CAPPOQUIN

A Brief Guide to an Area's Rich Heritage

Contents:

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(A series of seven guided heritage trails in and around the town)

Produced by

Cappoquin Heritage Group

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Most of the places and people identified in this booklet are commemorated by a series of stone plaques and lecterns placed in appropriate locations. We hope you will enjoy the experience of Cappoquin's rich and varied heritage, and that the plaques and lecterns will complement the material contained in the booklet and maps. Our front-cover picture is based on Arthur Maderson's drawing of Walsh's Hotel, formerly the Cappoquin Barracks. The drawing on the back is Arthur's depiction of the Market House in other days.

This modern scene by the river shows the mid 19th century Avonmore Bridge, with the Boathouse alongside

1. Down by the River (Walking trail)

The right angled bend in the Blackwater river at Cappoquin dates back at least as far as seventy million years. It came about, according to most scholars, as a result of a phenomenon called 'river capture', involving the original river which flowed through the area, the Suir, diverting its course around modern Ardfinnan and heading eastwards to Waterford. The old river bed, coming down through Ballinamult to Cappoquin, just dried up or remained as a mere trickle. It is possible that either the Glenshelane or Finnisk rivers, which enter the modern Blackwater south of Cappoquin, are remnants of the original Suir. In any event, by the time the Suir ceased to flow through the Cappoquin area, a major tributary had been coming across Kerry and Cork to meet with it at Cappoquin. As the Suir dried up, this tributary just continued to flow along the old route from Cappoquin to the sea. So, what looks to the eye like one river, the Blackwater, changing course dramatically at Cappoquin was once, in fact, two rivers.

The river has been a major feature of Cappoquin life over the centuries. It attracted Mesolithic peoples to hunt and fish thousands of years ago, and monks to find a crossing point on it on the road from Lismore to Ardmore 1300 years ago. In the early 17th century, it brought the Earl of Cork, who established industry and built a bridge along its banks. In recent times the drive to develop new housing in the town has certainly changed the riverscape considerably. Yet, there remains something majestic, something deep and brooding about the mighty river which nothing in human activity has managed to alter, nor ever will. We start at the Avonmore Bridge, possibly the best vantage point to view the river from.

Avonmore Bridge: This great Famine relief project of the Keane family was opened in 1851 but the name, 'Victoria Bridge' was later chiselled out by nationalists. The original plaque is still visible at the mid-point of the bridge, which once carried the main Cappoquin-Lismore road. This bridge was also a target of attack during the Troubles of the 1920s. You can still see where an explosion required extensive repairs to be done, if you look very closely.

This picture of Avonmore Bridge shows part of it damaged during the Troubles.

Looking northwards, you will see the beautiful woods which attracted the Earl of Cork to Cappoquin in search of charcoal for his iron smelting industries in the 1600s. It was also through this area, Chapel Wood, that the churchgoers of Cappoquin's first Catholic parish went to mass in the 18th century, near the site of the restored gate lodge of Salterbridge House.

Tivoli House overlooking the Blackwater

Tivoli House (Private): This Keane family home was once home to Harry Keane, the founder of the original Cappoquin Bacon Factory in 1907. The house dates from the 1820s and was previously associated with the Dennehy family. A plaque to Harry Keane, erected by public subscription, stands near the now-disused Tivoli entrance gate on the Lismore road.

Parochial House (Private): This has been home of the Parish Priests of Cappoquin since it was built in 1896 by Canon Spratt at a cost of £900 sterling (c.€1,350 in today's money). The architect of the Swiss-chalet style house was Andrew O'Riordan of Lismore. Canon Spratt was himself the nephew of an earlier Fr. Spratt, the Parish Priest who brought the Mercy Order to Cappoquin in 1850.

The Parochial House, little changed since 1896

The home of Cappoquin Rowing Club

The Boathouse: Part of Cappoquin's river heritage includes the Rowing Club's 'Boathouse'. Not only has this been a centre of rowing but it has also been the venue for countless dances, concerts and shows, with the likes of Bowyer and Woodward bringing opera and McMaster, Mac Liammóir and Edwards performing Shakespeare. A plaque commemorates the latter two nearby. This is at least the third boathouse on or near this site, the previous two having been more modest, single storey structures. The club is one of Ireland's oldest, founded in the 1860s.

C.O. Stanley: A great patron of Cappoquin rowing and son of one of the club's founders, C.O. Stanley was one of the most successful businessmen in mid 20th century Britain, with the famous PYE television company among his enterprises.

The commemorative plaque to C. O. Stanley.

The beautiful split-level Daly cottage

The Daly Family Home: The Dalys were river boat captains on the Blackwater for over a century, and co-founders of Cappoquin Rowing Club. The quay used by the early boats was at the end of the back garden of the family's split level home, where the original Boathouse also stood in the 1860s.

Mass Lane: Sometimes now called Tivoli Terrace, this was the route taken by Catholic churchgoers to the first church in the parish, which was established in 1750. The lane once formed part of the Cappoquin-Lismore road and was then called 'Old Chapel Road'.

Picturesque Mass Lane today

Strolling from Mass Lane (carefully) across the Lismore Road brings us down 'Woodenbridge Lane', to the main site of Cappoquin's trade and industry heritage.

A drawing of the original wooden bridge at Cappoquin, from 'Dublin Penny Journal' 1832.

Boyle's Iron Works and Bridge: The Earl of Cork built his iron works and cannon foundry here in the 1620s, as well as a 600-ton wooden bridge which was the only bridge over the Blackwater between Fermoy and the sea for nearly two centuries. The works specialised in cannon manufacture for the 30 Years War and was one of the main industries to emerge from the Munster Plantation. Cannon were exported as far away as Amsterdam. The wooden bridge was destroyed during the 1640s but was rebuilt by Act of Parliament.

Cappoquin Bacon Factory: This one-time employer of over 200 people was founded initially by the Keane family. Between 1907 and 1980, this factory was synonymous with Cappoquin and was western Waterford's most important industry. The company's black and yellow vans and lorries were common sights on the roads all over Munster.

An early 20th century photograph of carts delivering pigs to Cappoquin Bacon Factory

The South of Ireland Wheel and Carriage Works: Manufacturing some of the items needed for the railway boom of the post-Famine period, this company stood at the river bend in the second half of the 19th century. No trace of its buildings now remains but it stood roughly where the present Jardin Chanât La Mouteyre now lies.

2. West and South-West of Cappoquin (Driving or cycling trail)

About a mile along the Lismore road west from Cappoquin, at the 'Kitchenhole', a picnic site and lectern display gives an opportunity to absorb the beauty and history of this area further.

Salterbridge House (Limited Opening): Salterbridge House is visible from this spot as well. It was once home to the Musgraves and then Chearnleys. It is currently the Wingfield family residence. Across river from you can also see Kilbree Castle (Private), dating from medieval times.

Salterbridge House (Limited Opening)

Moving back towards town and then southwards over the Avonmore Bridge, we now head in the direction of late 19th century trading developments and of the districts of Drumroe and Tourin, the latter taking its name from the linen bleaching fields which dotted this area in the 18th century particularly.

The Red Bridge shortly before the railway closed, taken by Michael J. Walsh.

The Red Bridge: This half iron, half stone structure was opened in August 1878 as part of the new Waterford, Dungarvan and Lismore railway line. The metal section was used to complete the job more quickly and leave higher arches for some boat masts to get under. The line took six years to build and was, at the time, the most expensive railway project in Ireland. The Red Bridge closed when CIÉ shut the line in 1967.

The Steamers' Quay: From 1878 until the mid 20th century, this was the main quay used for Cappoquin's river traffic. Apart from the goods imports and exports going through Youghal, passenger excursions to Youghal were often entertained on board by the local band.

A passenger steamer leaving the Steamers' Quay

Travelling further south, with the Blackwater on our left and Kilbree House (Private) to the right, we pass the old lime kilns at the 'Rock', now looking upon a boat slipway and beautiful picnic site. The patron saint of Waterford and Lismore, Declan, is thought to have been born in this district of Drumroe, with the parish cemetery here, dating from 1910, being appropriately called St. Declan's.

These districts, along with Norrisland further south, were also major centres of the area's cider producing industry over the centuries, as well as supplying much of the reeds, rushes and twigs for the basket-making trade which flourished in 19th century Cappoquin due to the importance of the goods trade in the town.

Norrisland Castle (Private)

At **Norrisland Castle (Private)** and at Affane on the other side of the Blackwater, once stood the lands of the Greatrakes family. You now reach part of one of the oldest routes in Ireland, **Bóthar na Naomh:** This ancient roadway known at the 'Road of the Saints' runs here along the southern boundary of the townland of Drumroe. The monks crossed the river at its shallowest point, known locally as the 'Cooples', on their way between the Lismore and Ardmore monasteries.

Valentine Greatrakes: The famous 17th century healer of the 'King's evil' (scrofula) held lands on both sides of the Blackwater. The Cooples is a midway point between the two parts of the family territories. Greatrakes is thought to be buried at Affane.

Valentine Greatrakes

In the Lismore direction lies a Famine graveyard and reputed birthplace of St. Declan, called 'Reiligín Déagláin' (Private lands). Southwards, lies Tourin.

Tourin hurlers 1950

Tourin Hurlers: This club became Waterford's Senior Hurling Champions on the 10th September 1950, beating Mt. Sion by 3-7 to 2-5 in a historic final. The club remains the smallest ever to achieve the distinction of winning the title.

Tourin House (Limited Opening): Built to replace a Roche tower house of 1560, which still stands by the river, this 1840s house was designed by Abraham Denny. It was then home to the Musgraves but is now home of the Jameson family, of Irish whiskey fame. Joan Jameson was a painter of great renown in the early and mid 20th century. Nearby, we can also see the Musgrave school house where poet Edward Walsh once taught.

Tourin House, the Jameson home

Continuing past Tourin House, we find some of the finest river views in Ireland, as the road takes in the sight of Dromana House, home of the Villiers-Stuarts, perched on a cliff across river. The road continues past Camphire House (Private) to Camphire and the River Bride, once a busy trading artery in its own right, with a number of quaysides being used along the Bride to load cargo such as timber and iron ore over the centuries. The ruined church at Okyle (Private lands) near Camphire dates back to the later middle ages.

Camphire Bridge today.

3. The Western Side of Town (Walking trail)

Back in Cappoquin itself, moving eastwards from the river, Main Street, Church Street and Mill Street all developed as the early town settlement expanded in the 1700s. The fact that Cappoquin had a bridge across the Blackwater from the 1620s, was accessible to shipping because the Blackwater was tidal well beyond it and lay on the road network connecting west Waterford, south Tipperary and east Cork all helped in this development.

Main Street in particular has always been the heart of commercial Cappoquin, although trading patterns have changed considerably since 1950 when the town had twenty two registered grocers and seven drapers, most of them in this area. Many of the shop fronts still to be seen in central Main Street date from the early 19th century. Hely's Pharmacy has a relatively modern shop front but is not far off two centuries in existence in the same location. The three-storey nature of most of the premises on Main Street also shows how wealthy the 19th century town was, with ground space at a premium.

An early 20th century view of Main Street, showing the many shop premises

As the busiest and traditionally most populous street in the town, Main Street has been home to many great figures of the locality, including All-Ireland minor hurling winner Billy Conway and educator Pádraig Denn. It was here too that traditional businesses like Moore's and Conway's Hotels, along with Kingston's Stanley's, Hick's and Mansfield's flourished in the town until the latter half of the 20th century, while Lehane's remains the town's longest standing garage and filling station.

The Noel Mulcahy plaque.

Noel Mulcahy: Noel Mulcahy was several times Irish chess champion. From Main Street, Cappoquin, he was killed in the Aer Lingus Viscount crash in 1967 at the age of just thirty eight. Noel was noted locally for being capable of playing up to five opponents simultaneously. He rarely lost.

Pádraig Denn: The famous teacher, Irish scholar and man of faith taught his school at or near what is now the *Toby Jug*, in the 19th century. He is believed to be buried in the graveyard of St. Mary's Catholic Church, which lay near his school too.

Pádraig Denn taught his school beside Hely's Pharmacy, though it is uncertain on which side of it.

St Anne's Church today.

St. Anne's Church of Ireland: The Church of Ireland was built between the 1820s and 1830 and has undergone a number of structural changes since then, including the removal of its spire in the late 19th century and the change of clock face from square to round in the 20th.

Church Street was home to Mick Lacey, All Ireland winner with Waterford Senior Hurlers in 1959, as well as the first location of the company which is generally known as M.D. O'Connor and Sons, Poultry Processors. Many people consider Church Street to actually be an extension of Mill Street. This could well be, as the two churches here are relatively 'new' at under two centuries old.

Mill Street is so called because it housed an old grain and later timber mill which once stood on the site of the new community centre. This mill was powered by water, with a mill race originating nearly two miles away on the Glenshelane river coming along the southern edge of the old town, under the road at the junction of Mill Street and Cooke Street and along where now stands a fine line of trees and decorative lights. Mill Street was once the centre of the basket making and coopering trades which developed owing to Cappoquin's trading prominence.

The houses which once constituted the Convent of Mercy

The Convent Site (Private houses): Although the first residence of the Sisters of Mercy who came to Cappoquin in 1850 was somewhere in Main Street, these buildings were occupied for a considerable time by the Sisters, prior to building the new convent after 1901. The RIC also used part of the structure as a barracks prior to Irish independence, although the main police barracks from then until the 1970s lay near the junction of Mass Lane and Main Street.

St. Mary's Catholic Church: Built over a number of years, culminating in 1822, this church replaced the original Catholic church which stood at Salterbridge since the 1700s. The plaque commemorating Pádraig Denn is on the wall near the grotto. The small graveyard beside the church was, in fact, the only cemetery within the parish until the opening of St. Declan's in Drumroe in the early 20th century.

St. Mary's Catholic Church, with Mill Street and the entrance to the community centre to the right

Proceeding along Mill Street, where the pleasant green area is now was once the mill race that powered the mill which gave the street its name.

The parochial hall in earlier days.

The mill itself dated from the 18th century and was one of several which dotted the town in different locations. On this street lived Mossy O'Connor, local winner of two All Ireland hurling medals with Cork during the 1950s when based there with the army.

The Parochial School and Hall: This building served as the main school in the town for much of the 19th century and half of the 20th century. In later times, it became the parish hall and was used by the BBC in their 1982 filming of the William Trevor story, *One of Ourselves*. As the parochial hall, it has hosted countless events over the years and also houses the Billiards and Snooker Club, founded in 1927.

Hugh Collender: One of the Young Irelanders who attacked the barracks in Cappoquin in 1849, Hugh Collender later fled to the USA where he became one of the founders of the biggest billiard table making company in the world, Brunswick, Balck & Collender. The company survives to this day, now simply called 'Brunswick'. Collender is appropriately commemorated outside the Billiards and Snooker Club.

The Browne Family: Number 6, Mill Street (Private house) was the ancestral home of a family which included Cardinal Michael Browne, Monsignor Pádraig de Brún, Máire Mac an tSaoi and a number of other literary and clerical scholars. The family story was also the basis for *The Big Sycamore*, a novel by Joseph Brady (pen name of Fr. Maurice Browne) published in 1958 and which depicts much of 19th century Cappoquin.

The first US Collender factory

LEFT: The day in 1961 that Cardinal Browne visited Cappoquin.

Jimmy Foley (left), with a great local motorcyclist, Willie Sargent

Jimmy Foley: The former proprietor of the Railway Bar, once the Railway Hotel, Jimmy Foley won two Irish senior cycling championships during the 1940s and the title of Best All-Round Cyclist in 1942. With petrol shortages in World War II, he regularly cycled up to 100 miles to get to the competitions!

As Mill Street meets Cooke Street, on a now-redeveloped site once stood the main premises of M.D. O'Connor and Sons, until it moved to Lefanta out the road in the 1970s. O'Connors' has been much more than a poultry processing concern over the years, with a long tradition in salmon, rabbit and fruit shipment as well. From an initial handful of workers, by the 21st century, O'Connor's gave employment to close on 200 people.

As well as the many full-time workers, O'Connor's employed lots of local part-time helpers over the years.

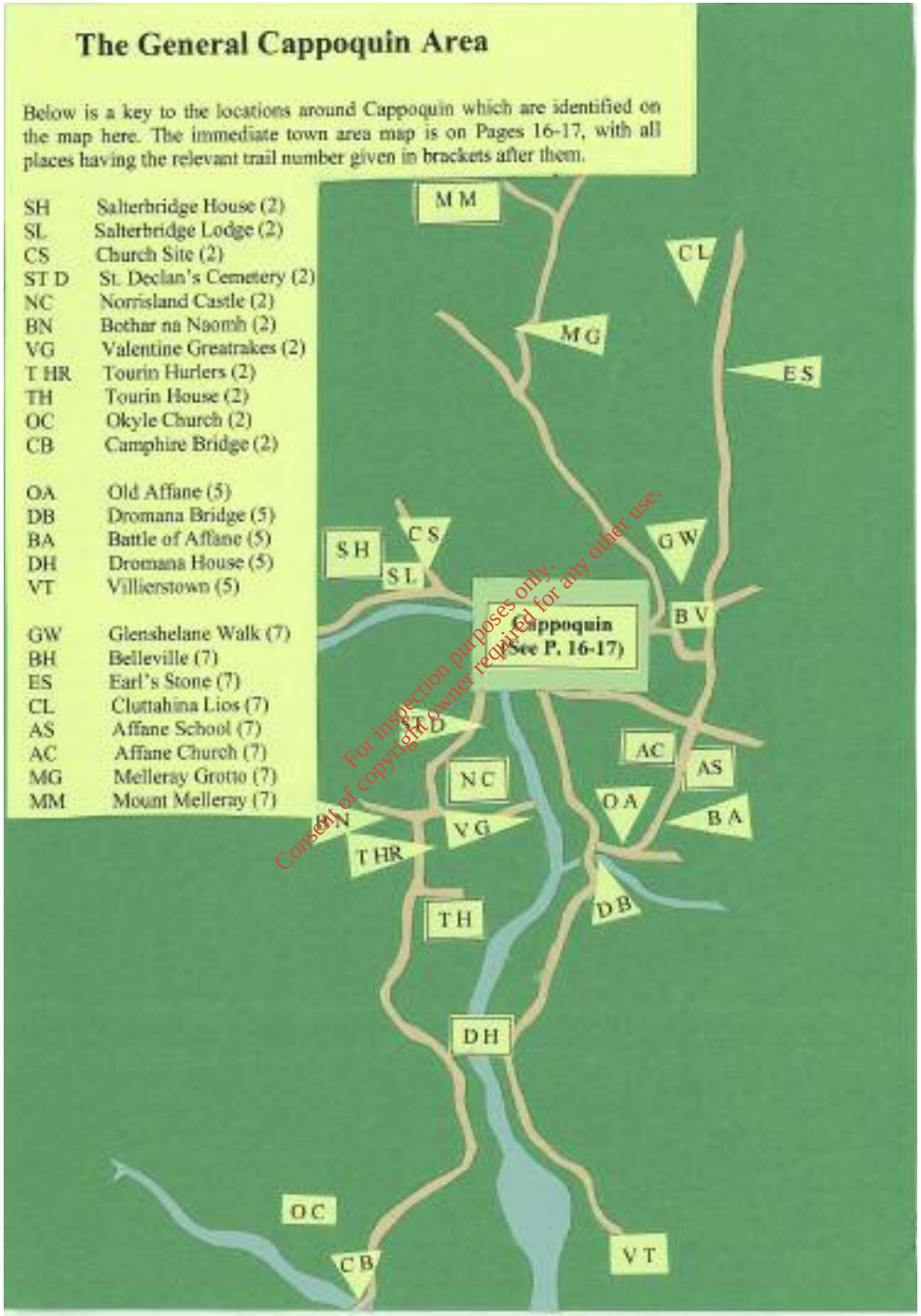
Beside O'Connors' stood Harrington's Hotel, one of six such establishments which served the needs of travellers in the 19th and early 20th centuries.

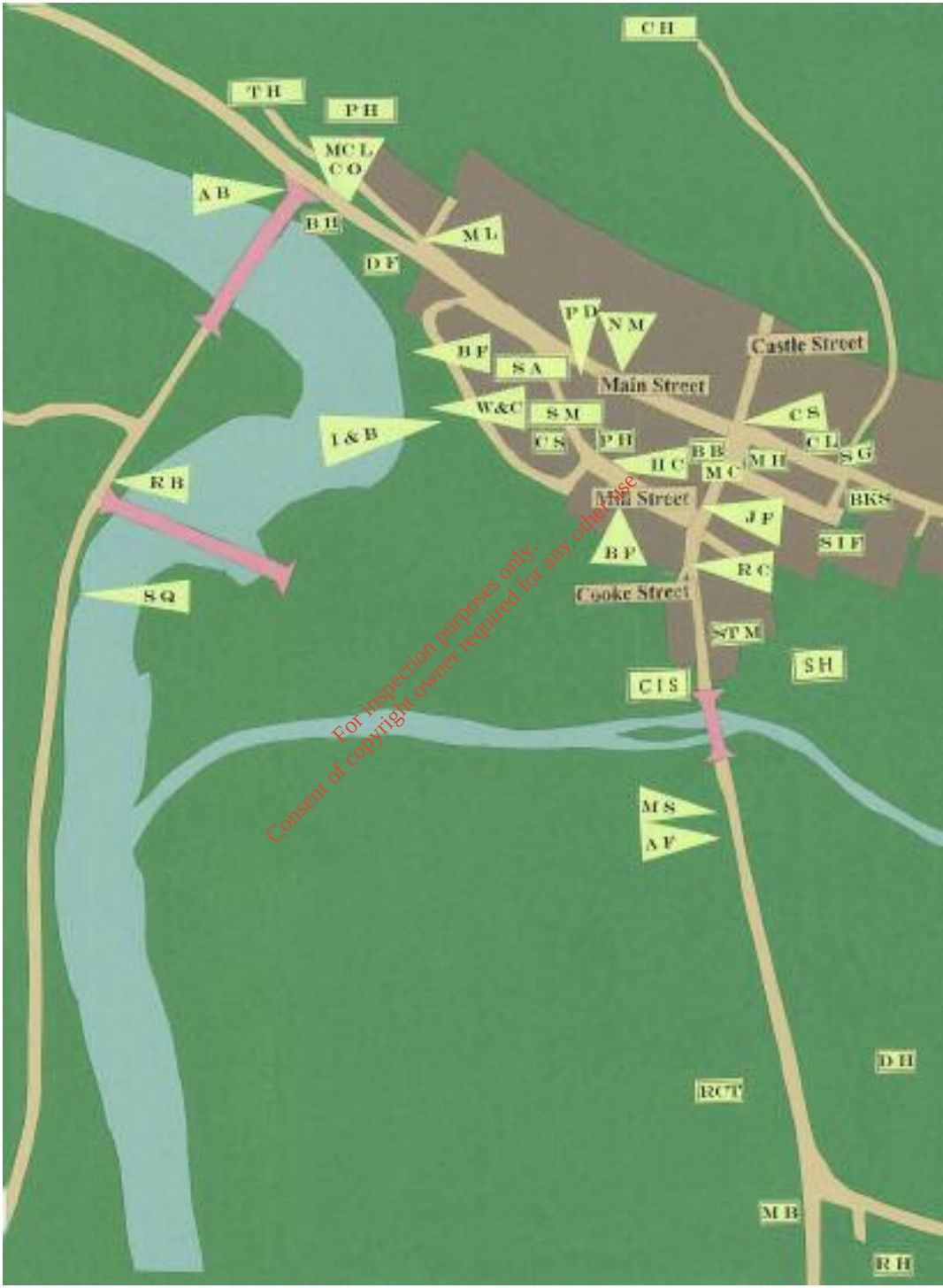
Harrington's Hotel, where Mill Street meets Cooke Street, in its heyday of the early 20th century

The General Cappoquin Area

Below is a key to the locations around Cappoquin which are identified on the map here. The immediate town area map is on Pages 16-17, with all places having the relevant trail number given in brackets after them.

SH	Salterbridge House (2)
SL	Salterbridge Lodge (2)
CS	Church Site (2)
ST D	St. Declan's Cemetery (2)
NC	Norrisland Castle (2)
BN	Bothar na Naomh (2)
VG	Valentine Greatrakes (2)
T HR	Tourin Hurlers (2)
TH	Tourin House (2)
OC	Okyle Church (2)
CB	Camphire Bridge (2)
OA	Old Affane (5)
DB	Dromana Bridge (5)
BA	Battle of Affane (5)
DH	Dromana House (5)
VT	Villierstown (5)
GW	Glenshelane Walk (7)
BH	Belleville (7)
ES	Earl's Stone (7)
CL	Cluttahina Lios (7)
AS	Affane School (7)
AC	Affane Church (7)
MG	Melleray Grotto (7)
MM	Mount Melleray (7)





Town Map Key

Trail 1:
Avonmore Bridge (A B)
Tivoli House (T V)
Parochial House (P H)
Boathouse (B H)
Mac Liammóir and Edwards (MC L)
C.O. Stanley (C))
Daly Family Home (D F)
Mass Lane (M L)
Boyle's Iron Works and Bridge (I & B)
Cappoquin Bacon Factory (B F)
Wheel and Carriage Works (W&C)

Trail 2:
Red Bridge (R B)
Steamers' Quay (S Q)

Trail 3:
Noel Mulcahy (N M)
Pádraig Denn (P D)
St. Anne's Church of Ireland S A)
The Convent Site (C S)
St. Mary's Catholic Church (S M)
Parochial School and Hall (P H)
Hugh Collender (H C)
Browne Family (B F)
Jimmy Foley (J F)

Trail 4:
The Cornerstone (C S)
The Market House (M H)
Barron's Bakery (B B)
Michael Cavanagh (M C)
Robert Cooke (R C)
St. Michael's (ST M)
Station House (S H)
Church of Ireland School (C I S)
Magnificent Seven (M S)
Affane Senior Footballers (A F)

Trail 5:
Derriheen House/Drs. White (D H)
Rectory (RCT)
Mulcahy brothers (M B)
Richmond House (R H)

Trail 6:
Carnegie Free Library C L)
Sargent's Garage (S G)
Walsh's Hotel/The Barracks (BKS)
Star Foundry and Implement Works (SIF)
Cappoquin House (C H)
The Desmond (D C)
Vocational School (VEC)
Convent Primary School (C P)
St. Anne's (ST A)
Convent of Mercy (C M)
Dane's Field (D F)

Trail 7:
The Monument (MT)

The market square of Cappoquin, focal point of trade for at least four centuries.

4. From the Centre, Southwards (Walking trail)

Perhaps the focal point of much of Cappoquin is the area around the Square. This is the point at which Castle Street, so-called because it was the original route to Cappoquin Castle, meets with Main Street, Green Street and Cooke Street. For walking purposes, it is much easier to start at the top of Castle Street and come downhill, as the road slopes continually all the way to the GAA field over half a mile away. Castle Street once went much further than it does now, linking the town all the way to Cappoquin Castle on the hillside above.

Historically, Castle Street was a central thoroughfare in the town and was probably the main street bringing goods to and from Dungarvan. In the 1640s, we know that the Confederate Wars saw a lot of action at Cappoquin, prominent because of its bridge and ironworks. While the town did not have a defensive wall, the Earl of Cork certainly recorded the existence of an earthen rampart running south of the town, probably at the southern end of Castle Street. This rampart was breached on several occasions in the 1640s, with records extant of a lot of skirmishes and civilian casualties at this time.

The Square itself is compact but a pleasant place to sit for a while, perhaps admiring the Michael Cavanagh memorial or the salmon sculpture. The symbol of the town has traditionally been the cornerstone, just at the point where Castle Street meets Main Street. Sitting on this is regarded as a matter of local compulsion, especially if conversation over lengthy and weighty issues is required.

The Cornerstone, Cloch an Chúinne.

The Cornerstone: The symbol of the town, with a remarkable Faustean legend attached to it. The legend deals with a local nobleman, Tomas Bán Fitzgerald, who made a tragic agreement with the hounds of the Devil in order to gain fleeting riches. Most local people consider the smaller stone to the right to be the original cornerstone, although it remains nicely balanced by the other, larger stone on the left as you look from the Square north towards Castle Street.

The Market House: This is probably the oldest building in Cappoquin, dating in its original form from 1628. It functioned as a courthouse until the 1970s and, as far as anyone can tell, has been a continuous trading centre in the town for nearly four centuries. If so, this may well be the oldest shop-site in Ireland. In the 1980s, a 17th century well was uncovered during building work nearby, while today the Market House and Square are the departure points for all Cappoquin sports teams.

An unusual team about to depart at the Market House

Barron's Bakery

Barron's Bakery: This is one of Ireland's oldest commercial bakeries, with original Scotch brick ovens intact. Barron's was founded here in the mid 1880s. Note the hanging sign over the door. 19th and much of 20th century Cappoquin was a hive of industry and small, self-contained businesses. Barron's Coffee Shop served as Keating's Saddlery for over 60 years.

Michael Cavanagh: The patriot and author whose statue stands at the Square was born in a house in Cooke Street, directly across the road from St. Michael's. He went to America after the failed rebellion of 1849 and became, among other things, the official biographer of Thomas Francis Meagher, the Young Ireland leader and Civil War hero. Cavanagh is also credited with being the first man to publish the legend of the Cornerstone in 1864.

The Cooke plaque.

The Michael Cavanagh statue

Robert Cooke: As Castle Street moves southwards, it becomes Cooke Street, called after one of Cappoquin's more eccentric former inhabitants, a man who insisted on wearing only white linen clothing. More curiously still, Cooke also insisted on keeping a herd of only-white cattle although he was a vegan himself. Cooke wrote some fascinating philosophical tracts and was one of Cappoquin's Quaker community, which had a meeting house somewhere in Mill Street in the 18th century.

A view of life in St. Michael's circa 1900

St. Michael's: In this building, the Sisters of Mercy ran a major industrial school, mainly for boys, between the 1870s and the 1970s. It has since been modernised and redeveloped as Riverview Guesthouse. At its height St. Michael's catered for nearly 100 children.

The Station House (Private): Between 1878 and 1967, the station house was a hive of activity in Cappoquin as it served the passengers and handled the freight which passed through en route to Mallow, Waterford, Mount Melleray and so on.

The station at Cappoquin, in its prime, photographed by Michael J. Walsh

The former Church of Ireland School.

The Church of Ireland School (Private): This beautifully-situated building on the banks of the town's second river, the Glenshelane, dates from 1832. Note the date plaque in the gable wall. The building remained in operation as a school until the mid 20th century.

Crossing over the Glenshelane Bridge, we come to Cappoquin's GAA field on the right hand side. Venue for many, many matches over the years, it hosted the All-Ireland Camogie Final in 1945. From 1969, the Cappoquin and Affane GAA Clubs joined forces, with the club's hurling teams being called 'Cappoquin' and the football teams being known as 'Affane'.

Cappoquin's Magnificent Seven.

The 'Magnificent Seven': In addition to trainer Paddy Cunningham, the Cappoquin club had six players on Waterford's All-Ireland winning minor hurling team of 1948. They were Billy Conway, Vincent Walsh, Michael Kelleher, Joe Flynn, Michael O'Connor and Michael Browne. O'Connor later won a senior All-Ireland medal too in 1959, and had the disctinction of being on the Waterford Senior Football team which beat Kerry in the 1957 Championship.

Affane Footballers: Having lost the 1973 final by a narrow margin, the local senior footballers became county champions in 1974, defeating Dunhill by 1-8 to 0-6 at Walsh Park, Waterford.

The 1974 County Senior Football Champions.

5. South from Cappoquin (Driving or cycling trail)

Leaving the GAA field behind, the eight kilometre stretch from Cappoquin to Villierstown, taking in 'old' Affane on the way, is steeped in history and beauty.

Derriheen House(Private).

Doctors William and Winnie White: A footpath plaque here commemorates Cappoquin's Medical Officer, 1914-53, a humanitarian whose legacy continued with his daughter, Dr. Winnie. The family lived for a long time at Derriheen House (Private). The famous travel writer Dervla Murphy, among many others, was born in Derriheen House, which was the local maternity hospital.

The Rectory (Private): This mid 19th century house is the former rectory of the Church of Ireland ministers in Cappoquin. The father of poet Louis McNeice started an illustrious clerical career as a humble Church of Ireland curate in Cappoquin before proceeding to become a celebrated bishop later in life.

The Rectory (Private).

The road forks at this point, with the main road to Dungarvan going eastwards but the route to Villierstown keeping us alongside the river Blackwater's floodplain.

The Mulcahy brothers: A wall plaque here remembers John and James Mulcahy. Comrades of Edmund Rice, came to Cappoquin from the Christian Brothers School in Dungarvan to open a free school near Cappoquin in 1813. John ran the school for over thirty years, mainly under the auspices of the bishop, until his death. In 1832, following the Stanley Education Act, this school became Cappoquin's first National School. It closed in 1847.

Richmond House: With an entrance just at the fork in the road, this stately home, now a guesthouse and restaurant, was built in 1701 by the Earl of Cork. As such, it is believed to be Cappoquin's oldest single mansion, being pre-Georgian in design. It was once occupied by a branch of the Villiers-Stuart family of Dromana.

Richmond House.

Leaving Cappoquin and heading in the direction of Villierstown, it is worth remembering that one of the earliest recorded sites of human activity in Ireland lies to the right of the roadway, in the district known as Lefanta ('Grey meadow'). Mesolithic artefacts dating back to Mesolithic times were found in the 1980s here by a UCC archaeological party. You will pass by the main industrial base of Cappoquin and along by another former property of the Greatrakes family.

'Old' Affane Churchyard today.

Old Affane: Continuing eastwards from here would bring the visitor to the ancient graveyard of Affane (restricted access), with some graves going back centuries. Affane means 'middle ford', a name dating from the time when a substantial medieval village stood here, at crossing points on both the Blackwater and Finnisk rivers.

Dromana bridge and gates.

Dromana Gate Lodge & Bridge: The remarkable gate lodge built in Hindu Gothic style marks the old entrance to the Villiers-Stuart estate. It was built originally to replace a papier mache archway which celebrated the wedding of one of the Villiers-Stuart family. The bridge was part of the estate until the 1970s, when it was taken over and rebuilt by the county council.

The Battle of Affane: At Dromana Bridge there stands another lectern, commemorating the Battle of Affane. The road northwards past old Affane graveyard and heading towards Cappoquin again is known locally as Boheravaggera (Bóthar a' Mhachaire) the 'road of the battle'. It was along this route that the bloody Battle of Affane was fought in February, 1565, setting in motion the events which led to the Desmond Rebellions and subsequently the Plantation of Munster.

The Earl of Ormond, victor in the Battle of Affane, 1565

Beyond Dromana Bridge lies a beautiful area of rolling pastures and dense woods, with glimpses of the Blackwater in between. **Dromana House** (Limited Opening) was once home of the Fitzgeralds but for several centuries has been the base of the Villiers-Stuarts. Beyond it, and created by the Villiers-Stuart family, lies Villierstown, an 18th century village, purpose-built to house Ulster linen weavers brought to work on locally grown flax.

Dromana House, viewed from the opposite side of the river, with workers loading pit props onto the 'deWadden'.

Villierstown.

Villierstown itself has a number of plaques and depictions of its history, the most modern being a tribute to its famous athletic son, John Treacy, whose early training involved a five mile run to school in Cappoquin, and back again each day. The quay at Villierstown once had a ferry boat which brought passengers across to the western side of the Blackwater and still gives fine views of the deep valley through which the great river winds its way southwards to Youghal.

6. Moving Eastwards through the Town (Walking trail)

An early 20th century view of upper Main Street, rising to the imposing barracks building.

In some respects, the eastern part of Cappoquin is the newest part. Yet, it is recorded that the town's military barracks was based here, in Barrack Street (also now called Allen Street), in the early 18th century. The entrance to Cappoquin House stands at the point where Main Street narrows and becomes Barrack Street, the same spot where the last action of the Young Ireland movement occurred on the 16th September 1849. Around the corner, Green Street was home not only to the village green but also to the fever hospital and the famous Keane iron foundry.

As we go further east, while the streetscape is very much of the 20th century, the Shanbally area was once a village in its own right. It was here that, until the first years of the 21st century, the major educational institutions of the town were gathered. The town's remaining school, Bunscoil Gleann Sídheáin, lies at the southern side of the main road. Overlooking the point where Barrack Street becomes Shanbally, and vice versa, stands the Convent of Mercy. The imposing building boasts the finest view of the lower Blackwater valley that there is. The lower side of Shanbally is known generally as the Dane's Field but the origins of this name are more or less a mystery today.

Thomas and Noel Lonergan at work, as pictured by Susan Nicassio in 1980

Few families have been as synonymous with Cappoquin as the Lonergans, who set up a tailoring business in Main Street in the 1920s. The shop has doubled as a focal point for hurlers and the occasional Tipperary man since; part of the town's rich craft heritage.

The Library: The town's Carnegie Free Library was built in the early years of the 20th century with funds from the famous Carnegie Foundation of the USA. It has also served as the town's courthouse on occasion, and is now both a meeting venue and a regular exhibition centre.

Cappoquin's Carnegie Library

Sargent's Garage, during the early 1960s, with Michael Sargent (right) and Jack Fraher in attendance.

Sargent's Garage: One of the first car dealerships in County Waterford, Sargent's Garage operated on this site for over fifty years under the auspices of one of the town's great sporting families. The Sargent Cup county hurling league is named after Willie Sargent, a champion motorcyclist who was killed in a crash.

Walsh's Hotel/The Barracks: The building now known as Walsh's Hotel was originally the army barracks and then constabulary barracks in Cappoquin. The site housed a troop of horse or more and was the focal point of the 1849 Young Ireland attack in Cappoquin, which was the last element of the movement's activities in the country.

The focal point of the 1849 rebellion.

A Star plough, as made at Cappoquin.

The Foundry and Implement Works: Here stood the internationally known farm implement works of R & F Keane. It employed 120 workers in the late 19th century and exported farm machinery under the famous STAR brand as far away as Romania and South Africa. A fever hospital also stood nearby, between the foundry and the barracks.

Cappoquin House

Cappoquin House (Limited Opening): The Georgian home of the Keane family since the 18th century also stands on the site of an Elizabethan house built by Sir Christopher Hatton and of an earlier, medieval castle owned by the Fitzgeralds. Destroyed during the Troubles of the 1920s, the main building was destroyed and later rebuilt, with a flat roof replacing the original slated one, and the main entrance door was moved to the courtyard.

The Desmond: Cappoquin's former cinema and theatre stood on this site from 1945 to 2005. The Desmond hosted locally produced shows, as well as visiting players like Maureen Potter and Jimmy O'Dea. It served as the Parish Church during renovations of St. Mary's in 1967 and later still as a tyre centre and garage.

The Desmond as it once was.

The Cappoquin Vocational School.

Cappoquin Vocational School: Second level education was provided in this building for much of the 20th century, from the 1920s as the Cappoquin VEC school and from the 1960s as part of St. Anne's. In addition to the regular classes held in this school, it won considerable fame for its night classes, not least in Irish, under the leadership of Labhrás Ó Cadhla and Pádraig Ó Fiannusa.

The Convent Primary School: The convent primary school was opened on this site in 1903 and continued to offer excellent educational service to the community for over a century afterwards.

A Jack Fraser drill display at the convent in the 1960s

Convent of Mercy (Private): After half a century in the town centre, the Mercy nuns built their main convent building here between 1902 and 1903. The building became synonymous with religious and educational life in Cappoquin for a full century, until closed when the order left the town.

The Convent of Mercy in Shanbally.

St. Anne's: St. Anne's secondary school, run by the Mercy order, stood on this site until its closure in 2003. Originally a girls' school, it became co-eduational after the introduction of free education in 1967. Famous alumni include world champion athlete John Treacy and poet and novelist, Thomas McCarthy.

An aerial view of St. Anne's and the other schools

Cappoquin Boys' School: The boys' national school stood near this spot from its construction in 1945 to its demolition in 2005. It had replaced the school in the Parochial Hall and was itself replaced just across the road by Bunscoil Gleann Sídheáin..

The Boys' School.

Most of the Shanbally area that we see today dates from the 1950s or more recently. The picture to the right here shows an aerial view of the first block of houses being built. O'Donohue Terrace was named after the local rebel who died in the 1849 attack on the Barracks.

The first houses being built at Shanbally

7. To the East and North-East (Driving or cycling trail)

Moving from Shanbally out of Cappoquin, the rolling plain which stretches down to Dungarvan is clearly visible to the south, as are the hills which eventually finish at Helvick Head.

The Monument: This monument was erected in the 1960s by the survivors of the old West Waterford Brigade of the IRA to commemorate the people who had fought and died locally during the Troubles of the early 20th century. Local fundraising, involving people of many political viewpoints, covered the cost.

The group pictured at the opening of the Monument.

With the Monument situated at a fork in the road eastwards from Cappoquin, one is faced with a choice of routes. Taking the one to the right (south) of the Monument brings one down a steep hill, passing Glenshelane, a beautiful signposted forest walk.

Apart from its natural beauty, watch for an old engineering device built into the river to bring water up hill from the river to the Keane demesne. This wooded valley was the first home of Cappoquin Hurling Club and held a number of sites of archaeological interest. Glenshelane House (Private) nestles in its midst. Towards the north east of Glenshelane wood stands an old Iron Age lios (Private lands) at Cluttahina, further evidence of the prehistoric activity which dotted the landscape locally.

Belleville House

Belleville House (Private): Belleville was the early home of poet John Walsh, whose father was a steward here. In the 20th century, it was the home of the author of *Good Behaviour*, Molly Keane, who was married to a member of the Cappoquin House family. It was also the early childhood home of acclaimed movie director from the silent era, William Desmond Taylor. He was murdered in Hollywood in 1922.

The Earl's Stone: On the side of the Bóthar Garbh, the old route to Clonmel, stands the huge boulder thought to be the resting place of the wounded Earl of Desmond en route to Clonmel prison after the Battle of Affane.

The Earl's Stone.

Although moving well outside Cappoquin parish at this point, this adjoining area of Affane (also covered in Trails 4 and 5) has many natural links with Cappoquin. Beyond here lie Modeligo, Touraneena and other areas steeped in heritage, famed for Irish dancing, the Irish language and their natural beauty. Their heritage has been well charted elsewhere.

Just a note to add that, to the south, at 'new' Affane, stands the lovely local parish church, and the school house which served the community until its closure due to the rationalisation of the 1960s. Continuing past here brings one again to the site of the Battle of Affane further south.

Affane schoolhouse.

Going back to the Monument outside Cappoquin and then taking the left or northern route, one now moves in the direction of **Mount Melleray**. The area itself is a marvellous mix of mountains and valleys, of woodlands and heather.

Left: The Old Forge at Melleray Bridge

A very popular Marian grotto stands beside Melleray bridge but the centrepiece of Mount Melleray is, of course, the Cistercian monastery which has stood on the mountain side for over 175 years. The school buildings here no longer stand, but the monastery's churches, café, shop and heritage centre are very well worth a visit.

Mount Melleray Abbey, a mid 20th century photograph

Acknowledgements

This first Cappoquin heritage guide has been an ongoing project of the Cappoquin Heritage Group since June 2006. In some respects, a heritage guide should always be seen as an ongoing project, never completed, always ready to acknowledge new elements of our area's past. We ask readers to accept that this is a first edition, a first attempt to provide a user-friendly guide to our place. We hope there will be a second edition, if not more than that, and will do everything possible to ensure that any omissions or errors will be rectified as things go on.

We would like to acknowledge the fantastic support we have been given locally in our efforts to develop this heritage trail. The generosity of Aidan Walsh in providing the stone plaques which identify many of the people and places on the trail is really beyond the level of fantastic. So too has been the time and talent of a number of artists, who did artwork for some of the lectern displays and are named on them. Seamus Ó Rodaigh, Antón Daltún and Fr. John Kiely assisted us hugely in translation work on the lectern displays. The skills of Arthur Butler, Michael O'Doherty and Jacinta Uniacke in creating the various display units are there for all to see, and we thank them greatly for their work also. The text of this booklet has been developed and edited by different members of the Heritage Group, with modern photography courtesy of group member, Helen McGrath. Where identifiable, other photographers have been credited individually.

Moving beyond Cappoquin, the practical help of Noel Healy, Paddy Walsh and the workers of Waterford County Council is very gratefully acknowledged. So too is the financial assistance of the Heritage Council, which part-funded elements of the work, including some publication costs of this booklet. Our printers, Modern Printers of Kilkenny, have become firm friends at this stage, not least because their work on our group's first publication, *Cappoquin: A Window on the Past*, helped to fund the major costs involved in setting up the group's operations.

Finally, we thank the people of Cappoquin and its surrounding areas. It is impossible to define where these surrounding areas end. We have generally, for the purposes of this booklet, confined things to the town, parish and river bend area. In doing so, we hope sincerely that we have not trespassed on the identity of any other place unduly, or that we have not omitted too much that should have been included in this first edition. In other respects, the Cappoquin area extends to Australia, the USA, Canada and many other places. We are also reminded that many new 'Cornerstone' dwellers have come from other places around the world and we hope this booklet helps to give them some flavour of what Cappoquin is all about too.

As Cappoquin Heritage Group comes under the umbrella of Cappoquin Civic Link, readers can find more details on our activities at www.cappoquin.net.

White Young Green

Ecological Assessment

Ecological Assessment of a Composting Facility at Cappoquin, Co. Waterford.

for
Molaisín Composting Ltd

May 2008

thinking beyond construction

White Young Green

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White Young Green Apex Business Centre, Blackthorn Road, Sandyford Dublin 18
Telephone: +353 (0) 1293 1200 Facsimile: +353 (0) 1293 1250 E-Mail: dublin@wyg.com

MOLAISÍN COMPOSTING LTD.

ECOLOGICAL ASSESSMENT OF A COMPOSTING FACILITY AT CAPPOQUIN, CO. WATERFORD

MAY 2008

CONTENTS

TABLES

APPENDICES

1 INTRODUCTION

White Young Green was commissioned to carry out an ecological assessment of the lands at the Molaisin Composting Ltd. composting facility at Kilmolash, Co. Waterford. The ecological assessment is part of a waste licence application for the site. The aim of this study is identify any likely significant impacts of the facility on the ecology of the site and adjacent habitats.

The compositing facility currently operates under a Waterford County Council issued waste permit. The facility is now required to operate under an EPA issued waste licence. The compositing facility was operational on the day of site visit.

The ecological assessment was prepared in accordance with legislative requirements including the European Directive (85/226/EEC) amended by the Council Directive 97/11/EC and effected by the Statutory Regulations in Ireland (including S.I. No. 349 of 1989 and SI Nos. 92 & 93 of 1999) and Schedule 1 of the 1999 Regulations, (S.I. No. 93 of 1999). This assessment was additionally carried out in accordance with the Draft Guidelines on the Information to be contained in Environmental Impact Statements (Environmental Protection Agency, 2002) and also Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (Environmental Protection Agency, 2003).

1.1 Brief Site Description

The 6.5 acre site is located approximately 11km west of Dungarvan, Co, Waterford and approximately 4km north of Aglish. The study site consists in the main of agricultural and landscaped land. The main access road runs southwest from a local third class road and the site can be accessed from an additional entrance at the southwest site boundary. The study site is located within an agricultural landscape and the SW area of the site has been excavated to allow construction of the composting facility. A sharp escarpment now exists.

2 METHODOLOGY

The study comprised both desk and field study elements. The desk study also encompassed a wider area of up to 10km from the site boundary. The area investigated during the field survey is the area contained within the site boundary and the lands immediately surrounding the site. The baseline ecological conditions are described, including the nature conservation status of habitats and species present. The results from the surveys were used to produce an informed assessment of the potential impacts on ecology and nature conservation interests. Consequently, appropriate mitigation measures are proposed to avoid, minimise or compensate for the potential negative effects identified.

The desk study involved consultation with relevant statutory and non-statutory bodies including:

- Dept. of Environment Heritage & Local Government
- National Parks and Wildlife Service
- Southern Regional Fisheries
- Waterford County Council Heritage Officer
- BirdWatch Ireland

To date, no comments have been received from any of the bodies.

2.1 Field Survey

The field surveys were carried out on the 27th of March 2008. Weather conditions were overcast, with sunny spells. Weather conditions in the week prior to field work were overcast with sunny spells and showers.

1..1 Survey Limitations

The field surveys was carried out outside the botanic growing season which is generally considered to be May to August. Flora recorded from the site may not provide a full representation of species, due to additional species yet to come into flower or species dying back from earlier in the season. Despite this, the habitat mapping of the site is considered to be accurate given the identification of the species present and abiotic features. Confirmation of mammal species (including badgers, otters, hares and bats) using the site would require a detailed mammal survey. Confirmation of breeding bird species using the site would require a breeding season survey (between April and June).

1..2 Flora

Habitats present were classified according to Fossitt (2000) in accordance with *Draft Habitat Survey Guidelines: a Standard Methodology for Habitat Survey and Mapping in Ireland* (Heritage Council, 2005). Habitats were mapped with Target Notes used to describe features of interest; these are represented in Appendix A. Botanical nomenclature follows Webb *et al.,* (1996).

1..3 Fauna

Mammals

The survey for vertebrate fauna was carried out by means of a search within the site and the immediate locality. The presence of mammals is indicated principally by their signs, such as dwellings, feeding signs or droppings - though direct observations are also occasionally made.

A number of mammalian species, including bats, Irish hare and badgers, are protected under the Wildlife Act (1976, and Amendment, 2000) and it is an offence to wilfully interfere with or destroy the breeding or resting place of these species, although there are exemptions. Surveys were undertaken to identify those species listed under Schedule 5 of the Wildlife Act 1976 which would be expected to occur on the site. These potentially include bats and badger and hare.

Birds

Most bird species are protected under the Wildlife Act (1976), except those regarded as pest species and those considered as game species (where they may be hunted under specified conditions). Bird species listed under Annex I of the EU Birds Directive (79/409/EU) are of particular concern. It is an offence to interfere with the breeding place of protected species, though there are exemptions for developments, such as road construction and building works. For the generally common species, best practice provision is made to limit the removal of vegetation and nesting habitat during the breeding season. Bird species observed during the survey were recorded and an assessment of the ornithological interest of the site is included with probable species of conservation interest, if any, likely to be breeding.

Reptiles and Amphibians

The common lizard, the common frog and the smooth newt are all protected species under the Wildlife Act (1976). It is standard good practice to ensure protection of breeding sites where these have been identified and to make provision for maintenance of the species if possible. An assessment of any habitat that may have the potential to support reptiles and amphibians was undertaken.

2.2 Conservation Evaluation of Habitats and Species

The habitats within the site were evaluated in terms of their conservation value and assigned an evaluation rating based on the criteria outlined in Table 1 in accordance with standard guidelines (IEEM, 2006).

Table 1: Site Conservation Evaluation: Rating Qualifying Criteria

Rating	Qualifying Criteria
A	**Internationally Important** Sites designated (or qualifying for designation) as an SAC* or SPA* under the EU Habitats or Birds Directives. Undesignated sites containing good examples of Annex I priority habitats under the EU Habitats Directive. Major salmon river fisheries. Major Salmonid (salmon, trout or char) lake fisheries.
B	**Nationally Important** Sites or waters designated or proposed as an NHA* or Statutory Nature Reserve. Undesignated sites containing good examples of Annex I habitats (under EU Habitats Directive). Undesignated sites containing significant numbers of resident or regularly occurring populations of Annex II species under the EU Habitats Directive or Annex I species under the EU Birds Directive or species protected under the Wildlife (Amendment) Act 2000. Major trout river fisheries. Water bodies with major amenity fishery value. Commercially important coarse fisheries.
C	**High Value, Locally Important** Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or significant populations of locally rare species. Sites containing any resident or regularly occurring populations of Annex II species under the EU Habitats Directive or Annex I species under the EU Birds Directive. Large water bodies with some coarse fisheries.
D	**Moderate Value, Locally Important** Sites containing some semi-natural habitat or locally important for wildlife. Small water-bodies with some coarse fisheries value or some potential salmonid habitat. Any water body with unpolluted water (Q-value 4-5).
E	**Low Value, Locally Important** Artificial or highly modified habitats with low species diversity and low wildlife value. Water bodies with no current fisheries and no significant potential fisheries value.

(after Natura Site Evaluation Scheme, NRA, 2006).

SAC = Special Area of Conservation; SPA = Special Protection Area; NHA = Natural Heritage Area.

2.3 Impact Assessment

The significance of the potential impacts of the proposed works were assessed using the criteria outlined in Table 2.

Table 2: Impact Assessment Matrix

Impact Level	A Sites Internationally Important	B Sites Nationally Important	C Sites High Value, Locally important	D Sites Moderate value, Locally important.	E Sites Low Value, Locally Important
Severe Negative	Any permanent impacts	Permanent impacts on a large part of a site.			
Major Negative	Temporary impacts on a large part of a site	Permanent impacts on a small part of a site	Permanent impacts on a large part of a site		
Moderate Negative	Temporary impacts on a small part of a site	Temporary impacts on a large part of a site	Permanent impacts on a small part of a site	Permanent impacts on a large part of a site	
Minor Negative		Temporary impacts on a small part of a site	Temporary impacts on a large part of a site	Permanent impacts on a small part of a site	Permanent impacts on a large part of a site
Neutral	No Impacts	No Impacts	No Impacts	No Impacts	Permanent impacts on a small part of a site
Minor Positive				Permanent beneficial impacts on a small part of a site	Permanent beneficial impacts on a large part of a site
Moderate Positive			Permanent beneficial impacts on a small part of a site	Permanent beneficial impacts on a large part of a site	
Major Positive		Permanent beneficial impacts on a small part of a site	Permanent beneficial impacts on a large part of a site		

(After Natura Site Evaluation Scheme, NRA, 2006).

2.4 Receiving Environment

2.4.1 Consultation Responses

A review of the National Parks and Wildlife Service (NPWS) database (www.heritagedata.ie) revealed that the site is not contained within or contains a designated site of ecological interest. The application of a 10km buffer to the site boundary revealed one Natural Heritage Areas, one Special Areas of Conservation and one Special Protection Area as detailed in Table 3 below and Appendix B.

Table 3: Nature Conservation Designations in proximity to the study site

Designation	Site Code	Site Name	Distance from Study Area (km)	Direction
NHA	72	Blackwater River and Estuary	Ca.2km	North west
SAC	2170	Blackwater River (Cork & Waterford)	Ca.0.5km	North
SPA	4028	Blackwater Estuary	Ca.8km	South west

The available site synopsis for the SAC and NHAs are provided in Appendix C with a list of protected flora and fauna species found within a 10km grid of the study site none of which were found onsite during the field survey.

2.4.2 Field survey results

2.4.2.1 Flora

The location of habitats and associated Target Notes are illustrated in the habitat map in Appendix A. The results of the botanical survey and habitat assessment carried out for the purposes of this study are described below with conservation evaluation ratings (refer to Table 1). Nomenclature for each species is given at first mention. The following habitat types were identified on the site (Fossitt, 2000):

Grassland and marsh

- Improved agricultural grassland (GA1)

Woodland and scrub

- Hedgerows (WL1)
- Treelines (WL2)
- Scrub (WS1)

Cultivated and built land

- Buildings and artificial surfaces (BL3)
- Tilled land (BC3)
- Stone walls and other stonework (BL1)

Exposed rock and disturbed ground

- Spoil and bare ground (ED2)
- Exposed calcareous rock (ER2)

Improved grassland (GA1)

The composting plant is contained within an agricultural landscape. Fields of improved agricultural grassland adjoins the study site along the north and north eastern boundaries, as shown in appendix A. This habitat type was found to be of low species diversity as the sward is generally homogenous and regularly fertilised (granules of fertiliser evident on ground surface). Species composition identified during this study includes perennial rye grass *Lolium perenne*, yorkshire fog *Holcus lanatus*, clover *Trifolium* spp., daisy *Bellis perennis* and broadleaved dock *Rumex obtusifolius*. These species are typical of this habitat in Ireland. No rare or protected flora was recorded. It is believed (using aerial photography) that the study site itself was agricultural grassland prior to the construction of the composting facility.

Ecological Evaluation

This is a species-poor habitat of low conservation value. It is widespread throughout Ireland and is evaluated as E.

Hedgerows (WL1)

Field boundaries included hedgerows and often over grown hedgerows forming treelines. Hedgerows bordering agricultural fields (outside the site boundary but form important wildlife corridors leading from treelines lining the site) were dominated by hawthorn *Crataegus monogyna* and were most likely maintained on an annual basis. The species composition was very uniform and well managed. The understorey consisted of bramble *Rubus fruticosus* agg., ivy *Hedera helix*, primrose *Primula vulgaris*, broadleaved dock *Rumex obtusifolius*, common nettle *Urtica dioica* L, cleavers *Galium aparine* and moss spp.. Along the entranceway running in a north easterly direction, young tree species have been planted (target note A, Appendix A). Species include hawthorn and cherry *Prunus avium*.

Ecological Evaluation

This habitat is important for wildlife including avian fauna and as foraging routes for bats and other mammal species. The habitat has moderate species richness. Both the habitat and the species recorded

are common within the wider landscape. Overall, this habitat is considered to be of moderate local conservation value and is evaluated as D.

Treelines (WL2)

Unmanaged overgrown hedgerows containing mature trees delimit the site boundary. Dominant tree species include hawthorn hedgerows with intermittent ash *Fraxinus excelsior,* elder *Sambucus nigra,* sycamore *Acer pseudoplatanus,* Holly *Ilex aquifolium* and Horse-chestnut *Aesculus hippocastanum*. Ground flora included ivy, brambles, honey suckle *Lonicera periclymenum*, bracken, Lesser celandine *Ranunculus ficaria*, primrose, barren strawberry *Potentilla sterilis*, violet *Viola spp.*, red dead nettle *Lamium purpureum*, harts tongue *Phyllitis scolopendrium*, Male fern *Dryopteris filix-mas*, broadleaved dock, cleavers, moss spp., common nettles, dandelion *Taraxacum officinale agg.*, dog rose *Rosa canina* and herb-robert *Geranium robertianum*. The western boundary along a roadside has a well developed understory with a stone wall and efforts should be made to maintain this area. This treeline maintains connectivity with a mixed broadleaved woodland (WD1) to the south west of the site. An area of scrub descends from this treeline and planting of a variety of tree species (such as rowan *Sorbus aucuparia*) has increased the age structure of the tress, species diversity thereby adding to the ecological value of the area.

Ecological Evaluation

Trees and treelines are important for breeding birds and as commuting, roosting and foraging sites for bats and other wildlife. Owing to their extent and utilisation as corridors for wildlife and this habitat is evaluated as D.

Scrub (WS1)

Gorse *Ulex europaeus* lines the roadway entering the site from a south west direction. An earth bank surrounds the composting building on which gorse is encroaching forming a vegetative a boundary.

Ecological Evaluation

This habitat is important for wildlife including avian fauna and as foraging routes for bats and other mammal species. This habitat is considered to be of moderate local conservation value and is evaluated as D.

Buildings and artificial surfaces (BL3)

This category includes all artificial surfaces including tarmacadam roadways, pathways, bridges (non-stone) and buildings (including the composting facility).

Ecological Evaluation

Such artificial habitats are of low ecological value and are evaluated as E. It should be noted however that prior to the renovation or removal of any buildings a bat survey is required.

Tilled land (BC3)

The field adjoining the north east boundary of the site has been prepared for planting with arable crops.

Ecological Evaluation

Agricultural land is an artificial habitat although the verges and field margins can house a variety of foraging. Such artificial habitats are of low ecological value and are evaluated as E.

Stonewalls and other stonework (BL1)

A stonewall marking the boundary of the site to the west along a roadway underneath a mature treeline. Stone walls are important for wildlife and this stonewall is an historic land boundary and supports a diversity of flora including lichens, mosses, ferns and flowering plants and should be maintained.

Ecological Evaluation

Stonewalls are important for wildlife (corridors and resources). Owing to its age it is evaluated as D.

Spoil and bare ground (ED2)

The laneway leading running in a north east to south west of the site is surfaced with a layer of mixed gravel. The laneway leading from the composting building up gradient to the (south westerly direction) is less disturbed and contains a small proportion of recolonising plants, mainly grasses and herbs.

Ecological Evaluation

This habitat is has low diversity and is evaluated as E.

Exposed calcareous rock (ER2)

An area of bedrock has been excavated for the composting facility leaving a escarpment of exposed bedrock facing north east as the south western area of the site. This area has been excavated relatively recently (less than 10 years) and therefore little recolonisation of flora has occurred.

Ecological Evaluation

This habitat is has low diversity and is evaluated as E. Overtime this could be increased to D.

Adjacent Habitats

An assessment of the habitats adjacent to the proposed site was undertaken as part of the overall habitat assessment. The lands immediately surrounding the study site have little semi-natural habitat, apart from hedgerows and are intensively managed for agriculture. To the south west perimeter of the site an area of mixed broadleaved woodland is dissected from the site by a small roadway. This is an important area for wildlife and connectivity with this patch of woodland should be maintained through the treelines and area of scrub. These areas are of low to moderate ecological value.

Overall Assessment - Flora

The site predominantly consists of highly modified, managed habitats, with low species diversity. The treelines and hedgerows are locally important providing cover and forage for flora and fauna. No protected or rare species were recorded from the site during this survey.

2.4.2.2 Fauna

Common species

Typical common rodent species including house mouse *Mus* (*musculus*) *domesticus*, brown rat *Rattus norvegicus* and wood mouse *Apodemus sylvaticus* will use the site. Rabbit *Oryctolagus cunniculus* burrows were evident along the main roadway with fox *Vulpes vulpes* and pygmy shrew *Sorex minutus* are also likely to also be present in the locality. The hedgehog *Erinaceous europaeus* probably also occurs.

Protected Species

Badgers: During the habitat survey, attention was paid to hedgerows, treelines and grassland for the presence of badger *Meles meles* setts, refuges, tracks or latrines. Badgers are protected at all times under the Wildlife Act 1976 and 2000. Signs of badger activity (snuffle holes) were identified during the survey in the agricultural field, to the south east of the main entrance way (outside the site boundary) at target note A). A potential badger sett was located approximately 50m to the north west of the site entrancen (target note B). Owing to badgers nocturnal ecology it is WYG that traffic using the site will not pose any threat to the badgers unless traffic activity runs into the night. If this is the situation a full detailed mammal survey would be required to accurately determine the extent of this use.

Irish Hare: No hares *Lepus timidus hibernicus* were noted during the survey however it is considered likely that hares use the grassland habitats on the site.

Bats: All bat species are protected under the Irish Wildlife Act (1976) and Amendment Act (2000). Bat species are also protected under the Habitats Directive (92/43/EEC) in which member states are encouraged to conserve landscape features such as field boundaries, woodlands and river corridors. Ireland ratified the Berne and Bonn conventions and is therefore obliged to promote bat conservation, identification and protection of habitats utilised by bats.

Although a dusk/dawn emergence survey was not carried out, the potential of the site to support bats was assessed. The mature treelines running along the site boundary and the presence of buildings provide potential roost spaces for a number of bat species. Species expected to be using the site would include Pipistrelles *Pipistrellus sp.* and Leisler's *Nyctalus leisleri* that may use the treelines to forage for insects and as commuter routes.

Common (Smooth) Newt and Common Frog: No newts were recorded from the site. A drainage channel crosses the main entrance and tadpoles were noted within this stream to the north of the site.

Common Lizard: No common lizards *Lacerta vivipara* were witnessed during the walkover and the site is not considered suitable for this species.

Otter: Otters occur close to major water bodies and the site does not support suitable habitat for this species.

Birds: A walkover survey was carried out during the habitat survey. Species noted that are common in the Irish countryside and gardens include rooks *Corvus frugilegus*, magpie *Pica pica*, blackbird *Turdus merula*, woodpigeon *Columba palumbus*, wren *Troglodytes troglodytes,* thrush *Turdus philomelos*, robin *Erithacus rubecula,* chaffinch *Finfukka coelebs* and Sparrowhawk *Accipiter nisus.*

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Overall Assessment - Fauna

The treelines, hedgerows and scrub present in the study area are important wildlife corridors for bats, breeding birds, rabbits and other mammals. The treelines and buildings within and in proximity to the study area could provide suitable roosting and forage for a number of bat species. If destruction or alteration (outside of normal management practices) of any of these habitats is required for construction works, verification of bat usage of the study area will be required by means of a detailed survey during the appropriate season and mitigated for appropriately.

3 IMPACT ASSESSMENT

3.1 Potential Impacts

Potential impacts associated with the development at the site include:

- Heavy machinery movement and maintenance
- On-site material storage
- Fuel storage
- Increased noise and dust
- Increased traffic flow
- Increased lighting

3.2 Ecological Impact Assessment

Operational activities will result in direct and indirect impacts on the site including:

- Disturbance in the form of ground tremors caused by traffic flow and noise
- Smell
- Increased lighting
- On a temporary level, activities on the site will lead to certain species, such as bat, bird and mammal species avoiding the operation area of the plant, with a potential for the pollution of surface water and of groundwater. Fauna may return to the site and with the implementation of effective mitigation, potential exists for the fauna to increase long term usage of the site.

4 MITIGATION MEASURES

Based on this assessment the following mitigation measures are recommended for the site:

- All operation works shall be carried out as per best industry standards and guidelines.

- Silt traps if required, should be constructed at locations that will intercept run-off to drainage ditches.

- The extent of the hedgerows and treelines within the site provides a semi-natural habitat that is used by avian fauna and mammals. Mature treelines and hedgerows should be maintained during operation of the facility and continue to be incorporated into the landscape design where possible, to maintain the linearity and connectivity of these wildlife corridors.

- Any necessary impacts to trees should take place outside the spring and summer period (March 1st and August 31st), unless authorisation is received from NPWS.

- Any further landscaping to minimise the visual impact of the proposed development and to compensate for hedgerow removal must utilise native tree species and be in character with the existing treelines and hedgerows *i.e.* planting of hawthorn, oak and ash.

- It is recommended that bat and bird boxes should be installed in suitable locations to encourage the continuing use of the site by these species. Recommendations for the installation of these will be made by a bat and bird specialists.

- Any ivy covered trees, which require felling, should be left to lie for 48 hours after cutting to allow for bats, possibly present beneath the cover, to escape.

- Mitigation measures will be put in place to reduce the movement of dust associated with the site works to adjacent habitats.

- An emergency plan should be developed for implementation at the site in the event of an accidental spillage or discharge of fuels or chemicals. The plan should include features such as upside-down water tight containers and high absorbency mats will be positioned at strategic points around the site to be used to temporarily store and soak up contaminated material in the event of a spill.

- All vehicles and machinery shall be kept in good working order and free from any leaks or defects. On-site refuelling, maintenance (if required) and any long term parking of vehicles should only take place on hard stand areas.

- All waste oil, empty containers and other hazardous wastes are disposed of in conjunction with the requirements of the Waste Management Act 1996.

5 RESIDUAL IMPACTS

The habitats and fauna on the site which are directly impacted by the compositing facility are of low local ecological value to moderate local ecological importance. The activities of the composting facility will have minor to negligible impacts on the flora and habitats in the immediate local area.

Overall, the significance of these impacts (Table 2) are expected to be *Minor Negative to Neutral* based on the baseline ecological conditions; the scale of the operation; the loss of habitats during the construction of the facility (prior to survey); the species affected and the implementation of mitigation measures.

6 CONCLUSIONS

The operation works at Cappoquin composting facility, should follow best construction practices. The semi-natural habitats on and surrounding the site provide suitable habitat for birds and mammals. Any future landscaping of the area should incorporate species such as hawthorn, ash and oak.

The greatest potential to negatively impact the habitats onsite is the destruction of existing hedgerows and treelines, disturbance of fauna through increased lighting, noise and traffic flow and contamination of surface and ground water.

Any mitigation measures adopted during the operation phase should be subject to ongoing monitoring and maintenance during all phases of activity to determine their efficacy.

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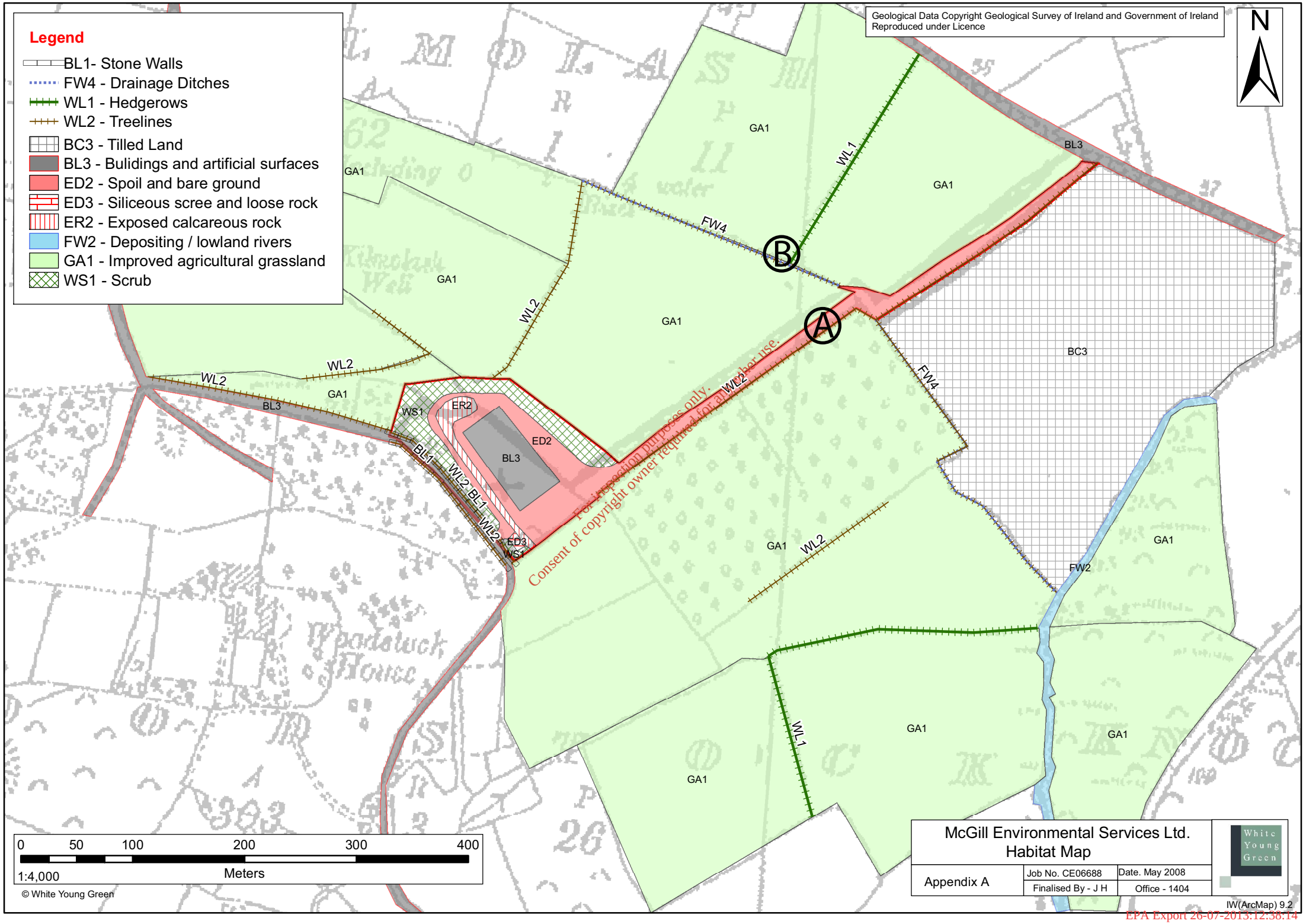
Appendix A

Habitat Map with Target Notes


Legend
BL1- Stone Walls
FW4 - Drainage Ditches
WL1 - Hedgerows
WL2 - Treelines
BC3 - Tilled Land
BL3 - Bulidings and artificial surfaces
ED2 - Spoil and bare ground
ED3 - Siliceous scree and loose rock
ER2 - Exposed calcareous rock
FW2 - Depositing / lowland rivers
GA1 - Improved agricultural grassland
WS1 - Scrub
Geological Data Copyright Geological Survey of Ireland and Government of Ireland
Reproduced under Licence
N
GA1
WL1
BL3
FW4
B
A
WL2
BC3
ER2
ED2
BL1
ED3
WS1
FW2
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Consent of copyright owner required for any other use.
0 50 100 200 300 400
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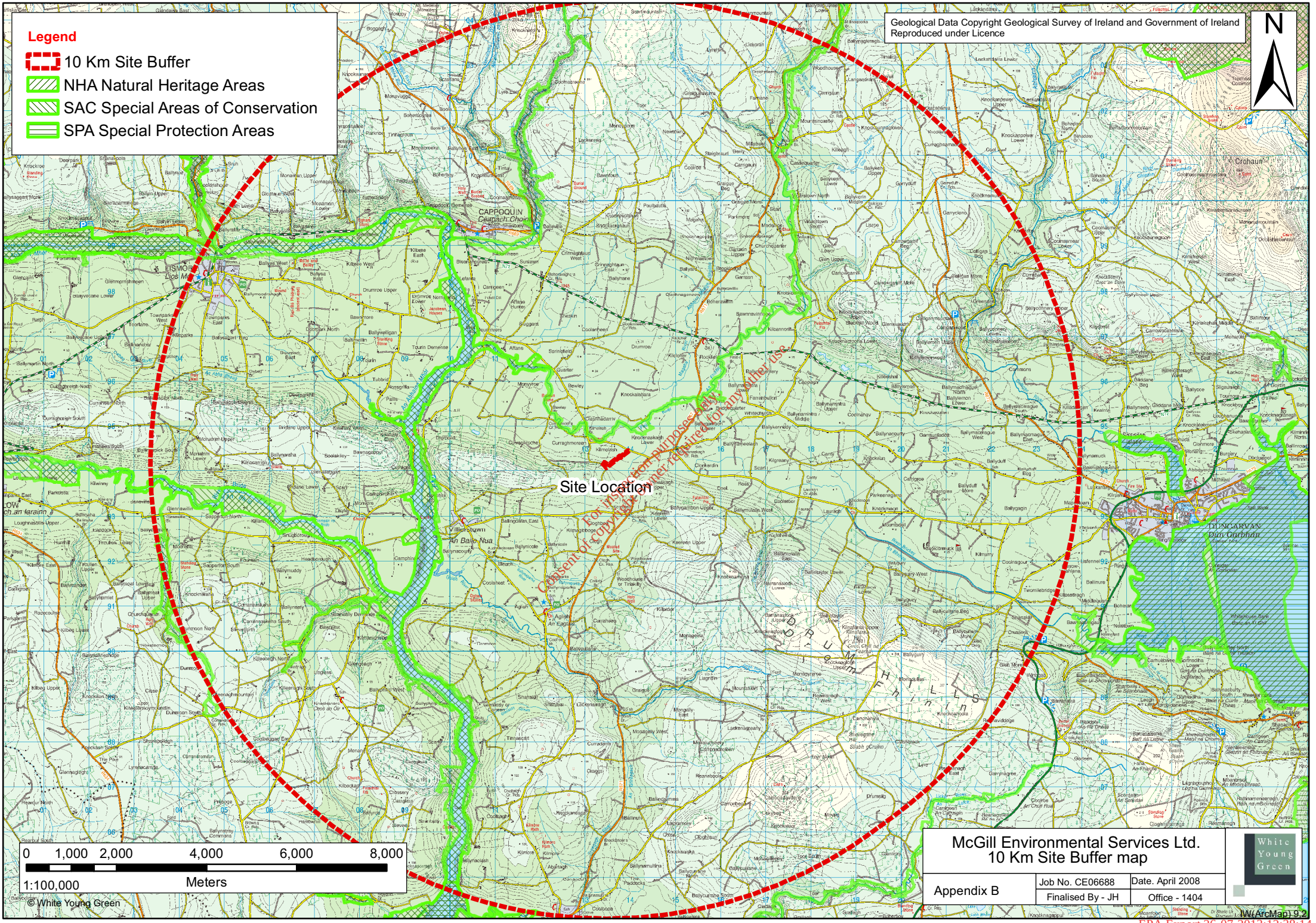
Meters
© White Young Green
McGill Environmental Services Ltd.
Habitat Map
Appendix A
Job No. CE06688
Date. May 2008
Finalised By - J H
Office - 1404
White Young Green
IW(ArcMap) 9.2
EPA Export 26-07-2013:12:38:14

Appendix B

Designated Sites of Conservation Interest


Legend
10 Km Site Buffer
NHA Natural Heritage Areas
SAC Special Areas of Conservation
SPA Special Protection Areas
Geological Data Copyright Geological Survey of Ireland and Government of Ireland
Reproduced under Licence
N
Site Location
CAPPOQUIN
Ceapach Choin
LISMORE
Lios Mór
Villierstown
An Baile Nua
TALLAGHTA
Tulach an Tarbh
TALLAGHTA
Tulach an Tarbh
TYNCARVAN
Tinn Garbhán
Crohaun
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For inspection purposes only.
0 1,000 2,000 4,000 6,000 8,000
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10 Km Site Buffer map
Appendix B
Job No. CE06688
Date. April 2008
Finalised By - JH
Office - 1404
White Young Green
IW(ArcMap) 9.2
EPA Export 26-07-2013:12:38:14

Appendix C

Site Synopses and Protected Flora and Fauna

SITE SYNOPSIS

SITE NAME: BLACKWATER ESTUARY SPA

SITE CODE: 004028

The Blackwater Estuary SPA is a moderately-sized, sheltered south-facing estuary, which extends from Youghal New Bridge to the Ferry Point peninsula, close to where the river enters the sea. It comprises a section of the main channel of the River Blackwater. At low tide, intertidal flats are exposed on both sides of the channel. On the eastern side the intertidal channel is included as far as Kinsalebeg and Moord Cross Roads is included, while on the west side the site includes part of the estuary of the Tourig River as far as Rincrew Bridge.

The intertidal sediments are mostly muds or sandy muds reflecting the sheltered conditions of the estuary. Green algae (*Enteromorpha* spp. and *Ulva lactuca*) are frequent on the mudflats during summer, and Bladder Wrack (*Fucus vesiculosus*) occurs on the upper more stony shorelines. The sediments have a macrofauna typical of muddy sands, with polychaete worms such as Lugworm (*Arenicola marina*), Ragworm (*Hediste diversicolor*) and the marine bristle worm *Nephtys hombergii* being common. Bivalves are also well represented, especially Peppery Furrow-shell (*Scrobicularia plana*), but also Sand Gaper (*Mya arenaria*), Baltic Tellin (*Macoma balthica*) and Common Cockle (*Cerastoderma edule*). Among the brown seaweed on the shoreline, the Shore Crab (*Carcinus maenus*) and the Rough Periwinkle (*Littorina saxatilis*) are found. Salt marshes fringe the estuarine channels, especially in the sheltered creeks.

The Blackwater Estuary is of high ornithological importance for wintering waterfowl, providing good quality feeding areas for an excellent diversity of waterfowl species.
At high tide, the birds roost along the shoreline and salt marsh fringe, especially in the Kinsalebeg area. Some birds may leave the site to roost in fields above the shoreline.

The site supports an internationally important population of Black-tailed Godwit (934), and has a further eight species with nationally important populations (all figures are average peaks for the five winters 1995/96 to 1999/2000): Shelduck (151), Wigeon (1,232), Golden Plover (2,947), Lapwing (3,988), Dunlin (2,016), Curlew (1,194), Redshank (634) and Greenshank (30). A population of Bar-tailed Godwit (172) is very close to the threshold for national importance. Other species which occur in significant numbers include Grey Heron (27), Teal (527), Mallard (148), Oystercatcher (508), Grey Plover (53), Knot (50) and Turnstone (56). The site also supports Brent Goose (19), Red-breasted Merganser (8), Shoveler (23), Ringed Plover (29) and Cormorant (60). The site is also notable for supporting large concentrations of gulls in autumn and winter, including Black-headed Gull (549), Common Gull (253), Lesser Black-backed Gull (602), Great Black-backed Gull (227) and Herring Gull (86).

Little Egret uses the site regularly during the year as there is a breeding colony upstream. The estuary provides an important feeding area for these birds (15, with a maximum of 26).

The Blackwater Estuary SPA is an internationally important wetland site on account of the population of Black-tailed Godwit it supports. It is also of high importance in a national context, with eight species having populations which exceed the thresholds for national importance. The occurrence of Little Egret, Golden Plover and Bar-tailed Godwit is of particular note as these species are listed on Annex I of the E.U. Birds Directive. The site has been well-studied, with detailed monthly counts extending back to 1974.

SITE SYNOPSIS

SITE NAME: BLACKWATER RIVER (CORK/WATERFORD)

SITE CODE: 002170

The River Blackwater is one of the largest rivers in Ireland, draining a major part of Co. Cork and five ranges of mountains. In times of heavy rainfall the levels can fluctuate widely by more than 12 feet on the gauge at Careysville. The peaty nature of the terrain in the upper reaches and of some of the tributaries gives the water a pronounced dark colour. The site consists of the freshwater stretches of the River Blackwater as far upstream as Ballydesmond, the tidal stretches as far as Youghal Harbour and many tributaries, the larger of which includes the Licky, Bride, Flesk, Chimneyfield, Finisk, Araglin, Awbeg (Buttevant), Clyda, Glen, Allow, Dalua, Brogeen, Rathcool, Finnow, Owentaraglin and Awnaskirtaun. The extent of the Blackwater and its tributaries in this site, flows through the counties of Kerry, Cork, Limerick, Tipperary and Waterford. Towns along, but not in the site, include Rathmore, Millstreet, Kanturk, Banteer, Mallow, Buttevant, Doneraile, Castletownroche, Fermoy, Ballyduff, Rathcormac, Tallow, Lismore, Cappoquin and Youghal.

The Blackwater rises in boggy land of east Kerry, where Namurian grits and shales build the low heather-covered plateaux. Near Kanturk the plateaux enclose a basin of productive Coal Measures. On leaving the Namurian rocks the Blackwater turns eastwards along the northern slopes of the Boggeraghs before entering the narrow limestone strike vale at Mallow. The valley deepens as first the Nagles Mountains and then the Knockmealdowns impinge upon it. Interesting geological features along this stretch of the Blackwater Valley include limestone cliffs and caves near the villages and small towns of Killavullen and Ballyhooly, the Killavullen caves contain fossil material from the end of the glacial period. The associated basic soils in this area support the growth of plant communities which are rare in Cork because in general the county's rocks are acidic. At Cappoquin the river suddenly turns south and cuts through high ridges of Old Red Sandstone. The Araglin valley is predominantly underlain by sandstone, with limestone occurring in the lower reaches near Fermoy.

The site is a candidate SAC selected for alluvial wet woodlands and Yew wood, both priority habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected as a candidate SAC for floating river vegetation, estuaries, tidal mudflats, *Salicornia* mudflats, Atlantic salt meadows, Mediterranean salt meadows, perennial vegetation of stony banks and old Oak woodlands, all habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected for the following species listed on Annex II of the same directive - Sea Lamprey, River Lamprey, Brook Lamprey, Freshwater Pearl Mussel, Crayfish, Twaite Shad, Atlantic Salmon, Otter and the plant, Killarney Fern.

Wet woodlands are found where river embankments, particularly on the River Bride, have broken down and where the channel edges in the steep-sided valley between Cappoquin and Youghal are subject to daily inundation. The river side of the embankments was often used for willow growing in the past (most recently at Cappoquin) so that the channel is lined by narrow woods of White and

Almond-leaved Willow (*Salix alba* and *S. triandra*) with isolated Crack Willow (*S. fragilis*) and Osier (*S. viminalis*). Grey Willow (*S. cinerea*) spreads naturally into the sites and occasionally, as at Villierstown on the Blackwater and Sapperton on the Bride, forms woods with a distinctive mix of woodland and marsh plants, including Gypsywort (*Lycopus europaeus*), Guelder Rose (*Viburnum opulus*), Bittersweet (*Solanum dulcamara*) and various mosses and algae. These wet woodlands form one of the most extensive tracts of the wet woodland habitat in the country.

A small stand of Yew (*Taxus baccata*) woodland, a rare habitat in Ireland and the EU, occurs within the site. This is on a limestone ridge at Dromana, near Villierstown. While there are some patches of the wood with a canopy of Yew and some very old trees, the quality is generally poor due to the dominance of non-native and invasive species such as Sycamore, Beech and Douglas Fir (*Pseudotsuga menzsisii*). However, the future prospect for this Yew wood is good as the site is proposed for restoration under a Coillte EU Life Programme. Owing to its rarity, Yew woodland is listed with priority status on Annex I of the EU Habitats Directive.

Marshes and reedbeds cover most of the flat areas beside the rivers and often occur in mosaic with the wet woodland. Common Reed (*Phragmites australis*) is ubiquitous and is harvested for thatching. There is also much Marsh Marigold (*Caltha palustris*) and, at the edges of the reeds, the Greater and Lesser Pond-sedge (*Carex riparia* and *C. acutiformis*). Hemlock Water-dropwort (*Oenanthe crocata*), Wild Angelica (*Angelica sylvestris*), Reed Canary-grass (*Phalaris arundinacea*), Meadowsweet (*Filipendula ulmaria*), Nettle (*Urtica dioica*), Purple Loosestrife (*Lythrum salicaria*), Marsh Valerian (*Valeriana officinalis*), Water Mint (*Mentha aquatica*) and Water Forget-me-not (*Myosotis scorpioides*).

At Banteer there are a number of hollows in the sediments of the floodplain where subsidence and subterranean drainage have created isolated wetlands, sunk below the level of the surrounding fields. The water rises and falls in these holes depending on the watertable and several different communities have developed on the acidic or neutral sediments. Many of the ponds are ringed about with Grey Willows, rooted in the mineral soils but sometimes collapsed into the water. Beneath the densest stands are woodland herbs like Yellow Pimpernel (*Lysimachia nemorum*) with locally abundant Starwort (*Callitriche stagnalis*) and Marsh Ragwort (*Senecio palustris*).

One of the depressions has Silver Birch (*Betula pendula*), Ash (*Fraxinus excelsior*), Crab Apple (*Malus sylvestris*) and a little Oak (*Quercus robur*) in addition to the willows.

Floating river vegetation is found along much of the freshwater stretches within the site. The species list is quite extensive and includes Pond Water-crowfoot (*Ranunculus peltatus*), Water-crowfoot (*Ranunculus* spp.), Canadian Pondweed (*Elodea canadensis*), Broad-leaved Pondweed (*Potamogeton natans*), Pondweed (*Potamogeton* spp.), Water Milfoil (*Myriophyllum* spp.), Common Club-rush (*Scirpus lacustris*), Water-starwort (*Callitriche* spp.), Lesser Water-parsnip (*Berula erecta*) particularly on the Awbeg, Water-cress (*Nasturtium officinale*), Hemlock Waterdropwort, Fine-leaved

Water-dropwort (*O. aquatica*), Common Duckweed (*Lemna minor*), Yellow Water-lily (*Nuphar lutea*), Unbranched Bur-reed (*Sparganium emersum*) and the moss *Fontinalis antipyretica*.

The grassland adjacent to the rivers of the site is generally heavily improved, although liable to flooding in many places. However, fields of more species-rich wet grassland with species such as Yellow-flag (*Iris pseudacorus),* Meadow-sweet, Meadow Buttercup (*Ranunculus acris*) and rushes (*Juncus* spp.) occur occasionally. Extensive fields of wet grassland also occur at Annagh Bog on the Awbeg. These fields are dominated by Tufted Hair-grass (*Deschampsia cespitosa*) and rushes.

The Blackwater Valley has a number of dry woodlands; these have mostly been managed by the estates in which they occur, frequently with the introduction of Beech (*Fagus sylvatica*) and a few conifers, and sometimes of Rhododendron (*Rhododendron ponticum*) and Laurel. Oak woodland is well developed on sandstone about Ballinatray, with the acid Oak woodland community of Holly (*Ilex aquifolium*), Bilberry (*Vaccinium myrtillus*), Greater Woodrush (*Luzula sylvatica*) and Buckler Ferns (*Dryopteris affinis, D. aemula*) occurring in one place. Irish Spurge (*Euphorbia hyberna*) continues eastwards on acid rocks from its headquarters to the west but there are many plants of richer soils, for example Wood Violet (*Viola reichenbachiana*), Goldilocks (*Ranunculus auricomus*), Broad-leaved Helleborine (*Epipactis helleborine*) and Red Campion (*Silene dioica*). Oak woodland is also found in Rincrew, Carrigane, Glendine, Newport and Dromana. The spread of Rhododendron is locally a problem, as is over-grazing. A few limestone rocks stand over the river in places showing traces of a less acidic woodland type with Ash, False Brome (*Brachypodium sylvaticum*) and Early-purple Orchid (*Orchis mascula*).

In the vicinity of Lismore, two deep valleys cut in Old Red Sandstone join to form the Owenashad River before flowing into the Blackwater at Lismore. These valleys retain something close to their original cover of Oak with Downy Birch (*Betula pubescens*), Holly and Hazel (*Corylus avellana*) also occurring. There has been much planting of Beech (as well as some of coniferous species) among the Oak on the shallower slopes and here both Rhododendron and Cherry Laurel (*Prunus laurocerasus*) have invaded the woodland.

The Oak wood community in the Lismore and Glenmore valleys is of the classical upland type, in which some Rowan (*Sorbus aucuparia*) and Downy Birch occur.

Honeysuckle (*Lonicera periclymenum*) and Ivy (*Hedera helix*) cover many of the trees while Greater Woodrush, Bluebell (*Hyacinthoides non-scripta*), Wood Sorrel (*Oxalis acetosella*) and, locally, Bilberry dominate the ground flora. Ferns present on the site include Hard Fern (*Blechnum spicant*), Male Fern (*Dryopteris filix-mas*), Buckler Ferns (*D. dilatata, D. aemula*) and Lady Fern (*Athyrium felix-femina*). There are many mosses present and large species such as *Rhytidiadelphus* spp., *Polytrichum formosum, Mnium hornum* and *Dicranum* spp. are noticeable. The lichen flora is important and

includes 'old forest' species which imply a continuity of woodland here since ancient times. Tree Lungwort (*Lobaria* spp.) is the most conspicuous and is widespread.

The Araglin valley consists predominantly of broadleaved woodland. Oak and Beech are joined by Hazel, Wild Cherry (*Prunus avium*) and Goat Willow (*Salix caprea*). The ground flora is relatively rich with Pignut (*Conopodium majus*), Wild Garlic (*Allium ursinum*), Garlic Mustard (*Alliaria petiolata*) and Wild Strawberry (*Fragaria vesca*). The presence of Ivy Broomrape (*Orobanche hederae*), a local species within Ireland, suggests that the woodland, along with its attendant Ivy is long established.

Along the lower reaches of the Awbeg River, the valley sides are generally cloaked with mixed deciduous woodland of estate origin. The dominant species is Beech, although a range of other species are also present, e.g. Sycamore (*Acer pseudoplatanus*), Ash and Horse-chestnut (*Aesculus hippocastanum*). In places the alien invasive species, Cherry Laurel, dominates the understorey. Parts of the woodlands are more semi-natural in composition, being dominated by Ash with Hawthorn (*Crataegus monogyna*) and Spindle (*Euonymus europaea*) also present.

However, the most natural areas of woodland appear to be the wet areas dominated by Alder and willows (*Salix* spp.). The ground flora of the dry woodland areas features species such as Pignut, Wood Avens (*Geum urbanum*), Ivy and Soft Shield-fern (*Polystichum setiferum*), while the ground flora of the wet woodland areas contains characteristic species such as Remote Sedge (*Carex remota*) and Opposite-leaved Golden-saxifrage (*Chrysosplenium oppositifolium*).

In places along the upper Bride, scrubby semi-natural deciduous woodland of Willow, Oak and Rowan occurs with abundant Great Woodrush in the ground flora. The Bunaglanna River passes down a very steep valley, flowing in a north-south direction to meet the Bride River. It flows through blanket bog to heath and then scattered woodland. The higher levels of moisture here enable a vigorous moss and fern community to flourish, along with a well-developed epiphyte community on the tree trunks and branches.

At Banteer a type of wetland occurs near the railway line which offers a complete contrast to the others. Old turf banks are colonised by Royal Fern (*Osmunda regalis*) and Eared Willow (*Salix aurita*) and between them there is a sheet of Bottle Sedge (*Carex rostrata*), Marsh Cinquefoil (*Potentilla palustris*), Bogbean (*Menyanthes trifoliata*), Marsh St. John's-wort (*Hypericum elodes*) and the mosses *Sphagnum auriculatum* and *Aulacomnium palustre*. The cover is a scraw with characteristic species like Marsh Willowherb (*Epilobium palustre*) and Marsh Orchid (*Dactylorhiza incarnata*).

The soil high up the Lismore valleys and in rocky places is poor in nutrients but it becomes richer where streams enter and also along the valley bottoms. In such sites Wood Speedwell (*Veronica montana*), Wood Anemone (*Anemone nemorosa*), Enchanter's Nightshade (*Circaea lutetiana*), Barren Strawberry (*Potentilla sterilis*) and Shield Fern occur. There is some Wild Garlic, Three-nerved

Sandwort (*Moehringia trinervia*) and Early-purple Orchid (*Orchis mascula*) locally, with Opposite-leaved Golden-saxifrage, Meadowsweet and Bugle in wet places. A Hazel stand at the base of the Glenakeeffe valley shows this community well.

The area has been subject to much tree felling in the recent past and re-sprouting stumps have given rise to areas of bushy Hazel, Holly, Rusty Willow (*Salix cinerea* subsp. *oleifoila*) and Downy Birch. The ground in the clearings is heathy with Heather (*Calluna vulgaris*), Slender St John's-wort (*Hypericum pulchrum*) and the occasional Broom (*Cytisus scoparius*) occurring.

The estuary and the other Habitats Directive Annex I habitats within it form a large component of the site. Very extensive areas of intertidal flats, comprised of substrates ranging from fine, silty mud to coarse sand with pebbles/stones are present. The main expanses occur at the southern end of the site with the best examples at Kinsalebeg in Co. Waterford and between Youghal and the main bridge north of it across the river in Co. Cork. Other areas occur along the tributaries of the Licky in east Co. Waterford and Glendine, Newport, Bride and Killahaly Rivers in Waterford west of the Blackwater and large tracts along the Tourig River in Co. Cork. There are narrow bands of intertidal flats along the main river as far north as Camphire Island. Patches of green algae (filamentous, *Ulva* species and *Enteromorpha* sp.) occur in places, while fucoid algae are common on the more stony flats even as high upstream as Glenassy or Coneen.

The area of saltmarsh within the site is small. The best examples occur at the mouths of the tributaries and in the townlands of Foxhole and Blackbog. Those found are generally characteristic of Atlantic salt meadows. The species list at Foxhole consists of Common Saltmarsh-grass (*Puccinellia maritima*), small amounts of Greater Seaspurrey (*Spergularia media*), Glasswort (*Salicornia* sp.), Sea Arrowgrass (*Triglochin maritima*), Annual Sea-blite (*Suaeda maritima*) and Sea Purslane (*Halimione portulacoides*) - the latter a very recent coloniser - at the edges. Some Sea Aster (*Aster tripolium*) occurs, generally with Creeping Bent (*Agrostis stolonifera*). Sea Couchgrass (*Elymus pycnanthus*) and small isolated clumps of Sea Club-rush (*Scirpus maritimus*) are also seen. On the Tourig River additional saltmarsh species found include Lavender (*Limoniun* spp.), Sea Thrift (*Armeria maritima*), Red Fescue (*Festuca rubra*), Common Scurvy-grass (*Cochlearia officinalis*) and Sea Plantain (*Plantago maritima*). Oraches (*Atriplex* spp.) are found on channel edges.

The shingle spit at Ferrypoint supports a good example of perennial vegetation of stony banks. The spit is composed of small stones and cobbles and has a well developed and diverse flora. At the lowest part, Sea Beet (*Beta vulgaris*), Curled Dock (*Rumex crispus*) and Yellow-horned Poppy (*Glaucium flavum*) occur with at a slightly higher level Sea Mayweed (*Tripleurospermum maritimum*), Cleavers (*Galium aparine*), Rock Samphire (*Crithmum maritimum*), Sandwort (*Honkenya peploides*), Spear-leaved Orache (*Atriplex prostrata*) and Babington's Orache (*A. glabriuscula*).

Other species present include Sea Rocket (*Cakile maritima*), Herb Robert (*Geranium robertianum*), Red Fescue (*Festuca rubra*) and Kidney Vetch (*Anthyllis vulneraria*).

The top of the spit is more vegetated and includes lichens and bryophytes (including *Tortula ruraliformis* and *Rhytidiadelphus squarrosus*). The site supports several Red Data Book plant species, i.e. Starved Wood Sedge (*Carex depauperata*), Killarney Fern (*Trichomanes speciosum*), Pennyroyal (*Mentha pulegium*), Bird's-nest Orchid (*Neottia nidus-avis,* Golden Dock (*Rumex maritimus*) and Bird Cherry (*Prunus padus*). The first three of these are also protected under the Flora (Protection) Order 1999. The following plants, relatively rare nationally, are also found within the site: Toothwort (*Lathraea squamaria*) associated with woodlands on the Awbeg and Blackwater; Summer Snowflake (*Leucojum aestivum*) and Flowering Rush (*Butomus umbellatus*) on the Blackwater; Common Calamint (*Calamintha ascendens*), Red Campion (*Silene dioica*), Sand Leek (*Allium scorodoprasum*) and Wood Club-rush (*Scirpus sylvaticus*) on the Awbeg.

The site is also important for the presence of several Habitats Directive Annex II animal species, including Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*), River Lamprey (*L. fluviatilis*), Twaite Shad (*Alosa fallax fallax*), Freshwater Pearl-mussel (*Margaritifera margaritifera*), Otter (*Lutra lutra*) and Salmon (*Salmo salar*). The Awbeg supports a population of White-clawed Crayfish (*Austropotamobius pallipes*). This threatened species has been recorded from a number of locations and its remains are also frequently found in Otter spraints, particularly in the lower reaches of the river. The freshwater stretches of the Blackwater and Bride Rivers are designated salmonid rivers.

The Blackwater is noted for its enormous run of salmon over the years. The river is characterised by mighty pools, lovely streams, glides and generally, a good push of water coming through except in very low water. Spring salmon fishing can be carried out as far upstream as Fermoy and is very highly regarded especially at Careysville. The Bride, main Blackwater upstream of Fermoy and some of the tributaries are more associated with grilse fishing.

The site supports many of the mammal species occurring in Ireland. Those which are listed in the Irish Red Data Book include Pine Marten, Badger and Irish Hare. The bat species Natterer's Bat, Daubenton's Bat, Whiskered Bat, Brown Long-eared Bat and Pipistrelle, are to be seen feeding along the river, roosting under the old bridges and in old buildings.

Common Frog, a Red Data Book species that is also legally protected (Wildlife Act, 1976), occurs throughout the site. The rare bush cricket, *Metrioptera roselii* (Orthoptera: Tettigoniidae), has been recorded in the reed/willow vegetation of the river embankment on the Lower Blackwater River. The Swan Mussel (*Anodonta cygnea*), a scarce species nationally, occurs at a few sites along the freshwater stretches of the Blackwater.

Several bird species listed on Annex I of the E.U. Birds Directive are found on the site. Some use it as a staging area, others are vagrants, while others use it more regularly. Internationally important numbers of Whooper Swan (average peak 174, 1994/95- 95/96) and nationally important numbers Bewick's Swan (average peak 35, 1994/95- 95/96) use the Blackwater Callows. Golden Plover occur in regionally important numbers on the Blackwater Estuary (average peak 885, 1984/85-86/87) and on the River Bride (absolute max. 2141, 1994/95). Staging Terns visit the site annually (Sandwich Tern (>300) and Arctic/Common Tern (>200), average peak 1974-1994).

The site also supports populations of the following: Red Throated Diver, Great Northern Diver, Barnacle Goose, Ruff, Wood Sandpiper and Greenland White-fronted Goose. Three breeding territories for Peregrine Falcon are known along the Blackwater Valley. This, the Awbeg and the Bride River are also thought to support at least 30 pairs of Kingfisher. Little Egret now breed at the site (12 pairs in 1997, 19 pairs in 1998) and this represents about 90% of the breeding population in Ireland.

The site holds important numbers of wintering waterfowl. Both the Blackwater Callows and the Blackwater Estuary Special Protection Areas (SPAs) hold internationally important numbers of Black-tailed Godwit (average peak 847, 1994/95- 95/96 on the callows, average peak 845, 1974/75-93/94 in the estuary). The Blackwater Callows also hold Wigeon (average peak 2752), Teal (average peak 1316), Mallard (average peak 427), Shoveler (average peak 28), Lapwing (average peak 880), Curlew (average peak 416) and Black-headed Gull (average peak 396) (counts from 1994/95-95/96). Numbers of birds using the Blackwater Estuary, given as the mean of the highest monthly maxima over 20 years (1974-94), are Shelduck (137 +10 breeding pairs), Wigeon (780), Teal (280), Mallard (320 + 10 breeding pairs), Goldeneye (11- 97), Oystercatcher (340), Ringed Plover (50 + 4 breeding pairs), Grey Plover (36), Lapwing (1680), Knot (150), Dunlin (2293), Snipe (272), Black-tailed Godwit (845), Bar-tailed Godwit (130), Curlew (920), Redshank (340), Turnstone (130), Blackheaded Gull (4000) and Lesser Black-backed Gull (172). The greatest numbers (75%) of the wintering waterfowl of the estuary are located in the Kinsalebeg area on the east of the estuary in Co. Waterford. The remainder are concentrated along the Tourig Estuary on the Co. Cork side.

The river and river margins also support many Heron, non-breeding Cormorant and Mute Swan (average peak 53, 1994/95-95/96 in the Blackwater Callows). Heron occurs all along the Bride and Blackwater Rivers - 2 or 3 pairs at Dromana Rock; *c*. 25 pairs in the woodland opposite; 8 pairs at Ardsallagh Wood and *c*. 20 pairs at Rincrew Wood have been recorded. Some of these are quite large and significant heronries. Significant numbers of Cormorant are found north of the bridge at Youghal and there are some important roosts present at Ardsallagh Wood, downstream of Strancally Castle and at the mouth of the Newport River. Of note are the high numbers of wintering Pochard (e.g. 275 individuals in 1997) found at Ballyhay quarry on the Awbeg, the best site for Pochard in County Cork. Other important species found within the site include Long-eared Owl, which occurs all along the Blackwater River, and Barn Owl, a Red Data Book species, which is found in some old buildings and in Castlehyde west of Fermoy. Reed Warbler, a scarce breeding species in Ireland, was found for the

first time in the site in 1998 at two locations. It is not known whether or not this species breeds on the site, although it is known to nearby to the south of Youghal. Dipper occurs on the rivers.

Landuse at the site is mainly centred on agricultural activities. The banks of much of the site and the callows, which extend almost from Fermoy to Cappoquin, are dominated by improved grasslands which are drained and heavily fertilised. These areas are grazed and used for silage production. Slurry is spread over much of this area. Arable crops are grown. The spreading of slurry and fertiliser poses a threat to the water quality of this salmonid river and to the populations of Habitats Directive Annex II animal species within it. Many of the woodlands along the rivers belong to old estates and support many non-native species. Little active woodland management occurs. Fishing is a main tourist attraction along stretches of the Blackwater and its tributaries and there are a number of Angler Associations, some with a number of beats. Fishing stands and styles have been erected in places. Both commercial and leisure fishing takes place on the rivers. Other recreational activities such as boating, golfing and walking are also popular. Water skiing is carried out at Villierstown. Parts of Doneraile Park and Anne's Grove are included in the site: both areas are primarily managed for amenity purposes. There is some hunting of game birds and Mink within the site. Ballyhay quarry is still actively quarried for sand and gravel. Several industrial developments, which discharge into the river, border the site.

The main threats to the site and current damaging activities include high inputs of nutrients into the river system from agricultural run-off and several sewage plants, dredging of the upper reaches of the Awbeg, overgrazing within the woodland areas, and invasion by nonnative species, for example Cherry Laurel.

Overall, the River Blackwater is of considerable conservation significance for the occurrence of good examples of habitats and of populations of plant and animal species that are listed on Annexes I and II of the E.U. Habitats Directive respectively; furthermore it is of high conservation value for the populations of bird species that use it. Two Special Protection Areas, designated under the E.U. Birds Directive, are also located within the site - Blackwater Callows and Blackwater Estuary. Additionally, the importance of the site is enhanced by the presence of a suite of uncommon plant species.
13.09.2006

HYDROGEOLOGICAL SITE ASSESSMENT REPORT

M^{c}GILL ENVIRONMENTAL SYSTEMS (IRL) LTD

CAPPOQUIN

CO. WATERFORD

Prepared For: -

McGill Environmental Systems (Irl.) Ltd.,
Ballinvoher,
Castletownroche,
Co. Cork.

Prepared By: -

O' Callaghan Moran & Associates,
Granary House,
Rutland Street,
Cork.

30th January 2007

TABLE OF CONTENTS

1. GEOLOGY AND HYDROGEOLOGY

1.1 Introduction

O'Callaghan Moran and Associates (OCM) were requested by McGill Environmental Systems (IRL) Ltd. (McGill) to undertake a desk study of the local and regional geological and hydrogeological conditions of the area around its Molaisín Facility in Cappoquin, County Waterford. The site location is shown on Figure 1.

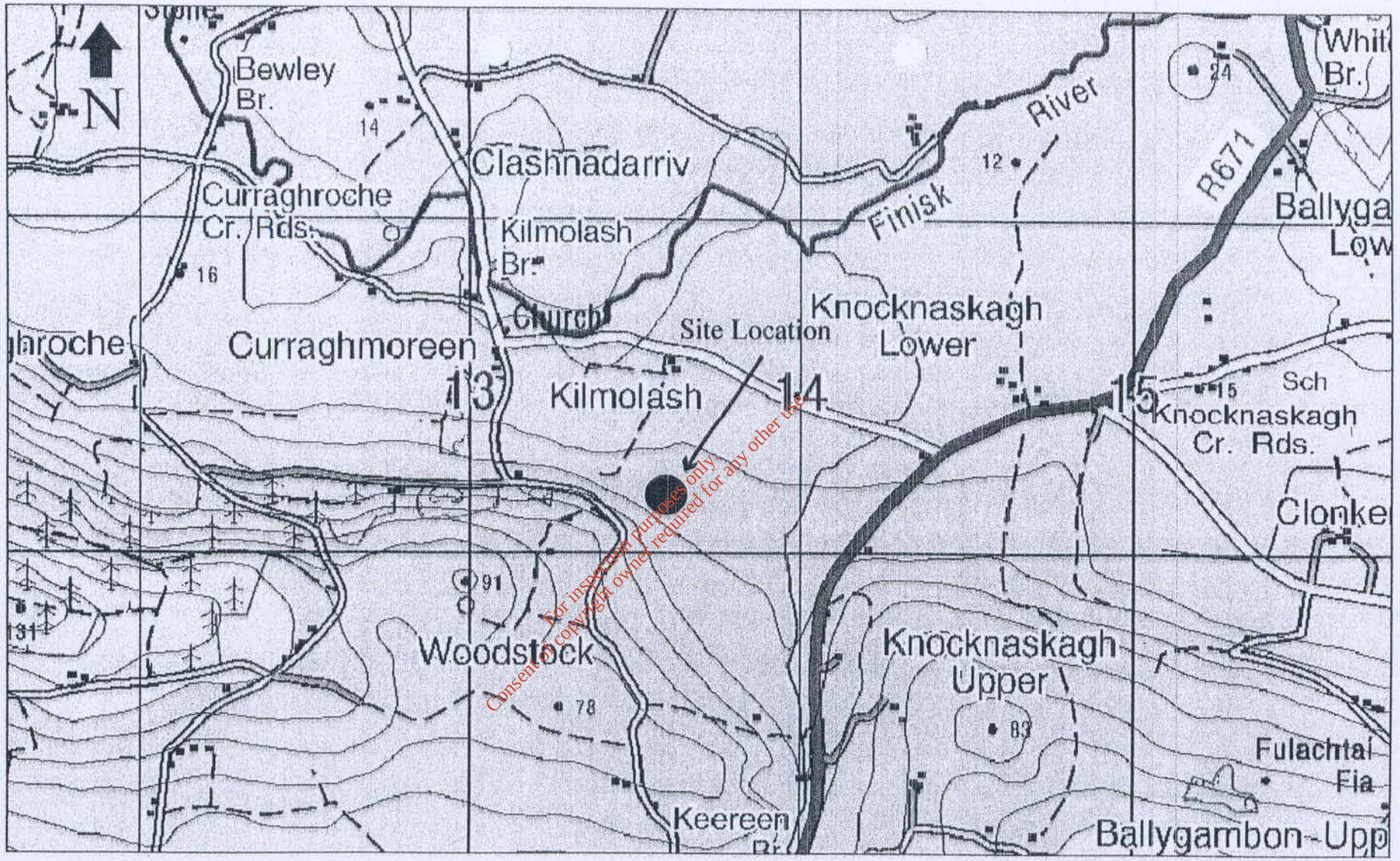
This desk study assesses the impacts of the current and proposed activities on the geology and hydrogeology. It included a review of information on soil type, subsoil permeability, bedrock ype, aquifer classification and vulnerability and groundwater well monitoring data derived from the Geological Survey of Ireland (GSI), Teagasc and OCM's in-house databases.

1.2 Soils & Subsoils

Information on soils and subsoils was derived from the National soil and Subsoil mapping programme undertaken by Teagasc in 2004/05. The soils in the area around the facility are described by Teagasc as an acidic mineral deep well draining soil. The underlying subsoils comprise a Till derived from Devonian Sandstone parent material. The soil and subsoil distribution are shown on Figure 2 and Figure 3. Prior to construction of the facility the site was a greenfield area, during construction of the facility in 2004 all soil and subsoil were removed.

1.3 Bedrock

OCM understand that three groundwater monitoring wells were installed at the facility and no borehole logs were available. There is no site specific data (e.g. borehole logs) on the characteristics of the bedrock beneath the site. The information obtained from the GSI Bedrock Sheet No. 22 and OCM's in-house database indicates that bedrock beneath the facility comprises impure limestones from the Ballysteen formation (BA). The Ballysteen limestone is described as a dark muddy limestone shale. The bedrock geology for the area is illustrated on Figure 4.



O'Callaghan Moran & Associates
Granary House, Rutland Street,
Cork Ireland.
Tel (021) 4321521 Fax (021) 4321522
email : info@ocallaghanmoran.com

CLIENT
McGill Environmental Ltd.

TITLE
Site Location Map

Details
O.S. Licence Agreement Number AR 0038707

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FIGURE NUMBER
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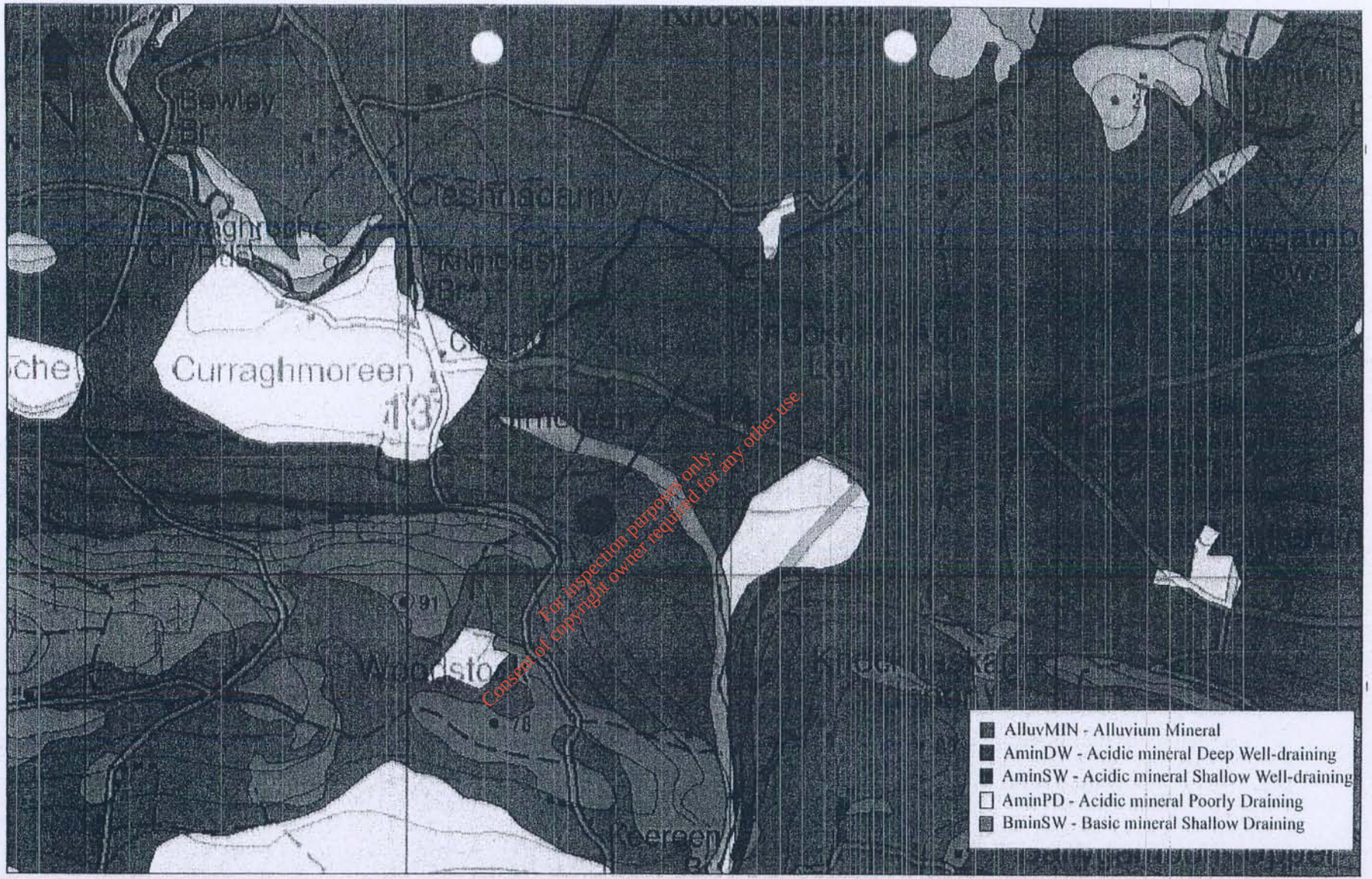

O' Callaghan Moran & Associates
Granary House, Rutland Street,
Cork Ireland.
Tel (021) 4321521 Fax (021) 4321522
email : info@ocallaghanmoran.com

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TITLE
Soil Map

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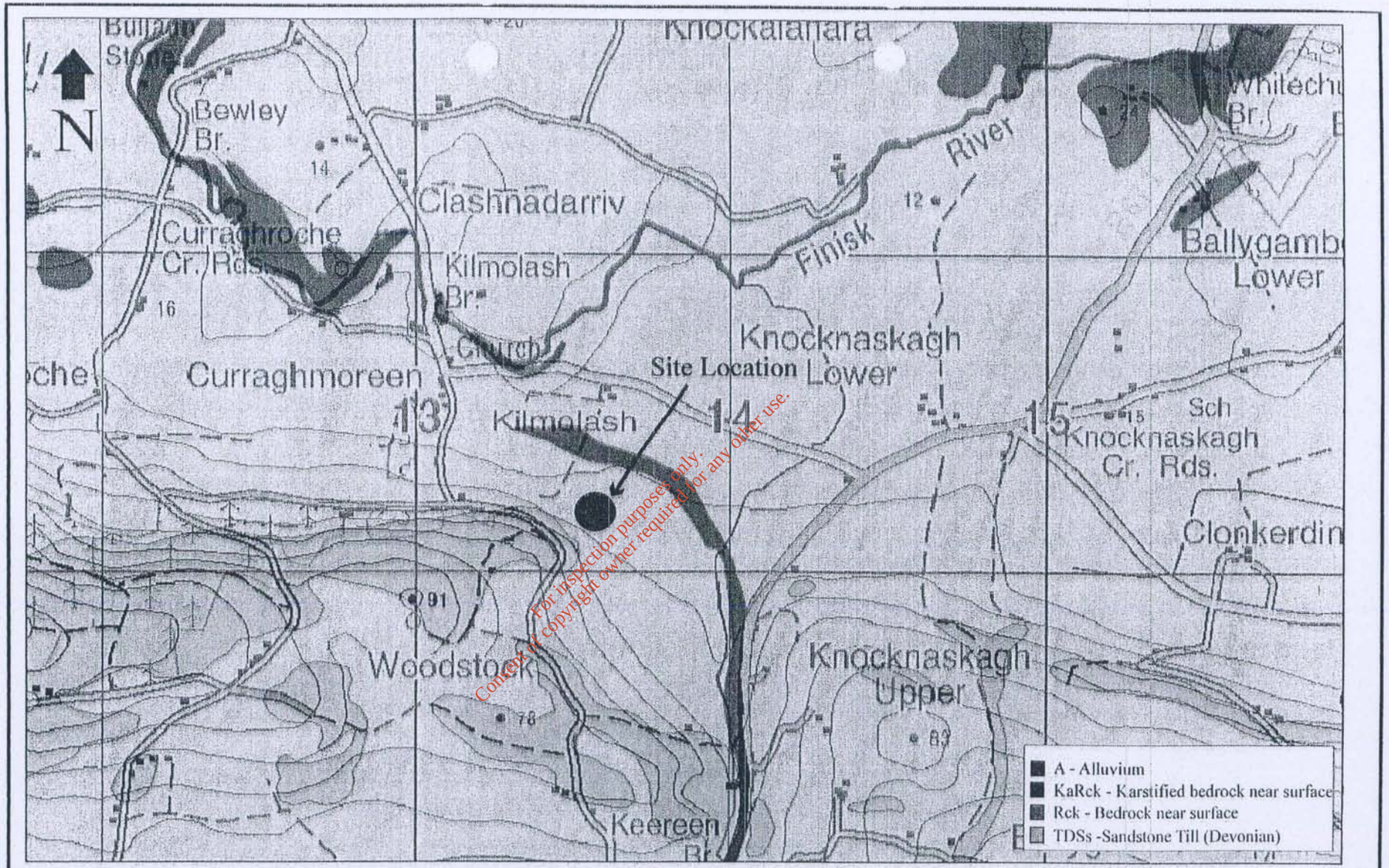

O' Callaghan Moran & Associates.
Granary House, Rutland Street,
Cork Ireland.
Tel. (021) 4321521 Fax. (021) 4321522
email : info@ocallaghanmoran.com

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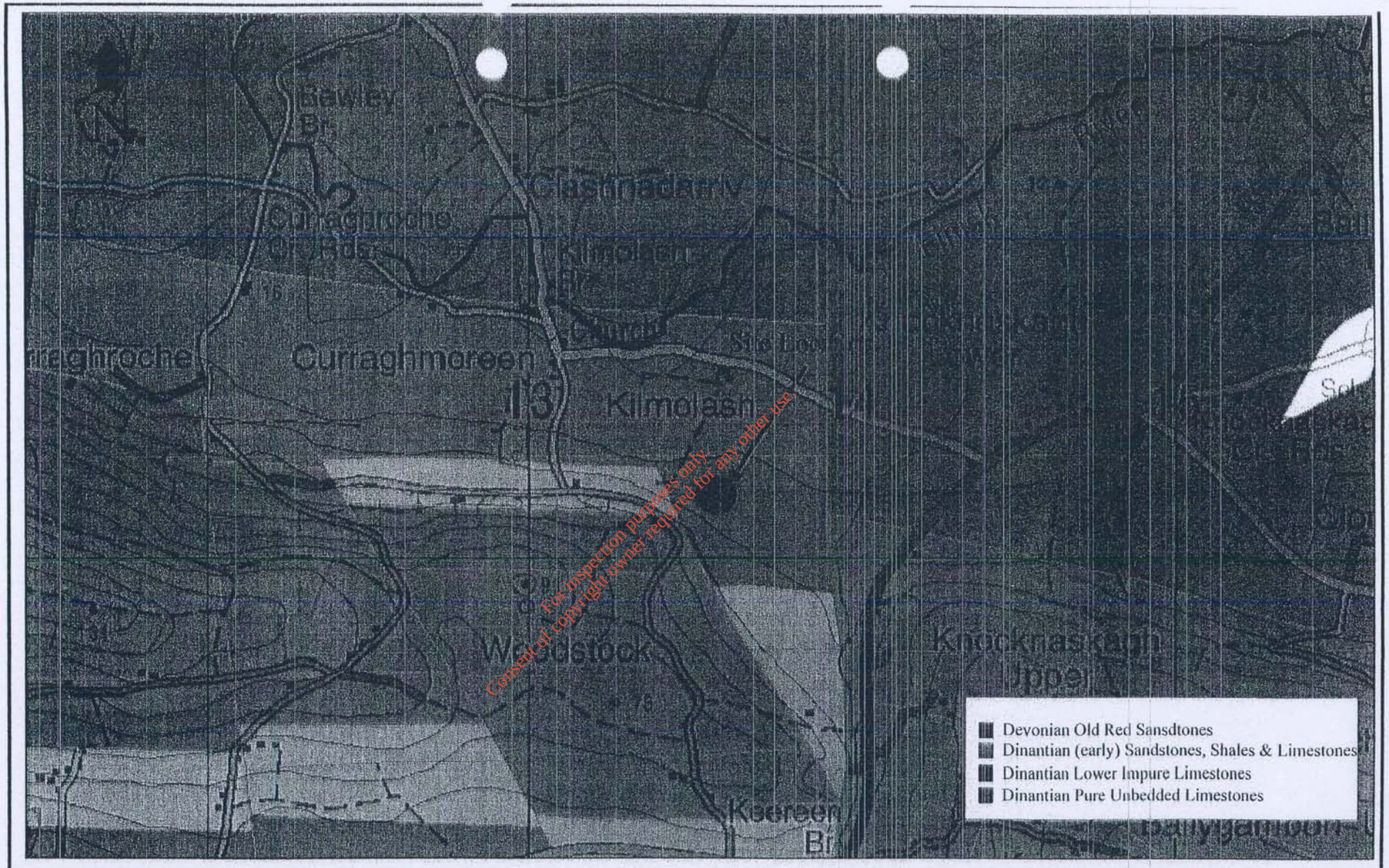

O' Callaghan Moran & Associates
Granary House, Rutland Street,
Cork Ireland
Tel (021) 4321521 Fax (021) 4321522
email : info@ocallaghanmoran.com

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Geology Map

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1.4 Groundwater Levels, Flow Directions and Gradients

There are three on-site groundwater monitoring wells. Groundwater levels were measured by OCM in all of the wells in July 2006. Monitoring wells MW-1 and MW-2 are downgradient while MW-3 is upgradient of the process building. There is no specific data available on the borehole installation (e.g. borehole logs) and therefore there are no ordnance datum levels available for the monitoring wells. The groundwater level data is shown on Table 1.1. Based upon the topography it appears that groundwater flow in the area is from South to North, towards the Finisk River.

Table 1.1 - Groundwater Level Data July 2006

Monitoring Well	Groundwater Level (mbtoc)	Total Well Depth (mbtoc)
MW-1	5.33	>30
MW-2	5.42	>30
MW-3	1.36	>30

mbtoc – metres below top of casing

1.5 Aquifer Characteristics

There is no site specific data (e.g. borehole logs) on the hydrogeological characteristics of the bedrock aquifer beneath the site. The GSI indicates that the bedrock aquifer is a locally important aquifer (Ll). The aquifer characteristics are shown on Figure 5.

A review of the available records identified one public water abstraction point within 1 km of the site. This is approximately 1 km to the east south east and upgradient of the facility. The abstraction is located within a regionally important diffuse karstified aquifer (Rkd). This Rkd aquifer is also used as the public water supply for the town of Dungarvan, which is approximately 10 kilometres from the facility. The Dungarvan public water supply has an abstraction rate of 7,000 m^3/day. The boundary between the Ll and Rkd aquifers is within 500 m of the site.

1.6 Vulnerability

Vulnerability is defined by the GSI as the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated by human activities.

The vulnerability depends upon: -

- The time taken by infiltrating water plus contaminants to reach the saturated zone,
- The relative quantity of the contaminants that can reach the groundwater,
- The contaminant attenuation capacity of the geological materials through which the water and contaminants infiltrate.

The travel time, quantity of the contaminants and the attenuation depend on the following geological and hydrogeological attributes: -

- The subsoils that overlie the groundwater,
- The recharge type-whether point or diffuse,
- The thickness of the unsaturated zone through which the contaminant moves.

In general, little attenuation of contaminants occurs in the bedrock in Ireland because flow is almost wholly via fissures. Consequently, the subsoils - sands, gravels, glacial tills, alluvial silts and clays, peat - are the single most important natural feature influencing groundwater vulnerability. Groundwater is most at risk where the subsoils are absent or thin and in areas of karstic limestone, where surface streams sink underground at swallow holes.

The GSI uses four groundwater vulnerability categories - extreme, high, moderate and low - for mapping purposes and in the assessment of risk to groundwaters. The categories are shown on Table 1.2. The GSI Vulnerability Map for the area (Figure 6) indicates that the site is in an area where vulnerability locally ranges from **Extreme** to **High** to **Low.**

The GSI vulnerability rating is based on the subsoil thickness within an area. However, portions of the subsoil on the site were removed to bedrock prior to construction of the facility and therefore the vulnerability rating is considered to be **Extreme,** with bedrock close to or at the surface.

1.7 Groundwater Quality

Groundwater quality monitoring was carried out by OCM on the 12th July 2006. The samples were submitted to an accredited laboratory for analyses, which included pH, electrical conductivity, ammoniacal nitrogen, sulphate, Chemical Oxygen Demand (COD), nitrate, faecal coliforms and total coliforms. The laboratory test report is included in Appendix 1 and the results are summarised in Table 1.3. The table includes the Interim Guideline Values (IGV) on groundwater quality published by the Environmental Protection Agency (EPA). The IGVs are not statutory guidelines, but have been prepared by the EPA to assist in the assessment of impacts on groundwater quality in the context of the implementation of the Water Framework Directive.

Table 1.2 Vulnerability Mapping Guidelines

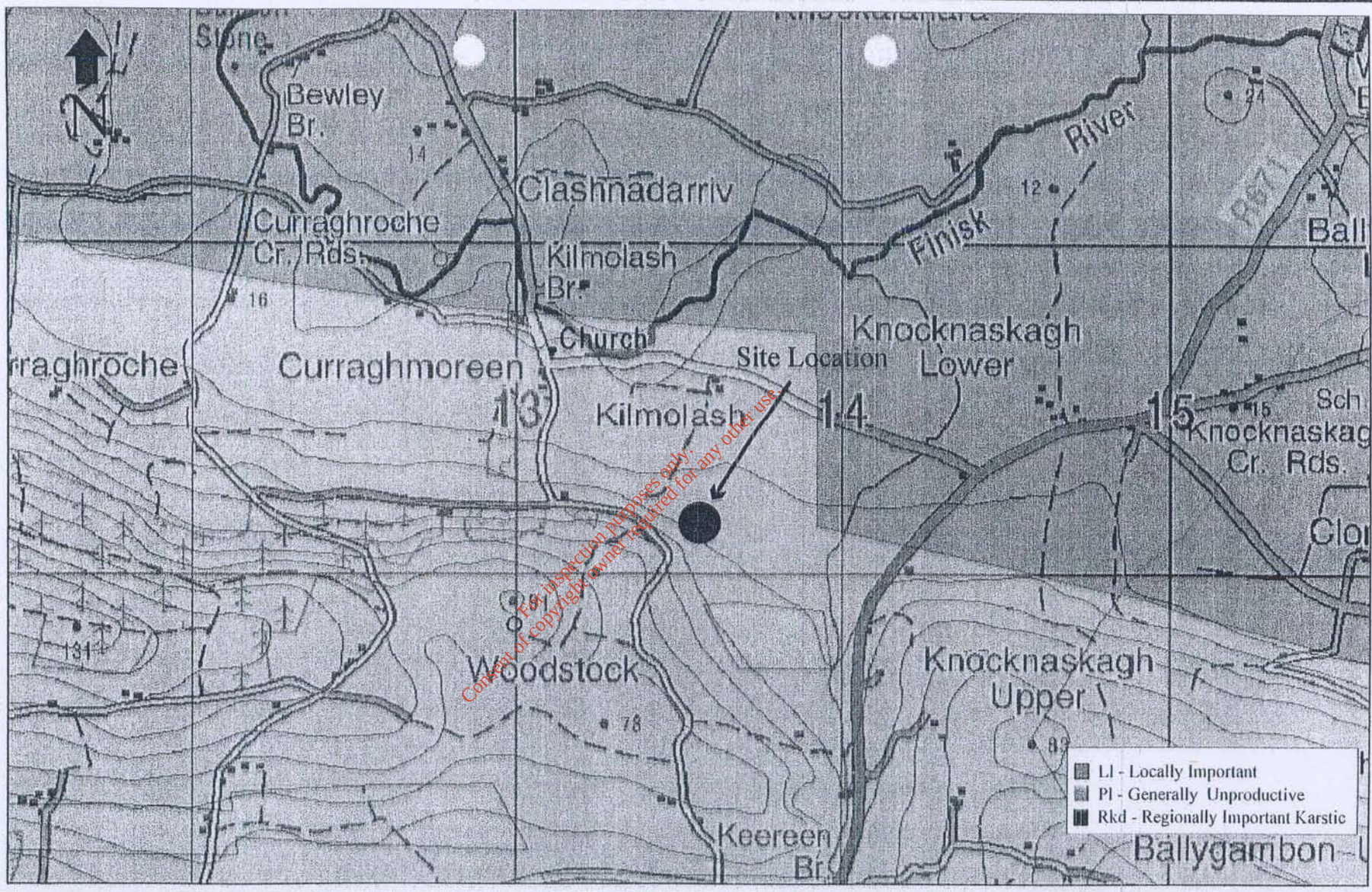
Vulnerability Rating	Subsoil Permeability (Type) and Thickness			Unsaturated Zone	Karst Features
	High permeability (sand/gravel)	Moderate Permeability (e.g. Sandy subsoil)	Low Permeability (e.g. Clayey subsoil, clay, peat)	(Sand/gravel aquifers only)	(<30 m radius)
Extreme (E)	0 – 3.0 m	0 – 3.0 m	0 – 3.0 m	0 – 3.0 m	-
High (H)	>3.0 m	3.0 – 10.0 m	3.0 – 5.0 m	>3.0 m	N/A
Moderate (M)	N/A	>10.0 m	5.0 – 10.0 m	N/A	N/A
Low (L)	N/A	N/A	>10.0 m	N/A	N/A

Notes: (1) N/A = not applicable.
(2) Precise permeability values cannot be given as present.
(3) Release point of contaminants is assumed to be 1 - 2 m below ground surface.

Table 1.3 Results July 2006

Parameter	Units	MW-1	MW-2	MW-3	IGV
pH	pH units	7.07	7.18	7.44	6.5 – 9.5
Ammoniacal Nitrogen	mg/l	1.2	4.9	9.5	0.15
Sulphate	mg/l	16	16	13	200
COD	mg/l	<15	<15	<15	NE
Nitrate (NO_3)	mg/l	32.1	67.8	25.8	25
Faecal Coliforms	cfu/100ml	2	4	<1	0
Total Coliforms	cfu/100ml	12	128	62	0

NE – Not Established



O'Callaghan Moran & Associates
Granary House, Rutland Street,
Cork Ireland
Tel (021) 4321521 Fax (021) 4321522
email : info@ocallaghanmoran.com

CLIENT: McGill Environmental Ltd.

TITLE: Aquifer Map

Details
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FIGURE NUMBER: 5

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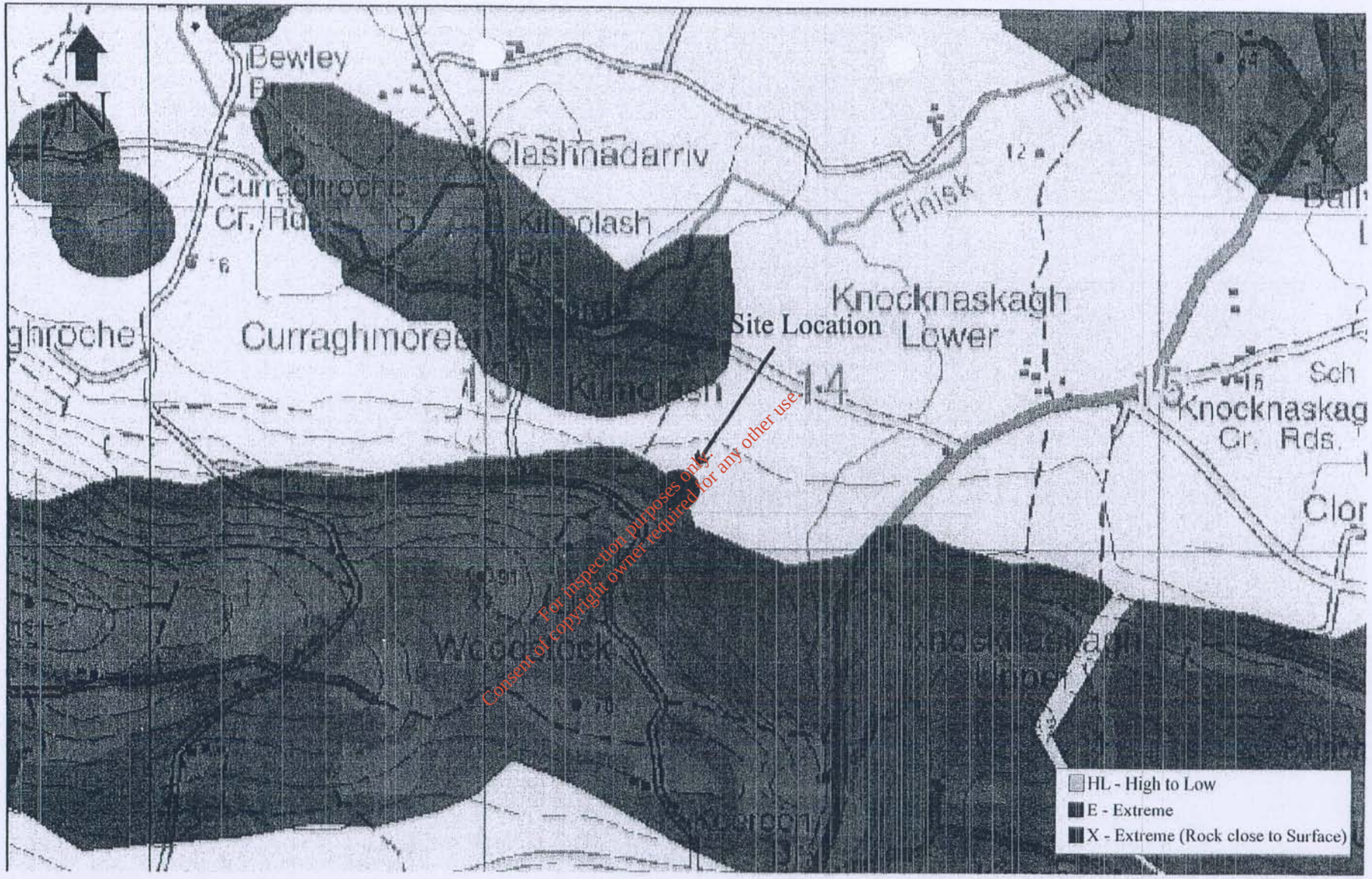
Revision: A



O' Callaghan Moran & Associates,
Granary House, Rutland Street,
Cork Ireland.
Tel. (021) 4321521 Fax. (021) 4321522
email : info@ocallaghanmoran.com

CLIENT
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TITLE
Vulnerability Map

Details
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FIGURE NUMBER
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The ammoniacal nitrogen levels in all of the samples are significantly higher than the IGV. The highest level (9.5 mg/l) was detected in the upgradient well (MW-3), with lower levels in the downgradient wells. Faecal coliforms were detected in two (MW-1 and MW-2) of the three samples. The nitrate level in MW-2 exceeded the IGV and is significantly higher than the levels in MW-1 and MW-3. The remaining parameters were all below the IGV thresholds. The Chemical Oxygen Demand (COD) was below the detection limit in all of the samples.

Elevated nitrate levels associated with regional agricultural practices are not uncommon in the South East of Ireland. The facility is located in a rural setting and the surrounding lands are used for agricultural purposes, including the land-spreading of farmyard effluent and chicken litter. It is possible that seasonal land-spreading is the source of the contamination detected in all of the wells.

1.8 Impact Assessment

While the waste materials processed at the facility are a potential source of groundwater contamination the facility has been designed and is operated in a manner to effectively mitigate the contamination risk. The majority of the open yard areas, including the area surrounding the process building, are paved. All wastes delivered to the site are off-loaded and processed inside the building. All finished product is stored inside the building pending removal from the facility.

1.9 Mitigation Measures

All wastes delivered to the site are off-loaded and processed inside the building and all finished products are stored inside the building prior to removal off-site. The areas surrounding the process building are paved. The building is provided with concrete floors, which are grouted and sealed. There is no on-site septic tank, storage tanks, or treated wastewater percolation areas at the site.

Rainwater run-off from the paved areas is directed to an underground sump on site and the water is then used in the composting process. There is no discharge to ground. Any run-off from cleaning down the plant is directed to a bay within the building where it is then mixed with dry sawdust and compost until dry and is then returned to the composting process.

APPENDIX 1

Laboratory Analytical Results

ALcontrol Laboratories (Dublin)

18a Rosemount Business Park,
Ballycoolin,
Dublin 11
Ireland
Tel: +353 (0) 1 8829893
Fax: +353 (0) 1 8829895

CERTIFICATE OF ANALYSIS

Client: O Callaghan Moran Associates (Cork)

Granary House
Rutland Street
Cork
Ireland

Attention: Martina Gleeson

Date: 28 July, 2006

Our Reference: 06-B04344/01

Your Reference: 06-034-01

Location:

A total of 3 samples was received for analysis on Wednesday, 12 July 2006. Accredited laboratory tests are defined in the log sheet, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation. We are pleased to enclose our final report, it was a pleasure to be of service to you, and we look forward to our continuing association.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Signed

Ken Scally

Ken Scally
General Manager, Ireland

Marie O'Connell

Compiled By

Marie O'Connell

UKAS TESTING
1291
GROUP

Printed at 15:15 on 31/07/2006

ALcontrol Laboratories Ireland

Test Schedule

Ref Number: 06-B04344/01 **Sample Type: WATER**

Client: O Callaghan Moran Associates (Cork) Location:

Date of Receipt: 12/07/2006 Client Contact: Martina Gleeson

Client Ref: 06-034-01

	Detection Method			Filtration	Filtration	KONE	KONE	METER	SPECTRO	SPECTRO							
	UKAS Accredited					✓	✓	✓	✓	✓							
ALcontrol Reference	Sample Identity	Other ID	P / V	Faecal Coliforms*	Total Coliforms*	Nitrate as NO3	Sulphate	pH (Liquid)	Ammoniacal Nitrogen	COD Unfiltered							
06-B04344-S0009-A01	MW-1	UNKNOWN	250ml Sterile	X	X	-	-	-	-	-							
06-B04344-S0009-A06	MW-1	UNKNOWN	Plastic Bottle	-	-	X	-	X	-	X							
06-B04344-S0009-A04	MW-1	UNKNOWN	Plastic Bottle + H2SO4	-	-	-	-	-	X	-							
06-B04344-S0010-A01	MW-2	UNKNOWN	250ml Sterile	X	X	-	-	-	-	-							
06-B04344-S0010-A06	MW-2	UNKNOWN	Plastic Bottle	-	-	X	X	X	-	X							
06-B04344-S0010-A04	MW-2	UNKNOWN	Plastic Bottle + H2SO4	-	-	-	-	-	X	-							
06-B04344-S0011-A01	MW-3	UNKNOWN	250ml Sterile	X	X	-	-	-	-	-							
06-B04344-S0011-A06	MW-3	UNKNOWN	Plastic Bottle	-	-	X	X	X	-	X							
06-B04344-S0011-A04	MW-3	UNKNOWN	Plastic Bottle + H2SO4	-	-	-	-	-	X	-							

Notes : NUMERIC VALUES INDICATE ADDITIONAL SCHEDULING

Printed at 15:15 on 31/07/2006

* SUBCONTRACTED TO OTHER LABORATORY / ** SAMPLES ANALYSED AT THE CHESTER LABORATORY

ALcontrol Laboratories Ireland

Test Schedule Summary

Ref Number: 06-B04344/01 **Sample Type: WATER**
Client: O Callaghan Moran Associates (Cork) Location:
Date of Receipt: 12/07/2006 Client Contact: Martina Gleeson
Client Ref: 06-034-01

* SUBCONTRACTED TO OTHER LABORATORY / ** SAMPLES ANALYSED AT THE CHESTER LABORATORY

SCHEDULE	METHOD	TEST NAME	TOTAL
X	Filtration	Faecal Coliforms*	3
X	Filtration	Total Coliforms*	3
X	KONE	Nitrate as NO3	3
X	KONE	Sulphate	3
X	METER	pH (Liquid)	3
X	SPECTRO	Ammoniacal Nitrogen	3
X	SPECTRO	COD Unfiltered	3

☐ Interim
☑ Validated

ALcontrol Laboratories Ireland

Table Of Results

Ref Number: 06-B04344/01
Client: O Callaghan Moran Associates (Cork)
Date of Receipt: 12/07/2006
(of first sample)

Sample Type: WATER
Location:
Client Contact: Martina Gleeson
Client Ref: 06-034-01

	Detection Method		Filtration	Filtration	KONE	KONE	METER	SPECTRO	SPECTRO
	Method Detection Limit		<1cfu/100ml	<1cfu/100ml	<0.3mg/l	<3mg/l	napH Units	<0.2mg/l	<15mg/l
	UKAS Accredited				✓	✓	✓	✓	✓
ALcontrol Reference	Sample Identity	Other ID	Faecal Coliforms*	Total Coliforms*	Nitrate as NO3	Sulphate	pH	Ammoniacal Nitrogen as N	COD Unfiltered
			cfu/100ml	cfu/100ml	mg/l	mg/l	pH Units	mg/l	mg/l
06-B04344-S0009	MW-1	UNKNOWN	2	12	32.1	16	7.07	1.2	<15
06-B04344-S0010	MW-2	UNKNOWN	4	128	67.8	16	7.08	4.9	<15
06-B04344-S0011	MW-3	UNKNOWN	<1	62	25.8	13	7.44	9.5	<15

Notes : METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE TO VARIOUS CIRCUMSTANCES BEYOND OUR CONTROL. **NDP** = NO DETERMINATION POSSIBLE

Checked By : Marie O'Connell

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APPENDIX

APPENDIX

1. The following analysis is performed on the sample as received
   PAH, DRO, SVOC, PCB, VOC, PRO, and NRA Leachate. , All cyanides, Acid Soluble sulphide CRIV.
   Results are expressed as dry weight except for VOC, PRO, NRA Leachate, All cyanides, Acid Soluble sulphide and CRVI

   The following analysis is performed on sample dried at 30^0 C
   All metals, All Kone (anions) analysis, pH, and CEN Leachate generation
   Results are expressed as dry weight.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. A sub sample of all samples received will be retained free of charge for one month from date results due to client for soils and waters (sample size permitting), but may then be discarded unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, an asbestos screen is done in-house on soils and if no fibres are found will be reported as NFD – no fibres detected. If fibres are detected, then identification and quantification is carried out by ALcontrol Technichem in the UK . If a sample is suspected of containing asbestos, then drying and crushing will be suspended on that sample until the asbestos results are known. If asbestos is present, then no analysis requiring dry sample are undertaken.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample – similarly, if a headspace is present in the volatile sample.

8. NDP – No Determination Possible due to insufficient/unsuitable sample.

9. Metals in water are performed on a filtered sample, and therefore represent dissolved metals – total metals must be requested separately.

10. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

Last updated March 2006

ALcontrol Laboratories

Certificate of Analysis

Alcontrol (Dublin)
18A Rosemount Business Park
Ballycoolin
Dublin 11

Client Order Num : 32262
SDG Type : Routine
SDG Name : ALC_DUB 13-07-06 M 1
SDG Created On : 13-Jul-06
SDG Received On : 13-Jul-06

Sample Name	Sample Description	Sample Details	Prep Date	Escherichia coli MP54 cfu in 100ml	Total Coliforms MP54 cfu in 100ml
ALC_DUB[DB-DB] 180493	MW1		13-Jul-06	2	12
ALC_DUB[DB-DB] 180494	MW2		13-Jul-06	4	128
ALC_DUB[DB-DB] 180495	MW3		13-Jul-06	0	82

Approved By: Chris Tickner(Site Manager)

Authorised On: 14-Jul-06

Abbreviations: < = Less than, > = Greater than. (P) = Presumptive. The site of test is identified by RM = Rotherham, SB = Shrewsbury, SP = Spalding, HP = Hartlepool, BH = Bellshill, NA = Newton Abbot, DS = Dunstable, which comprise the 1349 group. Tests marked *, # or $ in this report are not included in the ISO 17025 accreditation schedule for UKAS testing laboratory 1349. Those marked: * have not been subcontracted and are not accredited; # have been subcontracted and are ISO 17025 Accredited; $ have been subcontracted and are not ISO 17025 accredited; Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation. These results are representative of the samples supplied by the client and are not guaranteed to be representative of the bulk material. Samples which are presented in italics have an associated comment.

Food Laboratory, Unit 18A, Rosemount Business Park, Ballycoolin, Dublin 11. Tel: (00353) 1882 9893 Fax: (00353) 1882 9895

1349 Group

ALcontrol Laboratories

Unit 18a, Rosemount Business Park,
Ballycoolin, Dublin 11
e-mail: Ireland.schedulers@alcontrol.ie
Tel: 01 8829893 Fax: 01 8829895

Client: OCM
Address: Grd Fl, Bay House, Rutland St, Cork
Contact name: Martina Gleeson
Tel: 021-4321531 Fax: 021-4321532
Project/Site Name:
Project Code: 06-034-01
Quote Reference: 2731E

Date of Despatched:
Sample Martina Gleeson
Email schedule to: martina@ocallaghanmoran.com
Email results to: same
Job Continuation - yes / no

Sheet 1 of 1 page 1 /8

Date of Sampling:	Sample Ref. ID	Depth in metres	Sample Preservation Y/N	(S)oil or (W)ater (specify if other	Sample Concentration Low, Medium or High (L, M, H)	Suite Name/Analysis Required: pH	COD	Ammonia	Nitrate	Sulphate	Total Coliforms	Faecal Coliforms
12.7.06	MW-1			W		✓	✓	✓	✓	✓	✓	✓
	MW-2			W		✓	✓	✓	✓	✓	✓	✓
	MW3			W		✓	✓	✓	✓	✓	✓	✓

Turnaround - please tick
10 day t/a ✓
5 day t/a
3 day t/a
1 day t/a
date results required by:
Comments

Report format
Standard

Sampler Signature: Martina Gleeson

Special Instructions/Known Hazards:
(Please inform the lab of any known hazards in the sample, ie Asbestos)

P.O. Number 06-034-01

Invoice address if different from above:

Date Received: 12/7/06 Time 16.20 Temp 15° Signature: G.D.