DUBLIN HISTORIC INDUSTRY DATABASE

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EXECUTIVE SUMMARY

This report outlines the findings of the Dublin Historic Industry Database commissioned by the Geological Survey of Ireland (GSI) in September 2010 with Carrig Conservation, in association with Mary McMahon, Urban Heritage Consultancy and Gamma, engaged to carry out the work.

The Geological Survey of Ireland has undertaken the Dublin Soil Urban Geochemistry (SURGE) project encompassing a chemical survey of topsoil from areas around Dublin city and county. The project seeks to:

- Complete a baseline survey of soil chemistry in Dublin
- Assess the extent and nature of metals and organic chemicals in Dublin soils
- Develop geochemical maps of Dublin soils that can be used for land use and planning purposes, environmental management and health risk assessment.

Soil sampling and analysis has commenced and it is hoped that the Historic Industry Database will support the SURGE project.

The Dublin Historic Industry Database is intended to provide a survey of historic landuses in the Dublin area concentrating on determining the locations of potentially polluting industries and their durations. The information is presented in a spatial GIS database with accompanying maps and report. The database includes information on industry locations, types of industry and operation periods. It is intended that this will assist in the interpretation of the soil dataset currently being assembled by the GSI. The project includes the four administrative areas – Dublin City Council, Fingal County Council, South Dublin County Council and Dún Laoghaire-Rathdown County Council.

A paper survey was conducted to identify sites of industrial heritage within the study area. The primary source for this paper survey was cartographic sources, namely the Ordnance Survey maps. Previous survey work carried out in Dublin City and Dún Laoghaire-Rathdown was amalgamated into the survey. The locations of identified sites have been marked digitally on current maps.

In total over **2000** sites were identified. The most numerous site classification was extractive industry (amounting to about 50% of the sites) with quarries being the most prevalent site type.

Following on from the cartographic survey, documentary research was conducted on a number of trends which the cartographic survey highlighted. This serves as a broad overview of Dublin's industrial heritage.

1 INTRODUCTION

The Geological Survey of Ireland (GSI) are currently undertaking the Dublin Soil Urban Geochemistry (SURGE) project encompassing a chemical survey of topsoil from areas around Dublin city and county. The principal aim of the project is to complete a baseline survey of soil chemistry in Dublin assessing the extent and nature of metals and organic chemicals in the soils. This will lead to the development of geochemical maps of soils which can be used for planning purposes and environmental management as well as health risk assessment.

In September 2010 the GSI engaged Carrig Conservation in association with Mary McMahon, Urban Heritage Consultancy and Gamma to prepare a Historic Industry Database for Dublin. The primary aim of the project is to produce a historic survey of industry in the Dublin area concentrating on determining the locations of potentially polluting industries and their durations. The information is to be presented in a spatial GIS database with accompanying maps and report. The database is to include information on industry locations, types of industry and operation periods. This will then assist in the interpretation of the soil dataset currently being assembled by the GSI.

Dublin encompasses a wide variety of urban and suburban settlement areas taking in the zone of archaeological significance of the city centre, highly industrialised areas such as the port and docklands, and major industry-supporting watercourses such as the canals and Liffey, Tolka and Dodder Rivers. Urban sprawl has unified the core city with suburban areas which initially developed independently of it. Historical industrial sites can be identified across the entire study area, though there are significant concentrations within the city area and along the major waterways.

The project encompasses all four administrative areas which fall within Dublin – Dublin City Council, Fingal County Council, South Dublin County Council and Dún Laoghaire-Rathdown County Council. Previous survey work had been undertaken in both Dublin City and Dún Laoghaire-Rathdown and the results of these surveys were made available to the project team. The Dublin City Industrial Heritage Record and Dún Laoghaire-Rathdown Industrial Heritage Survey both included comprehensive mapping and databases. In addition the GSI provided digital Ordnance Survey mapping to the project team to complete the remaining two areas.

The report is divided into six sections: Executive Summary, Introduction, Historical Background, Methodology, Summary of Findings and Bibliography. It also includes three appendices. Appendix 1 is a glossary of some historic industry terms, Appendix 2 contains site types by classification, and Appendix 3 contains lists of the site types identified in the individual study areas.

2 HISTORICAL BACKGROUND

2.1 Textile Industry

Textile manufacturing featured significantly amongst the manufacturing industries identified during the course of the survey with a total of 124 sites being related to the textile industry. These sites ranged from cotton mills in South Dublin to the linen and hosiery industries of the Fingal area. The following table contains a list of the sites associated with the textile industry in Dublin.

Bleach Mill	Flax Manufactory	Silk Mill
Boot Factory	Gown Factory	Spinning Manufactory
Bedding Factory	Hat Manufactory	Starch Works
Button Factory	Hosiery Factory	Tape Mills
Calico Printing Works	Iron & Starch Works	Tent & Marquee Factory
Calico Printing Factory	Knitwear Factory	Textile Production
Carpet Factory	Lace Factory	Thread Factory
Carpet Mills	Laundry	Twine Factory
Cloth Factory	Laundry Mill	Underwear Factory
Cloth Mill	Linen Factory	Velvet Manufactory
Clothing Factory	Poplin and Silk Factory	Waterproof Factory
Corset Factory	Poplin Factory	Weaving Mill
Cotton Dye Works	Ribband Factory	Wool Stores
Cotton Factory	Rope Walk	Woollen Cloth Mill
Cotton Mill	Sack Factory	Woollen Mill
Cotton Spinning Mill	Shirt and Collar Factory	Worsted Factory
Dye Works	Shirt Factory	

2.1.1 City Area

The Liberties area of Dublin city was synonymous with textile production in the eighteenth-century. Following an Act of Parliament in 1662 encouraging immigration, Dublin city experienced an influx of Anglican weavers from the west of England as well as Protestants from the continent fleeing persecution, who established their agriculturally-based industries in the area. A licence to create a great market (Newmarket) was granted in 1674 to the 2nd Earl of Meath, which would deal in raw materials such as wool, hides, flax, etc. To service the growing industries. The area was the centre of the weaving industry, based principally around the Coombe and Weaver's Square (formerly Cloth Weaver Square). In large open fields to the south of Chamber Street and Weavers' Square, known as tenter fields, cloth or skins were stretched on wooden frames to dry and cure. Textile manufacturing, which was initially concentrated in the woollen trade, expanded into linen and cotton production. In South Brown Street the firm of Thomas Elliott & Sons operated a more specialised silk and poplin production plant from 1872 into the 1970s. However, during the 19th century the large-scale textile industry underwent a gradual but terminal decline.

2.1.2 Chapelizod

In the southwest of the city Chapelizod had a significant textile industry centred on the River Liffey. During the seventeenth-century linen manufacturing commenced in the village with artisans coming from Holland, Rochelle and Rhé. On the recommendation of the Duke of Ormonde, the Linen Board placed the bleaching yard for Leinster at Chapelizod with army linen, diaper, ticking, sailcloth and cordage produced. Other textiles were also manufactured there but by 1691 the linen industry at Chapelizod had failed. The eighteenth-century saw further developments in the industrial life of the village with industries such as a woollen processing and a silk production mill established in order to replace the linen manufactory. The mill complex at the core of the village was significantly altered in the early nineteenth-century with the mill-race re-routed following construction of a new road. At the outset of the nineteenth-century there were two fulling mills in Chapelizod, a woollen mill and a linen manufactory. In the mid-nineteenth-century William Dargan established a thread-spinning mill on the site of an earlier mill. However with the growing dominance of the northern counties in the linen industry, Dargan's enterprise began to lose money and the site was acquired by the Distiller's Company of Edinburgh who converted it to a distillery which became known as the Phoenix Park Distillery.

2.1.3 Balbriggan and Fingal

At the turn of the twentieth-century Balbriggan was known around the world for the quality of its textile products. The hosiery and linen industries were central businesses in the Balbriggan area for about 250 years with cotton manufacture introduced to the town by Baron Hamilton in 1780. Prior to that Balbriggan was a small fishing village overshadowed by the main population centre at Balrothery which had several small manufacturing industries in the eighteenth-century producing basic furniture, tanned products, beer and biscuits. There had been some hosiery manufacturing in Balrothery prior to 1740 but this was largely a cottage industry. In 1740 the hosiery industry was established on a more solid basis but the business lapsed in the 1760s. It was revived shortly after and in 1780 the firm Smyth & Company was established before moving to Balbriggan. Smyth & Company gradually and steadily gained in reputation and Balbriggan products became known the world over. In the early nineteenth-century the company began producing openwork stockings which were to become a favourite of Queen Victoria and the Tsarina of Russia.

Smyth & Co. occupied what was known as Upper Mill by 1783. They were by no means the only textile manufacturers in Balbriggan with the Drogheda Linen Company operating out of Lower Mill on Mill Street. In the 1830s the latter company took advantage of mechanisation and began developing power from water turbines and installing weaving looms from Lancashire. The factory built up a healthy business in bed sheets, pillowcases, tablecloths and mattress coverings. In 1887 the company was bought by Charles Gallen and renamed Charles Gallen & Co and continued operating with marked success into the late twentieth-century.

By the mid nineteenth-century Balbriggan had two thriving large factories powered by a combination of steam engine and waterwheel – together providing 84 horsepower which was sufficient to drive 7500 spindles for spinning the cotton, an average production of 7400lbs per week giving employment to about 300 people. A millrace, known locally as 'The Canal' drove the waterwheel. The presence of a sufficient water supply to drive the machinery was one of the key elements in transforming what had begun as a small cottage industry into a major manufacturing concern. A reservoir, located to the south of the town, together with an intricate network of natural watercourses such as Tanner's Water and the River Bracken, were augmented by mill ponds and mill races to ensure a supply of water to aid the development of the industries in Balbriggan.

In 1867 Smyth & Co. built new premises next to the railway station, which had opened in 1844. This new factory contained the most up-to date machinery, but was destroyed by fire in 1882. It was subsequently rebuilt on a larger scale and fitted with the latest machinery. The fire at Smyth & Co. presented opportunities for other firms, who utilised the skilled labour. An English firm, Deeds, Templar & Co., established a factory near the railway line to the north of the town in 1884, named Balbriggan Banks Hosiery Company. The factory was destroyed by the Black and Tans in 1920.

Tambour-work (a form of embroidery) was carried out extensively in Skerries with Lewis reporting that more than 700 women were employed in this work. It was carried out extensively throughout the nineteenth-century but appears to have largely been a cottage industry carried out by women in their homes.

2.2 Drinks Industries

Brewing and distilling were significant industries within the core of Dublin city, with all but two of the 21 breweries identified located within the city area. All 10 distilleries and 12 malting-related structures (an adjunct of the industry) were also located within the city. Brewing, after textiles, was the second most important Irish industry of the eighteenth and nineteenth-centuries. In 1804 there were 55 brewers in Dublin, of which c.30 were in the Liberties. Among the plucky competitors of the Guinness Empire was the once extensive Watkins Brewery bounded by Ardee Street, Newmarket, Brabazon Row and Cork Street. Watkins had a useful export trade and were clearly one of the more successful Dublin breweries, remaining in business well into the twentieth century as the amalgamated firm of Watkins, Jameson, and Pim. The remains of a distillery stand on the north side of Fumbally Lane, a street laid out in 1721 by a brewer, Jacob Poole. In the late eighteenth-century a brewery and malt house on the site were converted to a distillery, which in 1830s was the property of John Busby. The family business included distilling and malting concerns in Blackpitts, New Row, New Street, Mill Street and Newmarket. The business continued in operation from 1867 as the City of Dublin Brewery Company, expanding into the south side of the lane where they built a malt house. Decline of the industry in the late 19th century led to the closure of this and other similar business concerns in the area.

The Guinness Brewery, by the 1830s, was the largest brewery in Ireland. Today, the brewery is the biggest industrial complex in the city centre, covering a site of c.60 acres and providing some of the most distinctive features of the city's skyline. The brewery was established in 1759 by Arthur Guinness, in an area which already housed two significant Dublin distilleries – Power's Distillery and Henry Roe's Distillery. A brewery is known to have existed at St James's Gate since 1670, and it was this site which Arthur Guinness took a lease on in 1759 and began to brew a new beer known as porter. Throughout the nineteenth and twentieth centuries, the brewery expanded and grew with the construction of storehouses, brew houses and malthouses which has had a profound impact on the streetscape of this section of the city. Its close proximity to the River Liffey and the Grand Canal was an essential element in its growth during this period. Indeed the use by the Brewery of the canal resulted in the survival of the Grand Canal Harbour as a transport hub into the second half of the twentieth century. In the early twentieth-century, Guinness was reckoned to be the largest brewery in the world and the company also fulfilled a significant social role through the provision of medical services, sports and leisure facilities, educational schemes and even housing for its employees. Though no longer the largest brewery, Guinness continues to be the principal brewer of stout in the world.

2.3 Food Industries

The food-processing industry was, along with the drink's industry, one of the most rapidly growing industries in Ireland in the eighteenth- and nineteenth-centuries. Furthermore flour and meal milling were the most widely dispersed of the manufacturing industries, a fact which is borne out across the Dublin area with Flour and Corn Mills identified across the county, and not solely confined to urban areas or transport centres. While flour mills and corn mills were identified across the county (almost 60 sites between the two), windmills were predominantly confined to the rural hinterland. 12 of the 25 windmills identified were in Fingal where the low-lying lands was ideal for harnessing wind energy and the lack of rivers large enough to power watermills also resulted in a reliance on wind power. Tower windmills had the mill machinery contained within a typically cylindrical, masonry tower. In the tower mill the building is a fixed entity, and the moving portion containing the sails and the drive shaft (or windshaft) is carried in a rotating cap section set on top of the tower. A tail pole with a tiller wheel at its lower end was connected to the cap portion, a movement of the pole in any direction enabling the miller to turn the cap and thence the sails into the prevailing wind. The tower mills built before c.1770 in Ireland tend to be cylindrical, three- or four-storey rubblestone structures and they generally had opposing doors so that at least one would not be blocked off by the sails when the mill was operating. The gearing of nearly all windmills of this period were of wood while the moveable cap portion would have had a wooden roof covered with thatch.

The period after 1770 up to the end of the Napoleonic Wars witnessed a spate of windmill construction as the cultivation of cereals became a very profitable activity. The windmills of this period tended to be larger and more powerful. Smaller windmills continued to be built but these tended to be for local needs. By the early 1800s, tower mills of tapered profile with four or five floors (the upper floors for the milling plant and the lower for storage) were becoming more common. The increased height allowed larger sails to be used and the consequent increase in motive power made it possible for up to four sets of millstones to be employed. Wind speeds along the eastern coastal strip of Ireland favoured the construction of windmills and in many cases windmills were used to supplement water mills, particularly where watercourses were prone to drying up during summer months. From the first editions of the OS maps, it is clear that many Irish windmills were already falling into disuse by the early 1830s. An important factor in this was the decrease in demand for milled cereals at the end of the Napoleonic wars in 1815. The growth in steam-powered mills also forced smaller water and wind-powered grain mills into decline.

The large-scale mechanisation of grain milling began in Dublin in the mid-eighteenth century. The mechanisation of all processes involved in grain milling encouraged the concentration of production in increasingly larger structures. The introduction of steam power reduced the reliance on water power and there was an increased development of mills on quaysides of ports. This was seen around the Grand Canal Dock in Dublin where two Corn Mills, a Corn Kiln and a Bakery were all identified around the dock. A steam-powered flour mill was established in Dublin in the 1790s at Phoenix Street, though it was the period 1830-50 which saw the installation of steam engines at many flour mills. The introduction of steam engines also saw an increased demand in coal and further encouraged the locating of mills near ports where coal supplies could be readily accessed. The increase in production led to a greater demand for grain storage and separate corn and flour stores or granaries were constructed. These were located in close proximity to the docks in Dublin. A Corn Exchange was

constructed on Burgh Quay c.1816 and continued in use into the mid-twentieth-century. The building is still extant, though now converted to office accommodation.

The second half of the nineteenth-century saw a significant increase in the scale of operations at flour mills in Dublin. However this growth was short lived as the decline in population after the Famine and the consequent decline in Irish grain acreage in tandem with the availability of cheaper American grain led to the closing of a considerable numbers of mills. Mills located at ports were more likely to survive.

Grain milling was the predominant food-processing industry in Dublin with over 100 sites relating to it being identified. This figure includes bakeries, a site type confined to the city area save for one example in Dun Laoghaire-Rathdown. Other food-processing industries identified included, amongst others, Sweet Factories, Biscuit Factories, Confectionary Works, Jam Factories, a Bacon Curing Factory and a Sausage Skin Factory. Stores and warehouses were also identified, located principally in the docklands where items such as tea, sugar and tobacco were securely stored in bonded stores to await the payment of customs.

2.4 Chemical Industries

The Irish chemical industry of the eighteenth and nineteenth-centuries was for the most part comprised of small-scale concerns. Chemical industries identified in Dublin include Vitriol Works, Alkali Works, Chemical Manure and Oilcake Mills, Chemical Manure Works, Chemical Works, Powder Mills, Sal-ammoniac manufactory and Soapworks.

Vitriol, another name for sulphuric acid was used in the bleaching of linen cloth from the mid eighteenth-century. A substantial Vitriol Works was located at the mouth of the River Tolka on the North Strand and there were two other examples within the city. During the nineteenth-century, the use of slaked lime in the manufacture of bleaching powder appears to have replaced the use of vitriol and all three vitriol works were no longer in production by the early twentieth-century.

The manufacture of artificial manures first began in Dublin around the middle of the nineteenth-century. In the 1860s W. & H.M. Goulding Ltd, who had established a factory in Cork in 1857, opened a chemical manure works in Dublin on Sir John Rogerson Quay. Gouldings manufactured superphosphates using bones which were reduced to powder in crushing mills and then dissolved in sulphuric acid. The plant in Dublin contained a bone mill, grinding machinery and acid plant and continued in operation into the twentieth-century. In the 1870s mineral phosphates began to replace bones in the manufacturing process. There were in total about 10 sites titled ‘Chemical Works’ identified in Dublin and the site of the Vitriol Works on the Tolka was occupied by a Chemical Manure Works in the early twentieth-century.

The growth of the textile industry in Ireland in the eighteenth- and nineteenth-centuries brought an increased demand for soap for use in textile processing. One of the major factors in the growth of the soap industry was the introduction of the Le Blanc process to Ireland whereby common salt could be converted into *soda ash* (sodium carbonate). Soda ash was used in the glass, textile, paper and soap industries. Soda ash is an alkali and it is possible that some of the chemical works mentioned above produced it. An Alkali Works was identified in the north of Dublin city, operating in the mid nineteenth-century. There were three types of soap manufactured in Ireland classed as hard soaps, soda soaps and soft soaps. The access to animal fats from urban slaughterhouses was an important locational factor in the establishment of a soapworks. There were six soap manufactories identified, all located within the city area together with a soap candle factory and a candle factory. All eight concerns dated to the late nineteenth/early twentieth-centuries. It is likely that soap manufacture was carried out on a small scale prior to this, possibly as a cottage industry and thus is not apparent in the cartographic sources.

Gunpowder was manufactured within the environs of Dublin on an *ad hoc* basis in the late sixteenth- and early seventeenth century. The activity was conducted on a small-scale and it was not until c.1717 that a more permanent gunpowder mills, with up to seven mills, was established at Corkagh on the River Camac, between Baldonnel and Clondalkin by Nicholas Grueber. Two sites in Corkagh are titled ‘Powder Mill’ on the Ordnance Survey, while a further four sites are titled ‘Mill’. A second powder mill was erected in the Camac Valley by William Caldbeck, near the latter-day Clondalkin paper mills site, operating until the early nineteenth-century. Production seems to have ceased in the early to mid nineteenth-century.

2.5 Minerals and Aggregate Industries

2.5.1 Quarrying

Extractive industries, in particular quarrying, featured quite significantly amongst the industrial heritage of the Dublin area as identified during the course of this survey. From the medieval period onwards building stones were generally quarried locally due to transportation costs. This continued into the eighteenth- and early nineteenth-centuries. Structures were generally stone-built and this stone was sourced within a narrow radius of the construction site. However access to a navigable waterway also enabled stone to be transported over considerable distances. For the most part, Irish quarries were opened on an *ad hoc* basis to minimise transport costs for a special building project in an isolated area or simply because large amounts of stone were needed for a project. Quarries open on a continuous basis tended to supply the general needs of the building industry. Permanent or portable forges were used at most quarries to enable workers to re-edge tools. At the larger quarries ancillary buildings for storage as well as gunpowder magazines were also provided, as was stabling for horses used to operate whims and to pull wagons. There were 562 quarry sites identified across the county, with the largest concentrations found in Fingal and Dun Laoghaire-Rathdown. In addition to the quarries there were 268 gravel pits across the study area and 60 sand pits together with four marl pits and five clay pits.

Lime kilns were commonly located in quarries, at the roadside or at coastal locations to facilitate transport. There were 103 lime kilns identified along with two Lime Works. The primary use of lime was agricultural, where it was employed as an alkali to neutralise acidic soils, but it was also a key raw material for many industries such as a flux in blast furnaces, in the purification of town gas, in the production of bleaching powder and in de-hairing hides in the tanning process. It was also used for mortar. Two basic varieties of traditional lime kiln were used in Ireland over the past 250 years. The first and earliest of these was the *intermittent* kiln in which the body of the kiln was charged, fired and allowed to cool off before being emptied, after which it was re-charged for the next firing campaign. In these kilns the fuel and the limestone charge were separated within the main body of the kiln by a crude arch or dome constructed with limestone blocks. In this way the fuel and unslaked lime did not come into contact, giving an ash-free and purer product. The second kind of kiln is the *continuous* type, with a mixed feed of fuel and limestone, which were continuously fed into and burnt in the kiln bowl, with quicklime drawn off at the base.

With the spread of improved agricultural techniques in the second half of the eighteenth-century, the increased demand for quicklime as fertiliser led to the construction of larger continuous draw kilns. These tended to be rubblestone structures around 4-8m wide and about 5-8m high with a square or rectangular (and occasionally circular) ground plan. The central body of the kiln was either stone or brick-lined. The draw hole was set into an arched or lintelled recess. In small country kilns, this recess would often be supported by a simple lintel but in the larger, more developed kilns, elaborate arches with cut-stone voussoirs were common. The kiln funnel was charged with stone and fuel which was lighted from the recess at the base. In Irish coastal towns and ports it was a common practice for the heat rising out of the kiln to be used for refining salt. In what were called salt and lime works, which originated in the mid eighteenth-century, salt pans were positioned over lime kilns, whose rising heat was used to boil the water in the pans. A Salt and Lime Works was identified in Ringsend on the 1847 OS map edition.

2.5.2 Brick-making

The use of brick in Ireland was limited until the middle of the seventeenth-century, though it was closely associated with high-status buildings. As early as the 1690s there were 'brick Kills' at Clontarf and by the early eighteenth-century the clay of the Sandymount area was being used for building in the area around Merrion Square. By the beginning of the eighteenth-century town houses built of brick had become common in Dublin, where both locally manufactured and imported brick was employed.

Suitable clay for the brick-making process is found in almost every county in Ireland and current research suggests that most of the brick in Ireland was made locally. Even the smallest brickfields established during the period c.1750-1830 would generally have covered a few acres. Brick-making was generally a seasonal activity on the smaller brickfields with the main period of production being around April to September. The brick clay, once dug out of the clay pit, was left for a few days to sour. In smaller brickfields the clay was worked to the right consistency for moulding by watering it and trampling it underfoot, a process called *tempering*. At larger brickfields a pug mill was used which mechanically worked the clay into a plastic consistency. The clay was then moulded in wooden moulds

shod in iron. From 1729 on, following Pearse's Act of Parliament, bricks had to be manufactured to more or less a standard size. The bricks were then left to harden before being arranged in *hacks* on a drying field. Hacks were long rows consisting of small stacks five bricks high and one brick wide.

Bricks were traditionally fired in a *clamp kiln* which comprised a rectangular arrangement consisting of alternate courses of bricks. A series of pillars were constructed with unfired brick, which were gradually formed into a series of 8-12 arches. These arches served as fire settings, into which either coal, culm or turf were placed and lit.

From the middle of the nineteenth-century brick manufacture became more mechanised with larger and more specialised works being established replacing the seasonal work. By the 1880s machine-made bricks were manufactured across the country. Also by the 1850s more permanent kiln structures were beginning to be built at Irish brickfields. Like lime kilns, there were two types – *intermittent* and *continuous*.

There were 17 brick fields identified across the county during the survey together with six brickworks and a brick yard. There was also a Brick and Tile factory in Dublin City, near Dolphin's Barn.

2.5.3 Mining

Ireland has a long and rich mining heritage, with records of mining dating back to the Bronze Age with the southwest being an important copper producer. However it was not until the Industrial Revolution in the eighteenth and nineteenth-centuries that the metal mining in Ireland really developed. While there was mining activity in almost every Irish county during the nineteenth-century, the vast majority were marginal activities, undertaken when market conditions for particular minerals were thriving. They were also, particularly in the early decades of the nineteenth-century, small-scale, sporadic, under-capitalised and financed without the relative cushion of wider public investment. Throughout the nineteenth-century mining continued to operate on the periphery of the economy with mines located in remote areas. Fingal's mining industry included copper and lead.

Copper mines were opened at Loughshinny in 1777 by Benedict Arthur who brought over experienced miners from Belgium and Germany. The mines thrived for a time as copper was in demand for use in munitions. The ore was shipped to Sunderland where it was smelted down. However, after the Napoleonic Wars ended, the demand for copper fell dramatically and the mines were no longer financially viable. They were closed in 1812. Copper mines being worked by the Irish Consuls Company between 1862 and 1865 were noted in contemporary official listings as being in Fingal.

There were seven lead mines identified throughout the study area. Lead mining is associated with limestone areas and was carried out in the Dublin region from an early period. Two former lead mine shafts were located along the shore at Clontarf. They are mentioned in a list of mines prepared in 1497 and appear to have continued production for another 300 years before being abandoned owing to incursions from the sea. Lead mines were identified in Howth, Castleknock and Cloghran in Fingal. Cole, referring to a late eighteenth century publication, notes that a lead mine was opened by Edward Ford northeast of the old castle of Castleknock in 1744. He also notes, citing the same reference, that a 'very rich ore' was being raised c.1772 from two mines at the church of Cloghran, on the road from Dublin to Swords. Lewis mentions lead and copper being found at Cloghran and also the discovery of lead in Malahide.

Lead was commonly used for water and gas service pipes, for roofing, for shot, guttering and in the manufacture of sulphuric acid. Alloyed with tin, it formed pewter which was extensively employed for tablewares in the eighteenth and nineteenth-centuries. Lead works were established at Ballycorus in County Dublin in the mid-1820s to smelt the lead from the nearby lead mines, which had been opened in 1807. In the late 1820s the works commenced producing finished products such as sheet lead and lead pipes. The mines at Ballycorus were exploited sporadically until the mid nineteenth-century but were never very productive. The Ballycorus lead works, however, smelted ore mined in Wicklow, Donegal and Wexford. From the 1880s it was no longer profitable to use Irish ore and lead ore began to be imported from the Isle of Man. A shot tower was built at Ballycorus in 1829 and this appears to be the first and perhaps only recorded existence of such a tower in Ireland. This was used for the manufacture of lead shot for firearms. At the top of the tower molten lead globules were dropped and while falling through the air they formed perfect spheres before being caught in a water bath at the base of the tower. The lead works were virtually completely rebuilt between 1858 and 1868 and lead smelting ceased at the site early in the twentieth-century. Lead works were also identified in Ringsend and there was a Lead and Copper Mill at Palmerstown.

2.6 Metal Industry

Ironworks first began to appear in the Irish landscape in the late sixteenth-century, however the vast majority of ironworks were seventeenth-century or later. These early ironworks used charcoal-fuelled furnaces. However by the end of the eighteenth-century timber sources were becoming scarce and charcoal-fired ironworks had all but disappeared. Coal or coke was substituted for charcoal in England during the eighteenth-century, but Irish coal resources were limited, and consequently from the late eighteenth-century onwards ironworking was predominantly concentrated in Irish ports where coal and materials could be easily imported. Wrought-iron, cast-iron and steel are the ferrous metals most commonly used during the last 200 years and all are alloys of iron and carbon.

By the end of the eighteenth-century, processed iron was increasingly imported from Britain removing the necessity for smelting of iron directly from ores. The processed iron could be re-melted in Irish foundries and used to manufacture a wide range of implements and machines. Technological developments in the iron industry from the late eighteenth-century on made cast-iron a much cheaper commodity and it was beginning to replace wood in a variety of uses. This encouraged the establishment of new foundries. The development of public utilities such as gas and water, the development of railways, the introduction of cast-iron roof trusses and building frames and its use as component of water-powered wheels, power transmission systems and machinery all contributed to the growth in the number of foundries. Most iron foundries by the middle of the nineteenth-century shared certain features. They required an extensive covered area for assembling bulky components together, known as an erecting shop. A travelling crane was generally kept within this building. The erecting shop was generally connected to a building containing pattern-makers shops, finishing shops and model-makers' shops, all of which would have adjoined a foundry and forge shops.

Many of the Dublin's foundries were established in the 1820s and 1830s, which is borne out in the historical cartographic analysis. Some foundries also manufactured copper and brass, while some were also bell foundries. One site in Dublin City was titled *Iron and Brass Works*, though this was in operation in the late nineteenth/early twentieth-century. In general the historic record for Dublin indicates that the majority of foundries and ironworks were operating by 1840. While most foundries were established to serve local markets, some began to supply national and international markets by the mid-nineteenth-century. In total 30 sites were identified titled as Ironworks, Foundry, Mongery of Iron and Brass Works. Many of these sites continued to operate up to the mid-twentieth-century. There were also a Brass Works and Bell Foundry identified within Dublin City.

In addition to the large-scale metalworking sites, there were a significant number of sites identified which served a much smaller local market. Forges and in particular smithies were identified across the entire study area. In total 90 smithies were identified, most operating from the late nineteenth-century on. A smithy was the workplace of a blacksmith and contained a forge (hearth) for heating metals so they could be worked. They were identified in both rural and urban locations. The forge used coal, industrial coke or charcoal as fuel.

Other metalworking sites identified included manufacturing works associated with the railway, motor assembly, sheet metal, tin boxes and engineering.

2.7 Pulp/Paper Industries

The creation of a parliament in Dublin was the main stimulus for the establishment of an Irish paper industry. There were no fewer than 26 paper mills at work in the environs of the capital during the 18th century, mostly on the rivers Liffey, Camac and Dodder. The most important factors of location for Irish paper mills in both the 18th and 19th centuries were threefold – access to a large urban market, a plentiful supply of rags for making pulp and clear running water.

Up to the early 19th century paper was still essentially a hand-made process. Up to the middle of the 18th century, cotton and linen rags were first introduced into a water-powered stamping mill which reduced them to a pulp. This was then diluted in water in a wooden vat into which a wire screen was dipped to form a web of fibres on the mesh. The web was carefully removed, stacked on felts and pressed on a screw press to remove excess moisture. The paper webs were then hung in a loft fitted with special louvered vents which admitted air to the loft but excluded direct sunlight. The introduction of the *Hollander* in the mid-eighteenth-century represented a significant innovation in the pulping process. This comprised of an oblong wooden tub in which a wooden roller, manufactured from a tree trunk rotated horizontally. A series of about 30 to 60 knives were slotted into this trunk and their

combined action more efficiently macerated the linen and cotton rags, while at the same time requiring less motive power than stamping mills.

The products of Irish paper mills in the 18th century include fine writing and printing papers, wall hangings and ordinary packing papers. However the manufacturing process put limits on the amount of paper that could be produced which provided an incentive for new technology to be developed particularly as there was an increased demand for print and in turn paper. The first three decades of the 19th century witnessed a considerable expansion in the Irish paper-making industry and by 1838 there were 60 mills operating in the country. However this figure had declined to 28 by the early 1850s. By the end of the 19th century the industry was largely concentrated in the Dublin area, in the large mills at Saggart, Clondalkin. The survey identified 17 paper mills in the Dublin area, 13 of which were located in the South Dublin area.

2.8 Gas and Coal Industries

Town gas supply was a major feature of nineteenth-century industrial progression. In 1820 an act was passed for lighting Dublin city with gas and by 1824 three public gas undertakings had been established, each operating its own separate mains. In total nine gasworks and nine gasometers were identified across the study area.

Originally a by-product of the coking process, coal gas was extensively exploited in the 19th and early 20th centuries for lighting, cooking and heating. The development of manufactured gas paralleled that of the industrial revolution and urbanisation; and the by-products, coal tars and ammonia, were important for the dye and chemical industry.

Coal gas, or town gas as it was also known, was manufactured in a process called carbonisation. In this process bituminous coal was distilled in a refractory vessel called a *retort*. The gas was cleaned in a series of processes which allowed for by-products such as tar and ammonia to be extracted. Early retorts were heated furnaces set immediately beneath them and most of the coke manufactured in the retorts was used to stoke the furnaces. A new gas producing furnace was invented in 1861 which overcame this problem. The temperatures in the retorts were in excess of 1,000°C the effect of which was to drive off the gas and other substances. The crude gas was conducted through a series of cast-iron pipes to the *condenser* where it was cooled. As it cooled, the tar began to condense and was carried to an underground storage tank. A series of rotary pumps called *exhausters*, powered by a steam engine, moved the gas from the retorts to the condenser through the remaining cleaning processes called *purification*. This removed tar, ammonia and hydrogen sulphide. The gas was then stored in the gas-holder (also known as gasometers) for distribution. These comprised large composite tanks manufactured using rolled iron plates. The lower part rested on a water-filled tank while the water acted as a seal preventing the gas from seeping out. The admission of gas into the bell caused it to rise upwards. Telescopic gasholders were used from 1824 onwards allowing larger amounts of gas to be stored. An example of a telescopic gasholder, known as the Alliance gasholder, can be seen in at Barrow Street where it has been converted to apartments.

In the late nineteenth and early twentieth-centuries spiral-guided gasholders were introduced in Ireland. However up to the 1920s nearly all forms of gasholder relied on water tanks at their bases and water seals on individual sections. Waterless gasholders began to appear from the 1920s on including an example erected on Sir John Rogerson Quay in 1934, which became a dominant feature in the streetscape. Early gasworks were generally sited in low-lying areas of towns and cities, to take advantage of the tendency of gas to rise. They also generally had direct access to a navigable waterway to accommodate cheap access to coal. In the second half of the nineteenth-century many larger industrial installations such as textile mills and institutional buildings had built their own gasworks, particularly if they were located outside existing supply networks. Some larger country estates also built gasworks such as St Anne's in Clontarf. Nineteenth-century gasworks have been excavated at mill sites in Islandbridge and Chapelizod.

The Alliance and Dublin Consumers' Gas Company was the sole source of town gas in the Dublin area in 1904. This monopoly, formed by the merger of three smaller concerns, had its head office in D'Olier Street. The manufacturing plant and gasholders were at Sir John Rogerson Quay, Great Brunswick Street and Barrow Street. It was still the major energy supplier but its dominance was being challenged by the growing use of electricity.

The development of acetylene gas, created in a chemical reaction between calcium, carbide and water, in the late nineteenth-century produced a cleaner, cheaper and less dangerous alternative to

traditional coal gas. In the early years of the twentieth-century Irish gas companies faced an increasingly hostile commercial environment. Extra duties on imported goods necessary for their operation and Free State government policy on the development of electricity stifled their future development. While coal gas works held their own in many towns up to the Second World War, most had closed by the 1950s. Many gasworks sites have recently fallen victim to redevelopment and others almost invariably survive in fragmentary form. The three gasworks sites established in the south Docklands have all been redeveloped as apartments or offices, with the Grand Canal Theatre constructed on the site previously occupied by the Hibernian Gas Works.

Coal was the dominant source of fuel for Dublin industry from the late eighteenth-century onwards. As has been discussed it was used in the manufacture of gas, to power steam engines in a variety of manufacturing industries and as fuel in foundries and other metal industry concerns. It was also a source of fuel in the growing railway network, which commenced with the opening of the railway from Westland Row to Kingstown (Dun Laoghaire) in 1834. As coal mining was not widely carried out in Ireland, with no coal mines identified in the Dublin area, Dublin coal supplies were imported. Consequently sites relating to a coal industry in Ireland consist of coal storage, of which there were 12 identified. Coke ovens were noted at one of these sites close to the Royal Canal and railway line in Glasnevin. Coke is produced from coal which is baked in an airless furnace or oven to drive off constituents like water, coal-tar and coal-gas. Coke can be used as a fuel or in the smelting of iron-ore.

2.9 Power

Electrification was a major social and historic development at the turn of the twentieth-century. Electricity generation was introduced to Ireland in the 1880s by gas companies. The development of the incandescent light bulb and the electric motor created a growing demand for electricity. The electric motor enabled electricity to be employed in transportation, which created a growing demand for its use in tram cars. Dublin's tram system at this time was horse-drawn. Initially electricity in Ireland was generated by steam. Electrical companies such as the Dublin Electric Light Company, who had a generating station on Schoolhouse Lane, were supplying current for street lighting, as well as some of the larger industries such as Pim's Distillery and Jacob's biscuit factory. In 1890 the Alliance and Dublin Gas Company set up a generating station in Hawkin's Street. By the 1890s there was a demand for current in urban areas and in 1892 Dublin Corporation opened its own power station on Fleet Street to provide a municipal electricity service. This supplied street lighting and also individual customers. The demand for current from the station was high and in 1903 a new generating station was opened at the Pigeon House at Poolbeg. This coal-fired power station was the country's earliest major power production facility and the world's first three-phase generating station. By the early 1920s Ireland's electricity supply network was local, uncoordinated, haphazard and of limited value. This changed in the mid-1920s by the passing of the Electricity Supply Board Act which set up the ESB with a view to controlling and developing Ireland's electricity network. The setting up of the ESB and the completion of the first generating capacity at Ardnacrusha brought electricity into the mainstream of Irish life. The power station at Ardnacrusha was intended to power a national electric grid, and enable rural electrification. The Pigeon House generating station was synchronised with Ardnacrusha in 1930 and was shut down the following year. From then on the city of Dublin and the greater part of its environs was supplied with current from Ardnacrusha. A total of 23 sites were identified related to electric power generation including 10 electricity stations.

2.10 Animal Products Industry

All forms of industry associated with animal hides, including tanning, dying, skinning, leather production, animal butchery, glue manufacture and other processes, flourished in the Liberties area of the city. In Dublin City archaeological excavations have revealed that tanning was a thriving industry in the area from as early as the medieval period. Mill Street (formerly Tanners Alley) and Blackpitts, the name of which probably derives from the large black vats used for curing hides by the tanners and skinners, was the site of several tanneries during the eighteenth and nineteenth-centuries. The tannery would have cleaning and de-hairing area (a beam shed), a bark mill, a tan yard with tanning pits, and a drying house. Currying, which produced soft leathers through the use of oils and greases, was also undertaken in a separate area in or near the tannery. Both archaeological excavations and the Census Returns indicate that by the end of the 19th century the Dublin tanning industry was in serious decline.

2.11 Municipal Facilities Industries

The creation of public utilities was a new departure in nineteenth-century urban development. Of particular note are the development of mains drainage, and the provision of a clean water supply which were the twin elements of public health.

Dublin has had a supply of piped water since the thirteenth-century when the City Watercourse was laid out with water diverted from the River Poddle into a channel at the Tongue Field (north of the present Sundrive Road) which was then taken via the present Rutland Avenue and Dolphin's Barn Fire Station on through Dolphin's Barn to James's Street. A basin was constructed near James's Street which served the more elevated parts of the city. The earliest distribution system from the basin was by way of open channels along High Street and Thomas Street. Various regulations were introduced over the years to improve and ensure the quality of the water. Allowing animals to graze beside the open watercourses, dumping of any sort and washing of clothes were among the numerous malpractices prohibited. However it would have been impossible to police the City Watercourse constantly.

Dublin City experienced massive development from the latter half of the seventeenth-century both north and south of the river which created a problem regarding the provision of a quality water supply. The growth of industries needing a water supply also required to be taken into consideration and industrial pollution of the water supply was becoming a serious problem in the early eighteenth-century. The medieval water basin was no longer capable of supplying the required level of water, and in 1721, a new basin was constructed by the Corporation at James's Street, and became known as the City Basin. The City Watercourse, raised on embankments and masonry was diverted into the new basin and led to the area extending from Dolphin's Barn up to the present Grand Canal becoming known as 'The Back of the Pipes'. This new basin was at a higher level and more capable of providing a greater volume of water than its predecessor.

A basin, known as Liberty Basin was constructed in 1820-1 to supply water by way of twenty-five fountains to the Liberties area, which up to this point had lacked a clean and abundant water source. The basin continued to supply water in the area into the 1870s.

From the late 1770s water was provided for the City Basin from the Grand Canal. However, by 1806, the water supply was found to be completely insufficient for the needs of the citizens. Following construction of the Circular Line of the Grand Canal in the 1790s, water was taken from the canal at the 8th Lock at Portobello to supply the city. In the 1862, the Rathmines Township built a waterworks upstream of the 8th Lock of the Grand Canal from which water was taken. However, though representing a superb feat of engineering, the waterworks were unsuccessful, producing an indifferent and often inconsistent water supply. In 1868, filter beds were constructed beside the 5th Lock to supply water for industries in the city. These were designed by the City Surveyor, Parke Neville, and are still in operation.

The first comprehensive mains drainage scheme to be undertaken in Ireland was completed by the townships of Rathmines and Pembroke in 1881, in a bid to tackle the danger to health caused by pollution of the area's waterways. The pumping station at Londonbridge Road, which still survives was a major part of the schemes infrastructure, and allowed the transfer of waste material from low-level collection sewers (crossing the Dodder by siphon at Londonbridge) to a high level outfall sewer, which eventually discharged into the Liffey estuary at Whitebanks.

The early twentieth-century saw further significant changes in drainage within the city. Dublin Corporation's own main drainage system was established in 1906 and completed by 1908. Under this scheme waste which had previously flowed directly into the Liffey from the feeder rivers, was taken in interconnectors to Ringsend, treated in filter beds and then shipped out into Dublin Bay for dumping. Following the implementation of this, the Corporation set about extending the sewer network: areas which had previously been unsatisfactorily served were now added to the system where possible.

2.12 Water-Powered Industries

Water was the backbone of Irish industry during the eighteenth-century and for much of the nineteenth-century, and even in the nineteenth-century steam power was a supplement to rather than a replacement of water power. Consequently the water courses of the greater Dublin area were of immense importance in powering industrial concerns, particularly with the advent of industrialisation and the growth of many manufacturing processes as commercial enterprises. Many of these industries were located outside the city to avail of the fast-flowing waters of the mountain streams and rivers.

Thus rivers such as the Dodder, Tolka and Camock were exploited significantly as sources of water power.

2.12.1 The River Dodder

The Dodder rises in the Wicklow mountains, at Kippure, close to the source of the River Liffey, and from there makes it way down through Glenasmole, Templeogue and Clonskeagh to eventually meet the Liffey just east of the Grand Canal Docks at Rinsgsend.

Since the earliest settlements the Dodder has been a site for the development of water-related and water-dependent industries, and it has been noted that by 1844 there were 28 water mills extant on the river, while by 1879 that number had grown to 45, including a number of factories. The first edition of the Ordnance Survey depicts the following site types along the banks of the River Dodder – Flour Mill (x4), Distillery, Calico Printing Factory(x2), Bleach Mill, Factory, Bakery, Ironworks, Mill(x2), Cloth Mill(x4), Paper Mill(x2) and Parchment Mill. While many of these were no longer in operation at the start of the twentieth-century, concerns such as the Dartry Dye Works, Laundry at Milltown and Clonskeagh Ironworks were substantial industries.

In the nineteenth century changes were made to the river's natural flow at its upper reaches, when the Rathmines and Rathgar townships approached Richard Hassard to source a water supply for their residents. Hassard's plan included the construction of two reservoirs on the Dodder, at Glenasmole, with a series of diversions and weirs, which as well as successfully supplying drinking water to the townships also had the added benefit of regulating the water flow on the river and making it much less prone to flood.

2.12.2 The River Tolka

The River Tolka rises in County Meath and flows through Fingal into north Dublin City. The riverside industries identified along the banks of the Tolka river reflect the growing role of the Tolka in providing water-power to the burgeoning industrial development of north Dublin during the eighteenth and nineteenth centuries.

The section of the River Tolka that passes between Glasnevin and Luke Kelly Bridge/Distillery Road Bridge, Drumcondra crosses through a landscape that has a rich industrial heritage. In the 19th century a woollen manufactory had developed near Mobhi Road Glasnevin, taking advantage of a millrace that was built in the 1840s. This race was taken off the Tolka to a flourmill located at the junction of what are now Millbourne Avenue and Drumcondra Road Upper. The mill had replaced Drumcondra Manufactory, noted on Rocques map of 1756 as a linen bleachery. The race rejoined the river immediately upstream of Drumcondra Bridge.

Further downstream on the south bank of the river, Clonliffe Paper Mills was established in the 19th century. This complex is believed to be on the site of a watermill associated with the Cistercian foundation of St. Mary's Abbey, Dublin. On the north bank Dublin Distillery complex was linked with the paper mills by a weir extending across the river. Another former watermill site has been identified on the site of another paper mill site upstream at Tolka (Finglas) Bridge.

In the 19th century an ironworks was located upstream at Cardiffs Bridge which manufactured bar iron, spades and shovels. The earliest cartographic evidence of the works is from 1837, and it is also mentioned in D'Alton's *A History of Dublin* in 1838, who also noted that the local inn in Cardiffsbridge village provided a meeting place for those who were employed in the iron foundry. The ironworks continued in use in the early 20th century.

2.12.3 The River Camac

The Camac River rises south of Brittas Village in the Dublin Mountains and runs through Clondalkin and Kilmainham before flowing into the Liffey near Huston Station. Many mills were built alongside the river including flour, paper, gunpowder and oil mills. One of the most noteworthy sites on the River Camac is Kilmainham Mill which stands on a site that has experienced water-powered milling activities since at least the sixteenth-century in both textile and grain milling, retaining its function through to the start of this century. It is highly probable that the site represents the only largely unaltered early nineteenth-century fulling mill remaining within the city and one of the most intact within the country.

3 METHODOLOGY

3.1 Documentary Sources

The survey involved undertaking a desktop study to identify sites of industrial heritage within Dublin, taking in the four administrative areas of Dublin City Council, Fingal County Council, South Dublin County Council and Dún Laoghaire-Rathdown County Council.

Industrial heritage surveys had previously been completed for Dublin City Council (Dublin City Council Industrial Heritage Record) and Dún Laoghaire-Rathdown (Dún-Laoghaire Rathdown Industrial Heritage Survey) and these were made available for the project. It was agreed with the Steering Committee that the surveys for Dublin City and Dún Laoghaire-Rathdown would be used for those two areas. Both surveys comprehensively covered all available cartographic sources and comprised a number of site types which were not relevant to this project such as bridges and sites relating to the railways and canals. Both surveys were examined with a view to removing these sites.

Site identification for Fingal and South Dublin was conducted by means of examination of Ordnance Survey maps. These maps are the single most useful basis for site identification when conducting industrial surveys. The scale of the maps allows for individual sites to be clearly discernible while the majority of industrial sites are generally captioned. The location, nature and change of pace of Irish industry over its most significant period of development can be gauged by examining all map editions up to the present time. Even where not captioned, the presence of associated features such as mill races may reveal sites of interest. Sites which had been captioned were recorded, as well as sites which were clearly identifiable by means of a known symbol such as lime kilns, forges, quarries, etc.

The project team were concurrently working on a comprehensive desktop survey for Fingal County Council. Sites relating to polluting industries were incorporated into this project. No previous industrial survey had been carried out for South Dublin. Digital OS mapping was provided by the Geological Survey of Ireland and were examined for this area. The mapping provided comprised 6-inch/1:1056 first edition mapping dating to the late 1830s/early 1840s and 25-inch/1:2500 mapping dating to c.1910. The locations of the identified sites have been marked on digital copies of the current OS maps for the project area.

The following were the maps examined for the different administrative areas:

Dublin City: 1837 Edition (Scale 6-inch/1:10560); 1847 and 1864-5 Editions (Scale 5-foot/1:1056); 1865-6, 1907, and 1938-43 Editions (Scale 25-inch/1:2500)

Dún Laoghaire-Rathdown: 1843, 1870s, c.1910 and 1930s Editions (Scale 6-inch/1:10560); 1860s, c.1910, 1930s and c.1970 Editions (Scale 25-inch/1:2500)

Fingal County Council: c.1837, c.1870, c.1909 and c.1937 Editions (Scale 6-inch/1:10560); c.1910 (Scale 25-inch/1:2500)

South Dublin County Council: c.1840 Edition (Scale 6-inch/1:10560); c.1910 Edition (Scale 25-inch/1:2500)

3.2 Site Identification

All captioned sites are included in the survey. These ranged from sites relating to water supplies and sewage disposal, captioned enterprises such as gas and electricity, factories, mills, etc. Where sites were only indicated by the relevant symbol, i.e. quarries, gravel pits, lime kilns, these were also included. A list of all site types identified is included in Section 4.2.

3.3 Numbering System

Each site, when identified, was given a unique number to allow its inclusion within the database. The numbering commenced at 0001 and continued on from this. Some ‘sites’ may not represent a single building but include a complex of structures that are related to the industrial activity or activities that were carried on over time, for example a mill site may include a number of components. However as it was generally difficult to identify the use of individual structures on the map sources and even the exact extent of a site within an urban area, it was agreed that a single point in the centre of the site would be used to identify each site.

3.4 Documentary Research

Following the investigation of cartographic sources, a thorough study using secondary and some primary documentary sources at both local and national level was commenced. The direction of this research has been informed by site types and industrial trends ascertained during the cartographic examination. The documentary research has focused on the main industries identified within the study area. Previous research carried out as part of the Dublin City Industrial Heritage Record was also drawn on and this combination was invaluable in drawing up a comprehensive picture of the development of industries in Dublin.

3.5 Mapping

Digital copies of the modern OS maps for the survey area were supplied by the Geological Survey of Ireland. During the examination of the cartographic sources hard copies of these maps were used to mark the locations of the sites identified with the unique number for each specific site. This information was then transferred to the digital maps by Gamma using MapInfo. The mapping provided for the Dublin City Industrial Heritage Record and Dún Laoghaire Rathdown Industrial Heritage Survey were incorporated by Gamma when compiling their mapping.

4 SUMMARY OF FINDINGS

4.1 General

Overall c.**2000** industrial sites were identified within the Dublin area comprising a wide range of site types. The following table breaks the site numbers down between the four administrative areas.

Administrative Area	Number of Sites
Dublin City Council	690
Fingal County Council	499
South Dublin County Council	339
Dun-Laoghaire-Rathdown County Council	494

4.2 Site Types

Below is an indicative list of the types of sites that had been identified during the course of compiling the database and, although not exhaustive, it provides an effective indication of the scope and variety of historical industrial development within Dublin area.

Alkali Works
Asphalt Works
Astronomical Works
Baby Carriage Factory
Bacon Curing Factory
Bakery
Bedding Factory
Bedstead Factory
Bell Foundry
Biscuit Factory
Bleach Mill
Bonded Store
Bone mill
Boot Factory
Bottle Works
Brass Works
Brewery
Brick and Tile Factory
Brick Works
Brush Factory
Building & Engineering Works
Button Factory
Cake Factory
Calico Printing Works
Candle Factory
Carpet Mills
Cement Works
Chemical Manure Works
Chemical Works
Chocolate and Cocoa Factory
Clay pipe production
Clay Pit
Cloth Factory
Cloth Mill
Clothing Factory
Coach Factory
Coal Shed
Coal Yard
Comb and Button Works
Confectionery Works
Container Factory
Cooperage
Copper Mine
Corn Kiln
Corn Mill
Corn Store
Corset Factory
Cotton Dye Works
Cotton Factory
Cotton Mill
Cycle and Engineering Works
Dairy
Distillery
Drainage Pumping Station
Drying Kiln
Dye Works
Electric lighting and refuse destructor works
Electricity Generating Station
Electricity Works
Envelope works
Factory
Fertilizer Works
Filter Beds
Flax Manufactory
Flour & Oil Mills
Flour Mill
Forge
Foundry
Furniture Factory
Gas Works
Gasometer
Glass bottle factory
Glass House Factory
Glass Works
Glue Factory
Glue Manufactory
Gown Factory
Grain stores
Granary
Gravel Pit
Grinding Mill
Hair Works
Hat Manufactory
Hide + Skin Works
Hosiery Factory
Ice Factory
Iron & Starch Works
Iron and Brass Works
Iron Foundry
Iron Works
Jam Factory
Knitwear Factory
Lace Factory
Laundry
Lead & Copper Mill
Lead Mine
Lead works
Lime & Salt Works
Lime Kiln
Lime Works
Linen Factory
Mail Coach Factory
Maltings
Manganese & Lime Works
Maracrete Works
Marl pit
Match Factory

Metal Works
Mill
Mill Dam
Mill Pond
Mill Race
Mine
Mineral Water Works
Monumental Works
Motor Assembly Plant
Oil Mill
Packing Case Factory
Paint + Varnish Factory
Paint Factory
Paper Mill
Parchment Mill
Patent Malt Manufactory
Pin Factory
Pipe Factory
Polish Factory
Poplin and Silk Factory
Poplin Factory
Pottery Works
Powder Mill
Power Station
Printing Works
Pump House
Pumping Station
Quarry
Railway Engine & Coach Factory
Rectifying Distillery
Refuse Depot
Refuse Destructor
Refuse Tip
Reservoir
Ribband Factory
Rope Walk
Sack Factory
Sal-ammoniac manufactory
Salt Works
Sand Pit
Sausage Skin Factory
Saw Mill
Saw Pit
Scavenging Depot
Sewage Works
Sheep Dip Factory
Sheet Metal Works
Shirt and Collar Factory
Shot Manufactory
Shot Tower
Silk Mill
Smithy
Soap Candle Factory
Soap Works
Spinning Manufactory
Starch Works
Steam Saw Mill
Sugar Store
Sweet Factory
Syphon House
Tannery
Tape Mills
Tent & Marquee Factory
Textile Production
Thread Factory
Tile Factory
Timber Yards
Tin Box Manufactory
Tobacco & Snuff factory
Tobacco Factory
Tobacco Stores
Tobacco Warehouse
Twine Factory
Underwear Factory
Velvet Manufactory
Vinegar Brewery and Canning Works
Vitriol Works
Water Mill
Water treatment plant
Water Works
Waterproof Factory
Waterworks
Wax Factory
Weaving Mill
Whiskey Store
Windmill
Wire Works
Wool Stores
Woollen Cloth Mill
Worsted Factory

4.3 Site Classification

In order to break this diverse range of sites down into a more manageable format, and to give an indication of the proportions of different industrial activities that have historically occupied the survey area, a number of broad site classification categories were supplied by GSI. These classifications have been used in the table below to break this diverse range of sites into a more manageable format.

It should be noted, concerning the table below, that some sites experienced a variety of uses during the periods investigated and therefore the numbers below are not an accurate reflection of the total number of sites identified. Where a site was occupied by different industries, this has been recorded within the database accompanying the mapping. Furthermore not every site falls within the classifications in the table below. Some sites were simply titled 'Factory' or 'Mill' with no indication as to what type of factory or were captioned with a name such as 'Sunshine Works'. Attempts to discover the nature of the industry at such sites has proved fruitless. In addition some sites such as 'Grinding Mill' could fall within one of a number of the classifications and as there was no way of divining the specific industry the sites were related to these have not been included in the classifications.

Tables showing a breakdown of the sites by classification are included in Appendix 2.

Classification	Total No. Of Sites
Minerals & Aggregate	1081

Metal Industry	156
Food Industry	148
Textile Industry	129
Chemical Industry	101
Drinks Industry	52
Pulp/Paper Industry	50
Municipal Facilities	46
Oil/Gas Industry	25
Power Generation	23
Animal Products	13

4.4 Site Numbers

A breakdown of site numbers identified during the survey is contained in the table below. This list is indicative of the trends regarding site numbers identified. The table is presented in numerical descending order. This list is not comprehensive but is indicative of the numbers of certain sites identified during the survey.

Site Type	Total No. Of Sites
Quarry	562
Gravel Pit	268
Lime Kiln	103
Smithy	90
Sand Pit	60
Mill	36
Flour Mill	30
Corn Mill	29
Laundry	26
Windmill	25
Goods Shed	23
Brewery	21
Mill Pond	21
Printing Works	20
Pit	18
Brick Field	17
Forge	17
Paper Mill	17
Saw Mill	17
Rope Walk	16
Foundry	15
Reservoir	15

Site Type	Total No. Of Sites
Mill Race	13
Bakery	12
Clothing Factory	12
Boiler Shop	11
Iron Works	11
Pump House	11
Chemical Works	10
Coal Yard	10
Distillery	10
Pumping Station	10
Bonded Store	9
Factory	9
Gas Works	9
Gasometer	9
Tan Yard	8
Dispensary	7
Dye Works	7
Lead works	7
Maltings	7
Water Works	7
Brick Works	6
Cloth Mill	6

Site Type	Total No. Of Sites
Hosiery Factory	6
Mill Dam	6
Mine shaft	6
Sewage Tank	6
Clay Pit	5
Electricity Works	5
Glass Works	5
Lead Mine	5
Salt Works	5
Soap Works	5
Glass House Factory	4
Malthouse	4
Marl pit	4
Sweet Factory	4
Waterproof Factory	4
Biscuit Factory	3
Bottle Factory	3
Bottle Works	3
Chemical Manure Works	3
Chimney	3
Confectionery Works	3
Cooperage	3
Copper Mine	3
Corn Kiln	3
Corn Store	3
Cotton Dye Works	3
Dairy	3
Jam Factory	3
Mineral Water Works	3
Oil Mill	3
Refuse Depot	3
Tannery	3
Timber Yards	3
Tobacco Factory	3
Tobacco Warehouse	3
Vitriol Works	3
Woollen Mill	3
Asphalt Works	2
Brush Factory	2
Chocolate and Cocoa Factory	2
Cleansing Depot	2
Coach Factory	2
Container Factory	2
Cotton Factory	2
Cotton Mill	2
Granary	2
Hat Manufactory	2
Hide + Skin Works	2
Iron Mill	2
Lime Works	2
Linen Factory	2
Mineral Water Factory	2
Motor Assembly Works	2

Site Type	Total No. Of Sites
Packing Case Factory	2
Polish Factory	2
Powder Mill	2
Printing Office	2
Pumping House	2
Refuse Tip	2
Saw Pit	2
Sewage Works	2
Shaft	2
Sheep Dip Factory	2
Shirt Factory	2
Silk Mill	2
Sugar Store	2
Tobacco & Snuff factory	2
Tobacco Stores	2
Waterworks	2
Abattoir	1
Alkali Works	1
Astronomical Works	1
Axle Tree Mill	1
Baby Carriage Factory	1
Bacon Curing Factory	1
Bedding Factory	1
Bedstead Factory	1
Bell Foundry	1
Bleach Mill	1
Bone mill	1
Boot Factory	1
Brass Works	1
Brick and Tile Factory	1
Brick Yard	1
Building & Engineering Works	1
Button Factory	1
Cake Factory	1
Calico Printing Works	1
Calico Printing Factory	1
Candle Factory	1
Cardboard Factory	1
Carpet Factory	1
Carpet Mills	1
Cement Works	1
Chemical Manure and Oilcake Mills	1
Clay mill	1
Clay pipe production	1
Cloth Factory	1
Coach Works	1
Coal Depot	1
Coal Shed	1
Comb and Button Works	1
Confectionery Factory	1
Cooker and Meter Factory	1
Corn Exchange	1
Corn Flour Works	1

Site Type	Total No. Of Sites
Corset Factory	1
Cotton Spinning Mill	1
Cycle and Engineering Works	1
Drainage Outfall Works	1
Drainage Pumping Station	1
Dry Battery Manufactory	1
Drying Kiln	1
Electric lighting and refuse destructor works	1
Electricity Substation	1
Electricity Generating Station	1
Electricity Power House	1
Electricity switching station	1
Electricity Transformer Station	1
Envelope works	1
Fermenting House	1
Fertilizer Works	1
Filter Beds	1
Flax Manufactory	1
Flour & Oil Mills	1
Flue	1
Furniture Factory	1
Galvanising Works	1
Gas House	1
Gas Vent Pipe	1
Glass bottle factory	1
Glue Factory	1
Glue Manufactory	1
Goods Store	1
Gown Factory	1
Grain Silo	1
Grain stores	1
Gravel quarry	1
Grinding Mill	1
Hair Works	1
Hop Store	1
Ice & Cold Storage	1
Ice Factory	1
Iron & Starch Works	1
Iron and Brass Works	1
Iron Foundry	1
Iron Mongery	1
Knitwear Factory	1
Lace Factory	1
Laundry Mill	1
Lead & Copper Mill	1
Lime & Salt Works	1
Lying In Hospital	1
Mail Coach Factory	1
Malt Store	1
Manganese & Lime Works	1
Manufactory	1
Maracrete Works	1

Site Type	Total No. Of Sites
Margarine Factory	1
Match Factory	1
Metal Works	1
Mill site possible	1
Mill Yard	1
Mine	1
Mine adit	1
Monumental Works	1
Motor Assembly Plant	1
Oil Works	1
Paint + Varnish Factory	1
Paint and Colours Mill	1
Paint Factory	1
Parchment Mill	1
Patent Malt Manufactory	1
Pin Factory	1
Pipe Factory	1
Poplin and Silk Factory	1
Poplin Factory	1
Pottery	1
Pottery Works	1
Power Station	1
Preserve Works	1
Printing House	1
Railway Carriage Factory	1
Railway Coach Factory	1
Railway Engine & Coach Factory	1
Rectifying Distillery	1
Refuse Destructor	1
Refuse Yard	1
Ribband Factory	1
Sack Factory	1
Sal-ammoniac manufactory	1
Sausage Skin Factory	1
Scavenging Depot	1
Septic Tanks	1
Sewage Farm	1
Sewage Tank & Filter Bed	1
Sheet Metal Works	1
Shirt and Collar Factory	1
Shot Manufactory	1
Shot Tower	1
Shot works	1
Soap Candle Factory	1
Soap Factory	1
Spinning Manufactory	1
Starch Works	1
Steam Saw Mill	1
Subterranean flue	1
Sugar Works	1
Tanning	1
Tanyard	1
Tape Mills	1

Site Type	Total No. Of Sites
Tea Store	1
Tent & Marquee Factory	1
Textile Production	1
Thread Factory	1
Tile Factory	1
Tin Box Manufactory	1
Tram Power Station	1
Twine Factory	1
Underwear Factory	1
Vat House	1
Velvet Manufactory	1
Vinegar Brewery and Canning Works	1
Vinegar Works	1

Site Type	Total No. Of Sites
Warehouse	1
Water Mill	1
Water tank	1
Water treatment plant	1
Wax Factory	1
Weaving Mill	1
Wheelworks	1
Whim	1
Whiskey Store	1
Wire Works	1
Wool Stores	1
Woollen Cloth Mill	1
Worsted Factory	1

4.5 Analysis

Analysis of the findings of the survey show Minerals and Aggregate to be the most dominant of the classification categories, accounting for about 50% of the sites identified. Quarries were by far the most numerous site type followed, at a distance, by gravel pits and lime kilns. Quarrying is likely to have been carried out on both large and small-scales. The majority of sites, particularly in the outer reaches of the study area were not located in areas where they could be easily transported implying the quarries served local projects, and may have only been open for a short time although they continue to appear as features in the landscape on later map editions. However, there were also some larger quarries in operation, particularly in the Dalkey area where granite quarries provided stone for the construction of the pier at Dún Laoghaire. Of note concerning the ratio of extraction sites within the individual administrative areas was the small percentage of sites identified in Dublin City comprised sites of this nature when compared to the other areas. In Fingal, South Dublin and Dún Laoghaire-Rathdown, quarries, gravel pits, etc. were by far the most numerous site type. In Dublin City quarries were the second most numerous after smithies but the percentage was not as marked as in the other areas.

Metal, textile, food and chemical industries were also relatively prevalent though with considerably less numbers than extractive industries. Smithies and forges make up more than half the number of metal industry-related sites which reduces the impact of this classification on the industry as a whole. Furthermore, outside the city and with the exception of smithies and forges, metal-related industries were not very numerous.

Milling accounted for 57% of food industry sites, comprising flour mills, corn mills and windmills, and these sites were evenly spread across the four administrative areas. The drinks industry was primarily concentrated in Dublin City, with few sites identified in the other three areas. Laundries were the most numerous site type amongst the textile industry sites, followed by ropewalks. These sites were concentrated in the city area. Most of the site types which have been included under the textile classification appeared only once in the record highlighting the diversity amongst this industry. There were 129 sites and 48 site types identified within the textile industry.

The chemical industry also comprised a variety of site types, with printing works being the most numerous at 20 sites.

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APPENDIX 1: GLOSSARY

Alkali Works: Common salt was converted into soda ash (sodium carbonate), an alkali which was used in the glass, textile, paper and soap industries.

Astronomical Works: Pertaining to the manufacture of telescopes.

Bleach Mill: Fabric was treated chemically to remove its natural brown colour and then spread out on bleaching greens to dry.

Cooperage: Manufactory of timber casks. Often associated with breweries and distilleries.

Culm: Waste from anthracite coal mines, mixed with clay and tempered to produce fuel.

Fulling Mill: Fulling or tucking is a step in woollen cloth-making which involves the cleansing of cloth, in particular wool to eliminate oils, dirt, and other impurities, and make it thicker. The fulling of cloth was often undertaken in a water mill, known as a fulling or tuck mill. The cloth was continually pounded in a soapy solution by wooden fulling stocks. This process was in decline by the middle of the nineteenth-century, with new machinery replacing the traditional fulling stocks.

Maracrete: Concrete with a colour mixed through it.

Poplin: A fabric made with wool, cotton, silk, rayon, or any mixture of these, though originally made from silk. Poplins are used for dress purposes, and for rich upholstery work.

Rectifying Distillery: Rectification is a process whereby ethanol has been purified by means of repeated distillation to create a rectified alcohol/spirit.

Sal-ammoniac manufactory: A chemical produced from bones/offal/manure which is used in the production of soap and in the metal industry. It has also been used in bakery products.

Tuck Mill: See Fulling Mill

Tannery: Tanning is

Vitriol Works: Manufactured sulphuric acid for use in the bleaching of linen.

Whim: A device used in mining for hauling materials to the surface comprising a wide drum with a vertical axle. A rope is wound around the drum, with both ends traversing several pulleys and hanging down the mine shaft. As the drum is turned around, one end of the rope is lowered, carrying an empty bucket, while the other one is raised, carrying a full load. Early whims were horse-powered, but later they were powered by waterwheels or steam engines.

Worsted Factory: Worsted is a firmly twisted yarn or thread spun from combed, stapled wool fibres of the same length. The essential feature of worsted is straightness of fibre.

APPENDIX 2: SITE TYPES BY CLASSIFICATION

Minerals & Aggregate

Site Type	No. Of Sites
Quarry	562
Gravel Pit	268
Lime Kiln	103
Sand Pit	60
Brick Field	17
Pit	17
Lead works	7
Brick Works	6
Mine shaft	6
Clay Pit	5
Lead Mine	5
Marl pit	4
Copper Mine	3
Lime Works	2
Shaft	2
Brick and Tile Factory	1
Brick Yard	1
Cement Works	1
Clay mill	1
Clay pipe production	1
Gravel quarry	1
Lead & Copper Mill	1
Lime & Salt Works	1
Maracrete Works	1
Mine	1
Mine adit	1
Pottery	1
Pottery Works	1
Tile Factory	1
Total	**1081**

Metal Industry

Site Type	No. Of Sites
Smithy	90
Forge	17
Foundry	15
Iron Works	11
Coach Factory	2
Iron Mill	2
Motor Assembly Works	2
Bell Foundry	1
Brass Works	1
Building & Engineering Works	1
Coach Works	1
Cycle and Engineering Works	1
Galvanising Works	1
Iron and Brass Works	1
Iron Foundry	1
Iron Mongery	1
Mail Coach Factory	1
Metal Works	1
Motor Assembly Plant	1
Pin Factory	1
Railway Carriage Factory	1
Railway Coach Factory	1
Railway Engine & Coach Factory	1
Sheet Metal Works	1
Tin Box Manufactory	1
Total	**157**

Food Industry

Site Type	No. Of Sites
Flour Mill	30
Corn Mill	29
Windmill	25
Bakery	12
Sweet Factory	4
Biscuit Factory	3
Confectionery Works	3
Corn Kiln	3
Corn Store/Granary	4
Dairy	3
Jam Factory	3
Tobacco Factory	3
Tobacco Warehouse	3
Chocolate and Cocoa Factory	2
Sugar Store	2
Tobacco & Snuff factory	2
Tobacco Stores	2
Bacon Curing Factory	1
Cake Factory	1
Confectionery Factory	1
Corn Exchange	1
Corn Flour Works	1
Drying Kiln	1
Ice & Cold Storage	1
Ice Factory	1
Preserve Works	1
Sausage Skin Factory	1
Sugar Works	1
Tea Store	1
Vinegar Brewery and Canning Works	1
Vinegar Works	1
Margarine Factory	1

Total	148

Textile Industry

Site Type	No. Of Sites
Laundry	26
Rope Walk	16
Clothing Factory	12
Dye Works	7
Cloth Mill	6
Hosiery Factory	6
Waterproof Factory	4
Cotton Dye Works	3
Woollen Mill	3
Cotton Factory	2
Cotton Mill	2
Hat Manufactory	2
Linen Factory	2
Shirt Factory	2
Silk Mill	2
Bedding Factory	1
Bleach Mill	1
Button Factory	1
Calico Printing Works	1
Calico Printing Factory	1
Carpet Factory	1
Carpet Mills	1
Cloth Factory	1
Corset Factory	1
Cotton Spinning Mill	1
Flax Manufactory	1
Gown Factory	1
Iron & Starch Works	1
Knitwear Factory	1
Lace Factory	1
Laundry Mill	1
Poplin and Silk Factory	1
Poplin Factory	1
Ribband Factory	1
Sack Factory	1
Shirt and Collar Factory	1
Spinning Manufactory	1
Starch Works	1
Tape Mills	1
Tent & Marquee Factory	1
Textile Production	1
Thread Factory	1
Twine Factory	1
Underwear Factory	1
Velvet Manufactory	1
Weaving Mill	1
Wool Stores	1
Woollen Cloth Mill	1
Worsted Factory	1
Total	**129**

Chemical Industry

Site Type	No. of Sites
Printing Works	20
Chemical Works	10
Coal Yard	10
Glass Works	5
Salt Works	5
Soap Works	5
Glass House Factory	4
Bottle Factory	3
Bottle Works	3
Chemical Manure Works	3
Vitriol Works	3
Asphalt Works	2
Polish Factory	2
Powder Mill	2
Printing Office	2
Sheep Dip Factory	2
Alkali Works	1
Astronomical Works	1
Dry Battery Manufactory	1
Chemical Manure and Oilcake Mills	1
Coal Depot	1
Coal Shed	1
Fertilizer Works	1
Glass bottle factory	1
Manganese & Lime Works	1
Match Factory	1
Paint + Varnish Factory	1
Paint and Colours Mill	1
Paint Factory	1
Printing House	1
Sal-ammoniac manufactory	1
Shot Manufactory	1
Shot Tower	1
Shot works	1
Soap Candle Factory	1
Soap Factory	1
Total	**101**

Oil/Gas Industry

Site Type	No. of Sites
Gas Works	9
Gasometer	9
Oil Mill	4
Gas House	1

Gas Vent Pipe	1
Oil Works	1
Total	**25**

Drinks Industry

Site Type	No. of Sites
Brewery	21
Distillery	10
Maltings	7
Malthouse	4
Mineral Water Works	3
Mineral Water Factory	2
Fermenting House	1
Malt Store	1
Patent Malt Manufactory	1
Rectifying Distillery	1
Vat House	1
Total	**52**

Municipal Facilities

Site Type	No. of Sites
Pumping Station	10
Water Works	7
Sewage Tank	6
Refuse Depot	3
Syphon House	3
Cleansing Depot	2
Pumping House	2
Refuse Tip	2
Sewage Works	2
Filter Beds	1
Refuse Destructor	1
Refuse Yard	1
Scavenging Depot	1
Septic Tanks	1
Sewage Farm	1
Sewage Tank & Filter Bed	1
Water tank	1
Water treatment plant	1
Total	**46**

Pulp/Paper Industry

Site Type	No. of Sites
Paper Mill	17
Saw Mill	17
Cooperage	3
Timber Yards	3
Packing Case Factory	2
Saw Pit	2
Axle Tree Mill	1
Cardboard Factory	1
Envelope works	1
Furniture Factory	1
Parchment Mill	1
Steam Saw Mill	1
Total	**50**

Power Generation

Site Type	No. Of Sites
Electricity Station	10
Electricity Works	5
Electric lighting and refuse destructor works	1
Electricity Substation	1
Electricity Generating Station	1
Electricity Power House	1
Electricity switching station	1
Electricity Transformer Station	1
Power Station	1
Tram Power Station	1
Total	**23**

Animal Products

Site Type	No. Of Sites
Tannery	3
Hide + Skin Works	2
Abattoir	1
Boot Factory	1
Bone mill	1
Glue Factory	1
Glue Manufactory	1
Hair Works	1
Tanning	1
Tanyard	1
Total	**13**

APPENDIX 3: SITE TYPES - INDIVIDUAL ADMINISTRATION AREAS

Dublin City Council

Site Type	No. of Sites
Smithy	35
Quarry	33
Goods Shed	23
Laundry	22
Gravel Pit	20
Printing Works	20
Brewery	19
Saw Mill	16
Foundry	15
Rope Walk	15
Flour Mill	13
Clothing Factory	12
Mill	12
Bakery	11
Boiler Shop	11
Lime Kiln	11
Chemical Works	10
Distillery	10
Electricity Station	10
Iron Works	10
Bonded Store	9
Windmill	9
Coal Yard	8
Tan Yard	8
Dye Works	7
Maltings	7
Corn Mill	6
Factory	6
Pumping Station	6
Electricity Works	5
Gas Works	5
Glass Works	5
Soap Works	5
Forge	4
Glass House Factory	4
Malthouse	4
Paper Mill	4
Pump House	4
Sweet Factory	4
Waterproof Factory	4
Biscuit Factory	3
Bottle Factory	3
Bottle Works	3
Brick Works	3
Chemical Manure Works	3
Confectionery Works	3
Cooperage	3
Corn Store	3

Site Type	No. of Sites
Cotton Dye Works	3
Dairy	3
Gasometer	3
Lead works	3
Mineral Water Works	3
Refuse Depot	3
Salt Works	3
Syphon House	3
Tannery	3
Timber Yards	3
Tobacco Factory	3
Tobacco Warehouse	3
Vitriol Works	3
Asphalt Works	2
Brush Factory	2
Chocolate and Cocoa Factory	2
Clay Pit	2
Cleansing Depot	2
Coach Factory	2
Container Factory	2
Corn Kiln	2
Granary	2
Hat Manufactory	2
Hide + Skin Works	2
Hosiery Factory	2
Jam Factory	2
Lime Works	2
Mineral Water Factory	2
Motor Assembly Works	2
Packing Case Factory	2
Polish Factory	2
Printing Office	2
Refuse Tip	2
Sand Pit	2
Sheep Dip Factory	2
Sugar Store	2
Tobacco & Snuff factory	2
Tobacco Stores	2
Waterworks	2
Abattoir	1
Alkali Works	1
Astronomical Works	1
Axle Tree Mill	1
Baby Carriage Factory	1
Bacon Curing Factory	1
Bedding Factory	1
Bedstead Factory	1
Bell Foundry	1

Site Type	No. of Sites
Bleach Mill	1
Boot Factory	1
Brass Works	1
Brick and Tile Factory	1
Brick Field	1
Building & Engineering Works	1
Button Factory	1
Cake Factory	1
Calico Printing Works	1
Calico Printing Factory	1
Candle Factory	1
Cardboard Factory	1
Carpet Mills	1
Cement Works	1
Chemical Manure and Oilcake Mills	1
Chimneys	1
Clay pipe production	1
Cloth Mill	1
Coach Works	1
Coal Depot	1
Coal Shed	1
Comb and Button Works	1
Confectionery Factory	1
Cooker and Meter Factory	1
Corn Exchange	1
Corn Flour Works	1
Corset Factory	1
Cotton Factory	1
Cotton Spinning Mill	1
Cycle and Engineering Works	1
Drainage Outfall Works	1
Drainage Pumping Station	1
Dry Battery Manufactory	1
Electric lighting and refuse destructor works	1
Electrical Services Depot	1
Electricity Substation	1
Electricity Transformer Station	1
Envelope works	1
Fermenting House	1
Fertilizer Works	1
Flax Manufactory	1
Flour & Oil Mills	1
Furniture Factory	1
Galvanising Works	1
Gas House	1
Gas Vent Pipe	1
Glass bottle factory	1
Glue Factory	1
Goods Store	1

Site Type	No. of Sites
Gown Factory	1
Grain Silo	1
Grain stores	1
Grinding Mill	1
Hair Works	1
Hop Store	1
Ice & Cold Storage	1
Ice Factory	1
Iron and Brass Works	1
Iron Foundry	1
Iron Mongery	1
Kiln	1
Knitwear Factory	1
Lace Factory	1
Lime & Salt Works	1
Linen Factory	1
Mail Coach Factory	1
Malt Store	1
Manufactory	1
Maracrete Works	1
Match Factory	1
Metal Works	1
Mill Pond	1
Mill race {Weir; Sluices}	1
Mill Yard	1
Mine	1
Monumental Works	1
Motor Assembly Plant	1
Oil Works	1
Paint + Varnish Factory	1
Paint and Colours Mill	1
Paint Factory	1
Patent Malt Manufactory	1
Pipe Factory	1
Poplin and Silk Factory	1
Poplin Factory	1
Pottery Works	1
Preserve Works	1
Printing House	1
Railway Carriage Factory	1
Railway Coach Factory	1
Railway Engine & Coach Factory	1
Rectifying Distillery	1
Refuse Destructor	1
Refuse Yard	1
Sack Factory	1
Sal-ammoniac manufactory	1
Sausage Skin Factory	1
Saw Pit	1
Scavenging Depot	1

Site Type	No. of Sites
Sheet Metal Works	1
Shirt and Collar Factory	1
Shirt Factory	1
Soap Candle Factory	1
Soap Factory	1
Spinning Manufactory	1
St. Pancras Works	1
Steam Saw Mill	1
Sugar Works	1
Sunshine Works	1
Tanning	1
Tape Mills	1
Tea Store	1
Tent & Marquee Factory	1
Textile Production	1
The Eastwall Factory	1
Thread Factory	1

Site Type	No. of Sites
Tile Factory	1
Tram Power Station	1
Twine Factory	1
Underwear Factory	1
Vat House	1
Velvet Manufactory	1
Vinegar Brewery and Canning Works	1
Vinegar Works	1
Warehouse	1
Water Mill	1
Weaving Mill	1
Wheelworks	1
Whiskey Store	1
Wire Works	1
Wool Stores	1
Woollen Mill	1

Fingal County Council

Site Type	No. of Sites
Quarry	208
Gravel Pit	95
Lime Kiln	27
Smithy	24
Corn Mill	16
Sand Pit	14
Wind Mill	12
Brick Field	8
Flour Mill	8
Reservoir	7
Mill Race	6
Pump House	6
Mill Pond	5
Mill Dam	4
Water Works	4
Copper Mine	3
Lead Mine	3
Brick Works	2
Engine House	2
Forge	2
Hosiery Factory	2
Pumping House	2
Salt Works	2
Sewage Works	2
Brewery	1
Brick Yard	1
Carpet Factory	1

Site Type	No. of Sites
Clay Pit	1
Coal Yard	1
Cotton Factory	1
Drying Kiln	1
Electricity Generating Station	1
Electricity Power House	1
Gas Works	1
Gasometer	1
Iron & Starch Works	1
Laundry	1
Linen Factory	1
Manganese & Lime Works	1
Mill	1
Oil Mill	1
Pumping Station	1
Ribband Factory	1
Rope Walk	1
Sewage Farm	1
Sewage Tank	1
Shirt Factory	1
Starch Works	1
Tin Box Manufactory	1
Wax Factory	1
Woollen Mills	1
Worsted Factory	1
Dispensary	

South Dublin County Council

Site Type	No. of Sites
Quarry	123
Gravel Pit	92
Lime Kiln	28
Sand Pit	17
Paper Mill	13
Smithy	10
Flour Mill	9
Corn Mill	7
Dispensary	7
Mill	7
Cloth Mill	5
Mill Pond	5
Forge	4
Brickfield	3
Reservoir	3
Cotton Mill	2
Iron Mill	2
Mill Dam	2
Oil Mill	2

Site Type	No. of Sites
Powder Mill	2
Windmill	2
Cloth Factory	1
Filter Beds	1
Gasometer	1
Glue Manufactory	1
Laundry	1
Laundry Mill	1
Lead & Copper Mill	1
Lying In Hospital	1
Mill Race	1
Mills	1
Parchment Mill	1
Pin Factory	1
Power Station	1
Saw Mill	1
Silk Mill	1
Woollen Cloth Mill	1
Woollen Mill	1

Dún Laoghaire-Rathdown County Council

Site Type	No. of Sites
Quarry	198
Gravel pit	61
Lime kiln	37
Sand Pit	27
Smithy	21
Pit	18
Mill	15
Mill pond	10
Forge	7
Mine shaft	6
Brick Field	5
Mill race	5
Reservoir	5
Sewage Tank	5
Gasometer	4
Marl pit	4
Factory	3
Gas Works	3
Lead Works	3
Pumping Station	3
Water Works	3
Chimney	2
Clay Pits	2
Hosiery Factory	2
Laundry	2
Lead Mines	2
Shaft	2
Windmill	2
Bakery	1
Bone mill	1
Brewery	1

Site Type	No. of Sites
Brickworks	1
Clay mill	1
Coal Yard	1
Corn kiln	1
Electricity switching station	1
Flue	1
Gravel quarry	1
Iron works	1
Jam Factory	1
Kilns	1
Lead Works	1
Mill site possible	1
Mine adit	1
Pottery	1
Pump house	1
Saw pit	1
Septic Tanks	1
Sewage Tank & Filter Bed	1
Shot Manufactory	1
Shot Tower	1
Shot works	1
Silk mill	1
Subterranean flue	1
Tanks	1
Tanyard	1
Telephone exchange	1
The Richview Press	1
Water tank	1
Water treatment plant	1
Whim	1