

### 5.1 Scope of Study

This chapter considers the impact of the proposed development on the activities and well-being of the human population in the area. The chapter includes discussion on economic activity, social consideration, landuse and health and safety and takes into consideration feedback received from local residents.

### 5.2 Existing Environment

The site is located in a rural area 8 km to the west of Kinnegad village. It is situated within a forestry site in the townland of Pass of Kilbride, County Westmeath. Mullingar is the principal town in County Westmeath and is located 10km to the North West of the site. The nearest settlement is the village of Milltownpass which is situated approximately 2km south of the site. The village of Rochfortbridge lies over 6km to the South West of the site. Local housing is made up of farms and residential properties in a linear formation along the N6, N4 and minor roads in the vicinity.

There are no houses within 600m of the site boundary. The locations of the nearest residences are shown in Figure 5.1

The site is located within the townland of Pass of Kilbride which is part of Enniscoffey District Electoral Division (DED). Neighbouring DEDs include Castlelost (Rochfortbridge) to the South West, Griffinstown, Heathstown and Russellstown to the North, Kinnegad to the East, Milltown to the South and Mullingar Rural Area to the North West. Table 1.1 shows the population numbers, densities and trends in these districts from 1996 to 2002 and the population trend in County Westmeath over the same period.

Table 1.1 Population Statistics

District/Electoral Division	1996:Population	2002:Population	Area/(hectares)	Population Density (persons/km <sup>2</sup> )	Change in population 1996 - 2002 (%)
Castlelost	920	1,594	1,708	93.3	73.3
Enniscoffey	298	337	1,978	17.0	13.1
Griffinstown	436	493	2,574	19.2	13.1
Heathstown	534	642	2,087	30.8	20.2
Kinnegad	652	1,429	1,411	101.3	119.2
Milltown	282	315	1,617	19.5	11.7
Russellstown	381	436	1,397	31.2	14.4
Co. Westmeath	63,314	71,858	182,486	39.4	13.5
Leinster	1,924,702	2,105,579	1,980,066	106.34	9.40

The population densities for Enniscoffey, Griffinstown, Heathstown, Milltown and Russellstown are all below the average for County Westmeath. Both Castlelost (Rochfortbridge) DED and Kinnegad DED are more than double the average for the county but both are within easy commuting distance of Mullingar town. County Westmeath is essentially rural with just 4.2% of inhabitants living in areas classified by the Central Statistics Office as urban. This would account for the low population density of 39.4 persons per km<sup>2</sup> for the County as a whole compared to 106.34 persons per km<sup>2</sup> for the Province of Leinster. All of the surrounding towns, villages and townlands are experiencing rising population trends especially Castlelost and Kinnegad both of which contain rapidly expanding villages. The population increase, which is estimated to have occurred over the past seven years, is influenced by migration into the County. The reason for this rapid expansion is increased uptake of jobs in the Dublin region and the lower cost of property in counties within commuting distance of Dublin. As a result of this, the number of new houses and new families in County Westmeath has risen.

Milltownpass is the nearest village to the site, at approximately 2km to the south. It has two pubs, two shops, a Roman Catholic Church, a primary school and a GAA pitch and clubhouse. It is a service centre for the surrounding hinterland and serves the following functions; commercial, recreational, residential, religious, education, community and employment.

#### 5.2.1 Current Economic Activities

Landuse and economic activity in the immediate area comprise peat-cutting to the south and south east, forestry to the west and agriculture to the north and northeast. Of these three landuses, agriculture plays the most important part in the economic life of the area. It is the predominant landuse in the County and is a significant source of employment, providing jobs for 7% of people in County Westmeath. In addition to its productive/employment aspect the practise of agriculture still largely manages the rural environment and landscape and provides an amenity for the enjoyment of the general population.

For its size, Milltownpass has a significant employment base including Bennetts Construction offices & yards, Leo Wrights Joinery and Sky Clad.

Tourism in the immediate area is limited and the area is not identified in the Westmeath County Development Plan (2002 - 2008) as being an area of high tourist potential. It is recognised in the Plan that there is an apparent lack of more obvious tourist assets apart from a number of large lakes in the entire County. There are no large lakes in the vicinity of the site.

To the west of the site is a commercial forestry site owned by Thorntons Recycling and planted with coniferous Norway Spruce and Douglas Fir and deciduous Larch, Oak and Ash. Planted in 1994 this plantation is now well established, with good yield classes for all species.

### 5.3 Local Concerns

During early June 2004 a newsletter was distributed to residents in the area surrounding the proposed facility. The newsletter provided a description of the facility and its impact on the local community. A copy of this newsletter is provided in Appendix 5.1.

The newsletter was delivered by Thornton's staff to 95 residents in the vicinity of the site. Approximately one third of these residents were at home during the leaflet drop and were canvassed for their opinions in relation to the site.

At the time of writing, a second newsletter was being published to address the residents specific concerns and was scheduled for delivery on 15th and 16th August 2004.

During conversations with Thorntons staff, residents highlighted their concerns regarding the following issues:

- Traffic;
- Air pollution (smells and dust);
- Water (Pollution of the nearby river and pollution of the water table, resulting in pollution of domestic water wells and potential impact on water supply volumes in domestic supply wells);
- Health impacts ('spores');
- Waste coming from outside the area;
- Concerns that the remainder of the site may be used for other waste purposes.

The environmental impacts (items 1-4 above) are addressed in the following sections. The latter two impacts are addressed by Thorntons Recycling as follows:

- The facility is intended to serve the Midlands regions. However, when the plant first begins operation it is likely that there will not be sufficient waste from the Midlands region to make the plant commercially viable. Therefore in the short term, waste may have to be accepted from outside of the region. When the collection infrastructure improves, more organic waste will be available in the Midlands region for composting at the facility.
- Thorntons have no plans to develop other types of waste facilities on or in the vicinity of the site.

## 5.4 Potential Impacts

Potential and perceived impacts on the local population from the proposed development are listed below. These include the issues that were highlighted by local residents:

Potential Impact/issue of concern to residents	Addressed in Chapter
Bioaerosol emissions ('spores')	Chapter 6 - Air
Dust emissions	Chapter 6 - Air
Odours	Chapter 4 - Project Description
Noise	Chapter 8 - Noise
Groundwater and surface water quality/groundwater availability	Chapter 10 - Surface Water
Traffic	Chapter 11 - Geology & Hydrogeology
Changes in the landscape and visual impact	Chapter 9 - Traffic
Litter	Chapter 12 - Landscape
Birds, Vermin and Flies	Chapter 5 - Human Beings
	Chapter 5 - Human Beings

All of these impacts are assessed throughout the EIS and appropriate mitigation measures are outlined in these Chapters. The impacts are summarised as follows, with particular reference to the impact on the population in the immediate area surrounding the facility.

### 5.4.1 Health Effects (bioaerosol emissions)

The proposed facility will compost green waste, organic fines, wood waste and catering waste and therefore has the potential to generate 'bioaerosol' emissions.

Elevated numbers of micro-organisms are released into the air when any agitation of organic material occurs, be it turning, shredding or screening. The re-circulation of compost leachate may also release micro-organisms and due to their microscopic size, once released to the air, they can remain airborne for long periods of time forming what is known as 'bioaerosol' - an aerosol of biological particles.

The human respiratory system may filter out large dust particles through the hairs in the nose. These are inhalable (able to be deposited in the respiratory tract), but not respirable (unable to be deposited in the air sacs of the lungs where gases are exchanged).

Bioaerosols, due to their small size can escape the filters in the nose and penetrate into the lungs where they can produce allergenic or pathogenic reactions in certain individuals. It should be noted that there are currently no exposure limits defined for airborne micro-organisms. Exposure is entirely dependent on the individual and therefore their potential effect on individuals is virtually impossible to predict.

The principal micro-organism of concern is a species known as *Aspergillus Fumigatus*. This is linked to heat, and flourishes at temperatures above 45°C, releasing fine spores. It is linked to the occurrence of lung disease. When bacteria die, the remaining cell walls are known as "endotoxin". This is a very fine dust, which like all fine dusts can give rise to lung and airway inflammation, particularly in people with a pre-existing lung condition such as asthma.

#### Environment Agency (England & Wales) Statement on Composting and Health Effects

There is currently no Irish Guidance on the siting of composting facilities and therefore this EIS takes account of guidelines published by the Environment Agency (EA) for England and Wales.

The EA carried out research titled the "Health Effects of Composting"<sup>1</sup> and "Monitoring the Environmental Impact of Composting Plants" . From these studies they have come to several conclusions in relation to composting and its effect on human health.

Under properly controlled conditions, including the location of the process relative to sensitive receptors, composting is an acceptable form of managing waste and provides a useful means of recovering biodegradable waste to produce humus-like material.

The biological degradation of waste, whether in a dustbin, landfill, compost process or anaerobic digestion plant utilises the action of natural micro-organisms and will produce odours, volatile organic compounds, and release bioaerosols (air-borne micro-organisms, including pathogenic bacteria and fungal spores).

Levels of bacteria and fungi released are significant and, in particular, one fungus, *Aspergillus fumigatus*, a Class 2 pathogen, can be present in sufficient concentrations to give rise to adverse health effects in humans. While such effects may be most manifest in the infirm and those with immune deficiency, a significant minority of the population can be affected by releases of these agents at any level significantly above background levels.

Research carried out by the EA has shown that concentration levels of the spores of the fungus *Aspergillus fumigatus* are likely to be reduced to background levels within a distance of 250m from the source. The research also shows that 250m is probably sufficient to deal with other releases from a properly operated composting facility such as noise, dust and odour.

<sup>1</sup>Monitoring the Environmental Impact of Waste Composting Plants, R&D Technical Report P428, September 2001.

A research report was carried out by The Composting Association and the independent Health & Safety Laboratory for the Health and Safety Executive UK, into the potential health risks of commercial composting in 2003<sup>2</sup>. An extensive review of the published data into the potential ill-health effects due to exposure to compost bioaerosols by workers and neighbouring residents has supported existing occupational health protection measures.

The EA has set a limit of 250m around composting sites within which it is necessary to assess risks to exposed neighbours, and the studies also suggested that there is no available evidence to indicate a change to this limit is necessary at present. The main findings of the report were:

- There is potential for respiratory allergy caused by long-term exposure to bioaerosols on composting sites unless exposure is controlled. Comparisons can be drawn with other similar industries, such as farming or domestic waste handling. Only 2 cases internationally have been reported of respiratory infection attributable to composting.
- Published studies have shown no evidence of greater ill-health among residents living near composting facilities compared to similar populations living further away.

Dr Jane Gilbert, Chief Executive of The Composting Association (UK) and co-author of the above report states that "This work supports the conclusions of a similar independent review undertaken in the USA which concluded that 'composting facilities do not pose any unique endangerment to the health and welfare of the general public'".

#### **Potential impacts on site operatives**

Health symptoms could potentially occur in compost workers who are sensitive to bioaerosols. Symptoms which could potentially occur are sore or irritated eyes, a runny nose, nausea and a more serious health complaint arose known as "farmer's lung" or "compost worker's lung", which is a similar disease to bronchitis. It is characterised by congestion and inflammation of the airways and lungs. Workers can be effectively protected from these effects by the use of personal protective equipment.

#### **Potential impacts on local residents**

Airborne micro-organisms are inhaled throughout normal everyday life and rarely cause any ill effects as the body is equipped to cope with the presence of microbes. Background levels of bacteria and fungi are highly variable and range from 1-1000 colony forming units (cfu)/m<sup>3</sup>, although higher levels can be commonly encountered in agricultural and forest environments.

Composting could in theory be associated with long-term (or chronic) health effects. However, monitoring of the chemicals which could possibly give rise to these effects does not show levels that could be of concern<sup>1</sup>. Also, there is no information which indicates that people living close to composting facilities experience a higher incidence of chronic disease.

Public exposure to the generated bioaerosols is reduced by dilution in the air stream. Research funded by the Environment Agency (EA) in the UK<sup>3</sup> has suggested that bioaerosol levels are likely to be at or below ambient levels within 250m of the composting operation and this is supported by a policy statement issued by them in August 2001<sup>4</sup>. These documents also indicated that any proposed composting facility within 250 metres of another property would need to be accompanied by a risk assessment showing that any health effects were at an acceptably low level. While this was issued before the more recent work of Herr et al. 2 was published, the use of a 250 metre cut-off zone for requirement of a health study remains protective of public health. This is based on modelling and experimental data and assumes that no attenuation is carried out. If measures are taken to reduce or disperse the emission this distance may be substantially reduced.

<sup>2</sup>Research Report 130. Occupational and environmental exposure to bioaerosols from composts and potential health effects - A critical review of published data. Prepared by The Composting Association and Health and Safety Laboratory for the Health and Safety Executive 2003.

<sup>3</sup>Technical Guidance on Composting Operations. Environment Agency Draft for External Consultation, October 2001 (Version 3.0).

<sup>4</sup>Environment Agency for England and Wales (2001): Agency position on composting and health effects".

The nearest houses to the proposed facility are over 600m away and the site will use mitigation measures to reduce bioaerosol emissions (e.g air handling and biofiltration system). Therefore using the EA guidance a risk assessment would not be required for the site. However, to reassure local residents Thorntons Recycling commissioned an assessment of the potential impacts of the site on the health of local residents. The results of the modelling carried out are detailed in Chapter 6. The study concludes that there will be no significant health risk to the local population as a result of operations at the site. The assessment took into account the mitigation measures proposed for the facility, however even in the event of these mitigation measures failing, there is no current evidence to suggest that there would be greater ill-health amongst residents living near the composting facility compared to similar populations living further away.

#### **5.4.2 Dust emissions**

Chapter 6 assesses the likelihood of dust causing a nuisance at the nearest residences to the site. The study found that during the construction of the facility the dust particles generated by ground levelling and general site preparation works are likely to be between 10 and 70 µm diameter with the majority over 30 µm in diameter. On this basis, and considering the larger fractions of dust are deposited within 100m of the release point, most of the dust potentially emitted during site construction will be deposited on the ground between the composting site and any of the identified residential dwellings in the vicinity of the site, even when the wind blows directly from the site towards these dwellings.

During composting operations potential dust emissions are limited by the amount of moisture present in the waste material. The composting process requires a minimum moisture level of at least 35%, in order for the organic decomposition to take place, rising to 65-70% at some stages. Therefore the material will not be permitted to dry out to such an extent that significant dust generation may arise.

Dust may also be generated during activities such as shredding and screening of materials and also as a result of vehicles moving around the site. Use of good management practices and the screen of trees around the site will ensure that dust from these sources does not leave the site

#### **5.4.3 Odours**

An assessment of the potential for odours to cause a nuisance to local residents has been carried out and is detailed in Chapter 6.

The proposed composting facility has been designed with an air extraction and treatment system which provides advanced odour control. Waste material will undergo two stages of treatment; firstly in-vessel composting will be employed with a second further stage of curing provided in the aerated static piles. The negative aeration system draws air through the static piles as well as from the in-vessel tunnels, and directs the emissions to biofilters for treatment prior to release to atmosphere. Untreated dispersal of odours from the static piles and the in-vessel tunnels is thereby prevented.

The overriding management principle is that the waste will remain under active aerobic control as this is the most effective method of odour prevention. This system of odour control will ensure that local residents do not experience any odour nuisance from the site.

#### **5.4.4 Noise**

An assessment of the potential for noise to cause a nuisance to local residents has been carried out and is detailed in Chapter 8.

At present there are no man-made noise sources attributable to the site, except for sporadic agricultural activity and light traffic on the country road.

The proposed development has the potential to give rise to noise from three sources:

- road traffic noise on the County Road
- noise from construction plant on-site
- noise from operational mobile and fixed plant on-site

Noise predictions have indicated that with mitigation measures implemented, including acoustical screens around the northern and eastern site boundary, the predicted noise levels due to the proposed composting activities will not exceed the background noise levels by more than 9dB(A).

All of the predicted noise impacts at residential dwellings are nearly 10 decibels lower than the 55dBA day-time noise level generally stipulated in EPA waste licences.

#### 5.4.5 Groundwater and surface water

##### Quality

The potential deterioration of the groundwater and surface water quality in the vicinity of the site is of concern to local residents, who may rely on well water for their drinking water supply, or who may use local rivers or other amenity bodies.

Detailed assessments of the impact on ground and surface waters have been prepared for the facility and are detailed in Chapters 10 and 11. These studies indicated that there is only a minimal risk to ground and surface water quality as a result of operation at the site which will be mitigated against.

Water is required to be added to the compost and if there is any excess that is not taken up by the compost it will be recirculated into the compost or collected. Additionally, all surface water falling on to the site is collected and treated (where appropriate) for discharge to groundwater or surface water. Accident and emergency response procedures will be prepared for all identified risks (for example the spillage of fuel oil), to further mitigate against potential impacts.

##### Groundwater Availability

There is a concern amongst local residents that water abstraction on the site will lead to loss of water in their own domestic water wells.

During the site investigations (See Chapter 11), a permeability test was attempted in BH7 using a petrol-driven pump rated at 5l/s. Twenty minutes of pumping failed to create a sufficient head drop to provide acceptable pump test data, indicating a permeability greater than 0.009m/s (>777m/d). Subsequent pump tests were attempted in all eight boreholes in the vicinity of the proposed facility but no decrease in the groundwater level was detected after 30 minutes of pumping at 40 l/min. This indicates that water abstracted during the operation of the composting facility would not impact on local domestic supply wells.

#### 5.4.6 Traffic

The impact on local traffic is assessed in Chapter 9 of this EIS.

The proposed route to and from the facility will use the direct connection to the N6 via the existing intersection at the Pass of Kilbride. Visibility is acceptable at this intersection although some minor junction enhancements are suggested to improve delineation.

The facility will be accessed by a priority tee intersection located on the adjacent country road. The layout accommodates the largest facility generated vehicles and satisfies the required NRA sight line requirements.

The traffic study concluded that there would be an increase of 6 HGV movements (3 in and 3 out). Given the low volumes of facility generated traffic and low background traffic no capacity enhancement mitigation measures are considered necessary.

Widening of the adjacent county road is recommended to provide a 6.5 metre wide carriageway between the site and the N6.

The use of the existing N6 and the new separate dual carriageway route provides access to destinations without passing through built up areas such as Kinnegad. The existing N6 is anticipated to have an 87% reduction in traffic due to the implementation of the dual carriageway.

#### 5.4.7 Changes in the landscape and visual impact

Chapter 12 includes a landscape character assessment and a viewpoint analysis. The landscape assessment includes a description of the landscape context of the site and the surrounding area, together with an evaluation of the potential effects of the facility.

The landscape and visual assessment has shown that the perceived effect of the proposed development is limited to where the composting facility can be viewed from and these vantage points are limited due to the rolling nature of the landscape and the extent of mature tree planting. In addition to this it is clear through the assessment that the effect of the proposals will reduce during the establishment of planting to the perimeter of the development and within the surrounding woodlands and conifer plantations.

The viewpoint assessment has identified that there will not be significant effects on either the landscape character or visual amenity as experienced at the majority of locations around the site. Where notable effects occur, as identified to the south east of the site along the minor road, these will begin to reduce with the establishment of the woodland/screen planting to the roadside. The viewpoint analysis indicates that residents in close proximity to the proposed facility will not experience significant effects/views to the site. It is noted that there are several other residences/farms in the area immediately surrounding the site, but it has not been possible to assess these individually due to access restrictions however, they are generally at a similar level as the proposed development beyond elements of intervening planting and as such visual impact is not expected to be significant. Analysis of longer distance views indicates that residents and road users will not experience significant effects at greater distances from the site.

The study concluded that the proposals will not significantly affect either the existing landscape character found within the study area or the existing visual amenity.

#### 5.4.8 Litter

Litter is not expected to be a problem at the site. All waste delivered to the site will be covered or transported in enclosed vessels to prevent any of the waste from escaping.

The municipal fines waste may occasionally contain small amounts of paper which could cause a litter nuisance. However, this waste will be offloaded in a reception area in the main building and will therefore have no opportunity to be released into the external areas of the site.

#### 5.4.9 Birds, Vermin and Flies

Birds, vermin and flies are attracted to food waste and therefore control measures are required to prevent an increase in the population of these pests.

All food waste delivered to the site will be transported in enclosed vessels to prevent any food matter from escaping. The waste will be off-loaded in the internal reception hall and then loaded into one of the tunnels.

It is beneficial to the process if waste is loaded into the composting tunnels as soon as possible following offloading in the reception hall. Because of this there will be no opportunity for waste to accumulate on the site and attract pests.

The tunnels are completely sealed off and inaccessible to pests.

When the compost is taken out of the tunnels it is placed on aerated pads outside the main building where air is drawn through it. At this stage there is no food content to attract pests to the compost piles and the process of drawing air through the compost creates an unsuitable environment for pests to settle.

In addition to these operational controls, the pest population will be monitored and if an increase is detected contractors will be employed to reduce the population.

## 5.5 Do nothing scenario

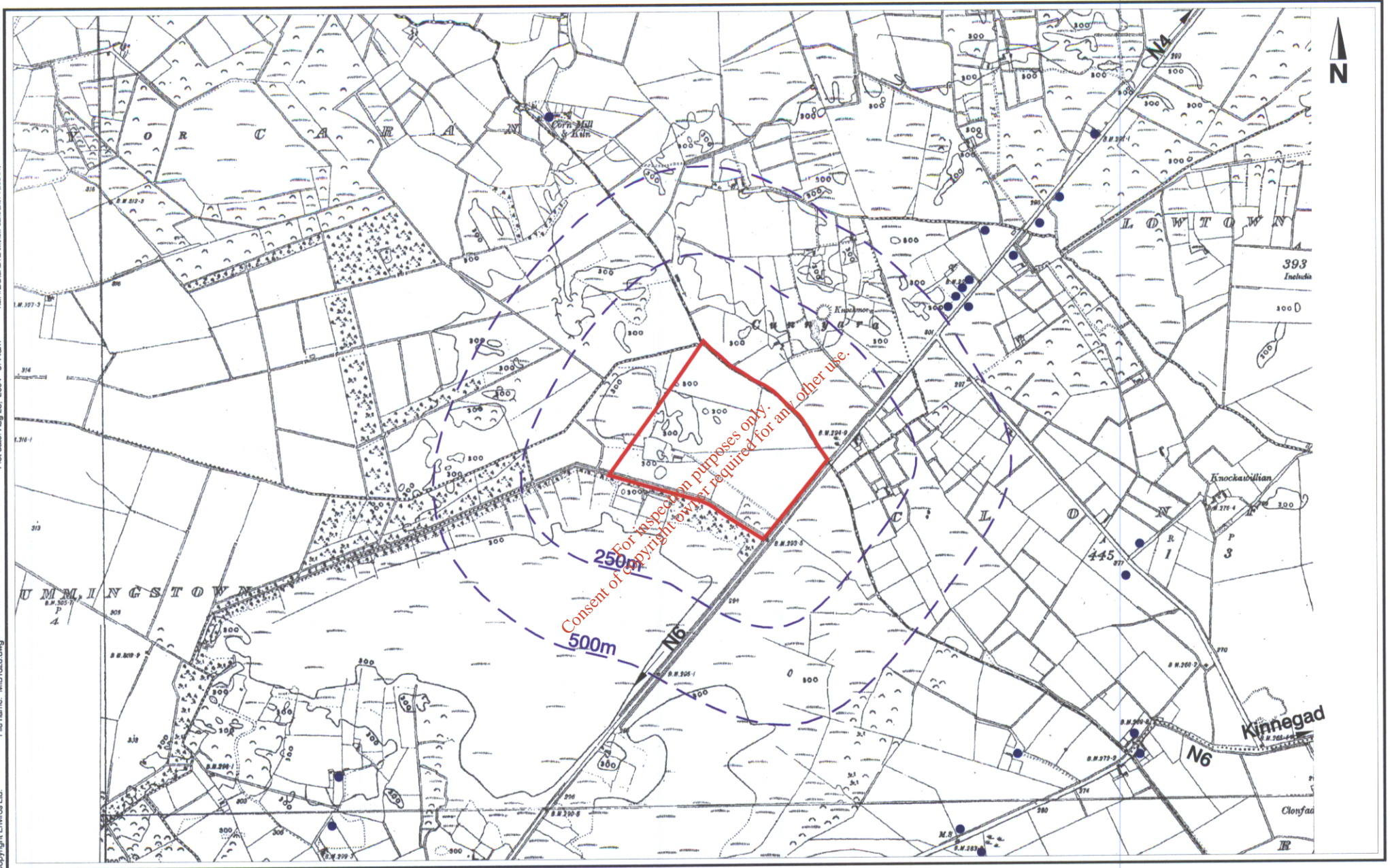
Under the 'do-nothing' scenario there would be no change in the current environment. The level of employment in the area would remain at current levels and no additional jobs would be created at the site.

## 5.6 Predicted Impacts

If the proposed mitigation measures are implemented, the negative impacts on the human population in the vicinity of the site will be insignificant.

A positive impact on the local population is the facility bringing approximately 30 new jobs to the area during construction and 20 during operation of the site.

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**FIGURE 5.1**  
**LOCATION OF HOUSES**

- KEY:**
- Planning Boundary
  - Offset Distance From Planning Boundary
  - Location of House