Chapter 2 – Characteristics of the London Borough of Barking and Dagenham.

2.1 – Geographical Location

The London Borough of Barking and Dagenham is situated on the North bank of the River Thames to the East of London, just nine miles from the centre of London and only a few minutes drive into the Essex countryside. It has a population of some 155,000 and a total land area of 3,419 hectares.

The Borough is sandwiched between three other London Boroughs. To the North is the LB Redbridge, to the East is the LB Havering and to the West is the LB Newham. The Boroughs Southern boundary is the River Thames.

2.2 – Brief Description/History

Until the 19th Century, the Borough was predominantly rural, dominated by agricultural uses, constrained in the north by Hainault Forest, to the south by the River Thames, in the west by the River Roding and to the east by the River Beam.

In the 19th Century the growth of London intensified pressure on agricultural land, and for a while Barking became the most important fishing port in England, only to decline in importance with the development of the rail network, pollution of the Thames and the advent of refrigeration technology.

In the 1920's work began on the Becontree Housing Estate in the Borough. Almost 3000 acres of land (1212 hectares) were used to develop a variety of terraced and semi-detached two storey dwellings on a new geometric road pattern, stretching from Goodmayes to Chadwell Heath and Dagenham Village.

The development of the Estate created new demands for employment in the Borough and led to the establishment of heavy industry at Dagenham Marshes along the River Thames corridor, and the eventual development of the Ford Motor Plant in the south east of the Borough. The Ford plant has since come to dominate the industrial landscape of the Borough in the same way as the Becontree Estate has dominated the housing landscape in the Borough.

Since Word War II the industrial areas of the Borough have intensified and expanded and a great deal of in-fill development has taken place on much of the open space. This is mainly due to the fact that the Borough is in an area of flooding potential so the land has been raised to compensate for this.

The late 1960's and early 1970's saw the redevelopment of some of the newer housing in the Borough and the construction of high rise and other flatted estates at various locations within the Borough. In common with the rest of the country, parts of these estates exhibit characteristics of deprivation.

There have been considerable changes in tenure patterns since 1981, largely due to the "right to buy" legislation. Just over half of the Boroughs households were owner-

occupiers in 1991. However, despite the increase in owner occupation Barking and Dagenham has the highest proportion of households renting from the Local Authority in Outer London (43% compared to an average 23%). The housing stock is characterised by a high proportion of terraced housing (63%) and one of the lowest proportions of flats in London (27%).

In conclusion, Barking and Dagenham's landscape, and in particular its built environment, has evolved comparatively recently, and whilst important areas of natural and semi-natural landscapes exist (notably in the north and east of the Borough), the majority of the Borough has been substantially shaped by residential and industrial development.

2.3 – Population Distribution

The population of the Borough is some 155,000 split between 20 Wards within an area of approximately 3,618 hectares. The Wards, population distribution and area in hectares are listed below:

Ward	**Area(ha)**	**Total resident population**
Abbey	138	10,400
Alibon	83	5,500
Becontree (new ward)	-	7,500
Cambell	206	9,300
Chadwell Heath	149	9,000
Eastbrook	344	8,900
Eastbury	100	5,400
Fanshawe	138	8,100
Gascoigne	106	8,500
Goresbrook	226	8,815
Heath	193	9,300
Longbridge	161	8,500
Manor	83	6,300
Marks Gate	135	5,000
Parsloes	153	6,300
River	277	6,800
Thames	426	6,200
Triptons	158	8,700
Valance	114	8,200
Village	224	10,100

The establishment of the Ford plant in the late 1920's was one of the first examples of mass production methods in Europe, and provided skilled and secure employment opportunities for the local population. Skilled workers in the construction and

transport industries have habitually represented a significant proportion of the Boroughs residents. However in the 1980's less labour intensive working methods, together with the decline of the manufacturing sector as a whole, led to a reduction in employment opportunities for the local population in traditional industries.

Social changes over the last 20 years have had a significant impact on the community: the rise in lone parents families, the increase in owner occupation under the "right to buy" legislation, growth in the number of older people and ethnic minorities, together with changes in the taxation and benefits systems, have combined to create an environment where poverty is deemed to be on the increase. In the Index of Multiple Deprivation 2000, the Borough ranked 24th in England and Wales.

The Borough has a high mortality and illness rates compared to the national averages and other London Boroughs. The incidence of coronary heart disease is significantly above the national average, and the Borough has the second highest proportion of people with long term limiting illness in London. Fertility rates, teenage pregnancies, low birth weight babies and infant death rates are high, as are mental illness rates. The ratio of GP's to population is one of the lowest in the country.

The Council recognises the serious impact of increased poverty in the Borough and has developed an Anti-Poverty Strategy to address these issues. In order to ascertain the nature, extent and causes of poverty, the Council has compiled a Poverty Profile, which describes the trends of increasing poverty in the Borough. It explains how these effects build up, and how different factors combine to undermine the community as a whole as well as individuals and families.

Current initiatives addressing poverty related issues include the Council's Leisure Strategy, Environmental Sustainability Strategy, economic development, capital investment in housing stock and work with Barking and Havering Health Authority and the Police. Development opportunities from various Government and European funding are being sought – these linked to the draft Regeneration Strategy and Heart of Thames Gateway SRB. Major opportunities for economic development will be the redevelopment of Barking Reach, the construction of the Channel Tunnel Rail Link and the development of Freshwharf and the Dagenham Dock Estates.

2.4 – Land owned by the Council

Like most local authorities the Council has extensive land holdings in the Borough. Various Directorates are responsible for land within the Borough. The make-up of Council owned land is as follows:

- Schools and their open spaces such as playing fields.
- Social Services building such as Old Peoples and Children's Homes etc.
- Council owned Housing stock.
- Council owned buildings such as the Town Hall, Civic Centre and Council offices/buildings.
- Council owned Depots and Civic Amenity Sites.
- Council owned former landfill sites.
- Libraries/museums/youth clubs and centres.
- Parks and Open Spaces

- Lakes and watercourses
- Sports centres and their playing fields.
- Graveyards.
- Gypsy site.
- Highways, service roads and alleyways.
- Commercial property.
- Historic buildings e.g. Eastbury Manor House.
- Derelict land.
- Allotments.

It may be inevitable that some of the above land holdings have been subject to contaminative uses in the past. As part of the Councils Strategy the investigation of contaminated land will follow the same procedures for both Council and non-Council owned land.

It should be noted that as part of the Planning process the Council has actively developed Council owned land to ensure that it does not remain in a derelict state. Remediation or clean-up operations have occurred, and continue to occur, on Council owned land that is found to be contaminated.

2.5 - Current land use characteristics

As stated previously there are extensive housing and industrial areas spread throughout the length and breath of the Borough. The Borough has some major industrial premises both past and present. These include:

- Motor manufacturing
- Old and new power stations
- Pharmaceutical manufacturing
- Paint manufacturing
- Road stone coating
- Asbestos manufacturing
- Ship building
- Dockside and rail-side handling
- Gravel extraction and Waste disposal including landfill
- Oil storage, mixing and blending
- Chemical works
- Gas works
- Lead battery works
- Radioactive materials processing and disposal
- Tanning and leatherworks.

As well as major industries like those illustrated above the Borough has many medium/small industries usually located within industrial estates. The types of operations found within these areas include:

- Paint spraying

- Car repairs
- Drum cleaning operations
- Dairy premises
- Industrial laundries
- Small brewery companies
- Anodising industries
- Metal works – including scrap metal
- Print works
- Waste transfer stations
- Edible oil tank farms.

In addition the following premises/locations should also be borne in mind when considering the whole issue of contaminated land throughout the Borough:

- Petrol stations
- Road and rail corridors.

Figure 2.5 shows the main areas of industrial use throughout the Borough.

2.6 - Protected Locations

The natural features of Barking and Dagenham tend to be hidden by the urban development which has engulfed much of the Borough since the beginning of the 20th Century. However there are within the Borough a number of Sites of Importance for Nature Conservation (SINC's) which are briefly described below.

Sites of Metropolitan Importance

- The River Thames and Tidal Tributaries
- The Chase Nature Reserve
- Barking Reach Nature Reserve including the City Farm.

Sites of Borough Importance (Grade I)

- River Roding
- Furze House Farm
- Dagenham Breach and the Lower Road Beam
- Lower Beam Valley and Dagenham Leys
- The Middle Beam Valley and Dagenham East Lake
- Eastbrookend

Sites of Borough Importance (Grade II)

- Barking Park and Loxford Water
- Mayesbrook and associated water courses
- Mayesbrook Park Lakes
- Parsloes Park/The Squatters
- Lymington Field

- Whites Farm
- Goresbrook River
- Whalebone Lane Hedge
- Wantz Lake area

Conservation Areas

- Barking Town Centre
- Former Gun Site at Marks Gate
- Dagenham Village
- Abbey Road Riverside

The Borough does not have any Areas of Outstanding Natural Beauty (AONB), RAMSAR sites, Special Areas of Conservation or Sites of Special Scientific Interest (SSSI's).

Sites of Local Importance

- Lady Trowers Trust Playing Fields
- Barking Abbey ruins and St Margaret's Churchyard
- Gascoigne Road Pumping Station Rough
- St Chad's Park
- Valence House Gardens
- Morrison road Rough
- Reed Road allotments, Pondsfield Road and adj. railside
- St Peter's and St Pauls' Churchyard, Dagenham

2.7 – Key Property Types

Barking and Dagenham, due to its industrial past and heritage does not have extensive natural assets.

However there are some places of interest, some of them of great historical importance. These include:

- Barking Abbey – founded in AD666 and destroyed in 1540 during Henry VIII's suppression of the Catholic church. Several walls of the ancient Abbey Church, which were excavated during the 1960's and 1970's, can be seen today. The Fire Bell Gate, which was built in about 1460, is the only remaining part of Barking Abbey.
- The Parish church of St Margaret's – dates back from the 13th Century. It was built within the Abbey precincts and part of its original roof appears to have been made from Norman masonry from the Abbey. Among the many historic events which took place at the Church, was the marriage in 1762 of Captain James Cook, the first western explorer to land in Australia.
- The Parish Church of St Peter and St Paul – in Church Lane, Dagenham also dates back to the 13th Century.

- The Borough's museum is based at Valence House, a former 17th Century manor house. It houses a collection of historic artefacts and the famous collection of portraits of the Fanshawe family of Dagenham.
- Eastbury Manor House, a 16th Century Tudor House Grade 1 listed building, is leased to the Borough by the National Trust. This imposing red brick building stands on a one and a half acre site and presents a superb example of an Elizabethan gentry house.
- The Civic Centre is a Grade II listed building which is considered to be one of the finest examples of 1930's civic architecture.
- At the Town Quay in Barking, there is a 17th Century timber framed old granary building. There has been considerable work undertaken to renovate the area with the River Roding being dredged and the water level kept to a controlled level by putting a new tidal barrier in place.
- At Eastbrookend, off Dagenham Road, the Council has created a Country Park and built a new visitors centre with the aid of the Millennium Commission. Opened in 1997, the building is a permanent exhibition of ecological principles as well as housing educational displays. The Council is intending to expand the Country Park into the Beam Valley to create a "green corridor" through the Borough.
- The Borough has 16 major parks and open spaces which cover no less than 280 hectares.

Within the Category of Significant Harm the DETR Circular 02/2000 identifies Scheduled Ancient Monuments as one of the receptors that could be subject to harm. In the case of Scheduled Ancient Monuments (SAM's), substantial damage (i.e. harm) is regarded as any damage that significantly impairs the historic, architectural, tradition, artistic or archaeological interest by reason of which the monument was scheduled. English Heritage have commented that Barking Abbey is included on the list of SAM's and this should be noted within the Strategy even if it not anticipated that contamination affects the site.

Consultation should be carried out with English Heritage's Greater London Archaeology Advisory Service (GLAAS) where contamination issues are identified on or in an unscheduled archaeological site and where remediation is necessary.

2.8 – Key Water resource/Protection Issues

One of the major issues in dealing with contaminated land is the protection of controlled waters. This includes the River's Thames, Roding and Beam, which make up 3 of the Boroughs four boundaries. The proximity of these main rivers and the potential for contaminated land to impact on them will form a major part of the Councils Strategy.

Essex and Suffolk Water supply the Borough's drinking water. They do not have any reservoirs in the Borough but have one groundwater pumping station just outside the Borough's Boundary in Havering. (TQ 508842).

In addition Thames Water Utilities have a groundwater pumping Station located in Barking. (TQ 437842).

Both are within Source Protection Zones for which modelling has been done by the Environment Agency. It is worth remembering that these abstractions are taken from the Chalk and there is significant protection afforded by the overlying London Clay.

The Borough has one active Private Water Supply. The borehole located at Dairy Crest Dairies in Selinas Lane, Dagenham supplies water for cleaning operations in the dairy. It is sampled and analysed on a yearly basis by Officers in the Environmental Protection Team as required under the Private Water Supply Regulations 1991.

2.9 – Known information on land contamination in the Borough

The Council has, over the past 10 years, accumulated a significant amount of information on land contamination in the Borough. This has mainly been via the Planning Process. If a development is proposed on an area of land where there is the potential for contaminated land to exist a Condition has been attached requiring the developer to undertake a site investigation.

In addition, large scale site investigations has been commissioned for major regeneration projects such as the Barking Reach development, the regeneration of the River Roding corridor, the Dagenham Dock and Freshwater Industrial Estates, the Channel Tunnel Rail Link, the realignment of the A13, the construction of the Choats Road, the Barking Northern Relief Road and the Eastbrookend Country Park development. In addition our Engineering Department has commissioned many site investigations throughout the past 10 years or so for road and infrastructure projects.

The Council's Unitary Development Plan (UDP) - Strategic Policy L states: The Council will seek to prevent land becoming derelict, to avoid the contamination of land, noise pollution, water and air pollution and to encourage recycling.

As a result of these investigations remediation work have been undertaken to ensure that the contamination does not pose a risk to receptors. However, in light of the new legislation the Council will need to assess all this historic information and critically evaluate it as part of its Risk Assessment process. This is to ensure that no significant pollution linkages remain for current or planned future uses.

2.10 – Geological Characteristics

Information published by the British Geological Society in Sheet 257 – "Romford" (1:50,000 series) shows that the majority of the Borough is directly underlain by the various river terraces of the Thames and Roding, including the Flood Plain Gravel, Taplow Gravel and Boyn Hill Gravel. Brickearth is shown overlying these deposits in some areas. River terrace deposits are shown to be scanty and discontinuous towards the north of the Borough (around Little Heath, Chadwell Heath and Mark's Gate) and much of this area is directly underlain by the solid geology of the Eocene: London Clay.

Younger (Holocene) Alluvium directly underlies the Borough on lower ground, next to major rivers, in particular the River Roding and River Beam. A more extensive cover of alluvium occurs to the south of the Borough, along the River Thames.

In most cases the geology of the Borough consists of the following:

- Made ground
- Alluvium (clay and silt, with some peat)
- Thames gravel's.
- London Clay – which varies in thickness across the Borough.

Four types of rocks compose the solid geology of the Borough. These are:

- London Clay
- Woolwich and Reading Beds
- Thanet sands and
- Chalk.

Extensive gravel extraction has, and continues to occur, in the Borough. Where gravel winnings have been undertaken many of the gravel's pits have been infilled with waste. These make up the majority of the Boroughs landfill sites. However in some cases the gravel pits have not been infilled and now make attractive water features, such as those found at Eastbrookend Country Park.

Soil type is an important influence on landuse, vegetation cover and, in terms of geomorphology, the sediment delivery within the Borough. The soil type of the Borough is such that they are dominated by clay based soils. These include well drained and slowly permeable calcerous clayey soils and associated brown earth. The clayey soils make for waterlogged soils but there is a small risk of water erosion due to the dominance of clay soil.

Note: A CDROM has been provided by the EA. This includes information on the Hydrogeology of the area. This information will be loaded on the GIS system when it comes "live." (Geological information is available from the British Geological Survey (BGS).

2.11 – Hydrogeological Characteristics

Three of the four Borough boundaries are watercourses. To the East is the River Roding, to the West is the River Beam and to the South is the River Thames. These are classified as Main rivers. In addition to this the Borough has some further main rivers such as the Rivers Mayesbrook, Goresbrook and Wantz.

Information supplied by the EA shows that the General Water Quality for the River Roding is "D", as is the River Beam, with the River Thames a Class "B". It is most likely that river quality will be impacted by the catchment upstream of the Borough – a difficult area to assess in terms of polluter's etc. The Environment agency's data broadly divides rivers into "reaches" which are not based on borough boundaries. In addition the Groundwater Quality Assessment (GQA) uses three basic parameters (dissolved oxygen, ammoniacal nitrogen and biological oxygen demand) over a rolling three year period.

The National Rivers Authority (now the Environment Agency) Groundwater Vulnerability Maps provides the information on the water beneath the land in the Borough. It shows that the Borough has no Major aquifers' within its boundary. The area is designated as "Minor aquifer" or "non-aquifer".

As mentioned previously the Borough has 2 Source Protection Zones. These will require further detailed work as part of the Desktop study and Risk Assessment to assess any potential impacts from contaminated land on them.

In addition water contamination has no boundaries. It may well be that pollution in other Boroughs may impact on our groundwater and watercourses as it flows downstream. This will have to be assessed and documented within the Strategy.

2.12 – Redevelopment history and controls

The Planning process does, and still will have, a vital role to play in the identification and clean up of contaminated land in the Borough.

As mentioned previously the Borough has a long history of industrial use. This has been reflected through the planning process. When new applications are received for redevelopment, Planning Conditions or Section 106 agreements provide legally-binding mechanisms to ensure that risks from contamination are effectively addressed at the expense of the landowner or developer.

It is anticipated that a revised PPG23 (Planning Policy Guidance): *Planning and Pollution Control* will be issued soon which will take into account the relationship between Part IIA and planning powers. However until then PPG 23 remains valid.

Pressure to release land for redevelopment in this area has meant that Officers from the Planning, Engineering, Building Control and Environmental Health Departments have been working together for many years to ensure that land is "suitable for use" once it has received planning permission for redevelopment. Where housing is planned Officers ensure that the remediation schemes proposed to deal with any anticipated or unexpected contamination are dealt with effectively.

2.13 – Action undertaken to deal with land contamination

The remediation of contaminated land is an ongoing requirement to deal with unacceptable risk. Planning conditions or Section 106 agreements tie in developers to ensure that contaminated land is dealt with according to current best practice.

An example of an engineered, robust remediation strategy is that currently in operation is that for the Barking Reach development.

Barking Reach is a flagship regeneration project situated to the South of the Borough fronting the River Thames. The landowners Bellway Homes, the Council and the London Development Agency (formally English Partnerships) are actively redeveloping over 600 acres (242 hectares) of brownfield land for eventual housing and commercial use.

Due to its industrial usage there is widespread contamination from PFA (pulverised Fuel Ash) from three former Power Station's, as well as asbestos and heavy metal contamination.

The remediation strategy consists of the following:

- Imported clean fill material is placed on top of the existing land.
- A Geotextile membrane is then placed on top of this fill.
- A Capillary Break Layer consisting of a suitable granular material is then laid on top of this. This acts as a passive venting layer for any gas that may be present.
- On top of this a further Geotextile membrane is laid.
- On top of this clean imported fill material is then placed.
- Finally topsoil is laid.
- All the services feeding the development are laid in the clean imported fill material to ensure no cross contamination occurs.
- External Environmental consultants undertake regular audits of the clean imported fill material. Both the Environmental Health Department and the Councils Senior Clerk of Works undertake site visits on a regular basis.

As well as the Barking Reach development, the Council has undertaken remediation schemes on the Harts Lane Estate in Barking. It is currently working with developers, and the LDA, on further regeneration projects in the Borough in which contaminated land will play a major part in the redevelopment of these sites.