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Flood Mitigation Measures in the United Kingdom

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Abstract

In recent times, the United Kingdom had witnessed flood disasters, from the overflowing of the banks of the River Thames to the submerging of residential and commercial neighbourhoods in Devon, Dorset, Somerset, Lancashire, Worcestershire, and at various other locations, too numerous to mention. The magnitude of the flood completely overwhelmed existing flood defences and made a mockery of well-known and packaged agendas meant to "prevent, protect and prepare" against such adverse occurrences. The European Union's (EU) Flood Directive 2007 is robust in its aim and mandate to member states, for which the UK is a member, in specifying that "adequate and coordinated measures" be taken to reduce flood risk. The UK Environment Agency, solely responsible for action against these natural disasters had been caught napping and widely blamed for failings in pre-empting these sad incidents. Thousands of properties were devastated and vital infrastructures, such as roads, bridges and rail tracks were damaged, as a result. Thousands of people were made homeless and some had to seek temporary shelter and refuge. The consequences on businesses were untold and large compensation were to be paid out by insurance companies.

This paper is set to look into various mitigating measures meant to overcome the lapses and inadequacies of the present system and to encourage a better informed approach in dealing with future occurrences. The paper will draw from existing documentation and legislation put in place to enhance corporate response, to avert repeating the cycle of flood disaster in the UK.

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1.0 Introduction

The European Union Flood Directives (2007) defines flood as a "covering of land not normally covered by water". However, flood is far more than a quiet occupation of land space but may involves rapid "overflowing" or flow of water or an outpouring or tidal upsurge. The effect of an abnormal rise in ground water level may inflict damaging results on structural foundations of buildings without any superficial indications. This kind of phenomenon may be classified as "silent" flood or ground water flood.

There are therefore different types of flood, such as flash, coastal, river, groundwater and sewer flood, (UKELA, 2014). Flash flood is usually sudden and unexpected, arising from heavy and persistent downpour. On the other hand, coastal flood may result from high tides overtaking a flood plain. Similarly, the banks of a river may burst, at times, resulting in river flood. Spillage is a term used when other fluid e.g. oil overflows on a land mass or over water surfaces.

The UK has in recent times experienced severe flooding in its major locations. During December 2013 and the early part of 2014, severe wind storm combined with heavy and persistent rain resulted in widespread flooding in Somerset, the Thames Valley, Kent, Sussex, Dorset, Hampshire, and the banks of the River Severn. The flooding left in its wake terrifying destruction of residential and commercial properties, sea and water defences. It also caused disruption of rail and road transport services. According to the Environment Agency, the Severn River flood affected Worcester and Gloucester, while the Thames overflowed its banks in Oxfordshire, Berkshire and Surrey, and damaged more than 2400 homes. The MET office records indicated that it was the highest recorded January rainfall since 1910. At least five deaths were recorded. Some roads were closed at some points, including A30 (Comwall), A40 (Gloucester), A29 (West Sussex), etc.

This paper examines some existing measures to mitigate these occurrences and pays more attention to deficiencies associated with engineering disposition of buildings and other infrastructures prone to flooding, including land use issues, global warming aspects, and planning considerations.

2.0 Existing Measures

The Environment Agency (EA) has set out a Corporate Plan for 2011-2015. This document indicates that over 5.5 million, or one in six, properties are at risk of flooding across England and Wales. Flood and Water Management Act 2010 made provision regarding the management of risks in connection with flooding and coastal erosion. Section 40 of the Act has an addendum to Building Act 1984 with respect to flood resistant buildings. This provision imposes on a person or group carrying out work of any type on building construction to ensure that the structure is flood resistant or resilient. This means that prior to the enactment of this Act, there was no mandate to have flood resilient buildings. However, it is yet to be confirmed within the last four years how many flood resilient properties had been constructed in the UK. The focus of the EA, according to their Corporate Plan 2011-15, is, but not limited to, developing their "mapping and modelling capabilities and providing enhanced flood risk management visualisation tools". Among the tools produced by the EA include flood risk maps; flood risk management plans (FRMPs); specific digital geospatial maps for each river basin districts, etc. The EA also maintains existing flood defences and structures. Despite these initiatives, records kept by the EA shows that in 2012/13 over 7,000 properties were flooded and more than 43,000 hectares of agricultural land was under water.

European Union (EU) flood risk management plan are based on five major elements as in figure 1: prevention, protection, preparedness, emergency response and recovery. It is important to note that the production of flood risk maps and risk management plans do not by themselves stop the occurrence of floods. The flood of 2013/14 occurred while all these were in place.