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WITHINGTON GOLF CLUB

PALATINE ROAD

MANCHESTER

M20 2UE

FLOOD RISK ASSESSMENT



Ref: 20-B-12636/Withington Golf Club Revision B **22nd July 2020**

Principal: **D.J. Middleton BEng(Hons) CEng MIStructE**
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1. INTRODUCTION

1.1 Appointment

Carley Daines and Partners Limited has been commissioned by Withington Golf Club to undertake a Flood Risk Assessment on the existing site where the proposal is to install mechanical plant to the rear of the car park. The report is intended to support a Planning Application for the proposed works.

1.2 Proposed Development

Preliminary plans have been made available to us and the proposal for the site is for the addition of a new containerised boiler and silo to the right (as one views the front elevation) of the existing clubhouse, adjacent to the existing car park. The boiler and the silo are to sit directly onto a cast reinforced concrete slab. The proposals are presented in Appendix 1.

1.3 Objectives of Report

The objectives of this report are to identify how the proposed works will impact on/be impacted by the fact that the clubhouse is in Flood Zone 3 and also the proximity of the adjacent flood basin.

1.4 Previous Investigations

No previous investigations of this type have been undertaken on the site to the best of our knowledge. If they have, they have not been made available to us.

2. SITE LOCATION AND HISTORY

2.1 Site Location

The clubhouse is located off Palatine Road in Northenden, Manchester, NGR SJ83525, 90771. The golf course and the clubhouse footprint is trapezoidal in shape and covers an approximate area of 35 Hectares.

The golf course is surrounded by housing to the North East, Palatine Road and the River Mersey to the North West, the M60 motorway to the South West and the River Mersey to the South East/East

2.2 Site History

The golf course was created on undeveloped land in the late 19th century.

In the late 1970s the riverbanks on the adjacent River Mersey were raised and flood storage basins were created, using the flat adjacent open land. Nearby sluice gates were also built such that in extreme rainfall conditions, they could be opened and the 'flood basins' used to store the excess water, reducing/eliminating flooding to the surrounding residential areas. The Withington Golf Course is one of these flood basins. The clubhouse and car park, however, sit within Flood Zone 3 (high likelihood of flooding).

A flood map is presented in Appendix 2.

3. DISCUSSION

3.1 Proposed Works

In order to understand the ramifications of the proposed works, it is important to assess the risk. This risk can be described as follows: -

- Proximity of proposed slab and equipment to the flood storage area.
- The proposed slab and equipment is located in Flood Zone 3.

3.2 Flood Zone 3

The flood map, as noted above, show the clubhouse and new plant slab to be in Flood Zone 3. Consequently, consideration should be given as to how this affects/is affected by the proposed works.

In terms of the nature of the works, reference should be made to the national Government guidance and specifically the 'Flood Risk Vulnerability Classification'. This is categorised as follows: -

1. Essential infrastructure (ie. facilities which require to remain fully operational in all conditions).
2. Highly vulnerable (ie. basement dwellings, police stations etc.).
3. More vulnerable (ie. hospitals, residential dwellings, hotels).
4. Less vulnerable (ie. facilities which do not need to be functional all the time).
5. Water compatible development (facilities which are not affected by flooding).

The above is presented in more detail in Appendix 3.

Given the descriptions within this text it is clear that plant machinery associated with a golf club can be regarded as 'outdoor sports and recreation and essential facilities' which is classed as 'water compatible development'. It is also worth noting that the proposed construction (concrete slab, boiler and silo) is resilient to flood water as well.

Using the flood risk vulnerablity and flood zone compatibility (see Appendix 4) development of this nature is shown to be **'appropriate'** in flood zone 3.

(Interestingly, a golf clubhouse, using the same guidance, should be regarded as 'less vulnerable' and would also be regarded as appropriate, in the case of a new build).

3.3 Flood Compensatory Storage

As noted above the site is approximately 35 hectares in size.

Using the provided data from the Environment Agency (see Appendix 5), with specific regard to flood levels the highest flood level identified around the site for a 1% AEP (1 in 100 year) +70% increase in flow level is 30.20m.

The site level directly adjacent to clubhouse on the golf course, adjacent to the undercroft, is 26.70m (see appendix 6).

The level of the proposed compound is therefore 26.70m + 1.90m = 28.60m.
The plan area of the containerised boiler and the silo is (6x2.4)+(2x2) = 18.4m² therefore the volume of water which is being displaced elsewhere is 30.20m – 28.60m x 18.4m² = **30m³.**

Therefore, 30m³ is to be displaced elsewhere around the site, so assuming a site area of 35 hectares the increase in flood level due to the addition of the proposed plant equipment is 30m³/350000m² (x1000) = 0.09mm. This is clearly infinitesimal and not a risk to either the public or land local to the flood area.

It should also be noted that the reality is this increase in flood level will in reality act over an area far larger than specifically the golf course site itself and therefore will further reduce accordingly.

Notwithstanding the above, the Golf Club also intend to remove 25 trees on the course. Conservatively assuming a tree diameter of 700mm, and the course level where the trees are being removed of 26.5m then a compensatory volume can be established.

(30.20-26.50) x 0.35 x 0.35 x π x 25 = **35m³.**

As this figure exceeds the figure of 30m³ being displaced by the container and biomass boiler then the compensatory areas have been met.

4. CONCLUSION

Given the above, we can conclude that the construction of the new slab and addition of the new boiler and silo is appropriate in the location proposed within the golf club and will not have an adverse impact on the flood levels on site in the event of extreme flooding or when the golf course is being utilised as a flood basin.

A P P E N D I X 1

PROPOSED LAYOUT

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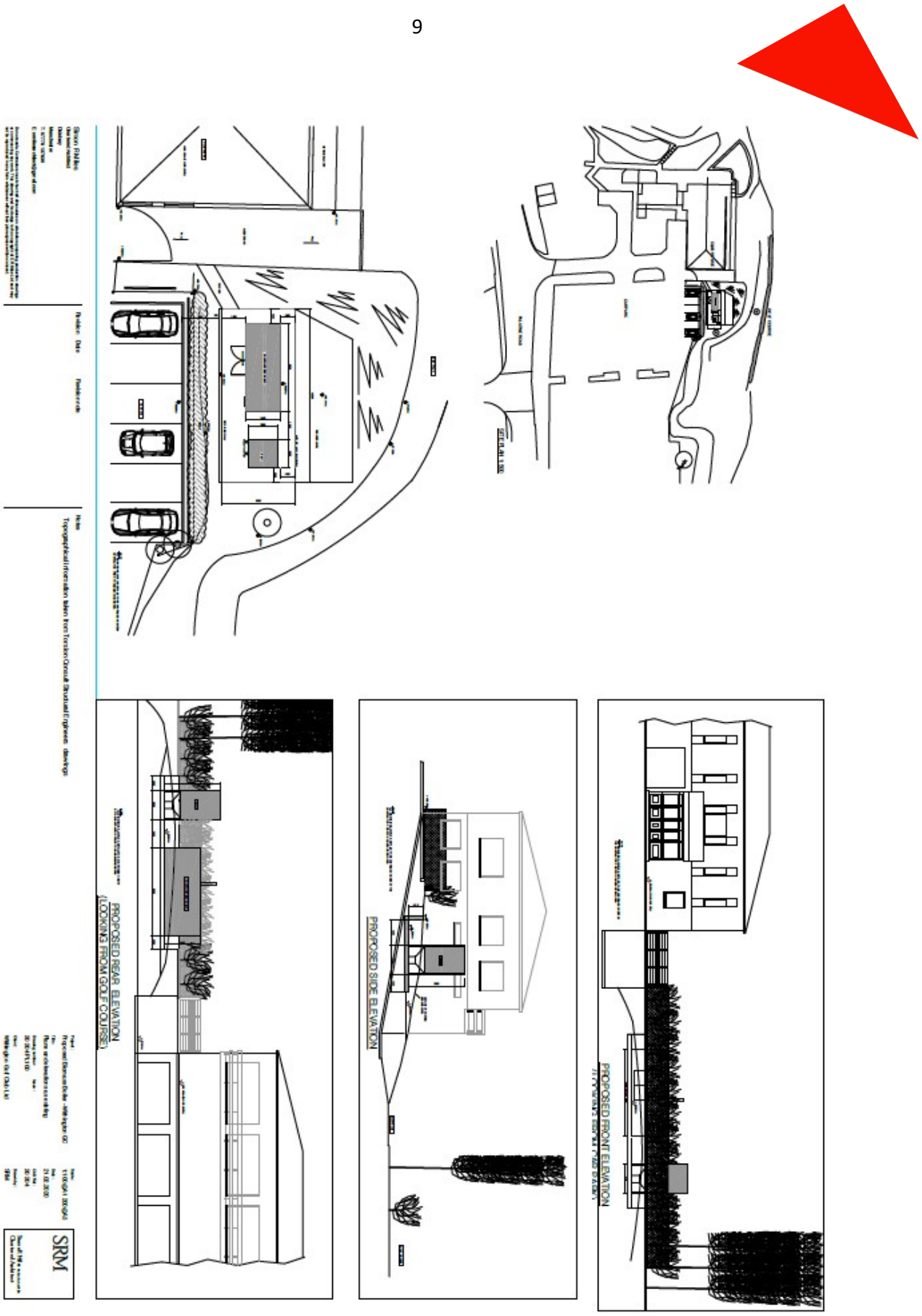

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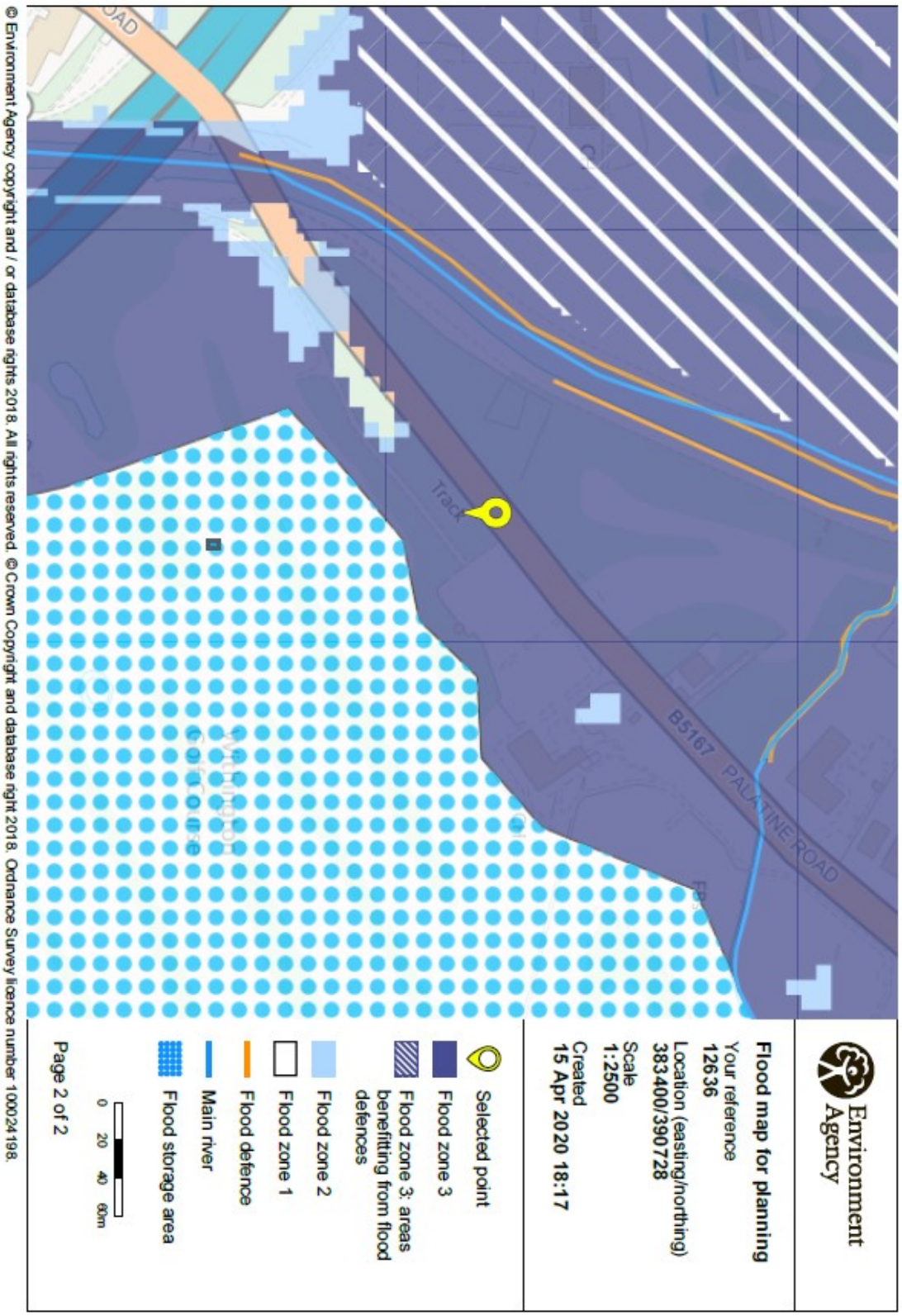
A P P E N D I X 2

FLOOD MAP


Environment Agency
Flood map for planning
Your reference
12636
Location (easting/northing)
383400/390728
Scale
1:2500
Created
15 Apr 2020 18:17
Selected point
Flood zone 3
Flood zone 3: areas benefitting from flood defences
Flood zone 2
Flood zone 1
Flood defence
Main river
Flood storage area
0 20 40 60m
Page 2 of 2
B5167 PALATINE ROAD
Track
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A P P E N D I X 3

FLOOD RISK VULNERABILITY CLASSIFICATION

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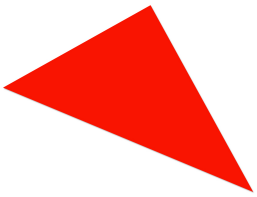

Essential infrastructure

- Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk.
- Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood.
- Wind turbines.

Highly vulnerable

- Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding.
- Emergency dispersal points.
- Basement dwellings.
- Caravans, mobile homes and park homes intended for permanent residential use.
- Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure').

More vulnerable

- Hospitals
- Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.
- Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
- Non-residential uses for health services, nurseries and educational establishments.
- Landfill* and sites used for waste management facilities for hazardous waste.
- Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.

Less vulnerable

- Police, ambulance and fire stations which are not required to be operational during flooding.
- Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'more vulnerable' class; and assembly and leisure.
- Land and buildings used for agriculture and forestry.
- Waste treatment (except landfill* and hazardous waste facilities).
- Minerals working and processing (except for sand and gravel working).
- Water treatment works which do not need to remain operational during times of flood.
- Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.

Water-compatible development

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel working.
- Docks, marinas and wharves.
- Navigation facilities.
- Ministry of Defence defence installations.
- Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
- Water-based recreation (excluding sleeping accommodation).
- Lifeguard and coastguard stations.
- Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.
- Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

A P P E N D I X 4

FLOOD RISK VULNERABILITY AND FLOOD ZONE COMPATIBILITY

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	✗	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	✗	✗	✗	✓*

Key:

✓ Development is appropriate

✗ Development should not be permitted.

A P P E N D I X 5

EA FLOOD LEVELS

A P P E N D I X 6

SITE SURVEY LEVELS