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Appendix 16.1 Historical Background

Archaeological Evidence

Generally, the coastline of Dublin has been the focus of settlement since prehistoric times. Earliest evidence derives from further along the opposing north quays in the Spencer Dock area where Mesolithic fish traps (McQuade 2004) were uncovered during recent development works. The presence of such traps indicates the usage of the estuary and adjacent areas in the early prehistoric period.

Archaeological finds from elsewhere within the bay, in addition to those recovered in townlands close to the shoreline, reflect the bay's continuity as a major sea route artery since the prehistoric period. A small number of the finds recorded from the bay area include a bone scoop within a shell midden in the cliff face below the Bailey Lighthouse on Howth Head, a dugout canoe unearthed in a sandpit in Sutton in 1935 and the neck of a medieval pottery vessel found in 1954 in gravel below estuarine mud at the Pigeon House, Ringsend. In 1970, copper vessel fragments, potsherds and clay-pipe fragments were discovered locally in Dublin harbour; however, the context of the finds remains unknown.

On the south side of the estuary, medieval settlements developed at Ringsend (RMP no. DU018:053) and Irishtown (RMP no. DU018:054). Settlement at the latter was founded in the mid-fifteenth century, when of all people of Irish blood were expelled from within the city gates (Bennett 1991). The pattern formed by Strand Street and Irishtown Road is likely to respect the line of an enclosure around the early foundation, the site of which is presently marked by St Matthew's Church.

The Liffey estuary's significance as a major sea artery, in conjunction with the tidal nature of the harbour and extreme physical obstacles posed by shifting tidal sands and exposure to strong winds, has ensured that numerous sailing vessels have floundered or have been lost within the river's channel (see Appendix 16.3). The Vikings would have first faced the navigational difficulties of the harbour when, in 837, a fleet of sixty of their ships sailed into the Liffey, where they quickly made a beachhead, possibly near the present junction of D'Olier Street and Pearse Street (De Courcy 1996). In 1800 the Bar was still the obstacle it had been for nine hundred years, and sailing vessels were still at the mercy of gales. The place of loss, or breaching, of many of the vessels that made it through the bar was obviously the limit of the north and south bull sands in many cases, necessitating the placement of buoys or marks to define the approach to the port.

In recent years archaeologists have been engaged to monitor dredging in Dublin Port, in addition to the excavation of pipeline trenches connected with a wastewater pipeline across the bay from Sutton to Ringsend, which have yielded a variety of archaeological objects. By far the most numerous finds recovered from such exercises have been timbers, recognisable as structural parts of wooden vessels such as stakes, scarves, keel and false keel fragments, futtocks and floor timbers, with lesser amounts of ceramic, metal, leather and stone objects (Ó Faoláin 2003). Two wrecks, one of seventeenth or eighteenth century date near Sutton Creek, the second in the intertidal zone on the northern part of Sandymount Strand at Ringsend (Dennehy; Dunne 2003), have also been encountered.

Early Historical Background and Cartographic Analysis

Late seventeenth-century descriptions of the Liffey estuary, corroborated by historical maps, offer a glimpse of the extreme physical or geographical conditions that have made the navigation of Dublin's harbour a hazardous affair from its earliest history (Gilligan 1988, pg. 14). Reference is made to a sandbar that connected the north and south bulls which served as an 'immense loss of property of subjects and Crown revenue' (Gilligan 1988, pg. 14), and De Courcy (1996) stipulates it might first have become a problem for tenth-century mariners using the Norse knarr or merchant ship. The late seventeenth-century shoreline, depicted by Bernard de Gomme in 1673 (Fig. 16.3), depicts the south side of the bay extending westward to Bath Avenue and to St Matthew's Church in Irishtown, while Ringsend occupied the end of a spit projecting into the bay. This map of the harbour and bay at low tide shows the tortuous channels of the Liffey and Tolka estuaries at that time, demonstrating the inadequacy of the channels as shipping lanes (De Courcy 1996). Concerned primarily with harbour

defences, following the outbreak of war between the English and the Dutch in 1672, de Gomme's survey also shows a large citadel, or star-fort, straddling the Ringsend peninsula.

A small fort guarding Dublin Harbour is shown on two contemporary maps: a map of Dublin by Phillips dating to c.1685 and the chart of Dublin Bay by Captain Greenville Collins, which would have been surveyed after 1681 and produced in 1686 (Fig. 16.4). The Greenville Collins chart shows a square bastioned fort at the end of the peninsula at Ringsend. Phillips's map shows the same structure with a more irregular outline and similar dimensions to the typical Cromwellian-period fort, with which it may well be contemporary. The fort is not shown on any eighteenth-century map (De Courcy 1996).

By the seventeenth century the management of the Liffey watercourse and the reclamation of the estuary area were of key importance. The period leading up the 1640s saw interest grow in the financial possibilities of reclamation work along the south side of the river. Reclamation work initially focused on the opening of a direct and secure route to Ringsend, and in doing so, provide new ground for the city to lease at a profit, the need for a secure harbour. The reclamation of the area between the city and Ringsend was accelerated by the assembly's granting of an estate along the strand in 1713 to Sir John Rogerson, who immediately began to enclose his new land with a massive sea wall, relieving the Ballast Office [established in 1707 initially to oversee the regulation of ballast, but soon adopting responsibility for the improvement of the port and harbour generally] of the responsibility. Plans were soon afoot to extend Rogerson's wall out into the bay to provide safer entry for shipping into the port, and, in April 1715, the City Assembly approved the creation of an embankment along the South Bull sands from Ringsend.

The embankment (RMP nos. DU018:066 and DU019:0029) began with the completion of a timber-piled wall, known simply as 'The Piles,' from the present Pigeon House Harbour to the present Poolbeg Lighthouse in 1731. A double stone-walled embankment connecting the western piles to Ringsend, known as the Ballast Office Wall, was completed by 1756. Work on replacing the original timber pile wall with stone began in 1761 with the construction of Poolbeg Lighthouse, which had by 1767 become operational; by the close of the century, the South Wall was complete.

A Revenue map of 'Dublin Citty and Bay', dated 1694 and a map entitled 'A New and Correct Map of the Bay and Harbour of Dublin' by Bowen, dated 1728, describe an area of the South Bull at the edge of the south channel of the Liffey as the Green Patch (De Courcy 1996). The South Bull from early times represented a large triangular sandbank bounded on the north by the channels of the River Liffey stretching eastwards into the bay from Ringsend close to the site of the Poolbeg lighthouse (De Courcy 1996). The South Wall now delineates the northern verge of the South Bull.

Additional features named in the South Bull area include Cock Lake, the name given in the seventeenth century or earlier to a small secondary channel of the Liffey that flowed through the South Bull sandbank to the bay (De Courcy 1996). The passage, which was utilised by fishing boats, was blocked at its junction with the Liffey as a result of piling along the South Wall from 1717. Early maps, including Greenville Collins seventeenth century chart (Fig. 16.4), shows Cork Lake flowing into the Liffey. Eighteenth century maps, including Rocque's 'An Actual Survey of the County of Dublin,' produced following the construction of the South Wall, in 1760 (Fig. 16.5), show Cock Lake as a loop with two mouths (De Courcy 1996).

Rocque's map of 1760 (Fig. 16.5) also documents the eastern expansion of the city in the eighteenth century and the development of reclaimed land north and south of the new Liffey Quay walls, primarily to accommodate housing at the upper end of the market. On the south bank, Ringsend village appears as a somewhat prosperous place, a rival fishing village with Clontarf, which from the end of the sixteenth century functioned as the deep-water port for Dublin. The South Wall is shown partly as a stone wall with slips from Ringsend Point and partly as the earlier piled breakwater staked out in 1716 to the eastern tip of the South Bull sands.

A series of pools in the Liffey's estuary included Clontarf Pool, the Salmon Pool, which stretched from Poolbeg to the entrance to Alexandra Basin, Poolbeg itself, which was located approximately east of the Pigeon House, and the Iron Pool, which stretched from Poolbeg Lighthouse almost to the Half Moon battery, built in 1793 on the South Wall about 800m from Poolbeg Lighthouse (De Courcy 1996). These pools, which are all shown on Captain Greville Collins's map of Dublin Bay made in 1686 (Fig. 16.4), were the only parts of the harbour, distinct from the bay, where ships could ride at anchor at low water, but they did nothing to protect ships within them from the effects of high winds. The building of the South Wall and, to a lesser extent, the East Wall during the eighteenth century

materially changed conditions in the estuary, and subsequent eighteenth-century maps following Rocque make no further mention of any pools (De Courcy 1996).

John Taylor's early nineteenth-century (1816) map of Dublin Bay (Fig. 16.6) indicates the approximate locations of a number of wrecks, which all appear on the sands of the North and South Bulls. Taylor indicates, in feet, the depth of water at low tide across Dublin Bar and within the approach channel. Duncan, on his slightly later map of 1821 (Fig. 16.7), provides additional information on water depths over the North and South Bull sands. Buoys delineate the approach to the harbour by denoting the extent of both Bull sands, and although the Bull Wall was only completed in 1824, Duncan indicates the position and extent of the wall on his 1821 map. Records of buoys in the harbour date to 1566, when Gerald Plunkett was authorised to set buoys or marks on Dublin Bar as a guide to shipping (Gilligan 1988, pg. 11). A buoy and a perch are also shown on two contemporary maps of Dublin Bay, the first by Thomas Phillips, dated 1685, the second by Captain Greville Collins, dated 1686 (Fig. 16.4), where the perch is indicated close to the tip of the South Bull sands (Gilligan 1988).

The Development of Pigeon House Road

The Pigeon House, roughly opposite the Clontarf oyster beds and earlier Clontarf Pool, is located where the Ballast Wall meets the earlier piled wall that combine to make up the South Wall. Although not indicated by Taylor, 'The Piles' reached their westernmost point on an area known as the 'Green Patch', which remained dry at high tide and was an early staging place for ships. The original Pigeon House or blockhouse (the first structure to be built in the Pigeon House precinct following the creation of the South Wall) at this point is said to have been built in 1760 (De Courcy 1996) and to be named after its resident caretaker, John Pigeon, and it is indicated as such by Taylor in 1816 (Fig. 16.6). "During the construction of the wall a wooden house was erected on the piles as a residence for a caretaker, and to its humble occupant, whose name was Pidgeon, tradition attributes the name of the celebrated Pigeon House…The house on the piles gave place to what was known as the Block House on the South Wall, but the name Pigeon House remained attached to the site of the caretaker's dwelling, and became well known as the starting point for the English packets." (http://www.chapters.eiretek.org/books/Pembroke/pem6.htm)

The Pigeon House quickly became a resting point for passengers landing at the Pigeon House Hole, part of the original Salmon Pool, and visitors to the Green Patch on excursion from the city. A harbour, to be called Pigeon House Harbour, was planned in 1791, following the establishment of the Ballast Board in 1786. At this stage, a new wall was constructed in the Liffey channel to form the new harbour's north side, as shown by Taylor (Fig. 16.6). By c.1793, the need for additional accommodation for travellers led to the construction of the Pigeon House Hotel, indicated on Taylor's map as the 'Hotel Barracks.' In addition to the 'Hotel Barracks,' Taylor notes the existence of the 'Revenue Barrack', with a longitudinal structure between them and a number of smaller buildings west of the hotel.

The Pigeon House precinct (RMP no. DU019:027) began as a temporary military strongpoint following the 1798 rebellion. In 1814 the government formalised its occupation of the precinct by purchasing the Pigeon House Hotel and harbour from the Ballast Board, together with a 180-metre length of road toward Ringsend (De Courcy 1996). The precinct (shown on Duncan's map of 1821, Fig. 16.7) remained occupied as a military fort until 1897, when it was sold to Dublin Corporation, which selected the site as a generating station to meet the rapidly increasing demands in the city for electricity.

The development of the Pigeon House precinct, as a military fort in the nineteenth century and as an area of service for the city of Dublin under Dublin Corporation in the twentieth century, is shown in most detail on the various six-inch edition Ordnance Survey maps, the first of which was published in 1843 (Fig. 16.8). Defensive gates had been constructed on the South Wall at both ends of the precinct during its occupation as a fort – the one guarding the approach from Ringsend was situated adjacent to the west wall of the harbour basin and is indicated as 'Gate' on the 1843 Ordnance Survey map. The gateways were protected with trenches and crossed by drawbridges (De Courcy 1996). By 1843 the Pigeon House Fort included a hospital (occupying the former Revenue Barrack), a magazine, officers quarters, an armoury, a guardhouse on the approach from Ringsend and stores.

In 1878–81 a sewage pipeline was constructed through the precinct, running beside the South Wall, to a discharge point into the Liffey east of the Pigeon House Fort. The discharge point was through a

penstock house at the White Bank. The various Ordnance Survey maps, including an early nineteenth century map by William Duncan, dated 1821 (Fig. 16.7), all show the 'White Bank', a ridge of sand that developed adjacent to the South Wall during the eighteenth century, roughly 800m east of the Pigeon House Fort – the bank is indicated as the 'Dry Bank' on Taylor's 1816 map (Fig. 16.6). This bank was implicated in a number of shipping disasters within the bay and is referred to on a number of occasions in the Underwater Archaeological Unit Shipwreck Inventory provided below (see Appendix 16.4).

With the purchase of the precinct by Dublin Corporation in 1897 the development of a city sewerage system (1896–1906) began in earnest. As part of the scheme sewage was treated in a series of sludge beds that occupied about 90 per cent of the former Pigeon House harbour. In 1902 the foundation stone was laid for a new electricity generating station in the precinct, and both the Corporation's 'Outfall Works' and 'Electricity Works', in addition to an 'Isolation Hospital' are shown at the Pigeon House precinct on the 1912 edition Ordnance Survey six-inch map (Fig. 16.9). Responsibility for the generating station was taken over by the Electricity Supply Board (ESB) in 1929, soon after its establishment (Gilligan 1988). The Pigeon House Hotel, which was utilised as officer's quarters during the military occupation of the precinct, was subsequently utilised by the ESB as offices.

By the mid-twentieth century the ESB proceeded with its plans to develop a new oil generating station at Ringsend, at the western edge of the Pigeon House precinct, south and west of the cholera isolation hospital shown on the 1912 edition Ordnance Survey six-inch map – by 1936 the hospital is shown as a 'Tuberculosis Hospital,' whose ground contained a convent and a Catholic Chapel. The Board reclaimed the foreshore to the south of the Pigeon House Road (in an area indicated as a Rifle Range on the 1912 map) for the station, and constructed a 550-foot long wharf, with associated reclamation for storage of coal adjoining the wharf on the riverfront. The new station came into operation in 1955 (Gilligan 1988).

Architectural and Industrial Archaeological Evidence

The industrial and architectural heritage of Pigeon House Road is linked with the areas development from the eighteenth century, in particular with the history of Pigeon House Harbour and Fort, the existence of a former cholera isolation hospital that was used for terminal TB patients during an outbreak of tuberculosis in the mid-twentieth century, and the areas selection by Dublin Corporation in the late nineteenth century for the provision of municipal services. Portions of the former brick hospital and old walls of the fort with their embrasures, together with some of the barracks buildings in which the troops were quartered (Gilligan 1988), as well as a handball alley, may still be seen to the west and east, respectively, of the proposed Dublin WtE facility.

There are no protected structures located within the the proposed Dublin WtE facility site . The nearest protected structure is the remnants of Pigeon House Fort (Ref. 6933 in Dublin City Development Plan Record of Protected Structures), located approximately 150m to the east. A number of other structures along Pigeon House Road also have protected structure status including the former Pigeonhouse Hotel (Ref. 6931), the former St. Catherine's Hospital (Ref. 6932), remnants of Pigeon House Fort (Ref. 6933) and Pigeon House power station (Ref. 6934). See Appendix 16.5 for a full list of Protected Structures within the area of Pigeon House Road.

Pigeon House Road also features within the Dublin Docklands Area Master Plan Inventory of the Architectural and Industrial Archaeological Heritage, which, produced by the School of Architecture, University College Dublin for The Custom House Docks Development Authority, details the building fabric of historic or architectural interest on Pigeon House Road, as well as the results of a Docklands Industrial Archaeological Survey. The objective of the latter survey was to identify the locations of sites of past industrial activity in the Docklands area (See Appendix 16.6).

No additional structures or features of architectural or industrial archaeological interest were identified during fieldwork conducted for the purposes of the present study at the proposed location of WtE facility.

Cultural Heritage Evidence

The cultural heritage of Pigeon House Road is related with the development of the South Wall peninsula, as outlined above under the section Early Historical Background and Cartographic Analysis. The area to the east of the proposed facility, along the Great South Wall, is utilised as an amenity area and is dominated by the two landmark ESB towers. There are no additional aspects of cultural heritage interest, further to those presented under Archaeological Evidence and Architectural and Industrial Archaeological Evidence, to be highlighted in respect of Pigeon House Road and the proposed location of the thermal treatment plant.

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Appendix 16.3 Summary Information from the Dublin RMP constraint maps, manual and files

There is no information regarding the following monuments in the Dublin RMP files additional to that given in secondary documentary sources, as in De Courcy (1996), and outlined above, in Section 2 Receiving Environment. The RMP numbers used to identify the monuments are numbered according to the Ordnance Survey six-inch sheet on which they are located – in this case the relevant sheet is Dublin 19 – and the number of the individual monument. A county code, e.g. DU for Dublin, is also included. For Dublin, a set of more detailed and up to date maps, produced at scales of 1:5,000 (see Fig. 16.1) and 1:2,500, are also available, and the new map numbers are also provided. The national grid reference (NGR) is given for each monument, as is its location by street name or townland, the site type and the distance of the monument from the footprint of the proposed thermal treatment plant.

RMP No.	**DU019:027**
Map No.	3265
Street Name	Pigeon House Road
NGR	32038/23365
Site Type	Fort
Distance	Monument constraints area commences c. 100m to the east

RMP No.	**DU019:029-01/02**
Map No.	3264/3265
Street Name	Pigeon House Road; Great South Wall
NGR	32268/23387
Site Type	Sea Wall (01); Sea Wall Site (02)
Distance	On alignment of Pigeon House Road abutting footprint of proposed thermal treatment plant

Appendix 16.4 List of Wrecks in the Underwater Archaeological Unit Shipwreck Inventory

The following is a list of wrecks in the files of the Underwater Archaeological Unit of the Heritage and Planning Division of the Department of the Environment, Heritage and Local Government. It includes only those wrecks that specifically mention the place of loss as Ringsend, Pigeon House or Poolbeg. There are, however, numerous other wrecks listed in the files that have the place of loss as 'River Liffey,' 'South Bull,' North Bull,' or simply 'Dublin Bay,' 'Dublin Harbour,' 'Dublin Bar' 'Dublin River' or 'near Dublin.'

Site Name Aldeborough

Date of Loss April 1725

Place of Loss Poolbeg Harbour

This British 'man of war' sank during a storm.

Site Name Antellope/Antelope

Date of Loss 27 Sept. 1852

Place of Loss Ringsend Point

This vessel of Dublin was en route from New York.

Site Name Apollo

Date of Loss 30 Jan. 1799

Place of Loss Poolbeg

This brig had its cables cut.

Site Name Argo

Date of Loss 10 Dec. 1892

Place of Loss Opposite the old coast guard station at Ringsend, River Liffey

This 31-year-old wooden fishing smack of Dublin weighed 46 tons. The master was M. Bisset, and the owner was C. Burnham Jn. of Ringsend. This vessel was moored in the River Liffey when the casualty occurred.

Site Name Ashbourne

Date of Loss 1832

Place of Loss Pigeon House

The captain of the vessel was Bennest of Gibralter. The vessel was last seen at the Pigeon House and has not been seen since.

Site Name **Belle Kate**

Date of Loss 17 Dec. 1851

Place of Loss Pigeon House

This barque ran aground as she came up the harbour. However, she is recorded as having been got off again.

Site Name **Dorset**

Date of Loss 26 March 1804

Place of Loss Pigeon House Dock

This yacht was damaged by a brig but was expected to be able to continue.

Site Name **Duke of Leinster**

Date of Loss 22 Oct. 1883

Place of Loss c. ½ mile north of Pigeon House Fort/ south bank of the River Liffey near Pigeon House

This screw steamer was en route from Dublin to Glasgow when she struck a sunken dredge while leaving port. The dredge's anchor caused a 60-foot gash in her side and she sank. Around ten days later the wreck was raised and beached on the south bank of the River Liffey.

Site Name **Dunbar**

Date of Loss 20/22 Feb. 1756

Place of Loss Poolbeg

This brig of Dunbar was en route from Dublin to the Western Isles when she sank.

Site Name **Emerald**

Date of Loss 2 July 1898

Place of Loss Pigeon House Fort

This 51-ton wooden ketch of Dublin was engaged in fishing when she collided with the steamship Carlow and was lost.

Site Name **Flyde of Preston**

Date of Loss 11 Oct. 1824

Place of Loss Near the lighthouse, White Bank

This vessel was lost.

Site Name Friendship

Date of Loss 22 Nov. 1798

Place of Loss Poolbeg

This sloop of Barmouth was lost after her cables were cut.

Site Name Glory

Date of Loss 26 Sept. 1805

Place of Loss White Bank

This vessel was en route from Glasgow when she went ashore.

Site Name Govenor Picton

Date of Loss 26 August 1799

Place of Loss Opposite Pigeon House

This ship of Antigua ran aground and sank.

Site Name Henrietta Louisa

Date of Loss 23 Sept. 1799

Place of Loss Opposite Pigeon House

This brig of Dantzig had its cables cut.

Site Name Henry

Date of Loss 12 Jan. 1767

Place of Loss Back of the piles at Dublin Port

This vessel was wrecked.

Site Name Henry

Date of Loss 23 Nov. 1798

Place of Loss South Wall

This brig of Liverpool was wrecked.

Site Name **Hero**

Date of Loss 11 Oct. 1824

Place of Loss Pigeon House

This vessel hit a sand bar and sank.

Site Name **Isabella**

Date of Loss 26 July 1811

Place of Loss Poolbeg

This vessel was en route from Sicily to Dublin when she became stranded.

Site Name **James and Ann**

Date of Loss 7 Feb. 1812

Place of Loss Pigeon Hole, Dublin River

This vessel was en route from Drogheda when she was hit by a collier brig and sank.

Site Name **Jealous of me**

Date of Loss 5 Dec. 1934

Place of Loss Poolbeg lighthouse

This hobble was en route from Dublin port to Dún Laoghaire when she was lost.

Site Name **London Packet**

Date of Loss 8 Feb. 1798

Place of Loss Poolbeg

This ship of London became stranded and sank.

Site Name **Naomi**

Date of Loss 22 Dec. 1909

Place of Loss Poolbeg lighthouse

This 46-ton wooden fishing cutter was fishing when the casualty occurred.

Site Name **Pelican**

Date of Loss 8 April 1889

Place of Loss Ringsend, River Liffey

This 37-ton wooden smack of Dublin was at anchor when she was burnt.

Site Name **Poisedon**

Date of Loss Around 1907

Place of Loss Shally Banks, south of ESB power station, Poolbeg

This Norwegian barque went ashore and remains are said to protrude from the sands.

Site Name **Polly**

Date of Loss 25 April 1775

Place of Loss Poolbeg

This vessel was en route from London when she sank.

Site Name **Princess Augusta**

Date of Loss 6 Dec. 1819

Place of Loss White Bank

This vessel was en route from Dublin to London when she ran ashore.

Site Name **Prosperous**

Date of Loss 21 July/ Aug. 1854

Place of Loss Near Pigeon House

This smack of Courtown was en route from Dublin to Holyhead when she sank after colliding with the Hibernia.

Site Name **Providence**

Date of Loss 5 Feb. 1771

Place of Loss Behind the piles at Dublin

This vessel was en route from London when she was lost.

Site Name **Providence**

Date of Loss 16 Nov. 1779

Place of Loss Poolbeg

This vessel was under the command of Maine when she was lost.

Site Name **Rainbow**

Date of Loss 16 Jan. 1874

Place of Loss Poolbeg lighthouse

This Brixham smack sank when she was hit by the 499-ton steamship Meteor.

Site Name **Seaflower**

Date of Loss 24 Jan. 1856

Place of Loss Off Ringsend

This vessel of Dublin broke from her moorings and ran into the steamer Liffey.

Site Name **Smyrna/Smyra**

Date of Loss 29 Sept. 1852

Place of Loss Rocks near Poolbeg lighthouse

This 90-ton brig of Workington was en route from Workington to Dublin when she encountered a northeast force 9 wind and rainy conditions and was driven onto rocks while trying to make the harbour. The Ringsend Coastguards proceeded along the Pigeon House Wall and the South Wall and a boat was seen, bottom up, on the White Bank.

Site Name **Speculation**

Date of Loss 12 Oct. 1799

Place of Loss Poolbeg

This ship had her cables cut.

Site Name **Times**

Date of Loss 13 Sept./29 Nov. 1851

Place of Loss Off Pigeon House

This steamer went ashore in dense fog but was got off again.

Site Name **Wellington**

Date of Loss 1 Dec. 1825

Place of Loss Near Pigeon House

This schooner of Wicklow sank.

Site Name **William**

Date of Loss Jan. 1609

Place of Loss Poolbeg

This vessel of Ayr was at anchor when she was lost in a storm.

Site Name **Wilmington**

Date of Loss 4 Feb. 1791

Place of Loss Poolbeg Harbour

This vessel was en route from Philadelphia to Belfast when she was wrecked.

Site Name **Young Christian**

Date of Loss 17 April 1799

Place of Loss Poolbeg

This vessel of Tidrickstol had her cables cut.

Site Name **Unknown**

Date of Loss 1524–1561

Place of Loss Poolbeg

The Mayor took charge and returned goods from a wrecked ship to the merchant concerned.

Site Name **Unknown**

Date of Loss Jan. 1608

Place of Loss Poolbeg

This ship was 'riding at anchor' at Poolbeg when it was caught in a storm and wrecked.

Site Name **Unknown**

Date of Loss 1760s (Oct.)

Place of Loss Ringsend

A severe gale in Dublin Bay wrecked two ships.

Site Name **Unknown**

Date of Loss 17/20 Feb. 1770

Place of Loss Poolbeg

This stoop from Wales sank.

Site Name **Unknown**

Date of Loss 5 Feb. 1771

Place of Loss Behind the piles at Dublin

Two unnamed ships were lost

Site Name **Unknown**

Date of Loss 16 Dec. 1787

Place of Loss Dublin Bay

A southeast gale in Dublin Bay drove five vessels ashore south of the piles.

Site Name **Unknown**

Date of Loss 22 Oct. 1883

Place of Loss c. ½ mile north of Pigeon House Fort

This dredger collided with the 60-ton collier Annie and sank. The dredger's anchor caused the Duke of Leinster to sink.

Site Name **Unknown**

Date of Loss 20 June 1895

Place of Loss 200 yards inside Poolbeg lighthouse

This vessel, a wooden sailing boat, was lost while on a pleasure trip in Dublin Bay.

Site Name **Unknown**

Date of Loss Feb. 1900

Place of Loss Ringsend Basin

This first-class sailing trawler was damaged and lost when she collided with a steamship.

Site Name **Unknown**

Date of Loss Unknown

Place of Loss Poolbeg

Six boat timbers were exposed in a sewage trench dug by a dredger.

Appendix 16.5 Protected Structures in the Dublin City Development Plan 2005-2011

The following list was obtained from Volume 3 - Record of Protected Structures of the Dublin City Development Plan 2005-2011. Under the Local Government (Planning and Development) Act 2000, which provides for the inclusion of protected structures into planning authorities' development plans and sets out statutory regulations regarding works affecting such structures, there is no longer a distinction between former List 1 and List 2. All structures listed in the development plan are now referred to as Protected Structures and enjoy equal statutory protection. The Record of Protected Structures lists all structures that are considered to be of special interest from an architectural, historical, archaeological, artistic, cultural, scientific, social or technical point of view.

Ref	Street	Number	Description
6930	Pigeon House, Dublin 4	Not applicable	Great South Wall (to Lighthouse)
6931	Pigeon House Road, Dublin 4	Not applicable	Former Pigeonhouse Hotel
6932	Pigeon House Road, Dublin 4	Not applicable	Former St. Catherine's Hospital surviving parts including northern and western site boundary walls
6933	Pigeon House Road, Dublin 4	Not applicable	Remnants of Pigeon House Fort
6934	Pigeon House Road, Dublin 4	Not applicable	Pigeon House power station: former redbrick electricity generating station
6945	Pigeon House Road, Dublin 4	70–80 (inc.)	Houses, including former coastguard premises
7547	Ringsend, South Bull Wall	Not applicable	Poolbeg Lighthouse Dublin 4

Appendix 16.6 Docklands Industrial Archaeology Survey

The following list was obtained from the Dublin Docklands Area Master Plan Inventory of the Architectural and Industrial Archaeological Heritage, produced by the School of Architecture, University College Dublin for The Custom House Docks Development Authority (see Fig. 16.2).

Site No.	Street	Classification	Map Designations
132.1	Pigeon House Road	Sewage Works	Outfall Works (Dublin Corrporation)
180	Pigeon House Road	Hospital	Isolation Hospital or Tuberculosis Hospital
180.1	Pigeon House Road	Chapel	Catholic Chapel
180.2	Pigeon House Road	Convent	Convent
181	Pigeon House Road	Fort	Pigeon House-Hotel Barracks, Revenue Barracks; Pigeon House Fort
181.1	Pigeon House Road	Harbour	Basin
181.2	Pigeon House Road	Lifeboat House	Lifeboat House
182	Pigeon House Road	Electricity Works	Electricity Works (Dublin Corporation); Electricity Works E.S.B.

Appendix 16.7 National Monuments Legislation

All archaeological sites have the full protection of the national monuments legislation (Principal Act 1930; Amendments 1954, 1987 and 1994).

In the 1987 Amendment of Section 2 of the Principal Act (1930), the definition of a national monument is specified as:

> *any artificial or partly artificial building, structure or erection or group of such buildings, structures or erections,*
>
> *any artificial cave, stone or natural product, whether forming part of the ground, that has been artificially carved, sculptured or worked upon or which (where it does not form part of the place where it is) appears to have been purposely put or arranged in position,*
>
> *any, or any part of any, prehistoric or ancient*
>
> *(i) tomb, grave or burial deposit, or*
>
> *(ii) ritual, industrial or habitation site,*

and

> *any place comprising the remains or traces of any such building, structure or erection, any cave, stone or natural product or any such tomb, grave, burial deposit or ritual, industrial or habitation site...*

Under Section 14 of the Principal Act (1930):

> *'It shall be unlawful...*
>
> *to demolish or remove wholly or in part or to disfigure, deface, alter, or in any manner injure or interfere with any such national monument without or otherwise than in accordance with the consent hereinafter mentioned (a licence issued by the Office of Public Works National Monuments Branch),*

or

> *to excavate, dig, plough or otherwise disturb the ground within, around, or in the proximity to any such national monument without or otherwise than in accordance…*

Under Amendment to Section 23 of the Principal Act (1930),

> *'A person who finds an archaeological object shall, within four days after the finding, make a report of it to a member of the Garda Síochána...or the Director of the National Museum...'*

The latter is of relevance to any finds made during a watching brief.

In the 1994 Amendment of Section 12 of the Principal Act (1930), all the sites and 'places' recorded by the Sites and Monuments Record of the Office of Public Works are provided with a new status in law. This new status provides a level of protection to the listed sites that is equivalent to that accorded to 'registered' sites (Section 8(1), National Monuments Amendment Act 1954) as follows:

The Commissioners shall establish and maintain a record of monuments and places where they believe there are monuments and the record shall be comprised of a list of monuments and such places and a map or maps showing each monument and such place in respect of each county in the State.

The Commissioners shall cause to be exhibited in a prescribed manner in each county the list and map or maps of the county drawn up and publish in a prescribed manner information about when and where the lists and maps may be consulted.

In addition, when the owner or occupier (not being the Commissioners) of a monument or place which has been recorded, or any person proposes to carry out, or to cause or permit the carrying out of, any work at or in relation to such monument or place, he shall give notice in writing of his proposal to carry out the work to the Commissioners and shall not, except in the case of urgent necessity and with the consent of the Commissioners, commence the work for a period of two months after having given the notice.

The National Monuments Amendment Act 2004

The National Monuments Amendment Act enacted in 2004 provides clarification in relation to the division of responsibilities between the Minister of Environment, Heritage and Local Government, Finance and Arts, Sports and Tourism together with the Commissioners of Public Works. The Minister of Environment, Heritage and Local Government will issue directions relating to archaeological works and will be advised by the National Monuments Section and the National Museum of Ireland. The Act gives discretion to the Minister of Environment, Heritage and Local Government to grant consent or issue directions in relation to road developments (Section 49 and 51) approved by An Bord Pleanála and/or in relation to the discovery of National Monuments.

14A. (1) The consent of the Minister under section 14 of this Act and any further consent or licence under any other provision of the National Monuments Acts 1930 to 2004 shall not be required where the works involved are connected with an approved road development.

(2) Any works of an archaeological nature that are carried out in respect of an approved road development shall be carried out in accordance with the directions of the Minister, which directions shall be issued following consultation by the minister with the Director of the National Museum of Ireland.

Subsection 14A (4) Where a national monument has been discovered to which subsection (3) of this section relates, then

(a) the road authority carrying out the road development shall report the discovery to the Minister

(b) subject to subsection (7) of this section, and pending any directions by the minister under paragraph (d) of this subsection, no works which would interfere with the monument shall be carried out, except works urgently required to secure its preservation carried out in accordance with such measures as may be specified by the Minister

The Minister will consult with the Director of the National Museum of Ireland for a period not longer than 14 days before issuing further directions in relation to the national monument.

The Minister will not be restricted to archaeological considerations alone, but will also consider the wider public interest.

Appendix 16.8 Local Government (Planning and Development) Act 2000

Structures of architectural, cultural, scientific, historical or archaeological interest are protected under the Planning and Development Act, 2000.

This act provides for the inclusion of protected structures into the planning authorities' development plans and sets out statutory regulations regarding works affecting such structures. Under the new legislation, no distinction is made between buildings formerly classified under development plans as List 1 and List 2. Such buildings are now all regarded as 'protected structures'.

The act defines a 'protected structure' as follows:

> (a) a structure, or
> (b) a specified part of a structure,
>
> which is included in a record of protected structures, and, where that record so indicates, includes any specified feature which is within the attendant grounds of the structure and which would not otherwise be included in this definition.
>
> 'Protection', in relation to a structure or part of a structure, includes conservation, preservation, and improvement compatible with maintaining the character and interest of the structure or part;

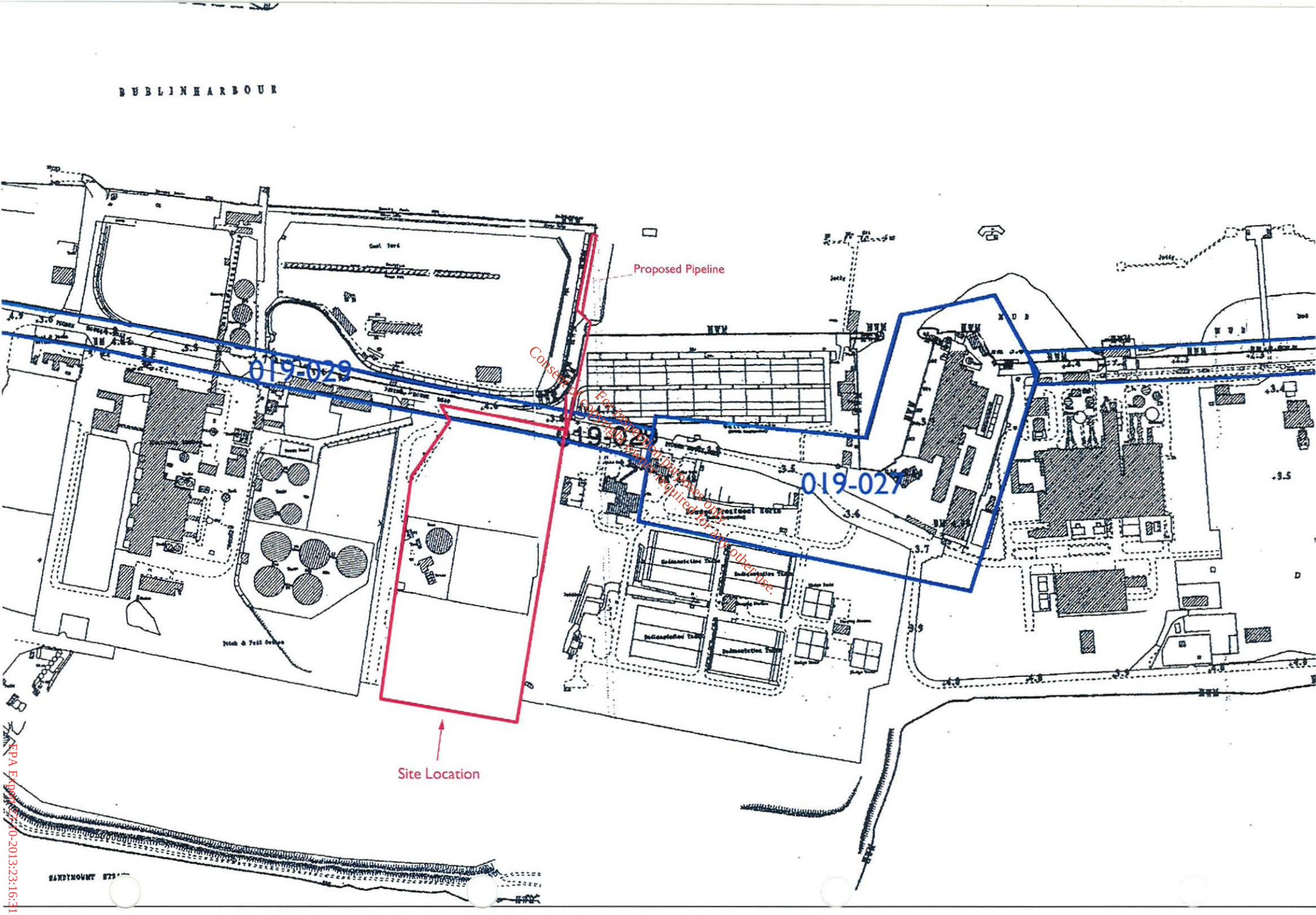
Part IV of the act deals with architectural heritage, and Section 57 deals specifically with works affecting the character of protected structures or proposed protected structures.

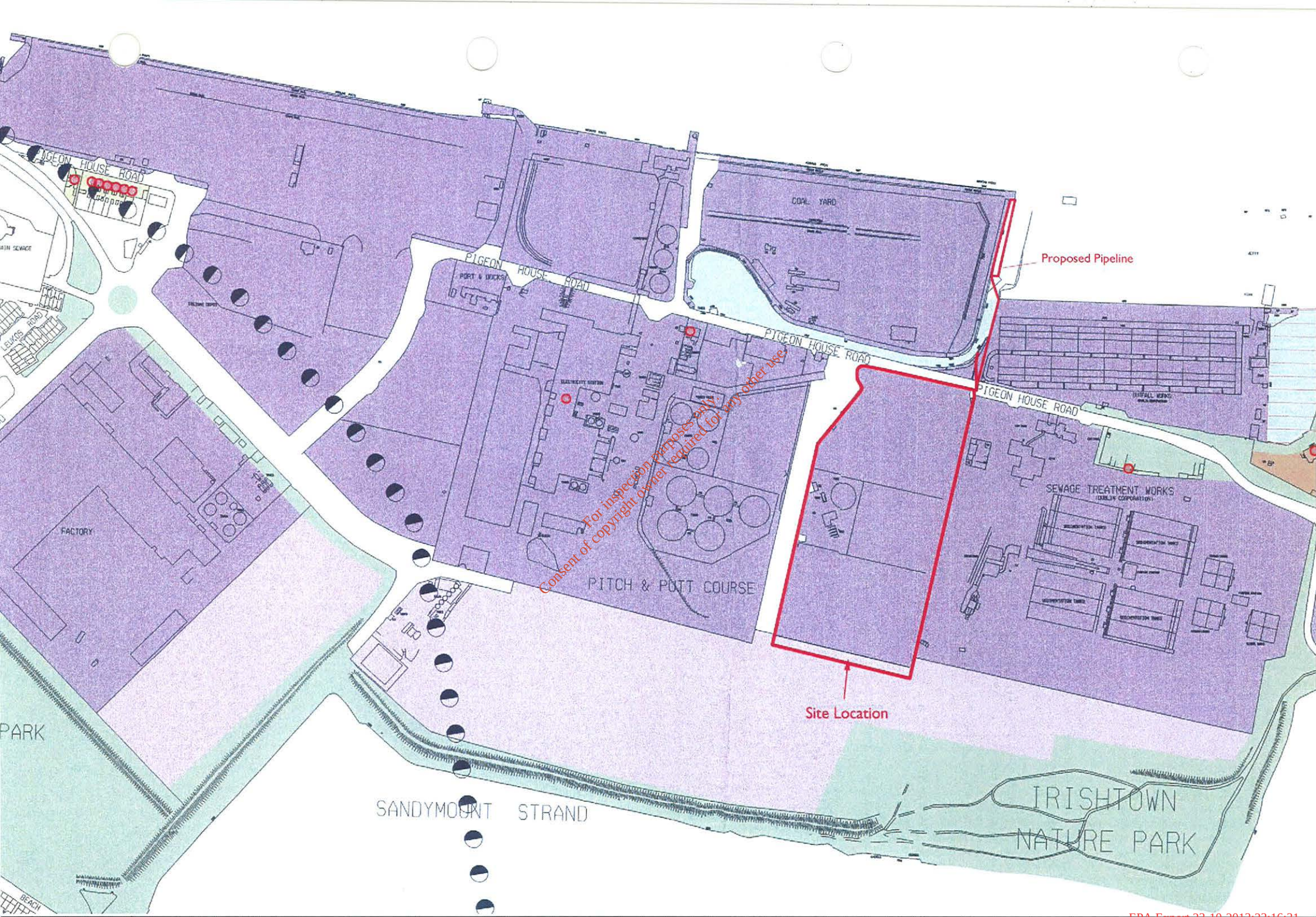
> ...the carrying out of works to a protected structure, or a proposed protected structure, shall be exempted development only if those works would not materially affect the character of—
>
> (a) the structure, or
> (b) any element of the structure which contributes to its special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest.

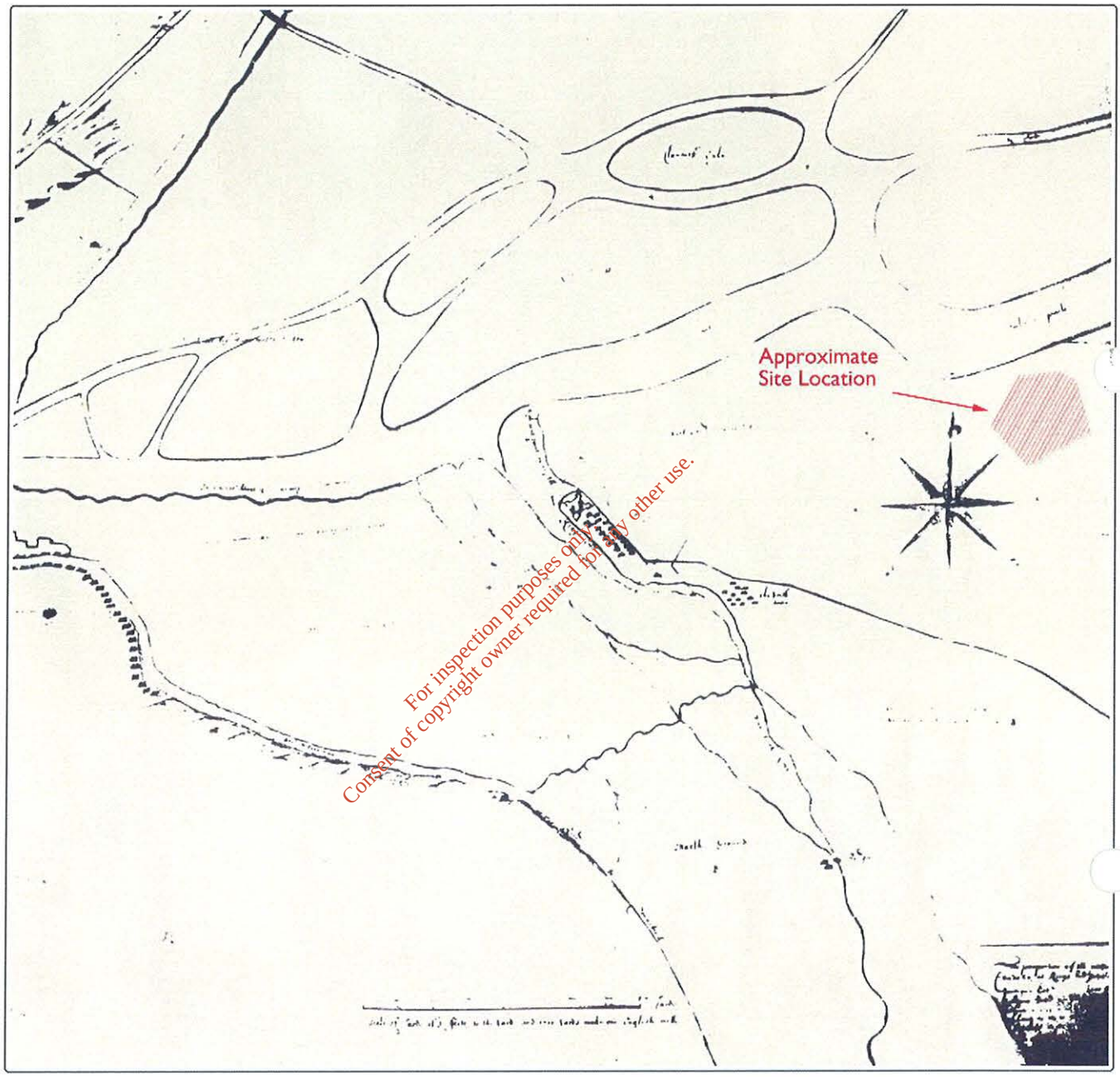
Section 58, subsection 4 states that:

Any person who, without lawful authority, causes damage to a protected structure or a proposed protected structure shall be guilty of an offence.

Appendix 16.9 - Figures

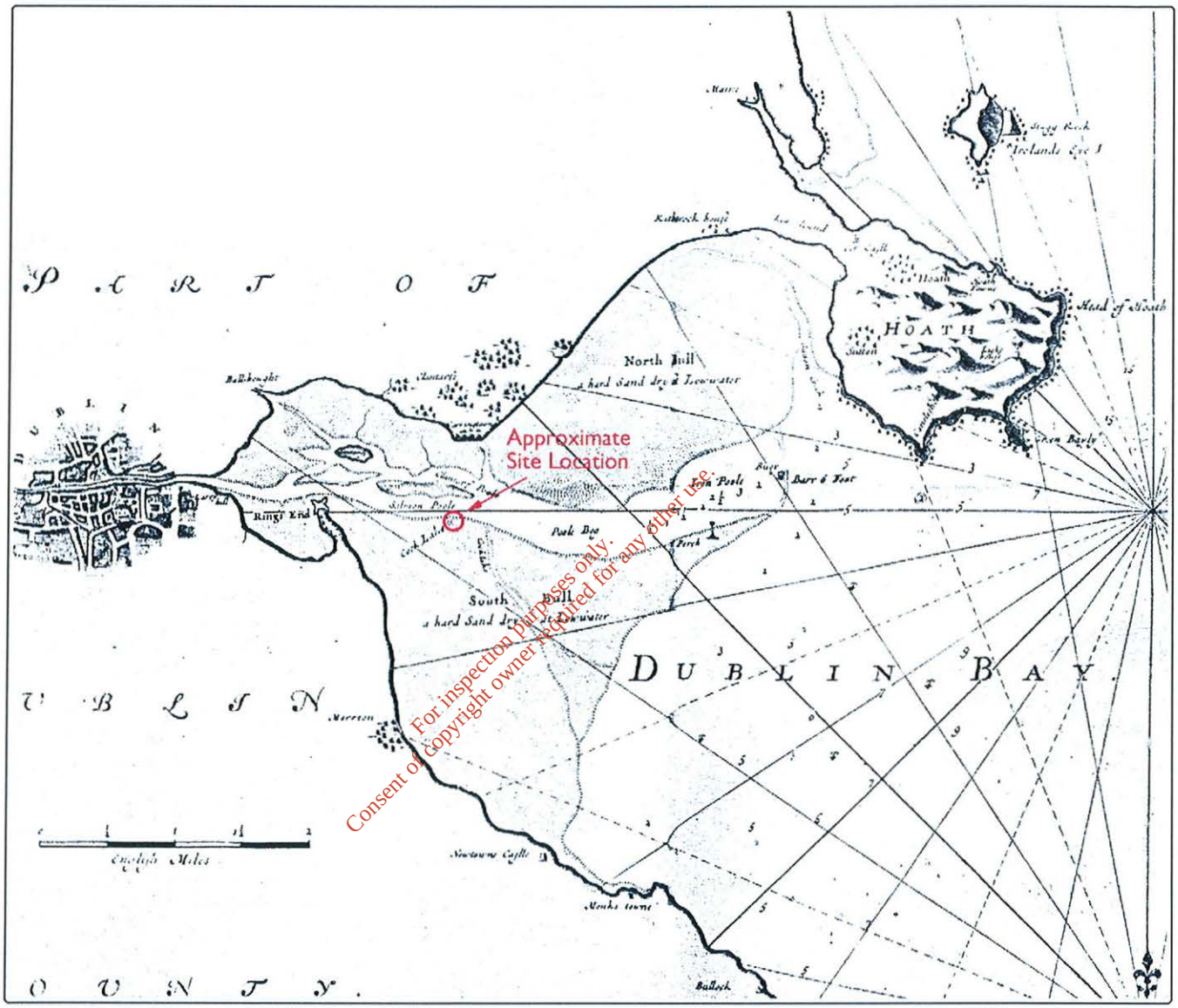






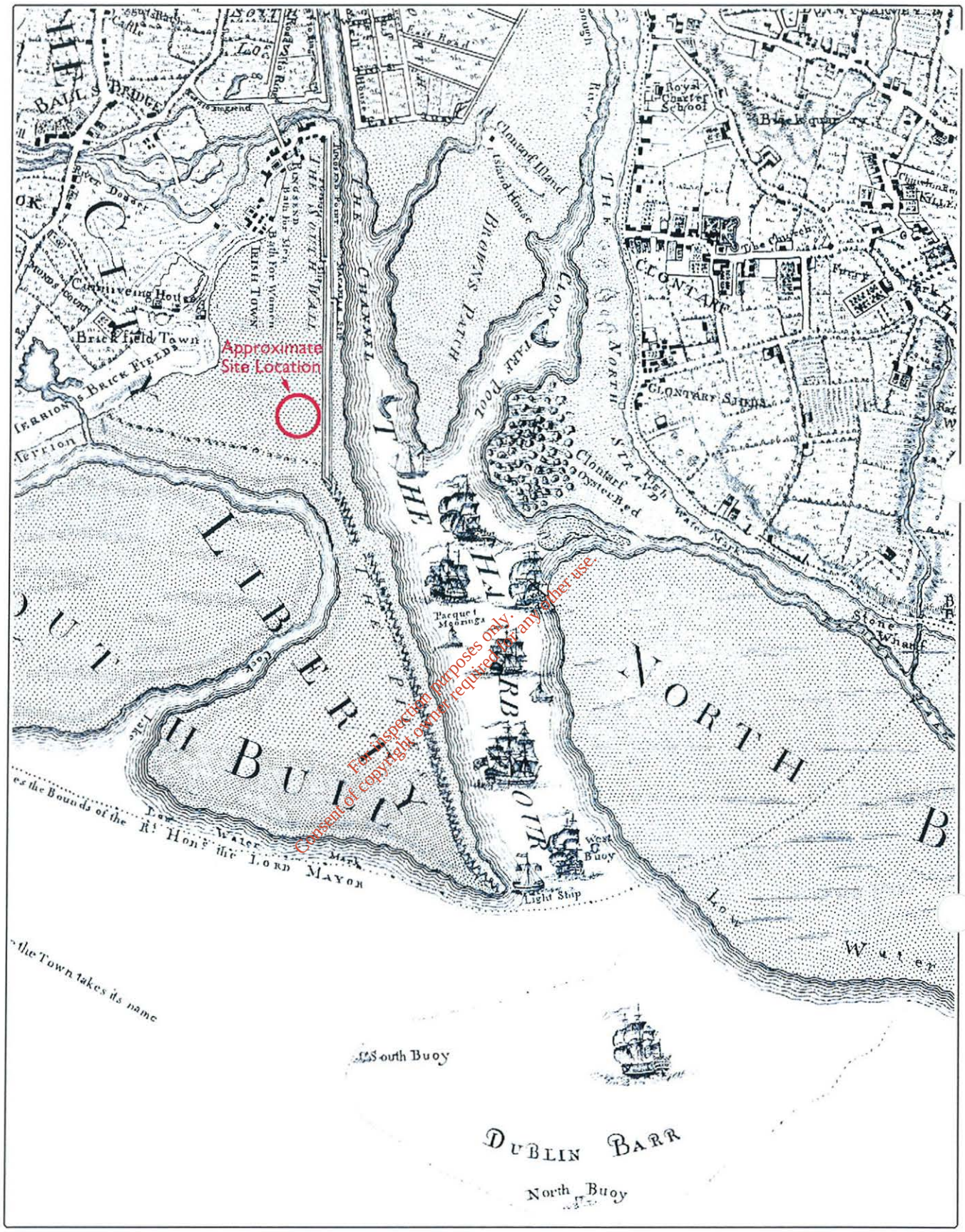
Margaret Gowen & Co Ltd
Archaeological Consultants & Project Managers

Job	Elsam Dublin Waste to Energy Facility, Dublin 4
Ref.	06055-R1
Date	15.05.06
Client	Arup and Partners, Consulting Engineers
Scale	Not applicable
Fig.16.3	de Gomme, 1673



Margaret Gowen & Co Ltd
Archaeological Consultants & Project Managers

Job	Elsam Dublin Waste to Energy Facility, Dublin 4
Ref.	06055-R1
Date	15.05.06
Client	Arup and Partners, Consulting Engineers
Scale	Not applicable
Fig. 16.4	Collins, 1686



Job	Elsam Dublin Waste to Energy Facility, Dublin 4
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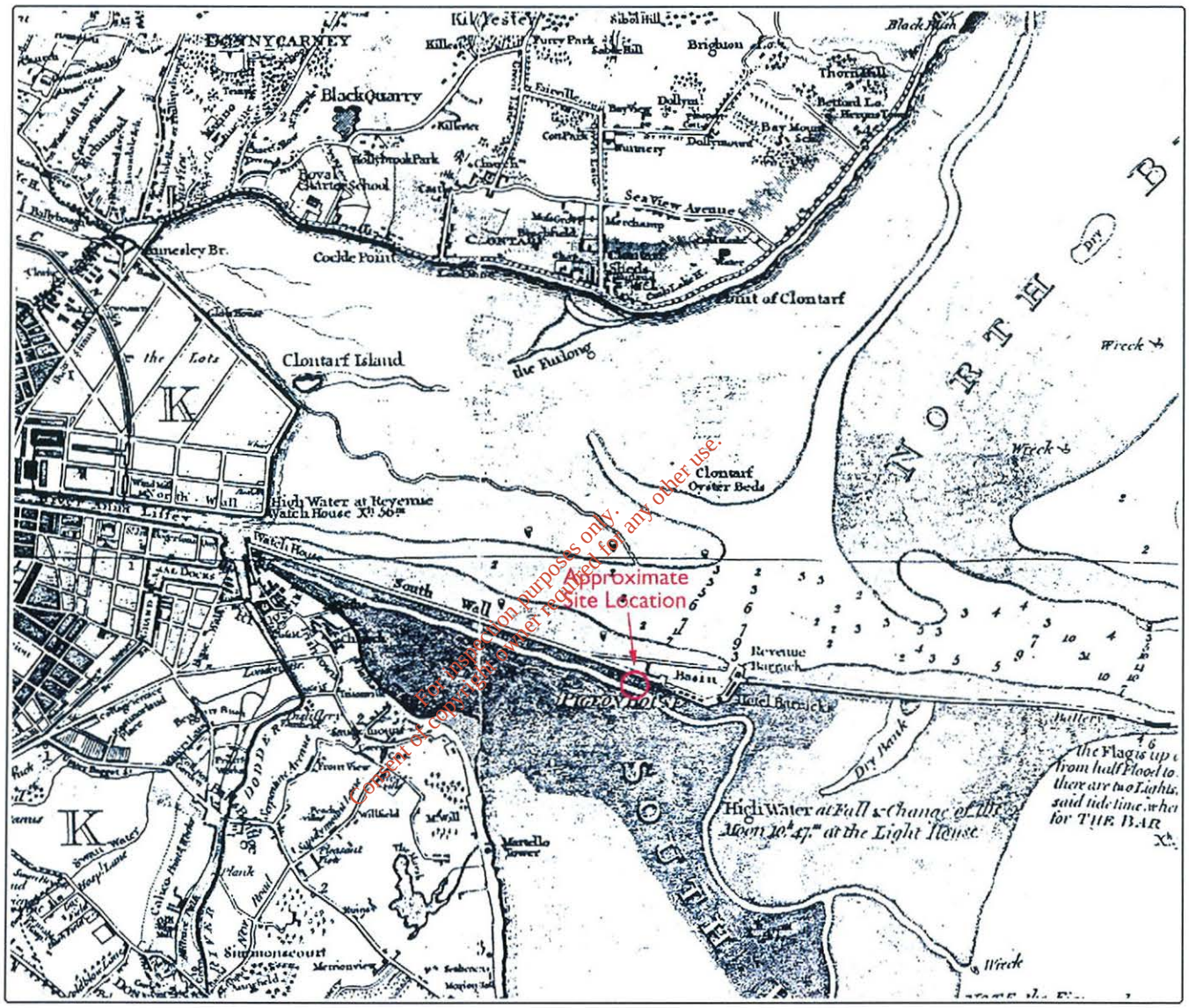
Date	15.05.06
Client	Arup and Partners, Consulting Engineers
Scale	Not applicable
Fig.16.5	Rocque, 1760



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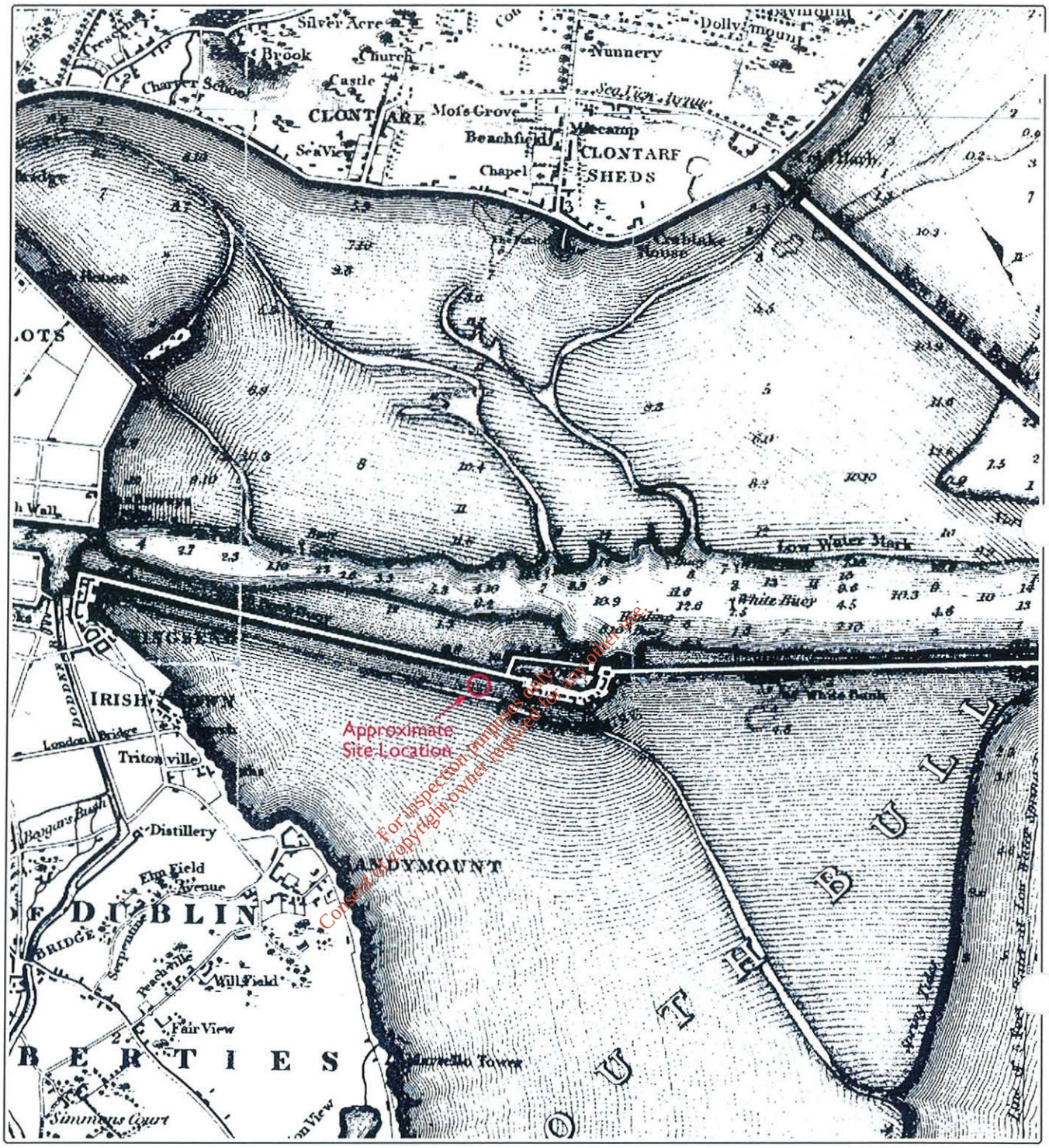
Job	Elsam Dublin Waste to Energy Facility, Dublin 4
Ref.	06055-R1
Date	15.05.06
Client	Arup and Partners, Consulting Engineers
Scale	Not applicable
Fig.16.6	Taylor, 1816



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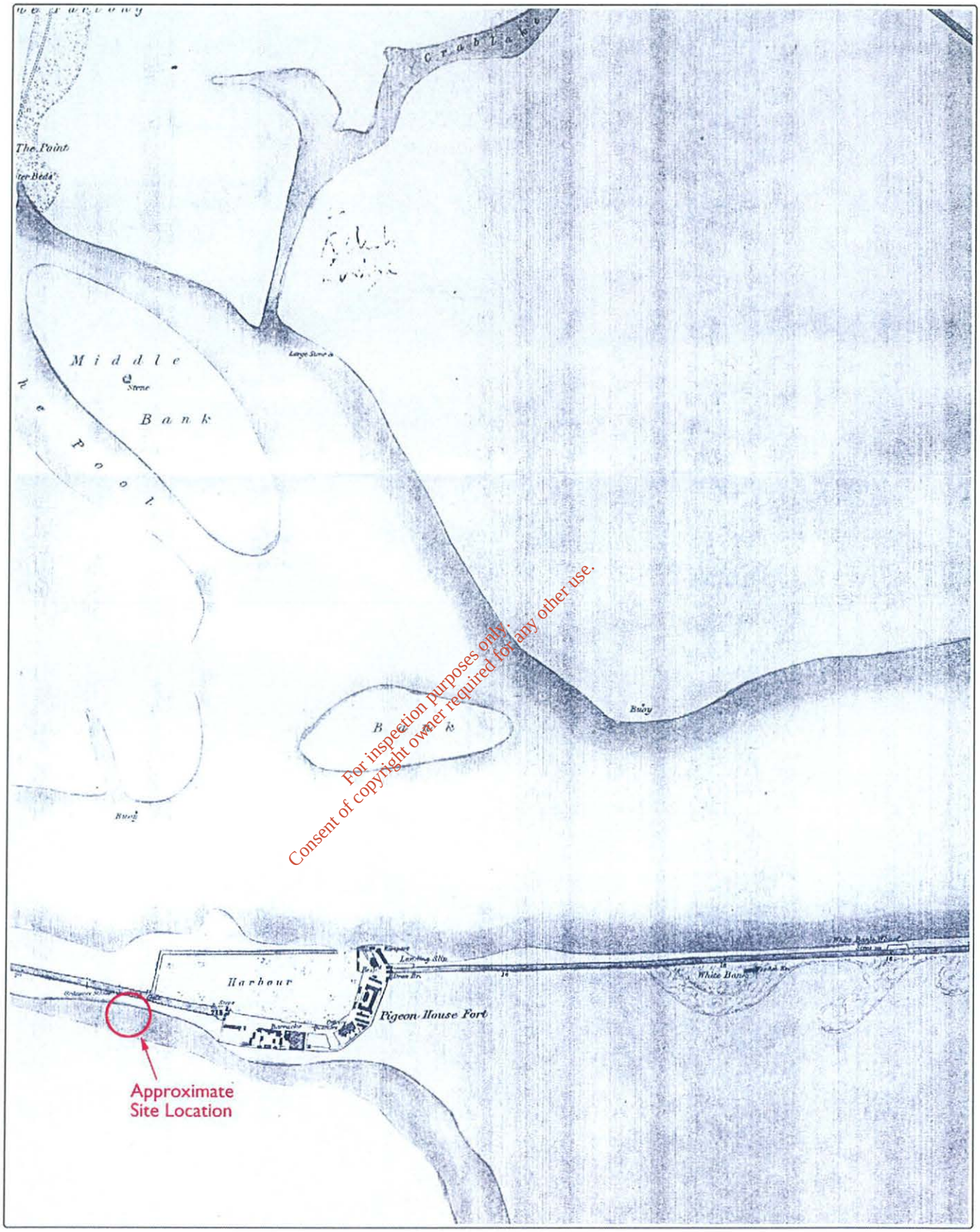
Job	Elsam Dublin Waste to Energy Facility, Dublin 4
Ref.	06055-R1
Date	15.05.06
Client	Arup and Partners, Consulting Engineers
Scale	Not applicable

Fig.16.7 Duncan, 1821



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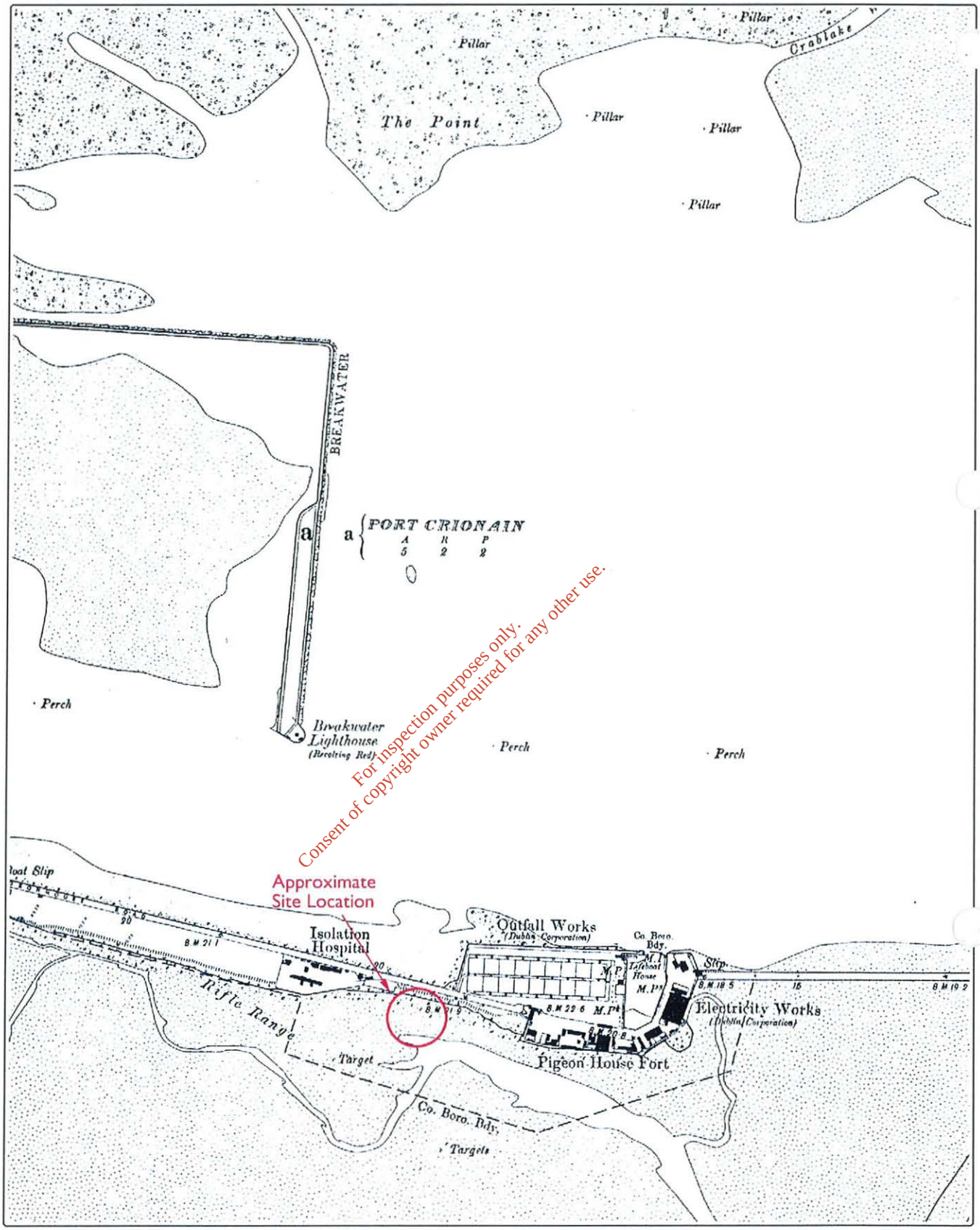
Job	Elsam Dublin Waste to Energy Facility, Dublin 4
Ref.	06055-R1
Date	15.05.06
Client	Arup and Partners, Consulting Engineers
Scale	1:10,560
Fig.16.8	1st ed. OS map, 1843



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Job	Elsam Dublin Waste to Energy Facility, Dublin 4
Ref.	06055-R1
Date	15.05.06
Client	Arup and Partners, Consulting Engineers
Scale	1:10,560
Fig.16.9	OS map, 1912

Plate 1 Shellbanks Road from the south

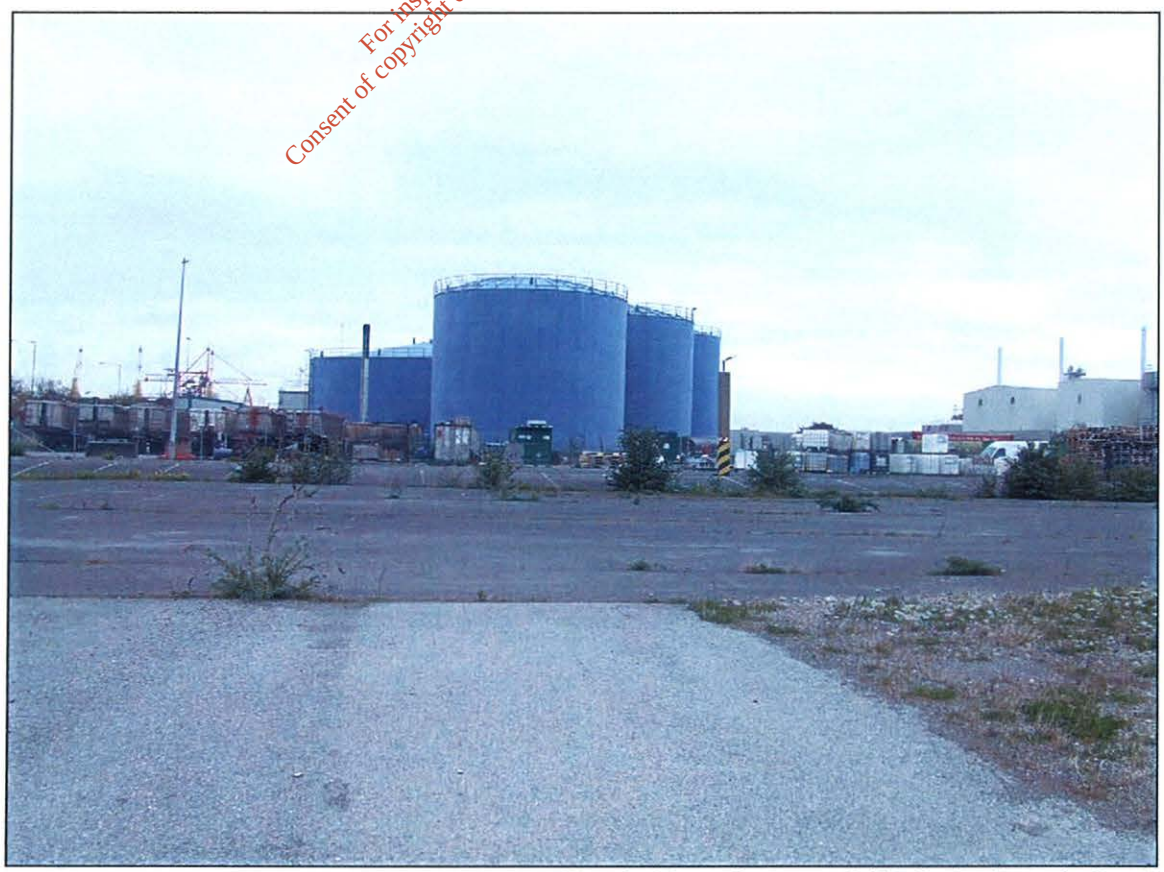


Plate 2 View of proposed WtE facility from the South

Plate 3 Hammond Lane Metal Working Company

Plate 4 Pigeon House Road from the East

Plate 5 Watercourse to the north of the proposed WtE facility site

Plate 6 Aerial View of the proposed WtE facility site from the northeast

Chapter	Appendix	Title
17	Appendix 17.1	Dublin Thermal treatment Plant

APPENDICES

EXECUTIVE SUMMARY

- It is very evident that there is a clear need to develop a number of thermal treatment plants in Ireland to facilitate the implementation of an integrated waste management strategy. Considering that the bulk of the population live in the Dublin region, and that the population is expected to increase by a further 30% to over 1.4 million persons by 2015, a thermal treatment facility will have to be developed in the Dublin region in the short to medium term.

- Approximately 26,500 households or 70,000 persons live within a two-mile radius of the specific site in Poolbeg, which has been selected as the preferred site to locate the capitals' first thermal treatment facility. Many of these households will be concerned about the impact the proposed facility will have on their properties. Some studies carried out in Europe, based on solicited opinions only, show negative findings regarding perceptions of what impact detrimental conditions have on residential markets and there is no doubt but that if a similar polling exercise was conducted in Dublin at present, similar results would be found due to a lack of knowledge about the thermal treatment process. As has been learned from other plants in Europe, the key to getting buy-in from the general public is total transparency with all authorities, city officials, regulatory authorities and the general public from a very early stage in the process to give everyone time to digest, discuss and consider the proposals.

- In general, there is a clear lack of understanding amongst the general public about thermal treatment technologies with common fears regarding the potential impact on the environment, food quality and health. These concerns will be equally true in Dublin; particularly considering it will be the first such facility in the Dublin region. Dublin City Council has a significant responsibility to properly manage and monitor the planning, construction and operation of the proposed thermal treatment plant to ensure that these fears are not realised. Considerable efforts need to be made to ensure that the public and more particularly the media are fully informed about the thermal treatment process to reassure them that the plant will be developed to the highest standards, that the incineration of waste will be strictly controlled, that any emissions will be within strict EU guidelines and that there will be no impact on property values in the vicinity. It is also extremely important to communicate technical complexities in terms non-experts will be able to understand. While fully informing the public and more particularly the media is critical, it will not be an easy exercise on the basis that many have been influenced by the detrimental impact poorly managed facilities and unlicensed illegal dumps have had on health and property values in the past.

- In addition to concerns about the environment, food quality and health, other issues that will undoubtedly concern local residents in the Poolbeg area specifically will include noise, the impact on traffic movements in the area and the visual impact of the plant. Local residents will undoubtedly be concerned that any such negative impacts may potentially impact on the value of their properties. In some cases property values can be reduced by the perception that a risk exists whether or not the perception is rational. For this reason, educating the public and more particularly the media about each of the specific issues that will concern them regarding locating this plant in Poolbeg will be critical.

- Studies carried out in the United States in the 1990's proved the relationship between newspaper coverage of local hazardous waste sites and house prices. Findings indicated that every positive publicity about the waste sites boosted house prices in the surrounding areas as residents lowered their perceptions of risk. Similarly, all negative publicity had a downward impact on property values. This highlights the need for Dublin City Council to invest significantly in publicity and informing the media to minimise the impact any negative publicity might have.

- If the incinerator itself is properly managed, if controls are properly enforced and traffic is managed effectively so as to have the least possible impact on neighbouring occupiers, incinerators pose no threat to local residents. Psychometric tests carried out across Europe show that those living in close proximity to incinerators rate the facilities as less risky than those living far away from them, proving that local residents quickly become familiar and accepting of facilities once they are reassured and trust that the technology and processes are being managed effectively and pose no risk.

- Generally, across Europe, price impacts are only experienced around hazardous waste sites. We have found no evidence that well-managed thermal treatment facilities treating non-hazardous waste have had any measurable impact on either property values, the volume of transactions or the desirability of property in neighbouring locations in any of the plants we have visited or researched around Europe. In fact, their presence in many cases gives a benefit to the local environment in terms of providing affordable district heating systems and in some cases electricity.

- Despite the fact that residents living within close proximity of Poolbeg in Dublin have been aware of proposals to locate a new thermal treatment facility at Poolbeg since 2001, there appears to have been no impact on residential property prices in surrounding neighbourhoods since that time. In fact, our research indicates that house prices in the neighbourhoods of Ballsbridge, Clontarf, Fairview, Ringsend, Sandymount and East Wall have all increased at a faster pace than the Dublin average since Q1 2002. In general, house prices in Dublin rose by 49.5% between Q1 2002 and Q3 2005, while house prices in the six neighbourhoods surrounding the proposed thermal treatment plant location in Poolbeg rose by over 66% in the same period. We have also noted that there does not appear to have been any notable impact on the volume of sales in the area over the last three-year period.

- In cases where properties are negatively impacted by detrimental conditions, properties in good locations that are in strong demand generally experience less of an impact than others and strong market conditions mitigate any negative impact. We do not believe that local property values will be impacted as a result of locating the thermal treatment plant at Poolbeg and the fact that the specific locations under consideration are in their own right well-established residential locations where demand is expected to remain strong, bodes very well.

- While we do not believe that property values will be negatively impacted, there may be a temporary liquidity effect in the Dublin market once construction of the plant begins as sellers become reluctant to adjust their price expectations downward and as potential buyers attempt to assess the probable long-term impact on market value. This could lead to a temporary reduction in the volume of sales transactions in the market.

- There are a number of factors, which will concern local residents. In our opinion, the one factor, which could potentially devalue properties in the area around Poolbeg if this facility is developed, is if traffic is not properly planned and managed. Compiling a comprehensive traffic management plan must be a key component of the project. It is critical that arterial routes that waste collection trucks will follow in making deliveries to the plant are properly identified so that they have the least possible impact on local residents.

- One legitimate concern that local residents will have is that they will be unable to sell their properties if the thermal treatment plant is developed. There was a general fear in the Poolbeg area several years ago when the Synergen plant went into operation and more recently when the sewage treatment plant was opened that houses would be harder to sell in the region. However, this fear has not been realised. Danninger who are well-respected property developers in the Dublin market are planning a major residential and commercial scheme for as many as 2,500 apartments and 10,000 m^2 of offices and other public amenities in the Poolbeg Penninsula. This flies in the face of objectors who claim that property will become difficult to sell once an incinerator comes into operation in the area.

THE BRIEF

At the invitation of Dublin City Council, CB Richard Ellis Gunne has compiled this research report examining the impact on local property values of the development of a thermal treatment plant in Dublin.

The study has involved identifying the likely impact on local property values (*residential and commercial*) in the vicinity of the proposed thermal treatment plant at Poolbeg taking into account international experience in this regard.

This research is provided for use internally by Dublin City Council and no responsibility is accepted to any third party for the whole of any part of its contents.

The purpose of this study is not to endorse or criticise thermal treatment of waste or to comment on the choice of location for the proposed plant, but rather to express professional opinion about the potential impact a thermal treatment plant in Poolbeg would have on residential property values in the immediate vicinity should it be sited in this location.

METHODOLOGY

In an effort to fully address the requirements of the brief on this project as comprehensively as possible, we adopted the following methodology

- Analysing the impact that similar thermal treatment plants/incinerators have had on property values within close proximity of facilities in other countries by
    - having regard to similar reports that have been carried out elsewhere in Europe
    - liaising with personnel in similar plants elsewhere in Europe and visiting similar plants in Copenhagen, Sweden, Paris, Vienna and the UK
    - liaising with property professionals operating in markets with similar plants

- Preparing an index of residential property prices in six neighbourhoods surrounding the proposed thermal treatment plant in Dublin to establish patterns before, during and after the plant comes into operation and to compare these trends with those being experienced in the residential property market in Dublin generally.

Dublin City Council provided us with

- general information on the proposed thermal treatment plant and its operation including information on likely emissions, likely capacity, proposed transfer policies and impacts on traffic movements compared with similar plants throughout Europe

- contact details for personnel in similar plants in other European countries

- aerial photography on similar plants throughout Europe, where available

PROJECT OVERVIEW

According to the OECD, the amount of municipal waste being generated in Ireland is higher than in most other developed countries in the world as a result of urbanisation, types and patterns of consumption, household revenue and lifestyles. Increased affluence associated with economic growth and changes in consumption patterns has led to the generation of higher rates of waste per capita than many other countries. With Irelands many landfills due to run out of capacity over the next number of years, it is very evident that there is a clear need to develop a number of thermal treatment plants in Ireland to facilitate the implementation of an integrated waste management strategy. Considering that the bulk of the population live in the Dublin region and that the population is expected to increase by a further 30% to over 1.4 million persons by 2015, a thermal treatment facility will have to be developed in the Dublin region.

Without a fully operational thermal treatment plant, Dublin's waste management targets will not be achieved. Thermal treatment is a broad term used to describe a range of heating or combustion technologies used for the treatment of waste and this is part of the integrated solution recognised in EU and national policy for effective waste management.

Dublin City Council, acting on behalf of the other Dublin local authorities is proposing to establish a waste-to-energy facility to treat household, commercial and non-hazardous industrial waste in Dublin over the coming years. It is proposed that the facility will have the capacity to thermally treat up to 600,000 tonnes of waste per annum and will have the capacity to generate electricity for as many as 45,000 homes and district heating for a further 30,000 homes.

Dublin City Council has identified the preferred site for this facility on the Poolbeg Peninsula in Dublin 4 (*See Appendix 1*). This site extends to approximately 6.2 hectares in size. Approximately 26,500 households or 70,000 persons live within a two-mile radius of the preferred site (*See Appendix 3*). Adjacent to the established residential areas of Ringsend, Irishtown and Sandymount, the Poolbeg peninsula is located approximately 3km east of Dublin City Centre. The surrounding area comprises a mix of uses including major utilities such as electricity generation and waste treatment. The Peninsula runs south of the mouth of the River Liffey and its northern boundary runs parallel to Dublin Port. The southern boundary of the Peninsula primarily comprises undeveloped land, some of which is in use as parkland. The area also has considerable amenity value, alongside Sandymount Strand, a popular beach and foreshore in the centre of Dublin Bay.

Danninger are planning a major residential and commercial scheme for as many as 2,500 apartments and 10,000 m^2 of offices and other public amenities in the Poolbeg Penninsula over the next few years. In addition, the former Glass Bottle Company 25-acre site in Poolbeg is expected to facilitate commercial and residential development in this location in the future.

In general there is a clear lack of understanding amongst the general public and the business community about thermal treatment technologies with common fears regarding the potential impact on the environment, food quality and health. These concerns will be equally true in Dublin; particularly considering it will be the first such facility in the Dublin region. Dublin City Council has a significant responsibility to properly manage and monitor the planning, construction and operation of the proposed thermal treatment plant to ensure that these fears are not realised.

Many people are unaware of the extent to which the incineration of waste is strictly controlled and that legislation governing emissions from incinerators is amongst the strictest environmental legislation in the world. The public need to be made aware that any gases emitted are cleaned and scrubbed to ensure emissions are extremely low and within strict EU guidelines and while there are some chemicals released to the environment in small quantities, these dioxins are already present in the environment coming from sources such as backyard burning of waste, traffic fumes and even smoking. Any incinerators built in Ireland will have to comply with the strictest legislation from the outset including the requirements of the Incineration Directive, which is now part of Irish Law, ensuring that the impact on the environment is kept to a minimum. In addition, the Environmental Protection Agency is prevented by law from granting a waste license unless it is satisfied that the thermal treatment activity will not cause environmental pollution.

An information service opened in Ringsend in January 2001 to inform local residents and a Community Interest Group was established in September of that year. However, this is not enough. Considerable efforts need to be made to ensure that the public and more particularly the media are fully informed about the thermal treatment process (*See Appendix 2*) to reassure them that the plant will be developed to the highest standards, that the incineration of waste will be strictly controlled, that any emissions will be within strict EU guidelines and that there will be no impact on property values in the vicinity. This will not be an easy exercise on the basis that many have been influenced by the detrimental impact poorly managed facilities and unlicensed illegal dumps have had on health and property values in the past.

THE IMPACT ON PROPERTY

Many of the households in the Poolbeg area of the city will have legitimate concerns about the impact the location of a thermal treatment facility in Poolbeg will have on the value and saleability of their homes. The value of a house is determined by its characteristics including the area in which it is located. If undesirable facilities are located nearby, this is generally reflected in the value.

Over the last number of years there has been much discussion and debate about the existence, magnitude and the persistence of the impact of locating certain facilities in close proximity to residential property. Much of the literature on this topic is primarily concerned with situations in which residential properties are affected by what are known as detrimental conditions.

Detrimental conditions that can affect real estate values include temporary easements, airport noise, construction defects, toxic waste, geotechnical issues and natural disasters. Determining the diminution in property value brought about by a detrimental condition requires the application of specialised methods, procedures and formulas. Each detrimental condition has unique patterns and attributes and the impact on value will vary from case to case. In some cases, a detrimental condition could be completely benign and have no impact whatsoever on property values. Therefore, every situation must be independently and completely analysed. The situation in Dublin is made more difficult by the fact that even though local residents are aware of plans to develop a thermal treatment plant at Poolbeg; the plant has not yet been built.

Some individuals might try to value all detrimental conditions as one but there are distinct classifications of detrimental conditions. When the detrimental conditions are stigmatised as undesirable, engineering experts may possess the expertise to judge that a specific situation is not a cause for concern. However, the non-engineer (*in this case the homeowner or potential buyer/lender*) may view the situation with scepticism. It must be pointed out, that in some cases property values can be reduced by the perception that a risk exists whether or not the perception is rational. For this reason, educating the public about each of the specific issues that will concern them regarding locating this plant in Poolbeg will be critical.

Some studies carried out in Europe, based on solicited opinions only, show negative findings regarding perceptions of what impact detrimental conditions have on residential markets and there is no doubt but that if a similar polling exercise was conducted in Dublin at present, similar results would be found due to a lack of knowledge about the thermal treatment process. This type of analysis purports to document adverse impacts on property values, yet it lacks any rigorous statistical evidence based on actual transactions and is little more than an opinion poll. For this reason, we have had regard to both statistical and anecdotal information in agreeing our results.

Studies carried out in the United States in the 1990's proved the relationship between newspaper coverage of local hazardous waste sites and house prices. Findings indicated that every positive publicity about the waste sites boosted house prices in the surrounding areas as residents lowered their perceptions of risk. Similarly, all negative publicity had a downward impact on property values. This highlights the need for Dublin City Council to invest significantly in publicity and informing the media to minimise the impact any negative publicity might have.

One way to determine if a detrimental condition has an impact on value is to conduct a paired-sales analysis. In this process, market data that is clearly unaffected by the issue is collected and compared with data for the area that has been affected. There is a clear distinction between scientifically assessed risk and perceived risk. If a legitimate detrimental condition exists there will likely be a measurable and consistent difference between the two sets of data. Therefore, we have compared Dublin data with data from specific areas adjacent to the proposed location in Poolbeg to establish if there is any significant difference between the two datasets at either current prices or appreciation rates.

Negative property impacts could also be caused by intangible factors such as a slowdown in demand in the market generally, a significant increase in supply coming to the market, a significant increase in interest rates or a deterioration in economic or employment conditions in the economy. By comparing property trends in the specific location being considered with general residential property trends in the Dublin market generally, we can account for such intangibles.

The specific factors which we feel will be of concern to residents in the Poolbeg area include the ability to sell property, the possibility of property values reducing, disturbance, visual impacts, environmental impacts, health impacts and the impact of traffic movements, each of which we have commented on separately below. We note that Dublin City Council have already organised a number of information sessions for local residents on incineration technologies focussing specifically on air quality, ecology, health and traffic. While these have been effective, they are not enough. The general public, local residents and the media need ongoing education and reassurance about each of the specific issues that will concern them about this plant being located in Poolbeg.

Ability To Sell Property

One legitimate concern that local residents will have is that they will be unable to sell their properties if the thermal treatment plant is developed. There was a general fear in the Poolbeg area several years ago when the Synergen plant went into operation and more recently when the sewage treatment plant was opened that houses would be harder to sell in the region. However, this fear has not been realised. Danninger who are well-respected property developers in the Dublin market are planning a major residential and commercial scheme for as many as 2,500 apartments and 10,000 m^2 of offices and other public amenities in the Poolbeg Penninsula. This flies in the face of objectors who claim that property will become difficult to sell once an incinerator comes into operation in the area. While we do not believe that the thermal treatment plant will impact on the ability to sell property in surrounding neighbourhoods in the long term, there may be a temporary liquidity effect in the market once construction of the plant begins as sellers become reluctant to adjust their price expectations downward and as potential buyers attempt to assess the probable long-term impact on market value. This could lead to a temporary reduction in the volume of sales transactions in the market.

Disturbance (Noise)

Another concern local residents will have is that the proposed plant will generate noise both during construction and during the operation of the plant. In any of the plants we visited throughout Europe, noise was not generated as a result of the operation of the plant. However, while there will undoubtedly be an element of noise generated during construction of the proposed plant and possibly in the future from trucks making deliveries to the plant, in our opinion, this will be sufficiently far away from local residents so as not to impact whatsoever on either the value or saleability of their homes.

Visual Impact

Another issue that will concern local residents is the visual impact of having a 100-metre chimneystack on the horizon and the impact this might have on either the value or saleability of their homes. However, considering that there are two similar chimneystacks currently on the horizon in the Poolbeg area (*See Appendix 4*) and they have not impacted negatively on property values in surrounding neighbourhoods, we do not see this as being a legitimate cause for concern for local residents.

Environmental Damage

There is a lot of misinformation about the impact incinerators have the environment. Countries with the best environmental records in Europe all have incinerators. World Health Organisation has stated that there are no harmful effects to the environment from properly managed thermal treatment facilities. This organisation has set very strict guidelines monitoring emission levels. In addition, the European Commission recognises that incineration is a necessary part of modern waste management and introduced a directive in 2000 outlining the rules for the safe operation of these plants and emission levels. The Environmental Protection Agency agree that incineration will not have any adverse affect on health or the environment provided the above guidelines and directives on emission standards are met. The Department of the Environment agree that incineration is a safer technology for the environment than landfill. On the basis that the proposed thermal treatment plant at Poolbeg will have to comply with stringent monitoring processes, we do not believe that local property will be impacted in any way.

Health Fears

There is no doubt but that house prices in the Poolbeg area of Dublin would be impacted negatively if the proposed thermal treatment plant comprised the health of the public. However, so far, research has not discovered any evidence linking incineration to health risks. Incinerators give rise to emissions but these are stringently monitored to ensure that they pose no threat to human health. The Food Safety Authority of Ireland has stated that properly managed incineration plants do not contaminate the food supply. Indeed, having visited several plants around Europe, it was interesting to note that many are located immediately adjacent to garden allotments where vegetables and crops are being grown. Backyard burning usually occurs at a temperature of between 200 and 400 degrees Celsius – the temperature at which dioxins are formed. However, incinerators burn waste at temperatures over 850 degrees Celcius – the temperature at which dioxins are destroyed. Some people are fearful of the fact that some plants around Europe have closed over the years. However, these are older incinerators, which failed to meet the stringent EU directives, proving that if health is compromised, operations at the plants are immediately halted. The Shannon-based firm Schwarz Pharma plant was closed down in March 2005 for exceeding EPA/EU emission levels, which could have threatened the health of locals. This should reassure the public that if there is a danger that health is being compromised; thermal treatment operations are immediately halted. New plants are under construction all over Europe and technology is improving rapidly. There is no reason why a new plant in Dublin cannot be built to the highest standards based on experience gained from other locations worldwide. The World Health Organisation has stated that there are no harmful effects to public health or food quality from properly managed thermal treatment facilities. If the public and the media are properly reassured that the proposed plant will pose no risk to health, there will be no noticeable impact on either the value or saleability of residential properties in the Poolbeg area.

However, if Dublin City Council fails to communicate this effectively, the perception that a risk exists could have a negative impact on both values and the saleability of property in the area even if no real risk exists.

Depreciation in Property Value

The biggest concern for local residents is that the value of their properties will be devalued as a result of the thermal treatment plant being located nearby. There is no doubt but that purchasers will be less comfortable buying property in the surrounding districts until such time as they can assess what impact the plant has on the surrounding area. Our analysis of other cities around Europe is that properly run thermal treatment facilities are generally well accepted by local communities once they get used to them and are comfortable that they pose no risks. For this reason, while there may be a temporary impact on liquidity, if Dublin City Council properly inform the public and the media, we do not believe that either the value or saleability of houses in the Poolbeg area will be affected in the long term as a result of the thermal treatment plant being located nearby.

However, in our opinion, the one factor, which could potentially devalue properties in the area around Poolbeg if this facility is developed, is if traffic is not properly managed. It is critical that arterial routes that waste collection trucks will follow in making deliveries to the plant are properly identified so that they have the least possible impact on local residents.

Transport Impact/Traffic

The process of how waste is to be delivered to the plant is a very significant and is a legitimate concern for local residents. In our opinion, the one factor, which could cause significant local opposition and potentially devalue properties in the area around Poolbeg if this facility is developed, is if traffic is not properly planned and managed. Recent opposition by locals to development of waste recycling facilities at Craughwell in County Galway were primarily related to narrow roads being unable to cope with the increased amount of trucks the facility would generate. Compiling a comprehensive traffic management plan must be a key component of the project.

Traffic monitoring studies have been carried out by engineering and environmental consultants on this site. Preliminary results on a figure of 200 round trips to the proposed plant each day show that the effect on traffic flows during morning and evening peak hours would be negligible. Dublin City Council have committed to putting in place a number of mitigating measures to reduce the impact on the surrounding area as much as possible. They intend that deliveries to the plant will be timed appropriately to ensure that traffic arrives consistently throughout the day, rather than being concentrated at peak periods. It is our understanding that waste collection trucks collecting waste within 5-7 km of the plant are to go directly to the plant at Poolbeg. Outside of this zone, waste will be taken to transfer stations around the M50 and will be taken from there to the plant in contained containers. This will significantly reduce the volume of traffic that will go directly to the plant. We also understand that specific arterial routes will be identified for drivers and that tracking systems will be in place to ensure drivers do not deviate from these routes. As long as Dublin City Council makes every effort to ensure that traffic movements will have the least possible impact on local residents, there should be no noticeable impact on either property values or the saleability of property in the Poolbeg area. However, if traffic is not properly planned and managed, this issue could have significant implications.

It is difficult to say what impact locating a thermal treatment plant in the Poolbeg area will have on local property prices in the long term. To date, our specific research shows that there appears to have been no impact on house prices or the volume of properties being offered for sale in the vicinity of Poolbeg since it was announced in 2001. We have visited a number of similar facilities throughout Europe to investigate property impacts and have found no evidence that well-managed thermal treatment facilities treating non-hazardous waste have had any measurable impact on property values, the volume of transactions or the desirability of property in neighbouring locations in any of the similar plants we have visited around Europe.

Statistical data coupled with interview evidence shows no measurable impact (*positive or negative*) from plants being located close to residential property. However, for a four to eight week period immediately following construction of a plant, residential property values sometimes fall off precipitously but then quickly return to normal once it becomes clear that there are no long-term physical effects. Similarly, research conducted by the Royal Institute of Chartered Surveyors have proved that house prices can be impacted when planning applications for wind farms are lodged (*primarily driven by concerns over the ability to sell properties as a result of the visual impact*) but the negative impact diminishes as time goes by. If there is an impact when construction starts or when the wind farm becomes operational, prices tend to recover once the facility has been up and running for at least two years, suggesting that wind farms become more accepted as local residents become used to them.

We expected to see a similar pattern emerge in the Poolbeg area following the announcement in 2001 that a thermal treatment plant was being proposed for the area. However, there appears to have been no impact on residential property prices in six surrounding neighbourhoods since that time. In fact, our research indicates that house prices in the neighbourhoods of Ballsbridge, Clontarf, Fairview, Ringsend, Sandymount and East Wall have all increased at a faster pace than the Dublin average since Q1 2002. In general, house prices in Dublin rose by 49.5% between Q1 2002 and Q3 2005, while house prices in the six neighbourhoods surrounding the proposed thermal treatment plant location in Poolbeg rose by over 66% in the same period. We have also noted that there does not appear to have been any notable impact on the volume of sales in the area over the last three-year period.

In an effort to track house price movements in the vicinity of the proposed thermal treatment plant at Poolbeg in Dublin, we compiled an index of property values in the vicinity of Poolbeg from Q1 2002 to Q3 2005 and compared this index with average house price movements in the Dublin region over the time period.

For the purposes of our research, we analysed house prices in the Ballsbridge, Clontarf, Fairview, Ringsend, Sandymount and East Wall areas specifically and valued a basket of 50 properties, comprising a combination of one and two bed apartments, two and three bed terraced properties, three and four bed semi-detached homes and four and five bed detached homes.
In the period from Q1 2002 to Q3 2005, house prices in the Dublin region rose very significantly. Indeed, the Permanent TSB/ESRI Index of house prices showed a 49.5% increase in house prices in Dublin in the time period. The greatest house price appreciation was witnessed in semi-detached and detached properties in the region. This was equally true of the specific neighbourhoods we examined as part of this research. However, the most interesting finding of our research was that the value of residential property in the six specific neighbourhoods examined increased in line with the Dublin average and in most cases actually exceeded the Dublin average very significantly since 2002 (*See Table 1*).

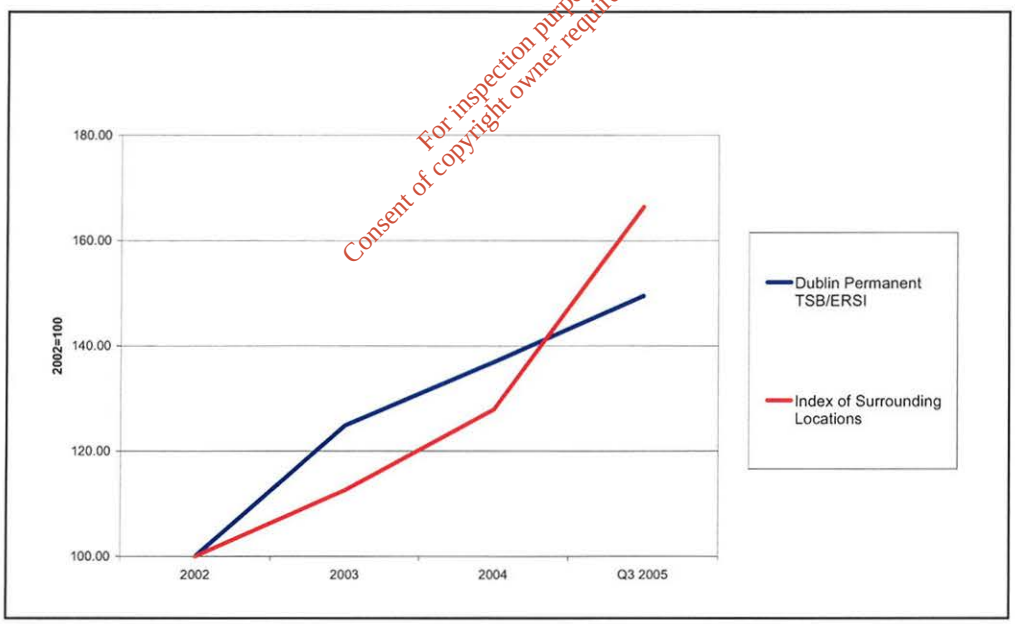
TABLE 1 - HOUSE PRICE INFLATION Q1 2002-Q3 2005

	% INCREASE
East Wall	82%
Fairview	71%
Sandymount	66%
Ballsbridge	65.5%
Ringsend	64.5%
Clontarf	65%
Dublin Average	50%

Source: CB Richard Ellis Gunne Research

Despite the fact that residents living with close proximity of Poolbeg in Dublin have been aware of proposals to locate a new thermal treatment facility at Poolbeg since 2001, there appears to have been no impact on residential property prices in surrounding neighbourhoods since that time. In fact, our research indicates that house prices in the neighbourhoods of Ballsbridge, Clontarf, Fairview, Ringsend, Sandymount and East Wall have all increased at a faster pace than the Dublin average since Q1 2002. In general, house prices in Dublin rose by 49.5% between Q1 2002 and Q3 2005, while house prices in the six neighbourhoods surrounding the proposed thermal treatment plant location in Poolbeg rose by over 66% (*See Chart 1*).

CHART 1 - HOUSE PRICE INDICES Q1 2002-Q3 2005



Source: CB Richard Ellis Gunne Research

To date, there appears to have been no negative impact on either residential property values or on the volume of transactions in the neighbourhoods that are in closest proximity to the proposed thermal treatment plant at Poolbeg. It should be noted that for these studies to have validity, the impact must be analysed over a long period of time. Time intervals of least a year will provide for consistent results. Going forward, we do not believe that local property values or the saleability of property will be impacted as a result of locating the thermal treatment plant at Poolbeg and the fact that the specific locations under consideration are well-established residential locations in their own right where demand is expected to remain strong bodes very well. However, we intend to continue to revalue the basket of residential properties we have analysed as part of this research on an ongoing basis to enable Dublin City Council to monitor this situation going forward.

We will be particularly interested in any potential impact on values in these neighbourhoods during the planning process, during construction of the thermal treatment plant and once the plant goes into operation as if there are to be any adverse impacts, they are generally experienced after construction commences. There may be a temporary liquidity effect as sellers become reluctant to adjust their price expectations downward and as potential buyers attempt to assess the probable long-term impact on market value. This could lead to a reduction in the volume of sales transactions in the market. That said, research shows that if there are adverse impacts that these are always temporary as perceived risks diminish over time.

INTERNATIONAL COMPARISONS

The concept of thermal treatment plants is well established in urban countries throughout Europe including Austria, Denmark, France, Germany, Italy, Netherlands, Norway, Spain, Sweden, Switzerland and the UK. In the Netherlands, there are 11 municipal incinerators and 100% of residential waste (*approximately 5 million tonnes per annum*) is incinerated. Plans to establish a facility to burn in the order of 600,000 tonnes per annum in Dublin is therefore just a small step towards implementing an effective waste management strategy in comparison with the rest of Europe. Indeed, Singapore has the same landmass as Dublin and has four incinerators.

With as much as 90% of waste disposal comprising incineration in some European countries, there is a general acceptance of thermal treatment plants with urban communities living alongside these facilities. In some of the countries observed, incinerators appear to have been deliberately sited in industrial locations or areas of low house prices. However, in many cities, waste-to-energy plants co-exist beside thriving residential communities. This is particularly evident in Copenhagen and in Vienna, where plants are located in the middle of prime residential districts and have had no detrimental impact on property values. Many studies have been done which show that these communities have no difficulties living alongside incinerators. If the incinerator itself is properly managed, if controls are properly enforced and traffic is managed effectively so as to have the least possible impact on neighbouring occupiers, incinerators pose no threat to local residents. Psychometric tests carried out across Europe show that those living in close proximity to incinerators rate the facilities as less risky than those living far away from them, proving that local residents quickly become familiar and accepting of facilities once they are reassured that the technology and processes are being managed effectively and pose no risk.

There have been very few studies carried out internationally looking at the specific impact thermal treatment facilities have on local property values. However, a study conducted on property values in the vicinity of a modern waste incineration plant in Augsburg in Germany showed no noticeable impact on local property values (*commercial or residential*), either following the announcement, the construction or subsequent operation of the plant. We have considered nine particular thermal treatment plants as part of our research and for the most part have discovered that they have had no impact whatsoever on either the value or the saleability of property in neighbouring locations (*See Table 2*).

TABLE 2 – INTERNATIONAL COMPARISONS

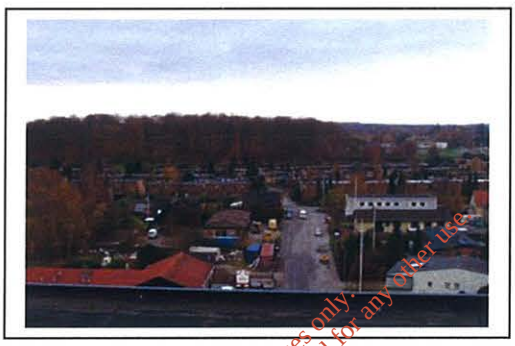
Plant	Location	Annual Capacity	Opened	Commentary
Westpoort	Amsterdam	800,000 tonnes	1993	Situated on a site at the western edge of the city of Amsterdam, this plant has been a huge success, treating approximately 800,000 tonnes of waste per annum with minimal air pollution and with a positive reaction from the public. Next year, when the phase currently under construction is completed, the plant will expand in size by a further 66% making it the world's largest waste treatment centre. Planning permission and all the relevant permits were granted for this without any public opposition and with support from non-Governmental organisations. There are a number of residential properties located in close proximity to this plant but the plant does not appear to have had any negative impact on either the value or saleability of property in neighbouring locations.
Sysav	Malmo, Sweden	210,000 tonnes (550 trucks per day)	1971	Situated in the north port district of Malmo in Sweden, this plant, which is owned by a partnership of 14 municipalities, produces district heating for as many as 50,000 apartments in the Malmo region. It is the worlds most energy efficient plant. The property is located in an industrial area of the city, adjacent to a landfill site (*which will eventually be converted in a recreation area*), a carbon refinery, a gas station and cement works. The nearest houses are located approximately 1km away from the plant and experience no problems being located close to the plant. A major development of new houses and apartments are being constructed in the municipality of Arlov about 1km east of the plant and there is strong interest from a range of owner-occupiers and investors for these new homes, despite their proximity to the plant.
Vestforbra ending	Glostrup, Copenhagen	500,000 tonnes (350-400 deliveries per day)	1970	This modern plant is located approximately 12km west of the city of Copenhagen in an area that was traditionally an industrial area of the city. Over time, some residential development has occurred in this location and now a residential area is located approximately 300 metres from the plant. While there has been no noticeable impact on property values in the area, local residents have in the last number of years have complained about the noise created by traffic making deliveries to the plant, which could ultimately negatively impact on property in the region if it is not addressed.

Amagerforbraending	Copenhagen	400,000-450,000 tonnes	1970	This plant has been developed on a 2-acre site on the coast road near Copenhagen Airport in an area, which is primarily in industrial use. It is located close to gas tanks, oil refineries, petrol tanks and a sewage/sludge treatment plant. The plant caters for both household and commercial waste and has four lines operating. There are residential properties located close to the plant. They mainly comprise apartments in large mixed-use developments and are primarily owner-occupied. There are also a number of summer homes and garden allotments located nearby. Across the water from the plant is an area of Copenhagen that boasts some of the highest prices 16th and 17th century housing, the new opera house and parliament buildings near the old moat of the city. This is a very attractive residential district with several new developments being constructed at the moment, many of which will have views of the Amagerforbraending plant. Local real estate agents report that the existence of the plant has had no negative impact on either values or saleability of houses in the surrounding area.
Nordforbraending	Copenhagen	110,000 tonnes (100 deliveries per day)	1969	This plant is located in the heart of the countryside approximately 12km north of Copenhagen in an area that is synonymous with high-value one-off residential housing. The closest properties to the plant are located 100-200 metres away. There have been no complaints from the local residents about the plant and property values have not been impacted whatsoever.
St Oeun	Paris, France	630,000 tonnes	1990	This plant provides hot water for the city of Paris and supplies steam to the Paris District Heating Network. The plant, which is lit up like a cathedral at night for effect is located close to the centre of Paris, replacing an earlier plant which came into operation in 1952. This plant removes residues by rail in order to reduce traffic from the plant. There are several residential buildings located less than 500 metres from the plant and there has been no noticeable negative impact on local property values as a result of the plant.
SELCHP	London	420,000 tonnes (260 deliveries per day)	1994	This modern plant, which is located on about 2.5 hectares in the southeast of London, produces electricity to supply approximately 35,000 houses. There are very tight regulations governing sound emissions from this plant because of its location. Traffic movements around the plant are also carefully planned to minimise potential nuisance to local residents. An Incinerator Monitoring Group, which is made up of local residents meets the management of this plant on a regular basis. There has been no noticeable negative impact on either values or the saleability of property in the surrounding area as a result of the plant.

Alkmaar	Netherlands	470,000 tonnes (220 deliveries per day)	1995	The Alkmaar plant in the Netherlands is located on a site of approximately 15 hectares in an area that houses some light industry but is largely in agricultural use. There were a lot of concerns amongst local farmers when it was announced that this plant was to be developed. To counter their fears, the operators of the plant told farmers that they would be compensated for any loss and to assist this process it was decided to establish a bio-monitoring programme. Plant Research International, a division of the Dutch Ministry of Agriculture, carries out the programme. The fact that farmers continue to operate dairy farms and grow crops and horticulture in the environs of the plant demonstrates their trust in the management of the plant. There are residential properties located within 500 metres of the plant but with the plant fully integrated into the community and accepted by local residents due to the meticulous way in which it is run, there appears to be no negative impact on local property values.

AERIAL SHOT OF VESTFORBRAENDING THERMAL TREATMENT PLANT, COPENHAGEN

AERIAL SHOT OF NORDFORBRAENDING THERMAL TREATMENT PLANT, COPENHAGEN



AERIAL SHOT OF AMAGFORBRAENDING THERMAL TREATMENT PLANT, COPENHAGEN

The key to not impacting on property values is communication and co-operation. Amsterdam has been incinerating municipal waste since 1919. In 1993, AEB began operating a large incinerator on a site at the western edge of the city in the Westpoort area. It has been a huge success, treating approximately 800,000 tonnes of waste per annum with minimal air pollution and with a positive reaction from the public. Next year, when the phase currently under construction is completed, the plant will expand in size by a further 66% making it the world's largest waste treatment centre. Planning permission and all the relevant permits were granted for this without any public opposition and with support from non-Governmental organisations.

This was achieved by

- *Abating all environmental concerns by operating under stringent EU legislation*
- *Conducing an excellent programme of public relations*

The key to getting buy-in from the public was that the public trusted that the operators of the plant had made every effort to improve efficiencies, ensure that emissions were minimal, increase the production of sustainable energy and reduce the use of road transport. The key was total transparency with all authorities, city officials, regulatory authorities and the general public from a very early stage in the process to give everyone time to digest and discuss the proposals. In addition, a special effort was made to communicate technical complexities involved in terms non-experts could understand.

CONCLUSIONS AND RECOMMENDATIONS

A DTZ Pieda Consulting report on behalf of East Sussex County Council and Brighton & Hove City Council on the impact of a thermal treatment plant in Newhaven in the UK concluded "*evidence from elsewhere is that incinerators do not have any substantive impact on property prices in the long term*". Similar studies carried out internationally prove that if thermal treatment plants are properly managed, the public and local residents buy in to the idea and there is no impact whatsoever on either the value or saleability of property in the vicinity. Having conducted our specific research over the last number of months, and considered the experience in other cities that have thermal treatment facilities, we have reached the same conclusion.

There may be a temporary impact on liquidity in local residential neighbourhoods once construction of the thermal treatment plant commences on the site but we believe that if this occurs it will quickly alleviate once the public accept that the facility poses no risk.

The key to getting buy-in from local residents and the public is to ensure that they are fully informed. Dublin City Council has a significant responsibility to properly manage and monitor the planning, construction and operation of the proposed thermal treatment plant to ensure that the fears of the public are not realised. Considerable efforts need to be made to ensure that the public and more particularly the media are fully informed about the thermal treatment process to reassure them that the plant will be developed to the highest standards, that the incineration of waste will be strictly controlled, that any emissions will be within strict EU guidelines and that there will be no impact on property values in the vicinity. There is a very real threat that if this communication process is not conducted effectively, that local residents will continue to presume and argue that the value and saleability of their properties will be adversely affected. The perception that this risk exists can be as negative as if the risk actually exists and property values could potentially be impacted if these preconceived ideas about risk are not addressed.

The process of how waste is to be delivered to the plant is in our opinion very significant and is a legitimate concern for local residents. In our opinion, the one factor, which could cause significant local opposition and potentially devalue properties in the area around Poolbeg if this facility is developed, is if traffic is not properly planned and managed. Compiling a comprehensive traffic management plan and communicating this effectively to the public and the media must be a key component of the project if this plant is not to have a negative impact on either the value or saleability of property in the area around Poolbeg.

APPENDIX 1

APPENDIX 2

APPENDIX 3

APPENDIX 4