WWII Defences on the Shores of the Mawddach Estuary

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Pillbox on the beach at Fairbourne SH 6141 1253 (NPRN 270356).

‘As England, in spite of the hopelessness of her military position, has so far shown herself unwilling to come to any compromise, I have decided to begin to prepare for, and if necessary to carry out, an invasion of England. This operation is dictated by the necessity of eliminating Great Britain as a base from which the war against Germany can be fought, and if necessary the island will be occupied.’

Directive No. 16, Adolf Hitler, 16th July 1940
Background

When war was declared in September 1939, the notion that Britain would be invaded was almost entirely dismissed. In October, a military exercise ‘The Julius Caesar Plan’ relied in repelling enemy invaders with ‘horsed cavalry’. Military tacticians were complacent in their attitude with home defence, relying on France (with its Maginot Line), Holland & Belgium to provide a considerable invasion ‘buffer zone’.

Nothing changed their opinion due to the fact that, with the exception of the invasion of Poland, very little happened in Western Europe for several months – a period known as the “Phoney War”.

Events took a dramatic turn after the 9th of April 1940 - when German forces invaded Denmark and Norway, where the poorly equipped British Expeditionary Force was quickly forced back to Britain.

Only a month later, following the stalemate on the borders of the Low Countries, France and Belgium, “Blitzkrieg” burst across the length of the Allied lines. A large but mostly antiquated French army and the outnumbered B.E.F. were forced to withdraw as the Germans advanced into France.

After only 19 days of fighting, the attitudes of the Chiefs of Staff changed dramatically, they now believed a full-scale attack on Britain was imminent. The Home Defence Executive was established under the command of General Sir Edmund Ironside, Commander-in-Chief Home Forces, to deal with all matters relating to any possible invasion.

Though Churchill had grave doubts concerning the proposals, he begrudgingly approved Ironside’s plan, and the biggest campaign of defensive construction in British history began.

When studied in isolation pillboxes and other anti-invasion works are difficult to comprehend, but they all make up a part of a strategic system:

1 - Off shore engagement – Enemy forces to be engaged by the Royal Navy, the enemy would then need to negotiate offshore minefields, and would be intercepted by aircraft of the RAF and coastal artillery batteries.

2 - Beach Obstacles on the shoreline – scaffolding entanglements, landing craft obstructions, barbed wire.

3 - Sea Front – The first line of manned defences – pillboxes, entrenched gun positions, supported by minefields, barbed wire entanglements, anti-tank obstacles, trenches, etc.

4 - Coastal Rear – pillboxes, cliff-top & dune defences, anti-glider obstructions.
5 - Anti-Tank islands, defended towns & villages, nodal points & defence lines

6 - The G.H.Q. Line

In June 1940, a series of linear obstacles was considered the best available method of halting enemy advance, enabling an aggressive defence by local forces as a delaying tactic. A nationwide network of such defences would allow mobile reserves to intercept, and form a counter-attack. Full advantage and use was to be made of natural obstacles, such as rivers, canals, marshes, railways, and high ground. Where the terrain allowed, anti-tank ditches were excavated.

Wherever a ditch was impractical, concrete obstacles were to be used, especially along the coast and at road blocks inland.

To call them “stoplines” is somewhat misleading term, they were never intended to halt a major armoured assault, but to prevent fast moving and lightly armed enemy troops from ranging across the country ahead of the main force. The idea was to hold attacking forces for as long as possible, and allow time for regular army reinforcements to muster and stage a counter attack.

It has always been crucial to oppose any invasion force while it was still in the vulnerable state of disimberkation. Faced with heavy defensive works at this point, enemy forces would have to waste valuable time and munitions, weakening the valuable limited resources of the attacker.

A War Office document stated – ‘No obstacle is an absolute obstacle. An obstacle is a first step in a plan to destroy tanks; its object is to check tanks and so create an opportunity to destroy them by (artillery) fire’.

Whist construction work on the GHQ line in England was underway, military commanders believed there was now also a possibility of an attack on three fronts – France, Norway, and Ireland. After all, Germany had already invaded a neutral country – Norway – early in the conflict. Ireland could be taken, though it would necessitate a long chain of supply by sea from France. Nevertheless, the threat had to be taken seriously. Dublin was a hotbed of spies from Germany, Britain, and a whole host of other nations.

The Irish government, lead by Éamon de Valera, was in an unenviable position. They feared possible invasion from two sides, by Germany over the sea, and by Great Britain through Ulster. A number of anti-invasion defence works were constructed through the country, especially along the strategically important banks of the lower River Boyne.

Subsequent research has revealed Hitler was seriously considering a full-scale invasion of the Eire (“Operation Green”), consolidate forces, and prepare for an invasion over the Irish Sea into West Wales and South-West Scotland, but did not to press ahead with the scheme. Such a long sea crossing would expose convoys to attack by the Royal Navy and the RAF, there could little Luftwaffe air support at such a long range, invasion would deplete the German armed forces occupying mainland Europe, political pressure and public opinion in the USA might have brought them into the War on the side of the Allies.
Nevertheless, had that plan progressed, the prime invasion targets would have been Milford Haven, Pembrokeshire, and Holyhead, Anglesey. Both are reasonably short sea crossing points from the Republic, they have sheltered deep water anchorages, airfields in close proximity, plus excellent rail & road links running East, into the industrial heartland of central England. However, both ports had long-established complex anti-invasion defensive capability.

But before a port could be taken, beach landings would be necessary along a wide front, to establish a foothold, establish a basic supply line, then attack the harbour defences, airfields, etc.

**Fairbourne Defences**

*Aerial photograph 76-120, Frame No. 026, date: 30 June 1976. The line of defences runs parallel to the shore on the left side of the photograph for 2.4km, to a point where there is a distinct change of direction of the spit of land. The railway line is clearly visible, entering the frame at the lower left corner, the junction in the centre, where the line splits to the north-west, over the Barmouth Viaduct. The old line ran to the north-east towards Dolgellau. © Ordnance Survey*

The beach at Fairbourne, Merionethshire, is ideal for invasion by landing craft. It has a wide sandy beach at low water, with a very shallow slope, a shoreline that runs North-South, is only overlooked by high ground to the south, and a large tidal river
estuary to the north. The only drawback is that it only has two narrow landward exit points at the South of the village where there is difficult access, and relatively easy to defend those access points to the A493, or the railway line, (both running towards the midlands).

At the low-water line, sappers from the Royal Engineers constructed massive lines of barbed wire defences and anti-tank rails, designed to hinder enemy tanks as they disembarked from landing craft. Placing them at the low-water mark made it impossible for the tanks to overcome the entanglements by attempting a run at the obstacles. The wire was held in place by 9ft high steel scaffolding tubes.

Anti invasion rails can occasionally still be seen on Welsh beaches.

The barbed wire defences were demolished soon after the end of the war, once more allowing the public access to the beaches. Little physical evidence of these obstacles remains, but oral evidence was provided during field investigation.

**Fairbourne Concrete Obstacles and Pillboxes**

One of the finest surviving anti-invasion lines in the UK is at Fairbourne. The cubes are (nearly all) situated in their original positions, and form an almost continuous single line extending to 2.4km. The line runs North-South parallel to the waterline, at the crest of the shingle bank.
Date of construction is confirmed after consulting a set of wartime RAF aerial photographic prints, a Medmenham low-level oblique flight (SHT68), flown 1st July 1940. No defensive works are visible on either shore of the Mawddach, or on the shoreline at Fairbourne. This sortie was probably flown to assist with placement of anti-invasion defence works. Shots that are “missing” from the run may have been of areas discarded for anti-invasion works.

The nationwide construction of anti-invasion defences was undertaken out at great speed, and caused a crisis for the national stocks of cement. It was quite common for major contractors to be working a seven-day week averaging twelve hours a day, or more. Also, in many places all able-bodied men, boys, and women were drawn into the hard work of building beach defences.
From its southern limit (SH 6110 1201) the line runs due north for 2.4km, West of the small settlement Fairbourne. Immediately to the East of the village the land mainly comprises flat reclaimed saltmarsh. The line then follows the terrain, turning north-east, into a spit of land that extends into the estuary of the River Mawddach, (the line itself terminates at SH 6108 1433). As noted earlier, the only exit points are to the south of the village.

When constructed, the line comprised 691 Anti Tank Cubes. The vast majority of these are still in their original location - and in remarkably good condition, but some have been moved to provide easier access to the beach (690 of the cubes survive). At the southern portion of the line, the cubes are exposed to their full height, but at the northern section they are partially buried, due to the tidal influence and land shift since 1940 (a small number have been totally covered by sand and grass).

Each block is a standard size, trapezoid section (1.7m high) rectangular plan, 1.5m x 1.5m at the base, tapering to 0.9m x 0.9m at the top, set at 45 degrees off the line, with a gap of 1.35m between adjacent cubes (at the base). It is calculated each block weighs in the region of 15 tons.

Eight of the blocks at the extreme south of the line have been moved off the original line, turned on their sides, and used to reinforce the sea wall, and a pouring of rough concrete in the gap between each block. There is also a single block that has been upturned and left adjacent to the reinforced wall, probably left in that position as it may have been surplus to requirements. The next six in the line have fallen on their sides, possibly due to the shifting of the shingle beach. The exposed base reveals the
block was constructed of large beach stones with an infill of pebbles, faced with a layer of concrete. This facing on a few of the blocks has deteriorated over the years, exposing the “banding” between differing layers. Such massive structures would need to have been constructed in four stages.

Many blocks had been marked on the flat top surface while the concrete mix was still wet. The more obvious marks included “Thomas Roberts”, “Betty Price”, “D Pant”, “DW 1940”, and LW 1940.
There were five standard FW3/24 pattern pillboxes set into the defensive line (one is in good condition, one damaged, but feint traces of the other three can still be located). It was standard military practice to have the pillboxes set a short distance behind the line. But at Fairbourne the local conditions dictated they were set into the linear defence system itself.

From the southernmost point of the line at SH 6110 1201 heading north to the first pillbox there are 21 blocks.
The southernmost pillbox (NPRN 270355) at SH 6110 1203 is a standard hexagonal Type FW3/24, brick built, double skin, with a concrete & rubble infill. The wall has a thickness of 430mm, with internal headroom of 2.12m, and a roof thickness of 0.22m. The entrance is set into the rear wall (3.97m long), which is longer than the other five (each 2.42m long), and had protected its flank with a small loophole each side of the doorway. Instead of the normal horizontal slit – or “letterbox” - firing loop, it has a rectangular opening, with a very wide internal splay, allowing a wide arc of fire from inside. Although this type of firing loop would appear to be the most common type in North West Wales, it is fairly rare in the rest of Britain. Two of the front walls of the pillbox have been removed, and the remaining firing loop and entrance have been blocked off at some time. The concrete roof and foundation (or “raft”) both remain intact. However, there is now no trace of the internal anti-ricochet wall, except for the feint marks on the floor and ceiling.

From this southern pillbox there is a line of 148 concrete cubes to the next pillbox, at SH 6141 1253 (NPRN 270356). The structure is in excellent condition, and all dimensions are identical to the first, but the two firing loops on the rear wall have been blocked. Again it has the rectangular firing loops, and the internal wall has been removed.

From this pillbox the line continues north, and there are 161 blocks until the next pillbox at SH 6110 1307, directly in line with (and defending) the access road as it curves inland towards the village. Only the concrete foundation (or “raft”) of the structure survives, but its unmistakable Type 24 plan on the ground is very clear.

Continuing north, there are 156 blocks to the feint remains of the next pillbox (Type 24), located at SH 6104 1361. Almost all trace of the pillbox now almost completely gone. A part of the foundation is visible, with a few fragments of red brick and concrete in the vicinity.

There are then 151 blocks to the last pillbox on the line, the most northerly, located at SH 6101 1412. An aerial photograph of the area, taken in 1950 shows the pillbox...
leaning over at a shallow angle, probably subsidence due to coastal erosion. Although now completely demolished (evidence would suggest by explosive charges), a few large fragments of the structure can still be found in the immediate vicinity.

After this point there are a further 53 cubes before the line terminates at SH 6108 1433. From this point North to the mouth of the estuary, dunes, rocks and soft shifting sand form a natural barrier to invasion.

Soon after the defences were completed, a Miles Magister aeroplane flew down from the airfield at Penrhos, Caernarfonshire, to Tywyn, and warned of an Invasion Alert. The news soon spread among the population, and a sense of mild panic ensued in the area.

**Support positions in the immediate area**

Any successful sea borne invasion would need to have been closely supported by parachute troops and infantry, brought in by aircraft, to outflank the beach defences. To counter the threat, inland from the stop line, Aircraft Immobilisation Poles were erected. One villager commented “The whole area looked like a collection of gigantic clothes lines”. Comprising a system of shallow ditches (to rip away the undercarriage of an aircraft attempting to land) and poles (to tear off the wings) were set out on the site of what is now the golf club. There is no trace left of the Aircraft Immobilisation Poles, or the earthworks.

![Area where some of the Aircraft Immobilisation Poles were erected.](image)

As mentioned earlier, after landing, to make any progress the invading forces need to make their way south along a narrow road to the village, then to either the A493 or the railway line.
The railway level crossing on Beach Road (where there is a local high point forming a natural obstacle) at SH 6159 1284 was defended by a temporary sandbagged machine gun post, and a spigot mortar. Some 200m South-East of this position (SH 6178 1275) there is a sharp dog-leg bend in the road, overlooked by higher ground – forming another natural obstruction.

The railway bridge at Penrhyn Drive South, SH 611 120, with obstacles each side of the narrow lane.

The other option for invading forces was to go further south, on a narrow single-track lane (Penrhyn Drive South), under the railway bridge, and on to the A493 main road at Friog. The lane turns sharp left before the bridge (SH 6111 1203). At this point there are two lengths of angle iron driven into the ground. These are of the typical pattern that was used as a hinge for a temporary roadblock, with an excellent arc of fire by supporting troops, positioned on the railway bridge, overlooking the roadblock.

The railway bridge itself has only a narrow arch for the roadway, and is only passable by one vehicle at a time. Any vehicle travelling east has to turn sharply to the left after passing under the bridge. Immediately after the bridge there is a vertical rock face on one side of the road, and a steep bridge abutment on the other. Here there are two small anti-tank cubes (SH 6119 1202). One is located on each side of the road. It is likely that there was also a roadblock at this point. The roadway has been resurfaced, so any evidence of a steel roadblock is now hidden. Adjacent to one of the cubes is a small cave, ideal for storing any petroleum warfare liquid fuel tanks.

The location is ideal for a ‘flame fougasse’ installation as it is overlooked by the railway and the main road, where defending troops could shelter from enemy fire.
The fourgasse was a crude, but highly effective ant-tank weapon. A 40 or 50 gallon metal drum located beside the target area contained a mixture of inflammable liquids, usually petrol, diesel, paraffin, creosote, etc. and fitted with an explosive charge and detonated by remote control, hand grenade, or flares.

When the enemy approached, the liquid would be released in to the road, and the mixture set alight. The idea was to engulf the enemy vehicle in fire so as to incinerate or suffocate the occupants, or at least to make them abandon the vehicle. Therefore it was crucial to site the devices where the vehicle would have to slow down, or even stop. If the flame weapon had been effective, the escaping crews of the vehicles would be easy targets for riflemen.

A short distance to the east there is an old Nissen Hut (SH 6124 1206), which may have been a command post or storage area. No access to the hut was possible.

Other supporting positions

Further afield, but still a part of the overall strategic defence system, there were other obstacles.

Had the enemy overcome the defences at Fairbourne and advanced along the railway towards Dolgelau, they would have encountered heavy resistance at a set of six large anti-tank cubes defending the line near Garth Isaf, Arthog (SH 6470 1568).
Five of the blocks are laid out corner to corner on a promontory on the northern side of the railway line, forming a barrier between the railway and the River Mawddach. One single block is on the southern side of the line, built into the railway cutting.

Two of the larger (stone faced) cubes, located closest to the bank are rectangular plan, 2.1m x 2.1m and 1.5m high. The four remaining (concrete faced) blocks are 1.5m x 1.5m and 1.5m high. The gaps between the obstacles vary from 1.6m to 0.36m.

The next likely resistance point was probably at the road bridge in Dolgellau. Due to extensive civil engineering works in the 1980s no evidence remains.

Further inland there are further small islands of resistance, at Bwlch Oerddrws (SH 7954 1729) NPRN 270351 and at Bwlch Llyn Bach, near the head of the Talyllyn Pass (SH 7520 1338) NPRN 270352.

The short line of obstacles (ca. 72m long) at Bwlch Oerddrws would block progress through the narrow pass before the steep drop down to Dinas Mawddwy, and the road to the industrial midlands.

Obstacles south of the A470 at Bwlch Oerddrws (SH 7954 1729) NPRN 270351

Made from a core of reinforced concrete, with an outer facing of local stone (blending into the scenery), each block is 1.6m x 1.6m rectangular plan and 1.6m high. The northern limit of the line starts near a rock outcrop, in a line of fifteen cubes, drop down to the A470 main road, where it stops - at which point there would be a Home Guard roadblock position. From the opposite side of the road the line of ten more cubes drop down to a stream and then uphill for a short distance to another outcrop, where the line finishes.

The surrounding area is festooned with further small outcrops, perfect sniping territory.

A much shorter line of cubes at Bwlch Llyn Bach, covers the A487 main road from the south, to protect from any outflanking operations by raiding parties from the
south. Similar anti-invasion defences were constructed at Tywyn and Aberdovey, plus the associated fallback positions, notably in Happy Valley.

The line at Bwlch Llyn Bach is shorter because it is located in a very narrow, steep-sided, valley. Today there are three surviving blocks, in poor condition (an RAF vertical aerial photograph 106G/UK/1463, Frame 6181, taken in May 1946 shows four cubes). As at Bwlch Oerddrws they are made of local stone.

_Bwlch Llyn Bach, near the head of the Talyllyn Pass (SH 7520 1338) NPRN 270352_

On the opposite earth bank there are two substantial lengths of angled iron, the remains of the hinge for the moveable roadblock, a Home Guard checkpoint. The RAF aerial photograph shows heavy scarring on the road surface from the movement of the obstacle. Also, on the hillside a protected firing position.

_Detail from RAF Aerial Photograph 106G/UK/1468, frame 6181, two sets of anti-tank cubes clearly visible. © Ministry of Defence._
The roadblock hinge opposite the three surviving anti-tank cubes.

The terrain here also comprises rocky outcrops - perfect cover for the determined defending sniper.

Solitary surviving Anti tank cube at Bwlch Llyn Bach
A short distance to the south is a solitary surviving block, in a very poor state. The 1946 AP shows there were three cubes. From this position there is an unbroken view and firing lines down the valley, providing precious warning of advancing troops.

No anti invasion structures or systems are known to survive on the Northern shore of the Mawddach Estuary. However, an aerial photograph (RAF Medmenham M2963 No. 46, taken 24 August 1941) shows a freshly constructed system of trenches close to the beach at Barmouth. Centred on SH 6063 1652, the area is now the site of residential housing estates: Heol-y-Llan and Heol Llewelyn. Although clearly of military origin, it cannot be ascertained for certain if these were part of the anti-invasion defences.

Notes

The sites were visited by Medwyn Parry on various occasions between March 1995 and October 2006. All photographs taken by the author, unless indicated.

No reference is made in the report to the five Royal Marines training camps in the area. They were established after the construction of the anti-invasion defences, and the threat of invasion had passed. Nevertheless, if there had been a threat of invasion, all available personnel and trainees would have been called upon to assist with guarding the area.

Despite exhaustive efforts, no records were found to identify the Royal Engineers, or civilian contractors who constructed the defences, or the specific Home Guard units responsible for manning them.
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