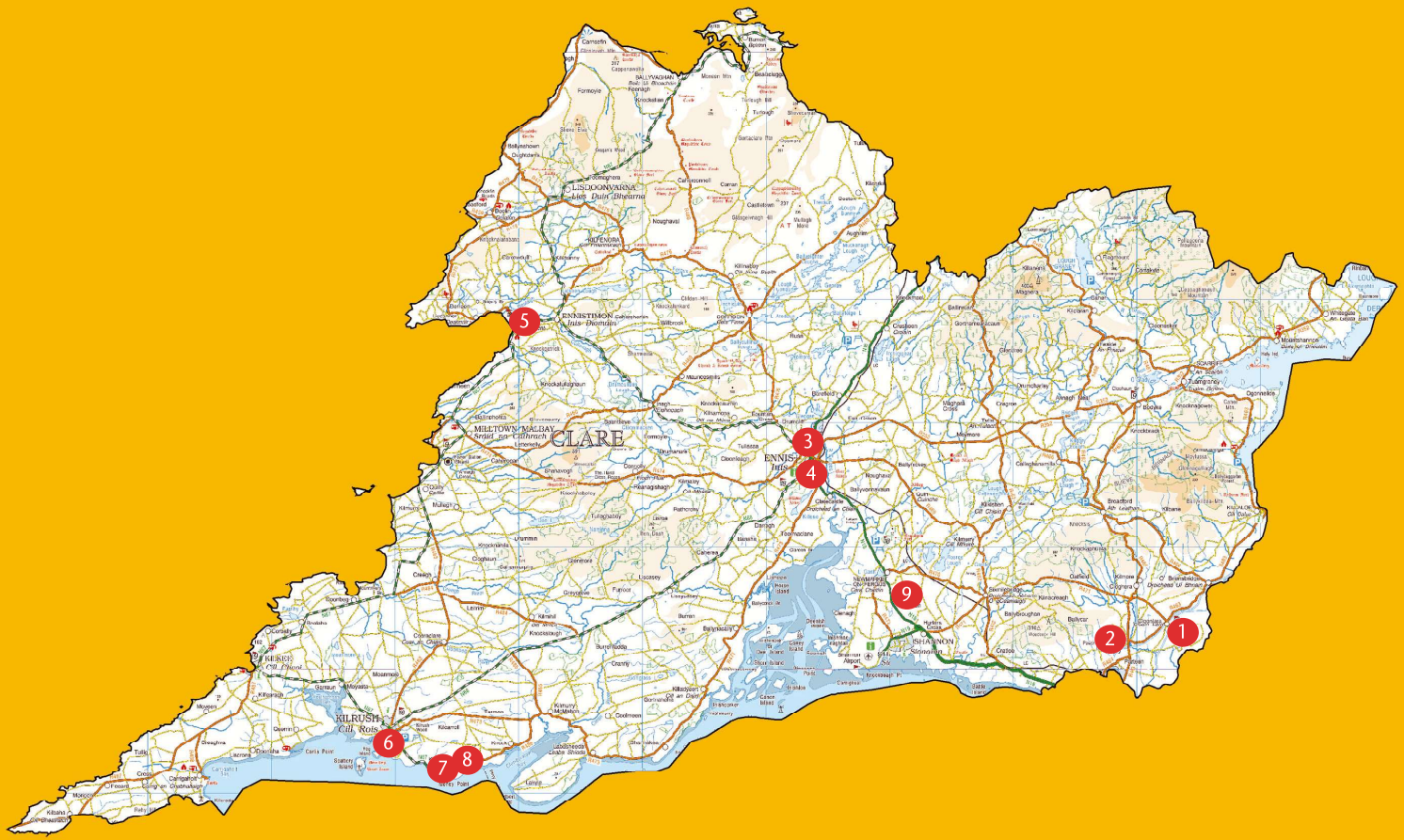
County CLARE



Contents

COUNTY CLARE

PS Power Station SS Substation D Depot O Office SH Shop ST Store VC Visitor Centre RE Recreational/Educational

WEIR & FISHERY MANAGEMENT CENTRE

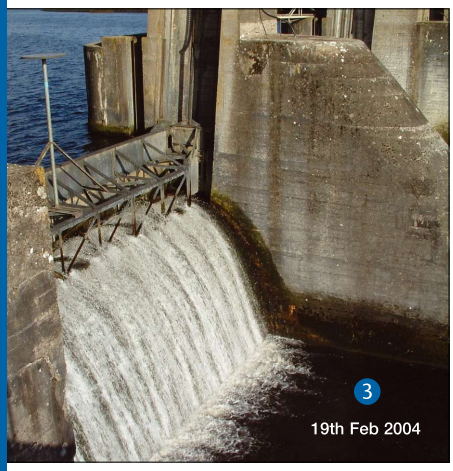
Parteen Weir, Parteen

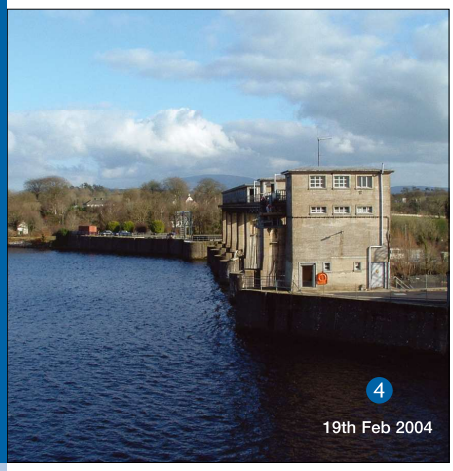
Date Of Survey: 19th February 2004

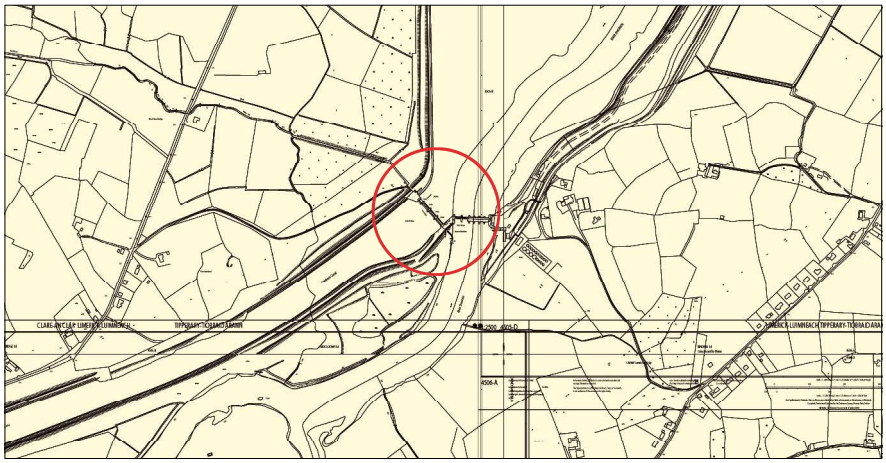
Surveyors Name:	Judith Doherty
Photographer:	Judith Doherty
Field Controller:	Peter Carroll
O.S. Ref: 4622/13	ESB Ref: CE-PG-4622/13

Architectural Heritage Evaluation:	
Record Only	
Local	
District	
Regional	
National	
International	✔

Categories of Special Interest:	
Archaeological (AG)	
Architectural (A)	✔
Artistic (AR)	
Cultural (C)	
Historical (H)	✔
Scientific (SC)	✔
Social (SO)	
Technical (T)	







Summary

Parteen Weir controls the flow of water from the Shannon and divides it into both the headrace and the old river channel with the six sluice gates on the old river outlet, and three sluices and a navigation gate on the headrace.

It is situated across the Shannon by the town of Parteen. The headrace conveys the water a distance of 12.6 km to the power station at Ardnacrusha. From the power station the water enters the tail race channel which conveys the water a distance of 2.4km before rejoining the Shannon near Limerick.

The Hydro Electric Development was undertaken by the Irish Government in 1925, and following commissioning, it was handed over to ESB on completion in July 1929. It was the first major engineering project undertaken by the State.

Description & Materials.

The weir at Parteen is a reinforced concrete structure with four double roller gates each 10m wide and two single roller gates each 18m wide. A minimum flow of 10 tonnes per second is allowed down the old river for fishery and conservation purposes. The maximum water demand at the power station is 400t per second and in cases of major floods water quantities in excess of this amount are diverted down the old river channel by Parteen Weir.

Fish Pass

A fish pass of thirteen steps is built into the weir to allow the migrating fish to pass into the upper Shannon.

Fish Hatchery

A fish hatchery was built by ESB at Parteen in 1958. Since then 23 million fish have been released from here into the upper Shannon.

Special Interest – Architectural

The weir is designed in an austere modern architectural industrial style. It would appear to have been influenced by some of the early industrial imagery and designs by the German architect Peter Mendohlson.

Special interest – Scientific, Fisheries

The fish hatchery located at the weir contributes to the management of the salmon and eel in the River Shannon. ESB is at present engaged in a far-reaching programme to find solutions to the problems of fish movements up and down the river. One element of this is a major annual airlift of up to 120,000

1. Aeriel View of Weir. **2.** Interior of Sluice Room. **3.** Roller Gates. **4.** View of Weir Across Shannon.


5

WEIR & FISHERY MANAGEMENT CENTRE

Parteen Weir, Parteen

Date Of Survey: 19th February 2004

salmon smolts to selected locations on the river. The smolts are given miniature tags enabling their performance and movements to be monitored.

Special Interest – Historical

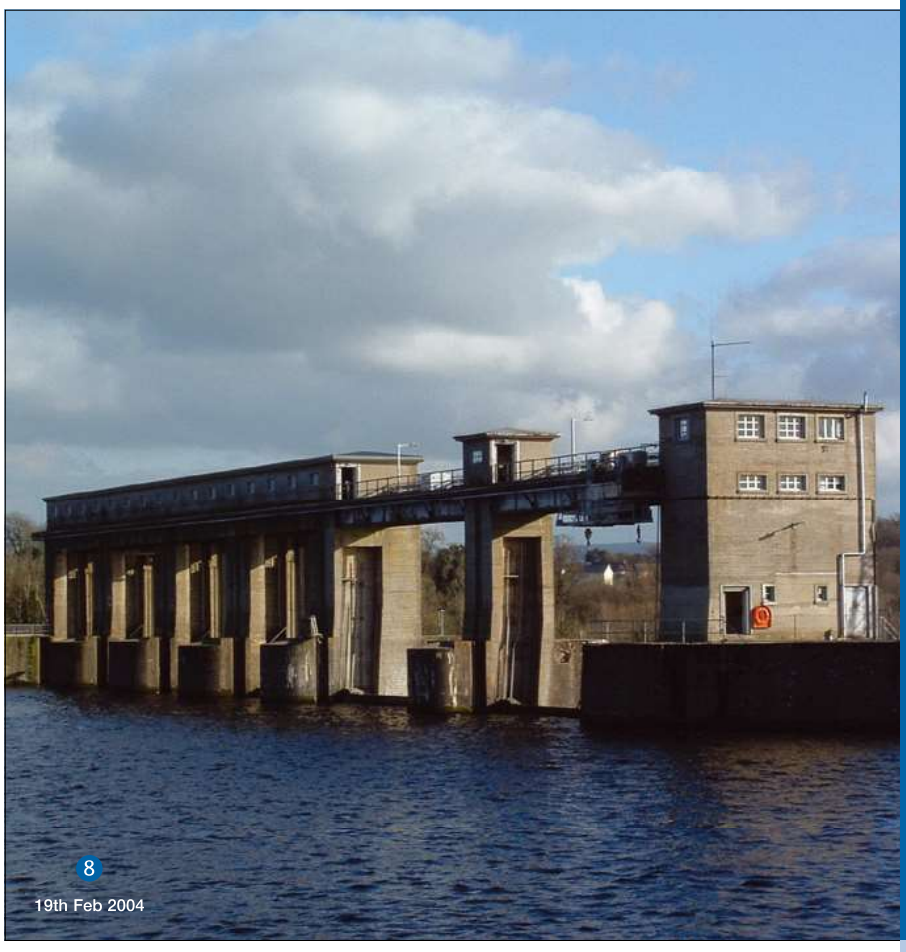
The village of Parteen was formerly known as Ardnacrusha but when the hydroelectric station opened in the area, the plant took the name for the station. In response, the locals decided to rename their village Parteen. Today the population of the parish is around 4,800 and growing due to the area's close proximity to Limerick City.

The name Parteen is derived from the Irish *An Páirtín* meaning 'the little port' or 'landing place'.

The official opening of the Shannon Scheme took place at Parteen Weir on 22nd July 1929 when An Taoiseach W.T. Cosgrave opened the gates to allow water flow down the headrace canal. Ardnacrusha Power Station was commissioned on 29th October, 1929 following successful completion of tests to the engineering plant and equipment.


6
19th Feb 2004


7
19th Feb 2004


8
19th Feb 2004

5. Original Photo of Fish Hatchery. **6.** Detail of Sluice Gate Lifting Mechanism. **7.** Walkway Across Top of Weir.. **8.** View of Control Gates from Shannon.

HYDRO ELECTRIC POWER STATION

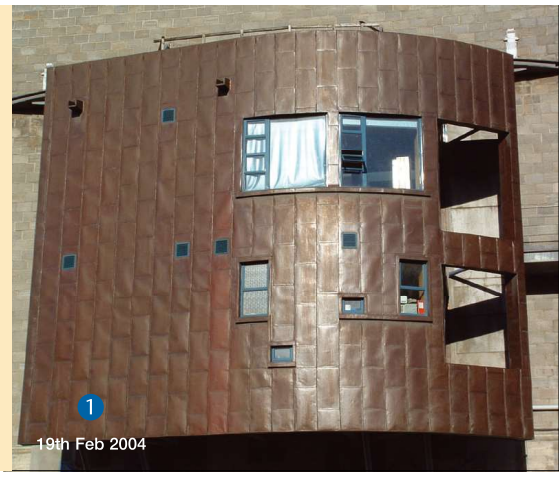
Ardnacrusha

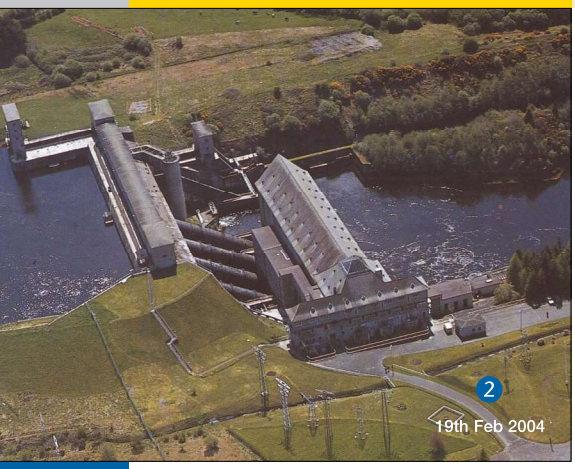
Surveyors Name: Judith Doherty
Photographer: Judith Doherty
Field Controller: Peter Carroll
O.S. Ref: 4622/13 ESB Ref: CE-PG-4622/13

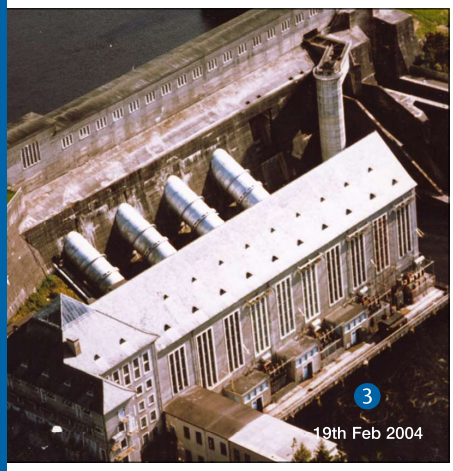
Architectural Heritage Evaluation:	
Record Only	
Local	
District	
Regional	
National	
International	✔

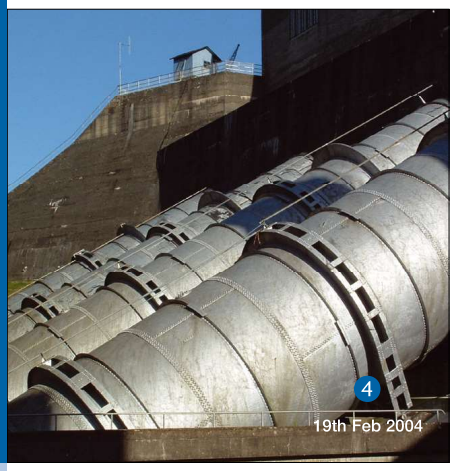
Categories of Special Interest:	
Archaeological (AG)	✔
Architectural (A)	✔
Artistic (AR)	✔
Cultural (C)	✔
Historical (H)	✔
Scientific (SC)	✔
Social (SO)	✔
Technical (T)	✔

Date Of Survey: 19th February 2004









Summary

Ardnacrusha is a Hydro Electric Power Station and is the largest of its type in the country with a current capacity of 91MW situated about 3km northeast of Limerick in Co. Clare.

The Shannon Hydro Electric Scheme was undertaken by the Irish Government in 1925 and, following its opening in July 1929, it was handed over to ESB on the completion of its commissioning in October 1929.

Description & Materials.

Headrace

The headrace canal is a 12.6km canal into which part of the Shannon is directed and conveyed to Ardnacrusha to drive the turbines in the power station. It was necessary to construct four reinforced concrete bridges across the headrace and tailrace at O'Brien's Bridge, Blackwater, Clonlara and Parteen. The canal terminates at the power station sluice house.

The Power Station

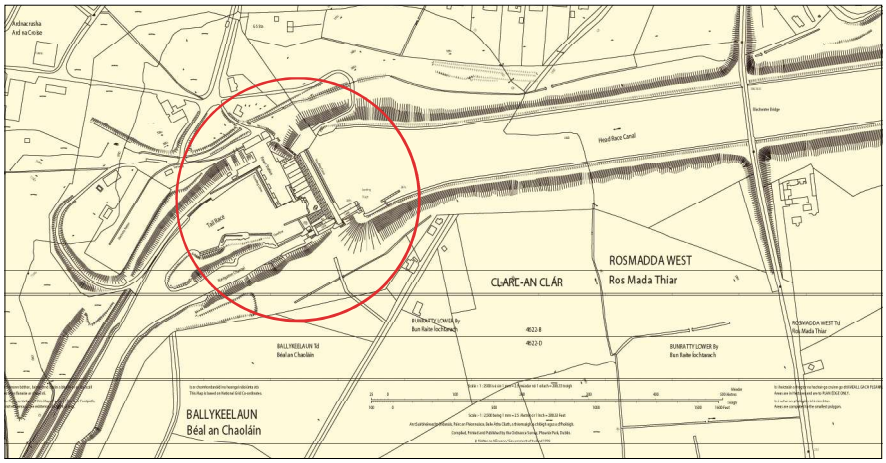
The power station is situated at the end of the headrace canal at Ardnacrusha. It consists of an intake sluice house, penstocks, generating building, waste channel, fish pass and navigation locks.

Sluice House

The intake sluice house is a large concrete structure, containing 60,000m^3 of concrete. It forms a barrier across the headrace and regulates the flow of water across the penstocks. The electrically operated sluice gates control the water to the penstocks. Screens are placed in front of these sluice gates in order to prevent debris flowing into the penstocks.

Penstocks

The four penstocks are angled cylindrical steel structures used to convey the water to the turbines. They are 41m long, 6m in diameter and have a slope of 31°. Each penstock delivers approximately 100 tonnes of water per second. At the base the penstocks connect to the spiral casings which supply water to the turbine motor. Initially three penstocks were installed in 1929 with a fourth added in 1934 when an extra turbine was commissioned. There was a provision to accommodate two additional penstocks which were not required.



1. View of New Control Room. **2.** Ariel view of Ardnacrusha. **3.** Ariel View of Generating Hall. **4.** View of Penstocks

HYDRO ELECTRIC POWER STATION

Ardnacrusha

Date Of Survey: 19th February 2004

The Power House/Generating Hall

The main entrance end of the building is three-storey in height with a pitched roof which rises to a glazed pyramidal shaped apex in the centre. The building is designed in the teutonic arts and crafts style. The building is reinforced concrete in structure. Wall finishes are natural render with nap plaster reveals to doors and windows. This part of the building connects at right angles to the generator hall. The teutonic arts and crafts style continue across its length however the hall below is designed in a different manner. The generator hall is designed in the international industrial style creating a huge steel portal column free space. There are ten full height windows in each side elevation. In the 1950s, there was an extension to the workshops and station building, together with a conference room and reception area for visitors. A modern control room was added to the end gable in 1996.

Turbine Hall

Within the power station in the turbine hall are three vertical shaft Francis turbo-generators installed in 1929 and one vertical shaft Kaplan turbo-generator installed in 1934, which provided a generating capacity of 85MW. This was increased when the station was refurbished to 91MW in the 1990s.

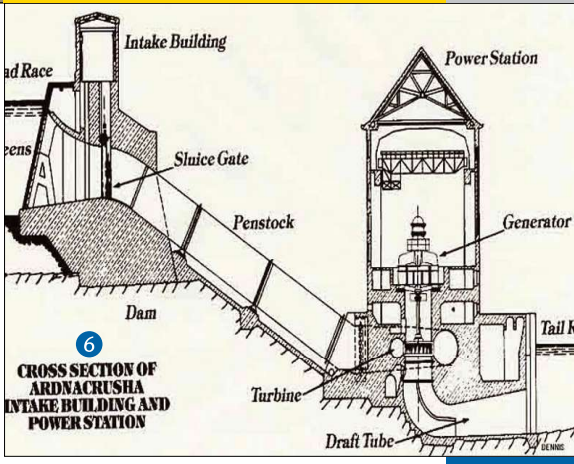
Control Room

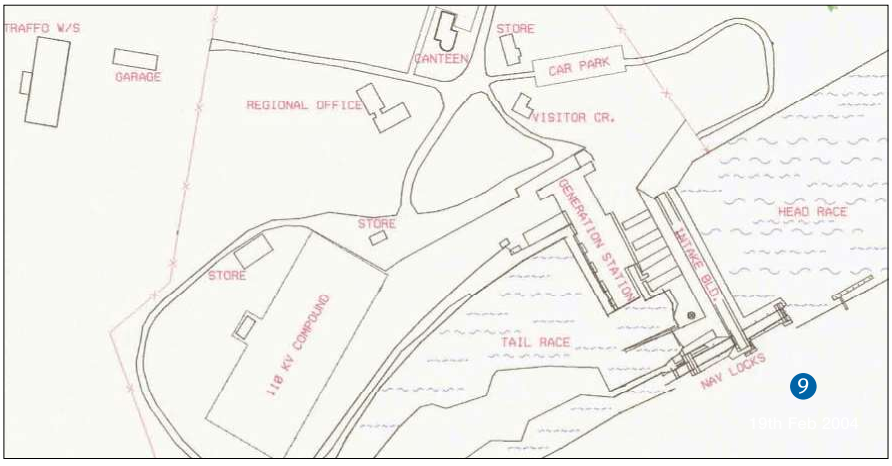
The original control room is situated on the upper level of the power house. This building has a pyramid glazed roof structure which allows light through the suspended tiled ceiling. This significant architectural feature was designed to give a degree of prominence to the control room reflecting the fact that, in addition to managing the local networks, the control room also controlled the entire National Grid until 1957.

As part of a refurbishment in 1996, a new control room complete with new computer-aided on-line management information system and control functions was designed and constructed. This was located at the end of the turbine hall and cantilevered from the gable wall. From this new control room there are spectacular views of both the tailrace and sluice house.

Navigation Locks

A double lock allows boats pass through



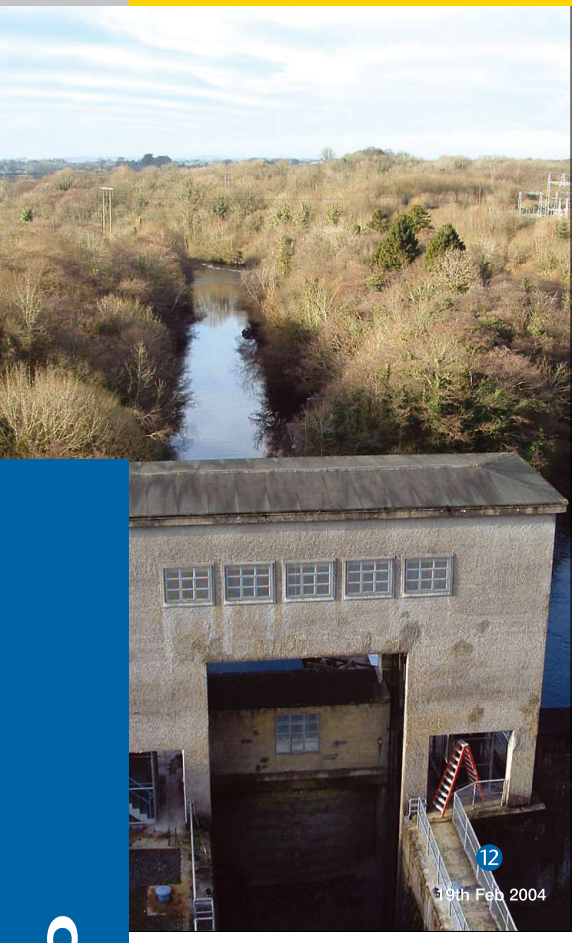


5. View of Original Control Room. **6.** Schematic Section Cross of Intake Building and Power Station. **7.** Internal View of Generating Hall. **8.** External View of Generating Hall. **9.** Site Layout of Station.

HYDRO ELECTRIC POWER STATION

Ardnacrusha (continued)

Date Of Survey: 19th February 2004



Ardnacrusha in each direction, into the headrace and into the tailrace to rejoin the Shannon. These are located on the south side of the dam and are designed to raise and lower the boats in two lifts. The locks, which were electrically operated, were designed to accommodate a boat of maximum dimensions 32m long, 4m beam and 2.5m draught.

Fish Pass

The Borland type fish lift was built at Ardnacrusha Power Station in 1959 to facilitate upstream passage of adult salmon past the dam. It is a circular concrete structure where the fish enter at the bottom of the dam and are raised to the top as the lift shaft fills with water. They then swim out into the headrace from there to the Shannon.

Tailrace

The water emerging from the power station is carried by a 2.4km long tailrace canal back into the Shannon.

Transmission

An associated network system for the transmission and distribution had to be constructed. Ardnacrusha generates at 10.5kV and this is transformed to 40kV for local distribution and to 110kV for long-distance transmission.

Temporary Power Station/ Transformer Repair Shop.

A temporary power station was initially the first building to be erected to provide power for plant and equipment. Within this station there were nine large diesel generators installed with an output of 4000 horse-power. This temporary power station supplied the electricity required for the construction of Ardnacrusha and also an electric railway line that was used for the transportation of materials around the site. The building that housed the temporary power station was converted to operate as a transformer repair shop. This became a significant addition in ESB's ability to repair and maintain its own equipment and manage its network system.

Cafeteria/Restaurant

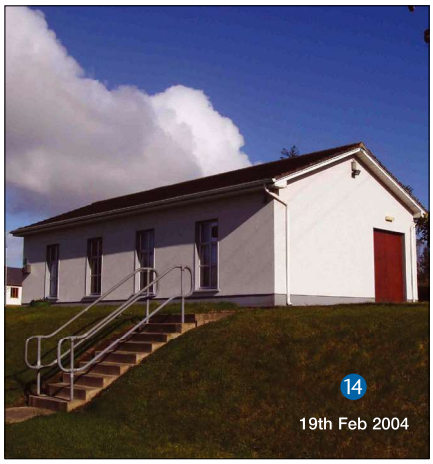
This building is a single storey masonry construction located to the entrance built in the early 1990s. The architects were ESB International/Building Consultancy Group. This building is a modern structure with a curved front bay and conical tiled roof.

Visitor Centre

This building is a modern single storey masonry building sited on a raised embankment adjacent to the main car park and restaurant. It has a pitched tiled roof and rendered finish.

Recent Developments

The refurbishment of Ardnacrusha took place in the 1990s and the plant was made suitable for remote control. New unit transformers were installed and three of the turbines were replaced with more modern prototypes increasing the



10. View of Penstocks and Fish Pass. **11.** Glazed Pyramidal Roof Above Original Control Room. **12.** Navigation Lock and View of Tailrace.
13. Restaurant. **14.** Visitor Centre.

HYDRO ELECTRIC POWER STATION

Ardnacrusha (continued)

Date Of Survey: 19th February 2004

output from 85MW to 91MW overall. The new control room was built and the old control room maintained in-situ as an industrial heritage artefact.

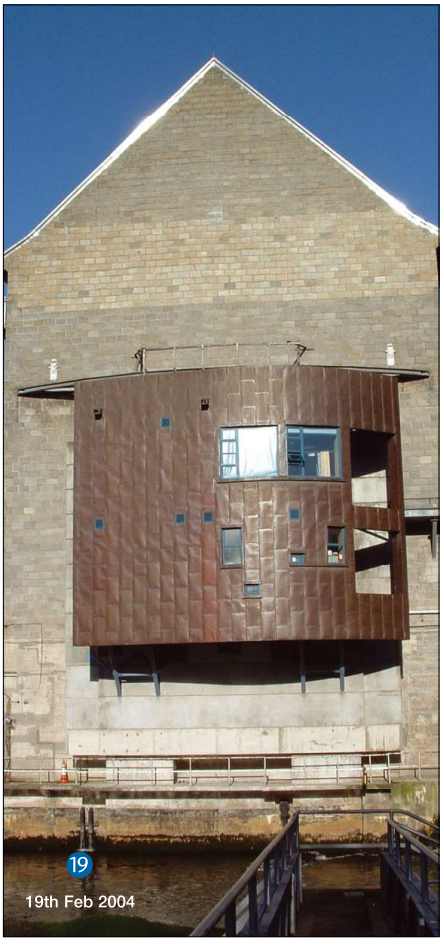
The Building of Ardnacrusha

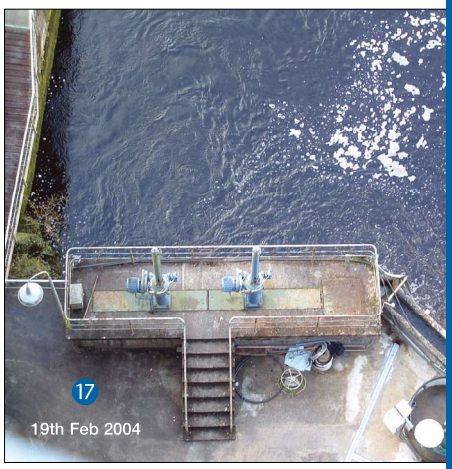
Before Ardnacrusha was constructed, electricity was generated in Ireland either by local authorities or privately owned undertakings. The construction of the single hydro electric station would power a national grid and provide the framework for rural electrification. The contract for the works was given to Siemens-Schukert. The plan was to divert the Shannon via a headrace canal to Ardnacrusha where the necessary fall of water was used to drive the turbines. The scheme also involved the construction of a weir at Parteen. A standard gauge railway link from Long Pavement in Limerick City to Ardnacrusha was constructed to assist in the transport of equipment to and from site. The construction of the main power house then commenced and the discharge from the power station was returned to the river via a 2.4km tailrace.

Skilled engineers, technicians and specialist craftsmen were brought in from across Europe, the majority of which were German. Of the three camps set up for the construction workers, the one at Ardnacrusha was the largest and included living quarters for 750 men, a dining room which seated 600, a kitchen, canteen and general store. It was described as almost like a town in itself. The official opening occurred in July, 1929. In the months that followed the canal was filled to its current volume. On October 29th 1929, when the pressure and seepage tests were completed on the embankment, the turbines set the generators in motion and the power station was formally commissioned.

Awards

On 29th July 2002 ESB's Shannon Scheme received two major heritage awards, namely the International Milestone Award and the International Landmark Award. The International Milestone Award was presented jointly to ESB and Siemens by the Institute of Electrical and Electronic Engineers which is the largest professional organisation in the world. The award recognises the scale of the project and





15. View of Siemens-Schuckert Turbines. **16.** Original Power Station/Transformer Repair Shop. **17.** Fish Counter. **18.** Window to Generating Hall. **19.** Gable Elevation with New Control Room.

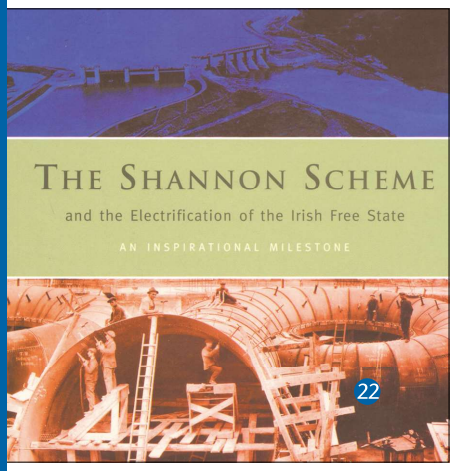
HYDRO ELECTRIC POWER STATION

Ardnacrusha (continued)

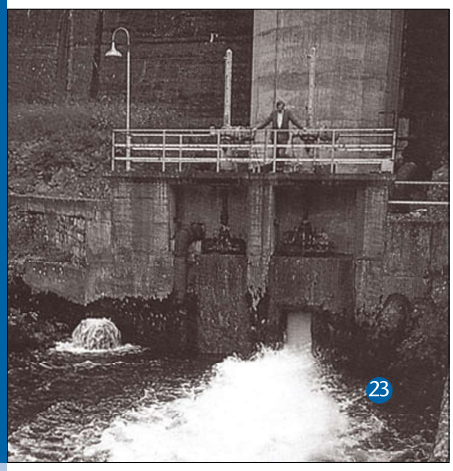
20
19th Feb 2004

Date Of Survey: 19th February 2004


21



22


23

how it became a model for large scale electrification schemes worldwide. A selection of the previous winners of the Milestone Award are the invention of Trans-Atlantic Telecommunications, the Cape Canaveral Space Shuttle Programme and Japan's Bullet Train. The Shannon Scheme is among an elite of fifty that have been presented with this award for electrical engineering achievements.

The International Landmark Award was awarded to the Shannon Scheme by the American Society of Civil Engineers. This award is conferred on civil engineering projects which have made a significant contribution to society. Only 300 of these awards have been presented worldwide to date. A selection of previous winners of this award include- The Eiffel Tower, The Panama Canal and The Golden Gate Bridge.

The Royal Institute of Architects of Ireland Regional Award for Excellence in Architecture was awarded to Building Consultancy Group (ESB International) for the control room refurbishment project in 1996.

In 1996 Ardnacrusha became the first power station in the world to achieve ISO 9002 – an award for the International Organisation for Standardisation – for its integrated management system. On September 21st 2004 Ardnacrusha was awarded ISO 14001 for environmental management presented by SGS Ireland, the accrediting body.

Special Interest – Artistic

Visual Arts

Sean Keating (1880-1977), born in Limerick, completed work to record the development of the Shannon Scheme in sketches, drawings and paintings. His work involved capturing and recording all phases of the construction and completion of the project.

Literary

The project provided material for a German Romantic Novel *'Am Shannon-Roman um ein Kraftwerk'* (On the Shannon – Novel at a Power Station) penned by the engineer Reinhold Zickel during his time in Limerick. In addition, Dennis Johnston based a play called 'The Moon in The Yellow River' on the construction of Ardnacrusha.

Special Interest – Archaeological

'St. Mo Lua's' oratory now standing next to the Catholic Church in Killaloe once stood on '*Inis Lua*' (Lua's Island sometimes known as Friar's Island) until 1929. When the Shannon Scheme was initiated it became apparent that the island and its 9th or 10th century church would be submerged and the entire structure was moved stone by stone to its present location in Killaloe.

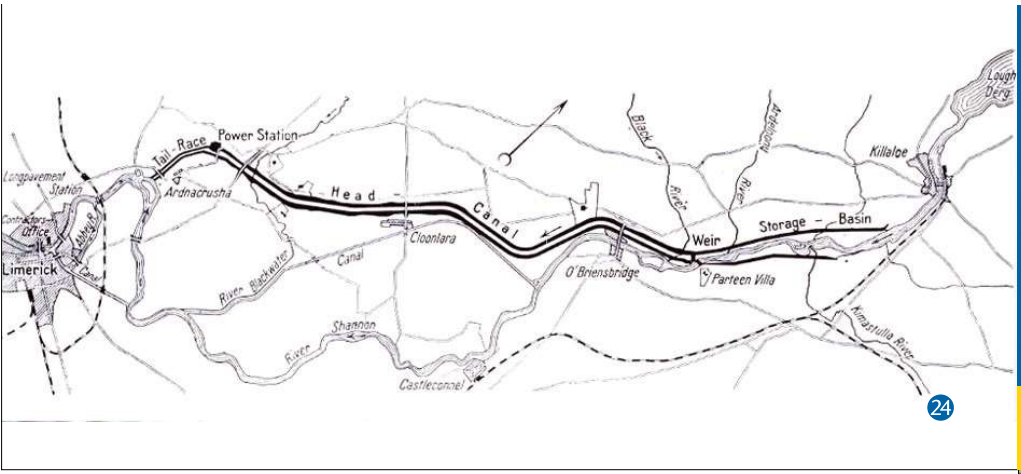
Special Interest – Architectural

The RIAI regional award for excellence in architecture was awarded to Building Consultancy Group for the Ardnacrusha control room (See awards above). The temporary power house/transformer repair shop is understood to be ESB's first building.

Special Interest – Historical

Ard na Croise translates as "the height of the cross". In 1111 A.D. the bishops of Ireland held a Synod at Rathbrassil in Co. Westmeath. The function of this Synod was to draw up a system of diocesan boundaries. These included Thomond, Inniscaltra and Clonrush in Co. Galway, and the parish of Castleconnell in Co. Limerick. Parteen, Meelick and Coonagh were assigned to the diocese of Limerick. The mearings, which were used to define the boundary lines, were at Ardnacrusha,

20. Plaque at Ardnacrusha. **21.** Photo of Seán Keating painting the Building of Ardnacrusha. **22.** Cover of Recent Book on the Shannon Scheme. **23.** Original Photo of Entry to Fish Pass.



HYDRO ELECTRIC POWER STATION

Ardnacrusha (continued)

Date Of Survey: 19th February 2004

Glenagross and Blackwater. A large wooden cross was erected on high ground, hence the name *Ard na Croise*, now Ardnacrusha.

A special commemorative book *'The Shannon Scheme An Inspirational Milestone'* was published to mark ESB's 75th Anniversary in 2002.

Special Interest – Social and Cultural, The development is widely considered to have provided the framework for the social, economic and industrial development of the country.

Special Interest – Scientific

Fisheries
In 1935, the Shannon Fisheries Act gave over the entire fishing rights of the Shannon to Electricity Supply Board (ESB) This left the Board with a major responsibility to 'preserve, maintain conduct and manage' the fisheries of the entire Shannon catchment. The harnessing of the river at Ardnacrusha did not change the environment for fish life in the upper Shannon, but it created an obvious entry and exit problem for migratory fish.

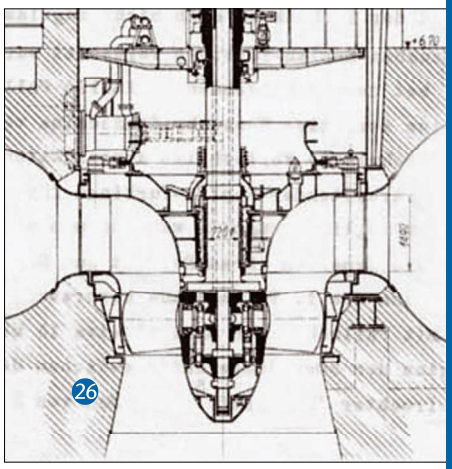
The Shannon has two migrating species, salmon and eel. The salmon travel across the north Atlantic in the direction of the Faroe Islands and Greenland to find cold salt water. The eel travel toward the Atlantic Ocean and onto the Sargasso Sea off the southeast coast off North America. On reaching the dam face at Ardnacrusha, they are delayed in their passage upstream and in 1959 a Borland lift was built at Ardnacrusha Power Station to facilitate the salmon and eel in travelling upstream.

The gushing water coming from the base of the dam attracts them to the fish pass entry point and they swim in. The fish pass then fills up and lifts them to the top of the dam from where they swim out into the headrace and from there to the Shannon. Nearly all eventually make it through the fish passes provided by ESB. Typically 3000 - 4000 salmon ascend the Ardnacrusha pass each year. The remainder of the returning cohort access the upper reaches via the recreational fishery on the original river at Castleconnell Co. Limerick and the alternative fish pass at Parteen.

Special Interest - Social
At its peak the Shannon Scheme during construction employed up to 5000 people of which 4000 were Irish workers.

Special Interest - Technical
The development of Ardnacrusha is significant in technical terms due to the following:

- Its role in the technology transfer and its contribution to the engineering profession of Ireland. The scheme provided the impetus for the technical transfer of information between the expertise of the engineers from Siemens-Schuckert who developed the project and the passing on of this expertise and knowledge from the German, American, Canadian, Dutch, Swedish, Swiss and Norwegian engineers to the trained Irish engineers who then took over the station.
- Ardnacrusha marked a breakthrough in hydro-machine construction as the J.M. Voith manufactured Kaplan turbine was the first in the world to be built for a maximum head exceeding 30m.
- This was the first national scheme for the production, transmission, distribution and sale of electricity in the world.



24. Map of Shannon Scheme. **25.** Fish Farm at Parteen. **26.** Drawing Section of Kaplan Turbine Installed in 1934. **27.** 220kV Transmission Station.

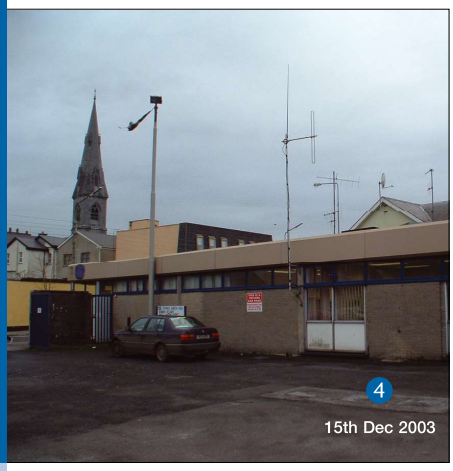
ESB SHOP & DEPOT

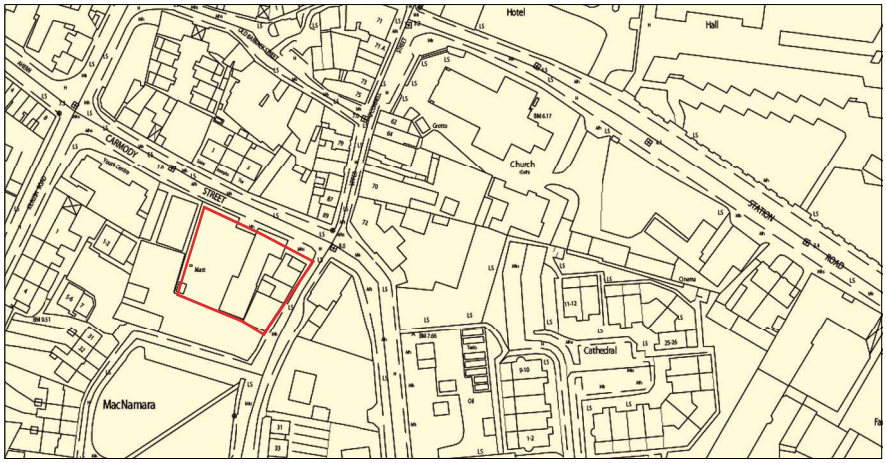
Carmody Street, Ennis

Surveyors Name: Caroline O'Riordan
Photographer: Caroline O'Riordan
Field Controller: Judith Doherty
O.S. Ref: 4322/08 ESB Ref: CE-SS-4322/08

Architectural Heritage Evaluation:		Categories of Special Interest:	
Record Only		Archaeological (AG)	
Local	✓	Architectural (A)	
District		Artistic (AR)	
Regional		Cultural (C)	
National		Historical (H)	
International		Scientific (SC)	
		Social (SO)	
		Technical (T)	

Date Of Survey: 15th December 2003





Summary

A detached, single storey, flat roofed depot near the centre of Ennis town.

There are two single storey buildings located on the site, the depot and shop building, and the tele-communications building.

The site was purchased in 1962 and the retail property constructed in 1969.

Description & Materials

The showroom faces onto Carmody Street and the rest of the building sits behind. The corner elevation on Carmody Street and Kilrush Road is clad with granite panels. There is profiled metal cladding to the fascia which is raised providing a parapet. Aluminium framed floor to ceiling glazing is applied to the shopfront.

The remainder of the building is clad with a brick outer leaf. Clerestory lighting is applied throughout except to the store. The building stretches the full depth of the site and comprises stores, offices, a showroom, canteen and toilets located off a central corridor. It has a gross floor area of 386.5m^2.

Structurally the building is built on a reinforced concrete frame with reinforced concrete ring beams.

Reinforced concrete beams are applied to the large spans over the store. The floor is constructed of a cast in-situ concrete slab. The roof comprises a ribbed slab with asphalt covering.

The communications building is single storey, detached on a rectangular plan with a flat roof and of concrete block construction supporting timber joists. It has a gross floor area of 10.8m^2.

A 2.4m high solid concrete block wall with precast concrete capping encloses the yard which is accessed via metal gates. There is also an underground diesel tank, a diesel pump, a substation, a steel telecommunications mast and an Esat cabin located on the site. The rear of a terrace of two-storey retail buildings on Kilrush Road backs onto the site.

The total area of the site is 0.15ha (0.37 acres).

1. View of Main Building from Carmody Street. **2.** Main Entrance. **3.** Interior of Showroom. **4.** Rear Elevation.

Surveyors Name: Peter Carroll
Photographer: Peter Carroll
Field Controller: Judith Doherty
O.S. Ref: 4322/08 ESB Ref: CE-N-4322/08

Architectural Heritage Evaluation:		Categories of Special Interest:	
Record Only		Archaeological (AG)	
Local	✔	Architectural (A)	
District		Artistic (AR)	
Regional		Cultural (C)	
National		Historical (H)	
International		Scientific (SC)	
		Social (SO)	
		Technical (T)	

ESB DEPOT & OFFICE

Station Road, Clonroadmore, Ennis

Date Of Survey: 18th February 2004

Summary

A single storey detached flat roofed depot building at the front of the site with storage facilities to the rear situated on the edge of Ennis town on Station Road. The present use of the entire property is as an ESB store and depot. Located on Station Road on the edge of the town the property is bounded on the east side by the West Ennis railway line. The front of the site faces south onto Station Road.

The earliest purchase date of the site was 1974 and the property was built in 1976. The property will be extended and refurbished during 2004/2005.

Description & Materials

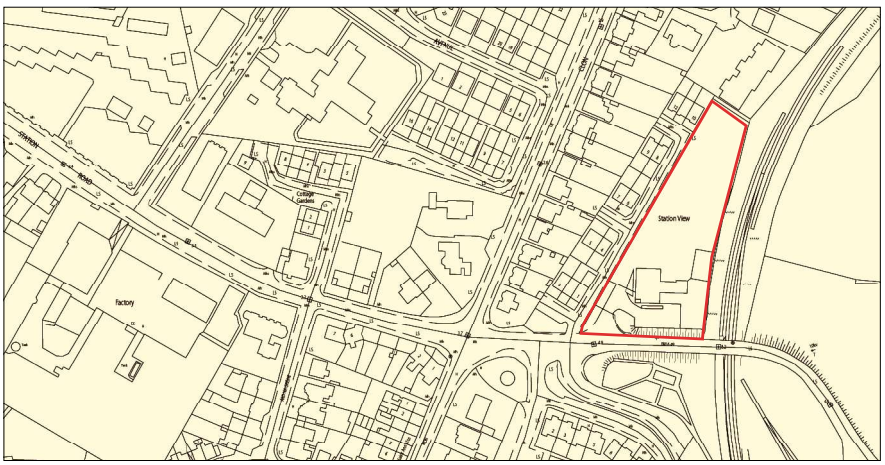
There are two single storey buildings located on the site. In addition to the depot building, the site also houses a stores building and compound, a vehicle wash area and fuel pump with apron area. An enclosed pole storage area is located to the rear of the site.

The main depot building comprises offices, printing room and toilets. The rear wing is accessed separately in the yard and comprises a drying room, toilets and a canteen. Structurally the building comprises a concrete frame to the front with cavity wall construction supporting an asphalt flat roof on timber joists. The elevational treatment comprises concrete block outer leaf with wet dash finish around floor to ceiling hardwood framed windows and precast concrete cills. The fascia has a sand and cement rendered band painted blue. The entrance bay is recessed and is clad with grey engineering brick.

Stores Building

The gross floor area of the stores building is 158m². The building comprises a single storey four-bayed structure on rectangular plan built on a reinforced concrete frame. U-beams span the width of the building supporting a flat felted roof on decking. The store building is accessed through hardwood doors and a metal roller shutter door. The blockwork is rendered externally with a wet dash render finish and above this there is a sand and cement plastered band painted blue. The site is enclosed by palisade fencing and there is a surface water culvert on the site which facilitates adjoining properties. The site is zoned for light industrial use.

The site area is 0.57ha (1.43 acres).



1. View of Main Entrance. **2.** Side Elevation. **3.** Rear Elevation of Depot. **4.** External Yard and Stores Building.

County CLARE

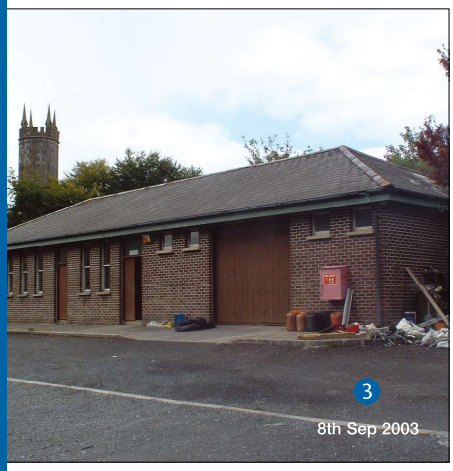
ESB DEPOT

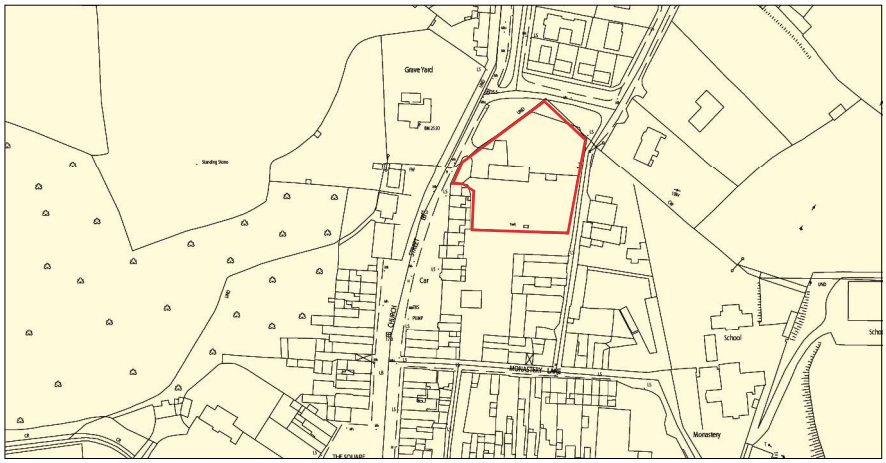
Church Street, Ennistymon

Surveyors Name: Andrew Stewart
Photographer: Andrew Stewart
Field Controller: Peter Carroll
O.S. Ref: 4084/12 ESB Ref: CE-N-4084/12

Architectural Heritage Evaluation:		Categories of Special Interest:	
Record Only	✔	Archaeological (AG)	
Local		Architectural (A)	
District		Artistic (AR)	
Regional		Cultural (C)	
National		Historical (H)	
International		Scientific (SC)	
		Social (SO)	
		Technical (T)	

Date Of Survey: 8th September 2003





Summary

A detached single storey hipped pitched roof building on a rectangular plan facing west onto Church Street in a picturesque setting in Co. Clare.

Built in a more traditional style than many of the other depot buildings, this structure is in a scenic location built opposite a 19th Century Neo-Gothic style church building. The property comprises a single building consisting of a supervisor's office, workshop and crew facilities with a depot yard and parking space. The site is adjoined by a terrace of housing, a public open space and a laneway.

The site was purchased by the ESB in 1972 and the property was built in 1974.

Description & Materials

The building comprises offices, a workshop, a store, locker rooms and toilets. The doors to the rear of the building onto the yard are of timber, and set in timber frames. The gross floor area of the building is 177m^2. The structure comprises cast in-situ concrete floor, cavity wall with brick outer leaf, supporting timber prefabricated roof trusses, sarking felt, battens and fibre cement slates.

The elevational treatment comprises redbrick stretcher course outer leaf, surrounding aluminium framed windows and precast concrete cills. The corner entrance bay consists of two panels of floor to ceiling aluminium framed glazing.

The building is set back from the road providing a landscaped area and some car parking to the front.

The rear yard is used for storage of equipment and vehicles. There is car parking to the front of the building. The rear depot yard is enclosed both by the building itself, a dashed rendered concrete block wall with precast concrete capping and is accessed through galvanised steel gates.

The rear of the site is enclosed by post and wire fencing and a low concrete wall. The boundary is not defined to the front where it merges into public open space which has since become absorbed into the Council housing scheme. There is a surface water drain on the site which facilitates adjoining properties.

The site area is 0.39ha (0.97 acres).

1. View of Main Entrance onto Church Street. **2.** Main Entrance. **3.** Vehicular Access and Side Elevation. **4.** Side Elevation.

Surveyors Name: Peter Carroll
Photographer: Peter Carroll
Field Controller: Judith Doherty
O.S. Ref: 4728/15 ESB Ref: CE-N-4728/15

Architectural Heritage Evaluation:		Categories of Special Interest:	
Record Only	✔	Archaeological (AG)	
Local		Architectural (A)	
District		Artistic (AR)	
Regional		Cultural (C)	
National		Historical (H)	
International		Scientific (SC)	
		Social (SO)	
		Technical (T)	

ESB DEPOT

Fahy's Road, Kilrush

Date Of Survey: 15th December 2003

Summary

The property is a detached, single storey hipped pitched roofed building on a rectangular plan at the front of a rectangular depot site facing north onto Fahy's Road at the edge of Kilrush town in Co. Clare. The property is located next to a school and opposite a fair green.

There are two single storey buildings located on the site and comprise the depot building and the tele-communications building. A concrete post and chain link fence which is approximately 2.4m high encloses the rear yard. A telecommunications mast, an Esat cabin and underground fuel storage tanks are also located on the site.

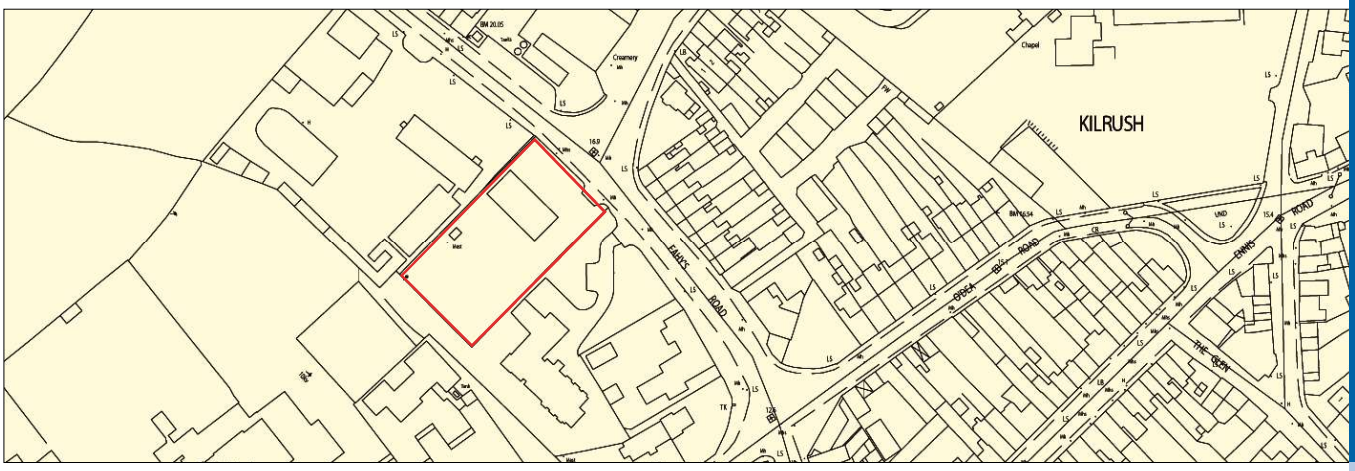
The property was designed by the architect Pluinchéad O'Ceallacháin in 1973.

Description & Materials

The gross floor area of the depot building is 275m². The building comprises a former showroom, cash office, supervisor's office, and workshop and crew facilities built on a rectangular plan. Structurally the building comprises concrete blockwork construction with a reinforced concrete ring beam supporting pitched steel trusses with profiled steel sheets on battens and purlins. Metal profiled cladding is applied to the ring beam under a galvanised steel seamless gutter. The concrete blockwork external leaf is rendered with roughcast wet dashed wall finish on a smooth plastered plinth finish. The windows are framed with bronze aluminium and two roof lights provide light to the corridor.

The gross floor area of the communications building is 8.62m². It is of simple construction and consists of concrete blockwork walls supporting a pitched roof covered with fibre cement slates. The communications building has a single sash aluminium framed window and hardwood door.

The site area is 0.27ha (0.68 acres).



1. View of Main Entrance onto Fahy's Road. **2.** Rear Elevation. **3.** Window Detail.

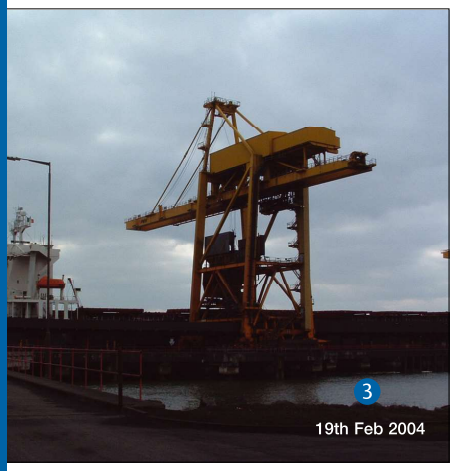
POWER STATION

Moneypoint, Kilrush

Surveyors Name: Judith Doherty
Photographer: Judith Doherty
Field Controller: Peter CArroll
O.S. Ref: Ref. 7-2 D ESB Ref: C-N-7-2D

Architectural Heritage Evaluation:		Categories of Special Interest:	
Record Only		Archaeological (AG)	
Local		Architectural (A)	
District		Artistic (AR)	
Regional		Cultural (C)	
National	✔	Historical (H)	✔
International		Scientific (SC)	
		Social (SO)	✔
		Technical (T)	✔

Date Of Survey: 19th February 2004



Summary

Moneypoint is Ireland's only coal fired Power Station. It has a current generating capacity of 915MW. It is designed to burn a wide range of internationally traded coals.

The station is located on the River Shannon Estuary, near Kilrush in Co. Clare. Shannon Ferry Limited currently operates two purpose-built ferries on its service across the Shannon Estuary from Tarbert, Co. Kerry to Killimer, Co. Clare.

The project for the construction of the power station commenced in 1979 with the commissioning taking place for the three units of 305MW each in 1985, 1986 and 1987 respectively.

Description

Site

The original site area was 146ha and this was increased with a reclaimed area of 24ha resulting in a total site area of 170ha.

Background

Part of the rationale for the construction of Moneypoint was that ESB decided to increase its fuel source diversity and so undertook the construction of this major coal-fired Power Station. In the building of the station it was also necessary to build an associated coal port capable of handling bulk carriers of up to 250,000 dwt approx. The station has a current capacity of 915MW; however, provision was made for a further unit of 305MW which was not built.

The location was selected because of its natural features with the site having a natural rock foundations and a deep water facility which could be developed to take vessels up to 250,000 tonnes.

ESB in-house engineers and project managers carried out the planning, environmental impact assessment, conceptual design, system design, detailed design of civil works from initial site investigation to construction drawings, detailed design of mechanical balance of plant systems and control and instrumentation, detailed design and installation of all electrical systems, selection of plant parameters, plant specification, tender evaluation, quality control, supervision of construction commissioning, plant operation and maintenance.

1. Aerial View of Power Station. **2.** Administration Building. **3.** Crane Off-loading Coal. **4.** Interior of Crane Room.

POWER STATION

Moneypoint, Kilrush

Date Of Survey: 19th February 2004

Prior to the specification writing for the major items of plant, an in-depth evaluation of the latest technology available was carried out on boiler, turbine, coal handling land ash handling equipment. ESB engineers carried out extensive hydraulic studies to test the effects of the discharge of large quantities of cooling water into the Shannon Estuary and a special jetty was built to accommodate the bulk carriers. The Jetty is 380m long and carried on 425 steel piles of average length of 50m driven through the river bed into the rock.

Coal Port and Coal Yard

The coal is imported by large bulk carriers (30,000 to 250,000 dwt) and discharged by coal handling plant on the deep water jettys. The coal storage and handling facilities consist of coal stacking/reclamation equipment and conveyor belts which convey the coal to the boiler bunkers. There are four bunkers per boiler with a capacity of 400 tonnes each. From the bunkers the coal is extracted by twin belt feeders and delivered to the pulverising mills where it is ground to a fine powder in order to ensure complete combustion in the furnace.

Pulverised Fuel Ash (PFA)

A by-product of coal firing is pulverised fuel ash. Coarse ash is collected under the furnace in the ash hopper and fine ash is collected under the precipitator in the hoppers. From these the ash is transferred to the disposal area which has a capacity of 3,000,000m^2 although a portion of the ash is available for industrial purposes such as the cement industry.

Administration Building

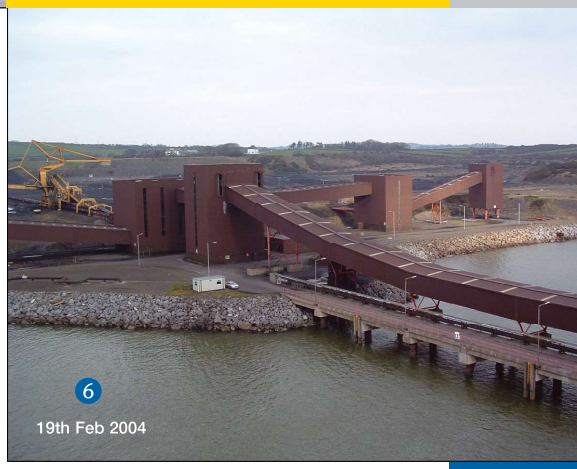
The workshops and canteen contained within the control building form part of the generating station complex. The administration building is a four storey reinforced concrete and brick building, is 2100m^2 and constructed with ribbed floor with roof slabs with a 2m deep downstand beam around the perimeter.

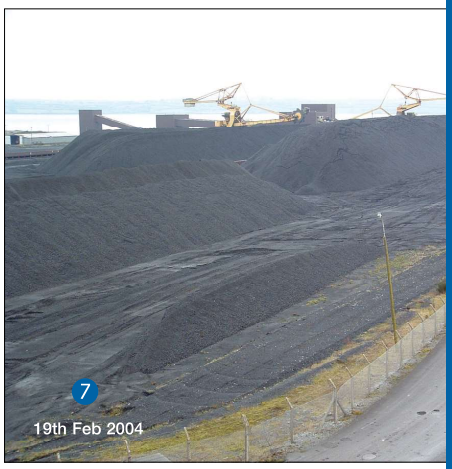
Canteen

The canteen is a single storey structure of some 810m^2 with a flat in-situ concrete reinforced concrete slab roof over the kitchen area and a steel framed copper clad pyramidal roof over the canteen.

Workshop

The workshop has a power floated slab incorporating numerous complex bases.





5. External View of Generating Hall. **6.** View of Conveyor Belt. **7.** Coal Storage. **8.** Krupp-Ardelt Crane Head.

POWER STATION

Moneypoint, Kilrush (continued)

Date Of Survey: 19th February 2004

Turbine Hall

The pulverised coal ignites and burns in the boiler which is lined with water wall tubes. The water is converted to steam in the tubes and the steam from these pass into the steam drum and onto the super heaters where it is connected to the turbine at 16.47MN/m^2 and 540°C.

Moneypoint 915MW coal-fired power station consists of three 305MW units based on natural circulation boilers and reheat steam turbines. The plant is direct-cooled using estuarine water.

It consists of dual-purpose boilers and can produce steam from coal or oil where required.

Equipment was procured on the international market and the station has U.S. manufactured boilers, Swiss-manufactured turbines, and auxiliary equipment from many countries, selected on the basis of lifetime cost-effectiveness. The steam turbo-alternators were built in Switzerland There are three turbines of a manufacturer and type: Brown Boveri, four-cylinder, single shaft impulse-reaction.

Chimneys

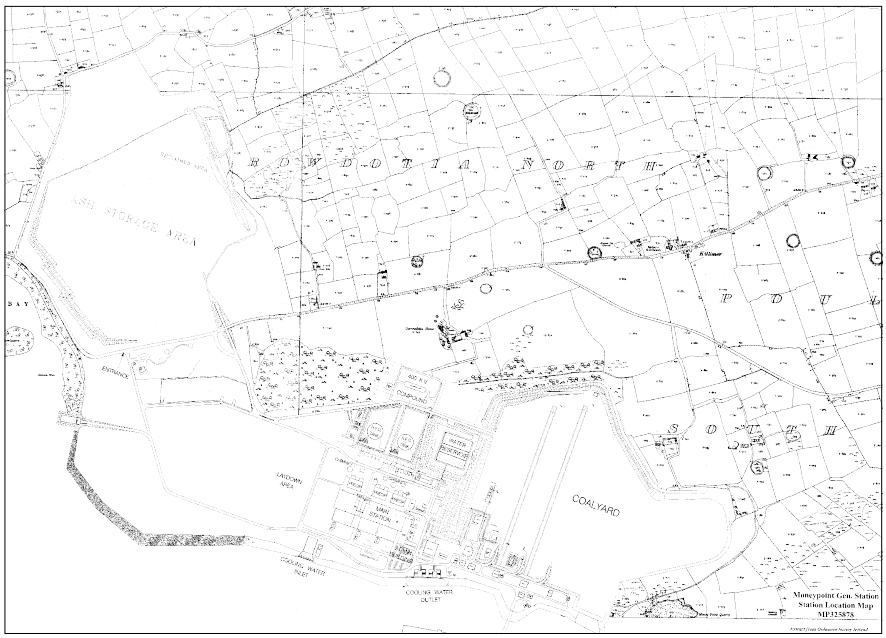
The flue gas which leaves the furnace is discharged into the main flue and the chimneys. Each chimney is 225m in height.

Transmission

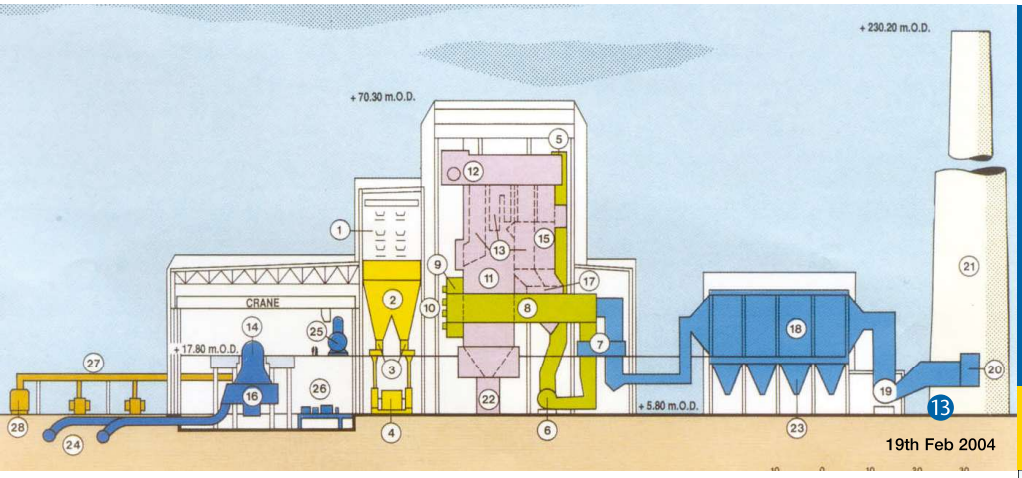
The electricity produced by the turbine/ generator is fed through phase segregated busbars to the generator transformer where the voltage is stepped up to 400kV for feeding into the National Grid.

Oil Storage Tank

The power station has two oil storage tanks with a capacity of 50,000 tonnes. This oil is capable of providing the same capacity of 915MW in the event of coal being unavailable.



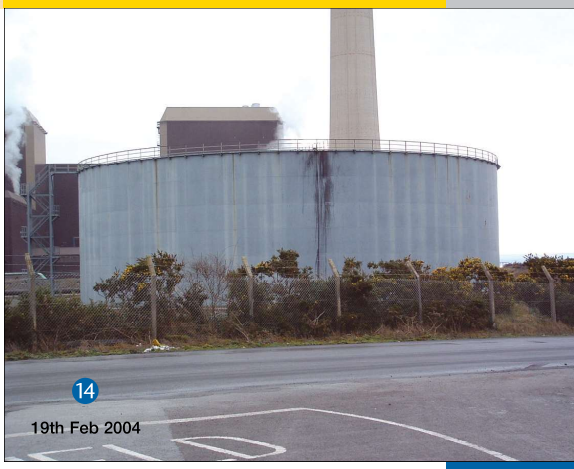
9. Interior of Control Room. **10.** Interior of Turbine Hall. **11.** Interior of Turbine Hall. **12.** Coal Unloader Crane.



POWER STATION

Moneypoint, Kilrush (continued)

Date Of Survey: 19th February 2004



Refurbishment Works
Between 1991 and 1995 ESBI were responsible for the design, specification, procurement, engineering and contract management of the replacement of the existing firing equipment with low NOx burners and the replacement of the existing boiler protection and burner management systems with new microprocessor based systems which were integrated with the plant distributed control systems.

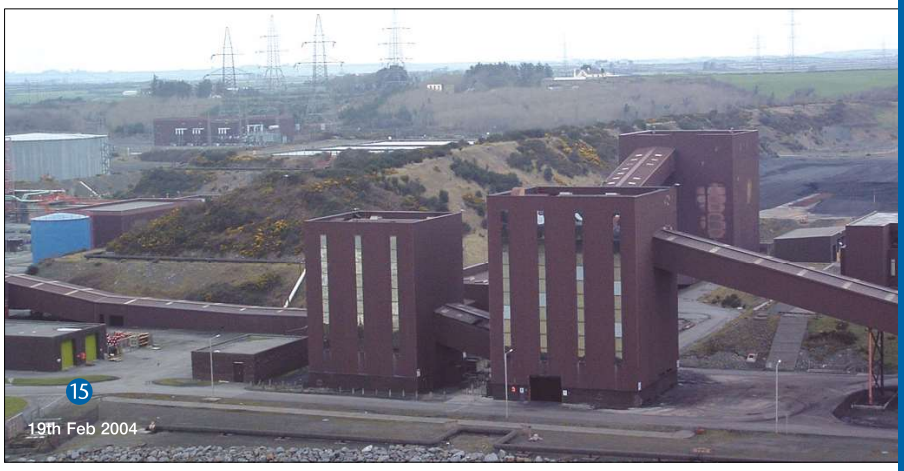
Environmental
ESB's policy on conservation and the environment resulted in the plantation of thousands of trees and shrubs around Moneypoint. This in turn provided excellent shelter for birds and animals, and increased the range of wildlife that flourishes in the locality.

Awards
Moneypoint was the first ESB generation station to achieve the voluntary international environmental management system standard ISO 14001.

Special Interest – Technical
The latest technology used in Moneypoint has been used as a reference point for the operation of large coal fired stations by a number of international utilities.

Special interest - Historical
The site is located on the site of an old school called Killimer National School from 1895.

Special Interest – Social
During construction the station employed up to 1600 people on the site with materials purchased from the local area.



13 Schematic Diagram of Generating Process. **14** Oil Storage on Site. **15** Arial View of Generating Building from Crane.
16 Plaque to Commemorate Site of Former Killimer School. **17** Substation.

VISITOR CENTRE

Moneypoint, Kilrush

Surveyors Name: Judith Doherty
Photographer: Judith Doherty
Field Controller: Peter Carroll
O.S. Ref: CE067/07+08+11+12 ESB Ref: CE-PG-067/07+08+11+12

Architectural Heritage Evaluation:		Categories of Special Interest:	
Record Only		Archaeological (AG)	
Local	✔	Architectural (A)	✔
District		Artistic (AR)	
Regional		Cultural (C)	
National		Historical (H)	
International		Scientific (SC)	
		Social (SO)	
		Technical (T)	

Date Of Survey: 19th February 2004

Summary

Moneypoint Visitor Centre is a single storey open-plan builing used to contain working models of Moneypoint and other ESB power stations to provide the visitors and educational tours with an overview of the Power Station.

It is located at the main entrance gate site entrance of the power station near Kilrush, Co. Clare with landscaping and car parking facilities.

The Visitor Centre designed by ESB International commenced in 1984 and was completed in June 1985.

Description & Materials

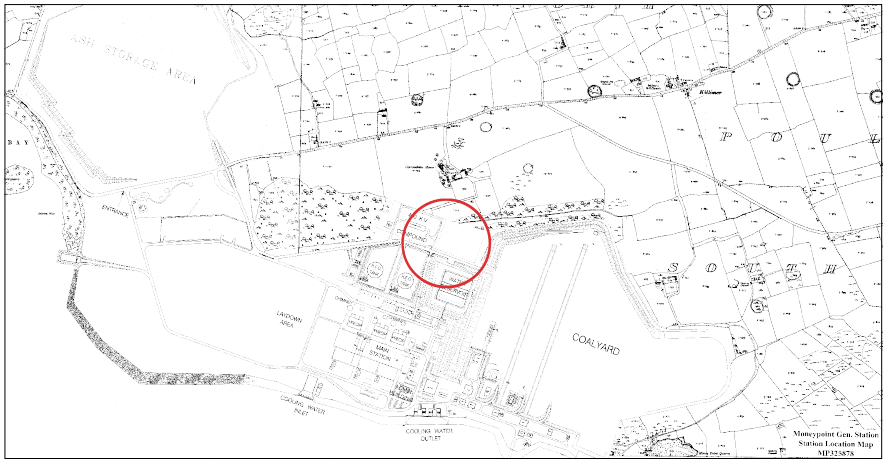
The property is a single storey masonry building designed to provide large areas of uninterrupted wall space for display purposes. There are a number of projected windows to each elevation and the glazed roof has been designed to follow the shape of the roof to the main power station.

The roof design mirrors the profile of the power station roof and consists of a space deck exposed internally with natural lighting surrounding the interior.

Within the visitor centre there is a working model depicting electricity being generated, a large model showing a complete overview of the station layout and a scaled model of the internal generating plant on display.

Special Interest - Architectural

The use of a steel space frame roof structure in 1985 to provide a column-free space, and to provide maximum wall space and natural light internally.



1. Aeriel View of Visitor Centre. **2.** View of Roof to Visitor Centre. **3.** Interior of Open Display Area. **4.** One of wall mounted maps in Visitors Centre.

Surveyors Name: Andrew Stewart
Photographer: Andrew Stewart
Field Controller: Judith Doherty
O.S. Ref: 4618/6 ESB Ref: CE-SS-4618/6

Architectural Heritage Evaluation:	
Record Only	
Local	✔
District	
Regional	
National	
International	

Categories of Special Interest:
Archaeological (AG)
Architectural (A)
Artistic (AR)
Cultural (C)
Historical (H)
Scientific (SC)
Social (SO)
Technical (T)

DEPOT & RETAIL SHOP

Shannon Town Centre

Date Of Survey: 10th September 2003

Summary

The property is a detached, single storey, office and storage building on a corner site with a rectangular shaped plan and a recessed entrance space. The rear yard contains an ESB substation, telecommunications building and a vehicle wash-down area. The store is accessed from this yard.

The building lies at the front of the site with a rear service yard accessed from the side and is surrounded by other commercial buildings in this relatively new town centre.

The date of construction of structures on the property is 1982. The architects were Bowman & Quaid.

Description & Materials

The building is rectangular in plan with the showroom and store located at either end of a central corridor. The staff areas and offices lie on either side of this corridor. The showroom area is located to the front corner of the building with ancillary staff and storage accommodation to the rear. The service access yard is located to the rear of the site.

The building consists of concrete block construction supporting a pitched roof with fibre cement slates and ridge tile covering. The fibre cement slates are applied to both the fascia and wall cladding. The remainder of the cladding consists of a nap sand cement plaster finish and painted white.

The front elevation of the showroom and lobby is composed of floor to ceiling glazing. The windows and doors are framed in bronze coloured aluminium. The yard at the rear is enclosed by a 2.1m high concrete block wall with precast concrete coping, and the area to the front of the building is both paved and landscaped.

Total area of the site is 0.18ha (0.46 acres) and the area of the main building is 324m².

1. View of Main Entrance. **2.** Rear Elevation. **3.** Landscaping to Side Elevation. **4.** Interior of Office Area.

County CLARE