

County WICKLOW



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COUNTY WICKLOW

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ESB DEPOT

Castle Park, Arklow



Date Of Survey: 20th August 2003

Surveyors Name: Peter Carroll
Photographer: Peter Carroll
Field Controller: Judith Doherty
O.S. Ref: 4428/11 ESB Ref: WW-N-4428/11

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)	



20th Aug 2003



20th Aug 2003



20th Aug 2003



20th Aug 2003

Summary

The property consists of a detached single storey flat roof building and service yard facing east onto Castle Park in Arklow town. It is situated near the junction with Hall's Lane, and the building is located at the front of the site. There is a customer car parking area at the main entrance.

The present use of the entire property is as an ESB depot and the date of original construction was 1978.

Description & Materials

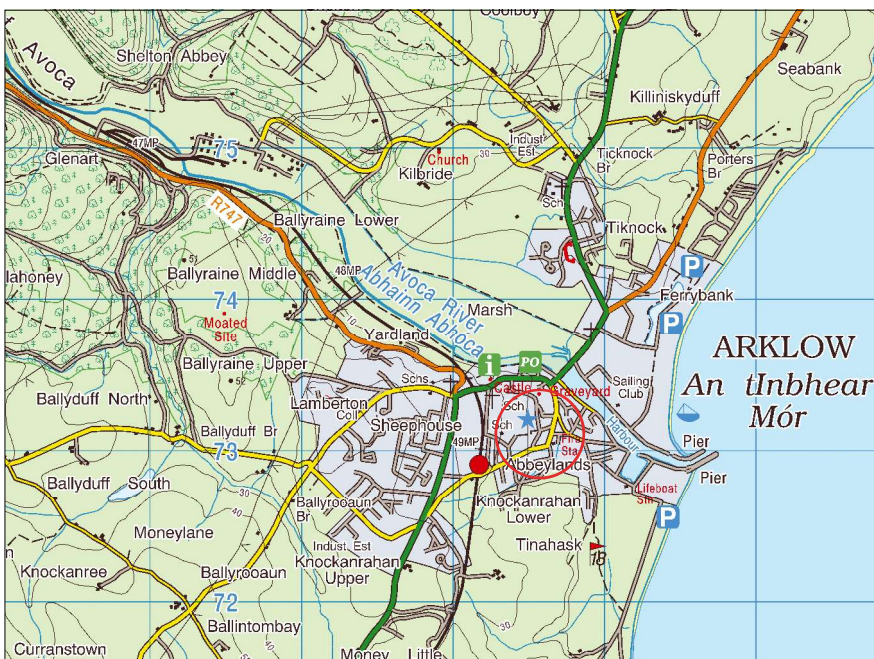
The building comprises shop, offices, canteen, stores and toilets in a single storey building which has a later addition to the front of the showroom. The external treatment comprises beige coloured brickwork surrounding floor to ceiling glazing to shop front consisting of power coated aluminium framed double glazed windows. There is a

pedimented parapet feature over the main entrance to the shop, with a smooth render band at high level. There is attractive brickwork detailing around the main entrance.

Structurally the building is composed of cavity wall construction, inner leaf blockwork, outer leaf brickwork supporting a timber trussed roof with blue/black fibre cement slates. The floor comprises a power floated concrete floor slab. The front of the shop and the new store are later additions.

The site is enclosed by a brickwork boundary wall with supporting brickwork piers and palisade fencing to the rear boundary. There is an enclosed compound area to the rear enclosed by concrete post and chain link fencing.

There are sporting rights over the property. The total site area is 0.26ha (0.635 acres).



1. Front Elevation onto Castle Park. 2. Frontage of Depot and Main Access. 3. Rear Elevation. 4. Internal Elevation.



Surveyors Name: Donal Walsh
 Photographer: Donal Walsh
 Field Controller: Judith Doherty
 O.S. Ref: 3568/13 ESB Ref: WW-N-3568/13

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)	

ESB DEPOT

Boghall Road, Bray

Date Of Survey: 19th April 2004



Summary

The property consists of two flat roof buildings and a depot yard, one an administration building and the other a workshop/stores building located at the rear of the site. The site is located in an industrial estate on the Boghall Road in Bray, Co. Wicklow. The buildings were constructed in 1974.

Description & Materials

Administration Building

A flat roofed detached single storey building comprising offices, a kitchen and toilets located off a central corridor. The administration building has a gross floor area of 246m². Structurally the building comprises of concrete blockwork construction supporting a flat cast in-situ concrete roof. The external treatment comprises nap plaster rendered concrete block work surrounding aluminium framed vertically sliding windows.

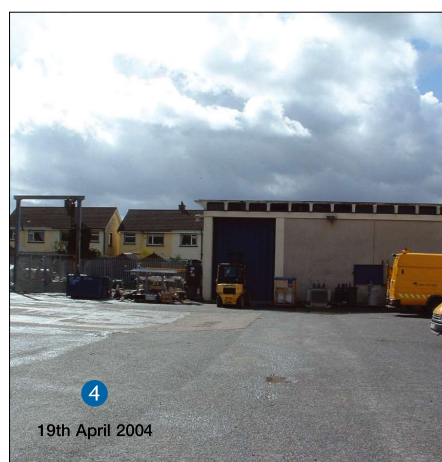
Workshop/Store

This building is a six-bay flat roofed store building located to the rear of the site and adjoins the workshops. The building accommodation consists of a large storage area with office on a rectangular plan. Walls consist of concrete

blockwork and concrete blockwork piers supporting the double T-roof beams. The store is accessed through large folding metal doors. Smooth plaster bands are located to the top and bottom band of the elevation and surrounding door openings. Adjoining the store building is the single storey flat roofed workshop building which comprises stores, workshops and toilets. This building is located perpendicularly to the store building. The gross floor area of the workshop/store is 486m².

In addition to the buildings there is a pole training area along with storage compounds and parking enclosed within the boundary of the site. Also located on the site are petrol tanks, pumps and two portable storage cabins. Staff parking is provided to the front surrounded by landscaped areas.

The total site area is 0.49ha (1.22 acres).



1. Main Entrance into Depot from Boghall Road. 2. Front Elevation. 3. Rear Elevation. 4. Depot Yard.

ESB SHOP

110 Main Street, Bray



Date Of Survey: 8th January 2004

Surveyors Name: Caroline O'Riordan
Photographer: Caroline O'Riordan
Field Controller: Judith Doherty
O.S. Ref: 3617/03 ESB Ref: WW-SS-3617/03

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)



8th Jan 2004

Summary

The property is a two-storey end of terrace flat roofed building on a narrow plan located in the centre of Bray on the corner of Main Street and Herbert Road. The property adjoins a two and three-storey retail terrace. The present use of the entire property is as a shop and the property was constructed in 1974.

Description & Materials

The building is modern in appearance and comprises a shop, offices, a store, a canteen and toilets with a rear yard. The gross floor area is 222m². There are public stairs located beside the cash office and the external stairs to first floor are located in the yard.

Structurally the building is constructed of solid concrete blockwork supporting concrete and timber floors and roof with a felted finish.

The exterior finishes comprise painted smooth render walls and a black painted concrete plinth. The shopfront incorporates floor to ceiling black coloured aluminium framed glazing at ground floor level with large white coloured PVC windows to first floor level.

A yard to the rear is enclosed by a 3m high masonry wall.

The building has a total area of 0.015ha (0.04 acres).



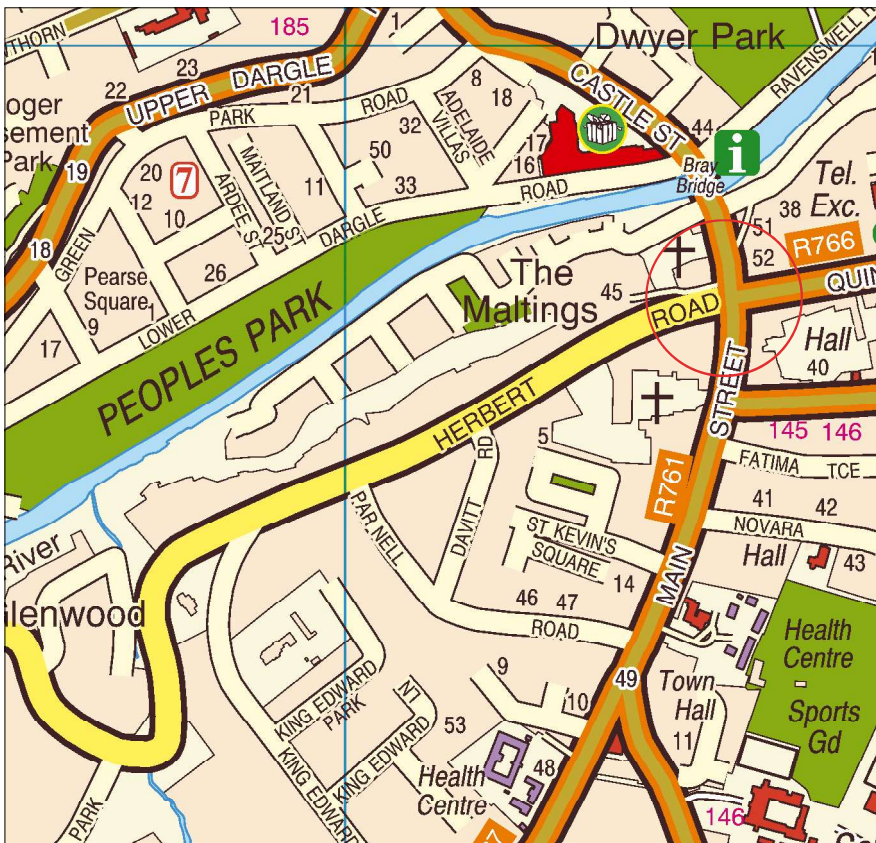
8th Jan 2004



8th Jan 2004



8th Jan 2004



1. Front Corner Elevation to Main Street. 2. Shopfront to Herbert Road. 3. Side Elevation to Herbert Road. 4. Interior of Showroom.



Turlough Hill Pumped Storage Hydro Electric Power Station, Co. Wicklow - View of Intake Tower at Upper Reservoir.

PUMPED STORAGE HYDRO ELECTRIC POWER STATION

Turlough Hill, Wicklow Gap



Date Of Survey: 11th February 2004

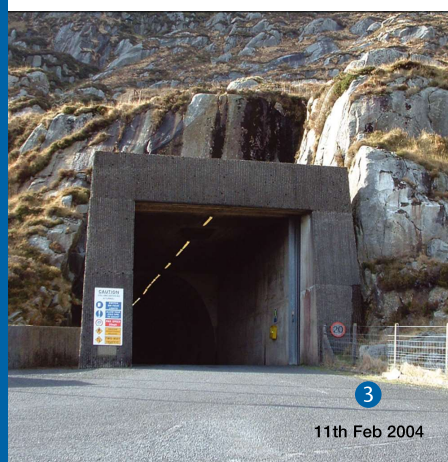
Surveyors Name: Eugene Boyle
Photographer: Eugene Boyle
Field Controller: Judith Doherty
O.S. Ref: 3018 & 3020 ESB Ref: WW-PG-3018 & 3020

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

Turlough Hill is a 'pumped storage' hydro electric power station, the only one of its kind in Ireland. It consists of a massive underground chamber housing the power station, a lower reservoir, the construction of an artificial lake on a mountain top and the building of tunnels through the mountain. The major elements are a pressure shaft, tailrace tunnel, access tunnel and underground powerhouse equipped with four 73MW reversible pump turbines providing a total of 292MW and 220kV switch yard.

The property is located on the Wicklow Gap four miles from Glendalough and approximately thirty seven miles south of Dublin.

Formal approval in principal for the scheme was sought from the government in the spring of 1967. Approval was forthcoming, with a requirement that the environmental impact of the development be reduced to a minimum. Preliminary work on the site was carried out in late 1968 and early 1969. The main contracts for the civil engineering and generation were awarded in June 1969, and work began the following

autumn. In December 1973, the first of the station's four generating units went into operation and the station has been fully operational since the summer of 1974.

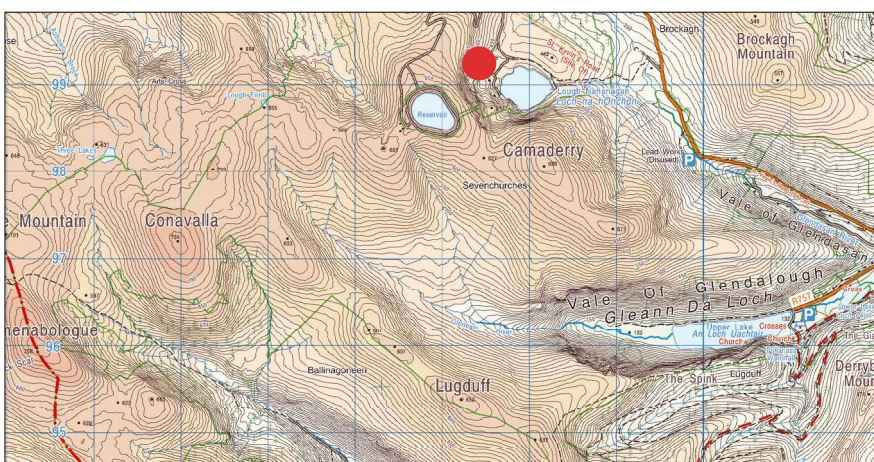
Description & Materials

The primary elements of the complex comprise entrance area and associated ancillary buildings, the lower reservoir which is a natural lake, the upper reservoir which is man-made, and the underground cavern which houses the power station deep inside Turlough Hill.

The entrance area comprises the administration building, ancillary services buildings, 220kV compound and the entrance to the access tunnel serving the main cavern.

Administration Building

The administration building is two storeys in scale and executed in a modernist style. The first floor accommodation is cantilevered over the ground plane locally and clad in a combination of exposed aggregate finished concrete and zinc sheet metal. The cantilevered and inclined geometry of the ends of the building along with the recessed glazed entrance lobby reduce its massing and allow the surrounding



1. End View of Administration Building. 2. View of Administration Building in Landscape. 3. Entrance to Cavern Tunnel. 4. Upper Reservoir.

PUMPED STORAGE HYDRO ELECTRIC POWER STATION

Turlough Hill, Wicklow Gap

Date Of Survey: 11th February 2004



11th Feb 2004

landscape to dominate the setting. The exposed aggregate concrete finish is repeated on ancillary buildings, entrance gate piers and walls, both unifying the scheme visually and anchoring it in the landscape. The exposed aggregate concrete is skilfully articulated by the use of ropes in the shuttering process which lends a subtle texturing to the material further de-materialising the visual impact of the man-made intervention, echoing the predominant palette of the rock and heather of the surrounding landscape.

Lower Reservoir

Adjacent to the entrance building is the lower reservoir comprising Lough Nahagan, a natural lake which is harnessed to drive the huge machines which act as both pumps and turbines in the pumped-storage project. The tail-race structure on the lake side announces the end of the 7.2m diameter concrete lined tailrace tunnel leading from the cavern deep inside the hill.

Power Station

At the end of the access tunnel deep inside the hill, lies the cavern. This houses the Power Station which is 82m long, 23m wide, 30m in height and located 15m below low water level of the lower reservoir.

The generating hall houses the pony motor/generators and is dramatically overlooked by the control room at high level which is expressed as a projecting window in the end wall of the space. Ancillary spaces house the main unit transformer, 10kV switchgear, control panels and relays. The top of the excavated cavern is visible from the roof above the generating hall.

Approximately half the volume of the overall cavern is located below the generating hall and is occupied by a series

of floors housing the motor/generators, pump turbines and turbine inlet valves and associated ancillary equipment.

Pump Turbines

The reversible pump turbines are fed through a single pressure shaft and single tailrace tunnel both excavated in granite. The machines can also operate as synchronous condensers in either direction. The machine governors are electro-hydraulic with load control and joint control of all machines.

Upper Reservoir

The artificial upper reservoir has a capacity of 2.3 million m³ of water and a maximum operating depth of 19.4m. It is formed partly by excavation and partly by the use of the excavated material in the construction of a ring-shaped rock filled embankment.

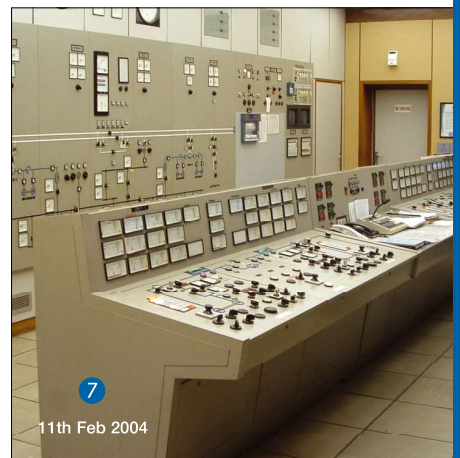
Its construction involved the removal of almost 1 million m³ of peat from the mountain top, the excavation of approximately 2.5 million tonnes of rock, the construction of an embankment nearly a mile in length and up to 30m in height, and the laying of 40 acres (16.2ha) of waterproof lining. An asphalt concrete lining covers the floor, inner slopes and crest. A ring-shaped under-floor drainage gallery is provided at the front of the inner slope of the embankment to collect and monitor any seepage through the asphalt concrete lining.

Intake Tower

The intake tower of the upper reservoir is connected to the reversible pump turbines in the cavern via a 4.8m diameter steel lined single pressure shaft.



11th Feb 2004



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11th Feb 2004

5. Lower Reservoir. 6. Façade to Administration Building. 7. Control Room. 8. Generating Hall.

PUMPED STORAGE HYDRO ELECTRIC POWER STATION

Turlough Hill, Wicklow Gap
(Continued)



Date Of Survey: 11th February 2004



11th Feb 2004

Special Interest - Architectural/Technical

The building of Turlough Hill can be seen as a major innovation in civil engineering in Ireland. It can be regarded as the most impressive piece of civil engineering undertaken by ESB since the construction of Ardnacrusha.

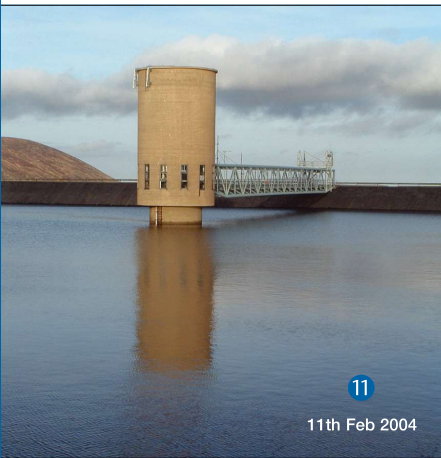
Special Interest - Archeological/Historical

As long ago as 1800, large scale mining began in this area for copper, lead and zinc. These workings began on the Lough Nahanagan side of Camaderry Mountain and were called the Luganure Mines. The water of Lough Nahanagan was used to drive water wheels which in turn operated pumps to drain excess water from the mines. Today, long after the mines have ceased operation, the water of the same Lough Nahanagan is being harnessed to drive the huge machines which act as both pumps and turbines in this ESB pumped storage project.

The power station is located at Wicklow Gap four miles from Glendalough, where the hermit Saint Kevin founded a monastic site of learning and pilgrimage in the 6th Century. The new road built to carry machinery and equipment to the top of the mountain, is one of the highest usable roads in Ireland and provides one of the finest panoramic views of the Wicklow Mountains. Crossing this modern roadway is the path taken by one of Wicklows oldest roads, the pilgrimage route to Glendalough known as St. Kevin's Road. The road originally connected Valleymount and Glendalough, a distance of 11 miles, and was probably built between the 8th and 12th Centuries, the peak period for the monastery at Glendalough. A section of the road was excavated by archaeologists from the National Museum at the request of ESB. The excavated section is on permanent view to the public.



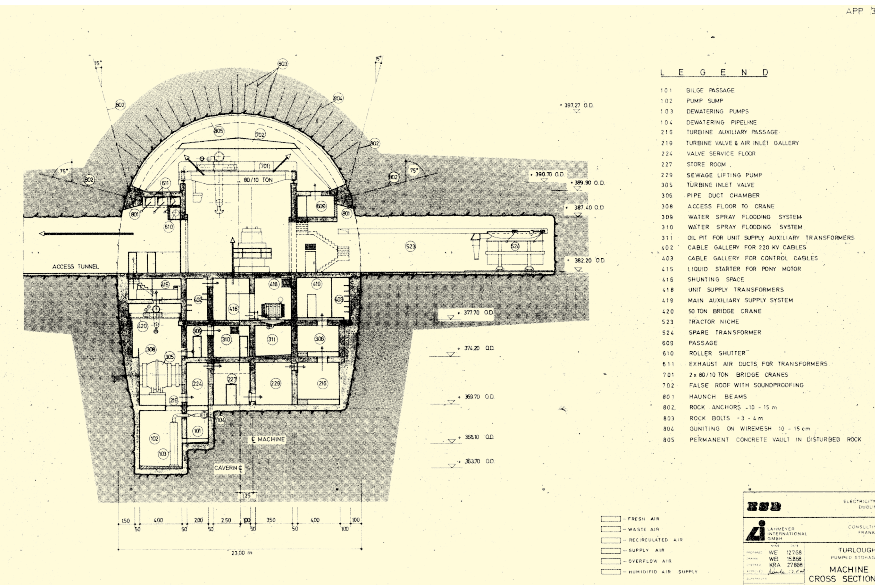
11th Feb 2004



11th Feb 2004



11th Feb 2004



9. Top of Excavated Cavern. 10. Generator. 11. Intake Tower. 12. Access into Site and Transformer Compound.

PUMPED STORAGE HYDRO ELECTRIC POWER STATION

Turlough Hill, Wicklow Gap
(Continued)

Date Of Survey: 11th February 2004



11th Feb 2004

Special Interest - Scientific/Environmental

ESB demonstrated concern for the environment in the selection of materials used in the construction, from the re-seeding of the works at the top of the hill, as well as carefully planning the visual elements of the scheme and segregating them from those that are hidden or integrated with the natural landscape. Special care was also taken with the erection of the power lines so they would not become a prominent feature impeding the panoramic views from the mountain.

Pumped Storage^A

A pumped storage scheme like Turlough Hill enables ESB to make the most economic and flexible use of its system. Electricity cannot be stored in large quantities and it is required by the end user the moment the switch is pressed. ESB must generate electricity to meet the varying demands of any one day and must have sufficient generating capacity to meet the highest point of demand in any 24-hour period.

As this daily peak period lasts for a relatively short time, it means that without a pumped storage station such as the one in Turlough Hill, expensive generating plant would otherwise be out of operation for many hours. Another consideration is the time required to "warm up" conventional oil or coal generating plant. This can take several hours. Pumped storage helps solve these problems and makes the total system both more economic and more flexible. Greater economy of operation is achieved because generating capacity from other stations can be used at periods of low demand to pump water from the lower lake to the upper reservoir where it is ready for use when demand increases. The most

modern and efficient stations on the system can be used for this purpose. Greater flexibility is achieved because the generators in a pumped storage scheme can be synchronised on to the system within seconds, providing power quickly to meet peak or sudden demand for electricity.

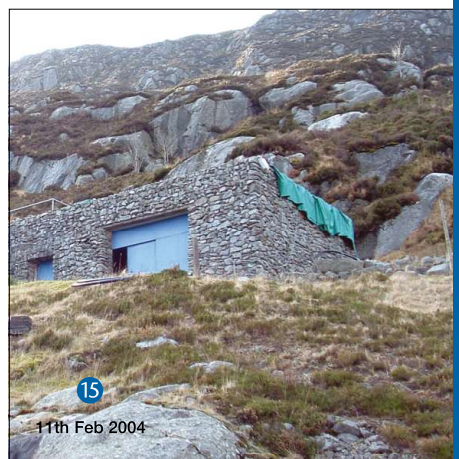
It should be stressed that a pumped storage station is not a net energy contributor to a power system. Its basic function is not to generate electricity but to translate electricity generated at one point at time into power supplied at a subsequent point in time. It is expensive, not only because the plant involved is massive, but also because of the inherent inefficiency of such a mechanism. This inefficiency occurs in all energy conversion processes

Even in the most efficient thermal stations currently operational, only approximately 40% of the calorific energy contained in the fuel is delivered as power to the grid. In the case of a pumped storage unit, oil or coal is converted into electricity at a thermal station. The electricity is used to pump water uphill to a storage station. The water is released to drive turbines which provide an output of power as required, but in the process a further energy loss occurs.

^A ESB Archive and Heritage Source.



11th Feb 2004



11th Feb 2004

13. Upper Reservoir. 14. Control Panel. 15. View of Water Treatment Plant.

ESB DEPOT

Bachelor's Walk, Wicklow



Date Of Survey: 22nd August 2003

Surveyors Name: Peter Carroll
Photographer: Peter Carroll
Field Controller: Judith Doherty
O.S. Ref: 4020/15+ 4020/20
ESB Ref: WW-N-4020/15+ 4020/20

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

The site consists of a small two-storey depot building and yard occupying a corner facing onto the Leirrim River. There is a two-storey store building and an adjoining lean-to single storey staff facility unit at the back of the site. The property is located near the Parnell footbridge on Bachelor's Walk and the buildings were constructed in 1959.

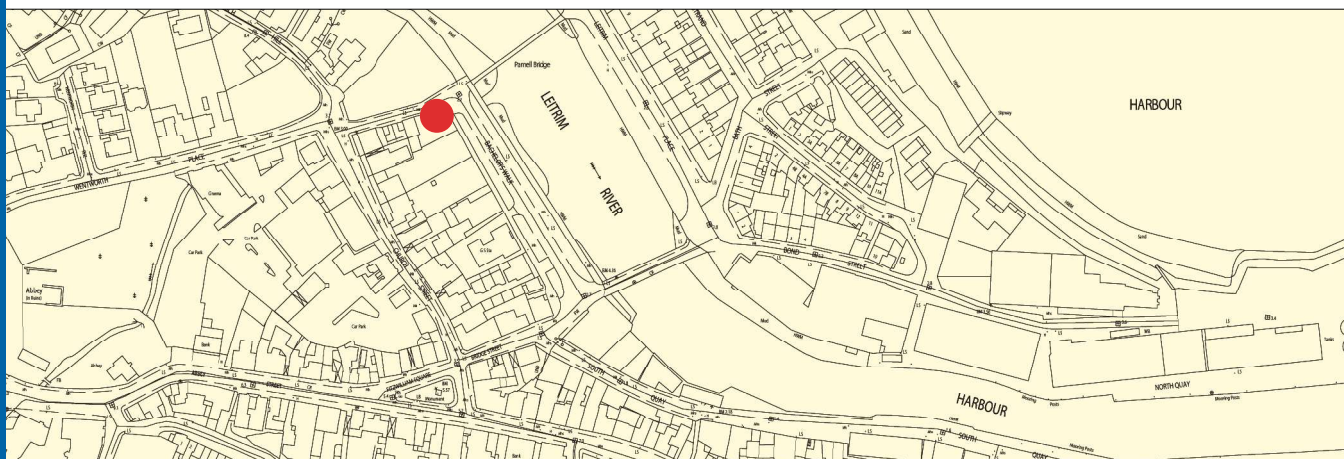
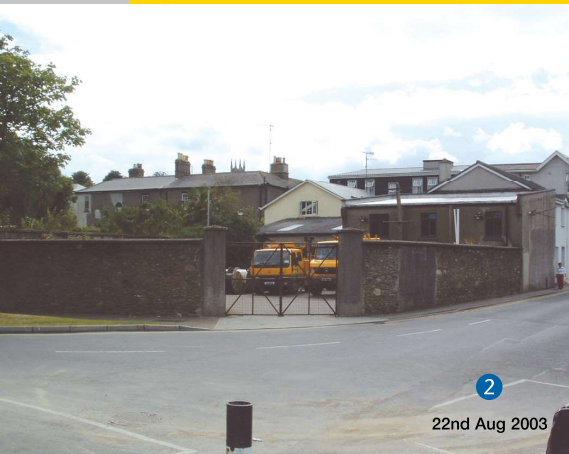
rubble wall with partial plaster finish and precast concrete capping.

The total area of the site is 0.04ha (0.1 acres)

Description & Materials

The buildings are of simple masonry construction with nap plaster render finish to the blockwork walls. The lean-to roof is covered with corrugated metal sheeting incorporating perspex roof lights over toilets and locker room. The windows are framed in hardwood and have metal security panels. The buildings are located against the rear boundary and comprise toilets and locker room in a lean-to structure next to a two-storey flat roofed store building having a gross floor area of 157m².

The present use of the entire property is as an ESB depot. This corner site is accessed by steel framed double entrance gates with wire mesh cladding. The site is enclosed by a stone random



1. View of Depot from River Bank. 2. Main Access into Building. 3. Depot Yard.



Surveyors Name: Peter Carroll
 Photographer: Peter Carroll
 Field Controller: Judith Doherty
 O.S. Ref: 4020/20 ESB Ref: WW-SS-4020/20

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)	

ESB RETAIL SHOP, OFFICE & DEPOT

"The Arches",
Main Street, Wicklow

Date Of Survey: 18th August 2003



Summary

The property consists of a terraced three-bay four-storey vernacular Irish style commercial building with rear yard and is located in the centre of Wicklow town. The property was acquired by ESB in 1993.

Description & Materials

The building comprises of one four-storey building consisting of a showroom on the ground floor, storage rooms to the basement and office space to the first and second floors. Structurally the building comprises solid masonry wall supporting solid cast in-situ concrete floor slabs and timber roof construction with blue/black slates.

The front elevation is three storeys in scale, composed of three bays and adjoins two-storey commercial and residential premises on either side. It consists of a traditional style shop-front with selected hardwood timber frame applied to the ground floor and with automatic doors accessing the showroom.

The remaining windows are double glazed and framed in aluminium. The showroom occupies the entire ground floor of the original structure and has exposed brickwork and a suspended ceiling. A circular opening in the brickwork reveals a stained glass panel specially designed for ESB.

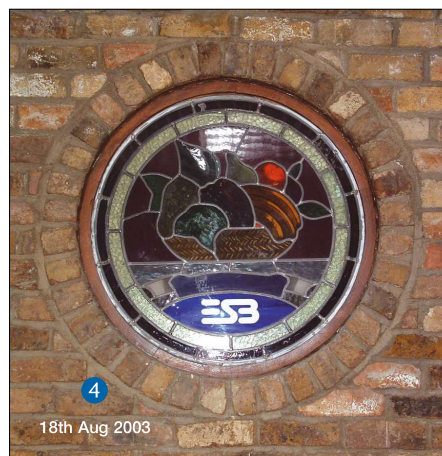
The site stretches between Main Street and South Quay and occupies part of a formerly separate plot.

The present use of the entire property is as an ESB retail shop and depot. The upper floors are used as offices. Part of the property is let to a third party, *The People Newspaper*.

The total area of the site is 0.04ha (0.113 acres)

Special interest - Historical

The property is located near a freestanding monument in the centre of the town erected in memory of the late Captain R.C. Halpin for his achievements in telegraphy.



1. View of Main Street Façade. 2. Rear Elevation. 3. Interior of Showroom. 4. Internal Window Detail.