advance
M & E

1448	CANFIELD PLACE LONDON NW6

RAINWATER HARVESTING FEASIBILITY

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Date	**23rd May 2023**
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Signature	[redacted]
Date	**23rd May 2023**

1.0 INTRODUCTION

This feasibility study has been prepared in order to consider using a Rainwater Harvesting system (RWH) at 10-24 Canfield Place NW6.

This document is in response to Section 106 Agreement from Camden Borough Council, paragraph 8.

The significance of Low or Zero Carbon Technologies (LZC) is becoming ever greater as we aim to reduce the strain on natural resources along with minimising our negative effect on the environment. Although RWH is not a LZC Technology or a renewable energy source it is often used as another method of reducing the use of natural resources, in this case, water.

The Section 106 Agreement document refers to 'on-site renewable energy facilities' which RWH cannot be classed as suitable.

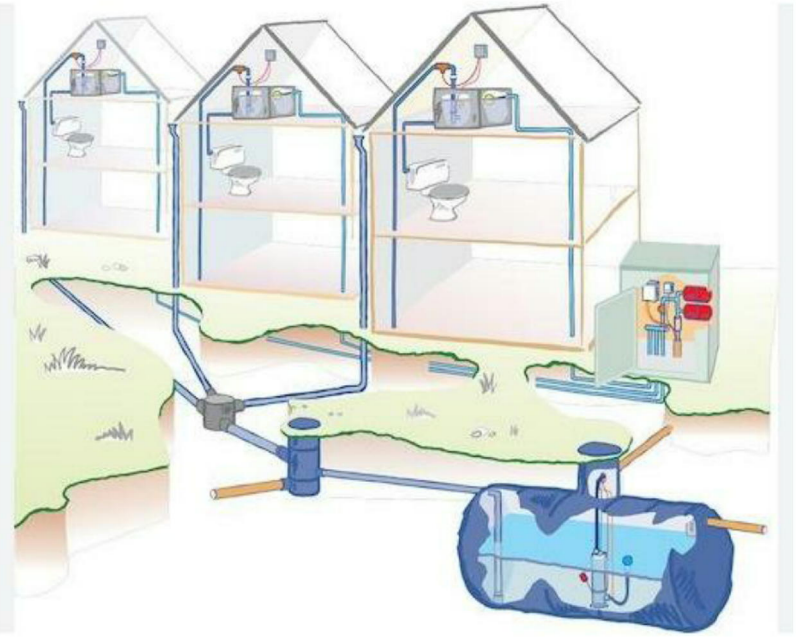
The following report shall outline the reasons that the implementation of this technology on this site is not a recommended option.

2.0 RAINWATER harvesting

Rainwater Harvesting (RWH) or recycling is a process of collecting and storing rainwater that falls on a catchment surface (in this case roofs) for use, independent from or supplemental to the mains water supply.

This reduces demand on the mains supply, offers some resilience from local supply problems. Collection and diversion of surface run-off can also mitigate flood risk and control drainage as part of a Sustainable Drainage System (SuDS).

Rainwater is a relatively clean water source, needing only minimal treatment. Collected water can be used for **non-potable** purposes such as flushing toilets, garden irrigation systems and vehicle washing etc.



2.1 Standards

Rainwater Harvesting Systems, Code of Practice; BS 8515: 2009 establishes standards for the installation, testing and maintenance of rainwater harvesting systems for **non-potable** applications.

It includes standards for filtration, for the manufacture and installation of storage tanks and a series of approaches for calculating the sizes of tanks.

2.2 Installation

A RWH system is comprised of 7 main components; (The components above can be seen in *figure 1* above)

- Collection area
- Downpipe connections
- Underground tank(s)
- Filter system
- Mains water connection
- Pumping system
- Distribution pipework/tanks

Due to the ground works required, there is a significant capital cost – in this case the most cost effective /efficient/suitable way of distributing the rainwater would be via 2 x underground tanks, approx. 5,000 -7,500 lt of total storage, (calculated on roof collection areas and a typical predicted rain fall) would cost in the region of £20,000 to £25,000 for the RWH system, plus additional for the groundworks – There will be significant area required for the underground tanks and associated filters, pipework etc.

This is the first of the concerns since there is no common area inside the curtilage of the site except under the buildings, as the roadway under Canfield Place is not in the ownership of the development.

(See markup appended to this report)

The second concern/observation would be that there is insufficient use for the collected rainwater to be a cost effective and environmentally effective option on this site. Since the water is non-potable, it can only be used to flush toilets and to irrigate gardens, since there is a single living roof on No. 24 and no other green areas this leaves the only useful purpose is flushing toilets. If there are 13No. toilets to flush on the site, then the water required is minimal (13 toilets, 50% diversity @ 4.5L part flush = 30L in any instance). RWH tanks generally require a mains water top up to avoid the sump pump from running dry, negating any real benefit from harvesting unless there is a significant loading of use.

The third consideration is that buildings using harvested rainwater typically increase greenhouse gas emissions compared to using mains water, where embodied and operational carbon are considered. For example over 30 years, where an 'average' development has a RWH system with a polyethylene tank, the total carbon footprint is approximately 1.25 – 2 tonnes of carbon dioxide equivalent (CO_2e). This is similar to one year of energy-related emissions from a house built to Code for Sustainable Homes Level 3 energy efficiency standards. (AECOM report on behalf of Environment Agency 2010)

3.0 Conclusions and Recommendations

Although the use of Rainwater Harvesting system is included in the 106 Agreement, because of the reasons above we would ask that these aspects of the actual implantation are reviewed by the local planning authority and discussed before any design of a system is progressed.

In summary, any RWH system would be of limited benefit on this development because;

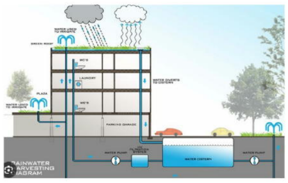
1. Difficult to implement and expensive installation costs
2. Limited use for the harvested water, maintenance costs for pumping arrangements
3. Future maintenance issues if the harvesting equipment is installed below the buildings
4. Various reports on negative impacts on the environment, i.e. increased greenhouse gas emissions

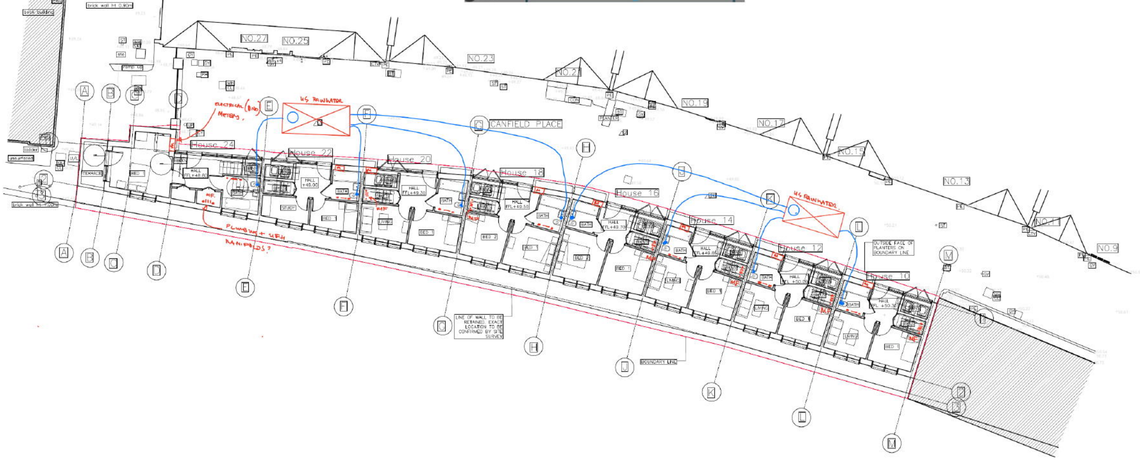
We would propose that the RHW system is not implemented on this project due to the reasons listed above.

1. Rainwater recycling - uses — watering green roofs?
— flushing toilets?

2. Size of tank for project? 7,500 lts.

Based on a GRAF tank size required.





GROUND FLOOR PLAN – PROPOSED

WORK IN PROGRESS

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INFORMATION

PROJECT: MEWS DEVELOPMENT
10-24 CANFIELD PLACE, NW6
FOR DOMYS LONDON

TITLE: GROUND FLOOR PLAN PROPOSED

SCALE: 1:500 A1 1:100@A3

DATE: 20 APR 2023

PROJ.#: 242 10-24CP

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