
- Traffic and Transportation – Section 5.3
- Soils and Geology – Section 5.4
- Air Quality – Section 5.5
- Noise and Vibration – Section 5.6
- Landscape and Visual – Section 5.7
- Flora and Fauna – Section 5.8
- Archaeology and Cultural Heritage – Section 5.9
- Socio-Economic Impacts – Section 5.10
- Interaction of Effects and Cumulative Impacts– Section 5.11
- Summary and Conclusions– Section 5.12

5.1.3 Terms of Reference

The Environmental Appraisal undertaken has been carried out in accordance with the 'Brief for Consultants to prepare a Strategic Environmental Appraisal for Adamstown SDZ Planning Scheme', issued by South Dublin County Council in June 2002. Reference has also been made to the 'Department of the Environment and Local Government 'Guidelines on Preparing Planning Schemes for Residential Development in Strategic Development Zones'.

5.1.4 Planning and Policy Context

Section 1.6 of the Planning Scheme outlines the main strategic planning and policy guidelines applicable to the Planning Scheme for Adamstown. This includes the following documents:-

- Planning and Development Act 2000;
- South Dublin County Development Plan 1998;
- Adamstown Local Area Plan 2001;
- Strategic Planning Guidelines for the Greater Dublin Area 1999;
- A Platform for Change – DTO Strategy 2000-2016;
- Residential Density Guidelines for Planning Authorities 1999.

The Planning Scheme for Adamstown is in accordance with the above documents. In addition, the following planning and policy guidelines are considered in this section:-

- Sustainable Development – A Strategy for Ireland 1997;
- National Development Plan 2000-2006;
- National Climate Change Strategy 2000.

5.1.4.1 Sustainable Development – A Strategy for Ireland 1997

The central aim of the Strategy is to provide a comprehensive analysis and framework that will promote sustainable development in Ireland. It also supports the commitment that Ireland made to sustainable development at the Earth Summit in Rio in 1992. One of the main objectives of the Adamstown SDZ development is to promote sustainable development principles and in particular to:-

- Integrate strategic economic and social planning
- Promote ecological principles, environmental upgrading and open spaces
- Promote sustainable transport - Improve accessibility and design flexibility
- Encourage use of energy efficient building practices

The Planning Scheme for Adamstown thus conforms to the stated objectives of the above Strategy.

5.1.4.2 National Development Plan 2000-2006

The central aim of the National Development Plan 2000-2006 (NDP) is to implement public policies, which will ensure the sustainability and consolidation of Ireland's recent economic growth. This is based on the development needs of the country and on achieving an appropriate balance between development and environmental conservation. The key policies of the NDP, which relate to the Planning Scheme for Adamstown, include continuing sustainable national economic and employment growth, fostering balanced regional growth and promoting social inclusion. The Planning Scheme for Adamstown aims to create a sustainable and vibrant community in a town with an excellent public transport system in addition to providing a broad mix of residential, employment and district centre uses. Thus the Planning Scheme for Adamstown conforms to the stated objectives of the National Development Plan. Several planned transport infrastructure projects being funded by the NDP, including improvements to the road and rail network will directly impact on and facilitate the proposed site. These projects are outlined in greater detail in Section 5.3.

5.1.4.3 National Climate Change Strategy 2000

The National Climate Change Strategy provides a framework for achieving greenhouse gas emission reductions, and is an essential step in preparing the country for the ratification of the Kyoto Protocol. The National Climate Change Strategy is relevant to the Planning Scheme for Adamstown in the areas of energy usage and transportation. The Planning Scheme for Adamstown aims to promote a high quality architectural design of buildings and spaces in accordance with the principles of sustainable development. In relation to the transport sector, the Strategy recognizes that a modal shift is necessary (i.e. increased use of public transport instead of the private car). One of the main objectives of Planning Scheme for Adamstown is to facilitate an excellent system of public transport as an attractive and reliable alternative to car use. It also aims to promote both walking and cycling as desirable and realistic alternatives to car use. Thus the Planning Scheme for Adamstown conforms to the stated objectives of the National Climate Change Strategy.

5.2 Services and Infrastructure (Water Supply, Surface Water, Foul Drainage, Solid Waste)

5.2.1 Introduction

This section examines the potential impacts on services and infrastructure associated with the proposed development.

5.2.2 Methodology

Reference is made to a number of studies prepared for the Adamstown Area including the following:

Report Title	Author	Date
Adamstown SDZ - Interim Design Report on Roads and Services	PH McCarthy and Partners	2002
Review of Interim Design Report on Roads and Services	Arup Consulting Engineers	2002
Adamstown SDZ – Public Private Partnership - DMDS 9B Foul Sewer Modelling	PH McCarthy and Partners	2001
Review of DMDS 9B Foul Sewer Modelling Report	Arup Consulting Engineers	2001
Drainage Review Study – Final Report - Lucan-Clondalkin (9B) Catchment	MC O'Sullivan & Co. Ltd.	1998
Adamstown Area Action Plan – Drainage Review 1999	PH McCarthy and Partners	1999
Outer Ring Road EIS	Arup Consulting Engineers	2001

5.2.3 The Existing Environment and Proposed Services Infrastructure

Existing and proposed services are detailed in Section 2.5. The site is currently "green-field" in nature thus no water supply, surface water or foul sewer infrastructure is present.

5.2.4 Evaluation of Potential Impacts

5.2.4.1 Construction

There is a potential for impacts during the construction of the development. With the provision and implementation of industry standard construction quality control assurance however, there is minimal risk of any flooding potential or groundwater/surface water pollution incidents occurring. Materials that will require disposal may include machinery oils, general debris, excess subsoil and food waste.

5.2.4.2 Operation

Water Supply

There is no existing water supply infrastructure within the Adamstown area. The proposed water supply network is described in Section 2.5. The Lucan/Palmerstown High Level Water Supply Scheme (LPHLWSS) will be adequate to provide the additional water supply required for the development. The impact of connecting the new network to existing mains may result in pipe bursts due to increased pressures and the possible reversal of flows across existing meters and district metering. Once the new water network is fully installed it is envisaged that any initial technical difficulties will be resolved.

Surface Water

There is no existing surface water drainage infrastructure within Adamstown. Adamstown is subdivided into three surface water drainage sub catchments; Tobermaclugg, North East Griffeen Tributary and South East Griffeen Tributary (Figure 5.4). The proposed surface water drainage network includes the following: -

- Upgrading the capacity of the existing channel of the Tobermaclugg Stream via new pipework along Tubber Lane.
- Attenuation of storm water in the North-East Griffeen Tributary catchment via underground storage tanks which will then drain to an existing pipe at the rear of Superquinn shopping centre on Newcastle Road.
- Attenuation of storm water in the South-East Griffeen Tributary catchment via underground storage tanks which will then drain via an existing drain under the Newcastle Road.

The proposed surface water drainage network is further detailed in Section 2.5.

Potential impacts from the development could include pollution of existing watercourses and culverts from surface water run-off.

Subject to the agreement of the Eastern Regional Fisheries Board and the Environmental Service Department of South Dublin County Council, some channels of the existing watercourses within the development lands may be permanently diverted and utilised as landscape features within green areas.

Foul Water

There is no existing foul sewerage infrastructure within Adamstown. The proposed foul water sewerage network is detailed in Section 2.5. This includes building a new pumping station at Tobermaclugg to facilitate the Tobermaclugg sub-catchment and upgrading the sewer/ pumping station network in the area. The South-East sub-catchment will be drained via the Lucan-Esker Pumping Station, which will be upgraded to facilitate the proposed development. The North-East sub-catchment will be drained via the Lucan Low Level Pumping Station, which will also be upgraded. In addition, the 9B main gravity sewer will be upgraded. The proposed foul water infrastructure will be adequate to accommodate the proposed development, however introduction of screening facilities at both new and existing pumping stations could potentially lead to risk of odour problems.

Solid Waste

The development of Adamstown will lead to increased waste generation and requirement for disposal of this waste. The main waste streams associated with a development of this nature, once construction is finished will generally be of domestic or commercial wastes.

5.2.5 Mitigation Measures

Water Supply

The proposed water supply infrastructure will be adequate to accommodate the development.

Surface water

A number of measures are proposed to alleviate the flooding along the Tobermaclugg Stream from the Backstown Stream include replacing the small diameter culverts with larger culvert sections, regrading and increasing the existing channel size to increase capacity along Tubber Lane and augmenting the capacity of the culvert under the N4. In addition, a complete topographical survey of the Griffeen Tributary and Tobermaclugg Stream downstream of the development will be carried out. This will further lead to the development of a hydroworks model to facilitate the detailed assessment of flood alleviation and attenuation requirements and any necessary adjustments to the storm water drainage master plan. Storm water generated in both the North East and South East Griffeen tributary catchments will require attenuation due to the limited available capacity of the existing down steam pipework. The provision of underground storm water storage tanks will to ensure that the downstream capacity of the Griffeen stream is not exceeded.

Adequately sized hydrocarbon interceptors will be installed to reduce inputs of pollutants and suspended solids into the surface water drainage system. Catchpits will be provided upstream of each storage facility within the development to prevent the discharge of sediments and other settable matter into the water courses.

Foul Water

Any odour problems associated with the proposed screening measures will be resolved through the detailed design and development of Operation and Maintenance procedures.

Solid Waste

Subsoil from excavations will be reused on site where possible but there may be excess material to be disposed of off-site. These materials will be disposed of or recovered, in accordance with the Waste Management Act 1996 and the Waste Management (Landfill Levy) Regulations 2002 to licensed landfills or waste recovery facilities. A regular programme of site tidying will be established to ensure a safe and orderly site. Scaffolding will have debris netting attached to prevent materials and equipment being scattered by the wind.

In terms of refuse and commercial waste, the services of South Dublin County Council (SDCC) and the private sector will be required to remove domestic refuse. At present the Council operates an Engineered Landfill for baled waste at Arthurstown, Co. Kildare. The disposal system will be designed to facilitate the segregation and separate collection of recoverable wastes if required.

Every effort will be made to encourage reduction and recycling of waste at Adamstown. South Dublin County Council, as part of its policy to foster and encourage recycling schemes, has made areas available at the Ballymount Civic and Amenity Facility for recycling facilities. These include facilities to recycle newspapers, light cardboard, magazines, aluminium and tin cans. A facility for the reception of green waste for composting was opened at Esker Lucan in 2001.

The Council also contributes to Rehab Recycling Partnership in relation to the placing of Bottle Banks at various locations throughout South Dublin, and supports Recoverable Resources Ltd. which is a can recycling venture. Support is also given to a textile recycling enterprise. It is envisaged that all the above recycling initiatives will be incorporated into the Adamstown SDZ.

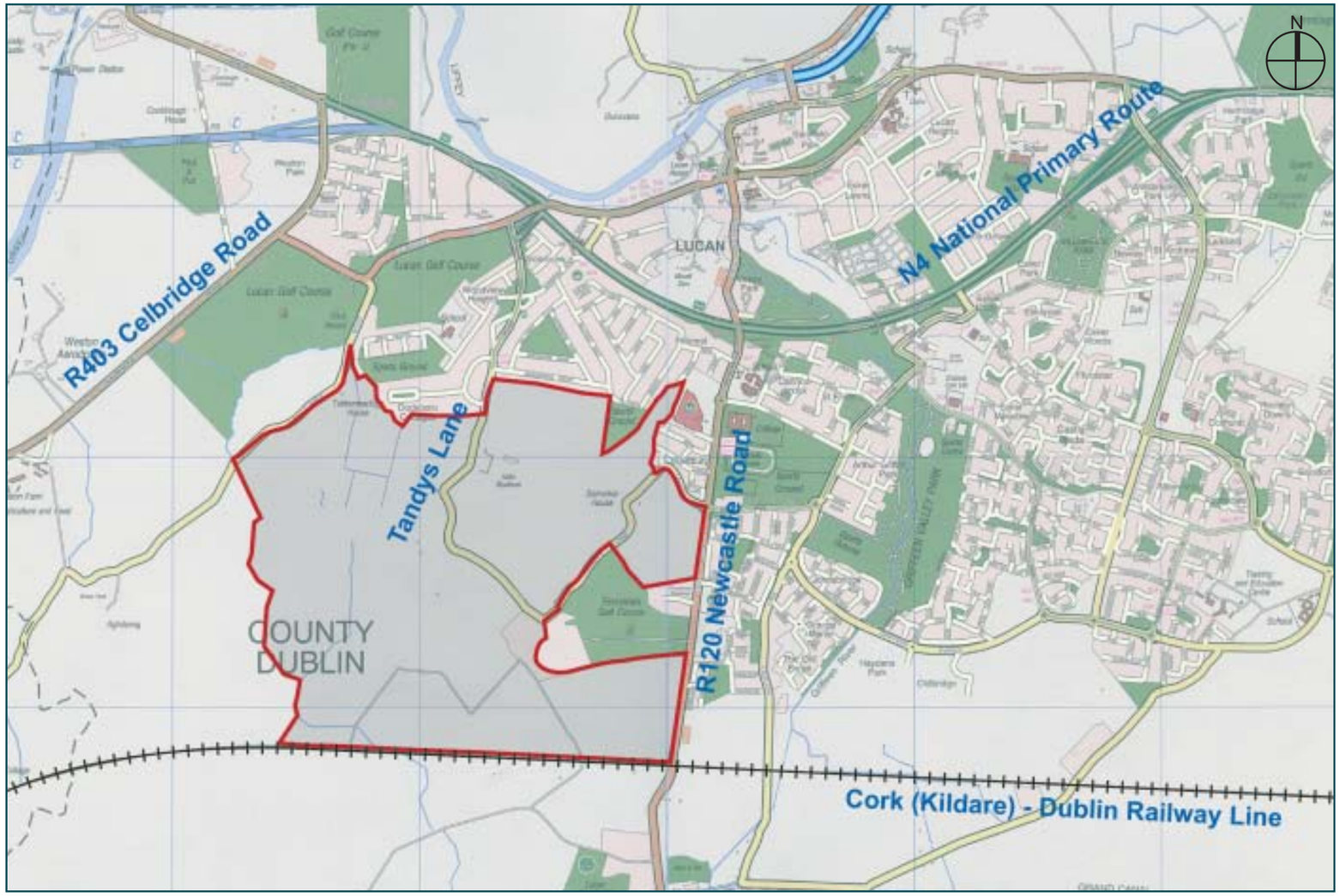

Figure 5.1. Existing Transport Infrastructure

5.3 Traffic and Transportation

5.3.1 Introduction

This section assesses the traffic and transport impacts of the development within the Adamstown SDZ Scheme and on the surrounding area. A review of the existing transport infrastructure in the area is initially presented. A review of transport elements of the proposed development, together with planned transport infrastructure servicing the development, is then outlined. Impacts of the Adamstown SDZ Area development are then presented, together with mitigation measures and recommendations on phasing and implementation as appropriate.

The SDZ Planning Scheme places a significant emphasis on the promotion of sustainable balanced transport objectives through the provision of new public transport links and improvements to public transport capacity. The area will also be serviced by planned improvements to the local (development proposals) and strategic road network in the vicinity.

5.3.2 Methodology

The traffic and transport assessment has been based on a number of information sources as follows: -

- Proposals outlined in the 'Adamstown Local Area Plan - July 2001';
- Traffic model prepared by TPI Limited (Adamstown SDZ - Interim Design Report on Roads and Services, PH McCarthy and Partners, 2002);
- Outer Ring Road Traffic Model developed by Arup on behalf of SDCC, updated in October 2002 (the extent of this model includes the proposed Adamstown Area);
- Traffic and transport trip generation is based on the development types and limits set out by the Adamstown Planning Scheme;
- DTO Platform for Change Strategy 2000-2016 (Transport Strategy for the Greater Dublin Area).

5.3.3 The Existing Environment

This section presents a summary of the existing environment in terms of transport infrastructure together with the status of proposals for the Adamstown area contained in the "Adamstown Local Area Plan – July 2001".

Adamstown is currently a 'green-field site' with limited accessibility by road. Existing transport infrastructure in the vicinity of the SDZ Area is presented on Figure 5.1.

Major road infrastructure in the vicinity of the site includes the N4 National Primary Route, approximately 1.5km to the north, and the M50 Motorway, approximately 4.5 km to the west. The R403 Lucan/Celbridge Road, providing access to the N4 via the 'Leixlip Interchange', is located approximately 500m to the north west of Adamstown, while the Newcastle R120 (Lock) Road is located immediately to the east of the area. The site is traversed by 'Tandy's Lane'.

The Kildare (Cork-Dublin) Railway Line is located immediately to the south of the site, with the nearest stations located at Hazelhatch to the southwest and at Clondalkin to the east of the site. This railway line provides inter-city and suburban rail (between Kildare and Dublin) services.

5.3.4 Adamstown SDZ Trip Generation

An assessment of trip generation from the proposed development has been made as presented in Table 5.1 below. This assessment allows for all trips, including car-based trips and public transport trips.

Activity / Trip Generator	Low	High	Medium
No Residential units	8250	10150	9200
Ave household size	2.5	2.5	2.5
Population	20625	25375	23000
% Economically Active	49%	49%	49%
Economically Active	10106	12189	11148
Local employees	25%	25%	25%
Schools area	28395	33635	31015
Schools job rate	0.00139	0.00139	0.00139
School related jobs	39	47	43
Local school jobs	10	12	11
Non-Local school jobs	30	35	32
Supporting uses floorspace (assumes average)	79050	79050	79050
Supporting uses job rate	0.05	0.05	0.05
Supporting uses jobs	3953	3953	3953
Local supporting jobs (60%)	2372	2372	2372
Non-Local supporting jobs (40%)	1581	1581	1581
Total Jobs in area	3992	3999	3996
Total local employees in area	2381	2383	2382
Total local employees outside area	7725	9806	8766
Total non-local employees in area	1611	1616	1613
Commuting jobs outbound	7725	9806	8766
Commuting jobs in bound	1611	1616	1613
% of Commuting Jobs in Peak Hour	64%	64%	64%
AM Peak Hour Commuting Trips Outbound	4944	6276	5610
AM Peak Hour Commuting Trips In bound	1031	1034	1033

Table 5.1 Adamstown SDZ Assumed Trip Generation (Full Development)

Traffic modelling of the area indicates that approximately 60% of road-based trips generated by the SDZ Lands will use the Adamstown Link Road and Outer Ring Road to the east, with the remainder utilising the Newcastle Road and Celbridge Road Link to the west.

As indicated in Section 5.3.1, the SDZ will be serviced by significant public transport links and infrastructure improvements. Allowing for a 50% public transport mode split (in line with the DTO Platform for Change Strategy), when fully developed, approximately 3322 trips in the AM Peak period would be by public transport, the remainder being accommodated on the road network.

The phasing of the SDZ Development will be managed to ensure that appropriate levels of public transport provision are in place for each stage of the development, in order to meet the public transport objectives of the scheme.

Proposed road and public transport infrastructure improvements to service the SDZ lands are detailed in Section 5.3.5 below.

5.3.5 Proposed Transport Improvements

Details of planned road and public transport infrastructure improvements, which will support or facilitate the Adamstown SDZ, are discussed in this section. Planned transport infrastructure in the vicinity of Adamstown is presented on Figure 5.5. The infrastructure improvements indicated are based on the DTO 'Platform for Change (2000 – 2016) Transport Strategy and projects proposed under the National Development Plan and the South Dublin County Development Plan 1998.

Proposed Road Accessibility and Infrastructure Improvements

Development in the Adamstown SDZ will be supported by several major road improvement schemes outside the SDZ lands. Links to these roads, constructed as part of the SDZ development, will provide road and public transport access to Adamstown. Road accessibility to Adamstown will be via the strategic local road network. Planned improvements to the road network will have the effect of dispersing road-based trips to and from Adamstown across a number of north-south and east-west strategic roads.

Table 5.2. provides a list of the major road infrastructure improvements, directly servicing the proposed development, and time scales for planned completion.

Additional planned road schemes that will have an impact on accessibility to Adamstown include the M50 Widening and Junction Improvements Scheme (completion 2006).

Road Improvement Scheme outside SDZ	New Infrastructure / Upgrading	Opening Date	Link Road to Adamstown	Proposed / Existing
Outer Ring Road N81 to N7 and N7 to N4	New Infrastructure / Upgrading Existing Road	2004	Adamstown Link Road 9m wide single carriageway, bus lanes in each direction	Proposed
N4 between M50 and Leixlip Interchange	Upgrading	2006	Newcastle Road and Mills Stream Road	Existing
Celbridge/ Leixlip West interchange on N4	New Infrastructure	End 2002	Celbridge Link Road (to R403 leading to N4) 9m wide single carriageway	Proposed

Table 5.2: Planned Road Improvements

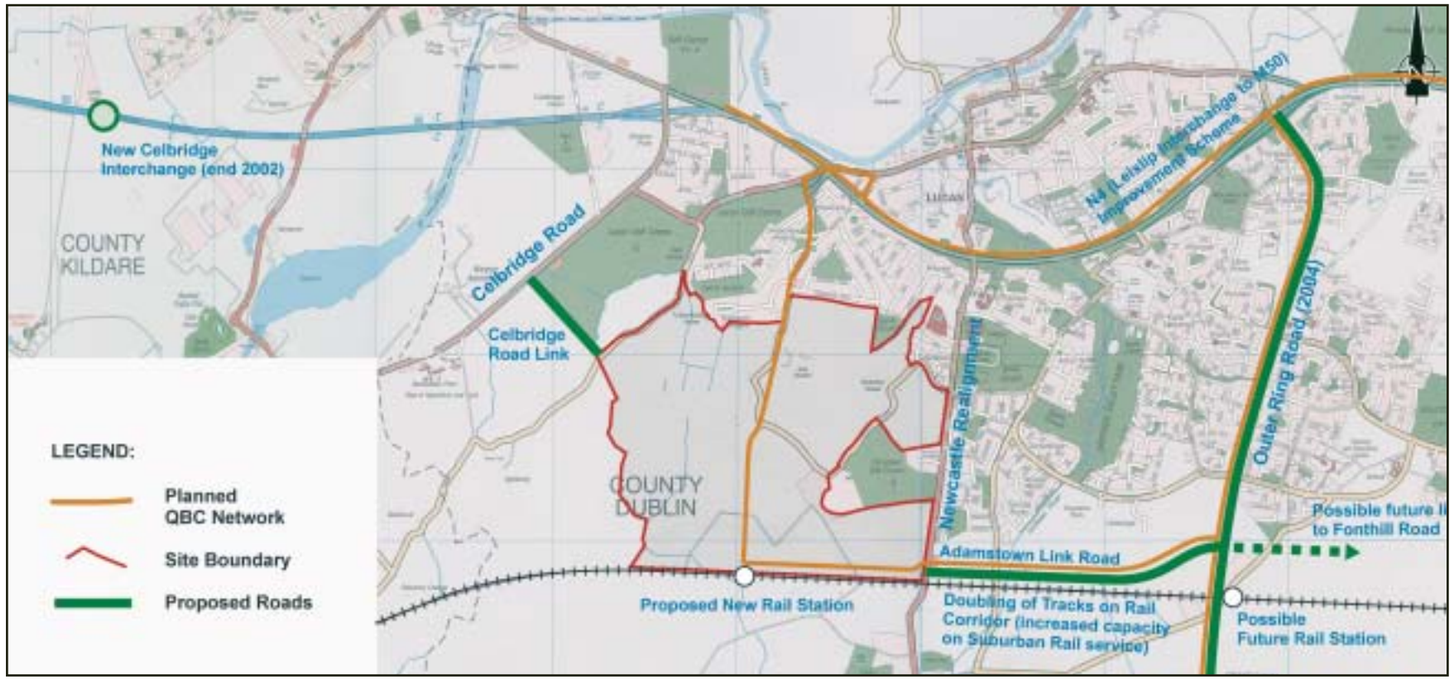

Figure 5.2. Proposed Transport Infrastructure

Suburban Rail

The two most significant elements rail infrastructure development for Adamstown are:

- The provision of a new railway station on the existing two-track railway line at Adamstown post 2003.
- The doubling of existing tracks on the Kildare railway line, scheduled for completion by 2007.

As indicated in Section 2.4 of the Planning Scheme, the Dublin (Heuston Station) to Kildare suburban rail service is currently being upgraded by Iarnrod Eireann. This work is being undertaken as part of a phased programme of improvement.

Stations improvements and additional railcars will increase capacity on the suburban service from 800 passengers per hour in each direction to 3000 passengers per hour in each direction. Proposals to double the tracks (i.e. segregate suburban services from inter-city services) would facilitate an increase in capacity to 8000 passengers per hour in each direction.

The Planning Scheme includes for the provision of a new station at Adamstown. The railway station would facilitate a transport interchange between all modes of transport including rail, bus, car, walking and cycling. Provision will be made for bus and taxi waiting areas, car drop off and car parking.

The development of accessibility to the SDZ lands by rail-based transport, particularly to and from Dublin City Centre, is considered integral to the sustainable development of the area and would reduce the number car-based trips generated by the development. The development of improved links between Heuston Station and Dublin City centre (Bus, Luas and the proposed Heuston – Connolly Rail Inter-connector), planned under the 'DTO Platform for Change Strategy' will significantly improve city centre rail accessibility from Adamstown.

Bus Network / Quality Bus Corridors

It is proposed that the Adamstown SDZ will be serviced by high capacity bus links, through the provision of 'Quality Bus Corridors', connecting to the Greater Dublin Area Quality Bus Network. There are two specific proposals with regard to future QBC access links:

- A busway to the south east of the SDZ between the railway station and the proposed Outer Ring Road QBC.
- A dedicated north-south busway through the centre of Adamstown, via Mills Stream Road, Dodsboro and the Celbridge Road. This will provide linkage to the N4 QBC.

Bus infrastructure within the Adamstown SDZ will be designed to a high standard, in terms of bus stop provision, interaction with pedestrian and cycle facilities and the design of a rail / bus interchange.

The provision of bus links from Adamstown SDZ to the strategic radial (e.g. N4 QBC) and orbital (e.g. ORR QBC) will provide an attractive and viable alternative to car-based trips in the area.

Walking and Cycling

The Planning Scheme provides for public transport and local centres within 5-10 minutes walking distance. Provision will be made for a network of direct, safe, secure and pleasant pedestrian and cyclist routes by all future development proposals. Development within the proposed SDZ, will allow for 'permeable' and direct access routes for cyclists and pedestrians. High quality, safe crossings points will be provided at road interfaces as appropriate. Traffic calming measures within residential areas will be provided as appropriate to create a safe environment for pedestrians and cyclists.

Internal Road Layout

The internal distributor and residential road network within the Adamstown SDZ will be developed in accordance with the guidelines set down in the Planning Scheme (see Section 2.3). A hierarchical road network will be designed to discourage through traffic from residential areas. Road types and cross section requirements, as outlined in the Planning Scheme, have been set to ensure appropriate use for each road type.

Car Parking

Car parking standards set out in the Planning Scheme (see Section 2.4) are designed to provide a balanced approach to dependence on private cars for accessibility to the Adamstown SDZ. The standards outlined are considered to be maximum standards, aimed at promoting sustainable modes of transport, proposed under the Planning Scheme for the SDZ.

5.3.6 Evaluation of Potential Impacts

5.3.6.1 Construction Impacts

Construction traffic would be generated by the following sources:

- Workers on specific development sites within the SDZ
- General materials deliveries
- Removal and disposal of materials off site.

The development of the SDZ Lands will however be undertaken on a phased basis. As such the impact of construction traffic on the surrounding existing local and strategic road network will be dispersed over a long period of time.

Material excavated during site clearance will be reused on site for landscaping as much as is possible, thereby reducing the amount of disposal and generated traffic movement off site.

Each development will be subject to approval of a construction traffic management plan. Access routes for materials deliveries, disposal, etc. will be agreed in advance, so as to prevent unsuitable or residential roads being used.

Construction Traffic Management Plans for development within the SDZ will require the following;

- Details and agreement on proposed construction access routes (site access routes will be confined to the strategic local road network and avoid areas of residential development)
- Agreed methodology for maintenance of access routes (road and wheel washing facilities), including noise and air quality control measures
- Restrictions on working hours adjacent to existing or new residential areas

The completion of the Adamstown Link Road from the Outer Ring Road and the new link road to the Celbridge Road, initially to haul road standard, will also facilitate access for construction traffic and will be utilised as such.

5.3.6.2 Post Development

The complete development of the Adamstown SDZ will generate a significant number of additional trips to the local and strategic road and public transport network. The development will however be facilitated by significant public transport infrastructure provision and linkage.

The development of a new station on the Kildare Railway Line (and Arrow suburban service), together with planned railway capacity improvements will provide a high capacity public transport service for trips into and out of Dublin. Similarly north-south and east-west bus priority links from Adamstown SDZ to the strategic Quality Bus Corridor network will provide an attractive public transport alternative to the private car.

The residual trips generated by the SDZ will be catered for by the local (development proposals) and strategic road network. The existing road network does not have capacity to facilitate increased trips generated by the full development of the SDZ lands. Planned road infrastructure improvements however, will provide sufficient capacity to facilitate the levels of development proposed.

The promotion of public transport, cycling and walking within the development, together with the development of a 'self contained' sustainable community is considered to be a positive impact of the proposed development.

5.3.7 Mitigation Measures

Mitigation of traffic and transportation impacts generated by the Adamstown SDZ will be provided by the development of supporting road and public transport infrastructure and the implementation of demand management policies such as phasing of development.

The planned improvements to the rail infrastructure and proposed new rail station directly servicing the SDZ Lands will have a significant positive impact in terms of mitigating potential impacts on the surrounding strategic road network.

The most significant mitigation measure recommended is the phasing / development control of the Adamstown SDZ Development, based on the programme for completion of supporting road and public transport infrastructure. The development of rail and bus public transport links, together with the supporting road infrastructure outlined, are integral to mitigating traffic impacts of the development on the existing and planned road network.

The implementation of demand management policies, such as the car parking standards outlined and the promotion of sustainable transport modes, will also seek to minimise traffic impacts of the Adamstown SDZ development.

5.4 Geology, Hydrology and Hydrogeology

5.4.1 Introduction

This section assesses the potential impacts of the development on the geology, hydrology and hydrogeology of the area

5.4.2 Methodology

Ground conditions in the area have been interpreted based on desk study information. Reference is made to the Outer Ring Road EIS (2001) and the Geological Survey of Ireland series – *Geology of Kildare-Wicklow Sheet 16*.

5.4.3 The Existing Environment

5.4.3.1 Geology

The Geology of the Adamstown area is characterised by the presence of Carboniferous limestone bedrock overlain by glacial till deposits common to the Greater Dublin Area. Reference to the Bedrock Maps of the "Geological Survey of Ireland" indicates that bedrock in the Adamstown area is referred to as Calp Limestone and can be generally described as dark grey, fine grained, graded limestone with interbedded black, poorly fossiliferous shales. An extract from the Bedrock Geology Map, covering the extent of the area, is reproduced as Figure 5.5. The overlying soils are grey brown podzolics and gleys derived from glacial till of Irish Sea origin with limestone and shale. There are no rock outcrops noted in the area.

5.4.3.2 Hydrology

Adamstown SDZ is currently drained by a number of streams and ditches (Figure 5.4). The Tobermaclugg Stream flows northwards through the western part of the site. The Tobermaclugg Stream is joined by the Backstown Stream on leaving the SDZ and continues along Tubber Lane and under the N4 via a culvert before discharging to the River Liffey in the vicinity of Lucan village. The north-east Griffeen tributary flows in a north-easterly direction across the north-east of the site and later discharges to the main channel of the Griffeen River. The south-east Griffeen Tributary flows east through the south-eastern corner of the site and later discharges to the Griffeen River. The Griffeen River feeds into the River Liffey at Lucan and the Grand Canal is situated to the south of the site. No watercourses in the Adamstown SDZ lands drain into to Grand Canal.

Figure 5.3. Bedrock Geology

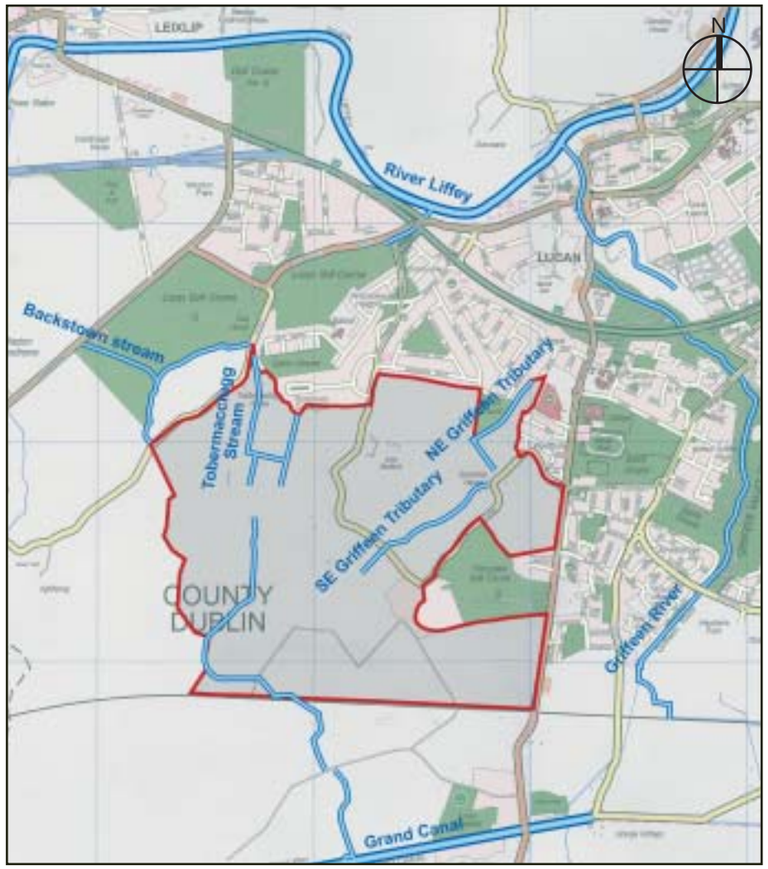

Figure 5.4. Hydrology

5.4.3.3 Hydrogeology

The Calp limestones are generally dominated by low permeability, fine grained and argillaceous limestones and shales. They are generally unproductive but there are certain strata in the South Dublin area that are more permeable and are classified as minor aquifers. They can usually produce yields sufficient to produce a domestic water supply. Reference to the Bedrock Maps of the "Geological Survey of Ireland" indicates that a number of warm springs occur in the Lucan-Celbridge area. The site of Tobermaclugg Holy Well was examined during the archaeological investigation (Section 5.9). However, water temperatures were not recorded during the investigation and no records were found to indicate that the well originates from a warm spring. The area was wet and marshy and appeared to be subject to periodic flooding.

The overlying quaternary boulder clays generally act as an "aquaclude" (confining layer) to the underlying bedrock. Perched pockets of water-saturated gravels may occasionally be encountered within the boulder clays.

5.4.4 Evaluation of Potential Impacts

5.4.4.1 Construction

It is envisaged that some works will be carried out below the existing ground levels. These works will include site clearance, re-routing of the existing services crossing the site, construction of foundations and installation of new services. Topsoil will be removed as part of the development. However, construction would involve very little excavations other than site clearance and topsoil stripping. There would generally be no dewatering activities required and consequently there would be no alteration of the groundwater table. The lack of excavations would also minimise the potential for impacts on the bedrock geology or pollution of groundwater.

There is the potential for run-off from the development which could cause contamination of watercourses by means of accidental spillages of diesel, etc. and silting as a result of disturbance while upgrading culverts etc. It is also proposed to divert some of the existing watercourses. This may result in pollution or silting.

5.4.4.2 Operation

Following the complete development of this site, it is envisaged that there will be no impact to geology, hydrogeology or hydrology (Section 5.2 deals with potential impacts on services such as surface water and foul water).

5.4.5 Mitigation Measures

- Topsoil will be stockpiled and generally used for landscaping.
- Construction impacts on watercourses will be kept to an absolute minimum by ensuring that good environmental working practices and policies are employed on site. For example, the storage of all fuels would be undertaken in accordance with recognized best practice and remote from sensitive watercourse receptors.
- Diversion of watercourses will be subject to the agreement of the Eastern Regional Fisheries Board and the Environmental Services Department of South Dublin County Council.
- The surface water system will be designed to ensure that it does not contribute to downstream flooding or pollution of watercourses (Refer to Section 5.2).

5.5 Air Quality

5.5.1 Introduction

This section assesses the potential impacts of the development on air quality in the area.

5.5.2 Methodology

Reference is made to previous air quality studies carried out in the surrounding area including those undertaken for the Outer Ring Road EIS and the Wyeth Medica Ireland Biotechnology Campus EIS.

5.5.3 The Existing Environment

In the region of the proposed development, current and projected pollution sources will be dominated by traffic emissions and burning of fuel for space heating. Specifically, these sources will emit pollutants, which are currently of concern due to their effect on human health and their potential to reach significant concentrations in ambient air. The pollutants of concern from these sources include nitrogen dioxide (NO_2), benzene, particulate matter of less than 10-micron size, (PM_{10}), carbon monoxide (CO) and sulphur dioxide (SO_2) due to their potential impact on human health. In addition carbon dioxide (CO_2) and nitrous oxide (N_2O) are of concern due to their potential impact on the climate.

Legislation changes have ensured that levels of black smoke and SO_2 (both historically from home heating) and lead (from leaded petrol), are small fractions of historical levels and now rarely approach the limit values. SO_2, smoke and lead are unlikely to be exceeded at locations such as the current one and thus these pollutants do not require detailed monitoring to be carried out.

Air quality in urban areas is expected to improve generally as a result of reductions of emissions from vehicles (NO_2, benzene CO and PM_{10}) despite increases in traffic volumes over the next few years. This is due to ongoing legislative-driven technical improvements to vehicle engines and emission-controlling devices on vehicle exhausts.

Existing residential areas comprise individual dwellings situated along Tandy's Lane, Dodsboro Road and Tubber Lane Road. Surrounding communities are predominantly low-density suburban housing and include Dodsboro cottages, Hillcrest and Meadowview Grove to the north, Lucan Village to the northeast, and various communities off Newcastle and Lock Road to the east.

A detailed modelling study undertaken for the Outer Ring Road EIS to the east of Adamstown has shown that concentrations of nitrogen dioxide, carbon monoxide, benzene and fine particles (PM_{10}) are currently below the significance criteria. In addition, the study has shown that compared to baseline conditions (year 2002), levels will generally decrease or remain at low levels in future years, as a result of legislation-driven technical improvements. Studies carried out for the Wyeth Medica Ireland Biotechnology Campus EIS indicate a good quality of ambient air in the general area with low levels of emissions from combustion, traffic and industrial sources

5.5.4 Evaluation of Potential Impacts

5.5.4.1 Construction

In common with all large construction sites, there is potential for dust emissions from the proposed development. Construction vehicles, generators etc., would also give rise to some exhaust emissions. These would be of short duration.

5.5.4.2 Operation

There is the potential for a number of emissions to atmosphere once the development is complete. This would include atmospheric emissions from the buildings and from generated traffic.

Emissions from the buildings will be related to the types of uses and occupancy within the development. The proposed development is not expected to generate atmospheric emissions that will require either an air pollution licence or an integrated pollution control licence. Boilers used for heating systems may cause emissions to atmosphere of pollutants including carbon monoxide, carbon dioxide, sulphur dioxide, oxides of nitrogen and particulates. Air conditioning may be required for some non-residential uses and may generate atmospheric emissions.

Road traffic would be expected to be the dominant source of emissions in the vicinity of the scheme. Emissions from particulates as well as nitrogen oxides and hydrocarbons can be considerable along roads, which are heavily congested. Potential receptors of traffic related pollutants would include nearby existing and future residential areas.

5.5.5 Mitigation Measures

5.5.5.1 Construction

Management measures will need to be taken to ensure that dust levels are minimised. Such measures will include the following:

- Dust repression techniques will be used if necessary.
- Site roads and local roads will be cleaned and maintained as appropriate.
- Contractors will be required to use water sprays and a wheel wash facility if necessary.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind.
- Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- Vehicles delivering material with dust potential will be enclosed or covered with tarpaulin at all times to restrict the escape of dust.
- During movement of soil both on and off site, trucks will be covered with tarpaulin.

5.5.5.2 Operation

Developers will be encouraged to use low polluting means of central heating. Provided that adequate consideration is given to the environmental impact of space heating at the design stage and that heating systems are operated in accordance with principles of best practice or within consent conditions, then the effect of space heating on air quality is not considered likely to be significant. High specification and filtration procedures will be employed to ensure that emissions resulting from air-conditioning will be minimal. Developers will be encouraged to maximise usage of natural ventilation and passive solar ventilation.

Emissions of pollutants from road traffic can be controlled most effectively by either limiting the number of road users or by controlling the flow of traffic. Adamstown has been designed to facilitate the use of public transport as an attractive and reliable alternative to car use and to encourage walking and cycling. The proposed road network has been designed to adequately serve the development whilst discouraging unnecessary through-traffic and to ensure a free flow of traffic (Proposals for transportation are detailed in Section 2.4). As a result of the above measures, the generation of traffic related pollutants would be minimised. The potential pollution from traffic generated by the development will require to be monitored in the same manner as for the rest of the South Dublin County Council area.

It is not anticipated that the nature of the proposed development will lead to significant climate change in the area.

5.6 Noise and Vibration

5.6.1 Introduction

This section assesses the potential impacts of the development on noise and vibration.

5.6.2 Methodology

Information was drawn from assessments for previous studies. This included noise surveys carried out for the Outer Ring Road EIS and the Wyeth Medica Ireland Biotechnology Campus EIS.

5.6.3 The Existing Environment

Land use in the general area is largely agricultural, with increasing residential development and amenity use. There is some light industry and retail development in the surrounding area.

There are a number of noise sensitive property types in the area. Existing residential areas comprise farmhouses and individual dwellings situated along Tandy's Lane, Dodsboro Road and Tubber Lane Road. Surrounding communities are predominantly low-density suburban housing and include Dodsboro cottages, Hillcrest and Meadowview Grove to the north, Lucan Village to the northeast, and various communities off Newcastle and Lock Road to the east.

5.6.4 Evaluation of Potential Impacts

5.6.4.1 Construction

Due to the nature of the activities undertaken on a large construction site, there is potential for generation of considerable levels of noise. The flow of vehicular traffic to and from a construction site is a potential source of relatively high noise levels. Excavators, lifting equipment, dumper trucks, compressors and generators may be in use. The potential for vibration at neighbouring sensitive locations during construction is typically limited to excavation works, piling operations and lorry movements on uneven road surfaces. The more significant of these is the vibration from excavation and piling operations; the method of which will need to be selected and controlled to ensure there is no likelihood of structural or even cosmetic damage to existing neighbouring dwellings.

Due to the fact that the construction programme has been established in outline form only, it is not possible to calculate the actual magnitude of noise emissions to the local environment. However, the impact due to construction activities will be transient in nature.

5.6.4.2 Operation

The potential for noise impact once the development is complete includes noise emissions generated from traffic and car parking and noise emissions generated from electrical or mechanical plant. It is not envisaged that noise generated from electrical or mechanical plant will exceed noise standards or require noise barriers. The development of a hierarchical road network within the Adamstown SDZ will ensure that through traffic is discouraged from residential areas, thereby minimising traffic noise impacts. Similarly, road access to and from Adamstown will be via the appropriate strategic road network.

It is not estimated that there will be any significant sources of vibration once the development is complete.

5.6.5 Mitigation Measures

5.6.5.1 Construction

Construction noise will be controlled in accordance with British Standard 5228: Noise control on construction and open sites, which offers detailed guidance on the control of noise and vibration from demolition and construction activities. Measures will include:

- Appointing a site representative responsible for matters relating to noise and vibration.
- Establishing channels of communication between the contractors/developers, Local Authority and residents.
- Limiting the hours during which site activities likely to create high levels of noise and vibration are permitted.
- Erection of barriers as necessary around items such as generators or high duty compressors.
- All site access roads will be kept even so as to mitigate the potential for vibration from lorries.
- Monitoring typical levels of noise and vibration during critical periods and at sensitive locations.
- Piled foundations may be required. The type of pile used will determine the extent of any vibrations. The piling operation is expected to be of short duration.
- Selection of plant with low inherent potential for generation of noise and/or vibration.
- Siting of noisy/vibratory plant as far away from sensitive properties as permitted by site constraints.

5.6.5.2 Operation

The development of a hierarchical road network and appropriate road access to Adamstown will ensure that traffic noise impacts are minimised. Building design and noise operation guidelines shall be applied to ensure that noise emission standards are adhered to.

5.7 Landscape and Visual

5.7.1 Introduction

This section assesses the potential landscape and visual of the proposed development.

5.7.2 Methodology

Reference has been made to the South Dublin County Development Plan 1998, Adamstown Local Area Plan (2001) and available aerial photography of the area.

5.7.3 The Existing Environment

Land use in the general area is largely agricultural, with increasing residential development and amenity use. There is some light industry and retail development in the surrounding area. The general area is bordered by the village of Lucan to the north, the Cork-Dublin railway line to the south, Tubber Lane Road to the west and the Newcastle and Lock Roads to the east (Figure 5.1.). There is a nine-hole golf course at Finnstown and a public open space with sports fields adjoining Hillcrest Walk, north of the site boundary. Some residential properties are located within the area. These comprise mainly of farmhouses and individual dwellings situated along Tandy's Lane, Tubber Lane Road and Dodsboro Road. Protected structures in the area include two early 19th Century houses at St. Helen's (REF 071) and Somerton (REF 069). Airlie House, although not protected is considered to be of local amenity value (Refer to Figure 5.6 and Section 5.9).

The development lands comprise level pasture fields and lie between the 50m and 70m contours. Land use is predominantly used for agricultural purposes, with potatoes the main crop and a lesser area under wheat. Remaining agricultural land is under grass with individual fields bounded by hedgerows. These field boundaries form an intrinsic part of the landscape. There are a number of mature trees that are listed for protection and preservation in the 1998 County Development Plan. These are mainly concentrated in the vicinity of Tandy's Lane. These trees are shown on Figure 5.5. Two streams are contained within the lands, the Tobermaclugg Stream and a tributary of the Griffeen River.

There are no listed views for preservation in the 1998 County Development Plan in the SDZ area. The development lands are characterised by a descending topography northwards to the Liffey Valley and a gently ascending topography southwards to the foothills of the Dublin Mountains. These mountains provide the most significant landscape features in terms of a point of reference and orientation. Some residential areas adjoining the plan lands currently enjoy a clear and uninterrupted view of the mountains.

5.7.4 Evaluation of Potential Impacts

A temporary visual impact will arise during the construction of the development. This will be associated with general site activity, the movement of vehicles and plant, construction compounds with assorted site huts, fencing, hoardings and construction cranes.

The likely effect of this development will be to create a new town of high to medium density with associated services, road network etc. This will result in a transition from a rural environment to an urban-suburban environment.

The existing perceived character of the development site is of an area of low density agricultural land bounded by hedgerows and interspersed with mature trees. Existing land-use patterns will be removed for the development and thus change the character of the area. However the carefully designed landscape will be created to provide a setting for a contemporary built environment, while attempting to create an appropriate context for existing buildings.

There may be a possible impact on local views of the Dublin Mountains and of protected structures.

5.7.5 Mitigation Measures

Proposals for landscaping and amenities are detailed in Section 2.6. However general mitigation measures would include:

- The remote siting of construction compounds from existing residential developments.
- The erection of a hoarding around the site perimeter during the construction phase to minimise the visual impact of the site works.
- The maintenance of existing established walking routes where possible.
- Landscaping and planting will be designed to encourage the evolution of diverse habitats to support the development of the ecological environment.
- Sensitive architectural design and layout of buildings and spaces to preserve local views.
- Incorporation of existing landscape features into the Planning Scheme.
- The provision of an integrated belt of parks and open spaces to preserve local views and environment.
- Preservation of protected trees within the development area
- Protection of mature trees on Tandy's Lane and incorporation of Tandy's Lane as a natural amenity and walking route.
- Protected structures will be retained.

5.8 Flora and Fauna

5.8.1 Introduction

This section assesses the impacts of the development on the flora and fauna in the area.

5.8.2 Methodology

The information presented here on flora and fauna is taken directly from a report prepared for the area in June 1999 by Eleanor Mayes, Ecological Consultant. Reference is also made the Flora and Fauna report prepared for the Outer Ring Road EIS in February 2001 by Natura.

The area was surveyed in late June 1999 using the Phase 1 Habitat Survey Methodology (Joint Nature Conservation Committee, 1993). Some grassland had been mown prior to the survey, reducing the identification of a number of species. In addition some small properties were not accessed, but this did not affect the general accuracy of the survey.

Early morning site visits were made to determine breeding bird communities at the site. Birds were recorded as breeding if any of the following were observed: territorial song, adults carrying food or nesting material and presence of young.

The presence of mammals on site was assessed by field signs such as droppings, evidence of feeding, tracks and burrows. Invertebrate fauna was not systematically surveyed, but indicator species such as butterflies, damselflies and dragonflies were recorded when observed.

Colour aerial photography was used as an aid to habitat mapping.

5.8.3 The Existing Environment

5.8.3.1 Flora

A total of nine habitats/vegetation types were recorded at the Adamstown site as follows:

- Hedgerows.
- Plantation woodland and mature trees.
- Neutral Grassland.
- Improved grassland.
- Amenity grassland.
- Arable land.
- Tall herbaceous vegetation.
- Ephemeral and short perennial vegetation of disturbed ground.
- Aquatic vegetation of streams, ditches and wet ground.

Each of the habitats/vegetation types is described in the report and the location marked on Figure 5.5.

The County Development Plan lists a number of trees for protection and preservation, which were not mentioned in Flora and Fauna assessment report 1999. These trees are shown on Figure 5.5. Trees identified for preservation should be the subject of a more detailed tree survey at planning application stage.

Hedgerows

Hedgerows form the field boundaries at the site. Almost all are intact and most are tall, occasionally trimmed with mature shrubs and trees. Species composition varies somewhat between properties.

Plantation Woodland and Mature Trees

There is a small area of plantation woodland at Finnstown House, which was not surveyed in detail. Finnstown House lies just outside the western boundary of the site. It is dominated by beech, ash, sycamore and cypress. A number of trees are considered worthy of preservation and include those on Tandy's Lane between St. Helens house and Somerton House

Neutral Grassland

Neutral grassland occurs to the north of Tandy's Lane. Much had been mown prior to survey, and because of this some species may have been unrecorded. The flora is grass dominated with species including rough-stalked meadow grass, smooth stalked meadow grass, yorkshire fog, ryegrass, red fescue and occasional cock's foot, meadow foxtail and false oat-grass.

Other species include creeping thistle, spear thistle, nettle, common ragworth, curled dock, red clover, creeping buttercup, meadow buttercup, field horsetail and occasional field scabious, creeping cinquefoil and field forget-me-not. The presence of one or two year old ash and sycamore plants suggests that these fields may have been fallow for some time prior to mowing.

Improved Grassland

Improved grassland occurs in the eastern portion of the subject site. It is intensively managed, but has not been re-seeded in recent years. Improved grassland can be regarded as intermediate between intensive grassland/amenity grassland and neutral grassland with regard to species diversity. Improved grassland is dominated by ryegrass.

Amenity Grassland

Amenity grassland is species poor and intensively managed. The public open space adjoining Hillcrest Walk is dominated by ryegrass and white clover.

Figure 5.5. Habitat Map

Arable Land

Arable ground is intensively managed, including the use of herbicides for weed control. Arable weeds were extremely sparse. Species recorded include silverweed, common couch-grass, creeping bent-grass, ryegrass and nettle.

Tall Herbaceous Vegetation

Tall herbaceous vegetation occurs in the headlands of arable fields, between hedgerows and cultivated land. The dominant species are nettle, cow parsley, hogweed, creeping and spear thistle, clustered and curled dock, cleavers, cocks foot and false oat grass. Meadow sweet and bush vetch are occasional. In some areas, tall herbaceous vegetation has been controlled by herbicides.

Ephemeral and short Perennial Vegetation of Disturbed Ground

Ephemeral and perennial vegetation was recorded in one area of disturbed ground. Species recorded typical opportunistic plants of disturbed ground including good king henry, wild turnip, creeping thistle, corn poppy, nipplewort, red dead nettle, sun spurge, common fumitory, cut-leaved crane's bill and knotgrass. Annual meadow-grass was the dominant grass species.

Aquatic Vegetation of Ditches, Streams and Wet Ground

Ditches which held water during the survey were vegetated with common duckweed, watercress, fools watercress, brooklime and floating sweet grass. Bittersweet, meadow sweet and occasional great willowherb occurred on ditch side slopes above water level. Self-heal, creeping cinquefoil, meadowsweet and grasses grew on higher ground along the ditch banks

Only one stream channel held water during the survey. This was shaded by overhanging mature hawthorn and blackthorn. Dry ditches were vegetated with great willowherb, bittersweet and nettle.

5.8.3.2 Fauna

Birds

Bird species recorded as breeding at the site were great tit, coal tit, blue tit, starling, blackbird, song thrush, wren, robin, house sparrow, dunnock, magpie, chaffinch, greenfinch, yellowhammer, pied wagtail and rook. Birds recorded as present, and probably breeding around farm and residential buildings which were not included in the survey were jackdaw, swift, house martin and swallow. There was evidence of birds of prey but no birds were observed. The bird species are typical of rural areas with intensive agriculture and without wetland and extensive woodland habitats.

Mammals

Fox, hare and rabbit were observed at Adamstown. Rabbits were numerous, with small warrens frequent in hedgerows and railway embankment scrub. Badgers or hedgehogs were not sighted but their presence was not ruled out. Rats were frequent in arable land especially potato fields. Two species of butterfly were recorded at the site. No damselflies or dragonflies were observed.

5.8.4 Evaluation of Potential Impacts

A primary aim of the site management will be to ensure the protection of watercourses and wildlife, at all times during construction.

No protected or rare plants occur in the Adamstown area (Curtis and McGough 1988). The hedgerows and mature trees provide the main habitat of ecological value. The grassland areas are generally not species rich however neutral grassland is relatively diverse in comparison to the improved grassland and arable grassland, which are of very limited ecological value.

There will be no drainage into the Canal Grand Canal NHA situated to the south of the site.

There is likely to be an impact upon indigenous flora and fauna, as a result of transition from a rural to an urban/suburban environment. There will be a loss of habitat and some native species may no longer inhabit the Plan lands. While some mature trees and good quality hedgerows will be preserved, natural vegetation will be removed.

5.8.5 Mitigation Measures

- Provision of an integrated belt of parks and open spaces to reduce impacts on indigenous flora and fauna.

- Preservation of mature trees and good quality hedgerows.

- Maintain trees highlighted in the County Development Plan and shown on Figure 5.8, subject to a more detailed tree survey at planning application stage.

- Additional planting along any of the retained hedgerows should consist of native species, which occur in the area.

- Provision of petrol interceptors in surface water system before discharging to watercourses.

- Any ponds, which are developed to provide storage and attenuation of surface water run-off should be designed so that water levels fluctuate with rainfall. They should have a central depth of at least 2m, so that there will be areas of open water free from vegetation. The pond margins should be gently sloping to provide habitat for aquatic and marginal vegetation. Native species suitable for planting include common reed, bulrush and bur-weed. Species suitable for planting along the margins include flowering species such as purple loosestrife, yellow iris, brooklime, celery-leaved buttercup, marsh marigold, water mint and meadowsweet. Tree species suitable for planting at wetland margins are willow, alder and birch.

5.9 Archaeology and Cultural Heritage

5.9.1 Introduction

This section assesses the potential impact of the development on the archaeology and cultural heritage of the area. Mitigation measures are proposed to minimise potential impacts.

5.9.2 Methodology

A review of the available documentation in relation to the archaeology at Adamstown SDZ site was carried out. The documents reviewed included the following:

- Proposed Development at Adamstown, Lucan, Co. Dublin. Preliminary Archaeology Report, June 1999, Rosanne Meenan.
- Archaeological Assessment, Site Adjacent to Adamstown Castle (RMP DU017:029), Adamstown, Co. Dublin, Margaret Gowen & Co. Ltd.
- Archaeological Assessment, Site of Tobermaclugg House and Holy Well, Co. Dublin (RMP DU017:027), Margaret Gowen & Co. Ltd.

A preliminary assessment of archaeology at the site was carried out in 1999, and following this a more detailed investigation was carried out on two sites within the proposed development area.

The preliminary assessment was conducted by consulting the following sources:

- Sites and Monuments Records, Dúchas, The Heritage Service, Dublin.
- First Edition of Ordnance Survey 6” map (Sheet 17).
- Aerial Photography commissioned by the developer.
- Geological Survey aerial photography.

A walkover survey of the site was carried out in June 1999 as part of the preliminary archaeology investigation. A detailed investigation was carried out at the site adjacent to the site of Adamstown Castle and at the site of Tobermaclugg House and Holy well. Investigation at the site adjacent to Adamstown Castle included the excavation of seven test trenches by mechanical digger. Investigation at the site of Tobermaclugg House and Holy Well included excavation of eight test trenches by mechanical digger.

5.9.3 The Existing Environment

The development area comprises part or all of the following townlands: Tobermaclugg, Dodsboro, Finnstown, Aderrig and Adamstown. The area is located on reasonably flat ground bounded to the south by the Dublin – Cork railway line, to the north and west by agricultural land and to the east by the Newcastle road.

The SMR (sites and monuments records) files recorded three sites in the vicinity of the development site as follows: Tobermaclugg House and Holy Well (DUO17:027), Aderrig Church, enclosure and graveyard (DUO17:028) and the site of Adamstown Castle (DUO17: 029) (Figure 5.6).

5.9.3.1 Tobermaclugg House and Holy Well (DUO17:027)

The site of Tobermaclugg House and Holy Well is located in a field of rough grassland and dense overgrowth at the northwest boundary of the development site (Figure 5.9). The holy well is a recorded monument and is registered in the Record of Monuments and Places (RMP) of Duchas (DUO17:027). It is also a protected structure (REF 064) under the County Development Plan 1998. The site of the house is not included in the RMP but is a protected structure.

The survey for the structural remains of Tobermaclugg House uncovered a large building surrounded to the north and northwest by a range of outbuildings. The buildings probably date from the nineteen-century and are the remains of those shown on the OS maps of that period.

It cannot however, be ruled out that the largest of these structures, i.e. the main house, may have been built on the site of an earlier structure, the full extent of the Tobermaclugg building depicted on the first and second edition OS maps. According to local residents, the house was demolished in the 1970s.

Stone pillars at the entrance to the site consisted of one modern concrete structure and one circular, well-formed cut limestone pillar. The foundations of a low wall extended sporadically from the limestone pillar back into the site for about 18m where the remains of a second limestone pillar of similar style were uncovered in the undergrowth. The limestone pillars may be associated with the eighteen century Tobermaclugg House.

The remains of a well-formed cut limestone structure (1m square) was identified in a trench that was dug in the area reputed to be the location of the Tobermaclugg Holy Well. The structure was abutted on the eastern side by three stone steps. There was a constant flow of water from beneath the structure into a stream further east. Although the structure was not fully exposed, the form and construction of the remains suggested that it may form part of the remains of the holy well.

5.9.3.2 Aderrig church, enclosure and graveyard (DUO17:028)

It should be noted that the site boundary shown in the Preliminary Archaeological Report (1999) includes additional fields in Aderrig, which are now not part of the Adamstown site. The Aderrig site is located in these fields (Figure 5.6).

The site comprises the remains of a medieval church within an enclosing bank and fosse. The enclosing feature may represent the remains of a ringfort. A preliminary paper survey found that Simms and Fagan (1992) mark a castle 'in repair' at Aderrig on a map showing Co. Dublin in the 17th Century.

No other references to the castle were found in the preliminary paper survey. It is possible that it was located close to the church thereby suggesting the possibility of a medieval nucleated settlement. This group of monuments lies outside the western boundary of the development area.

However there is a possibility of survival of archaeological material, associated with the monuments within the development area. The site is listed in the South Dublin County Development Plan as *Ecclestiastical Remains, Church (ruin), Graveyard and Enclosure possible*.

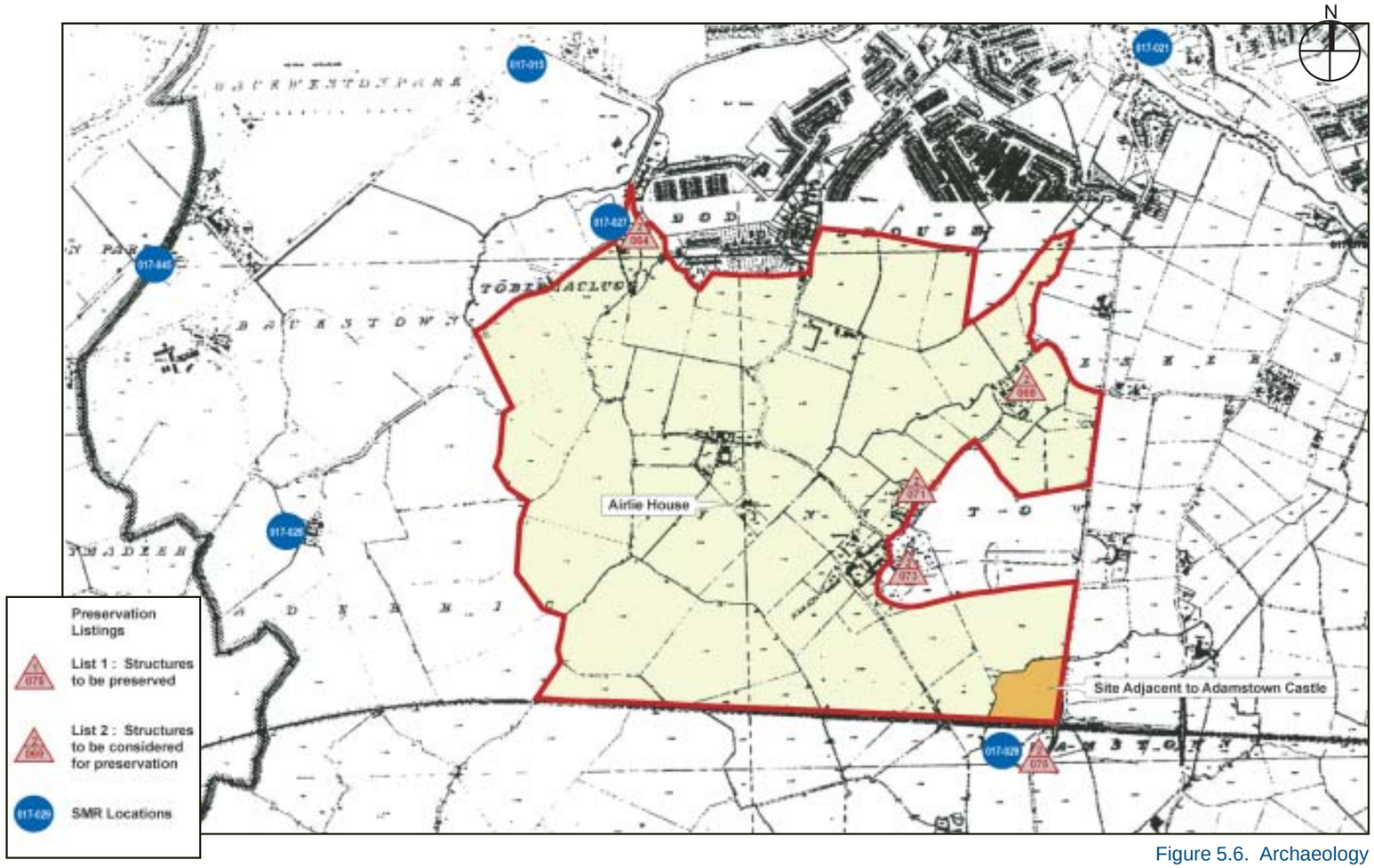

Figure 5.6. Archaeology

5.9.3.3 Site Adjacent to Adamstown Castle (DUO17:029)

The site of Adamstown Castle, a registered monument (DUO17:029) and protected structure (REF 075), lies on the south side of the railway line just outside the south-eastern boundary of the development area (Figure 5.6). The area adjacent to the site within the development area was examined. It is a roughly square-shaped level green field of good quality pasture. No known archaeological monuments are located on the site, however test excavation was requested due to the site's proximity to the site of Adamstown Castle. The castle derives its name from a family by the name of Adam that, according to Ball (1906) was established in the sixteenth century in the parish of Esker.

The castle was demolished in the 1960s, and no visible trace remains at surface ground level. Any outer defensive structures may have been destroyed by the construction of the railway line. Seven test trenches were excavated at the site adjacent to Adamstown Castle and in no trench were finds, features or structures of any archaeological significance uncovered.

5.9.3.4 Protected Structures

There are three protected structures on the development site all of which were identified on List 2 of the South Dublin County Development Plan 1998. These are the site of Tobermaclugg House and Holy Well (REF 064), St. Helens House (REF 071) and Somerton House (REF 069) (Figure 5.9). The two protected early 19th Century houses at St. Helen's and Somerton and their remaining privately owned land grounds together comprise 2.5 hectares and are located off Tandys Lane. Airlie House, located off Tandys Lane is not a protected structure but is a feature of Adamstown that is of local and historic interest. It is in architectural terms, typical of a mid-19th Century farmhouse and the original part of the House is considered to be of local amenity value (Figure 5.6). Finnstown House and Castle (REF 073) lies just outside the western boundary of the site and is also a protected structure. The site of Adamstown Castle is also a protected structure (REF 075).

5.9.4 Evaluation of Potential Impacts

- The development of a pumping station in the area of Tobermaclugg House and holy well may be possible without disturbing the surviving remains.
- Infringement on the setting of protected structures and historic buildings.
- There are no predicted impacts (construction or operational) at Aderrig church, enclosure and graveyard or at the site adjacent to Adamstown Castle. \

5.9.5 Mitigation Measures

- Development of the SDZ lands will require Archaeological monitoring during construction.

- A full excavation of the area should precede any development in the vicinity of Tobermaclugg House and Holy well.
- Preservation and incorporation of all protected structures into areas of open space.
- It is proposed to retain Airlie House. Appropriate uses could include community, residential or commercial activities.

5.10 Socio-Economics

5.10.1 Introduction

This section assesses the potential socio-economic impacts associated with the development.

5.10.2 Methodology

Information was drawn from assessments from previous studies including the Adamstown Local Area Plan, Strategic Planning Guidelines for the Greater Dublin Area 1999, the Outer Ring Road EIS, the Wyeth Medica Ireland Biotechnology Campus EIS, the 1996 Census Report and the 2002 Preliminary Census Report.

5.10.3 The Existing Environment

The *Preliminary Census Report 2002* states that the population of South Dublin has increased by 9.7% in recent years from 218,728 in 1996 to 239,887 in 2002. This increase has been more noticeable in the Lucan area where the population of the Lucan-Esker Electoral Division (ED) area has almost trebled in 6 years to reach a figure of 21,785 in 2002 compared to 7,451 in 1996.

The Adamstown Local Area Plan defines the *Greater Lucan* area as the area to the west of Fonthill Road and to the north of the Dublin-Cork railway, extending north and west to the South Dublin County boundaries with Fingal and Kildare.

The Adamstown Local Area Plan estimates that the average household occupancy level in *Greater Lucan* was approximately 2.8 persons per dwelling in 2000. This compares with average figures of 3.3 persons per dwelling in the overall South Dublin County Council Area and 3.0 persons per dwelling in the Greater Dublin Area. The *Strategic Planning Guidelines* project that the average household occupancy levels will decrease to 2.7 persons per dwelling in South Dublin by 2011. It is assumed that *Greater Luca*n will experience a similar decrease (2.5 persons per dwelling or less) over the same period.

The Adamstown Local Area Plan estimates that the number of dwellings in the *Greater Lucan* area have increased significantly in recent years from 6,300 dwellings in 1996 to 10,500 in 2000 respectively. However the residential density has remained low (15 dwellings or 42 people per hectare in 2000). (Residential density is the number of people or dwellings in a given area, usually measured in persons or dwelling units per hectare or acre). As average house occupancy rates fall, the corresponding figures could be less than 37 people per hectare by 2011.

The existing community within the Adamstown development lands is small and dispersed. There are ten existing habitable dwellings and consist mainly of farmhouses and individual dwellings situated along Tandys Lane, Dodsboro Road and Tubber Lane Road.

Surrounding communities are predominantly low-density suburban housing and include Dodsboro cottages, Hillcrest and Meadowview Grove to the north, Lucan Village to the northeast, and various communities off Newcastle and Lock Road to the east. The Cork-Dublin railway borders the southern part of the site.

There is limited employment associated with the current agricultural use of the SDZ Lands. The Adamstown Local Area Plan estimates that there were approximately 3,000 jobs and 29,500 people in the *Greater Lucan* area in 2000.

There are three existing purpose built retail centres in the vicinity of the SDZ Lands that also function as local centres of service and employment. In addition to Dublin City Centre, major centres of employment in the vicinity of Adamstown include Grange Castle International Business Park (2km), Hewlett Packard (4km), Clondalkin (5km), Intel (6km), Park West (6km), City West (7km) and Tallaght (10km).

Low residential densities, combined with a relatively low ratio of employment to population (i.e. one job for every ten residents), are the principal reasons for the dispersed pattern of development, difficulties in public transport provision, reliance on the private car and ultimately, traffic congestion.

Local parks and amenities in the area include the Griffeen Valley Regional Park, the Grand Canal and the River Liffey, all of which are 1km distant or less from the Adamstown SDZ.

5.10.4 Evaluation of Potential Impacts

In general, the predicted impacts of the development of the Adamstown SDZ will be beneficial to the surrounding community. The likely significant impacts of the development include an increase in population of approximately 20,000 people, an increase in local based employment and a greater but more concentrated demand for services, amenities, transport and travel. Proposals for the provision of amenities, facilities and services for the community are detailed in Section 2.6. Facilities will include the following:

- Railway station/transport interchange and dedicated Quality Bus Corridor (QBC) with a link to the existing N4 QBC.
- Shopping and retail services concentrated in one new district centre, two new local centres and an extension to existing district centres and several individual shops/local parades.
- Two primary schools, one secondary school and significant childcare provision and various childcare facilities.
- High quality parks and public open spaces to include pitches courts and play facilities.
- Central/civic amenity building.
- Two enterprise centres.
- A series of community meeting rooms/drop in centres.
- A site for a fire station.
- The provision for greater employment, leisure, cultural and civic space uses.In general, the Adamstown development will provide a beneficial impact to the Greater Lucan Area. Medium residential densities will support the establishment of viable services, community facilities and public transport. The average housing density throughout the plan lands will be in excess of 50 dwellings per hectare. In addition, 15% of residential dwellings will be provided as social and/or affordable units.

The public open space and walking/cycling network has been designed to preserve existing historic features including protected structures and listed trees. Each of the schools will be situated adjoining a local centre as well as a major park, thus incorporating local walking and cycling networks.

The Adamstown District centre will be focused around the transport interchange and will be the core area within Adamstown for retail, leisure, employment and cultural uses. A development such as the District centre, with a range of diverse activities and non-residential uses encourages the generation of local employment and thus reduces the need for travel to work.

The public transport system will provide an attractive and reliable alternative to car use. The creation of construction jobs (direct and indirect) throughout the period of construction will be of beneficial effect.

5.10.5 Mitigation Measures

Proposed mitigation measures to accommodate the increase in population include:

- Adequate provision of supporting services, facilities and amenities in association with new residential development. Such services would include educational and childcare facilities, various parks and open spaces, retail services and shopping facilities. Services, facilities and amenities are further detailed in Section 2.6.
- Adequate infrastructure will be provided. This will include services such as water supply, surface water drainage, foul sewerage, solid waste, and information technology. Services are detailed in Section 2.5 and 5.2.
- Provision of an integrated network of walking and cycling routes and improved road network. Provision of an adequate public transport system. Transportation is detailed in Section 2.4.
- There will be a high quality architectural design, layout and landscape treatment of all buildings. There will be a range and choice of dwelling types and sizes to accommodate the increase in population. Development design is further detailed in Section 2.3.

Proposed mitigation measures to ensure adequate provision of employment opportunities include:

- The availability of non-residential floorspace for employment activities such as offices, leisure, cultural and civic uses.
- A mix of activities and uses focused on a hierarchy of identified centres with opportunities for non-residential development will be dispersed throughout the development area.

5.11 Interaction of Effects and Cumulative Impacts

5.11.1 Introduction

This section examines the interaction of environmental effects caused by the development, in order to ensure that the impacts of the development are considered cumulatively.

A summary of the key environmental impacts is presented in section 5.11.2. These are set out as either construction impacts or operational impacts and the main interactions between different environmental impacts are examined. A summary of the key mitigation measures is presented in section 5.11.3. Similarly, these are set out as either construction mitigation measures or operational mitigation measures and the key interactions between each other are examined. Conclusions and Recommendations are detailed in Section 5.12.

5.11.2 Summary of Potential Impacts

5.11.2.1 Construction

Geology, Hydrology, Hydrogeology, Nature Conservation and Archaeology

- Surface water drainage during construction may contribute to run-off from the development, which could cause surface water or groundwater pollution. Diversion of some of the existing watercourses may result in pollution or silting.
- There is a potential for impact on watercourses and wildlife during construction. A primary aim of the site management will be to ensure the protection of these at all times.
- Materials excavated during site clearance will require disposal. However, the majority of materials will be reused on site for landscaping thereby reducing the amount of disposal and generated traffic movement off site.
- Construction will involve very little excavations other than site clearance, re-routing of the existing services crossing the site, topsoil stripping, construction of foundations and installation of new services. As a result, the potential impact for pollution of groundwater or bedrock geology will be minimised.
- Without mitigation measures, there is potential for an impact on Tobermaclugg House and Holy well as a result of construction activities.

Traffic, Air Quality, Noise and Vibration and Visual Impact

- There is potential for generation of increased levels of noise from construction traffic. However as the development of the SDZ Lands will be undertaken on a phased basis, the impact of construction traffic on sensitive receptors and on the surrounding existing local and strategic road network will be dispersed over a long period of time.
- There is potential for dust emissions from the proposed development. Construction vehicles, generators etc., would also give rise to some exhaust emissions. These would be of short duration and mitigation through good construction practices.
- The potential for vibration at neighbouring sensitive locations during construction is typically limited to excavation works, piling operations and lorry movements on uneven road surfaces. The more significant of these is the vibration from excavation and piling operations; the method of which will need to be selected and controlled to ensure there is no likelihood of structural or even cosmetic damage to existing neighbouring dwellings.
- A temporary visual impact will arise during the construction of the development. This will be associated with general site activity, the movement of vehicles and plant, construction compounds with assorted site huts, fencing, hoardings and construction cranes.

Employment and Construction

- The creation of construction jobs (direct and indirect) throughout the period of construction will be of beneficial effect.

5.11.2.2 Operation

Services, Geology, Hydrogeology, Hydrology and Nature Conservation

- Potential impacts from the development could include pollution of existing watercourses and culverts from surface water run-off.
- The impact of connecting the new water supply network to existing mains may result in pipe bursts due to increased pressures and the possible reversal of flows across existing meters and district metering. Once the new water network is fully installed it is envisaged that any initial technical difficulties will be resolved.
- The introduction of screening facilities at both new and existing pumping stations could potentially lead to risk of odour problems.
- The development of Adamstown will lead to increased waste generation and requirement for disposal of this waste. The main waste streams associated with a development of this nature, once construction is finished will generally be of domestic or commercial wastes.

Traffic, Air Quality, Noise and Vibration

- There is the potential for a number of emissions to atmosphere once the development is complete. This would include atmospheric emissions from the buildings and from generated traffic. The potential for noise impact includes noise emissions generated from traffic and car parking and noise emissions generated from electrical or mechanical plant.

Traffic and Human Beings

- The complete development of the Adamstown SDZ will generate an increased number of additional trips to the local and strategic road and public transport network. The development will however be facilitated by significant public transport infrastructure provision and linkage.

- The promotion of public transport, cycling and walking within the development, together with the development of a 'self contained' sustainable community is considered to be a positive impact of the proposed development.

- The development of a new train station together with planned railway improvements will provide access to a high capacity public transport service for trips into and out of Dublin. Similarly north-south and east-west bus priority links from Adamstown SDZ to the strategic Quality Bus Corridor network will provide an attractive public transport alternative to the private car.

- Planned road infrastructure improvements will provide sufficient capacity to facilitate the levels of development proposed.

Landscaping and Visual, Nature Conservation and Archaeology

- The likely effect of this development will be to create a new town of medium residential density with associated services, road network etc. This will result in a transition from a rural environment to an urban-suburban environment.

- There is likely to be an impact upon indigenous flora and fauna, as a result of transition from a rural to an urban/ suburban environment. There will be a loss of habitat and some native species may no longer inhabit the Plan lands. While some mature trees and good quality hedgerows will be preserved, natural vegetation will be removed.

- Existing land-use patterns will be removed for the development and thus change the character of the area. However the carefully designed landscape will be created to provide a setting for a contemporary built environment, while attempting to create an appropriate context for existing buildings.

- There may be a possible impact on local views of the Dublin Mountains and of protected structures and historic buildings. However, the proposed public open space and walking/ cycling network has been designed to preserve existing historic features including protected structures and listed trees.

Human Beings and Operation

- In general the predicted socio-economic impacts will be beneficial to the surrounding community. The likely significant impacts of the development include an increase in population of approximately 20,000 people, an increase in employment and a greater demand for housing, services, amenities, transport and travel.

5.11.3 Summary of Mitigation Measures

5.11.3.1 Construction

Geology, Hydrology, Hydrogeology, Nature Conservation and Archaeology

- Construction impacts on watercourses will be kept to an absolute minimum by ensuring that good environmental working practices and policies are employed on site. For example, the storage of all fuels would be undertaken in accordance with recognized best practice and remote from sensitive watercourse receptors. Petrol interceptors will be provided in the surface water system before discharging to watercourses.
- Diversion of watercourses will be subject to the agreement of the Eastern Regional Fisheries Board and the Environmental Services Department of South Dublin County Council.

- Subsoil from excavations will be reused on site where possible but there may be excess material to be disposed of off-site. These materials will be disposed of or recovered, to licensed landfills or waste recovery facilities. Topsoil will be stockpiled and generally used for landscaping.

- A regular programme of site tidying will be established to ensure a safe and orderly site. Scaffolding will have debris netting attached to prevent materials and equipment being scattered by the wind.

- Development of the SDZ lands will require Archaeological monitoring during construction. A full excavation of the area will be required to precede any development in the vicinity of Tobermaclugg House and Holy well.

Traffic, Air Quality, Noise and Vibration and Visual

- Each development will be subject to approval of a construction traffic management plan. Access routes for materials deliveries, disposal, etc. will be agreed in advance, so as to prevent unsuitable or residential roads being used. The completion of the Adamstown Link Road from the Outer Ring Road and the new link road to the Celbridge Road will also facilitate access for construction traffic and will be utilised as such.
- Management measures will need to be taken to ensure that dust levels are minimised. Dust repression techniques will be used if necessary. Site roads and local roads will be cleaned and maintained as appropriate. Contractors will be required to use water sprays and a wheel wash facility if necessary. Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods. Vehicles delivering material with dust potential will be enclosed or covered with tarpaulin at all times to restrict the escape of dust. During movement of soil both on and off site, trucks will be covered with tarpaulin.

- Construction noise will be controlled in accordance with British Standard 5228. Measures will include the selection of appropriate plant, construction methods and programming. Barriers will be erected as necessary around items such as generators or high duty compressors. All site access roads will be kept even so as to mitigate the potential for vibration from lorries.
- Piled foundations may be required. The type of pile used will determine the extent of any vibrations. The piling operation is expected to be of short duration. Noisy/vibratory plant and construction compounds will be sited as far away from sensitive properties as permitted by site constraints.
- Hoarding will be erected around the site perimeters as appropriate during the construction phase to minimise the visual impact of the site works.

5.11.3.2 Operation

Services, Geology, Hydrology, Hydrogeology and Nature Conservation

- A number of measures intended to alleviate potential flooding along the Tobermaclugg Stream from the Backstown Stream include replacing the small diameter culverts with larger culvert sections, regrading and increasing the existing channel size to increase capacity along Tubber Lane and augmenting the capacity of the culvert under the N4.

- A complete topographical survey of the Griffeen Tributary and Tobermaclugg Stream downstream of the development will be carried out. This will further lead to the development of a hydroworks model to facilitate the detailed assessment of flood alleviation and attenuation requirements and any necessary adjustments to the storm water drainage master plan.

- Storm water generated in both the North-East and South-East Griffeen Tributary catchments will require attenuation due to the limited available capacity of the existing down steam pipework. The provision of underground storm water storage tanks will ensure that the downstream capacity of the Griffeen stream is not exceeded.

- Adequately sized hydrocarbon interceptors will be installed to reduce inputs of pollutants and suspended solids into the surface water drainage system. Catchpits will be provided upstream of each storage facility within the development to prevent the discharge of sediments and other settable matter into the water courses.

- Any odour problems associated with the proposed screening measures will be resolved through the detailed design and development of Operation and Maintenance procedures.

- Refuse and commercial waste will be disposed of or recovered, to licensed landfills or waste recovery facilities. The disposal system will be designed to facilitate the segregation and separate collection of recoverable wastes if required. Reduction and recycling of waste will be encouraged.

Traffic, Air Quality and Noise and Vibration

- The most significant mitigation measure recommended is the phasing / development control of the Adamstown SDZ Development, based on the programme for completion of supporting road and public transport infrastructure. The development of rail and bus public transport links, together with the supporting road infrastructure, are integral to mitigating traffic impacts of the development on the existing and planned road network. As a result of the above measures, the generation of traffic related pollutants and noise would be minimised.
- The development of a hierarchical road network and appropriate road access to Adamstown will ensure that traffic noise and atmospheric impacts are minimised. Building design and noise operation guidelines shall be applied to ensure that noise emission standards are adhered to.

- Developers will be encouraged to use low polluting means of central heating and to maximise usage of natural ventilation and passive solar ventilation. High specification and filtration procedures will be employed to ensure that emissions resulting from air-conditioning will be minimal.

Traffic and Human Beings

- Mitigation of traffic and transportation impacts generated by the Adamstown SDZ will be provided by the development of supporting road and public transport infrastructure and the implementation of demand management policies.

- The implementation of demand management policies, such as the car parking standards outlined and the promotion of sustainable transport modes, will also seek to minimise traffic impacts of the Adamstown SDZ development.

Landscaping and Visual, Nature Conservation and Archaeology

- Mature trees and good quality hedgerows will be retained where possible. Trees highlighted in the County Development Plan will be maintained. Tandy's Lane will be incorporated as a natural amenity and walking route. Other existing established walking routes will be maintained where possible. Additional planting along any of the retained hedgerows should consist of native species, which occur in the area.

- Landscaping and planting will be designed to encourage the evolution of diverse habitats to support the development of the ecological environment. Existing landscape features will be incorporated into the design. An integrated belt of parks and open spaces will be provided to reduce impacts on indigenous flora and fauna and to preserve local views and environment

- Sensitive architectural design and layout of buildings and spaces to preserve local views.

- Preservation and incorporation of all protected structures into areas of open space.

Human Beings and Services

Proposed mitigation measures to accommodate the increase in population include:

- Adequate provision of supporting services, facilities and amenities in association with new residential development. Such services would include educational and childcare facilities, various parks and open spaces, retail services and shopping facilities. Services, facilities and amenities are further detailed in Section 2.6.

- Adequate infrastructure will be provided. This will include services such as water supply, surface water drainage, foul sewerage, solid waste, and information technology. Services are detailed in Section 2.5 and 5.2.

- Provision of an integrated network of walking and cycling routes and improved road network. Provision of an adequate public transport system. Transportation is detailed in Section 2.4.

- There will be a high quality architectural design, layout and landscape treatment of all buildings. There will be a range and choice of dwelling types and sizes to accommodate the increase in population. Development design is further detailed in Section 2.3.

Employment and Design of Development

Proposed mitigation measures to ensure adequate provision of employment opportunities include:

- The availability of non-residential floorspace for employment activities such as offices, leisure, cultural and civic uses.

- A mix of activities and uses focused on a hierarchy of identified centres with opportunities for non-residential development will be dispersed throughout the development area.

5.12 Conclusions and Recommendations

The Adamstown SDZ will create a new sustainable residential community in West Dublin. The Planning Scheme sets out the type and extent of development permitted within the SDZ area. Proposals include a sustainable mix of residential development, including social and affordable housing, community/commercial, retail, employment and office, leisure, cultural and civic development.

The Planning Scheme promotes the use of public transport and will be facilitated by new road, bus and rail infrastructure. It is envisaged that the proposed development will have an overall positive socio-economic impact on the West Dublin Area.

The Environmental Appraisal seeks to identify overall impacts of the complete development and recommend mitigation measures as appropriate to minimise any adverse impacts. It is intended to be a framework for future specific development projects within the SDZ.

Impacts on the receiving environment (landscape, flora, fauna and archaeology) during construction will be minimised though the implementation and monitoring of best construction practices. Development proposals will include for a high level of landscape design and the creation of public parks and open spaces.

Proposed services provision (water supply, foul and surface water), road and public transport infrastructure are considered adequate to facilitate the development. The development of the SDZ will however be progressed on a phased manner to ensure that the appropriate service requirements are in place at each stage.

This Environmental Appraisal takes a view of the overall development of the area and does not therefore address specific development proposals within the Adamstown area. It is recommended that future proposed development types within the SDZ, which may have considerable environmental impacts, are individually assessed.

This framework appraisal does not also preclude the requirement for preparing Environmental Impact Statements for any prescribed development type within the SDZ, in accordance with the threshold criteria set out in the EU Environmental Impact Assessment Regulations 1985 to 2000.