Hounslow School Emergency Plans

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ABSTRACT

The Contingency Planning Unit (CPU) of the London Borough of Hounslow (LBH) distributes emergency plan templates and guidance to schools in the borough. After conducting a literature and best practice review, our group of students updated the emergency plan template and guidance documents for the CPU. We systemically analyzed plans and guidance from other schools, both in London and worldwide, we synthesized the updated template and guidance from the best practices. We considered Hounslow's largest risks (i.e. flooding, flu, and utility failure), schools' emergency plans, and the relationship of emergency planners and school staff while writing our plans. Our team recommends incentivizing the updating of emergency plans, and emphasizes the importance of drilling and practice.

ACKNOWLEDGEMENTS

EXECUTIVE SUMMARY

If a child goes to school for six hours a day, nine months of the year, then that is around 1,600 hours per year in which parents entrust the safety of their children to the school. Educational institutions, however, are not immune from real-world emergencies. If an emergency such as a fire or an act of violence occurs, schools need to have plans in place to overcome the situation.

One of the worst school emergencies in the United Kingdom (UK) occurred in Dunblane, Scotland in 1996, when an armed intruder entered the school and took the lives of sixteen children and one teacher (Anonymous, 1996). This tragedy, later named the Dunblane School Massacre, reminded many of the importance of emergency planning in schools.

The goal of this project was to develop revised School-Specific Emergency Plans (SSEPs) and increase community resilience in the London Borough of Hounslow (LBH). The Contingency Planning Unit (CPU) of the LBH has an existing suite (collection) of SSEPs, procedures, and templates. The CPU offers a template to all of Hounslow's schools as well as a guidance document describing best practices for filling out the template.

METHODOLOGY

To accomplish our goal we broke the project up into four objectives:

1. Conduct a broad literature and best practice review of school emergency plans.

2. Assess administrators' and experts' opinions of current plans.

3. Develop a draft of revised emergency documents.

4. Develop training exercises for school children in the LBH.

In order to revise the plans, we conducted a broad literature and best practice review of school emergency plans: one from Australia, three from the United States, and four from the UK. In addition, we reviewed additional materials related to emergency planning. We comparatively analyzed these plans and those from Hounslow. We interviewed LBH school administrators and CPU workers in order to get their opinions on the emergency plans.

Using the data we collected from our literature review, interviews, and survey, we drafted a revised version of the LBH emergency plans. Lastly, when we finished drafting our plans for

Hounslow, we worked collaboratively with our sponsor to create a program to teach school children about emergency preparedness and response.

FINDINGS & DISCUSSION

We summarize our findings as the following:

1. The biggest risks to the LBH are floods, utility failures, and pandemic illnesses, according to the Hounslow Community Risk Register.

2. Many of the plans had what is called an Emergency Management Team.

3. Teachers and school staff prioritize education over emergency planning.

<u>Potential risks to Hounslow schools.</u>

When planning for emergencies, we prioritized those which were most likely to happen within the LBH. Using data from the Hounslow Community Risk Register (HCRR), a document that compares emergencies' possibilities and potential impact, we identified three priority emergencies. **Utility failures, floods, and a pandemic of influenza or similar illness were all emergencies ranked as Very High Risk by the HCRR.**

<u>Shared aspects of school-specific emergency plans.</u>

We analyzed the procedures in other schools' plans, comparing them to the plans in the LBH. **Hounslow did not include bomb threats, bus incidents, flu pandemics, in addition to other emergencies, in their template and guidance.** Other schools in our literature review did include these emergencies, so we focused on adding these emergencies to Hounslow's template and guidance. **We also found that many of the plans had what is called an emergency management team (EMT).** An EMT is a team that schools convene in an emergency to manage the situation in a manner that is organized and structured. Of the nine SSEPs we analyzed, including the ones from Hounslow, only the ones from Burlington, MA and the Devon County Council did not recognize the importance of having an EMT. The structure of EMTs varied widely across the world, with the largest team, from Arizona, consisting of 45 members, and the smallest team, from Doncaster, England, consisting of five.

<u>The relationship between emergency planners and school administrators.</u>

Teachers and school staff prioritize education over emergency planning. We interviewed David Brockie, a Senior Education Advisor for the LBH, about schools' roles in an

emergency. Mr. Brockie frequently lamented that the attitude of teachers and administration towards emergency planning was, "boring, but necessary" (Brockie, 2015). Through discussion with employees of the Contingency Planning Unit (CPU) and with Kelly Chapman of Beavers Community Primary School, we found that most schools did not update their emergency plans on a regular basis because there was a lack of motivation. Consequently, schools in the Borough have another position called the Business Manager, who usually takes the responsibility of writing and updating of the emergency plans (Ibid.).

Emergency plan templates must be both concise and comprehensive. This attitude towards emergency planning by heads of schools led us to focus on how we can make the template and guidance comprehensive enough to adequately describe an emergency, but concise enough so that the act of filling out the template does not take up time in the diary of whoever fills it out.

CONCLUSIONS & RECOMMENDATIONS

We recommend the following:

1. For Local Authorities: Enforce the updating of emergency plans via audits and/or fines.

2. For school staff: Keep students' skill in emergency response up to date by holding drills and exercises related to emergency response.

Incentivizing the updating of emergency plans.

Because of the lack of motivation to update school emergency plans, we recommend that Local Authorities (LAs) enforce the updating of emergency plans through fines or other methods that dissuade schools from letting their plans get outdated.

The importance of training and drills.

For emergency planners, both at the Local Authority level and at the school level, we recommend putting a section for drills in the template and guidance documents. Also, we would like to note that The Office for Standards in Education, Children's Services and Skills (Ofsted), a government agency that inspects schools, does not rate contingency plans during their inspections; they do, however, give schools with a culture of safety high scores. Therefore,

schools may earn better Ofsted ratings if they hold drills and exercises to keep students informed of emergency response procedures, which creates a culture of safety.

Conclusion

After we left Hounslow, we left behind our updated emergency plan template and guidance, as well as a lesson plan that schools could use to increase their pupils' abilities to respond to emergencies. We learned much about emergency response through our broad literature review and got many opinions from personnel all around Hounslow. We took all this information we gathered and combined it into our draft template and guidance. We researched the emergencies to which Hounslow is susceptible as well as emergencies not mentioned in original plans. We were able to go into Beavers Community Primary school and try out our lesson plan on Year 6 students (aged 10 to 11 years old). We discuss our template, guidance, and lesson plan in Section 6: Results.

AUTHORSHIP

John Baia (JB), Cobi Finkelstein (CF), Daniel Pongratz (DP), and Juan Rodriguez (JR) were the primary authors of this report. Cobi Finkelstein edited Sections One through Three, and John Baia, Daniel Pongratz, and Juan Rodriguez edited Sections Four through Six. All authors contributed equally to the Introduction section. The primary authors for the emergency plan template and deliverables were John Baia, Daniel Pongratz, and Juan Rodriguez, and the primary author of the lesson plan was Cobi Finkelstein. See the table below for a breakdown of authorship of other sections.

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JB	Executive Summary, 2.1, 2.2.2, 2.6, 3.1.1, 4.2.3.1-4.2.3.3
CF	Abstract, Acknowledgements, 2.2.1, 2.4, 3.1.1, 3.3.1, 4, 5, 6
DP	2.5, 2.7, 3.1.2
JR	2.3, 3.2.1

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1 INTRODUCTION

It is a parent's worst nightmare: getting notified that there was an emergency at their child's school. When we think of a school, the first thought that may come to mind is a place where children learn, play, and grow up among other children. Although the main responsibility of primary and secondary schools is to educate, schools have other important obligations to their students. One of these is to make sure that their pupils are safe. If a child goes to school for six hours a day, nine months of the year, then that is around 1,600 hours per year in which parents entrust the safety of their children to the school. Educational institutions, however, are not immune from real-world emergencies. If an emergency such as a fire or an act of violence occurs, schools need to have plans in place to overcome the situation.

One of the worst school emergencies in the United Kingdom (UK) occurred in Dunblane, Scotland in 1996, when an armed intruder entered the school and took the lives of sixteen children and one teacher (Anonymous, 1996). This tragedy, later named the Dunblane School Massacre, reminded many of the importance of emergency planning. As part of this idea, schools trained their staff to properly act in case of an emergency. In 2006, a decade after the events in Dunblane, the BBC wrote about how the event changed school security in the UK. They reported that despite one school's investments in a security fence as well as CCTV cameras, a reporter was able to enter the school unchallenged and walk around for half an hour (Champion, 2006). Knowing the fact that the Dunblane massacre occurred within a period of three to four minutes, an intruder being loose for thirty minutes could have catastrophic consequences (Cullen, 1996). These emergencies could happen in any school. Consequently, schools throughout London are working to update and strengthen their emergency plans. Specifically, the London Borough of

Hounslow (LBH) wanted to update and develop their school emergency plan template and guidance documents.

The Borough of Hounslow has a total of over 75 primary and secondary schools and some recently fell victim to burst water mains, chemical spills, and fires. One of the worst school emergencies in Hounslow was a fire in 2013 which destroyed 80% of Hounslow's St. Paul's Church of England Primary School's building (St Paul's Church of England Primary School, 2015).

In this project, we worked with the Contingency Planning Unit (CPU) of the London Borough of Hounslow to review the existing suite (collection) of School-Specific Emergency Plans, procedures, and templates. In this paper we are defining "School-Specific Plans" as plans for schools in general. The CPU gives out a template to all of Hounslow's schools as well as a guidance document describing best practices for filling out the template. We researched the best practices in responding to emergencies, and examined international, national, and regional school emergency plans. We interviewed experts and CPU workers to identify techniques to enhance school and community resilience.

This report has six sections, the Introduction, the Background, the project Methodology, our Findings, Recommendations, and Results. In the Background section, we discuss potential emergencies that schools face and basic strategies to prevent or contain those emergencies. We describe the roles of *Category One* (first) responders during emergencies and how schools' information management systems allow for concise distribution of information to those who need it. We also explore how to provide support during the aftermath of the emergency and, lastly, how London and Hounslow schools set up their current emergency plans.

In the Methodology section, we describe our methodological approach for completing our project goal. Our project approach is broken into three phases. The first phase includes analysis of School-Specific Emergency Plans (SSEPs). The second phase included modification to the Hounslow SSEPs. During the analysis phase we examined SSEPs in Hounslow, other communities in the UK, and around the world. We assessed the opinions of Hounslow's administrators to identify what they do and do not like about the current emergency plans. During the modification phase, we developed draft revisions to the Hounslow SSEP template and guidance using the information we found during our analysis. We sought input from our sponsor and other experts on the revisions, and made additional changes based on their recommendations. The third phase was to improve community resilience, and we did this through an activity at school that we titled the "Wheel of Misfortune."

In the Findings section, we discuss the discoveries we made during our research. We found that the biggest risks to the London Borough of Hounslow were utility failures, floods, and pandemic illnesses. We also analyzed the shared aspects of SSEPs, and how they were similar and different to those in the LBH. Finally, we learned about the attitudes of school staff with regard to emergency planning, and that they prioritize education over emergency planning. In our Recommendations section, we share our recommendations. Finally, in our Results section we discuss our final deliverables.

2 BACKGROUND

From violence to natural disasters, schools need to be equipped with strategies for responding to a wide range of emergencies. Schools need to understand the structure of the emergency services and how they spread information. When an emergency is over, schools must

have plans for the aftermath of the emergency. In this section, we start by discussing previous emergencies as well as general strategies to prevent and handle emergencies in a public setting. We delve into limitations that may cause current emergency strategies to be less efficient as well as how emergency services are able to respond. Lastly, we introduce the goal of this project and explore the strengths and limitations of the London Borough of Hounslow's current School-Specific Emergency Plans (SSEPs).

2.1   Potential Emergencies

The first aspect of emergency planning to consider is the emergencies themselves. There are many different types of emergencies, but we identified three groups of emergencies that require special attention because of their potential risk and impact: (1) school violence, (2) fires, floods, and utility failures, and (3) pandemic illness.

2.1.1   Violence.

School violence, a term that describes a range of emergencies from assault to school shootings, got the attention of contingency planners and the media in the United Kingdom (UK) and United States (US) after a multitude of school shootings. In the UK from 2011-2012, incidents of children assaulting adults occurred at a rate of 90 incidents per day, with a total of 17,520 at the end of the academic year (Department for Education, 2013). In the United States, school violence is one of the highest-risk emergencies (Akiba, LeTendre, Baker, & Goesling, 2002). Though violence is one form of a school emergency, accidents and natural disasters are also something for which schools need a plan.

2.1.2   Fires, floods, and utility failures.

Fires, floods and utility failures are all emergencies that can affect schools. Between the years of 2000 and 2013, there were a total of 6,360 casualties in Great Britain due to fires

(Cabinet Office, 2013). The BBC reported that on every third day in 2011 there was a school on fire, with 113 fires being accidental and 36 being arson (BBC, 2013). The BBC also reported that in the same year, nationally, one in every eight schools had been victims of arson, costing schools more than 90 million dollars that year (Ibid.).

Floods have also been a problem in London schools, with some schools having to temporarily close due to flooding. In 2013, the worst year in the past decade for floods, 9,819 people globally were tragically killed by floods and flood-related incidents (Guhar-Supir, Hoyois, & Below, 2014). From the beginning of 2013 to the end of 2014, Hounslow had over 80 incidents involving flooding.

Utility failures can cause conveniences such as electricity and running water to stop and this can lead to health and sanitation problems. If the school has any elevators and the power goes out, students or staff could become stuck. The US and Canada experienced their largest blackout in 2003 (Prezant et al., 2005). The blackout led to the failure of oxygen preservers and ventilators (Greenwald, Rutherford, Green, & Giglio, 2004). These failures caused an increase of hospital visits due to device failure to 9% (Ibid.). In an unrelated but similar incident in London in 2003, about 100 people became stuck in elevators and had to be rescued by firefighters (BBC, 2003). This same blackout also affected 60% of the London Tube system, which was about 1,800 trains. This caused adults to miss work, children to miss school, and increased traffic on the street due to the loss of trains as a transport option (Whittow, 1995).

Much like blackouts, water outages can cause massive chaos for unknown amounts of time. As water is the most important thing to survival, an outage can be catastrophic (Parker, 1995). Showers, baths, and sewage systems would cease functioning, causing the spread of disease (Ibid.). People would not be cooking, and resulting floods can force people out of their

homes (Ibid.). One water outage in 2010 left thousands in West London without water and flooded more than 50 homes (BBC, 2010). Schools have to worry about these events but also need to think of illnesses that can spread through their buildings.

2.1.3 Pandemic illness.

Flu is a respiratory illness which affects the nose, throat, and lungs. The flu is contagious and spreads when people cough, sneeze, and talk. We discuss three different levels of the spread of disease. In order of increasing affected area, they are: outbreak, epidemic, and pandemic. An outbreak occurs when there are more incidents of an illness in a small area (e.g. a town) than expected (Porta, 2014). Epidemics are similar to outbreaks, but affect a greater area (e.g. multiple cities in one region) (Ibid.). The largest of these incidents is the pandemic, which is similar to outbreaks and epidemics, but cover the widest area (e.g. crossing over international lines) (Ibid.). Pandemic diseases can infect even the most able-bodied people, which is why contingency planners consider them to be a threat. Flu is common in schools due to children being in close proximity of one another. The United States Center for Disease Control and Prevention (CDC) reported that each year an average of 20,000 children under the age of five are hospitalized due to flu-related illnesses (Center for Disease Control, 2015). The worst case of the flu was back in 1918 to 1919 where over 20 million people died, which was more than the number that died in World War I (Billings, 2005).

**Percent of Deaths Due to Pneumonia and Influenza
NCHS,
by week, 2009-14, National**
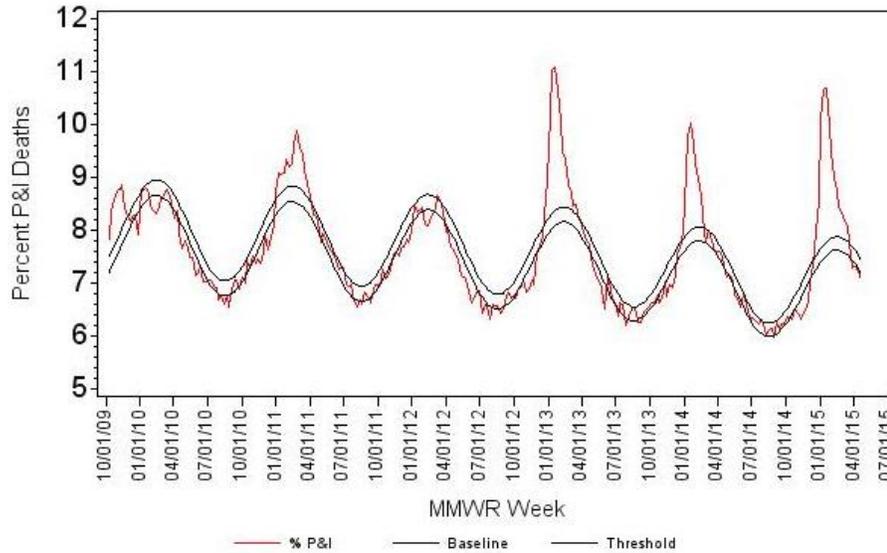
Figure 1: Percentage of Deaths Due to Pneumonia and Influenza (Center for Disease Control, 2014)[1]

Figure 1, created by the CDC, shows the weekly percent of reported deaths caused by pneumonia and flu from 2009 to 2014, with an average of 7.6% of total deaths weekly being attributed to these illnesses (Center for Disease Control, 2015). A pandemic outbreak of flu or a similar illness can affect up to half the population of the Borough, which adversely affects school attendance by both teachers and staff. The flu is something schools have to watch and make sure that all their students are protected or kept away if they become ill.

2.1.4   Case study: Previous emergencies.

An essential part of planning for the future is looking to the past; in this case, it is looking at previous school emergencies. Information on past emergencies serves as a feedback mechanism to improve current school contingency plans. The most catastrophic school

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[1] Courtesy of the Center for Disease Control and Prevention. Public domain.

emergencies have been the driving force for important social or political changes. Some examples of such occurrences worldwide include the 1958 Chicago School fire, the 1966 Aberfan disaster in Wales, and the 1996 Dunblane school massacre in Scotland. Such events are well-remembered due to the impact they had on their communities and in legislation, especially the Aberfan and Dunblane incidents, which inspired changes in the British legislation that contributed to the safety of the community.

In 1958, the United States city of Chicago, Illinois saw one of the worst school tragedies in the history of the country. On December first, 90 children and three nuns lost their lives when the Our Lady of the Angels school caught on fire, and the incident injured many others. There are multiple reasons why this unfortunate emergency was such a tragedy, the most important being that the school's infrastructure did not meet several of the required safety standards for buildings at that time. The United States National Fire Protection Agency (NFPA), an independent agency that makes suggested model codes for adoption by local governments, established in their Building Exit Code (today known as NFPA 101®, Life Safety Code®) that all staircases in schools had to be enclosed so that in case of a fire, the victims could evacuate the building without harm from hot fumes, smoke and flares (Babcock & Wilson, 1959). Unfortunately, only two staircases of four were enclosed in Our Lady of Angels School, and when the fire had been noticed, the open staircases allowed hot fumes and smoke to fill the second floor hallways, making it impossible for the students to leave their classes (Ibid.). Other failures to consider were the lack of an automatic fire detection alarm and fire suppressing sprinklers (Ibid.). Also, the fire alarms did not automatically alert the fire department (Ibid.). According to Arthur E. Cote, a disaster expert for the NFPA, the reaction to this fire was faster and greater than the reaction to any other past fire in the history of the US Schools across the

entire country began to overhaul their buildings to comply with the fire safety standards established by the NFPA (Cote, 2003).

The 1966 Aberfan disaster occurred when an enormous amount of spoil (coal waste), slid down the Nynydd Merthyr mountain, right above the village of Aberfan, after an abnormally heavy rainfall (McLean, 1997). A mining company called National Coal Board (NCB) placed this spoil on the side of the mountain. On that morning, 116 children and 28 adults died, buried by the avalanche of liquefied spoil (McLean, 1997). The Houses of Parliament and the Secretary of State for Wales took this case to a Tribunal of Inquiry. This tribunal, chaired by Sir Herbert Edmund Davies, investigated the causes of this tragedy and whether there was any blameworthy conduct that could have caused such an event. The final report, released on August third, 1967, concluded that the blame for the disaster rests upon NCB (among others). This report revealed some flaws in the legislation that could have permitted this disaster from happening. The decision was the following:

> *"II. There was a total absence of tipping policy and this was the basic cause of the disaster. In this respect, however, the National Coal Board were following in the footsteps of their predecessors. They were not guided either by Her Majesty's Inspectorate of Mines and Quarries or by legislation (Paragraph 66)."*
> *"III. There is no legislation dealing with the safety of tips in force in this or any country, except in part of West Germany and in South Africa (Paragraph 70)."* (Davies, 1967)

According to such statements, while the responsibility of the Aberfan tragedy was on the NCB, there was no rule or law that stated that what the company was doing was either an infringement or a bad practice. Consequently, the Parliament of the United Kingdom passed the Mines And Quarries (Tips) Act of 1969 which, according to the British Geological Survey, "govern[ed] mines and quarries and their attendant waste tips" (British Geological Survey, 2015).

Years later the Dunblane school massacre of 1996 took place in the town of Dunblane, Scotland. On Wednesday, March 13th, Thomas Hamilton took the lives 16 children and a teacher with a firearm while they were in class, and then proceeded to end his own life. The shooter,

carrying four legally owned guns, targeted 32 people in less than three minutes. The gun laws in the UK were already quite strict. The law required shotgun owners, and owners of any semi-automatic weapon greater than .22 caliber, to register their weapons (Wilkinson, 2013). After Dunblane, however, the community came together and petitioned for a ban on private gun ownership in the UK. An organization called Action on Armed Violence stated that "The Snowdrop Campaign was founded by families and friends of those affected by the tragedy in Dunblane, and gained 750,000 signatures to a petition for a ban on private gun ownership in six weeks" (Action on Armed Violence, 2014).

The local government took the public opinion into account, and in 1997 the Parliament of the United Kingdom passed an act, called the Firearms (Amendment) (No. 2) Act 1997, banning the possession of any type of gun, including small caliber handguns (Ibid.). The impact of the Dunblane shooting raised awareness in the community and this led to government action.

More recently, and an illustration of one of the benefits of preparedness, on Wednesday, April 29, 2015 the Lewiston Elementary School in Georgia, US, evacuated after detecting a gas leak while the students were having lunch (Macavinta, 2015). The school proceeded to evacuate their pupils and staff to a park adjacent to the school, which was a pre-determined evacuation location (Ibid.). The teachers then proceeded to contact the parents of the children to inform them of the situation and to acquire permission to send their children back home (Ibid.). Schools made arrangements with the transportation services so that the buses picked up the students at 1:00 PM, and transported them home (Ibid.). If the teachers could not contact the parents, the teachers kept the children at the safe site until their parents picked them up later (Ibid.). The way the school handled the situation in Lewiston Elementary School is a proof that, in schools where emergency plans are in place, and the staff and students are familiar to the emergency plans,

schools can handle potentially harmful situations before they escalate into disasters. These emergencies are not hypothetical, they are factual. Thus, schools have developed response plans in the event that any of these emergencies occur.

2.2   Basic Strategies

When creating emergency plans for schools, planners must treat every emergency differently. Violent emergencies should not have the same plans in place as fires and floods. Also, not all emergency plans relate to emergencies; some plans relate to teaching children about response.

2.2.1   Teaching children.

Every person learns in a slightly different way. Teachers and school administrators must consider different learning styles when teaching children about emergency protocol.

Children, and their vulnerability in disasters, have been receiving special attention when it comes to community resilience ever since 2004 when Hurricane Katrina hit the United States (Peek, 2008). Children are particular targets for resilience education because they are one of the most vulnerable groups; they are more susceptible to psychological issues such as post-traumatic stress disorder (PTSD), physical issues such as illness, and furthermore are vulnerable to educational issues that may arise from missing school (Ibid.).

There are many methods to teach children about emergency plans. Among the most common in the United States is the method used by the United States Federal Emergency Management Agency (FEMA), the agency which deals with disasters inside the United States. In this method, instructors give children pamphlets, sit them down, and discuss what to do should disaster strike (Federal Emergency Management Agency, 2014). There are programs in London to teach children about school safety as well. One such program is Think Safe, which teaches

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children about school safety and aims to increase children's confidence in themselves and ability to respond in an emergency situation. (Think Safe, 2015). This program teaches children by simulating fire, police, and medical emergency situations, and getting them into the mindset of how to respond (Think Safe, 2015).

2.2.2 Response to human error and natural disasters.

Many schools have plans for accidents and test these plans often to make sure both students and teachers are prepared. Schools have to plan for human error, including fires and chemical spills, as well as potential school emergencies caused by natural disasters, such as floods.

Fire drills are the most common way for schools to prepare for fires. Drills are a common practice; they ensure that everyone in the school will know what to do and remain calm in a fire-related emergency (Oxfordshire County Council, 2014). Fire drills teach both children and teachers how to evacuate or remain safe in case of a fire at the school. While fire drills are common in schools, some emergencies are not accounted for.

Chemical spills pose another potential school-wide emergency. The United States Center for Disease Control (CDC) recommends that both teachers and students be trained to identify hazardous spills and how to keep themselves safe (CDC, 2004). Chemical spills occur less frequently than fires, which causes schools to test their chemical spill related emergency plans less often. Much like chemical spills, floods occur infrequently.

Flooding is a major risk in the UK, but there are efforts to reduce its potential impact. A 2008 study about the UK's Environment Agencies concluded that a significantly larger number of people take action when flood maps are available to the public (S. Priest, 2008). These flood maps show geographic areas that may be heavily affected by floods and allow users to identify

their level of flood risk and low-risk areas they can go to for safety. Although schools have plans in place for handling emergencies, they often need external resources to stop these emergencies from continuing and causing more harm.

2.3 Emergency Services

The role of the emergency services is to assist people in life-threatening situations. In the UK, a law known as the Civil Contingencies Act 2004 (the Act) was introduced to provide guidance on how to maintain a system able to respond to the possible threats and emergencies in the 21st Century. To maintain an effective and efficient response system, the Act divided the multi-agency organizations into two groups, *Category One* responders and *Category Two* responders, based on "their involvement in civil protection work" (Secretariat Civil Contingencies, 2004).

Category One responders are agencies responsible for civil protection duties. Civil protection includes emergency response and broadcasting emergency response plans to the public. *Category One* responders provide stability for the institutions affected by the emergency, so business or operations can resume as quickly as possible. Finally, *Category One* responders work in coordination with other agencies to increase the effectiveness of the response plan. *Category One* responders include: police force, fire authorities, ambulance services, Local Authorities, the British Transport police, and others, which can be seen in Table 1. The second group, *Category Two* responders, are the agencies and organizations whose input is less critical than *Category One* responders. *Category Two* responders provide constant assistance to the *Category One* responders in incidents that occur in their area of operation (Secretariat Civil Contingencies, 2004). *Category Two* responders include organizations such as utility companies, transportation authorities and companies, and others, which can be seen in Table 1.

Category One responders:	Category Two responders:

• Emergency Services:
    o Police Force
    o Fire authorities
    o British Transport Police
    o Ambulance Service
    o Maritime and Coastguard Agency
• Local Authorities:
    o All principal local (municipal) authorities
    o Port Health Authorities
• Health Bodies:
    o Primary Care Trusts
    o Acute Trusts
    o Foundation Trusts
    o Any Welsh NHS Trust which provides public health services
    o Local Health Boards (in Wales)
    o Health Protection Agency
• Government Agencies:
    o Environment Agency
	• Utilities:
	    o Electricity distributors and transmitters
	    o Gas distributors
	    o Water and sewerage undertakers
	    o Telephone service providers (fixed and mobile)
	• Transport:
	    o Network Rail
	    o Train Operating Companies (passenger and freight)
	    o London Underground
	    o Transport for London
	    o Airport operators
	    o Harbour authorities
	    o Highways Agency
	• Health Bodies:
	    o Strategic Health Authorities
	• Government Agencies:
	    o Health and Safety executive

Table 1: Categorization of emergency personnel (Secretariat Civil Contingencies, 2004)

In addition to the individual responsibilities that both groups have, the Act requires

Category One and *Category Two* responders to meet and set up "Local Resilience Forums"

(LRF) (Secretariat Civil Contingencies, 2004). The purpose of such meetings is to increase the

level of cooperation and coordination between the agencies at a local level, thus increasing the

effectiveness of their response. Additionally, the LRF help the duty-holders to understand and

comply with their obligations under the Act. The Act expects the LRF to meet at least once every

six months, although these meetings might occur more often if the members feel the necessity to

do so (Cabinet Office, 2006).

2.4 Warning Systems & the Chain of Command

Knowledge is power, so it stands to reason that those who can gather and spread the most information are the most successful, especially in the case of an emergency. The most important components of communication in an emergency are a solid structure that does not entirely depend on technology, a strong chain of command, and, in the case of school emergencies, prioritizing communication with parents.

There are a few factors that impede the effectiveness of information management systems. An information management system detects disasters and informs the decisions of responders (Sorensen, 2000). A team from the Association for Computer Machinery found that there were three categories of issues that must be considered when implementing a plan for an information management system: (1) technology, (2) sociology and (3) organization (Manoj & Baker, 2007). Technological issues include the failure of cell phone towers, and the destruction of utilities (Ibid.). Sociological issues occur because of panic, which brings distrust between groups of individuals (Ibid.). Finally, there are organizational issues, such as the differences in terminology between different levels of services (i.e. the differences in terminology between different levels of command) (Ibid.).

An important concept to consider is the structure of the chain of command in an emergency. In the UK, there are three distinct categories of emergency service members: *Gold, Silver, and Bronze* (Kelly et al., 2014). The *Gold* team is in charge of delegation of decisions to the *Silver* groups, and formulation strategies (Ibid.). The *Silver* team formulates tactics to achieve the strategies set forth by the *Gold* team. Lastly, *Bronze* teams implement the tactics devised by the *Silver* team. *Bronze* is the team at the site of the emergency, who follows the orders of the

Silver team. In an emergency, communication moves up the chain of command if the team requires more data (Turoff, Chumer, de Walle, & Yao, 2004).

Whenever there is an emergency at school, parents want to know that their children are safe. Among the first numbers someone calls are an emergency plan is 999 (911 in the United States), the head teacher, and the parents of students (Hounslow Contingency Planning Unit, 2015). To keep parents informed about an emergency, schools, as well the Contingency Planning Unit (CPU), use social media, television, radio, and special telephone lines (Bailor, 2014). The Local Authority also gives parents information through these channels, as it is the entity that coordinates the response (Hodge, 2015). Another important line of communication for schools to have is with emergency services themselves. In most cases, calling emergency services will be among the first actions in an emergency. After schools contact emergency services, they contact parents. Contacting parents before the media helps to avoid panic (Ibid.). According to the London Emergency Services Liaison Panel (LESLP), a group formed by representatives from the Metropolitan Police Service, City of London Police, British Transport Police, the London Fire Brigade, the London Ambulance Service, and Local (municipal) Authorities, "Effective communication with the public about an incident will minimise [sic] its wider impacts and increase the confidence of the public in the emergency services" (London Emergency Services Liaison Panel, 2012). Because of this, it is critical to keep parents, emergency services, and the media informed.

2.5   Continuing Business

Business must continue after a disaster, but how does that happen? Every emergency plan should have some sort of procedure as to how handle the aftermath. There are several main areas of concern when it comes helping a community and school recover from an emergency. First, at

what point are schools and a community ready to begin the recovery process? Second, how can schools or emergency responders help children, teachers, parents and community members in the aftermath of an emergency?

Making sure that the children are physically sound in the aftermath is a necessary step, however a child's mental and emotional wellbeing may be overlooked. Most children do not know how to cope with death in an emergency, should it happen. In the aftermath of an emergency, the behavior of children might change. School staff and grief counselors can help with behavior changes by giving students a "critical incident stress debriefing," where students communicate their experiences in small groups (Carlier, 2000). William Yule and Anne Gold are professors of Applied Child Psychology at the University of London and specialists in Post-Traumatic Stress Disorder (PTSD) and stress. According to Yule and Gold, problems children have when coping with intense grief include trouble sleeping, difficulty concentrating, fear, and flashbacks (Kennedy-Paine, Reeves, & Brock, 2014; Yule & Gold, 1993). Some are known to have suffered from PTSD, however there are methods to lessen the psychological impact of an emergency (Yule & Gold, 1993). Sometimes, however, the situation turns for the worst and a student or staff member dies in an incident.

The school should gather the information on funeral services from the family because in certain religions relatives must bury the body within 24 hours (Yule & Gold, 1993). It is important for those that knew the deceased to say goodbye (McGlauflin, 1998). Although not attending the services may feel like the best option in the short term, not attending services forces friends or relatives to go through this tragic loss of a friend or loved one alone (McGlauflin, 1998). In addition, one can confront their grief more quickly and effectively if they

say goodbye in a formal setting (Yule & Gold, 1993). Not all families and cultures, however, are comfortable with allowing non-family members to attend a funeral.

When those affected by the tragedy are not able or allowed to go to a friend's or teacher's funeral, it falls on the school to hold some sort of memorial. Not only does a memorial help the students like a funeral would, even if it is to a lesser degree; it also signifies that the event is over, and that the healing process can begin (Yule & Gold, 1993). Another benefit of the memorial services is that they can bring the school community closer together. A memorial service also allows the school to grieve together as one (McGlauflin, 1998). Those that are grieving may find some solace in the mere act of planning it (Yule & Gold, 1993). Schools should impose some ground rules, such as contacting the family before an event in honor of a fallen classmate, as not to offend or further upset those affected by the incident (Kennedy-Paine, Reeves, & Brock, 2014). Not only does this help people grieve, but this also helps people return to a sense of normalcy and routine (Kennedy-Paine et al., 2014).

Making this return after a school crisis can be a double-edged sword. It is beneficial to have a routine that can be predictable and controllable (Kennedy-Paine et al., 2014). School is the most reliable and stable place for some children and a routine can be comforting to them (McGlauflin, 1998). The entire community may benefit from resuming a routine (Ronan & Johnston, 2005). However, if it is not done smoothly the students can feel like they are under more pressure, ultimately doing them more harm than good (Yule & Gold, 1993).

Sharing information with students and the community during and after a tragedy is another key step to resuming business. During the emergency the safety of everyone involved is always the top priority, which means that there may be a delay in getting the student reunited with their family, causing much anxiety on both sides. The release of information to parents is key to

keeping people from becoming too distressed (Ronan & Johnston, 2005). When telling the

students what happened, instructors should keep the students in small groups so that instructors

can easily answer their questions (Yule & Gold, 1993). Teachers should keep a dialogue open

with students, and when the recovery ends, let them know about what to do if an emergency

happens again.

2.6   London School Preventative Measures

Due to past emergencies, schools realize they need to improve school security. A 2002

Daily Mirror article reported that in 2001 £10 million was allocated for London state schools to

improve their security (Daily Mirror, 2002). Schools used this relatively large amount of money

to purchase CCTV cameras, fences, and other security measures in order to keep students safe

(Ibid.). Though a lot of money goes into buying physical goods, these extra-measures for

security are not always welcomed. Recent increase in security measures in schools has caused

some people to say schools have become too "fortress-like" (Carvel, 1996). The overabundance

of fences and physical barriers in schools can cause some to feel at unease so security measures

are important but should not be overdone. Nigel de Gruchy, general secretary of the National

Association of Schoolmasters/Union of Women Teachers, explains that in order to have a secure

school there should be defined boundaries as well as only one secure way into the school (Ibid.).

The last piece of security is the education of teachers.

Jamie Stone, the Scottish Liberal Democrat education spokesman, said that the lack of

self-defense training for teachers was "alarming" (The Times, 2000). Teachers need to be

educated in their security procedures in order to reassure parents and other staff that children are

safe. The agency responsible for emergency plans, and the education of staff about them, is the

Contingency Planning Unit (CPU). The CPU, under the Local Authority (equivalent to a

municipal government in the United States) creates and manages emergency plans and response, business continuity, and community resilience in the jurisdiction of their respective Local Authority.

2.7 Hounslow School Emergency Plans

Every school has its own unique set of emergency plans. The CPU in the London Borough of Hounslow created a few elements that all the schools in the Borough of Hounslow share. These elements include an emergency management team, a grab bag, and a point of command.

2.7.1 Emergency Management Team.

The CPU recommends that every school has what they call the Emergency Management Team (EMT) comprised of at least eight staff. The EMT has six subdivisions within it: Head of EMT, Welfare, Logistics, Communications, Facilities, and Loggist (Hounslow Contingency Planning Unit, 2015). These roles are separate from the *Gold, Silver,* and *Bronze* teams described in Section 2.3; the roles of the EMT are specific to every school. The roles of each subdivision is described in the table below (Hounslow Contingency Planning Unit, 2015):

Member	Role
Head of EMT	Coordinates and directs the rest of the EMT
Welfare	Keeps the wellbeing of students and staff in check, both while the event is occurring and in the aftermath
Logistics	Coordinates all logistical solutions, such as finding contractors and arranging different transportation options for students and teachers
Communications	Ensures that emergency services, the media, and parents are informed of the situation at hand
Facilities	Keeps track of all issues related to the school building

Loggist	Assists the other teams in keeping logs on activities and findings

Table 2: EMT members and roles

School staff also have their own responsibilities, such as preparing a grab bag.

2.7.2 Grab Bag.

The CPU also suggests that every school should have a grab bag. A grab bag is a bag containing a set of materials that is taken from the school during an incident. The CPU suggests that two bags be in place, and kept in separate locations so that if, for whatever reason, one is available, should the other be unreachable (Hounslow Contingency Planning Unit, 2015). All teachers should be aware of the locations of both bags (Ibid.). The CPU recommends that the bag contains some useful equipment in the case of an emergency, such as full contact information for all students and staff, a first aid kit, a copy of the emergency plans, including a floor plan of the school, and more (Ibid.).

2.7.3 Control Point.

Another suggestion of the CPU is that the EMT should establish a control point in the event of an emergency. A control point is a place where the EMT will gather. As in the case of the grab bag, the CPU recommends that each school has two control points, in case one of them becomes unavailable during the emergency. This room should have some resources available to it. One example of a plan for consideration of a command point given by the CPU is as follows (Hounslow Contingency Planning Unit, 2015):

Equipment and Resources Required:	Where they are normally stored:
TV and Video	In Drama office
Torch and spare batteries	Caretakers office

Laptop(s)	Head's or School office
White board	Media room
Flip chart	Media room
2-way radios(if you have them already)	School office
Pens and paper	EMT box in school office
Phones	Are there phones in your dedicated room?
Mobiles	2 in school grab bag
Incident Logs	EMT box in school officer
Copy of School emergency plan and maps	EMT box in school officer

Table 3: Control points example

Given the importance of a strong emergency plan, the London Borough of Hounslow would like to update their emergency plans and develop a system for continuous regular updates to the school's emergency plan templates and guidance. Consequently, in collaboration with Twm Palmer, Head of Contingency Planning and Resilience of the CPU, we researched best practices for School-Specific Emergency Plans and recommending updates to Hounslow's template and guidance. We discuss our methodological approach in more detail in the next section.

3 METHODOLOGY

The goal of this project was to develop revised School-Specific Emergency Plans (SSEPs) and increase community resilience in the London Borough of Hounslow (LBH). First we analyzed the current Hounslow SSEP guidelines and templates in order to identify their positive and negative characteristics based on our literature review. Next we interviewed LBH school administrators and assessed their opinions on the emergency plans. We also interviewed CPU employees in order to get their opinions on the plans. Once were done analyzing the data, we began to draft a revised version of the current emergency plans. We also spoke with experts in the field of school security and got their opinions which further shaped our modifications. We implemented our previous knowledge into our modifications. Lastly, we developed a lesson plan to increase community resilience in the LBH. We discuss the approach to each of our objectives in detail in this section.

3.1 Analysis

3.1.1 Objective 1: Conduct a broad literature and best practice review of school emergency plans.

The first step to accomplishing our goals was to identify the positive and negative characteristics of current Hounslow SSEPs as well as other SSEPs. What worked? What did not? We answered these questions by conducting interviews, and conducting a content analysis of SSEPs from Hounslow and area schools and by systematically analyzing data from previous emergencies in Hounslow and other schools around the world.

Data about the best practices for emergency planning came from literature published by other schools as well as the Contingency Planning Unit (CPU) of Hounslow. We interviewed Twm Palmer, and utilized snowball sampling, where our final question in every interview asked

if the interviewee could provide additional contact. The history of revisions of emergency plans

lent insight as to how the current plans could be updated. This interview with Mr. Palmer gave us

criteria to which we could compare the SSEPs we analyzed. Interview questions can be found in

Appendix B.2. We selected these plans for two main reasons. The first was the ease of retrieval.

Because of the sensitive nature of emergency planning, few schools were willing to share their

plans and templates via e-mail. The second was that the LBH recommended that we analyze the

Sandwell plans, because the CPU believed that the Sandwell plans demonstrated best practices.

We comparatively analyzed the content of these plans. We placed this information in a data

collecting tool for easy comparison and calculation of statistics. A blank excerpt of the data

collection tool is Table 4.

School Location	Chemical/Hazmat	Physical Or Sexual Assault Of A Child Or Adult	Flooding In Building	Building Fire	Gas Leak	Hostage	Industrial Incident	Shootings	Threatening Person In The School Building	Threatening Person In School Grounds
Hounslow										
Arizona										
Australia										
Burlington										
Devon										
Doncaster										
North Somerset										
Sandwell										
Wayland										

Table 4: SSEP data collection tool.

We acquired and compiled data in this tool, and it helped us understand the breadth of

post-emergency plans and evaluate areas for improvement. Along with the SSEPs for Hounslow,

we examined the plans from other schools. Once we acquired other SSEPs, we comparatively

analyzed these plans to the Hounslow SSEP. We analyzed the different SSEPs based on multiple

variables, which allowed us to gather data on the variety of SSEP templates (e.g. good

formatting, effective practices, and procedures) and store it in a comparison table. We used such data to compile the revised plans for Hounslow schools.

3.1.2 Objective 2: Assess administrators' and experts' opinions of current plans.

Our third objective was to assess the administrators' opinions of the current plans. For the purposes of this project, we define administrators as people with leadership roles connected with or working in Hounslow schools. There are a few groups we classify as administrators: Twm Palmer, our sponsor and the Head of Contingency Planning and Resilience of the London Borough of Hounslow, area schools' head teachers, and Hounslow schools' teachers and staff. In order to fulfill this objective we conducted various interviews.

We also conducted a semi-structured interview with our sponsor (see Appendix B.2 for questions), and asked him questions as the need arose. As an expert in the field of SSEPs, he was a useful guide through our project. In addition to his expertise, our sponsor was one of the people we could reach without any struggle while in the CPU office, so he addressed our questions and concerns moment we raised them. Furthermore, he assisted in establishing contact with local schools. During our first meeting with Mr. Palmer we sought information about how the CPU operates, his ideas on how to update the current Hounslow SSEPs, insight into the successes/shortcomings of the current Hounslow SSEPs, and his plans on how to increase emergency preparedness and community resilience across the LBH.

We interviewed Mr. David Brockie, the Senior Education Advisor for Hounslow schools, who gave us an invitation to a head teacher's breakfast briefing. As a result of this breakfast briefing, we established contact with Kelly Chapman, the Health & Safety lead at Beavers Community Primary School, and John Wiffen, the Financial Manager of The Green School via e-mail. We then interviewed Ms. Chapman in person and Mr. Wiffen via phone to get their

opinions on planning, community resilience, business continuity, and risks that require special

attention. Interview questions and information are in Appendix B.3.

Other interviewees included Gary Wilsher, who was the Resilience Lead in the Child and

Adult Services Directorate (CAS), and Debbie Noad, a school liaison and Business Support

Manager. We held a discussion with them about potential risks to Hounslow schools, and asked

if any of those risks required special attention. Questions for this interview can be found in

Appendix B.3.

3.2   Modification and Development

3.2.1   Objective 3: Develop draft revised emergency plans.

Once we collected the data from all relevant stakeholders, we developed the draft SSEP

revisions. Based on the suggestions gathered in these interviews and on the data gathered in the

comparison table, we divided the results into different categories. These categories were: (1)

updated aspects, where the Hounslow plans remained similar to more recent plans, (2) outdated

aspects, where more recent plans have updated information, and (3) sections which were absent

in Hounslow's current SSEP. Since the goal of our project was to enhance the existing plans, we

kept their updated aspects and modified the outdated ones. Finally, we considered and added any

new procedures or actions that would advance the existing plans. Dividing our findings into

separate groups allowed us to implement our changes in a smooth and organized matter.

Current SSEP   Observations and Opinions   Revised
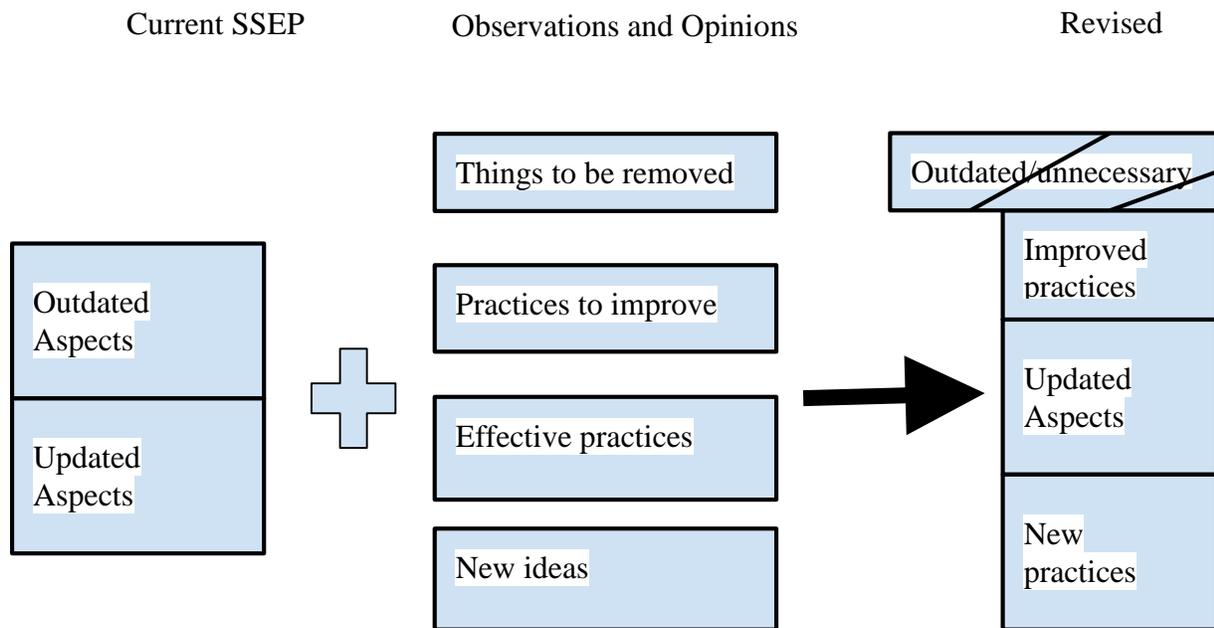
Figure 2: SSEP Workflow

Once we collected and analyzed the data from all relevant stakeholders, we developed the draft

SSEP revisions.

3.3 Implementation

3.3.1 Objective 4: Develop a lesson plan for schools in the LBH.

For the final objective of the project, we developed a program for schools. We held an

informal focus group with Twm Palmer and Richard Davill, two CPU officers, to uncover

possible activities for our lesson. Our group contacted the head teacher of Beavers Community

Primary School (BCPS) via e-mail to obtain permission to run a pilot lesson at the school. Once

the head teacher of the BCPS gave her approval, we considered our target audience. The children

who would form our audience were Year 6 students, who are 10 to 11 years of age.

We decided on a program titled "Wheel of Misfortune," where students spin a wheel and share experiences and insight on how to respond to different emergencies, both at school and at home. We developed a lesson plan for this program and reviewed it with Mr. Palmer, then reviewed it again with Ms. Chapman, before delivering it to a class of Year 6 students. The completed lesson plan is in Appendix G.

4   FINDINGS & DISCUSSION

In this section we discuss the findings that our team made during our research. We explored how the emergency plans of the London Borough of Hounslow (LBH) compare with those of schools around the world, the threat to Hounslow's schools, and the relationship between contingency planners and school administrators. Our goal was to revise the current School-Specific Emergency Plans (SSEP) template and guidance documents, and to develop a comprehensive approach to community resilience in schools in the LBH. We considered the following findings while making these revisions and developments.

4.1   Potential Risks to Hounslow Schools

When planning for emergencies, we prioritized those which were most likely to happen within the LBH. We found that the Hounslow Resilience Forum defined the primary threats to safety in the schools in the LBH to be utility failures, floods, and a pandemic of influenza or similar illness. The primary source of this information was the Hounslow Community Risk Register (HCRR), Hounslow Resilience Forum Risk Assessment Working Group (RAWG). Created and managed. The Hounslow Resilience Forum is a multi-agency partnership of services that were involved in emergency response, with the RAWG working specifically with risk assessment (Hounslow Resilience Forum, 2015). The RAWG updates the HCRR once per quarter. The HCRR scores a variety of risks on a scale of Low, Medium, High, and Very High based on their worst-case likelihood and potential impact (Ibid.). The likelihood score describes whether a disaster has a larger or smaller chance of happening. For example, fires are more likely to happen in the LBH than a plane crash (Ibid.). Table 5 contains the scale used to score likelihood of emergencies in the HCRR.

Level (Descriptor)	Likelihood Over 5 Years	Likelihood Over 5 Years

1 (Negligible)	>0.005%	> 1 in 20,000 chance
2 (Rare)	>0.05%	> 1 in 2,000 chance
3 (Unlikely)	>0.5%	> 1 in 200 chance
4 (Possible)	>5%	> 1 in 20 chance
5 (Probable)	>50%	> 1 in 2 chance

Table 5: Likelihood scoring scale for the HCRR

The HCRR uses a second metric, potential impact, to further categorize emergencies in the register. The HCRR uses a scale from 1 (Limited) to 5 (Catastrophic) to describe the likely immediate consequences or significance of the disaster, such as affected facilities, number of fatalities and casualties, and the extent of contamination. The RAWG conducts a qualitative analysis on these risks in order to assign them a score. Table 6 contains the scoring criteria for potential impact.

Level (Descriptor)	Categories of Impact	Description of Impact
1 (Limited)	Health	• Limited number of injuries or impact on health
	Social	• Limited number of persons displaced and insignificant personal support required • Limited disruption to community services, including transport services and infrastructure
	Economic	• Limited impact on local economy
	Environment	• Limited impact on environment
2 (Minor)	Health	• Small number of people affected, no fatalities, and a small number of minor injuries with first aid treatment
	Social	• Minor damage to properties • Minor displacement of a small number of people <24 hours and minor personal support required • Minor localized disruption to community services or infrastructure <24 hours
	Economic	• Negligible impact on local economy and cost easily absorbed

	Environment	• Minor impact on environment with short-term or long-term effects
3 (Moderate)	Health	• Sufficient number of fatalities with some casualties requiring hospitalization and medical treatment and activation of MAJAX, the automated intelligent alert notification system, procedures in one or more hospitals
	Social	• Damage that is confined to a specific location, or to a number of locations, but requires additional resources • Localised displacement of >100 people for 1-3 days
	Economic	• Limited impact on local economy with some short-term loss of production with possible additional clean-up costs
	Environment	• Limited impact on environment with short-term or long-term effects
4 (Significant)	Health	• Significant number of people in affected are impacted with multiple fatalities, multiple serious or extensive injuries, significant hospitalization and activation of MAJAX procedures across a number of hospitals
	Social	• Significant damage that requires support for local responders with external resources • 100 to 500 people in danger and displaced for longer than 1 week. Local responders require external resources to deliver personal support • Significant impact on and possible breakdown of some local community services
	Economic	• Significant impact on local economy with medium-term loss of production • Significant extra clean-up and recovery costs

	Environment	• Significant impact on environment with medium to long-term effects
5 (Catastrophic)	Health	• Very large numbers of people in affected area(s) impacted with significant numbers of fatalities, large number of people requiring hospitalization with serious injuries with longer-term effects
	Social	• Extensive damage to properties and built environment in affected area requiring major demolition • General and widespread displacement of more than 500 people for prolonged duration and extensive personal support required • Serious damage to infrastructure causing significant disruption to, or loss of, key services for prolonged period. Community unable to function without significant support
	Economic	• Serious impact on local and regional economy with some long-term, potentially permanent, loss of production with some structural change • Extensive clean-up and recovery costs
	Environment	• Serious long-term impact on environment and/or permanent damage

Table 6: Impact scoring scales

For example, utility loss is "possible" and, should it happen, the impact would be "significant," meaning that it earns a score of "Very High" on the HCRR (Hounslow Resilience Forum, 2015). The Hounslow Resilience Forum compiled every risk in the register and formed Table 7, the Hounslow Risk Matrix.
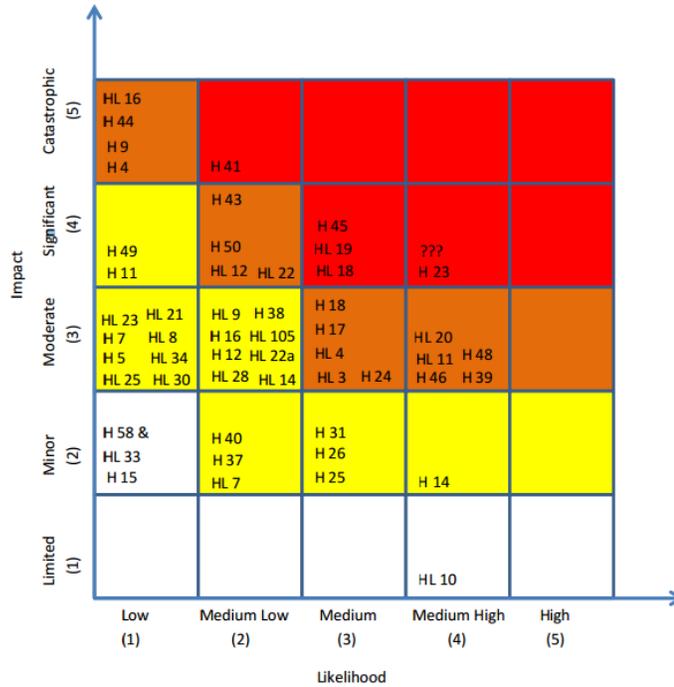
Table 7: Hounslow Risk Matrix (Hounslow Resilience Forum, 2015)[2]

There are six emergencies which are "Very High" risk. See Table 8 for a reference to their codes, and Table 12, located in Appendix D, for a list of codes for all emergencies:

Code	Emergency
???	Loss of Utilities
HL18	Local/Urban flooding fluvial or surface runoff
HL19	Flooding: Local fluvial flooding
H23	Influenza Type Disease (Pandemic)
H41	Technical failure of national electricity network (Blackstart)
H45	Technical failure of regional electricity network

Table 8: Quick references for emergency codes (Ibid.)

Our team consolidated the six Very High Risk emergencies into three categories to more easily incorporate them in the revised template. The HCRR lists two types of flooding, three

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[2] Courtesy of the Hounslow Contingency Planning Unit. Public domain.

types of utility failures, and one type of pandemic. This information allowed us to prioritize these emergencies when writing our plans.

4.1.1 Special Consideration: The Increased Threat of Radicalization.

Through interviews and a conference with school heads and employees of the LBH's Child and Adult Service Directorate (CAS) and Senior Education Advisors, we discovered that the radicalization of children is a new concern to the borough. This information came from an interview with Gary Wilsher, the Resilience Lead for the CAS, and Debbie Noad, the Business Support Manager for schools in the LBH. One organization responsible for radicalization is the group that calls itself the Islamic State of Iraq and Syria (ISIS), a radical Islamist organization (Wilsher & Noad, 2015). ISIS takes advantage of certain factors in the LBH to recruit and radicalize children. The first factor is that there is a large Muslim community in the LBH, consisting of 14% of Hounslow's population as of 2011 (Office for National Statistics, 2011). This means that ISIS can radicalize children through their common faith and communicating that joining ISIS will confer a higher standard of living (Ibid.). The second is that ISIS can use social media. While children can do research for school on the Internet, it also opens a channel through which ISIS can recruit them (Conlon, 2015). Lastly, according to Mr. Wilsher and Ms. Noad, there is a widespread fear of the Muslim community because of recent events in the Middle East and around the world. This allows ISIS to exploit feelings of isolation felt by children in Hounslow (Ibid.). The Middle East is also easily accessible from the UK, being a short trip through Turkey, which means that travelling there to join ISIS is relatively simple (Wilsher & Noad, 2015). While radicalization is an issue, plans concerning radicalization focus on prevention instead of response, and thus we did not include this particular issue in our template.

4.1.2 Special Consideration: Shooting plans.

We noticed that most schools are unaware of a new system in place in the event of a

school shooting. ALICE (Alert, Lockdown, Inform, Counter, Evacuate) and British SO20

(Counter-Terrorism Protective Security Command) do not recommend initiating lockdown

procedures where students and staff hide in their rooms immediately, which is the current

method used by most schools, based on our research. These two organizations suggest that

students and staff should evacuate the premises immediately. If that is not possible, students and

staff should hide, but preferably close to an exit in case the intruder discovers them. Finally,

according to ALICE, if the previously stated is not possible and students and staff are in

immediate danger, then staff should fight the intruder directly. We incorporated this new

knowledge into our template and guidance.

4.2 Shared Aspects of School-Specific Emergency Plans

We analyzed nine SSEPs in our research. We analyzed plans from Wayland and

Burlington, Massachusetts and the state of Arizona from the United States, one SSEP from

Australia, and plans from the Devon County Council, the Doncaster County Council, the

Hounslow Council, the North Somerset Council, and the Sandwell Council from the UK. We

compiled the procedures of these nine plans into a table in order to comparatively analyze their

components and quickly reference them while revising the current plans. The table also allowed

us to analyze how many schools had plans for specific emergencies.

4.2.1 Common emergencies.

In order to make Hounslow's template and guidance more comprehensive, we analyzed

how frequently specific emergencies appear in emergency plans. In addition, we noted whether

or not Hounslow had a plan in their template and guidance. See Table 9 for the eight most

common emergencies mentioned in the nine SSEPs we analyzed (the full table, Table 11, can be found in Appendix F).

School Location	Frequency in Plans	Plans in Hounslow?
Shelter-In-Place (Lockdown)	7	Yes
Building Fire	5	Yes
Bomb Threat	5	No
Chemical/Hazmat	4	Yes
Physical Or Sexual Assault Of A Child Or Adult	4	Yes
Threatening Person In The School Building	4	Yes
Bus Incident	4	No
Flu Pandemic	4	No

Table 9: Amount of schools with plans for various emergencies (abridged)

Of these eight emergencies, the Hounslow plans were missing three: Bomb Threat, Bus Incident, which describes an incident corresponding to transport to or from school via bus, either on a daily basis or during a field trip, and Flu Pandemic. This information was of particular importance to our team; we prioritized writing plans for a Flu Pandemic for a few reasons. First, Hounslow did not have plans for a pandemic when we revised the plans. Second, the Hounslow Resilience Forum classified a flu pandemic as a "Very High" risk emergency (Hounslow Resilience Forum, 2015). Finally, other schools prioritized pandemic emergencies in their plans as well, which gave us material we could use to form the revised Hounslow plans.

4.2.2 Emergency Management Team.

These emergencies need a team to manage them. At the time of an emergency, the school will form an Emergency Management Team (EMT). An EMT is a team that schools convene in an emergency to manage the situation in a manner that is organized and structured. We included EMT structure and function in our analysis of SSEPs. Of the nine SSEPs we analyzed, only two

did not recognize the importance of having an EMT. The structure of EMTs varied widely across the world, with the largest team consisting of 45 members, and the smallest team consisting of five. Consult with Figure 3 for a breakdown by school, and note that neither Burlington nor Devon included an explicit template for their EMT, resulting in a minimum EMT size of zero. Keep in mind that the amount of people on a team does not necessarily correlate with how well the team performs.
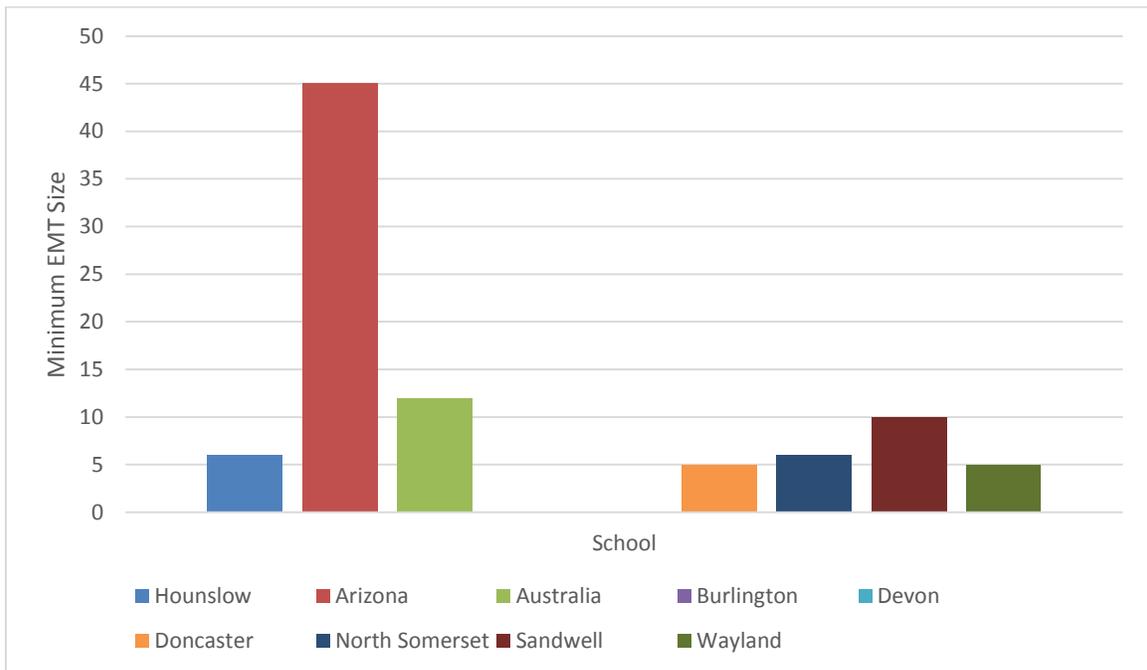

Figure 3: EMT sizes of various schools

Team size is, on average, five to ten people. Six roles were common to most plans; the roles correspond to the descriptions of EMTs we found in our literature review. The description of these common roles as they apply to Hounslow are in Table 2: EMT members and roles.

4.2.3 Analysis of largest-risk emergencies.

We paid special attention to school violence and the emergencies with the largest risk in the LBH, which were fires, floods, utility failures, and pandemic illness. The following are our findings with regard to these emergencies.

4.2.3.1 *School violence.*

In terms of handling violence, the first step in most of the school emergency plans we analyzed was to inform the emergency services of an incident. After this first step, school plans started to differ. All of the plans gave an approach for responding to whatever disturbance there is in the school or on the grounds. The plans from Australia suggested that the staff and head teachers should try to contain the disturbance by locking doors or using physical barriers. Emergency response teams should assist and evacuate victims and activate lockdown if necessary. The plans from the Sandwell County Council suggested liaising with local hospitals in order to expedite the assisting of anyone injured. Sandwell's plans also suggest creating a control point somewhere safe for teachers to bring their students and for the incident management to set up operations for the EMT. The Wayland, Massachusetts plans advise that teachers should have student rosters in order to take attendance should an evacuation occur. All the plans suggest that the school notify the parents of their children's wellbeing once the students are safe. Lastly, Sandwell's and Australia's plans suggest that a third party handles the media in order to allow staff to focus on their students and important personnel to focus on business continuity. Psychologist Peter Smith is Head of School and Family Studies at Goldsmiths College, University of London, and he recommends that a schools determine the definition of what violence is (Smith, 2004). Smith emphasizes that knowledge of what violence is will help teachers prevent their pupils from acting out violently in school and thus protect their school.

4.2.3.2 *Fires, floods, and utility failures.*

The plans of five schools we analyzed included plans in case of fire. Each of these plans' first steps were to either call emergency services or pull the fire alarm. After someone at the school pulls the fire alarm or contacts emergency services, schools evacuate the students. Schools practice this procedure using fire drills. Australia's emergency plans suggested closing all windows and doors in order to slow the travel of the fire. The plans from Arizona suggested that every teacher should have class rosters in order to ensure all students evacuated the school safely. Every plan asserted that no one re-enters the school until declared safe by fire or police. If it is necessary, some schools suggested closing school for the remainder of the day in order to further protect students from the fire.

Less than four of the plans we reviewed contained materials on flooding. Flood plans differ from fire plans in that the school does not always evacuate. The Australia plans suggested using a battery powered radio or TV in order to keep up to date on emergency broadcasts. All plans that mentioned flooding urged students and staff to remain in a safe place until emergency services come and give the all-clear.

Out of all the plans we analyzed, only the Sandwell plans had accounted for utility failures. The plans advised that the school should contact the utility company and establish a timescale for the outage, areas that will be affected, and any backup the school can use to bypass the current failure. Schools will then measure the level of impact based on the time, season/weather, and temperature in order to decide whether school needs to be closed or cancelled. If necessary, the school convenes their incident team and informs necessary officials about the utility failures. The emergency planning team decides on alternative teaching locations and creates a timetable in order to make necessary changes to school activities.

4.2.3.3 _Pandemic illness._

The last type of emergency we analyzed was flu outbreaks. Five of the plans we reviewed had plans for preparing for an outbreak and then acting if the outbreak is affecting their school. All five of these plans suggest that sanitation education such as washing hands or covering mouths when coughing or sneezing is imperative in order to protect their school from the spread of the flu. The plans from Arizona stated that there is a possibility of 20 to 30 percent of their staff and students being affected by the outbreak and advised schools to plan accordingly. Arizona's plans also speak on how the World Health Organization has six phases for dealing with flu, with Phase Three being when the flu has hit their school and Phase Five being when the outbreak affects a large number of personnel in the school. When Phase Three occurs, Arizona's plans suggest putting out a news release to inform families of the current situation, reiterate sanitation education, and to remind students to stay home if they become ill. If Phase Five occurs, the media and school administrators urge staff and students to stay home and distribute alternative education material to students at home.

The plan from Australia has four steps which are preparedness, standby, action, and stand down. In the preparedness phase, the school will begin distributing hygiene facts. In the standby phase, the school will educate their students more about how to protect themselves from the oncoming outbreak. In the action phase, the school enacts their emergency teams and decide if the school needs to be shut down. The last phase, stand down, is where the school recovers based on staff availability and safeness to resume as well as communicates with students and parents that the school is recovering.

4.3 The Relationship between Contingency Planners and School Administrators

4.3.1 <u>Lack of layman understanding and interest in emergency plans.</u>

Teachers and school staff prioritize education over emergency planning. We interviewed David Brockie, a Senior Education Advisor for the LBH, about schools' roles in emergencies and he frequently lamented that the attitude of teachers and administration towards emergency planning was, "boring, but necessary" (Brockie, 2015). Consequently, schools in the Borough have another position called the Business Manager, who usually takes the responsibility of writing and updating of the emergency plans (Ibid.). This attitude towards emergency planning by heads of schools led us to focus on how we can make the template and guidance comprehensive enough to adequately describe an emergency, but concise enough so that the act of filling out the template does not take up time in the head's diary.

4.3.2 <u>Drilling and exercise of emergency plans.</u>

Emergency response is a skill that requires practice, and two common ways of practicing emergency response are fire and lockdown drills. While the skill is important, fewer schools wrote about drilling in their plans than we expected. Of the nine SSEPs we analyzed, only four mentioned drilling in a formal fashion. Of those four, only one expressed the importance of drilling. Drills are a part of what earns high scores in what The Office for Standards in Education, Children's Services and Skills (Ofsted) inspects. Ofsted inspects most schools in the UK on a yearly basis and scores them on a scale from 1 (Outstanding) to 4 (Inadequate). One particular aspect of schools that earn an Outstanding rating is that, "Children's health, safety and well-being are significantly enhanced by the vigilant and highly consistent implementation of robust policies, procedures and practice" (Ofsted, 2015). Ofsted does not include emergency plans in most of its inspections, but rather checks if there is a culture of safety in the school.

5   RECOMMENDATIONS

There are two recommendations our team makes: Incentivize the updating of emergency plans, and practice these plans once they are in place.

5.1   Incentivizing the updating of emergency plans

Through discussion with employees of the Contingency Planning Unit (CPU) and with Kelly Chapman of Beavers Community Primary School, we found that most schools did not update their emergency plans on a regular basis because there was a lack of motivation. Therefore, we recommend that Local Authorities (LAs) enforce the updating of emergency plans through fines or other methods that dissuade schools from letting their plans get outdated.

5.2   The importance of training and drills

For emergency planners, both at the Local Authority level and at the school level, we recommend putting a section for drills in the template and guidance documents. See Table 10 for a detailed breakdown of the contents of each document with regards to drills and practice.

Template	Guidance
• A schedule of when drills take place • The procedure of drills	• An example table of when drills should take place • Example procedures for drills, and guidance on best practices • Information regarding the benefits of practice and drills

Table 10: Template and Guidance contents regarding drilling

Therefore, schools that are well-practiced in their emergency plans and response get higher scores from Ofsted in the Behaviour and Safety category of the inspection.

6 RESULTS

There were three main deliverables for this project. Our first deliverable was the school-specific emergency plan template, found in Appendix E. School staff will fill out this template with information specific for their school. We designed it to be easy to read and follow, especially under the stress of an emergency. Our second deliverable was the school-specific emergency plan guidance, found in Appendix F. The staff assigned with planning will refer to this document while filling out the template. Unlike the plans, we did not design this document for reading from beginning to end. Instead, this is a reference document. Our final deliverable was the lesson plan for emergency education, found in Appendix G. We elected to use the name "Wheel of Misfortune." For information pertaining to the process of creating these documents, see Section 3: Methodology. For considerations we took into account while creating these documents, see Section 4: Findings & Discussion. The first two deliverables pertain to our goal to update the emergency plan template and guidance, and the third pertains to our goal to improve community resilience.

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APPENDIX A: SURVEY QUESTIONS

A.1   For heads and business managers of schools:

- Are you involved with emergency planning in your school? (Yes / No)

  o If yes, how involved would you are? (Scale of 1-3, 1 being minor role, 3 being major role)

  o If no, what are some reasons why?

- How often are emergency plans revised?

- Are you the Primary Planner of your school? We define a Primary Planner as the person(s) who take the biggest role in developing the school's emergency plans.

  o If not, then who is the Primary Planner? (Name and e-mail address)

- Have you ever been involved in managing an emergency?

  o If yes, what, in your opinion, was handled well?

  o What, in your opinion, was handled poorly?

APPENDIX B: INTERVIEW QUESTIONS

Open-ended questions are non-binary questions which aim to get longer responses from participants. An example of an open ended question is, "What do you think the most important components of an emergency plan are? We asked if they have a filled out emergency templates as well. An emergency template is a document that is available to different schools so they can develop their own specific plans.

B.1   For headmasters:

- How did you write the emergency plans?

- Did you use the LBH Template and Guidance?

- If not, what are the current plans based on?

- Did you receive help from local authorities or other entities while developing the plans?

- What part of the plans did you find the most difficult or complicated to develop?

- What is the motivation behind the commitment to have plans (that should be updated) in place?

- Does any agency or individual inspect the plans?

- If so, how often and what are the premises they look over?

- How does the school know that theirs procedures follow good practices?

- In order to increase emergency preparedness, how are the kids taught about the risks in the area and the emergency plans? How aware are the teachers of the emergency procedures?

- How is your EMT structured?

- How do you teach pupils about emergency response?

- Can we engage with some students to teach them about emergency response?

B.2   For Twm Palmer:

● How is life at the CPU?

● What is a typical day for you?

● Have you experienced any school emergencies?

○ If so what? Was it handled well?

● How often are plans revised?

● What is the most important thing you want us to accomplish?

○ Anything else?

● Are there any parts of the plan that you know right now need to be updated?

B.3   For experts:

● What is your expertise?

● How long have you been advising?

● What do you feel the biggest mistake schools make is?

● What is something you believe will work that most schools do not do?

● Have you ever been involved in a school emergency?

○ As an expert? Onlooker? Participant?

● Do you know of the school emergency plans?

○ If so, what do you like and what don't you like?

APPENDIX C: PREAMBLES FOR SURVEYS, INTERVIEWS, AND FOCUS GROUPS

C.1   For surveys:

Please know that your participation in this survey is entirely voluntary and all of your answers, as well as your identity will remain anonymous. If at any point you do not feel comfortable answering a question, please feel comfortable to skip to the next question. Your time and cooperation is greatly appreciated and if you would like to receive a copy of our report please fill out your contact information below:

Name: _____

Preference for receiving report:

[ ] Email: _____

[ ] Mail: Address: _____

[ ] Other: _____

C.2   For interviews:

Please know that your participation in this interview is entirely voluntary and all of your answers can be reported anonymously. If at any point you do not feel comfortable answering a question, please feel comfortable to just ask for the next question. Your time and cooperation is greatly appreciated and if you would like to receive a copy of our report just let us know your contact information.

APPENDIX D: FULL-SIZED TABLES

School Location	Amount with Plans	Plans in Hounslow?
Shelter-In-Place	7	Yes
Building Fire	5	Yes
Bomb Threat	5	No
Chemical/Hazmat	4	Yes
Physical Or Sexual Assault Of A Child Or Adult	4	Yes
Threatening Person In The School Building	4	Yes
Bus Incident	4	No
Flu Pandemic	4	No
Gas Leak	4	Yes
Media	3	No
Serious Injury/Death	4	No
Weather	3	No
Flooding In Building	2	Yes
Hostage	2	Yes
Shootings	2	Yes
Threatening Person In School Grounds	2	Yes
General Emergency	2	No
Student Unrest	2	No
Industrial Incident	1	Yes
Animals	1	No
Radiological Event	1	No
Sheltering Procedures	1	No
Suicide	1	No
Terrorist Event	1	No
Weapons	1	No
Bushfire/Grassfire	1	No
Earthquake	1	No
Suspicious Package	1	No
Missing Child	1	No

Off-Site Accident		1	No

Table 11: Amount of schools with plans for various emergencies

Code	Emergency
???	Loss of Utilities
HL18	Local/Urban flooding fluvial or surface runoff
HL19	Flooding: Local fluvial flooding
H23	Influenza Type Disease (Pandemic)
H41	Technical failure of national electricity network (Blackstart)
H45	Technical failure of regional electricity network
H46	Biological substance release during an unrelated work activity/industrial process (e.g. Legionella)
HL11	Railway accident
H39	Failure of water infrastructure or accidental contamination (non-toxic)
H48	Heat Wave
HL3	Localised industrial accident involving small toxic release
HL4	Major pollution of controlled waters
HL17	Storms and gales
H18	Low temperatures and heavy snow
H24	Emerging infectious diseases
HL12	Localised accident involving transport or hazardous chemicals
H50	Drought
H43	Telecommunication infrastructure- human error
HL22	Building collapse
H4	Fire or explosion at a fuel distribution site or site storing flammable and/or toxic liquids under atmospheric pressure
H9	Large toxic chemical release
H44	Major reservoir dam failure/collapse
HL16	Local coastal/tidal flooding
H26	Zoonotic notifiable animal diseases (e.g. highly pathogenic avian influenza (HPAI) rabies and West Nile virus)
H31	Significant or perceived significant constraint on fuel supply at filling stations
H7	Industrial explosions and major fires

H37	International security incident resulting in influx of British Nationals who are not normally resident in the UK
H11	Accidental release of radioactive material from incorrectly handled or disposed of sources
H49	Loss of drinking water supplies due to a major incident affecting infrastructure
H7	Explosion at a high pressure natural gas pipeline
H5	Fire or explosion at an onshore fuel pipeline
HL25	Fire or explosion at a flammable LPG/LPN storage site
HL8	Fire, flooding, stranding or collision involving a passenger vessel in or close to UK waters or on inland waterways, leading to the ship's evacuation
HL34	Fire, flooding or collision involving a passenger vessel in UK inland waterways, leading to the ships full/partial evacuation at sea
HL30	Localised explosion at a natural gas main
HL28	Localised fire or explosion at the fuel distribution site or tank storage of flammable and/or toxic liquids
H12	Biological substance release from facility where pathogens are handled deliberately (e.g. pathogen release from contaminated laboratory)
HL9	Aviation accident
HL14	Local (road) accident involving transport of fuel/explosives
HL22a	Large building collapse
HL105	Complex built environments
H16	Aviation accident over a semi-urban area
H38	Technical failure of critical oil/gas facility, gas import pipeline terminal, or Liquefied Natural Gas (LNG) import reception facility, leading to disruption in upstream oil and gas production
HL21	Land movement (i.e. caused by tremors or earthquakes)
HL23	Bridge collapse
H14	

H25	Non-zoonotic notifiable animal diseases e.g. foot and mouth disease
H40	No notice loss of significant telecommunications infrastructure in a localized fire, flood, or gas incident
HL10	Local accident on motorways and major trunk road
HL15	Maritime pollution (e.g. affecting tidal River Thames)
H58 & HL33	Forest or grassland fire

Table 12: Full emergency code reference

APPENDIX E: HOUNSLOW SCHOOL EMERGENCY PLAN TEMPLATE

Please see the attached documents to review our emergency plan template.

APPENDIX F: HOUNSLOW SCHOOL EMERGENCY PLAN GUIDANCE

Please see the attached documents to review our emergency plan guidance.

APPENDIX G: SCHOOL LESSON PLAN: "WHEEL OF MISFORTUNE"

Please see the attached documents to review our lesson plan.