Current Drainage

The existing ground water drainage has been developed over the 127-year history of the course and various types of drains are installed. Some of these are now redundant or possibly blocked/inoperable.

Withington Golf Course currently has two main gravity drainage systems:

1) The south area of the course drains via land drains to a main drain run to an outfall, located beyond the tee at hole number 18 at the River Mersey. A flap valve is located on the outfall to prevent backflow from the river.
2) The north area of the course drains via land drains to the pond at the 5th hole or to the stream which runs past hole number 1, underneath Palatine Road to the River Mersey beyond Britannia Hotels' access road. A flap valve is located on the outfall to prevent backflow from the river.

When the river level increases above the course's ground water level, ie preventing gravity drainage, the drainage from the course utilises the attenuation ponds at the 5th, 8th, 13th and 16th holes.

Glossary

Attenuation - the process of storing and slowly releasing surface water run-off.

Land drain – Perforated pipe laid below the surface in a gravel-filled trench, used for subsoil drainage.

Jetting – process of using high pressure water to clean out debris from existing drainage.

Challenges to our drainage system since July 2019

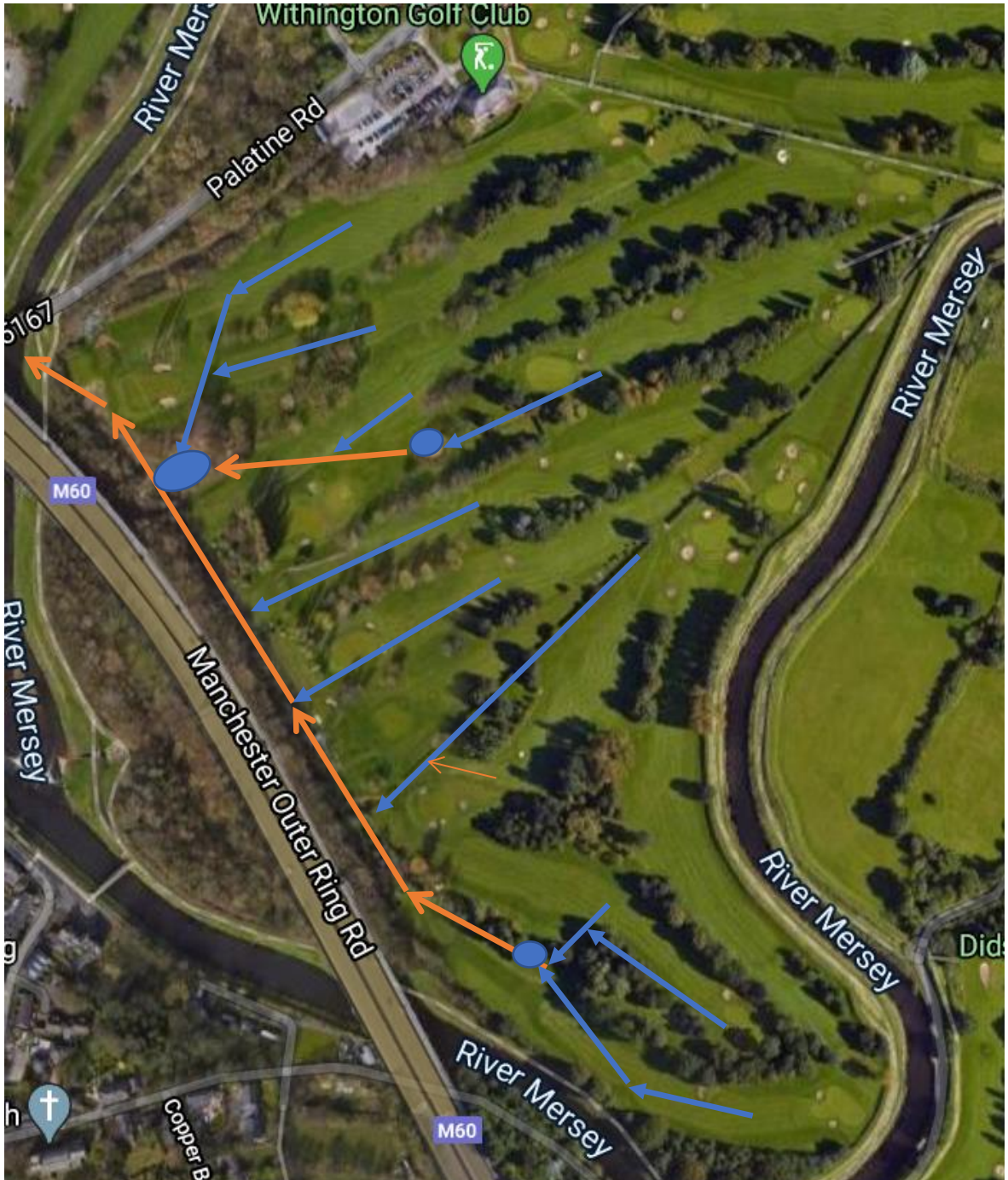
In addition to a very wet Winter, including the wettest February on record the course suffered 3 major flooding events in the space of 3 months.

In total the drainage system has had to cope with the equivalent of 3000mm (9.8ft) of rainfall since the beginning of August 2019. This is 400% more than the long-term average

The last flood in October resulted in the course becoming saturated at a time when evaporation levels and take up from vegetation were falling. Holes 13, 17, and 18 in particular became prone to standing water after periods of heavy rainfall and high river levels.

The proposals outlined below have been developed to make the course more resilient against future flooding events and weather extremes, now more likely as a consequence of global warming.

Simplified Existing drainage plan

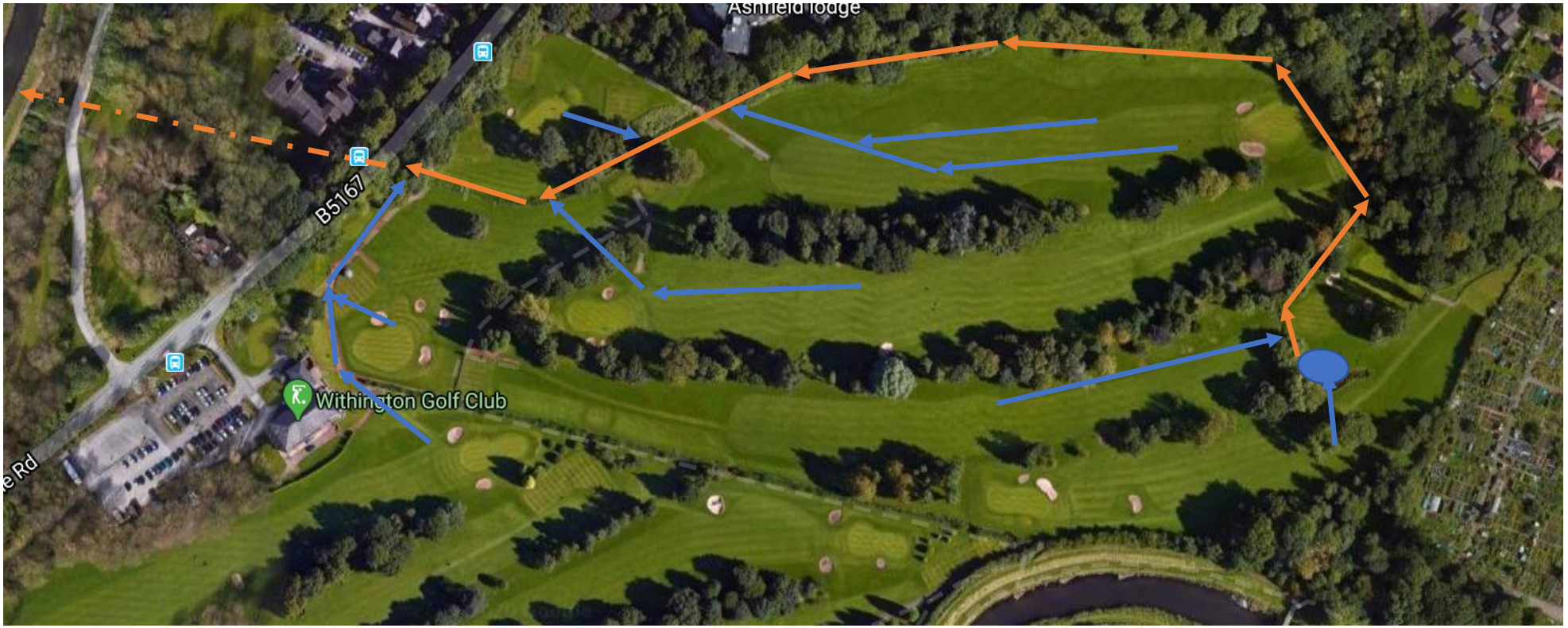


Legend

Pond

Main Drain

Land Drain



Legend

Main Stream

Land Drain

Pond

Summary of Phases of Work

Solution

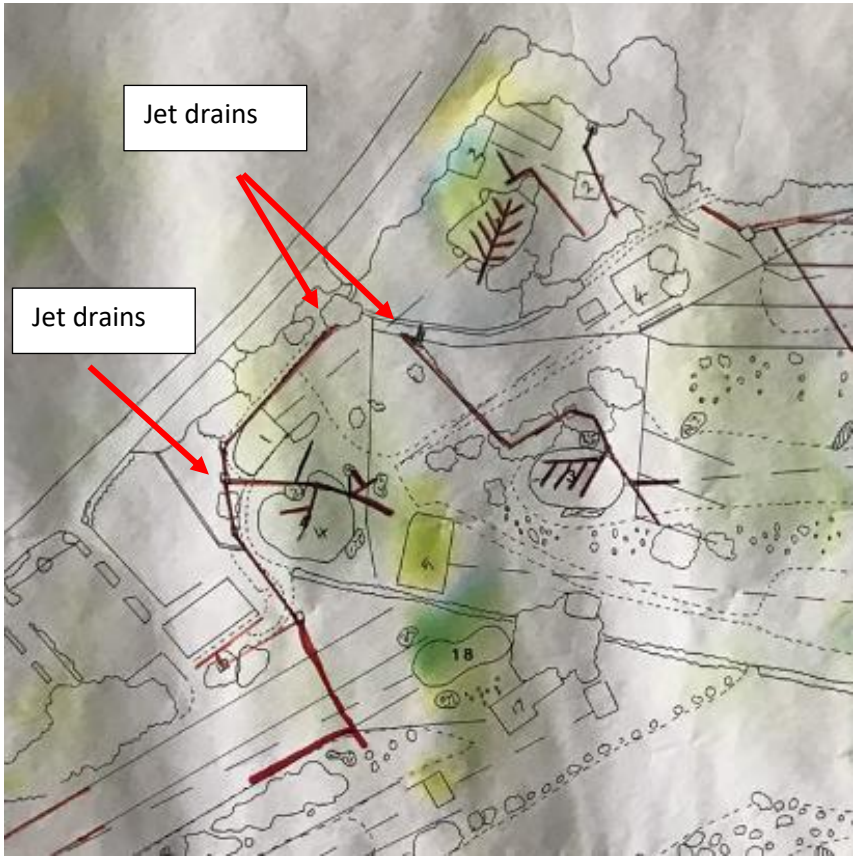
Main aim is to return existing drainage to fully operable condition, ie thus lowering the natural ground water level and providing natural storage within the ground.

Second part of this solution is to increase the attenuation ponds' size to provide greater capacity of storage, without compromising the course layout.

Phase 1

This work will be completed during March 2020.

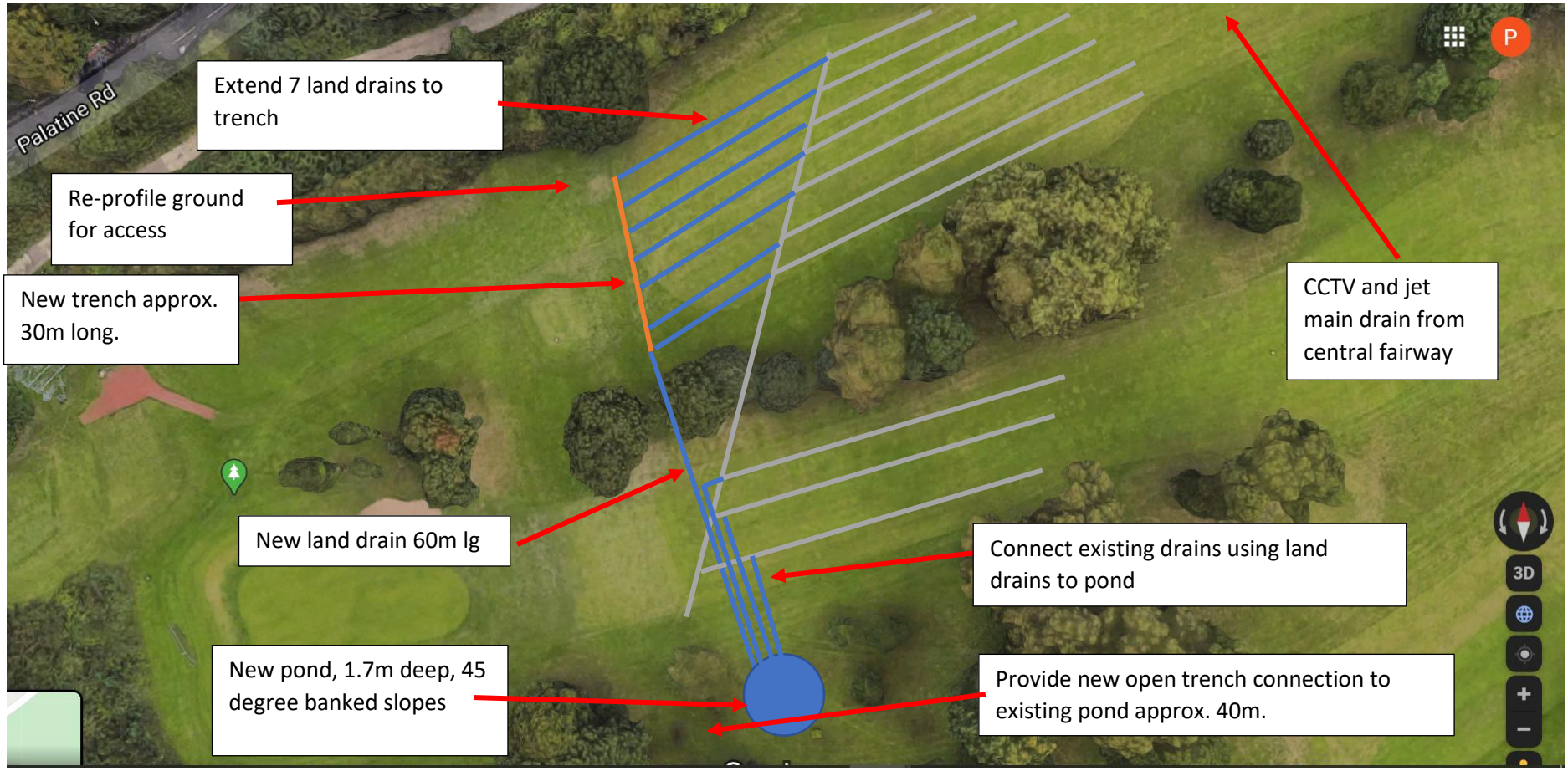
The work will consist of clearing existing drainage on holes 1, 3, 4, 17 and 18 and providing additional storage for the 17th and 18th fairways.



Hole 1, 3 & 4

Existing land drains to be jetted during weekday period, which will only cause minor disruption to play.

Holes 17 and 18



Legend

Existing land drain

New land drain

New drainage trench

Pond

This work will provide additional attenuation for the 17th and 18th fairways. It will also allow the existing drains to be easily jetted in future from the trench and pond areas without affecting play.

Phase 2 – March – April 2020

Fine Turf to verti-drain and re-seed damaged areas of 13th, 16th, 17th & 18th fairways.

Phase 3 –August to October 2020

This work will consist of providing additional attenuation to the rear of the 17th green. This will effectively increase the capacity of the 16th pond's storage.

The pond at the 8th fairway will be made larger with a buggy path installed over the pond.

The pond at 13th hole will be increased in size.

Other work will include installation of new manholes to provide easier jetting points on the course.

Additionally, a trench will be constructed leading to the stream adjacent the 2nd fairway. This will provide easier access for jetting the 2nd fairway and it will connect through to the 3rd & 5th fairways in phase 5.

The drainage on the 2nd fairway will be extended towards the trench. (this is likely to be completed in phase 5 to prevent disruption in play).

Phase 4 – August to October 2020

Existing drains to be jetted during winter outage. This is an ongoing process completed each year and higher priority holes will be identified. Further jetting will be completed in each maintenance outage every year.

Phase 5 – 2021 to 2023

This is longer term improvement works, which will commence from 2021 and continue until 2023.

This will include providing mole drainage, ie a series of cuts provided through the fairways and filled with sand, effectively providing an easier path for water to the existing land drains, thus increasing the drainage flow.

Installation of new drains in areas, which would benefit from small works improvements.

In addition, the annual maintenance programme will include jetting of the drainage system, on a rolling basis to ensure each main drain is cleaned in the early Autumn every 2 to 3 years.

Hole by Hole Improvement Works

Holes 1 & 4

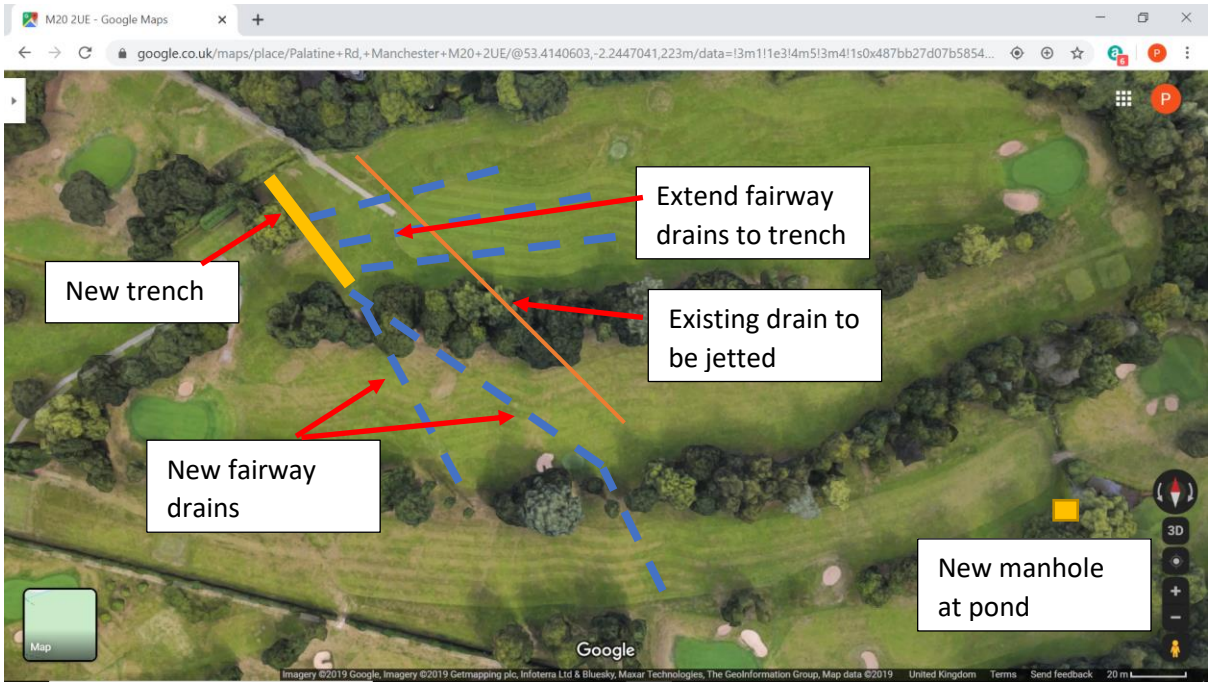
Phase 1

All existing drains from stream to be jetted. (see summary diagram),

Phase 3

Jet 1st green drain

Hole 2, 3 & 5



Phase 3

Construct trench across 2nd fairway, which can be completed without affecting play.

New Manhole adjacent existing pond on the 5th to connect existing fairway drains, thus providing easy access jetting point.

Phase 4

Jet 2nd tee area

Jet 2nd fairway drains area from stream.

Jet 3rd green area from existing MH.

Jet 3rd tee area from stream.

Jet 5th fairway from pond

Phase 5

Extend existing fairway drains on 2nd fairway to trench. Thus providing easy access jetting points.

New drains from adjacent 6th green, goes across 3rd & 5th fairways to trench on 2nd fairway.

Hole 6

Phase 4

Jet existing drains from the pond area.