Refurbishment				Ref No. DfH010_18
Potential health impacts to be considered by the designer:		Concept Stage ☐	Scheme Design Stage ☐	Detailed design Stage ☐
Design Element	Health Hazard	Considerations	Possible Solutions	Linked to Ref No.
Inspection of existing structures	Biological hazards (such as C. psittaci, aspergillus, e-coli and meningitis)	Hazards resulting from the presence of bird droppings present a range of potential health effects. Check out HSE guidance on biological hazards. But remember also that nature needs to be worked with not forcibly eliminated. Hazard(s) may be present in horizontal exposed surfaces externally and	Design to prevent roosting opportunity by, for example, use of smooth surfaces, enclosure, proprietary anti-roosting devices or nettings. If considering deterrents such as anti-roosting devices check with organisations such as the RSPB and Bat Conservation Trust beforehand. Reduce the frequency of inspection required by selecting 'long life' products. Ensure that the	

		possibly internally, depending upon the state of the building/ structure.	elements that need inspecting have intrinsic protection from sun, precipitation and wind.	
	Ground contaminated by current or former industrial processes, fuel storage, for example.	Exposure to carcinogens, mutagens etc. through exposure to volatile organic compounds, polyaromatic hydrocarbons, total petroleum hydrocarbons, organic solvents, polychlorinated biphenyls, heavy metals etc.	Investigate previous use and whether it was of an industrial or similar nature. This will indicate whether dust, duct residues, encrustations etc. are likely to be particularly hazardous. Ensure that any ground investigation establishes the nature, concentration and spacial extent of contaminants in the soil and groundwater in terms of likely occupational exposure to the hazard.	
	Ground contaminated by biological contaminants such as sewage, biological waste, for example.	Biological infection including leptospirosis and water borne diseases		
	Asbestos exposure can lead to fatal outcomes or life altering health conditions such as: Mesothelioma, Asbestos-related lung cancer, Asbestosis (Pneumoconiosis) Pleural Thickening	Ban on use of blue and brown asbestos in structures came into force in 1993 while use of white asbestos was not banned until 2000. Accordingly, aasbestos **can be found** in any industrial or residential building built or refurbished before the year 2000. It is in many of the common materials used in the building trade that you may come across; such as: • Loose asbestos in ceiling or floor cavity; • Lagging;	Asbestos may occur in a large number of locations and uses. Refer to the HSE Asbestos Essentials. Establish a pre-construction survey to establish presence, condition and type in line with the requirements of the Control of Asbestos Regulations 2012. Ensure contract contains details of the data and sufficient time for specialist removal. Consider material disposal options, within the design	

		• Sprayed coatings on ceilings, walls and beams/columns; • Asbestos insulating board; • Floor tiles, textiles and composites; • Textured coatings; • Asbestos cement products; • Roofing felt; • Rope seals and gaskets	process, such as. encapsulation on site, treatment, mechanical movement around site to avoid manual handling, for example.	
Site set-up and design stage visits to site	-	-	-	DfH002_18
Groundworks	-	-	-	DfH003_18
Concrete and Mortar	-	-	-	DfH014_18
Internal Drainage	-	-	-	DfH011_18
Removal of existing concrete works and other hard obstructions. Forming holes and openings.	NIHL HAVS WRULD Silicosis	Use of high-powered saws and/ or grinders expose workers to a range of hazards.	Endeavour to design details in order to minimise quantity of activities such as removal, cutting and/ or breaking out. Have a pre-construction survey conducted, if no data available regarding reinforcement position and quantities, for example. Consider and identify sequence and method of demolition (for example breakers, hydro-dem, chemicals). **NOTE**: Some or all of the information may be in a	

			Health & Safety File associated with the structure/ building. In considering preparing of existing surfaces do not specify aesthetic scabbled surfaces. The use chemical retarders, joint formers or grit/ ultra-high-pressure water blasting as an alternative scabbling to prepare surface for good bond. Limit the need for site drilling by detailing positions and flexibility into service holes and other openings. Encourage early co-ordination with services designer and specialist contractor. Where holes are needed after concrete has been cast design to ensure there is room for jig-mounted diamond core drills with clamped in rig.	
	Chemical properties of additives, admixtures and sealants	Use of proprietary repair materials; additives, admixtures, jointing material and sealants, depending upon the specific chemical properties (detailed in product-specific Material Safety Data Sheets (MSDS)) present specific health hazards to the workers. Some jointing materials such as polysulphide or bitumen-based products emit toxic fumes in fires.	When specifying be aware that some of the substances are more hazardous than others (e.g. they may contain isocyanates). Avoid unnecessary specification of those with harmful side effects. Check the MSDS and specify the solvent and isocyanate free products. Water-based sealants are available.	

Steelwork	Weight, shape and manoeuvrability.	Handling heavy and/ or awkward shapes exposes workers to poor posture for prolonged periods, such as the need to manually handle steel sections into position where cranes cannot be used, for example.	Designers should consider using lightweight items where possible e.g. metal lintels For smaller items consider, for example location and installation of lifting points. Remember where the use of a crane may not be possible consider the use of alternatives that can be installed in sections.	
Steelwork protective systems	Asbestos exposure can lead to fatal outcomes or life altering health conditions such as: Mesothelioma, Asbestos-related lung cancer, Asbestosis (Pneumoconiosis) Pleural Thickening	Ban on use of blue and brown asbestos in structures came into force in 1993 while use of white asbestos was not banned until 2000. Accordingly, aasbestos **can be found** in any industrial or residential building built or refurbished before the year 2000. It is in many of the common materials used in the building trade that you may come across; such as: • Loose asbestos in ceiling or floor cavity; • Lagging; • Sprayed coatings on ceilings, walls and beams/columns; • Asbestos insulating board; • Floor tiles, textiles and composites; • Textured coatings; • Asbestos cement products; • Roofing felt;	Asbestos may occur in a large number of locations and uses. Refer to the HSE Asbestos Essentials. Establish a pre-construction survey to establish presence, condition and type in line with the requirements of the Control of Asbestos Regulations 2012. Ensure contract contains details of the data and sufficient time for specialist removal. Consider material disposal options, within the design process, such as. encapsulation on site, treatment, mechanical movement around site to avoid manual handling, for example.	

		• Rope seals and gaskets		
	Existing paints may contain lead. Breathing or ingesting lead dust or fume can cause serious problems like kidney, nerve and brain damage or infertility.	Workers who regularly remove existing paint coatings in properties built before the 1980s, strip old paint using blow lamps or gas torches or who dry sand old paint may be exposed to lead in the paint. Lead pigments were widely used in paints for homes, schools and offices until the 1960s. Lead pigments were not removed from commonly used paints until the early 1980s. Lead paint can be found under existing paintwork in older buildings.	Where the information isn't readily available arrange for survey of location and condition of any painted surfaces that may contain lead. Avoid unnecessary stripping or blast stripping of old paintwork. It may be a better option to leave lead-containing paintwork that is in good condition and/ or covered by non-leaded paint in place, so long as the information is provided to contractor to allow for appropriate construction controls to be put in place.	
Cutting, chasing or cleaning brick, stone or blocks.	NIHL HAVS Silicosis	Use of high-powered saws and/ or grinders expose workers to a range of hazards.	Endeavour to design details in order to minimise quantity of activities such as removal, cutting and/ or breaking out, for example wherever possible surface mount conduit etc. to avoid chasing, especially in new walls. Surface blasting can raise silica containing dusts and is to be avoided. Wet blasting techniques can	

			eliminate this.	
	Chemical properties of cleaning materials.	Use of proprietary cleaning materials; depending upon the specific chemical properties (detailed in product-specific Material Safety Data Sheets (MSDS)) present specific health hazards to the workers.	When specifying be aware that some of the substances are more hazardous than others. Avoid unnecessary specification of those with harmful side effects.	
Building new partitions, for example acoustic and/ or fire partitions.	Weight, shape and manoeuvrability. WRULD	Handling heavy and/ or awkward shapes exposes workers to poor posture for prolonged periods, such as the need to manually handle bricks and/ or blocks into positions where mechanical handling devices cannot be used.	Designers should consider using lightweight blocks where possible. For smaller items consider, for example location and installation of lifting points. Remember where the use of a mechanical handling devices may not be possible consider the use of alternatives that can be installed in sections.	
Plaster	Anthrax potential in plaster where horse-hair was used as binder.	Phased out after the 1920s	Where the information isn't readily available arrange for survey of location and condition of any painted surfaces that may contain horse-hair binder. It may be a better option to install lining and leave plaster undisturbed.	
Internal Services	Pipes, flashings and fittings may be manufactured in lead Breathing or ingesting lead dust or fume can cause	Phased out after the 1980s	Exposure to lead becomes a problem for the worker when it has to be cut. Endeavour to design details in order to eliminate or significantly reduce the need for cutting lead pipes or fittings.	

	serious problems like kidney, nerve and brain damage or infertility.			
	Workers can be exposed to the legionella bacteria through inhaling small droplets of water (aerosols), suspended in the air, which contain the bacteria, and may contract Legionnaires disease. Other microbiological organisms or toxic spores may also be present.	The legionella bacteria may be found in purpose-built water systems such as cooling towers, evaporative condensers, hot and cold water systems and spa pools. Consider also any mechanical ventilation/ air condition ducts	Where the information isn't readily available arrange for survey of location and condition of any water systems. Check for the presence of treatment chemicals and obtain details on the method of operation and maintenance.	
	NIHL HAVS	New electrical conduits	Avoid the need to chase out in existing walls by enclosing electrical conduits within new linings and plaster finishings.	
Finishings	WRULD	Space needed for fixing	Ensure adequate space exists for repetitive fixing operations	
Timber treatment and	Exposure to fumes from chemicals	Treatment processes can include treatment for infestation, dry rot or	Consider alternatives such as management of infestation (e.g. dry rot or insect attack) instead of	

damp-proofing	used in the treatment processes.	damp proofing.	chemical treatment, or drainage instead of damp-proofing. Site applications involving risk of inhalation and skin contact should be avoided where possible. However, some modern products exhibit lower exposure risk. Options can be discussed with manufacturers.	
	Skin irritants that could lead to dermatitis, for example.	Paint strippers	Investigate likely type of paint stripper required for specified treatment. Consider alternatives if significant exposure risk is present and where possible design to allow for off-site application.	
	Wood dust exposes workers to potential respiratory conditions such as occupational asthma and hardwood dust is a known carcinogen.	Wood dusts	All wood dusts have workplace exposure limits (WELs), which must not be exceeded and where possible reduced as far as possible. Determine the likely types of wood present and whether it needs to be cut or sanded. And if so can it be done in locations where exposure can be reduced to below WELs See HSE Guidance; Wood Dust: What You Need to Know.	
Materials Generally	Hazardous substances	Work with materials with COSHH implications can lead to general ill	Undertake assessment at design stage to identify harmful or hazardous substances that may be	

		health	present. Consult with specialist suppliers/contractors or occupational hygienists, if required. Obtain manufacturers; material safety data sheets (MSDS). Remember that managing the problem by leaving the material in place may be an appropriate solution.	
	Weight, shape and manoeuvrability of materials.	Musculoskeletal disorder	Consider the actions necessary to install specified materials, to ensure that this may be done without unnecessary exposure to the hazard. Highlight key issues in respect of build sequence or sub-assembly needs.	

Information to go to contractor:

Provide any ground condition surveys in order that controls can be developed for any identified health hazards.

Ensure contract contains details of the data gained from asbestos surveys and allows sufficient time for its specialist removal.

Location and condition of any lead-containing painted surfaces.

Location and condition of any plaster containing horse hair binder.

Alert contractor to the presence of water systems that may contain the legionella bacteria.

Information to go to H&S File: Use ☐ Maintenance ☐ Demolition ☐

Further Information:

Asbestos Essentials: http://www.hse.gov.uk/ASBESTOS/essentials/index.htm

Biological Hazards (HSE Guidance): http://www.hse.gov.uk/construction/faq-biological.htm

Construction manual handling: Blocks and masonry units: http://www.hse.gov.uk/construction/healthrisks/physical-ill-health-risks/manual-handling-specific-tasks-blocks-masonry-units.htm

Control of Asbestos Regulations 2012: http://www.hse.gov.uk/ASBESTOS/regulations.htm

Legionella and Legionnaires' disease: http://www.hse.gov.uk/legionnaires/

Wood Dust: What You Need to Know (HSE Guidance): http://www.hse.gov.uk/woodworking/wooddust.htm

Research – None known at this time.