

6. HUMAN BEINGS

6.1 INTRODUCTION

This chapter evaluates the impacts, if any, which the proposed changes to the existing Indaver facility will have on Human Beings as defined in the Environmental Protection Agency (EPA) 'Advice Notes on Current Practice (in the preparation of Environmental Impact Statements)', 2003.

This chapter has been prepared based on a review of the previous Human Beings assessment completed as part of the 2009 EIS and planning application. The 2009 assessment has been revised to assess the potential impact on human beings as a result of the proposed amendments to the existing planning permission as outlined in Chapter 1 Introduction.

In accordance with the above guidance this chapter has considered the 'existence, activities and well being of people' with respect to 'topics which are manifested in the environment such as new land-uses, more buildings or greater emissions'. Issues examined in this section include:

- Health and Safety
- Social Consideration
- Land Use
- Economic Activity

These issues are discussed below in further detail. Consideration of other issues as recommended by the EPA 'such as employment, commercial competition, zoning and social and economic activity are also dealt with in this section.

6.1.2 Human Beings Baseline Study

6.1.2.1 Introduction

This portion of the human beings assessment is conducted by reviewing the current socio economic status in the areas close to the proposed development. In the case of this facility, this is the District Electoral Division (DED) of Duleek in Co. Meath.

Identification of principal potential receptors and an analysis of recent trends in population, employment economic performance and land use including local amenities was completed and the impact of the development was assessed against this background. Reference is made to the most recent census data available from the Central Statistics Office (CSO), 'Census of Population 2006, Small Area Population

Statistics'. Although the 2011 census has been completed the Small Area Population Statistics will not be available from the CSO until later during 2012. The only statistics available from the 2011 census is the population for the state and province. The DED of Duleek includes 15 townland areas including:

- Carranstown*
- Abbeyland
- Caulstown*
- Commons*
- Cruicerath*
- Downestown
- Drumman
- Gillinstown
- Longford*
- Lougher
- Newtown*
- Prioryland
- Reask
- Roughgrange
- Stalleen*

The proposed development is located in the townland of Carranstown. Townlands accompanied with an asterix (*) are those within 3km of the proposed development.

6.1.2.2 Principal Potential Receptors

An assessment of principal potential receptors within the environs of the facility including homes, hotels, holiday accommodation, schools and rehabilitation workshops and commercial premises was conducted and is detailed below.

Housing development in the Duleek area intensified considerably between 2002 and 2006, as it did across much of the state. This was most evident in the village of Donore and Duleek town. An updated housing survey was conducted in November 2011 in the vicinity (3Km radius) of the proposed development and is illustrated in Figure 6.1. Since the previous housing survey completed in 2009, there has been no major change in population density/development around the facility. Only a small number of additional one off houses have been completed in the area since 2009.

Cognisance of the facilities in the villages of Duleek and Donore are also referenced as the facility is located approximately 2.7 km north east of Duleek and 2.6 km south east of Donore in Co. Meath.

Homes

Residential development in Carranstown is predominantly ribbon development along the main roads. These vary from one off housing to garages and two-storey farmhouses with associated sheds. A number of small commercial/industrial units including a petrol station and forecourt shop have been constructed approximately half way between the facility and Duleek village. The closest residential dwellings to the facility are;

- Two dwellings adjacent to the eastern boundary of the facility,
- Two dwellings located across the R152 to the south of the facility,
- A group of five residential dwellings and a garage located across the R152 road from the eastern corner of the facility,
- One unoccupied house and a newly built house adjacent to the southern boundary
- A further group of dwellings including two farm houses about 400 metres to the west of the facility across the railway line.

CSO information for 2002 and 2006 was used in assessing the number of households and the number of people in private households within the study area. The household size i.e. the number of people residing permanently at a household was evaluated on a national, county and DED level. The findings are illustrated in Table 6.1 and 6.2 respectively.

Table 6.1 Numbers of Households in the Study Area, 2002 and 2006

	2002	2006	Increase/ Decrease
Persons in private households (Duleek DED)	2922	3236	+314
Number of households (Duleek DED)	941	1107	+166

The findings illustrate that within the study area the number of households increased significantly between 2002 and 2006. Table 6.2 below demonstrates and that the number of people residing permanently at a household has decreased between 2002 and 2006 as it also did between 1996 and 2002. This follows the general national trend.

Table 6.2 Households Sizes on National, County and DED Level, 2002 and 2006

	2002 (Units/people per household)	2006 (Units/people per household)	% Increase/Decrease
State	2.94	2.81	- 0.13%
County Meath	3.2	3.00	- 0.2%
Duleek DED	3.1	2.92	- 0.05%

Health, Social and Community Facilities

Health, social and community facilities located in the study area are limited but include:

- Local Football Club, Opposite Carranstown Lodge
- Duleek Pitch 'n' Putt Club

Schools

Details are provided below on the four primary schools located in the study area, including their address.

Table 6.3 Educational Facilities in the Area

School Type	Name	Address	Approximate Distance from Facility (km)
Primary	Scoil Colm Cille	Mt Hanover, Duleek Co. Meath	1
Primary	Donore Primary	Donore, Duleek, Co. Meath	2
Primary	Duleek Girls NS	Duleek, Co. Meath	2.5
Primary	Duleek Boys NS	Duleek Co., Meath	2.5

Heritage and Amenity

The Area is classified under the County Development Plan as 'Rural and Agricultural'. The closest 'Areas of Visual Quality' to the facility are the 'Lower Boyne Valley' located about 2km to the north and the 'River Valleys' located about 2km to the South (See figure 6.2). The area immediately surrounding the facility is not a significant tourist attraction however Duleek is identified as a settlement with potential to be a tourist base and is considered a secondary tourist attraction in the County Development Plan.

Duleek is located within Central Lowlands Landscape Character Area which is identified by the County Development Plan as being of regional importance, having high landscape value, and as having medium landscape sensitivity. The core area of Duleek town is designated as an Area of Archaeological Interest and there are 32 no. recorded facilities and monuments within the Duleek Local Area Plan. The Duleek Heritage Trail has been established because of the high quality built heritage and historic buildings within Duleek and includes monastic facilities and facilities linked to the Battle of the Boyne. The buildings/ structures included within the Duleek Heritage Trail include the following:

- Duleek Courthouse
- Connells House
- Duleek Parochial House
- The Lime Tree
- St. Cianans R.C
- Larrix Street and Kingsgate
- St. Mary's Abbey
- Duleek Wayside Cross
- Duleek House
- Duleek Commons
- The Beford Cross
- The Nanny Bridges
- Coach House or 'The Buildings'

Duleek, amongst a number of other towns and areas are included within The Boyne Valley which holds significant archaeological value that attracts tourists. In addition it has the tourism potential for fishing holidays in the River Boyne. Duleek village does have heritage connections to the events of the Battle of the Boyne and there is signage at the River Nanny Bridge explaining the town's role during the Battle of

the Boyne. The village boasts a number of religious crosses, churches and Abbeys as well as the oldest Lime tree in Ireland. Heritage protected structures and amenities in the area include:

- Bellewstown Race Course
- Bru Na Boinne visitor centre incorporating Newgrange, Knowth and Dowth Megalithic tombs
- The Boyne River Valley
- The Battle of the Boyne historic area
- Duleek village churches and crosses

Proposed Natural Heritage Areas (pNHA) in the locality includes (see Chapter 13 for more information on these):

- pNHA. Duleek Commons (No. 01578)
- pNHA Thomastown Bog (No. 01593)
- cSAC Boyne River Islands (No. 01862)
- pNHA Dowth Wetland (No. 01861)

The above proposed natural heritage areas (pNHAs) are located between 2km and 5km from the proposed facility. Therefore there was no requirement to assess the potential impact of the facility on these sites.

Commercial and Industrial premises

The development is situated to the southwest of the existing Irish Cement Ltd. cement manufacturing plant at Platin, Duleek, Co. Meath. Annual output here is about 2.8 million tonnes of cement annually. The cement works is one of three significant employment locations within or close to Duleek. The remaining two are the Duleek Business Park and the quarry to the north of the town. The Duleek Business Park provides employment space for light industrial and service based businesses and a Framework Plan Area for Extension to Duleek Business Park is developed. This area relates to lands located north-east of the existing Duleek Business Park.

As mentioned previously there is a garage and tyre shop located across the R152 to the eastern boundary of the facility. In addition there are industrial units in the townland of Gaffney approximately 1.5km to the southwest of the facility. As much of the study area is farmland the majority of the non-residential buildings in the area are farm sheds and related agri-business. These small businesses are scattered around the study area.

Areas in Duleek have been targeted for mixed residential and commercial development. There are many commercial units in the centre of Duleek village including convenience stores, comparison outlet and service businesses. The service units include hairdressers, betting offices, pubs, restaurants, post office and credit union.

6.1.2.3 Recent Trends in Population

The closest population centres to the facility are Duleek village to the south west and Drogheda town to the north east. Carranstown is located within Duleek DED. Although the SAPS are not available for the 2011 census, the population statistics are available for the state and county but not the DED level. CSO data provides an ability to review recent trends in population within the wider area over a four year period i.e. from 2006 to 2011 as illustrated in Table 6.4. The growth rates in the county at 13% exceeded the state growth rates of 8.1%. Although the 2011 figures are not available for Duleek it is likely that the population has increased.

Table 6.4 2006 and 2011 Population of the Study Area

	2006	2011	% Increase
State	4,239,848	4,581,269	8.1
County Meath	162,831	184,034	13.0
Duleek DED	3,236	-	-

The demographic profile i.e. the age structure, of the population in the study area is illustrated in Table 6.5. The table shows a notable increase in overall population with notable increases particularly in the 25-44 age group. An increase of 36% was noted in this age group.

Table 6.5 Demographic Profile within the Study Area

	2002		2006	
	Actual	%	Actual	%
0 - 14	651	22.13	765	23.64
15 - 24	512	17.40	464	14.33
25 - 44	951	32.33	1297	40.1
45 - 64	603	20.50	539	16.65
65+	224	7.61	171	5.28
Total	2941	100.0	3236	100.0

6.1.2.4 Recent Trends in Employment

Recent trends in employment were evaluated using CSO information and information generated from the Small Area population Statistics (2006). The information was compiled on the basis that:

- The labour force is defined as the sum of people aged 15+ who are at work or who are unemployed

- The participation rate is the proportion of persons in the workforce aged 15 and over expressed as a percentage of all persons in that age group
- The unemployment rate is the proportion of all people unemployed expressed as a percentage of all persons in the labour force

The findings illustrate that the unemployment rate within the study area is 3.69%, which is a slight increase on the 2002 statistics of 3.58%.

Upon evaluation of the principal employment profiles as illustrated in Table 6.7, it is evident that employment rates in agriculture, manufacturing and building/construction are decreasing while employment rates in commerce, clerical and professional services are increasing. Clearly as this data relates to an employment profile based on 2006 census data, the employment profile is likely to have changed significantly in the area between 2006 and 2011, particularly in light of the changed economic circumstances. The County Development Plan states that unemployment in the town is still relatively high despite the success of Duleek Business Park.

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Table 6.6 Employment Figures

	Persons aged 15+		At Work		Unemployed		Labourforce		Participation Rate		Unemployment Rate of Workforce	
	2002	2006	2002	2006	2002	2006	2002	2006	2002	2006	2002	2006
DED	2290	3358	1277	2149	82	124	1359	2273	59.3%	67.6%	3.58%	3.69%

Table 6.7 Distribution of Employment Sectors within the Study Area

	DED	
	2002 %	2006 %
Agriculture (including fishing, forestry)	5.71	3.07
Manufacturing/ Industry	21.45	14.65
Building/ Construction	18.48	13.77
Commerce (including service)	20.83	22.25
Transport	6.73	8.8
Clerical/ Public Admin	4.15	18.24
Prof Workers	9.47	10.42
Other	13.16	8.8
Totals	100	100

6.2 HEALTH AND SAFETY

6.2.1 Human Health

As part of the 2006 EIS, Dr. Martin Hogan AFOM, FFOMI, a Medical Doctor specialising in Occupational Medicine was asked to assess the potential effect on human health of the Municipal Waste Incinerator at Carranstown Co Meath. It is considered that the proposed amendments, which do not result in a change to the primary process or significant changes to the nature or characteristics of the emissions, will not result in an impact on human health. This is demonstrated in the findings of the air quality study (as presented in Chapter 7). It is therefore not considered necessary to reassess the potential impacts of the facility on human health. Other potential health impacts regarding the delivery, handling and processing of the proposed new waste types are outlined below.

6.2.1.1 Proposed New Waste Streams

Part of this application includes the request to accept additional waste types at the Meath WTE facility, including some that have been designated as hazardous waste by the assignment of the most appropriate EWC (European Waste Catalogue) Code.

For clarity, this does not mean that these new waste types are dangerous wastes, most would be very similar in physical and chemical characteristics to the wastes accepted at the Meath WTE facility today as non hazardous waste, but due to them being collected directly from particular producers, or as segregated streams from existing waste collectors or Civic Amenity Sites, the classification process designates the material to be hazardous.

Waste that would pose a danger to Indaver personnel, or indeed, Indaver's extensive investment in the Meath WTE will not be accepted at the facility. Health and Safety assessments of all Indaver Operations are ongoing as part of the companys commitment to guaranteeing a safe working environment and protection of the Environment.

6.2.1.2 Transport to the site

Wastes will be transported to the site in sealed packages in closed trailers/shipping containers or in bulk in covered vehicles. This waste is currently being transported further afield and poses no threat to public health.

6.2.1.3 Handling and storage on site

Wastes will be tipped directly into the bunker which is designed as a large water retaining structure and hence there is no threat to groundwater – discussed further in Chapter 9. The bunker is kept under a negative air pressure by the primary air fans and this means that any airborne particles in the bunker associated with this waste will be introduced to the furnace. The only exception to this would be if infectious waste (EWC Code 18 01 03*) was to be accepted at the site. If this waste type was

acceptable, then a direct feeding mechanism in the form of a closed conveyor system would have to be constructed so that this waste would not be introduced to the bunker.

6.2.1.4 Processing & Emissions Control

These wastes will be mixed with other wastes in the bunker by mechanical cranes remotely operated from the control room and fed directly into the furnace via the hopper. The waste will burn out on the grate and the bottom ash will exit via the wet de-slagger and then be sent by conveyor to the bottom ash hall. Based on experience from other grate furnaces in Europe treating similar waste types, the classification of the bottom ash will remain non-hazardous. This will be verified in accordance with the sampling and analysis regime required under the existing waste licence. As mentioned previously in Section 5.7 of Chapter 5, the emissions will not be compromised due to the robust design of the flue gas cleaning systems and the upstream measurement of pollutants in the untreated flue gases. This measurement allows a quick response from the control system if it sees an increasing trend in HCl or SO₂ concentrations to increase the addition of lime milk or dry lime at the two stages in the flue gas cleaning process to keep the concentrations of these pollutants low in the stack. Heavy metals and dioxins are controlled by overdosing at both stages in the process with expanded clay and activated carbon at fixed rates. Experience from other plants in Europe burning these waste types is that emissions control is not a difficulty. For example; the Ekokem facility in Finland or the AVR facility at Rosendahl, Rotterdam in The Netherlands.

6.3 SOCIAL CONSIDERATIONS

6.3.1 Introduction

Planning permission was granted for the construction of a 70 MW waste-to-energy facility with a capacity of 200,000 tonnes per annum. The plant has been built and is operational. It is intended to apply for planning permission to increase the tonnage to 220,000 tonnes per annum and accept suitable hazardous waste streams. This plant remains Ireland's first commercial waste-to-energy plants and while waste-to-energy is not the definitive solution to the waste issue in this country; its necessity is paramount to the success of a fully integrated sustainable waste management system in Ireland.

While being an end of cycle process for waste, the re-use of the waste as energy is in line with the principles of the waste hierarchy and sustainable development as detailed in Chapter 2 the Background to the Project. Simple hazardous waste streams, for instance paint tins or empty contaminated packaging are exported abroad for treatment however the technology is now available within the plant to treat these waste streams providing cost savings. Furthermore the permitted development will have a significant role in the following:

- It is a recommended objective of the Environmental Protection Agency's (EPA) Second National Hazardous Waste Management Plan 2008-12 to reduce export and increase indigenous (including on-site) treatment of hazardous waste. For example, the hazardous waste category of paint, ink, varnish waste amounts to approximately 3,977 tonnes annually of which approximately, 3,045 tonnes of waste was exported abroad. The hazardous waste stream of packaging (contaminated or containing residues) generated approximately 1,115 tonnes, of which 881 tonnes is exported abroad
- It will contribute to Ireland's renewable energy targets as required under EU Directive 2001/77/EC. Renewable energy will be generated from the biodegradable fraction, which is, on average over 50% of the waste treated. The proposed increase in tonnage at the facility can provide enough electricity for 20,000 homes annually. It will also contribute to the production of electricity to reduce both the reliance on energy imports and exposure to international markets.
- Ireland has committed, under the Kyoto Protocol, to maintaining its green-house gas emissions to some 13% above its 1990 levels in the period 2008-2012. The reduction from the fossil fuel energy sector will make a significant contribution to achieving Ireland's Kyoto obligations.
- Reduce landfill emissions of methane due to diversion of the waste stream from landfill to incineration.
- The Landfill Directive 1999/31/EC set national targets for the diversion of biodegradable waste from landfill (based on the 1995 waste figures). The quantity of biodegradable waste going to landfill in 2009 was approximately 1,059,582 million tones and the target for 2013 is 610,000 tonnes. There remains an ever more urgent requirement to establish necessary treatment facilities in order to achieve the National targets as set out by the landfill directive and the National Strategy for Biodegradable Waste (2006).

6.3.2 Impacts and Mitigation Measures

Impacts upon society as a result of this development have been considered in detail in this EIS. Detailed descriptions of the effects, residues and emissions associated with the facility and the proposed amendments are presented in Chapters 6-17 under the following headings:

Chapter 6: Human Beings	Chapter 12: Ecology
Chapter 7: Air	Chapter 13: Traffic
Chapter 8: Noise	Chapter 14: Landscape- Visual Impact
Chapter 9: Geology and Soils	Chapter 15: Climate
Chapter 10: Groundwater and Hydrogeology	Chapter 16: Cultural Heritage
Chapter 11: Surface Water	Chapter 17: Material Assets

6.4 TOURISM , LAND USE & ECONOMIC ACTIVITY

As outlined above the proposed amendments will not impact on the local population from a health perspective i.e. medical, dioxins or odour. The following sections describe the potential indirect impact of the proposed facility on human beings via tourism, land use and employment. Impacts on a number of other related economic assets are described in Chapter 17 Material Assets. The proposed amendments within the same facility will have no impact on tourism or land use. There will be a positive impact for economic activity in terms of the proposed acceptance of suitable hazardous waste as it will provide a cost saving for companies and local Authorities in comparison to exporting abroad. The proposed centralisation of the Indaver Maintenance and Spare Parts at the facility will provide additional employment opportunities. A summary of the findings of the assessments is presented below.



Incinerator in Vienna



Incinerator in Portugal

6.4.1 Tourism

In general the facility and environs are predominantly agricultural and therefore tourism is not a major industry in the immediate area of the facility. Duleek is identified as a settlement with potential to be a tourist base and is considered a secondary tourist attraction in the County Development Plan. The primary attractions in Duleek and the surrounding areas are listed above under 'Heritage and Amenity'. There is some tourist accommodation in the form of B+B's within a 3km radius of the facility though there are no hotels, caravan facilities or self-catering accommodation in the study area. These facilities are available at the nearby towns of Drogheda, Ardee and Navan.

6.4.1.1 Impacts and Mitigation Measures

Many of the 450-500 European municipal waste-to-energy facilities are located in the vicinity of major tourist attractions. Incinerators are currently operating in European cities such as Paris, Monaco, Vienna and Lisbon and on islands such as Madeira and Majorca, all popular holiday destinations and where tourism makes a significant contribution to the national economy. From research to date there is no evidence to suggest that a waste-to-energy plant has a significant impact on tourism in the vicinity. As the plant has now been constructed the proposed amendments to the plant will have no impact on tourism in the immediate area and therefore no mitigation is proposed in relation to potential impact for tourism.



Incinerator in Madeira



Incinerator in Majorca

6.4.2 Land Use

The facility is located on an area of approximately 10 hectares (25 acres in the townland of Carranstown, County Meath (Figure 6.1). The proposed amendments will not involve any additional land take and there will be no severance of land. There will also be no loss of rights of ways, amenities or rezoning of land required. A number of the proposed additional structures within the facility are already present as temporary structures. The operation of the development is not predicted to have any significant impact on the land-use of the surrounding areas and is not predicted to have any significant impact on the housing in the surrounding areas. (See Chapter 17– Material Assets for further information.)

6.4.2.1 Impacts and Mitigation Measures

Cognisance of the impact that this development will have on the environment as a whole has been evaluated in Chapter 6-17.

6.5 ECONOMIC ACTIVITY

6.5.1 Introduction

On the basis of the most recent Census data, the total labour force within the study area in 2006 was 2,273. The largest employment sector is in the commerce sector accounting for 22.25% of the employment rate. This is followed closely by the clerical/public admin sectors comprising 18.24% of the workforce respectively.

6.5.2 Impacts

Direct Impacts

As outlined in Chapter 18, it is expected that construction works related to the conversion of the temporary office and maintenance building will require up to 10 staff. The staff will comprise managerial, technical, skilled and unskilled workers. It is anticipated that this proposed development will have a small increase on the numbers of employees in this sector.

Now that the facility is fully operational 44 personnel are employed in a full time capacity (the majority of whom are from the immediate area). Based on the proposed amendments the employment will increase to 46-47. It is considered that the revenue generated from the additional employment of 2-3 persons within the study area will result in additional money being spent in the locality. This will have effects on local service demand, accommodation etc over a long term basis resulting in continued expenditure within the locality.

Community Gain

As a condition of the original planning permission granted to Indaver Ireland an annual financial contribution of €200,000 is made to Meath County Council for the provision of environmental improvement and recreational/community facility projects in the vicinity of the facility. The identification of environmental/recreational/community facility projects are decided by Meath County Council and the Community Liaison Committee.

Since the start of construction in 2009, the Community Fund has been used to fund a number of projects including building a footpath along the R152, resurfacing a play area at Duleek Girls School, repair and restoration of old headstones and maintain cemetery at Donore Cemetery –, new railings on the Duleek GFC sports field, provision of meeting rooms for Duleek AFC-, replacement of netting at St Marys GFC, extension of an indoor training area at Cushinstown Athletic Club and planting of mature trees in association with the Duleek Tidy Towns committee.

The additional tonnage proposed will provide an additional €25,000 per annum to the fund if granted.

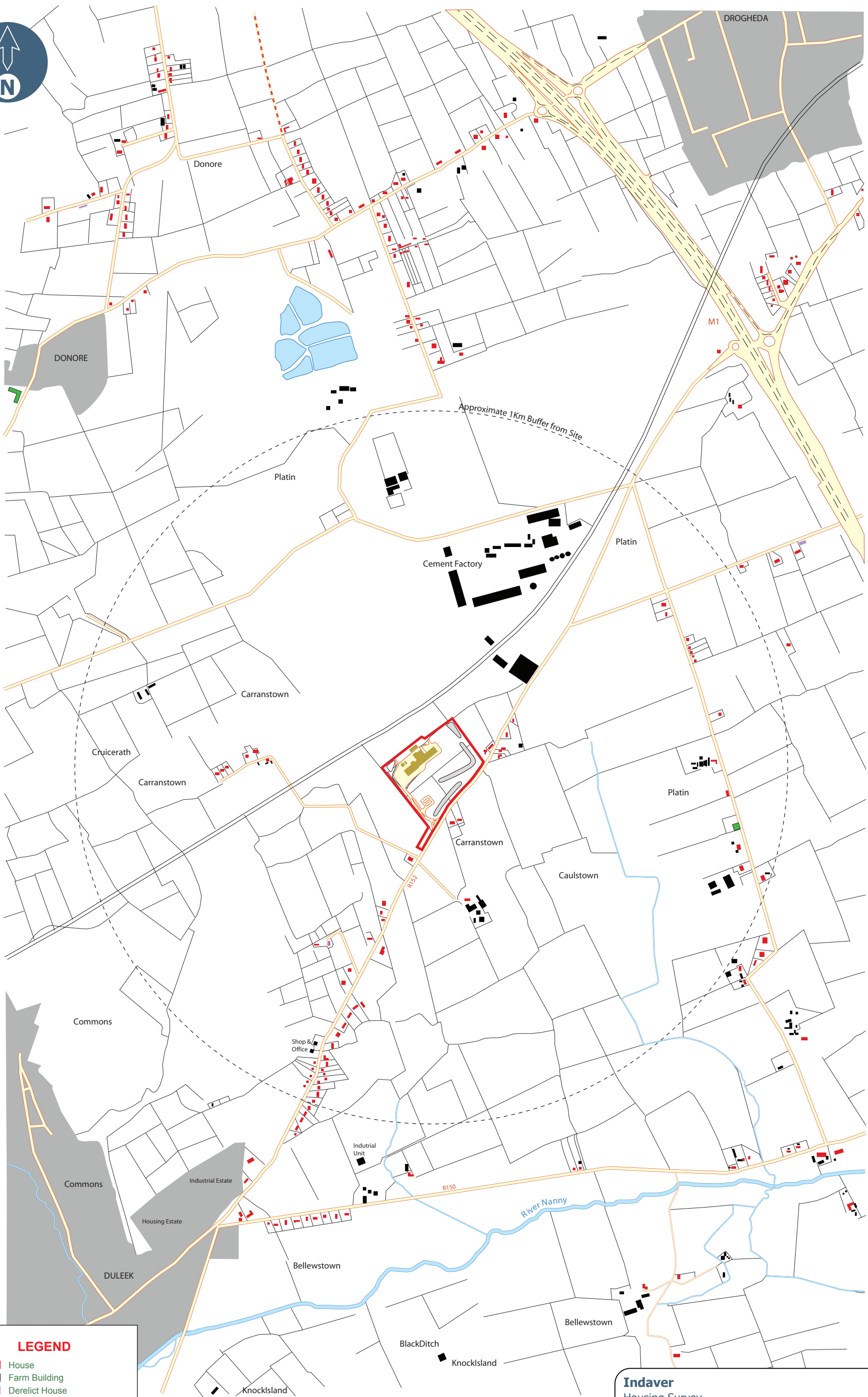
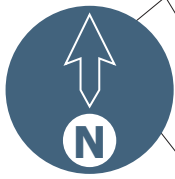
6.5.3 Mitigation Measures

Following completion of the proposed amendments to the development a small increase in employment within the DED will occur and introduce related expenditure into the economy as detailed above. The additional minor construction works for the proposed amendments to the development will take place over approximately 1 month, as outlined in Chapter 18. It is estimated that an additional maximum of 10 people will be employed in the construction activities for the proposed amendments. Therefore no mitigation measures are suggested as the proposed development will have a slight positive impact on the economic activity of the study area.

6.6 RESIDUAL IMPACTS

Strict adherence to the mitigation measures recommended in Chapters 6 to 18 will ensure that there will be no negative environmental impacts or effects on Human beings as a result of the proposed amendments to the development.

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LEGEND

- House
- Farm Building
- Derelict House
- School
- Indaver Buildings
- Site Boundary

**Indaver
Housing Survey**

Figure No. 6.1

Job No. CE08650	Date. March 2012
Finalised By - DMCD	Office - 1404
Drawn By: J Farrar - CS2, Illustrator	



WYG Ireland

NOTE: Drawing is for diagrammatic purposes only. No measurements to be taken.

