ZENZIC

CAM Legal Landscape: Off-Highway

For applications including Ports, Airports, and Factories

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1. Introduction and Scope /

1.1 The purpose of this document is the provide a 'legal guidance' for use primarily by owners and/ or operators of (all or part of) factories, ports and airports ("**Industry Organisations**") who are considering introducing Automated Vehicles ("**AVs**") in their domains.

1.2 This document is a 'legal overview' guidance document, not legal advice. Industry Organisations must ensure their own legal compliance and assurance and if appropriate take their own legal advice. Indeed, given the wide range of potential use case scenarios, and that applicable law is different and applies differently to different facts / circumstances, it is important that all such Industry Organisations should take specialist advice to consider and comply with applicable law by reference to the specific details of their own use cases. A reader should not rely on Zenzic's guidance or this guidance document as an accurate and complete statement of the law.

1.3 This 'legal overview' guidance document provides an overview of sources of law which would be relevant to a legal analysis that an Industry Organisation might conduct when preparing their own use cases for deployment of AVs on private land. It serves as a guidance outlining relevant laws, regulations, and guidance (as at 1 March 2026) to be taken into consideration.

1.4 As shown by the content summary below, this document is structured so that the front end of it (Section 2) is intended to be an summary, accessible to a non-legal reader, of the many different sources of law which are likely to need consideration by Industry Organisations who are considering introducing AVs within their domains.

(a) Where such a deployment is an incremental evolution of existing practices, then the Industry Organisation(s) may already have considered these sources of law, but may not have considered the more specific issue of whether or how the law may apply to CAM deployments. We have attempted to provide some high-level thoughts on this to guide such considerations.

(b) If such a deployment would be an entirely or substantially new type of operation for the Industry Organisation(s) then they may not be familiar with these areas of the law. So we have sought to provide an overview of each area of law to increase and inform that familiarity.

1.5 The table (Section 2) provides an accessibly overview, and in most cases it then provides a cross reference to a lower section of this document within which the reader can 'dill down' into that area of law in greater detail. The greater level of detail in those lower Sections is necessarily 'legal' and therefore may be more challenging to a non-legal reader depending on their familiarity with such laws. However, we have attempted to make these explanations accessible to any reader. They should at least be accessible to a legal adviser seeking to drawn on this guidance for a baseline understanding of applicable laws. Of particular note:

(a) **Statutory Health & Safety law** has a particular significance to CAM deployments on private land and is a complex, multi-faceted, multi-Regulation statutory scheme, we have therefore provided both (i) CAM-focussed and practical thoughts on three of the most relevant 'overarching' parts of the H&S framework: HSWA, the Management Regulations, and Workplace Regulations (at Appendix 1); and (ii) a 'H&S Guidance' (Appendix 2) intended to enable to reader to understand the crux of the other key H&S regulations which would seem likely to require consideration in designing a safe CAM deployment.

(b) **Regarding legal jurisdiction (applicable territories within the UK**): Save where expressly stated, the law examined below is the law of Great Britian (England, Wales and Scotland). In some cases, we have drawn out Scotland-specific aspects of the law. However, Northern Irish law contains considerable differences, both because of the impact of the Windsor Framework (requiring alignment with European Law), and because aspects of relevant law are 'devolved issues'. Therefore, whilst Northern Irish law is very considerably aligned with GB law in most of the areas examined, there are some differences. Zenzic commissioned, therefore, a summary of key comparative differences in Northern Irish Law, which has been prepared by leading Northern Irish law firm, Carson McDowell (Appendix 3)

1.6 Finally, in the course of preparing this 'legal overview' guidance document we received valuable assistance from various organisations who had already been involved in CAM deployments in private land, through which we were able to develop further 'practical' thoughts, which relate to this legal analysis but which are practical factors rather than law. These practical considerations are also included (Appendix 4).

2. Overview of applicable law in relation to 'private' CAM deployments /

Assuming AVs are used solely off-highway (essentially, private land with no public roads), the following key legal sources apply.[1] We have provided high-level descriptions of each topic and its main legal obligations. While we do not explicitly address each topic's specific relevance to 'off-highway' CAM deployment here, readers can infer their potential application in the Sections shown in Column 1.

Table 1: Key legal sources for 'off-road' CAM deployments

Topic Area	Essential Legal Provisions	Essence of the Legal Obligations	Holder of Obligations	Who may Enforce the Obligation? (i.e. the claimant)
Contractual Rights & Obligations Section 4	**Terms of the Contract** and documents incorporated by contract.	**To adhere to the terms of the contract** (including any warranties and indemnities and subject to any agreed exclusions, so far as is legally enforceable).	**The Contracting party.**	**Contracting counterparty** (or in some cases a third party[2]).
Land Obligations	**[1] Covenants** and/or **[2] Lease obligations**	**To adhere to the terms of the covenant / lease impacting what can be done on and/or with the affected land.** Covenants on the land and/or (where the land is leased) lease obligations may require the landowner to do something (a positive covenant) or prevent them from doing something (a negative covenant).	**[1] Landowner** of the 'dominant tenement' **[2] Lessor / Landlord**	**[1] Landowner** of the 'servient tenement' **[2] Lessee / Tenant**
Tort Law (or 'Delict') in Scotland Section 5	**Tort of negligence**	**Duty to take reasonable care** (in respect of those to whom the law considers a duty is owed). *Note: This duty often parallels or at least contours duties imposed by other sources of law e.g. commonly: (1) parallels to rights / obligations under contract; and (2) obligations established under statute (e.g. H&S law, see below).*	**A duty-holder** in respect of their actions or (extremely exceptionally) their omissions	**Person to whom the duty is owed:** there are many established relationship categories in law e.g. Employer to Employee (and vice versa), Premises Occupier to Visitor, Driver to Passenger. These are not 'closed' and are capable of extension to new categories per an established 3-part test.[2]
	Occupiers' Liability Acts: [1] Occupiers' Liability Act 1957 (OLA1957) [2] Occupiers' Liability Act 1984 (OLA1984) [3] Or in Scotland, the Occupiers' Liability (Scotland) Act 1960	A specific extension of the above duty of care specific to the **safety of visitors** to premises (e.g. for OLA1957 lawful visitors it is a duty to "take such care as in all the circumstances of the case is reasonable to see that the visitor will be reasonably safe in using the premises for the purposes for which he is invited or permitted by the occupier to be there")	**The occupier of premises.**	1] OLA1957 duty is owned to **"lawful visitors" acting within the scope** of the permission the occupier has given them. [2] OLA1984 extends a more limited duty of care to persons **"other than visitors"** (e.g. trespassers). [3] OL (Scotland) Act 1960 imposes a single statutory duty of care to **all visitors** (including non-invitees).
	Other torts e.g. **[1] Private Nuisance** **[2] Neg. Misstatement** **[3] 'Rylands v Fletcher'**	[1] Not to create a disturbance (e.g. sound or noise) so great as to be a '**nuisance**'. [2] Not to negligently / carelessly make **misstatements** of fact to certain people who might reasonably rely on it. [3] To take care that certain inherently dangerous things do not '**escape**' the premises and cause damage.	[1] **Creator** (usually occupier) [2] **Statement maker** [3] Controller of the dangerous thing	Person who suffers a type of harm eligible for compensation, most usually: For [1] and [3] **neighbouring premises** suffering harm. For [2] people who the law considers have a sufficiently proximate relationship to the statement maker and **might reasonably rely** on their statement.

Topic Area	Essential Legal Provisions	Essence of the Legal Obligations	Holder of Obligations	Who may Enforce the Obligation? (i.e. the claimant)
Product Safety (Consumer protection & claim rights) Section 6 *Note: we have considered 'Product Safety' notwithstanding this guidance is primarily aimed at Industry Organisations in particular as organisations seeking to deploy AVs on private land may work closely with the AV manufacturer and/or developers of components, and AVs and some of their components may be novel.*	**Part I of the Consumer Protection Act 1987 (CPA)**	**Safety of products placed on the GB market for use by "consumers".** Introduces strict liability for "defective" products, allowing "consumers" to claim compensation for (limited kinds of) damage[4], death, or personal injury without proving manufacturer negligence. A product is deemed "defective" if it falls below the safety level the public is generally entitled to expect. There are some Defences (see Section 6)	"**Consumer**" (which may include a business 'consumer' although ability to recover loss is more limited[5]).	"**Producers**" (defined by s.1(2) CPA as the Manufacturer) of a product and/ or Importers or Distributors who place the product on the market in the UK.
	Sale of Goods / Services Acts: [1] Sale of Goods Act 1979 (SGA)[7] [2] Sale of Goods and Services Act 1982 (SGSA)	**Reasonably quality / skill.** Key provisions in this context are: [1] SGA S14: goods must be of satisfactory quality and reasonably fit for any particular purpose made known to the seller. [2] SGSA S13: the supplier will carry out the service with reasonable care and skill.	**Contracting party.** SGA/SGSA implies these terms into the contract unless expressly excluded by contract.[6]	**Contracting counterparty.** Recipient of the goods / services under contract (Business-to-business contracts[8]).
Regulatory Product Safety Product Safety (Consumer protection & claim rights) Section 6 *Note: See Government announcement of 25 Feb 2026 in Section 6 re intent to re-alignment with EU law*	**Supply of Machinery (Safety) Regulations 2008** Note: Many products (or components) will also be covered by other more specific product legislation in addition, including: [1] Electromagnetic Compatibility Regs (EMC) [2] Radio Equipment Regulations 2017 [3] Non-road Mobile Machinery (Emission …) Regulations	**Safety of machinery (including components) placed on the GB market.** To ensure that machinery and safety components placed on the GB market are safe, complying with Essential Health & Safety Requirements (EHSRs) via specified design standards, technical documentation, conformity assessments, and UKCA/CE marking (see separately below the section referring to 'Standards' as this is only one of their applications). [1] Design specification and safety requirements for electrically powered / controlled machinery. [2] All machinery incorporating radio equipment (which includes e.g. Wi-Fi & 5G)[9] [3] non-road / off-road non-road mobile machinery with combustion engines (i.e. not electric, in which event separate similar Regs apply).	**"Responsible Person"** Defined as the **manufacturer** of the machinery or the manufacturer's **authorised representative** and extends to others such as: **Distributors** who market products under their own name, and persons who **substantially modify** existing machinery[10].	**The Health and Safety Executive (HSE)** is the Market Surveillance Authority and leads the enforcement for most products intended for use at work. *Note: Although H&S law is not enforceable by an individual / organisation it and of itself, it may be enforceable through a term of contract for: [1] 'compliance with applicable law' (generally) and/or [2] compliance with this particular law or a Standard (specifically).*
Data Protection Law	**The UK General Data Protection Regulation (UK GDPR)** and **The Data Protection Act 2018 (DPA 2018)** *Note: **The Data (Use and Access) Act 2025 (DUAA)** is being implemented in phases and supplements or amends the above legislation[11]*	**Processing of personal data** The UK GDPR governs the processing (e.g. collecting, storing, using) of personal data. Fundamental to the regime are the seven key principles requiring that personal data is: [1] used fairly, lawfully and transparently; [2] used for specified, explicit purposes; [3] adequate, relevant and limited to what is necessary; [4] accurate and kept up to date; [5] not kept longer than necessary; and [6] handled with appropriate security. The seventh principle, the 'accountability' principle, requires that the **controller** is responsible for, and can demonstrate, compliance with principles 1 – 6. It sets out the basis on which personal data may be processed and lays out the requirements where a controller engages a processor to process personal data on its behalf. It also confers individual rights on 'data subjects', including the rights of access, rectification, erasure and other rights.	Anyone who is either a: [1] **Controller** of data (i.e. determines the purposes and means of processing personal data); or [2] **Processor** of data (those who process data on behalf of a controller) *Note: employees who unlawfully access data can be liable under DPA 2018.*	1] **Information Commissioner's Office (ICO)** has information, auditing and enforcement powers including the ability to issue monetary penalty notices. [2] **'Data subjects'** also have the right to lodge complaints with the ICO and to seek judicial remedies if their rights have been violated. [3] Where contractual obligations (e.g. set out in a data processing agreement, data sharing agreement, or as part of a wider contractual arrangement), **the counterparty.**

Topic Area	Essential Legal Provisions	Essence of the Legal Obligations	Holder of Obligations	Who may Enforce the Obligation? (i.e. the claimant)
Cyber Security	None specifically and instead covered by a combination of: [1] Data Protection Law [2] Health & Safety Law [3] Standards (which may become 'binding' in a sense for the reasons explained in the 'standards' section below). **The Network and Information Systems (NIS) Directive (2016/1148)** designated certain sectors as involving "critical societal or economic activities". We presume any airport, port or factory owners subject to NIS will be aware of it and of its implications. *See also Section 6 below: (i) as to potentially imminent alignment with the new **EU Machinery Regulation** which has "cyber-security" aspects, and also as to why manufacturers and/or distributors wishing to also access the EU market will need to comply with* **Revised Product Liability Directive** *and* **EU AI Act** *thereby potentially creating higher standards of cyber security via the need to comply with EU law, even if that law is not entirely directly applicable in GB.*	A key government source of guidance remains the Key Principles of Cyber Security for Connected and Automated Vehicles (2017)[12] which lists 3 x ITS/CAV System **Security** Principles, and 5 x and ITS/CAV System **Design** Principles[13] and lists a large number of ISO and SAE standards, nearly all of which are still in force (although some have been updated). There have also been more recent standards expressly addressed to 'road vehicles' which might be seen to apply by analogy to 'off-highway vehicles' whilst making suitable accommodations for the differing contexts noting in particular that the policy reasons for the law as it applies to public roads and private land are different. For example: [1] **ISO/SAE 21434:2021** — Road Vehicles: Cybersecurity Engineering [2] **ISO/PAS 8800:2024** — Road Vehicles: Safety and AI [3] **ISO 24089:2023** — Road Vehicles: Software Update Engineering [4] **ISO/SAE DTR 8477** Road vehicles — Cybersecurity verification and validation is "Under development"[14] It is notable that the Government's consultation on the Statement of Safety Principles (SoSP) with which "on road" AVs will need to comply with AVA2024 (see Section 10 below) states: "We believe safety expectations for a regulated body to maintain cyber resilience of an automated vehicle should be captured through the technical requirements set within the UNECE's Regulation 155, which government plans to mandate in the GB type approval framework." However, as explained in Section 10 below it does not necessarily follow that the same should apply like-for-like in an "off-highway" or private context.	Potentially various (see previous column).	Potentially various. In essence, inadequate cyber-security may lead to breaches of various laws – for example: [1] A breach of Data Protection Law insofar as it results in personal data being compromised e.g. UK GDPR obligation on data controllers and processors to implement "appropriate, technical, and organisational measures" to ensure a level of security appropriate to the risk (Article 32).[15] [2] Potentially a breach of Health & Safety law where the lack of cyber security creates the risk of harm that has not been reduced to ALARP via appropriate cyber-security measures.[16] [3] Where contractual obligations specify minimum levels of cyber-security and/or e.g. an ongoing commitment to maintaining cyber-security, **the counterparty.**

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Health & Safety Law Section 7	**Health & Safety at Work Act (HSWA)** and **Regulations made under HSWA (see Appendix 1)** *Note: specifically in the context of public passenger transport in an airport see Appendix 1 Section 5 on the applicability of 'ROGs' (an additional H&S overlay) to such activities.*	**Ensure safety in specific respects, so far as is reasonably practicable (SFAIRP); sometimes expressed as a duty to reduce risks to 'as low as reasonably practice' (ALARP) including:** [1] **Section 2 of HWSA: Employer's duty to its** employees to ensure (SFAIRP) health, safety and welfare at work. Includes: safe plant, systems of work, premises, working environment; provide information, instruction, training etc. [2] **Section 3 of HWSA: Employer's duty to non-employees** who may be affect by the employer's 'undertaking' to ensure health and safety (SFAIRP). [3] **Section 4 of HWSA: Controller** of the premises has a duty to ensure premises, access/egress, plant and substances are safe.[17] [4] **Section 6 of HWSA: General Duties on Designers Manufacturers, Importers and Suppliers** to ensure articles and substances are safe; test and examine; provide information; carry out research. [5] **Sections 7 & 8 of HWSA: Employees' duties** to take reasonable care of themselves and others and cooperate with their employer. *NB: [1] In this document we have sometimes used "ALARP" as a shorthand hand way of referring to those H&S duties where there is a requirement to ensure the health and/or safety of an identified class of persons 'so far as is reasonably practicable' (SFAIRP). It is important to note that whilst ALARP is a commonly used shorthand and it is not the wording of the law.* *[2] SFAIRP obligations are a core part of H&S law but are not the only part. Certain aspects of H&S law impose strict obligations to do things in a particular way, have particular documentation in place, or use or appoint particular people.* *[3] SFAIRP obligations are technically breached by the mere failure to ensure H&S to SFAIRP standard, whether or not it actually results in any harm. It is not necessary for harm to occur before an H&S regulator may take regulatory action. If criminal prosecution is brought, then the Regulator bears the burden on establishing actual or potential material risk of harm, but it is then for the Defendant to show that the measures they took were sufficient to ensure H&S to SFAIRP standard (a so-called "reverse burden of proof")*	Various depending on provision but importantly includes: [1] Employer [2] Employer within 'scope of undertaking' [3] Premises 'controller' (whether or not also the owner) [4] Manufacturers (etc) [5] Employees – *NB: this is a potentially powerful provision in terms of making employees aware of their personal liability for unsafe actions at work (e.g. if they were to deliberately not follow their training / instructions around AVs.)*	**The Health & Safety Executive (HSE)** is Britain's national regulator for workplace Health & Safety with regulatory and enforcement powers (criminal law). HSE is the relevant enforcing authority for factories, some docks and harbours, and areas of airport operation[18]. To the extent these facilities may: [1] contain railways (e.g. a terminus) the **ORR** is the enforcing authority for railways; and/or [2] deal with nuclear materials, the **ONR** is the H&S authority. The position is slightly different on-board ships[19] and HSE has a memorandum of understanding with the Maritime & Coastguard Agency (MCA) to ensure their regulatory oversights align. Similarly, whilst HSE is the regulator for most parts of the airport[20] including parts of 'airside', the HSE has a memorandum of understanding with the Civil Aviation Authority (CAA) to ensure their regulatory spheres dovetail. *Note: H&S legislation is **not enforceable by individuals** but (as noted above) the law of negligence, enforceable by an individual who suffers harm, work alongside H&S laws so an employer may be inadvertently liable through a negligent breach of that duty of care.*
Location-specific Byelaws and 'Rules' Section 3.11	Various Port Byelaws	Ports often have their own byelaws (which are given legal force by various Acts of Parliament).	Depends on Byelaws and enabling legislation but can place obligations on any entity / person merely by their presence on land covered by said byelaws. Alternatively non-statutory/ informal protocols called 'byelaws' or organisational / premises 'rules' can be incorporated by contract (including e.g. by notice such as signage as a condition of entry).	Depends on Byelaws and enabling legislation but often empowers specific authorised persons (e.g. the Harbourmaster or specific titles within the Harbour Authority in ports). If binding by contract it is enforceable by contract. *(Note: As explained above, people who exceed their authority e.g. breach byelaws or rules whilst on land may nevertheless benefit from the more minimalist protections of some of the Occupiers Liability legislation).*
	Airport Byelaws	Airports often have their own byelaws (which are given legal force by various Acts of Parliament).		
	Any Organisation can have its own 'Rules' or 'Code'	Ports, airports and factories often have their own 'Rules' to which employees and/ or customers, visitors etc must adhere.		

Topic Area	Essential Legal Provisions	Essence of the Legal Obligations	Holder of Obligations	Who may Enforce the Obligation? (i.e. the claimant)
Standards and other authoritative guidance (including non-ACoP HSE Guidance) See Section 7.10	This is not an exhaustive statement of all potentially applicable guidance and standards which may be relevant to CAM operations in an "off road" context but does list key examples which we have identified in the course of our research. **Particularly 'on point' guidance and standards in respect of the deployment of AVs in "off-highway" settings are:** • Workplace transport safety, a brief guide - May 2013 • A guide to workplace transport safety - September 2014 • HSE – Workplace Transport Safety Index • DfT/CCAV - Code of Practice: AV trialling - 30 November 2023 • TRL/CCAV - Off-Highway Automated Vehicles Code of Practice – 2021 • HSE – Vehicle safety webpage index • HSE – Gap analysis on Review of key machinery safety standards and guidance, and how they reflect on emerging technologies – 2024 HSE / MCA / PS&S Port specific guidance: There is no guidance specific to ports on AVs but there is a range of guidance relating to health and safety assessment and management in various fields which directly concern or overlap with CAM Operations. A combination of the Health & Safety Executive (HSE), Maritime & Coastguard Agency (MCA) and Port Skills & Safety (PS&S), sometimes co-branded, issue guidance on specific aspects of safety and operations at ports. CAA Airport specific guidance: There is no airport specific guidance on AVs but there is a range on guidance relating to health and safety assessment and management in various fields which directly concern or overlap with CAM Operations. Civil Aviation Publications (CAPs) provide what the UK Civil Aviation Authority (CAA) calls "authoritative guidance, standards and regulatory information for the aviation industry". The CAA also state that "each CAP sets out the intent of its content and its legal status". At the very least, in most places a CAP sets out the CAA's expectation of what it considers to be 'good practice' and, therefore should be given considerable weight, noting that this comes from a UK regulator. **HSE - Health & Safety Specific Guidance:** The HSE issues a range on guidance relating to health and safety assessment and management in various fields which directly concern or overlap with CAM Operations. Although these Guidance documents do not have the legal status of an Approved Code of Practice, they reflect the view of the Regulator of (at least) good practice and therefore carry some status. In many places they are simply HSE seeking to assist organisations translate the complexities of H&S legislation into the practicalities of particular areas of operation. **PAS / ISO / EN and other 'Standards':** ISO and BS EN standards are not, as a rule, directly legally binding in the UK. In the mainstream product safety framework they are voluntary "designated standards" which, if followed, give a rebuttable presumption that the product meets the relevant statutory "essential requirements" (they do not replace those legal requirements, and manufacturers remain responsible for compliance). That said, a standard could become legally binding where a statute or statutory instrument expressly "calls up" a specific standard. In areas where there is an absence of data on which to found alternative assessment routes for compliance, it is understandable that organisations would seek to follow such standards as a way of obtaining some comfort that they are meeting relevant legal requirements.		Not directly enforceable by anyone against anyone but may play a crucial role insofar as: - **Contract:** They may be **directly** incorporated into contracts (by express reference to particular standards). Or, indirectly incorporated (e.g. by less direct reference for example to 'standards to be agreed by the parties' or 'standards which are industry good practice'). - **Product Liability:** Certain parts of the Regulations cited above contain requirements that products conform to particular Standards on Government approved lists. Such standards, particularly as they become more widely adopted, may also impact the legal interpretation of what is the "safety level the public is generally entitled to expect" for the purposes of Part I of the Consumer Protection Act 1987 (CPA). - **H&S law:** Guidance and/or standards can shape what is 'good practice' and therefore what is 'reasonable' to reduce risk 'so far as is reasonably practicable' (SFAIRP, often alternatively referred to as reducing risk to 'as low as reasonably practicable' or 'ALARP') as required by HSWA (and regulations under it). - **Tort/ delict law:** Guidance and/or standards may play a role in setting a standard and/or the minimum standard, and therefore be an aid to determining whether a duty holder negligently fell below that standard and is liable in negligence. It may similarly dictate safety measures which are reasonable for Occupiers' Liability purposes. *Note: Insofar as autonomous technology incorporates artificial intelligence, it is noted that whilst the HSE has not provides any specific Guidance or Code of Practice on the use of AI, a recent 'HSE news' publication called "HSE's regulatory approach to Artificial Intelligence (AI)" (https://www.hse.gov.uk/news/hse-ai.htm) clarifies HSE's role in regulating AI in the workplace and in the design, manufacture and supply of workplace machinery, equipment and products. Industry Participants may wish to read this news item and any further updates from the HSE, noting its commentary that: "The central principle of health and safety law is that those who create risks are best placed to manage and control that risk in a sensible, proportionate, and pragmatic way. As benchmarks develop for the use of AI, we want to reach a point where AI risk is no longer novel and is managed in the same way as any other risk.*	

<table>
<tr><th>Topic Area</th><th>Essential Legal Provisions</th><th>Essence of the Legal Obligations</th><th>Holder of Obligations</th><th>Who may Enforce the Obligation? (i.e. the claimant)</th></tr>
<tr>
<td>HSE approved Codes of Practice (ACoPs)

See within Section 6.27</td>
<td colspan="2">HSE "L" Series – see Publications to help you interpret the law - HSE[21]

Not every set of health and safety regulations has an accompanying ACoP. Those which seem most relevant to a CAM deployment on any private land (including an airport, port, or factory) are:

Note: This is not a complete list of ACOPs. Some ACOPs are not listed which might be relevant depending on the specific activity being undertaken. Some of those listed below would only be relevant if the AV operated in a particular area or way (e.g. L5, L101, L122). The ones most likely to be of general relevance to an AV deployment are L22, L24, L146 and if used for lifting then L113. The table below lists them in L-series order.
<table>
<tr><th>Ref</th><th>Title</th><th>Edition / Year</th><th>Key Regulations / Duties Covered</th></tr>
<tr><td>L5</td><td>Control of Substances Hazardous to Health</td><td>6th edition(2013)</td><td>Control of Substances Hazardous to Health Regulations 2002 (as amended) (COSHH)</td></tr>
<tr><td>L22</td><td>Safe Use of Work Equipment</td><td>4th edition (2014)</td><td>Provision and Use of Work Equipment Regulations 1998 (PUWER)</td></tr>
<tr><td>L24</td><td>Workplace Health, Safety and Welfare</td><td>2nd edition (2013)</td><td>Workplace (Health, Safety and Welfare)Regulations 1992</td></tr>
<tr><td>L101</td><td>Safe Work in Confined Spaces</td><td>3rd edition (2014)</td><td>Confined Spaces Regulations 1997</td></tr>
<tr><td>L113</td><td>Safe Use of Lifting Equipment</td><td>2nd edition (2014)</td><td>Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)</td></tr>
<tr><td>L117</td><td>Rider-Operated Lift Trucks: Operator Training+ Safe Use</td><td>3rd edition (2013)</td><td>HSWA Sections 2 and 3; PUWER 1998</td></tr>
<tr><td>L122</td><td>Safety of Pressure Systems</td><td>2ndedition (2014)</td><td>Pressure Systems Safety Regulations 2000</td></tr>
<tr><td>L146</td><td>Consulting Workers on Health and Safety</td><td>1st edition (2012)</td><td>Safety Representatives Regs 1977 and 1996</td></tr>
</table>

<table>
<tr><td>L148</td><td>Safety in Docks</td><td>1st edition (2014)</td><td>HSWA S2 to 4 (and the now withdrawn Docks Regulations 1988</td></tr>
<tr><td>L155</td><td>Dangerous Goods in Harbour Areas</td><td>1st edition (2016)</td><td>Dangerous Goods in Harbour Areas Regulations 2016</td></tr>
</table>
Note: there are no equivalent ACoPs for 'factories' per se, or for 'airports' akin to the 'Dock-specific' ACoPs listed above. As can be seen, many of these are now dated and were not drafted at a time when AVs were contemplated.</td>
<td>Not directly enforceable by anyone against anyone but they do have a special legal status under Section 16 HSWA, the effect of which the HSE describes in the following way:

"Each ACoP is approved by the Health and Safety Executive, with the consent of the Secretary of State. It gives practical advice on how to comply with the law. If you follow the advice you will be doing enough to comply with the law in respect of those specific matters on which the Code gives advice. You may use alternative methods to those set out in the Code in order to comply with the law. However, the Code has a special legal status. If you are prosecuted for breach of health and safety law, and it is proved that you did not follow the relevant provisions of the Code, you will need to show that you have complied with the law in some other way or a Court will find you at fault." [emphasis added]

Following the 'ACoP parts[22]' of an ACoP is effectively, therefore a 'safeharbour' in showing you have met your legal H&S duties (notably the duty to reduce risk to ALARP/ SFAIRP).

However, many of these ACoPs were written without specific contemplation of any role for AVs and it may not be possible, therefore, to apply them in all places. Where that is not possible (or possibly even if it is possibly but the duty holder can perceive of an alternative means of compliance), the duty holder must find some other means of achieving (and also showing / evidencing in case of regulatory investigation) that the relevant risk has been mitigated to ALARP/ SFAIRP.

As with other 'standards' they may also be relevant to Contract, Product Liability and Tort/ delict law, in the ways described above.</td>
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Topic Area	Essential Legal Provisions	Essence of the Legal Obligations	Holder of Obligations	Who may Enforce the Obligation? (i.e. the claimant)
'On Road' Automated Vehicle Legislation Section 10	[1] **Automated Vehicles Act 2024** (AVA2024) [2] **Automated and Electric Vehicles Act 2018** (AVA2018)	[1] AVA2024 paves the way for deployment of automated (including full autonomous) vehicles on public roads and other public places. It creates the framework to be fleshed out by regulations. [2] AVA2018 makes provision for insurance and liability in respect of "an accident … caused by an automated vehicle when driving itself on a **[public] road or other public place** in Great Britain".	As further explained in **Section 10**, the current Automated Vehicle legislation (AVA2024 and AVA2018), and pursuant regulations under it, regulate the use of automated vehicles on (public) roads and in other public places. It is not expressed to apply to private land and 'private roads' (i.e. roads to which the public does not have access) on that land. This has the impact of spotlighting a potential area of friction in the current legal framework which is summarised in high level terms in **Section 10** below. In light of this friction, there is a possibility that the organisations seeking to deploy AVs "off-highway" (in private controlled spaces) will find it harder to show that they have met the applicable legal requirements, because of the apparent friction between the regulatory framework for private deployment (in particular ALARP / SFAIRP under HSWA) and the framework to enable deployment on public roads (in particular, 'type approval'). Therefore, there is much to be said for Industry Organisations undertaking a careful examination of the extent to which they intend to apply the framework, regulations and principles (including SoSP) of the AVA2024, where it is not explicitly applicable to "off-highway" deployment of AVs. In particular, compliance focused on current Automated Vehicle legislation (AVA2024 and AVA2018) risks (subject to clarity from the Regulator and/or change in law) falling short of the regulatory framework for private deployment standards, in particular the ALARP standard in H&S law.	

Other areas of law not covered by the table above

For completeness, it has not been possible to include a full examination of all applicable laws, and in particular more 'general' aspects of UK law, which would be relevant and are applicable but are less obviously AV-specific and more obviously features of the general law. Key examples are:

(a) The **Equality Act 2010** (and related regimes relating to disabled access to transport, insofar as such transport is accessible to members of the "public") including anti-discrimination obligations and the duty to make 'reasonable adjustments' in respect of those with protected characteristics.

(b) Serious criminal offences such as **Gross Negligence Manslaughter**[23], **Corporate Manslaughter**[24] and '**Section 37 HSWA**' (concerning connivance or neglect by directors/managers).

(c) The **Regulatory Reform (Fire Safety) Order 2005**, which is the key fire safety regime for England and Wales covering most non domestic premises and enforced by Fire & Rescue Authorities through notices and prosecution where necessary. It places duties on the "Responsible Person" (often the employer, owner or person in control) to carry out and keep under review a suitable and sufficient fire risk assessment, implement and maintain appropriate preventive and protective measures, provide information and instruction to relevant persons, and co operate and co ordinate where there are multiple duty holders.

3. Legal boundaries / interfaces with 'out of scope' regimes /

3.1 Our legal guidance is focussed on so-called "off-highway" use cases – i.e. use in areas which are not roads to which members of the public have access. We suggest that any guidance to Industry Organisations should nevertheless acknowledge the existence of the following legal boundaries / interfaces because, depending on the use case, one or more of them could in principle be relevant.

3.2 **Use cases that are conducted on water (on vessels or other facilities):** Many parts of UK Health & Safety law expressly exclude activities on vessels from their scope.[25] Broadly, the Health & Safety at Work etc. Act 1974 ("**HSWA**") and associated regulations "*do not apply to seamen working on board ship under the control of the ship's master. Comparable Merchant Shipping Health and Safety Regulations do apply to ship's crew and are enforced by the Maritime and Coastguard Agency (MCA)*".[26] We presume that Industry Organisations working in ports will be aware of these jurisdictional boundaries.

3.3 **Aircraft (including their self-propelled movement on the ground):**

HSWA applies, to a limited extent, to aircraft while on the ground in the UK.[27] Issues of health and safety during flight are primarily regulated by the CAA through the Air Navigation Order 2016 and related legislation, but this is unlikely to be relevant in the context of AVs. The HSWA also applies to activities carried out in UK airports.[28] Responsibility for enforcing this legislation is shared between the HSE and relevant Local Government Authorities, with the HSE being responsible for most activities carried out at an airport, excluding activities carried out in the common areas.[29]

Regarding passengers specifically, the Montreal Convention 1999 provides an exclusive liability regime for carriers for all accidents that occur either on board an aircraft or during embarkation and disembarkation of the aircraft.[30] The concepts of embarkation and disembarkation have been defined widely by the Courts and will ultimately be determined on a case-by-case basis. However, the liability regime created by the Montreal Convention 1999 is likely to apply to any circumstance in which the passenger is under the effective control of the carrier: this might include, for example, the period in which a passenger transits from the gate to the aircraft for boarding.[31] This exclusive liability regime is not available for airport operators.

3.4 **"On-road" vehicle laws and traffic laws:** Where something is a "road" (in its 'public' sense as defined below) then the use of vehicles (including AVs) on that road must comply with road vehicle legislation (including type approval legislation), road traffic legislation, relevant case law, and supplemented by traffic rules (in particular through the Highway Code). It is important to flag the broad definition of "roads" (in their public sense) includes "*highways and other roads to which the public has access, and includes bridges over which a road passes*" (England and Wales[32]) or "*any road within the meaning of the Roads (Scotland) Act 1984 and any other way to which the public has access*" (Scotland[33]). To avoid confusion, we refer to these roads below as "public roads" to differentiate them from routes on private land which an ordinary person would call a 'road' but which does not fall within the above definition, and we refer to as an "off / private road".

3.5 Consequently 'public roads' (which includes footpaths, bridleways, pavements, verges and *in-road* cycle lanes) can exist on private land as long as they are accessible and used by the general public (whether or not by vehicle) with express or implied permission, as opposed to where access is physically prevented, expressly or implicitly prohibited or permitted only to a restricted or special class of members of the public. For example, it is sometimes the case that some roads at larger ports fall into the category of 'road' within the legal definition because they are accessibly by the public, but that the quayside, storage facilities, and other areas exclude the public and are only accessible via security gates.

3.6 Notably, whether or not the road is 'private' in the sense of being 'privately maintained' or maintained at private expense is not the relevant factor as to whether something in a 'road' in this sense. The Road Traffic Acts and Highways Acts specifically allow for roads that may be maintainable at private expense but are nevertheless "public roads" (roads within the above definition), because the key factor is whether "the public has access". Thus, use of a vehicle that was not 'on-road legal' on a road situated on privately-owned land *but to which the public has access* would in principle be as unlawful as it would be on a 'conventional' public road. (Query if, in practice, breaches might be less likely to be enforced by a regulator; this is uncertain).

3.7 The *extent* of 'public access' which makes something a 'public road' in this sense is a matter of fact and degree in individual cases. This means that Industry Organisations may want to take legal advice on the specific status of 'roads' (which includes footpaths, bridleways, pavements, verges and *in-road* cycle lanes) on their premises where there is doubt as to the extent to which "the public" are excluded. It is possible that Industry Organisations have not had to directly address their minds to this previously because all vehicles in use on the premises are 'on-road legal' and those using the land are clear on the extent to which the public are excluded, but have never needed to directly address their minds to whether the road is a 'public road'.

3.8 There is a policy coherency to the wide definition of a 'public road'. Many of the relevant road vehicles and road traffic laws are mandated for 'road user safety' or 'road user protection' reasons (including mandating that third party motor insurance can be called upon in the event of a claim). In those circumstances:

(a) there is a logic to the statutory position that these rules should *also* encompass use of vehicles on parts of privately-owned land to which the public have access, and
(b) it is coherent that where the public does not have access, such 'protection of the public' measures are not necessary; other statutory and legal frameworks examined in this note (include H&S law, Product Safety law, Contract law, and Occupiers Liability law) provide sufficient protection for those 'off-highway' purposes. Although as we explain in Section 10, it is not clear that this results in a better position for the Industry Organisation in terms of being able to show they have met those legal obligations.

3.9 The determination of road use also relevant to compulsory motor insurance notwithstanding post-*Vnuk* changes to law to clarify position for vehicles used exclusively off-highways.

3.10 The designation of certain routes (including e.g. footpaths) as 'roads' is also a factor which Industry Organisations may want to keep in mind on an ongoing basis when making infrastructure decisions, potentially for initial CAM deployment and thereafter. For example:

(a) To the extent that AVs are not 'on-road legal' but are stored 'off site' then they would need an 'on-road legal' method of being transported from that other site (e.g. if they were put on a 'road legal' vehicle carrier).
(b) Alternatively, if this is to be avoided, and AVs are to be stored 'on site' then changes to the site may be needed so that these AVs have a location(s) to be stored, charged, inspected, and maintained when not in operational use. It can easily be envisaged that where there is a large number of AVs this may be substantially large area (whereas, if operations had previously been performed by 'on-road legal'

vehicles with a human operator those vehicles may be have been to other sites (e.g. vacant lots) / employee homes when not in operation).

(c) If vehicles and their operation cannot also be demonstrated to comply with 'on road' legal requirements in respect of the parts of the operators' land that are 'public roads' or 'public places', the use cases and the Operational Design Domain (ODD) for such vehicles may have to be restricted geographically to parts of private land which do not allow access to the general public or perhaps be restricted to times during which the general public are clearly excluded (e.g. outside of hours when the site may be accessed by the public such as night working).

(d) Some AVs may use standard electric vehicle charging infrastructure. It is possible that an Industry Organisation might look to 'sweat these assets' by allowing their use by members of the public to charge their electric vehicles. This has been seen in the context of bus depots where charging infrastructure is not in use whilst the buses are out on their routes. However, opening up public assess in this way might, depending on how it is achieved, trigger the circumstances in which the definition of "[public] road" is inadvertently applicable to the site, resulting in unintended consequences for vehicle regulation.

3.11 **Site-specific local byelaws and 'rules':** These must be checked by Industry Organisations in respect of their proposed use case location(s). We expect that Industry Organisations which operate at ports, airports and factories will be aware of the specific byelaws or 'rules' which apply to their sites. They will need to consider them on a case-by-case basis. Nevertheless, we make the following overarching observations:

(a) **Byelaws:** Although we anticipated it is highly uncommon (if at all) that factories have any legally enforceable byelaws (sometimes spelled 'bylaws'), it is very common for ports[34] and airports[35] to have byelaws. Byelaws are usually a means by which specific activities are mandated or ways of working restricted, together with enforcement mechanisms to ensure the byelaws are observed. It seems unlikely, therefore, that they will provide for any specific powers or exemptions which might be specifically useful for the introduction of AVs. However, the byelaws should be considered in particular insofar as:

(i) they may usefully regulate the conduct of people and vehicles whilst within the area regulated by the byelaws and so be used to assist in meeting H&S and Occupier Liability obligations;

(ii) they may grant the relevant 'authorised persons' (e.g. harbour masters and harbour police in ports, or airport security and local police in airports) useful additional powers which may assist in meeting H&S Law and Occupier Liability obligations;

(iii) they may need to be amended insofar as they do not contemplate and might currently be incompatible with the deployment of AVs within the area regulated by the byelaws, noting that some byelaws are 50 years or older.

(b) **'Rules':** It is not uncommon for large industrial premises, ports and airports to have documents that they designate as 'rules'. For example, all Associated British Ports (ABP) use the ABP Port Rules[36]. Such 'rules' do not, of themselves, have any legal force (unless compliance with them is a byelaw; see above) but become enforceable as a term of contract and/or as a 'condition of entry' onto the premises and may therefore form part of a binding contract between those entering the premises and the operator of the premises, insofar as the general 'common law' on incorporation of contractual terms is satisfied.[37]

(i) As with byelaws above in section 3.11(a)(i), (ii), and (iii), these 'rules' should be considered in the context of meeting H&S and Occupier Liability obligations, and granting authoritative powers to assist in meeting said obligations. Their compatibility with the deployment of AVs should also be considered within the area regulated by the 'rules'[38].

3.12 **Movement of goods which the law classes as 'dangerous' or 'hazardous' (including nuclear):** In our 'H&S Guidance' (Appendix 2) provided we have provided specific examples which may apply where dangerous or hazardous goods are 'on site' at premises and/or it is proposed that AV movement will be proximate to those goods or AVs may be used to move those goods. These are provided as examples to spotlight the importance that they are considered. We expect that Industry Organisations that handle goods which are 'dangerous' or 'hazardous' will already be aware of their obligations under relevant legislation.[39] Notably there are also specific additional laws which apply in the context of:

Ports: The Dangerous Goods in Harbour Areas Regulations 2016 (DGHAR)[40] is aimed at safeguarding ports against major accidents involving dangerous goods when they transit through ports, harbours and harbour area; and the Freight Container (Safety Convention) Regulations 2017, including the ongoing obligations for maintenance and examination.

Airports: There is no specific legislation applicable to the transiting of dangerous goods through UK airports. However, depending on the airport, there may also be specific byelaws that apply to the carriage of dangerous or hazardous goods. These should be checked on an airport-by-airport basis for any intended AV usage. Further, carriers are subject to the requirements of the Air Navigation (Dangerous Goods) Regulations 20002 (SI 2002.2786) and the requirements of Annex 18 to the Chicago Convention 1994 as amended by the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air and implemented into local law. These requirements may be relevant to airports to the extent that carriers carry out the required preparatory steps and inspections on dangerous cargo while at the airport. Finally, individual airlines are likely to include provisions specifying how dangerous cargo is to be carried in their respective Operating Manuals, which are regulated by the CAA.[41]

It will be necessary for Industry Organisations to consider how the introduction of AVs may impact their obligations under these types of legislation, for example whether the routeing of AVs should be shaped so as to remove them from proximity to such goods, and whether major accident prevention policies and/or evacuation procedures need to be updated to accommodate for AV operations.

3.13 **Laws relating to the design and manufacture of machinery:** We have provided a summary of key product liability legislation below. However, specific detail of the law and regulation relating to the design, manufacture and supply of AVs are largely outside of the scope of this guidance (which instead focusses on how Industry Organisations may seek to deploy AVs in factory, port or airport settings, rather than on the design manufacture and/or supply of AVs). However, it may be valuable for such Industry Organisations to have an awareness of this legal regime in particular cases such as:

(a) AVs being specifically designed for a particular deployment. In such cases, the development of "technical files" to evidence conformity to applicable standards may have to be considered alongside development of other safety analysis and consideration of other law.
(b) AVs being bought 'off the shelf' (see further below) insofar as those purchasing them will be seeking to ensure they can be safely operated in the UK.

3.14 **Future laws yet to be made or in force** (including any potential legislation changes specific to use and operation of automated vehicles).[42] In particular:

(a) **The Automated Vehicles Act 2024 (AVA2024)** establishes (although not yet in force) a safety and liability framework for the use of "authorised" automated vehicles "*on roads*

and in other public places", including allocating criminal and in-use responsibilities (e.g. for Authorised Self-Driving Entities (ASDEs)), but it does not displace the product liability position for off-road machinery. However, AV developers and Industry Organisations may wish to monitor developments in: (i) the implementation of the AV Act which is expected to be implemented in phases between Spring 2026 and Late 2027; and (ii) regulations made pursuant to the AVA2024, for example the anticipated 'Automated Passenger Services Regulations'. Such legislation will only be applicable to "*on roads and in other public places*". However, AV developers and/or Industry Operators may seek to apply it: (i) by analogy in the absence of applicable 'off road' standards (for example in designing "transition demand" features for transition from "user-in-charge" to "no-user-in-charge" or vice-versa); and/or (ii) to avoid foreclosing the possibility of a AV being used in both on- & off-highway contexts. This potential benefits and pitfalls of such an approach as discussed further in Section 10.

(b) **Clarification as to the 'standard' for Core Duties under H&S law:** As noted in greater detail in Section 7 and Appendix 1 below, much of UK Health & Safety law centres on requirements to reduce risk 'so far as is reasonably practicable' (SFAIRP). This is not a requirement to eliminate all risk. It requires foreseeable and nontrivial risks to be reduced unless the time, trouble or cost of further risk reduction would be disproportionate to the safety benefit achieved. As Low As Reasonably Practicable (ALARP) is often used as shorthand for the statutory requirement to manage risks SFAIRP. Furthermore, in some Regulatory guidance and commentary there remains reference to "grossly disproportionate" rather than merely "disproportionate". However, there are a number of signals which appear to indicate that this will be clarified in the near future. See Section 7 below for further elaboration of this.

4. Contract law /

4.1 Contract law is only considered in summary here as the structure and terms of commercial contracts that may apply to CAM deployment in an entirely "off road" use case are a matter of negotiation between the parties (including employer/employee; site operator/site visitor; AV customer/AV developer) and would be a large topic in its own right. There is nothing 'CAM-specific' about this topic. However, we consider the following observations may be useful.

4.2 **Advantages of creating binding rights and obligations:** First, contract law creates whatever binding legal rights and obligations the parties to the contract agree to be bound by.[43] In commercial settings, questions about who is responsible for a particular loss, and to what extent, are often determined by the contractual arrangements between the parties. Within a supply chain (including for the design, manufacturer and/or implementation of autonomous vehicles), contracts are usually the primary, and sometimes only sufficiently certain mechanism (see in comparison to 'Tort' & 'Product Liability' sections below) for allocating liability. Warranties, indemnities, and contractual limits or exclusions of liability typically set out the scope of liability and any ability to pass losses up the chain. *Note: Claims in tort / delict (see Section 5) and/or under product liability law (see section 6 below) are often only pursued where there is either no relevant contractual structure or it provides an adequate structure for apportioning liability for harm / loss.*

4.3 In light of this, contracts may be a useful means by which to, for example: (a) impose adherence to certain standards of behaviour (for example requiring employees and site visitors to adhere to 'Site Rules' when on site); (b) impose adherence to other minimum standards and/or provide a warranty or indemnity against them not being met (for example adherence to specific EN / ISO / PAS standards); and / or (c) agree the apportionment of liability between the parties (and potentially up the supply chain) where the law allows for such apportionment (noting the third point below). Inserting these contractual provisions may, in turn assist with the law in other areas summarised below.

4.4 **Risk of unincorporated or unenforceable terms:** Secondly, Industry Organisations should be alert to the risks that terms intended to be contractually binding might, depending on the circumstances, be found either not to be incorporated into a contract, or found to have been incorporated but unenforceable:

(a) They might not be incorporated because, for example, reasonable notice was not given before or at the time of contracting, the term was introduced too late, an onerous clause was insufficiently signposted, conflicting terms applied, or there was no consistent course of dealing.
(b) They may be found to be incorporated but unenforceable, for instance because they fall foul of statutory controls (such as the Unfair Contract Terms Act 1977 or, in consumer cases, the Consumer Rights Act 2015), operate as a penalty, or are void for illegality or public policy.

4.5 This may be a relevant consideration where an Industry Organisation is seeking to use contractual controls as part of its framework for risk management for the deployment of AVs in an "off road" use case (such as, using the same example as above, 'Site Rules' which contain specific provisions about only walking along designated routes or following certain behaviours are incorporated into the contract, or whether certain exclusions of liability are included).

4.6 **Inability to apportion or insure against criminality:** Thirdly, generally speaking it is not possible to use contract law to apportion to a third party a liability for breach of the criminal law. There may be potentially narrow exceptions to this[44] and 'defence costs' (of defending against criminal charges) usually can be covered by insurance. This is particularly relevant in the context of Health & Safety law, which is a primarily criminal regime. The key point is that if the Health & Safety at Work Act 1974, or regulations made under it, provide that a particular risk lies with a particular entity (e.g. as the employer, or occupier of premises – see Section 6.27 below) then this duty, and liability for its breach, cannot be reapportioned to another entity, nor can another entity agree to indemnify or provide insurance against that liability.[45]

5. Law or tort (of law of delict in Scotland), including occupier's liablity /

5.1 Law of Tort or Delict[46] (including Occupiers Liability) is only considered in summary as the very wide variety of circumstances in which tort law may apply to CAM deployment in an "off road" use case would be a wide topic in its own right. There is nothing 'AV-specific' about this topic. However, we consider the following observations may be useful.

5.2 Tort law in England and Wales imposes civil liability for breach of obligations imposed by law. It is enforceable by private individuals / entities. The tort with which people are most generally familiar is the 'tort of negligence'. However, there are a wide range of potentially applicable 'tort laws' which might apply depending on the breach. We consider the following torts are probably those more likely to apply in this context.

Relationship to contract

5.3 As noted above, where contractual clauses provide sufficient certainty as to who is contractually agreed to be responsible and how liability should be apportioned, then contract may be the primary vehicle for pursuing remedies for harm / losses resulting. However, it is not uncommon to pursue a claim in tort (most commonly negligence) in parallel. Where there are no relevant contracting structures, or these are inadequate for the claimant, then they may pursue their claim in tort, and most commonly in negligence.

5.4 In Great Britian and Northern Ireland contractual allocation of risk does not eliminate a duty in tort to third parties who are not party to that contract.

5.5 Contract can be used to *partially* limit or apportion only *certain* aspects of liability for negligence. All parts of the UK are subject to the Unfair Contract Terms Act 1977[47] and the Consumer Rights Act 2015, the effects of which are that:

(a) **Business-to-business:** Section 2 and Schedule 2 of the Unfair Contract Terms Act 1977 provides that (1) any term or notice purporting to exclude or restrict liability for death or personal injury resulting from negligence is void (i.e. unenforceable as if it does not exist); and (2) for other loss or damage (other than death or injury) caused by negligence, any exclusion or limitation is effective only if it satisfies the statutory reasonableness test and may be void if it fails that test.

(b) **Business-to-consumer** (which might be relevant to the extent an AV is being used to offer some kind of services to the consumer e.g. passengers): Sections 62 to 65 and Schedule 2 of the Consumer Rights Act 2015 provides: (1) an absolute prohibition on a trader excluding or restricting liability for death or personal injury resulting from negligence in a consumer contract or consumer notice; and (2) that any term which seeks to limit negligence liability for other loss in a consumer contract must pass the CRA unfairness test and may be unenforceable if it fails that test.

Negligence

5.6 **Summary:** The tort of negligence is often commonly referred to as a duty to exercise reasonable care, or simply as a 'duty of care'; in fact it is better thought of as an obligation not to fall negligently below that standard. A successful claim in this tort requires a claimant to be able to establish: (i) the defendant (the person / entity accused of having caused the harm) owed a duty of care to the claimant; (ii) the terms of the relevant standard of care; (ii) that the defendants conduct fell below the relevant standard of care (which is sometimes expressed in the converse: that the defendants failed to take all reasonable precautions to avoid or mitigate a foreseeable risk of harm); (iii) that the breached

cause the claimant to suffer an identifiable loss; and (iv) that the type of loss (even if not its extent) was reasonably foreseeable.

> Unless otherwise stated in this section, the key components of the law of delict in Scotland can generally be taken to be aligned with the law of tort in England & Wales, subject to certain differences in terminology (and modest technical differences). For ease of reading, English law terminology only is used in this section.

5.7 **Consideration in the context of autonomous systems:** How the law of negligence should apply to harm caused by wholly or partially autonomous systems is a difficult question. It has been the recent subject of:

(a) A Law Commission Discussion Paper: 'AI and the Law' (June 2025)[48], which although expressed as being directed to "AI" is in fact also directed more broadly at 'autonomous systems' (it uses, for example, the case study of a house cleaning robot that causes harm to a child and how liability in negligence may be apportioned in that scenario[49]).

(b) UK Jurisdiction Taskforce (UKJT) currently has a 'live' consultation on its Draft Legal Statement on Liability for AI harms under English Private Law (January 2026)[50] which is specifically focussed on how the law of tort (and particular negligence) may be applied to "autonomous systems". It features the case study of a factory using autonomous vehicles on an assembly line where the AV supplier has failed to carry out sufficient 'real world' testing to enable the AV to identify a wheelchair user as being a human, and therefore to cease operation when in proximity[51]). This 'Draft Legal Statement' is at a very high 'statement of principle' level and yet runs to over 80 pages, which provides some feel for the potential breadth and complexity of this topic.

5.8 These papers conclude that the issue of who may be liability and to what extent will be highly fact-specific, in particular in light of which 'component(s)' of a the 'system' (including human, autonomous and/or mechanical components) are thought to have caused the harm, and the respective responsibilities of various parties either for the control of that component or control of the scenario / context in which it was deployed.

5.9 **Consideration of vicarious liability:** These papers also consider the difficult and related issue of so-called 'Vicarious Liability', which is the legal principle whereby one person (such as an employer) can be liable for the acts of another (such as an employee), and how this may apply to harm caused by autonomous systems, or to harm caused by negligent use of an autonomous system.[52]

5.10 This is a potentially important consideration because generally, a person / entity is not liable for harm caused by the intervention of a third party. However, there are legally established exceptions to this principle, and one such exception may arise where the defendant exercises control over the third party and ought reasonably to have foreseen the likelihood of the third party causing damage to somebody in close proximity if the defendant failed to take reasonable care exercising control over that third party. The most common case of this exception are circumstances in which employers are vicariously liability for the acts of their employees (and correspondingly the circumstances in which they are not vicariously liable, for example, for acts of contractors with a higher degree of autonomy over their choice of actions).

5.11 **Consideration of the Employer's Liability (Defective Equipment) Act 1969:** This is a special kind of 'statutory vicarious liability'. The Act only has one operative provision. It provides that a claim may be brought by an employee who suffers personal injury in the course of employment due to a "defect" in equipment (which includes "*plant and machinery, vehicle, aircraft and clothing*") provided by the employer for the purposes of the employer's business even where "*the defect is attributable wholly or partly to the fault of a third party (whether identified or not)*". In such cases "*the injury shall be deemed to be also attributable to negligence on the part of the employer (whether or not he is liable in respect of the injury apart from this subsection), but without prejudice to the law relating to contributory negligence and to any remedy by way of contribution or in contract or otherwise which is available*"[53].

5.12 The effect of the Act is therefore to make it easier for an employee (but only an employee[54]) to bring a claim in negligence against their employer where they suffer personal injury due to a "defect" (which is not specifically defined) in equipment, *whether or not* the employer was in fact negligent in any respect. In practical terms in means the employee does not need to work out who was negligent. From an employer's perspective, it can be seen how this might apply in the case of an AV which causes injury. However, as noted in the last part quoted above, the effect of this Act is "without prejudice to the law relating to contributory negligence… or contract"; so the employer could still bring a contract and/or contribution claim against others e.g. suppliers, maintainers and/or manufacturers (provided they could make a case for their liability).

5.13 For completeness, where the employee dies, their estate and / or eligible dependants may bring proceedings on their behalf.[55]

5.14 **Relationship of negligence to parallel legal regimes:** It is noteworthy that the 'shape' of a duty of care owed to individuals or groups in a particular case may be influenced by or contoured to the pre-existing obligations in that area in particular (in each case provided that a claimant could meet all criteria for a claim in negligence, per paragraph 5.1 above).

(a) In contract, where, as noted above, the existence of contractual obligations is sometimes contoured by a parallel duty of care in the tort of negligence;
(b) In Health & Safety law, where for example, claims in negligence might be brought where an employer has acted negligently in providing safe systems of work, segregation of people/plant, training, and supervision; and
(c) In product liability law, for example, where a manufacturer/integrator/maintainer, acts negligently in for example design, software changes, calibration, cyber security provision (also see Section 5 below regarding an employer's potential additional / parallel liability under the Employer's Liability (Defective Equipment) Act 1969.

Occupiers' liability

5.15 Even on private land without public access, certain tortious 'duties of care' will nevertheless arise under the various Occupiers' Liability Acts. In summary, the Occupiers' Liability Act 1957 ("OLA1957") applies to "lawful visitors"; the Occupiers' Liability Act 1984 (OLA1984) extends a more limited duty of care to persons "other than visitors" (e.g. trespassers); whilst in Scotland, the Occupiers' Liability (Scotland) Act 1960 imposes a single statutory duty of care to persons entering the premises (including, in practice, non-visitors).

5.16 These statutory duties operate alongside, not instead of, common law negligence and are therefore an additional potential source of liability and for consideration when considering AV deployment in a private land context. It is notable, for example, that the UKJT Draft Legal Statement on Liability for AI harms uses an example of a factory using autonomous vehicles on an assembly line where the AV supplier has failed to carry out sufficient 'real world' testing to enable the AV to identify a wheelchair user as being a human, and therefore to cease operation when in proximity.[56] The Draft Legal Statement concludes that, notwithstanding potential additional claims in negligence, "*where she is injured on FactoryCo's premises, she likely has a claim under the Occupiers' Liability Act 1957, the focus of which will be whether care has been taken to keep visitors reasonably safe, and not on the AI as such*."

Further details of Occupiers' Liability

The Occupiers Liability Act 1957 ("OLA1957") imposes a duty of care in respect of injuries or damage on an "occupier" of "premises" towards "visitors" to their premises so as to "*take such care as in all the circumstances of the case is reasonable to see that the visitor will be reasonably safe in using the premises for the purposes for which the visitor invited or permitted by the occupier to be there*". It relates to dangers due to the state of the premises or to things done or omitted to be done on them.

The definition of "occupier" is not defined but it has been established in case law that the relevant test is one based on the degree of control exercised by a person over the premises. If a number of persons exercise sufficient control independently then there may be more than one relevant occupier. By the same token, in a tenancy situation, the owner of land may in some cases not be an occupier of all or part of their land depending on the terms of their lease.

The definition of "*visitors*" is broad being any person entering or using the occupier's premises by express or implied invitation or permission of the occupier. Additionally, any person who enters the premises in exercise of a right conferred by the law (e.g. the police) are deemed as permitted by the occupier to enter. OLA57 makes clear that occupiers must presume that children will be less careful than adults but that they can expect that workers on premises will appreciate and guard against special risks ordinarily incident to their calling.

The concept of a visitor acknowledges that permission given by occupiers is not unlimited. OLA1957 acknowledges that warnings and contractual conditions may be applied (although in all cases they may be subject to other laws on contractual fairness). If that permission is exceeded, persons on premises may stop being visitors within the meaning of OLA1957 (see further on this below). Consequently, many of the cases in this area relate to the effectiveness of and scope of warnings and permissions given to visitors.

It should be noted that the relevant definition of "premises" does not relate just to land and buildings but also to any "*fixed or movable structure, including any vessel, vehicle or aircraft*". The general law of negligence appears to be used most commonly in respect of civil claims arising from events inside vehicles and indeed the duty of care in negligence is probably at least as high as the OLA1957 common duty if not higher[57].

OLA1957 as it applies to land and buildings tends to be used in respect of dangers associated with the state or premises and as regards vehicles usually to the activities of those vehicles on those premises. Most reported cases involving vehicular activities claims relate to premises which are used for racetracks and the duties owed to competitors and spectators and the respective risks that they accept or were deemed to accept from training, warning signs, etc[58].

The Occupiers Liability Act 1984 ("OLA1984") regulates the duty of occupiers to persons on their premises that are not their visitors. In practice this relates to trespassers and visitors that have exceeded their permission. However, duties are only owed to the extent that occupiers are aware of the relevant danger (or have reasonable grounds to believe they exist) and either knew or had reasonable grounds to believe the other person would be in the vicinity of the danger or could be. There is then also a test of whether, in all the circumstances, it would be reasonably expected that an occupier would offer the other person some protection from the risk.

In short, there is a low expectation in practice of duties being owed to trespassers unless there is some evidence of reasonable grounds to assume that there might be trespassers or visitors exceeding their permissions put themselves in danger, particularly if reasonable steps have been taken to prevent the risk materialising. Nevertheless, it is an important consideration if, for example, use of vehicles occurs in closed sites (permanently or at particular times). The Occupiers' Liability (Scotland) Act 1960 imposes a single statutory duty of care to persons entering the premises (including, in practice, non-visitors).

Other types of 'tort'

5.17 Within the scope of this 'guidance' it is not possible to examine all potentially applicable torts. However, it provisionally appears to us that addition torts which might be relevant include:

(a) **The tort of private nuisance** where operations generate a nuisance to neighbours (e.g. noise or high light levels). This might occur e.g. where CAM deployments 'unlock' the potential for overnight working in ways that were not previously possible, therefore generating new / additional noise and light at night which may be a source of nuisance to neighbours.

(b) **The tort of negligent misstatement** where one party 'carelessly' / 'negligently' makes a statement to a third party to whom the law determined they owe a duty of care, and reliance on that misstatement causes loss to the third party. This might apply where, for example, the negligent misstatement concerns an AV's capabilities (e.g. suitable use cases) or its limitations (e.g. misstates limits of its ODD). The particular relevance of this type of tort is that it comes to the aid of a third party who does not have a contract with the statement maker, but where it is reasonably foreseeable that they are within the class of person who might place reliance on such statements.

(c) **The rule in Rylands v Fletcher** which is a specific type of tort that applies to the 'escape' of something which is sufficiently inherently dangerous and might reasonably foreseeably cause harm. (It is unclear whether Scottish law would accept Rylands-style arguments).

6. Product safety laws /

6.1 As noted above, law and regulation relating to the design, manufacture and supply of AVs are largely outside of the scope of this guidance, which focusses on how Industry Organisations may seek to deploy AVs in factory, port or airport settings, rather than on the design manufacture and/or supply of AVs. However, it may be valuable for such Industry Organisations to have an awareness of this legal regime in particular in cases where:

(a) AVs are being specifically designed for a particular deployment. In such cases, the development of "technical files" will be required to evidence conformity and may have to be considered alongside development of other safety analysis and consideration of other law.
(b) AVs are being bought 'off the shelf' (see further below) insofar as those purchasing them will be seeking to ensure they can be safely operated in the UK.

UK law: the CPA, Machinery Safety Regulations and 'Designated Standards'

6.2 There is presently no dedicated UK primary or secondary legislation that creates a bespoke product liability regime for automated off-road vehicles as a category. Product liability for such products continues to be governed principally:

(a) In respect of 'consumer protection' (which may include business) the consumer rights created by the strict-liability regime in **Part I of the Consumer Protection Act 1987 ('CPA')**; and
(b) In respect of the regulation of machine safety and 'placing on the market' obligations the **Supply of Machinery (Safety) Regulations 2008** (as amended) **(the 'Machinery Safety Regulations')**. See also HSWA Section 6 duties in Appendix 1, which apply in parallel

These two regimes perform very different functions but are grouped together in our note as we suspect that from the perspective of the Industry Organisations considering CAM deployment on their private land they will view these as a body of laws that sit principally with the manufacturer(s) of the AVs and relevant associated machinery. (For completeness, the **General Product Safety Regulations 2005** also apply where a product is supplied as a "consumer product" but we provisionally suggest that it is unlikely that an AV, or any component of it, would fall within that definition for present purposes, so this Regulation is not considered further).

6.3 The CPA and Machinery Regulations operate alongside (and independently from) **contractual** and tortious **negligence** claims:

(a) In respect of contract, where a product fails to meet the contractually require standard or specification and/or performs a way which breaches a contractual warranty or indemnity, then this may give rise to a breach of contract claim.
(b) In respect of negligence, where a person or organisation can show that they were owed a duty of care, and that the conduct of the party who owed that standard fell below the level of that duty, then it may found a claim in negligence.

Consumer Protection Act (CPA)

6.4 Part I of the CPA imposes strict liability on "producers" and certain others for damage caused by a defective "product". A claimant need not prove fault, only that the product was "defective" and caused damage of a kind recoverable under the CPA. Whether the produce was "defective" is to be assessed against the safety which "the public is entitled to expect", having regard to all the circumstances, including warnings and instructions.

6.5 In principle, this applies to AVs (and their components) in the same way as for other machinery and equipment. The CPA remains

technology-neutral and therefore to some extent capable of addressing defects arising from hardware, software, or integration.

6.6 That said, as identified by a EU Commission assessment of the Product Liability Directive (which the CPA implements into GB law), the law was designed in the 1980s to address harm caused physical products, and not products which digital or have digital integrations or which depend on data and connectivity to perform non-defectively. It is further unclear to what extent terms like "product", "producer", "defect" and "damage" can be applied to data, software, automated decision-making and/or harms resulting from them going wrong. These perceived 'gaps' in the legislation are why the EU has reformed the Product Liability Directive. However, post-Brexit UK law now appears set to diverge from that reformed EU law (see below).

6.7 Defences under the CPA are also worth consideration, in particular because of how their viability may change over time, either as the CPA changes (if updated to align with EU law, see below) and/or due to changes in 'state of the art' and differences between the on/off road AV regimes. In particular:

(a) It is a potential defence to show that the defect could not expect to have been discoverable given accessible scientific and technical knowledge at the time the product was supplied[59]. This defence (commonly referred to as the 'state of the art' defence) rationally becomes less viable as available bodies of evidence on AVs (and their components) develops. This might mean that whilst this defence was more viable for earlier pioneers of these technologies, it will be increasingly less so.

(b) It is a potential requirement to share that a mandatory legal requirement compelled the characteristic that gives rise to the defect[60]. This is a narrow defence in the sense that it is not enough to show the ensuring conformity with non-binding general standards or industry guidance compelled that characteristic; the law must have left the manufacturer no discretion on the point. There is the potential that, in the near term, this defence might become available to 'on road' AVs in a way that is not available for 'off road' AVs. This might occur if 'on road' AVs become subject to a 'type approval regime' (see Section 10 below) which compels compliance with certain standards; insofar as compliance with those standards then creates a defect (e.g. in the interaction with other components) then this defence may become available. Contrastingly it would not be available to 'off road' AVs which were not subject to the 'type approval' regime, even if they were applying the standards, insofar as they were doing so voluntarily (which might still be sensible for a number of reasons) rather than because they were compelled to do so to achieve 'type approval'.

Note: This may be the reason why (as a matter of public policy) much of automotive safety is channelled through 'type approval' in the first place: it provides a regulatory benchmark against which products are measured and deemed 'sufficiently safe', and compliance with mandatory requirements needed to achieve 'type approval' can be a defence under the CPA.

Machinery Safety Regulations and 'Designated Standards'

6.8 We consider that AVs are likely to constitute "machinery" for the purposes of the Machinery Safety Regulations. As such, this will trigger compliance with certain essential health and safety requirements (EHSRs, which include risk assessment61), conformity assessment, 'technical file' documentation, and appropriate conformity marking when first placed on the market or put into service anywhere in Great Britian.

6.9 For the purposes of the Machinery Safety Regulations, the Government maintains a 'living list' of "designated standards" for machinery which, when applied, confer a presumption of conformity with relevant essential requirements under the Regulations.[62] However, if the designated standard does not specifically cover the machine type and for essential requirements not fully covered by the designated standard then the responsible person will need to do further conformity assessment

(a) While standards remain voluntary, in practice we understand adherence to designated standards

to prove conformity is the principal way to demonstrate compliance, *where the option of adherence to such a 'designated' standard is available* (whether for the entire product or only for certain components within it, i.e. the products within the product).

(b) It may be that, in time, this 'designated standard' list comes to include further EN ISO standards which are specific to automated technologies. This might provide comfort to manufacturers (and other 'responsible persons') that their AVs (and components within them) were sufficiently safe 'as a product'[63].

(c) Even at present some of this standards are of general application to machines include AVs, such as '*EN ISO 12100:2010 - Safety of machinery - General principles for design - Risk assessment and risk reduction*', although we have heard from at least one AV-related entity whom we interviewed for this instruction, that EN ISO 12100 is, in places, difficult to apply to CAM deployments.

Reforms to EU law

6.10 Currently, within the European Union (of which Great Britian is no longer a part) key legislation on product liability in a business-to-business context is the **Product Liability Directive (85/374/EEC)**. As a Directive, it needs to be implemented into domestical law by EU Member States. It is this Directive which the UK implemented into UK law in the Consumer Protection Act 1987 (CPA). Therefore, currently UK law is harmonised with EU law on this aspect. However, this is about to change.

6.11 The new **Revised Product Liability Directive (EU/2024/2853)** will apply in the EU from 9 December 2026 (the "**New PLD**"). The New PLD attempts to update product liability in light of the deficiencies identified by the Commission (see 6.5 above). The New PLD provides that:

(a) Operating systems, AI systems and any digital services required for a product to function all fall within the scope of the Directive;

(b) Developers and providers of software or digital services that influence how a product operates may be held liable for damage caused by a defective product;

(c) Manufacturers may also be liable if harm arises from post-market changes to a product, including those introduced through software updates under the manufacturer's control, failure to address cybersecurity vulnerabilities, and defects in machine learning; and,

(d) defects arising from the way components interconnect or communicate with each other can also amount to a 'defect'.[64]

6.12 In July 2024, the EU published the **Artificial Intelligence Act (EU) 2024/1689 (EU AI Act)**. Some of the Act is already in force (in the EU) with further provisions coming into effect later.[65] Much of the EU AI Act concerns so-called 'high-risk' systems, which are systems which present significant potential harm to health, safety, fundamental rights, environment, democracy and the rule of law, and may well therefore encompass certain types of machinery. High-risk systems are subject to enhanced obligations (including, for example, in relation to the use of training, validation and testing data sets that meet stipulated quality criteria; record keeping; and cyber-security).

6.13 Further still, in 20 January 2027, the new **EU Machinery *Regulation* (EU 2023/1230)** will replace the existing 2006 EU Machinery *Directive*. The latter is what is transposed into UK law by the Machinery Safety Regulations. So the reasons identified by the EU Commission which necessitated the new EU Machinery Regulation may be seen as reflecting current deficiencies in the UK's Machinery Safety Regulations. Key things which the EU Machinery Regulation seek to cover include:

(a) potential risks that originate from direct human-robot collaboration, in particular the increased use of robots that are designed to work alongside human workers;

(b) machinery that is connected and/or autonomous, including specifically driverless machines;

(c) Adding machines with embedded AI to the list of "high risk" machinery;

(d) Adding in provisions relating to cyber-security in particular: (i) a new essential H&S requirement (EHSR) requirement for "Protection against corruption" and an extension to the safety and reliability of control systems is amended to require

that such systems are designed and constructed to withstand unintended external influences, including reasonably foreseeable malicious attempts from third parties leading to a hazardous situation.

(e) When machinery is "substantially modified", the person that modifies the machinery becomes the manufacturer and must comply with the relevant obligations imposed on manufacturers.

6.14 As the New PLD, new EU Machinery Regulation and EU AI Act are EU laws they are largely beyond the scope of this note. However:

(a) we suspect that many manufacturers of AVs or AV components will be keen not to foreclose their options to selling into EU Member States' markets.

(b) Further, in respect of components which are CE marked, UK law recognises CE[66] (which practically means goods place on the market in the UK may have either a UKCA mark or a CE mark), whereas the EU does not recognise the equivalence of UKCA marking.

(c) It may also be the case (although we have not accessed it for the purposes of this note) that compliance with the New PLD would also be effective to ensure compliance with the UK CPA, such that manufacturers will look to comply with the higher standard and therefore meet both.

(d) In any event, the Government's announcement of 25 February 2026 (see below) suggest that UK law in respect of Machinery Safety will be brought into very substantive alignment (although cannot *entirely* replicate, as explained in the quote above) with EU Machinery Regulation, including the provisions aimed at providing for the safety of connected and autonomous vehicles and use of AI. Even though key aspects of the EU Machinery Regulation does not come into force until January 2027, we expect that manufacturers (and distributors, importers so far as relevance) will move towards advanced compliance with these requirements (e.g. the new cyber-security EHSRs)

Reforms to UK law

6.15 In light of the above, UK CPA law is set to diverge from EU law. However, the Law Commission has announced a review of the law relating to liability for defective products, which expressly recognises the outdated nature of Part 1 of the CPA and that "There are concerns that the product liability regime has not kept pace with … developments" such as digital technology. In December 2025, the Commission published its Terms of Reference[67] which note that the CPA is "no longer fit for purpose, in part due to technological progress since its inception, including, but not limited to, artificial intelligence (AI)". It has since stated that "We will have a formal public consultation on our proposals for reform, currently planned for the second half of 2026".[68] Reform is coming, therefore, but will be slow to arrive.[69]

6.16 In respect of AI law (but acknowledging that not all AVs use AI), the UK government has consistently said that it would adopt a pro-innovation and business-friendly approach to regulating AI. There is currently no AI-specific legislation in the UK.

6.17 On 25 February 2026, in apparent recognition of the deficiencies in the UK's current Machinery Safety Regulations, in particular if they are to become unaligned with equivalent EU law, the UK Government announced that:

For NI, implementation of the EU Regulation under the Windsor Framework requires legislation to be laid in Parliament by October 2026, in line with the EU deadline for enforcement provisions. // The Government intends to lay legislation to continue CE recognition for machinery products in GB when Parliamentary time allows. In addition, we will update the Supply of Machinery (Safety) Regulations 2008 as they apply in GB to introduce similar measures to the EU, and therefore NI, into GB legislation. In line with stakeholder viewpoints, we will ensure these GB changes are compatible with EU requirements. However, full replication or 'alignment' is not possible as any legal text introduced in GB must be tailored to national requirements, such as omitting references to EU reporting requirements, institutions and language, as well as providing for conformity assessment by UK recognised conformity assessment bodies and the UK conformity marking (UKCA).[70]

Other product safety laws

6.18 Although largely beyond the scope of this note, we note that the CPA and Machinery Safety Regulations are not the only applicable 'product safety' laws and that there are many other regulations (and an even larger body of 'Standards') which may apply depending on the particular product, or component within the product, and use case.

Electrical Equipment (Safety) Regulations 2016[71]

6.19 The Electrical Equipment (Safety) Regulations 2016 set the safety requirements that electrical equipment must meet before being placed on the GB market. They apply to workplace electrical equipment operating between 50–1,000 V AC and 75–1,500 V DC. For AVs, this may include electrical sub-systems and charging or auxiliary equipment within those voltage ranges. The legislation requires products to meet the principal safety objectives in Schedule 1, which require equipment to be safely designed, properly assembled, marked with essential characteristics, and protected against electrical and non-electrical hazards. The Regulations also require equipment to withstand the expected mechanical and environmental conditions in which it will be used. This may be an important consideration for AVs operating in ports, factories or airport settings where weather exposure, and heavy-duty use may arise.

6.20 Before placing electrical equipment on the GB market, manufacturers must design and manufacture it in accordance with the principal elements of the safety objectives set out in Schedule 1, draw up technical documentation, decide which conformity assessment marking (UKCA, CE or CE + UKNI) will be used, carry out the relevant conformity assessment procedure, draw up the applicable declaration of conformity, and affix the relevant conformity marking visibly and indelibly. They must also label the equipment appropriately, provide clear English language instructions, maintain procedures for ensuring that series production remains compliant, and undertake sample testing and investigations where appropriate. Manufacturers must act where they have reason to believe equipment is non-conforming by bringing it into conformity, withdrawing it or recalling it, and must inform the market surveillance authority (MSA) where the equipment presents a risk.

6.21 Distributors (meaning anyone other than the manufacturer or importer who makes equipment available on the GB market) must act with due care to ensure equipment conforms to the principal safety objectives and that the Regulations' obligations have been met. Before making equipment available, a distributor must verify the presence of the relevant conformity assessment marking, that required instructions and safety information accompany the product, and that manufacturer and importer labelling obligations have been met. If equipment is suspected to be non-conforming, distributors must not supply it until brought into conformity, and must ensure corrective action, withdrawal or recall, as appropriate. Where the equipment presents a risk, they must inform the MSA with details of the non-conformity and any corrective action taken. Distributors must also cooperate with and provide information to enforcing authorities.

6.22 In very simplified summary of a more complex regulatory position, for workplace equipment, the HSE enforces the Regulations and specific product supply Notices require compliance, withdrawal from the market, and recall where provided by product supply law. The regulatory position here is complex; consider specialist advice.

Radio Equipment Regulations 2017

6.23 The Radio Equipment Regulations 2017 apply to radio equipment placed on the GB market. Products must meet the essential requirements by ensuring a high level of safety for persons, domestic animals and property, achieving an adequate level of electromagnetic compatibility, and operating in a way that promotes efficient use of the radio spectrum. These Regulations apply to most radio equipment unless covered by other specific UK legislation. Save as provided for in regulation 6(1)(a) (which includes the objectives with respect to safety

requirements set out in the Electrical Equipment (Safety) Regulations 2016), radio equipment within scope is not subject to the Electrical Equipment (Safety) Regulations 2016. For AVs, which typically integrate multiple radio-based systems for navigation and communications, this means that any embedded radio components must be designed to protect the health and safety of people and property, avoid harmful interference, and operate effectively within the radio spectrum.

6.24 A manufacturer is a person who manufactures or designs radio equipment and markets that product under their name or trademark. Before placing radio equipment on the GB market, manufacturers must ensure it is designed and manufactured in accordance with the essential requirements, that it can operate without infringing applicable radio spectrum use requirements, decide which conformity assessment marking will be used, draw up technical documentation, and ensure that the relevant conformity assessment procedure is carried out. They must also draw up the appropriate declaration of conformity, affix the relevant marking, keep required documentation for 10 years, label the product appropriately, provide English language instructions and information on any restrictions or authorisation requirements, ensure series production remains compliant, undertake sample testing and complaint investigation where appropriate, maintain a 10 year register of relevant issues, take corrective action where non conformities arise (including notifying the MSA where risks are presented), and cooperate with enforcement authorities.

6.25 Distributors (meaning any person other than the manufacturer or importer who makes radio equipment available on the UK market) must act with due care to ensure conformity with the Regulations, and before supply must verify that the equipment bears the relevant conformity assessment marking, is accompanied by required documents, instructions and safety information in easily understandable English, and that manufacturer and importer labelling and information duties have been met. They must not supply equipment believed to be non-conforming, and where non-conformity is identified for equipment already supplied must ensure corrective measures, withdrawal or recall. Where a risk is presented, they must immediately inform the market surveillance authority with details of the non-conformity and corrective action. Distributors are also responsible for ensuring that, while radio equipment is under their responsibility, storage and transport conditions do not compromise conformity with the essential health and safety requirements, and they must cooperate with and provide information to enforcement authorities.

6.26 The enforcing authority for radio equipment, in relation to protection and management of the radio spectrum is OFCOM, and for other aspects, including safety, it is Trading Standards. They will take all appropriate measures to withdraw, prohibit and/or restrict the supply of products which may endanger the health and safety of persons, property or the environment.

Automated Vehicles Act 2024 (AVA2024)

6.27 As examined in greater detail in Section 10 below, the AVA2024 establishes (although not yet in force) a safety and liability framework for the use of "authorised" automated vehicles "*on roads and in other public places*". Although it does not displace the product liability position for off-road machinery, there may be reasons to seek to adhere to it or contour it so far as can be achieved in an 'off road' context.

7. The health & safety regime /

7.1 The Health and Safety at Work Act, etc 1974 ("HSWA") and regulations made under it create a very broad regime, imposing general duties which include in particular:

(a) on employers to ensure "so far as is reasonably practicable" ('SFAIRP' also expressed as 'ALARP'[72]) the health, safety and wellbeing of employees at work; and
(b) on employers and the self-employed "so far as is reasonably practicable" to any non-employees that might be affected by their 'undertaking' (which includes member of the public, contractors or visitors).

7.2 The scope of HSWA and its duties are therefore of key importance to any proposed use case for automated vehicles in a workplace context.

7.3 Regulations made under the Act often provide some more detail and/or greater prescription noting that HSE legislation is usually 'goal setting' as to the health & safety outcome to be achieved, rather than prescriptive about how it is to be achieved. In this respect, Regulations often set out duties that apply in more specific contexts (see Appendix 1 and Appendix 2).

7.4 Breaches of these health & safety duties amount to criminal offences. Breaches do not require that health / safety risks have resulted in any injuries or damage. It is sufficient that the accused has failed to reduce the risk 'so far as is reasonably practicable' (SFAIRP) / 'to as low as reasonably practicable' (ALARP) or the relevant standard (noting, as noted elsewhere in this document, not all H&S duties are based on SFAIRP/ ALARP). The existence of the insufficiently mitigated risk may be[76] sufficient grounds for a prosecution or other non-prosecution enforcement action available to the regulator.

7.5 Notably, there is a 'reverse burden of proof' for those accused of such safety breaches. It is for those accused to prove (as the case may be) that it was not practicable or not reasonably practicable to do more than was in fact done to satisfy the duty or requirement, or that there was no better practicable means than was in fact used to satisfy the duty or requirement. In other words, an accused has to prove on the balance of probabilities that it was not reasonably practicable to do more than was in fact done.

7.6 In respect of 'off road' deployment of AVs, the general framework of HSWA and the operation of its general duties may be viewed as either a benefit or a particular difficulty, including for the following reasons:

(a) The HSWA regime is essentially outputs based. The HSE often prefer to refer to this as 'goal setting' - i.e. these provisions set the goal of safety so far as is reasonably practicable , but without prescribing the route to achieve this - to show that risk has been reduced to as low as reasonably practicable;
(b) Certain regulations under HSWA provide frameworks for seeking to achieve this, which in this context includes in particular the Management of Health and Safety at Work Regulations 1999, Workplace (Health, Safety and Welfare) Regulations 1992, and Provision and Use of Work Equipment Regulations 1998;
(c) Taking these altogether, fundamentally a duty holder is required to be able to demonstrate (both on paper and in terms of its application in practice) that they have:

(i) adequately assessed safety risk, including the identification of mitigations to reduce risk;
(ii) implemented safe systems of work, which include implementing those proposed mitigations in practical reality; and
(iii) put in place safety management systems (the form, formality, and content of which may be prescribed to a greater or lesser degree depending on the activities in question) to ensure the continuous management of risk, which includes application of the risk management cycle[77].

(d) A combination of applicable regulations, ACOPs, guidance and standards can be used to generate risk analysis, policies and

procedures to achieve the above (and evidence that it has been achieved). But fundamentally it remains the obligation of the dutyholder to show that risks have been reduced to the ALARP/SFAIRP standard;

(e) In areas of novel or evolving technology, and perhaps particularly where it is being deployed into a dynamic context (and potentially one it has not previously been deployed) there are particular risks around a lack of standards and guidance to inform thinking, as well as a risk that thinking from first principles might be faulty or contain gaps. It is not infrequently the case that HWSA prosecutions arise from an issue where the dutyholder has failed to identify a particular angle of risk (or alternatively might have done so but failed to consider particularly useful mitigations) and has therefore failed to reduce risk to the ALARP/SFAIRP standard;

(f) The flipside, and a particular potential benefit, of this regime is its flexibility due to its outcomes focussed nature. This means it should be sufficiently flexible to be complied with in new technologies and/or in new deployment contexts. As a result, for simple and/or low risk deployments, a dutyholder may have a greater degree of confidence that it: has achieved each of 7.6(c)(i) to (iii) above; has all its paperwork and practices aligned; and can therefore proceed with the deployment.

(g) Conversely, for more complex and/or higher risk projects there is much greater potential for difficulty and a 'grey area' where the dutyholder has to work much harder to seek to establish and implement each of 7.6(c)(i) to (iii) above, and may still be left with the possibility that it has not fully complied (the prospects of which may only become apparent following a harm which spotlights a failure).

7.7 As further explored below (see section 8), this can be contrasted with the 'on road' regime, where 'sufficient safety' to be permitted to operate on the road can be assured by compliance with AVA2024 and the proposed 'type approval' regime. The difference between these two regimes is not necessarily 'a bad thing'. The policy drivers and context for the separate regimes are different. In particular the HSWA regime is flexible so that it can shape itself to specific deployment contexts – from the transport of high hazard materials in a highly dynamic port, to the stacking of shelves in factory, to the work of desk-based office workers – whilst the 'on road' AVA2024 / proposed 'type approval' regime is aimed at public and passenger safety when on public roads or other public places. However, without measures to assist HWSA dutyholders navigate their obligations (e.g. via guidance), potentially coupled with greater regulatory assistance and/or a sympathetic application of a so-called 'proportionate approach to regulation it is possible to see why dutyholders in an 'offroad' context may feel they face greater legal risk exposure.

7.8 As noted above, in addition to HSWA, the following Regulations are of particular foundational importance:

(a) **The Management of Health and Safety at Work Regulations 1999,** which creates the risk based safety management framework requiring employers to, in particular: assess risks (Reg. 3), plan and organise preventive measures (Regs. 4–5), appoint competent persons (Reg. 7), provide information and training (Regs. 10 & 13), prepare for emergencies (Reg. 8), and consider certain vulnerable groups (Regs. 16–19).

(b) **The Workplace (Health, Safety and Welfare) Regulations 1992:** which build on the HSWA ALARP duties and are designed to protect everyone in the workplace. In particular, they apply to the 'controller(s)' of a premise in accordance with the extent of their control of that premises. These Regulations and the associated ACOP[78] are particularly important to CAM deployment because they prescribe binding rules or in some parts of the ACOP provide suitable means to ensure compliance in relation to: (i) private roads and pedestrian walkways, which will be of relevance in considering how workers interact with AVs as they move around the workplace; and (ii) conditions of the workplace itself, which will be of relevance for example to those who will operate or supervise AVs

(c) **Provision and Use of Work Equipment Regulations 1998** which place duties on entities who own, operate or have control over work equipment, and is therefore applicable to CAMs

used as work equipment, requiring (for example) that it is maintained in a safe condition, and is used only by people who have received adequate information, instruction and training.

7.9 Given the central importance of these three, they are explored in greater detail in Appendix 1 below. However, they are part of a longer list of potentially (and in some cases certainty) applicable regulations made under HSWA. To assist in understanding the 'most applicable' we have provided a 'H&S Guidance' (Appendix 2). However, for the purposes of this document we note that they include:

7.10 There is also an important overarching point about potentially imminent changes to the application of the requirement to reduce risk to as low as reasonably practicable which sits are the core of the H&S regime.

Table 2: Most applicable H&S regulations

Regulation (SI)	What it covers
Highly likely to be applicable in all cases	
Management of Health and Safety at Work Regulations 1999	Core risk-management duties: suitable and sufficient risk assessment, preventive and protective measures, competent assistance, arrangements, co-operation/coordination, information, instruction, training and health surveillance.
Workplace (Health, Safety and Welfare) Regulations 1992	Baseline physical conditions for most workplaces what is suitable and sufficient (ventilation, temperature, lighting, cleanliness, traffic routes, sanitary conveniences, etc.).
Provision and Use of Work Equipment Regulations 1998 (PUWER)	Safe selection, guarding, maintenance, inspection and use of work equipment; user information, instruction and training. There is an absolute duty to ensure workers are not exposed to danger from moving parts.
Likely to be applicable to many deployments	
Health and Safety (Consultation with Employees) Regulations 1996 & 1977	Statutory consultation routes with employees (non-union and unionised settings respectively), including appointment/ functions of safety reps and safety committees.
Health and Safety (Safety Signs and Signals) Regulations 1996	Use of safety signs, signals, audible/illuminated indicators and hand signals to mitigate residual risks.
Likely to be applicable depending on type of AV deployment	
Health and Safety (Display Screen Equipment) Regulations 1992	Risk assessment and control for Display Screen Equipment (DSE) work (workstation set-up, breaks, eye/ eyesight tests, information and training).
Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)	Planning, supervision and safe execution of lifting operations; suitability thorough "thorough examination" of lifting equipment at prescribed intervals, in addition to planning by a competent person and adequate supervision.
Worth consideration as potentially applicable to certain work activities	
Personal Protective Equipment at Work Regulations (as amended 2022)	Duty to provide suitable PPE; compatibility, maintenance and training on PPE; employees must use PPE as instructed.
Manual Handling Operations Regulations 1992	Avoid, assess and reduce risks from manual handling of loads; information, training and control measures.
Electricity at Work Regulations 1989	Electrical systems and equipment safety: construction, maintenance, isolation, competence and precautions to prevent danger.
Confined Spaces Regulations 1997	Avoid entry where possible; if unavoidable, assess risks and implement safe systems, permits-to-work, rescue arrangements.
Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR)	Specifies what work-related injuries, diseases and dangerous occurrences must be notified to the enforcing authority and recorded.
Depending on particularly dangerous / hazardous nature of activities on site, proximate or involved	
Control of Substances Hazardous to Health Regulations 2002 (COSHH)	*Risk assessment and control of exposure to hazardous substances (including carcinogens/biological agents), with monitoring, health surveillance and information duties.*
Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR)	*Risk assessment/controls for fire, explosion and similar energy-release risks from dangerous substances; ATEX zoning and equipment selection interface.*
Control of Major Accident Hazards Regulations 2015 (COMAH)	*Preventing and limiting consequences of major accidents involving dangerous substances; safety management systems, safety reports and emergency planning for lower/upper-tier sites.*

Keeping an eye out for potential future changes to the interpretation of ALARP

- The interpretation of the obligation to reduce risks "as low as is reasonably practicable" (ALARP) so far as H&S law goes rests in particular on the following exposition of the principle (emphasis added):

  "'Reasonably practicable' is a narrower term than 'physically possible' and seems to me to imply that a computation must be made by the owner in which the quantum of risk is placed on one scale and the sacrifice involved in the measures necessary for averting the risk (whether in money, time or trouble) is placed in the other, and that, if it be shown that there is a ***gross disproportion*** *between them - the risk being insignificant in relation to the sacrifice - the defendants discharge the onus on them."* (Edwards v National Coal Board [1949])

- Consequently, demonstrating compliance is in particular dependent on an understanding of risks, the available counteracting measures, the relative cost of those measures (in time, money and effort) and cost-benefit calculation between them. The difference between: [1] what is merely 'disproportionate' and [2] what is 'grossly disproportionate', is not defined but is linked to the level of perceived risk and societal level risk of the activity

- The recommendations of the 2025 Fingleton Report include that: "*Government should propose secondary legislation under section 50 of HSWA which clarifies the law. The test should* ***not*** *be whether a measure is* ***grossly disproportionate,*** *but instead what is* ***proportionate*** *taking into account a multi-faceted consideration of the level of risk*" (see pages 60-61 of the Report). Those pages of the Report provide a potential test, and relevant factors to be considered, when determining what is 'proportionate' and therefore meeting the ALARP standard.

- The Prime Minister's 'Britian Built for All' speech on 1 December 2026 signalled that this was going to result in reforms beyond nuclear[79]: Prime Minister's speech on Britain built for all: 1 December 2025 - GOV.UK that "*in addition to accepting the Fingleton recommendations I am asking the Business Secretary to apply these lessons across the entire industrial strategy*" and in November 2026's Budget Speech it was suggested that within three months the Government would set out its plan for implementing this change. In the meantime, a 'soft' transition has already been signalled, for example in the implementation of the 'Nuclear industry: principles to guide the application of ALARP' in November 2025[80] by the Office for Nuclear Regulation, and its press statement 'Government, regulators and industry unite on new efficient regulatory principles' (11 February 2026[81]), which expressly contemplate the use of (mere) proportionality when "achieving a consensus as to when 'enough evidence is enough'."

  This is a developing area and those reading this guidance should be aware that this issue may (or may not) have been subject to further clarification by the time of their review. As may be apparent from the text above, much of the debate to date has been focussed on the context of nuclear regulation, and wider applicability beyond nuclear is under less active discussion presently.

8. Relevance of approved codes of practice (ACOPS) /

8.1 Not directly enforceable by anyone against anyone but they do have a special legal status under **Section 16 HSWA**, the effect of which the HSE describes in the following way:

8.2 *"Each ACoP is approved by the Health and Safety Executive, with the consent of the Secretary of State. It gives practical advice on how to comply with the law. If you follow the advice you will be doing enough to comply with the law in respect of those specific matters on which the Code gives advice.* ***You may use alternative methods*** *to those set out in the Code in order to comply with the law. However, the Code has a special legal status. If you are* ***prosecuted*** *for breach of health and safety law, and it is* ***proved*** *that you did not follow the relevant provisions of the Code,* ***you will need to show that you have complied with the law in some other way*** *or a Court will find you at fault."* [emphasis added]

8.3 Following the 'ACOPed parts[82]' of an ACoP is effectively, therefore a 'safeharbour' in showing you have met your legal H&S duties. However, many of these ACoPs were written without specific contemplation of any role for AVs and it may not be possible, therefore, to apply them in all places. Where that is not possible (or possibly even if it is possibly but the duty holder can perceive of an alternative means of compliance), the duty holder must find some other means of achieving (and also showing / evidencing in case of regulatory investigation) that the relevant risk has been mitigated to ALARP.

8.4 Not every set of health and safety regulations has an accompanying ACoP. Those which seem most relevant to a CAM deployment on any private land (including an airport, port, or factory) are:

Table 3: H&S Approved Codes of Practice (ACoP) relevant to CAM

Ref	Title	Edition / Year	Key Regulations / Duties Covered
L5	Control of Substances Hazardous to Health	6th edition(2013)	Control of Substances Hazardous to Health Regulations 2002 (COSHH)
L22	Safe Use of Work Equipment	4th edition (2014)	Provision and Use of Work Equipment Regulations 1998 (PUWER)
L24	Workplace Health, Safety and Welfare	2nd edition (2013)	Workplace (Health, Safety and Welfare)Regulations 1992
L101	Safe Work in Confined Spaces	3rd edition (2014)	Confined Spaces Regulations 1997
L113	Safe Use of Lifting Equipment	2nd edition (2014)	Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)
L117	Rider-Operated Lift Trucks: Operator Training+ Safe Use	3rd edition (2013)	HSWA Sections 2 and 3; PUWER 1998
L122	Safety of Pressure Systems	2ndedition (2014)	Pressure Systems Safety Regulations 2000
L146	Consulting Workers on Health and Safety	1st edition (2012)	Safety Representatives Regs 1977 and 1996
L148	Safety in Docks	1st edition (2014)	HSWA S2 to 4 (and the new withdrawn Docks Regulations 1988
L155	Dangerous Goods in Harbour Areas	1st edition (2016)	Dangerous Goods in Harbour Areas Regulations 2016

Note: This is not a complete list of ACOPs. Some ACOPs are not listed which might be relevant depending on the specific activity being undertaken. Some of those listed below would only be relevant if the AV operated in a particular area or way (e.g. L5, L101, L122)

9. The relevance of 'standards' and application of the 'on road' standards and guidance by analogy /

9.1 This contrasts with the position for automated 'road' vehicles where there is a relative lack of general guidance as to deployment of AVs on private land. In the circumstances, those deploying automated vehicles on private land nevertheless should also consider the emerging guidance and regulation on automated road vehicles (e.g. BSI CAV standards suite)[83] notwithstanding the different context.

Particularly 'on point' guidance and standards

9.2 Particularly 'on point' guidance and standards in respect of the deployment of AVs in "off road" settings are:

- HSE, Workplace transport safety A brief guide – May 2013[84]
- HSE, A guide to workplace transport safety – September 2014[85]
- DfT/CCAV, Code of Practice: automated vehicle trialling – 30 November 2023[86]
- TRL/CCAV, Off-Highway Automated Vehicles Code of Practice – 2021[87]
- HSE, Vehicle safety webpage index[88]
- HSE, Gap analysis on Review of key machinery safety standards and guidance, and how they reflect on emerging technologies – 2024[89]

Note: HSE often reviews its guidance and standards, so keep an eye out for future consultations and changes.

HSE / MCA / PS&S Port specific guidance

There is no port-specific guidance on autonomous vehicles but there is a range of guidance relating to health and safety assessment and management in various fields which directly concern or overlap with AV operations. A combination of the Health & Safety Executive (HSE), Maritime & Coastguard Agency (MCA) and Port Skills & Safety (PS&S), sometimes co-branded, issue guidance on specific aspects of safety and operations at ports.

- HSE, 'Managing health and safety in Dockwork (Guidance)' – 2002[90]
- Maritime & Coastguard Agency (MCA), 'Guide to good practice on port and marine facilities' – 5 April 2025[91]
- Port Skills & Safety (PS&S), 'SIP 000: Guidance Framework – January 2024[92]
- PS&S / HSE, 'SIP 001: Guidance on Port and Terminal Planning (Workplace Transport)' – 14 November 2023[93]
- PS&S / HSE, SIP 002: General Cargo – 22 April 2025[94]
- PS&S / HSE, SIP 003: Container Handling – 3 June 2025[95]
- PS&S / HSE, 'SIP 010: Guidance on Ro-Ro and Sto-Ro Operations' – 7 November 2023[96] (at least insofar as Ro-Ro or Sto-Ro[97] being used for cargo transport)
- PS&S / HSE, 'SIP 014: Guidance on Safe Access and Egress – September 2019[98]
- International Labour Organization (ILO), 'Safety and health in ports. ILO code of practice' – 2005[99]

Note: there are many other PS&S guidance documents relating to specific issues such as the 'transport of dangerous goods' or the 'storage of dry bulk cargo' and 'emergency planning at ports' which may be relevant depending on particular operations. It is understood from HSE that 'Port skills and safety' workplan for 2026-2027 includes the creation of new guidance on emerging technologies including autonomous and electric vehicles.

CAA Airport specific guidance

There is no airport-specific guidance on autonomous vehicles but there is a range oF guidance relating to health and safety assessment and management in various fields which directly concern or overlap with AV Operations. Civil Aviation Publications (CAPs) provide what the UK Civil Aviation Authority (CAA) calls "authoritative guidance, standards and regulatory information for the aviation industry". The CAA also state that "Each CAP sets out the intent of its content and its legal status".

At the very least, in most places a CAP sets out the CAA's expectation of what it considers to be 'good practice' and, noting that this comes from a UK regulator, therefore has some status. In some cases, a CAP may be legally binding insofar as it sets out conditions that the CAA will require to be satisfied to exercise its discretion (e.g., in respect of licensing conditions set out in CAP 168).

Examples of particularly relevant CAP documents include:

- CAA, CAP 168: Licensing of Aerodromes – 2 December 2025[100]
- CAA, CAP 2156a: Airspace change masterplan – CAA acceptance criteria – June 2024[101]
- CAA, CAP 2156b: Airspace change masterplan – assessment framework – June 2024[102]
- CAA, CAP 642: Airside Safety Management – 9 November 2018[103]
- CAA, CAP 760: Guidance on the Conduct of Hazard Identification, Risk Assessment and the Production of Safety Cases: For Aerodrome Operators and Air Traffic Service Providers – 10 December 2010[104]
- CAA, CAP 790: Requirement for an Airside Driving Permit (ADP) Scheme – 29 February 2012[105]
- CAA, CAP 1721: Alternative means of compliance – 19 June 2025[106]
- CAA, CAP 2970: Building Trust in AI: 5 Principles for AI and Autonomy – CAA – 7 March 2024[107]
- CAA, CAP 3064: CAA's Response to Emerging AI-Enabled Automation - CAA - 3 December 2024[108]
- CAA, CAP 14841: CAA/HSE/HSENI Memorandum of Understanding guidance – 9 March 2017[109]

HSE - Health & Safety Specific Guidance

9.3 The HSE issues a range on guidance relating to health and safety assessment and management in various fields which directly concern or overlap with AV Operations:

- HSE, Managing for health and safety (3rd edition) – 2013[110]
- HSE, Safety in the remote diagnosis of manufacturing plant and equipment – 1995[111]
- HSE, Warehousing and storage A guide to health and safety (2nd edition) – 2007[112]
- HSE, PUWER 1998: Provision and Use of Work Equipment Regulations 1998 – 2008[113]
- HSE, Guidance on permit-to-work systems - 2005[114]
- HSE, Managing contractors: A guide for employers (2nd edition) – 2011[115]

Note: there are many other HSE guidance documents relating to specific issues such as the 'storage of flammable liquids in containers', 'maintaining portable electrical equipment', or 'chemical warehousing: the storage of packaged dangerous substances' which may be relevant depending on the particular operations of the relevant port and the intended operations and interfaces of the AV.

PAS / ISO / EN and other 'Standards'

9.4 ISO and BS EN standards are not, as a rule, directly legally binding in the UK. In the mainstream product safety framework they are voluntary "designated standards" which, if followed, give a rebuttable presumption that the product meets the relevant statutory "essential requirements" (they do not replace those legal requirements, and manufacturers remain responsible for compliance).

9.5 That said, a standard could become legally binding where a statute or statutory instrument expressly "calls up" a specific standard (for example, by mandating a particular test method or specification), thereby incorporating it by reference. An example is the Road Vehicles (Display of Registration Marks) Regulations 2001 specifically requires number laces to conform to the "British Standard specification for retroreflecting number plates published on 28th February 2018 under number BS AU 145e". We have not, for the purposes of this work, sought to identify any specifically CAM-relevant incorporations of standards into law.

9.6 In areas where there is an absence of data on which to find alternative assessment routes for compliance, it is understandable that organisations would seek to follow such standards as a way of obtaining some comfort that they are meeting relevant legal requirements.

9.7 *Note: For the purposes of this work, we have not purchased these standards in order to read them but have instead collated them using references to them from other sources and/or reviewing the 'preview' pages of these standards.*

Definitions:

PAS is a Publicly Available Specification. It is a fast-track standard developed and published by the British Standards Institution (BSI). It is often the precursor to a formal BS, EN or ISO standard
ISO is the International Organization for Standardization, a global standards body.
SAE is the body formerly called the Society of Automotive Engineers, a US-based professional association that develops mobility/automotive technical standards.
BSI Flex is a process which enables a standard to be rapidly developed, on an iterative basis, in order to fulfil an immediate stakeholder need. A BSI Flex can be considered for further development as a PAS or British Standard
BS EN IEC effectively suggests a full alignment between global, European and British standards on a particular issue because BS means British Standard; EN means European Norm approved in the EU by CEN; IEC means International Electrotechnical Commission (a globally recognised body)

- PAS 1881 (2022) - Assuring the Operational Safety of Automated Vehicles - BSI & CCAV - effective April 2022
- PAS 1881 2026 [draft] - Assuring the Operational Safety of Automated Vehicles - BSI & CCAV - DRAFT
- PAS 1882 (2021) - Data for Automated Vehicle Trials Incident Investigation - BSI & CCAV - effective March 2021
- PAS 1883 (2020) - Operational Design Domain (ODD) taxonomy for an automated driving system (ADS) – Specification - effective August 2020
- PAS 1884 (2021) - Safety operators in automated vehicle testing and trialling – Guide - effective November 2021
- PAS 1885, The fundamental principles of automotive cyber security – Specification
- Cyber Security for Industrial Automation and Control Systems (IACS) - 2018
- ISO/SAE 21434 (2021) - Road vehicles - Cybersecurity engineering
- ISO 12100 (2010) - Safety of machinery — General principles for design — Risk assessment and risk reduction
- ISO 10218 - Part 1 (2025) Robotics Safety requirements — Part 1: Industrial robots
- ISO 10218 - Part 2 (2025) Robotics Safety requirements — Part 2: Industrial robot applications and robot cells
- ISO 3691- Part 4: (2023) - Industrial trucks — Safety requirements and verification - Part 4: Driverless industrial trucks and their systems
- BS EN IEC 62061 (2021) - TC Safety of machinery. Functional safety of safety-related control systems
- BS EN ISO 13850 (2015) - TC Safety of machinery. Emergency stop function. Principles for design
- BS EN ISO 9283 (1998) - Manipulating industrial robots. Performance criteria and related test method

10. Consideration of indirect application of 'on road' automated vehicle legislation and associated guidance /

The law

10.1 The Automated Vehicles Act 2024 (AVA2024) paves the way for deployment of automated (including full autonomous) vehicles on public roads and other public places. It creates the framework to be fleshed out by Regulations. The AVA2024 will 'go live' in phases over the next few years, as will the necessary Regulations which the AVA2024 contemplates will be made under it, building upon the basic framework created by the AVA2024. In particular, as at the date of this document, there are:

(a) Calls for evidence in respect of (1) 'Getting AVs on the road', covering vehicle type approval, authorisation, operator licensing, user-in-charge and transition demands and insurance; and (2) 'Once AVs are on the road', covering in-use regulation, incident investigation and cyber security;[117]

(b) The consultation on the Automated passenger services (APS) permitting scheme is now closed and draft Regulations are expected imminently;[118] and,

(c) The call for evidence on the statement of 'safety principles' (SoSP) is closed and a final draft SoSP is expected later this year.[119]

10.2 **The Automated and Electric Vehicles Act 2018 (AVA2018)** makes provision for the Government "listing" of AVs that "may lawfully be used when driving themselves, in at least some circumstances or situations, on roads or other public places in Great Britain", as well as for the insurance "to the use of the vehicle on a road or other public place", as well as the attribution of liability to the insurer (and relatively liability of the insurer and others) in circumstances of "an accident … caused by an automated vehicle when driving itself on a road or other public place in Great Britain". The AVA2018 does not make provision, therefore, for equivalent vehicles and insurance on private land. This means that the insurance of AVs on private land, and the equivalent insurance framework, is the same as applies to other general machinery and not the AVA2018. The exception would be where the AV is also driving on 'public' roads (see analysis above) where it appears that the liability attribution framework of AVA2018 would apply to "an accident … caused by an automated vehicle when driving itself on a road or other public place in Great Britain" but default attribution rules would apply if the accident was to occur on private land.

10.3 In essence, AVA2024 is therefore not actually in force and will only come into force once Commencement Regulations are made. This is intended to happen as and when the implementing Secondary Legislation (such as the APS Regulations noted above) are also ready to go. AEVA2018 is current law but the process for listing AVs (etc) will essentially be replaced by the AVA2024 regime once it comes into force. Our analysis of AVA2024 (as of the date of this Note) is as incoming law which will be subject to imminent further development this and next year.

Potential friction with the 'off road' AV legal regime

10.4 As further explained below, the current AVA2018 and AVA2024 and planned legislation (regulations) to be made pursuant to this legislation, is to regulate the use of automated vehicles on (public) roads and in other public places. It is not expressed to apply to private land and 'private roads' (i.e. roads to which the public does not have access) on that land. This has the impact of spotlighting a potential area of friction in the current legal framework which is summarised in high level terms below.

10.5 For vehicles travelling on (non-'private') roads and in other public places the direction of travel for AV regulation is for it to parallel the regime for non-AV vehicles whereby vehicles (and indeed components within vehicles) have to obtain 'type approval' certifications in order to be placed on UK roads, and are then subject to a licencing and MOT regime for their continued use and roadworthiness on roads. 'Type approval' requirements play a pivotal road in setting vehicle safety expectations, aligning industry standards and supporting consumer confidence in vehicles (and / or their individual 'type-approved' components) which are going to be deployed into a public environment.

10.6 For vehicles on private land, these are not regulated by this framework, and are instead regulated by the framework described in this document, including (by way of a demonstrative example) the Product Liability framework aimed at ensuring the safety of machinery being place on the market, and (in particular) duties under the Health & Safety at Work Act 1974 (and regulations under it) including the core duties aimed at reducing risk to ALARP.

10.7 There is an important difference between these two approaches, in particular insofar as the ALARP test continues approached as if it was a test of 'gross disproportion' (GDP) – see Section 7 above. Logically applicability of an ALARP approach would result in risk assessments and deployment of mitigation measures that would at least meet, but often potentially exceed, type approval requirements, given how stringent the ALARP ('gross disproportion') test is conventionally applied

10.8 Furthermore, with 'type approval', 'safety' is assessed in terms of being able to demonstrate (technically and in reality) conformance with the prescribed 'standards' for type approval. This is sufficient to obtain type approval and therefore enable the vehicle to be driven in public (i.e. a prescription approach).

10.9 By contrast, the ALARP approach under H&S law potentially requires a more considered and dynamic assessment of all potential risks, and consideration of the engineering choices and other mitigations which it would be reasonably practicable to implement (or more specifically would not be 'grossly disproportionate' to implement). Demonstrating ALARP is, in particular, dependent on an understanding of risks, the available counteracting measures, the relative cost of those measures (in time, money and effort) and cost-benefit calculation between them. This can be particularly challenging where designing for emergent risks for which there is currently an absence of data and where the state of the art (e.g. AI technology, AV functionality, and cyber security technology) is continually changing.

10.10 Reinforcing the above analysis is that the definition of 'safe' / safely' is different under AVA2024, which states that a AV travels "'safely' if it travels to an *acceptably* safe standard" (reinforcing that 'type approval' will define what is acceptably safe), whereas the H&S duty is to reduce risk ALARP by taking all mitigation measures save for those which it would be grossly disproportionate to take.

10.11 There is a possibility, therefore, that the organisations seeking to deploy AVs "off-highway" (in private controlled spaces) will find it harder to show that they have met the applicable legal requirements, because the differences between the regulatory framework for private deployment (in particular ALARP / SFAIRP under HSWA) and the framework to enable deployment on public roads (in particular 'type approval').

Examples which demonstrate this friction in practice

10.12 A microcosm of this issue can be seen in respect of Cyber Security, 'safe driving', 'NUIC operator' and 'public passenger' provision. As noted below, the Government recently completed its consultation on the Statement of Safety Principles (SoSP) required by the AVA2024 (see further below). The SoSP expressly envisages that "To minimise regulatory burden, we wish to mirror requirements set at type-approval and authorisation as far as possible". As explained above, this would apply to vehicles deployed on public roads but not to vehicles deployed on private land.

10.13 **In respect of Cyber-resilience** the SoSP consultation states that "*We believe safety expectations for a regulated body to maintain cyber resilience of an automated vehicle should be captured through the technical requirements set within the UNECE's Regulation 155, which government plans to mandate in the GB 'type approval' framework*". UN Regulation No. 155 on cyber security, as well as listing specific threats and mitigations has general provisions that relate to cyber security being "*adequately considered*", mitigation within "*a reasonable timeframe*", "*proportionate mitigations*", "proportionate measures" and being in line with "consensus standards". There is an apparent friction here with the H&S law ALARP test which actually contemplates the undertaking of what might be considered 'disproportionate' measures as long as they are not 'grossly' so.

10.14 **In respect of 'safe driving'** the SoSP consultation states that: "*As we develop the SoSP, we believe consideration must be given to the expectations for human drivers and road users, and how the behaviours of automated vehicles may differ. Machines are different from humans. We should expect some instances where the capabilities exhibited by an automated vehicle when executing elements of the driving task may look and feel different to a human. For example, automated vehicles may react to objects beyond the line of sight of a human driver.*" The consultation therefore posed the question: "*in your view, how might the assessment of careful and competent driving differ between human drivers and automated vehicles?*" The importance of this question is that those 'differences' will therefore (presumably) be configured into the specifications for 'type approval', which will therefore 'bake in' the concept that AVs will behave differently from human driven vehicles but nevertheless be sufficiently safe to obtain type approval. No such specific statement of safety principles is provided by the H&S law ALARP test where, in the absence of such specific acknowledgments and in light of the uncertainty as to how to show that risk has been reduced to ALARP, the temptation may be to seek to design 'safe systems' where what is safe is measured by reference to the 'human driver equivalent' rather than safe by reference to the inherently different (often advantageous) differences in 'AV driving'.

10.15 **In respect of 'NUIC operator' provisions,** further Regulations under AVA2024 are expected (potentially as easy as late 2026) to prescribe the 'No-User-In-Charge' (NUIC) Operator role, which AVA2024 mandates. As the SoSP consultation states: "*As well as an ASDE [meaning "authorised self-driving entity"], these vehicles will also have an NUIC operator that will be responsible for non-driving related tasks. These include: (1) maintaining the roadworthiness of the vehicle; (2) responding to incidents, such as breakdowns*". It is expected, therefore, the coming Regulations will prescribe feature of the 'No-User-In-Charge' (NUIC) Operator role, such that a vehicle on public roads can continue to be licenced provided those features (for example, potentially the prescribed minimum ratio of NUIC Operators to AVs) continue to be met. No such certainty is provided by the H&S law ALARP test where, in the absence of such specific acknowledgments and in light of the uncertainty as to how to show that risk has been reduced to ALARP, the temptation may be to err on the side of caution in specifying the capabilities (and e.g. supervision ratio) of NUIC Operators (aka 'supervisors' of the AV).

10.16 **In respect of Public Passenger services,** the Regulations for the Automated passenger services (APS) permitting scheme[120] are expected imminently, enabling for so-called 'robo-taxis' and other passenger carrying AVs. It is not expected that these Regulations will make any provision for carriage of public passengers on private land, but it is not clear whether any standards prescribed by this Regulation should be applied by analogy when transporting members of the public across private land (e.g. an airside 'shuttle bus') in order to demonstrate compliance with default regime that applies to private land as described elsewhere in this document.

10.17 In light of the above, there is much to be said for Industry Organisations undertaking a careful examination of the extent to which they intend to apply the framework, Regulations and principles (including SoSP) of the AVA2024 in seeking to demonstrate they have complied with the "off-highway" legal regime, but at the risk such compliance might (subject to clarity from the Regulator and / or change in law) fall short of those standards, in particular the ALARP standard required by H&S law, at least by reference to the conventional 'gross disproportion' application of this test.

Appendix 1 /

Summary of some of the key health & safety regulations

1 Note on enforcement and sanctions

1.1 HSWA (and Regulations made under it) are only enforceable[121] by designated enforcement authorities (most notably the HSE) and not by private individuals, private entities, or non-designated enforcement authorities. However, it should be noted that an organisation may owe the following duties which have the effect of potentially creating further liability indirectly for failure to comply with HSWA (or Regulations):

(a) a 'duty of care' to third parties (e.g. individuals) under the English & Welsh 'common law', and in particular under the tort / delict law of 'negligence'. That duty of care may have strong contours with HSWA (and Regulations made under it), such that falling below the standard required by HSWA (or Regulations) may also be a breach of duty of care which might give an individual a right to pursue a 'common law' claim against the organisation.

(b) Contractual liabilities may also be triggered by a breach of HSWA (or Regulations), in particular because it is common for a contract to contain a clause (often expressed as a warranty or indemnity) in which the organisation agreed to adhere to 'all applicable laws' or 'all applicable safety requirements' or similar. Therefore, a failure to comply with HSWA (or Regulations) may breach any such clause.

1.2 Sentencing for breach of HSWA (or Regulations) is outside of the scope of this note. However, sentences are based on the turnover of the organisation and the seriousness off the breach, and can therefore be in the high thousands or in some cases even millions of pounds (£GBP). Further, English & Welsh law does not allow companies to insure against their own breaches of criminal law.

2 Health & Safety at Work Act 1974 ("HSWA")

Summary: HSWA is the UK's primary health and safety statute, placing broad, overarching duties on employers, employees, the self-employed and those in control of premises to ensure, so far as is reasonably practicable, the health, safety and welfare of workers and others affected by their undertaking

2.1 Many of the key provisions of general applicability, and therefore applicable to the introduction of AVs in a workplace, are summarised below.

2.2 **Section 2(1) of HSWA: The General Duty of an Employer to reduce risks[122] to their Employees to ALARP[123]**: This is a duty to ensure the health, safety and welfare at work of all of the organisations employee, in so far as it is reasonably practicable to do so (SFAIRP / to ALARP[124]). Section 2(2) of HWSA describes aspects of this duty: it "extends … in particular" to reducing risk to ALARP through:

(a) Safe plant and systems of work;[125]
(b) Safe handling, storage and transport of articles and substances;[126]
(c) Information, instruction, training, supervision;[127]
(d) where the workplace is under the employers control, safe workplace and safe access to and from that place of work;[128] and,
(e) Safe working environment and adequate welfare facilities and arrangements[129]

2.3 **Section 3 of HWSA: The General Duty of an Employer to reduce risks[130] to Non-Employees SFAIRP / to ALARP:** Employers and self employed persons must ensure (SFAIRP) that non employees (contractors, visitors, members of the public) are

not exposed to risks arising from the way in which the employer "conducts his undertaking" (see box below).

2.4 **Section 4 of HWSA: The General Duty of those who "to any extent control":** (i) **premises** where people work, (ii) access to or from those premises, and / or (iii) **plant or substances** on those premises, to ensure safety of non-employees using these features, so far as is reasonably practicable within their control.[131]

2.5 **Section 6 of HWSA: General Duties on Designers, Manufacturers, Importers and Suppliers as regard articles and substances for use at work** to ensure that (SFAIRP) articles are designed and constructed to be safe and without risks to health when being set, used, cleaned or maintained, and that certain information must be provided.

Note: This sits alongside and is complementary to duties (and the potential criminal liability) under the Supply of Machinery (Safety) Regulations – see Section 6, and in particular paragraph 6.8 above.

2.6 **Section 7 & 8 of HWSA: Duties of Employees:** They must take reasonable care for their own health and safety; cooperate with employer policies and requirements; and not intentionally or recklessly interfere with or misuse anything provided for health and safety.

2.7 **Section 2(3) of HWSA[132]: Requirement for a H&S Policy and arrangements in practice:** Places a duty on the employer to: (i) have and keep updated a 'Heath & Safety Policy'; (ii) have and keep under review the arrangements in practice which implement that Policy; and (iii) bring the Policy to the attention of employees, which seeks to ensure it is implemented in practice and is not merely 'on paper'.[133]

Scope of an Organisation's "undertaking

This is an important concept to understand in the context of CAM deployments in a workplace.

Issues which fall within an organisations "undertaking" (and therefore fall within the organisations duty to reduce risk to ALARP) *include* the organisation's work activities. However, legal cases state that the word 'undertaking' is to be given a 'broad' interpretation which covers all activities and arrangements within the organisations business or enterprise in the ordinary sense.

Importantly, it includes all activities that the organisation organises or manages as part of its business, *even if these have been (partially or entirely) sub-contracted to another organisation:* the focus is on whether it would be objectively understood that the particular activity in question fell 'within the undertaking' of the organisation in a broad sense, focusing on the activity rather than the specific contractual arrangements. Importantly, for this reason an activity may fall 'within the undertaking' of more than one organisation (for example both the 'principal' and the 'sub-contractor') in which event both may be responsible and therefore liable if found to be in breach of their duties.

An example of a specific potential application to CAM deployments is the potential for different aspects of a CAM's deployment to fall 'within the undertaking' of multiple employers, such as where the AV continues to be inspected, maintained, updated or 'supervised' / remotely operated by the original manufacturer / distributor / their sub-contractor. Depending on the detail of these arrangements, aspects of the inspection, maintenance and updating may fall within the scope of undertaking of multiple organisations which might include the original manufacturer / distributor, as well as the organisation operating the premises.

3 Management of Health & Safety at Work Regulations 1999

Summary: The Management Regulations create a risk-based safety management framework requiring employers to: assess risks (Reg. 3), plan and organise preventive measures (Regs. 4–5), appoint competent persons (Reg. 7), provide information and training (Regs. 10 & 13), prepare for emergencies (Reg. 8), and manage certain vulnerable groups (Regs. 16–19).

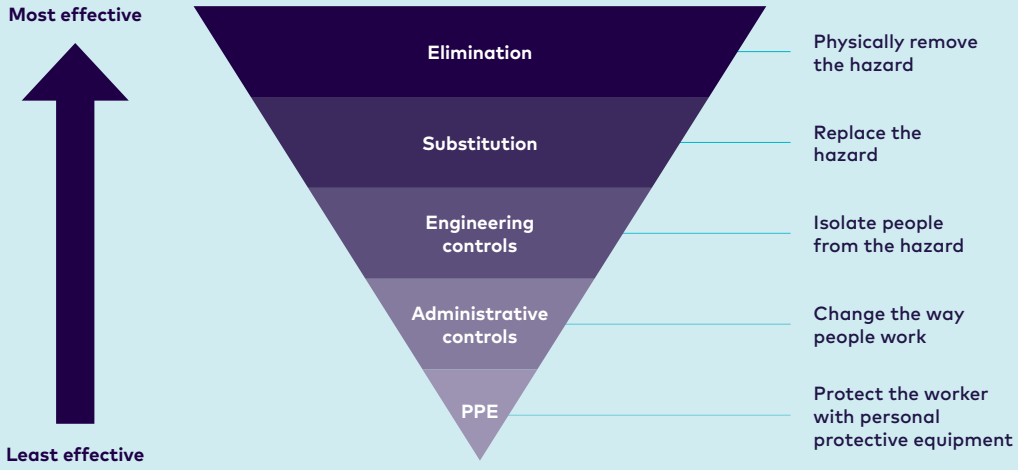
3.1 Many of the key provisions of general applicability, and therefore applicable to the introduction of AVs are summarised below.

3.2 **Risk Assessment (Reg 3)** requires employers to (i) identify hazards arising from their undertaking, who may be harmed and how; (ii) evaluate risks; (iii) implement adequate preventive and protective measures; and (iv) review assessments including in light of any "significant change". There are also special provisions which apply in requiring employers to give special consideration to New and Expectant Mothers (Regs 16–18) and Young Persons (Reg 19) on the workplace.

'Significant Changes' Trigger Mandatory Risk Assessment Reviews
We suggest that in most cases the introduction of any AV into a workspace would constitute a "significant change" and trigger the requirement to revisit existing risk assessments, therefore in any event it seems likely to would introduce new hazards and therefore merit risk assessment to ensure the associated risks are mitigated.

Of course, in practice, a dutyholding organisation would want to (and should) do this in any event, as part their structured processes for ensuring that H&S risks were reduced to ALARP notwithstanding the introduction of AVs. However, the relevance of this being a legal duty is that if a dutyholder fails to update existing Risk Assessments and there are resulting gaps, therefore, in the risk assessment process, then the failure to have an adequate risk assessment(s) will be a freestanding breach of H&S law, whether or not the risk was in fact reduced to ALARP – i.e. evidencing the dutyholder has undertaken this process is important.

3.3 **Principles of Prevention (Reg 4)** is an important Regulation in articulating the principles to which an organisation must adhere when designing preventative and protective measures to mitigate risks, including (i) Avoiding risks; (ii) Evaluating unavoidable risks; (iii) Combating risks at source; (iv) Adapting work to the individual; (v) Replacing dangerous with non / less-dangerous processes; (vi) Developing a coherent, overall prevention policy "which covers technology, organisation of work, working conditions, social relationships and the influence of factors relating to the working environment"; (vii) Prioritising collective protective measures over individual PPE; and (viii) Giving appropriate instructions to employees.



The 'Hierarchy of Control Measures'

So far as we are aware, the only UK health & safety law that expressly sets out a hierarchy of control measures in statutory text is Regulation 7(3) of the Control of Substances Hazardous to Health Regulations 2002 (COSHH) which expressly states that in the control of hazardous substance, in order of priority the law expects an employer to:

(1) **Eliminate** the hazardous substance where reasonably practicable.
(2) **Substitute** with a safer substance or process.
(3) **Use engineering controls** (e.g. closed systems).
(4) **Use administrative controls** (e.g. safe systems of work, permits, training, signage).
(5) **Use Personal Protective Equipment** (PPE) as a last resort.

Although not technically replicated in other legal provisions, this hierarchy is strongly implied, including in the HSWA duties to reduce risk to ALARP (which implies considering this hierarchy, including how (3) to (5) might be layered to further reduce risk); the Management Regulations 1999 principles of prevention (see above); and, for example, public statements made by the H&S Regulator about how organisations should seek to reduce risk to ALARP in practice[134].

This 'hierarchy of control measure' may be a key component, therefore, of an organisations approach to implementing risk controls to cater for the introduction of AVs. For example, if an engineering control (such as a guardrail to physically separate the path of pedestrians from the route of AVs) was assessed to be a reasonably practicable measure, then it should take precedence over an alternative administrative control (such as signage alerting pedestrians to the routing of the AVs).

3.4 **Health and Safety Arrangements (Reg 5)** requires that employers must implement effective arrangements for planning, organising, controlling, monitoring and reviewing preventive and protective measures. This regulation is sometimes colloquially seen as the foundation for a "Safety Management System" (SMS). The requirement for 'monitoring and reviewing' is potentially of particular significance when considering data capture and the issue of reporting in relation to the introduction of AVs.

Whether SMSs are necessary or merely desirable

Airports: In an aviation context, this requirement is reinforced through Article 212 of the Air Navigation Order 2016, which provides that the CAA may only licence an aerodrome if it is satisfied that, inter alia, the airport possesses an "effective safety management system." This is supported by more detailed provisions contained in CAP168, which set out the CAA's expectations as to what each airport's SMS should contain: in short, each SMS should be commensurate to the aerodrome's size and level of operations.

Ports: We are not aware that that is a specific statutory provision which requires ports to have an SMS, although we understand that in reality many do. We think this is because the non-statutory Port Marine Safety Code (PMSC) sets the Government's expectation that harbour authorities operate a risk-based Marine Safety Management System (M-SMS), and it is a sensible approach to structure a complex organisation to ensure it has the right systems for management of H&S in place.

Other industries: Outside of specific known situations, where we expect Industry Operators would know if they were subject to mandatory requirements to have an SMS (e.g. COMAH licenced sites, Nuclear Licenced sites, Rail Operators), we are not aware of any other industry/sectorial mandates to have an SMS. However, many largely organisations have SMSs as a sensible and structured overarching structure of their many health & safety documents, and for managing H&S risk (including through application of the risk manage cycle).

3.5 **Procedures for Serious and Imminent Danger (Reg 8):**
This has aspects which may be of separate and linked relevance to the introduction of AVs:

(a) **Informing persons** at work who are exposed to serious and imminent danger of the nature of the hazard and the protective steps taken or to be taken
(b) **Stopping work and evacuating:** Employers must establish and ensure they can give effect to procedures to be followed in the event of serious and imminent danger to persons at work, which includes procedures to "*enable the persons concerned to stop work and immediately proceed to a place of safety*" and not to resume work until there is no longer a serious or imminent danger.
(c) **Preventing access:** Employers must "*ensure that none of his employees has access to any area occupied by him to which it is necessary to restrict access on grounds of health and safety unless the employee concerned has received adequate health and safety instruction*".

'Serious and imminent danger'
Neither the MHSWR 1999 nor its ACOP defines "serious and imminent danger", although the ACOP does provide guidance as to things that might meet the threshold. So it is a matter for employers to define. Notably there is a reciprocal duty in Regulation 14 for employees to inform their employer of "any work situation which a person with the first-mentioned employee's training and instruction would reasonably consider represented a serious and immediate danger to health and safety."

The obligation to enable immediate stop work and evacuation may have particular implications when designing and implementing how AVs should operate when workers need to evacuate or move from a place of danger – e.g. a need to ensure that AVs stop or move to a particular location.

Given the complexity of briefings, training and instructions which may be needed to enable employees (and others) to operate safely in proximity to AVs, this requirement reinforces the legal basis for implementing physical measures to ensure prevention of access to such areas, save to those who are adequately briefed, trained, and acting on instructions. This links to the 'Hierarchy of Controls' above.

3.6 **Contact with External Services (Reg 9):** Employers must ensure that any necessary contacts with external services are arranged, particularly as regards first-aid, emergency medical care and rescue work. This is one of the legal bases for ensuring that the emergency services are involved, or consulted, or at least informed, of an intended CAM deployment.

3.7 **Information to Employees (Reg 10) non-employees e.g. contractors (Reg 12) and Temporary Workers (Reg 15):** Employers must provide comprehensible and relevant information to employees on: (i) Risks identified by risk assessments; (ii) Preventive and protective measures; (iii) Emergency procedures; and (iv) Competent persons appointed under Reg 7. See also Regulation 12 in respect of similar obligations for non-employees (e.g. contractors) working "within" an Employer's undertaking, and Regulation 15 for those temporarily contracted.

3.8 **Co operation and Co ordination (Reg 11):** Where employers share a workplace, they must co operate to ensure compliance and co ordinate measures.

'Information Sharing'
A commonality between Regulations 9 to 12 and 15 is information sharing. The 'relevant information' to be shared with various stakeholders will be different, including due to their different roles and interfaces with the new risks created by CAM deployment.

Notably in respect Reg 11 mere notification is not sufficient. Each employer must also "take all reasonable steps to co-ordinate the measures he takes to comply with the requirements and prohibitions imposed upon him … with the measures the other employers concerned are taking."

Ports and airports are paradigmatic shared workplaces. For example, a port typically hosts the port authority or terminal operator, stevedoring companies, haulage firms, shipping lines' agents, freight forwarders, customs and border officials, and maintenance contractors. Many will have employees physically present in the same operational areas. This might also be relevant in private industrial parks where multiple business units share common facilities e.g. common loading / unloading facilities.

The ACOP suggests that where multiple employers share a workplace, it may be appropriate for one employer (typically the one with overall control of the premises) to take the lead in co-ordinating health and safety measures. For example, if a port terminal operator introduces autonomous straddle carriers, but a stevedoring company's employees continue to work on foot in the same container yard, the two employers must co-ordinate their respective measures.

3.9 **Capabilities and Training of Employees (Reg 13):** Employers must: (i) consider employees' capabilities as regards health and safety; and (ii) provide appropriate training. Such training must be repeated periodically and when circumstances change, in particular when an employee will be "exposed to new or increased risks because of… the introduction of new work equipment into or a change respecting work equipment…[or] the introduction of new technology…" This provision mandates the design and roll-out of training to employees[135] when introducing AV technology in the workplace.

4 Workplace (Health, Safety and Welfare) Regulations 1992 (WHSWR

Under section 2 of the HSW Act, employers must ensure, so far as reasonably practicable, their employees' health, safety and welfare at work. Section 4 of HWSA places similar duties on those who control non-domestic premises towards non-employees using those premises.

These Regulations build on those duties and are designed to protect everyone in the workplace. In particular, they apply to the **'controller(s)'**[136] of a premise in accordance with the extent of their control of that premises. Duties under the Regulations apply to parts of the workplace insofar as, and to the extent that, they are under that organisations "control". Therefore, a tenant may have control over parts of a premises (e.g. a particular warehouse) with the landowner / operator in control of other parts and all common parts.

Where employees work at a workplace which is not under their employer's control, their employer has no duty under *these Regulations*, but nevertheless remains subject to their Section 4 HSWA duties (see above) which apply to their employees wherever they are based.

These Regulations and the associated Approved Code of Practice (ACoP[137]) are particularly important to CAM deployment because they prescribe binding rules and / or strongly indicative good practice in relation to private roads and pedestrian walkways. They will also be highly relevant in terms of the workplace environment for those who will operate or supervise AVs e.g. on offices / working remotely.

4.1 **"Workplace" including private roads and paths (Regulation 2 & 4)** includes "*any room, lobby, corridor, staircase, road or other place used as a means of access to or egress from that place of work or where facilities are provided for use in connection with the place of work other than a public road*". Private roads are expressly within scope, and the ACoP goes on to confirm these Regulations apply to (amongst other things) "*common parts of shared buildings, private roads and paths on industrial estates and business parks*". In fact, as shown below, most of the operative provisions that might apply to 'roads' are in fact expressed to apply using the broader phrase of "*traffic routes*" meaning any "*route for pedestrian traffic, vehicles or both and includes any stairs, staircase, fixed ladder, doorway, gateway, loading bay or ramp*" (Reg 2).

AV-specific considerations: An organisation may consider deploying AVs to follow or adhere to a route determined by something other than a 'road' in the traditionally envisaged sense, for example, a route determined by other forms of markers or geofencing. The Regulations have a broad definition of "workspace" and many of the provisions below are either agnostic as to whether the path of travel is along a 'road' or some other form of route (for example Reg 12 refers to "traffic route" rather than "road") or, in other places, it would appear sensible to read the word 'road' as more widely including other forms of route, in order to give effect to the particular objective of that provision (e.g. to keep people segregated from vehicles irrespective of which of them is on a 'road').

4.2 **Maintenance of workplace, and of equipment, devices and systems within the workplace (Reg 5):** "*The workplace and the equipment, devices and systems to which this regulation applies shall be maintained (including cleaned as appropriate) in an efficient state* [which includes "*free of faults*"[138]], in efficient working order and in good repair". This definition does not encompass all workplace equipment, devices and systems (which may be covered by other Regulations) but does expressly include "*equipment and devices intended to prevent or reduce hazards*". The ACoP elaborates that: "*Equipment that could fail and put workers at serious risk should be properly maintained and checked at regular intervals, as appropriate, by inspection, testing, adjustment, lubrication, repair and cleaning… Any faults should be properly rectified as soon as possible. Action should be taken immediately to isolate and rectify the fault where there is a risk of serious or imminent harm*".

AV-specific considerations: This regulation is an important source of obligations around maintenance and inspection. It would appear that[139] equipment caught by the definition includes:

i) aspects of the AV (hardware and its operation) intended to identify hazards (and therefore prevent or reduce them) such as the hardware it uses for visual and audible detection; and
ii) design features intended to protect people from being harmed by AVs (e.g. barriers and signs).

Meeting this standard will require, therefore, that the organisation considers who will provide such maintenance and inspection, and who is competent to do so. For example, will it require some form of 'aftercare' from the AV provider because such inspection and maintenance is so complex and/or involves access to proprietary information (IP / design secrets) that it cannot be provided by the organisation (or any third party) or can the organisations own employees be trained to undertake these activities?

4.3 **The requirement for "suitable and sufficient lighting" (Reg 8)** including regulations in respect of natural light and emergency lighting. The ACoP elaborates that "*Lighting should be sufficient to enable people to work, use facilities without experiencing eye-strain, and safely move from place to place*" (emphasis added) and "*Lights and light fittings must be selected, positioned and maintained, so that they avoid annoying glare and do not cause a hazard (e.g. electrical, fire, radiation or collision).*" It is notable that this Regulation is obviously designed with humans in mind rather than the operation of machines.

4.4 **Minimum room and special dimensions (Reg 10).** This Regulation specifies the need for every work area to have "*sufficient floor area, height and unoccupied space for purposes of health, safety and welfare*".

AV-specific considerations: Regulations 8 and 10 are intelligently worded in that they merely require the controller of premises to decide what is "suitable" and "sufficient" lighting, and "suitable" spatial requirements. It may be the case, therefore, that there are some locations in which AVs operate where lighting could be below the levels required by human operators, provided that they can nevertheless operate safely using their detection systems (etc). Nevertheless, it is likely that the organisation will need to intelligently consider the provision of lighting, for example:

i) to the extent people will also use that space;
ii) when considering the lighting and spatial requirements to be provided to those who may need to inspect the AV if it is paused / stops in that areas; and
iii) when considering whether the lighting or special layout might interfere with the AV's detection systems if positioned in a particular way.

4.5 **Workstations and seating (Reg 11):** The core of this obligation is that every workstation must be suitable for any person who will be required to or is likely to work at that workstation, and suitable for the type of work being done at that workstation. The HSE has supplemented this regulation with guidance (which seems likely to have the status of being 'good practice' and therefore persuasive in determining if risk has been managed) concerning 'Working safely with display screen equipment'[140], which includes guidance on workstation setup, posture, work routines and breaks, training on use, and other related issues.

AV-specific considerations: So far as we have seen, CAM deployments are usually envisaged as requiring an 'operator' per AV – at least at the initial stages of deployment – who has the ability to take charge of the AV (under fault conditions or any other pre-agreed conditions). A CAM deployment may envisage this transitioning to a 'supervisor' role where a single person supervises the movements of multiple AVs and can take over operation if need. Regulation 11 appears applicable to such roles.

For the avoidance of doubt, there will also be further wider considerations of the conditions needed for such an individual to be effective in their role, such as consideration of human factors (fatigue, alertness, desensitisation) and working hours (including application of Working Time Regulations 1998 maximum hours limits). At this time, we are not aware of specific law governing maximum working hours for those in the a 'operator / supervisor' role for an AV. However, in light of the safety nature of the role, organisations may look to draw analogies with other roles, such as lorry drivers[141] or train drivers, or depart from them where they consider there is sufficient safety justification for doing so.

4.6 **Organisation of 'traffic routes' (Reg 17) and Condition of floors and 'traffic routes' (Reg 12):** Key provisions include (not exclusively):

(a) Workplace must be organised so that pedestrians and vehicles can "*circulate in a safe manner*".
(b) Traffic routes in a workplace must be "*suitable for the persons or vehicles using them, sufficient in number, in suitable positions and of sufficient size*", which includes "*where vehicles and pedestrians use the same traffic route, there is sufficient separation between them*".
(c) Traffic routes must be "*suitably indicated where necessary for reasons of health or safety*". The Guidance to the Signage Regs 1996 (see below) adds that "*Part V of Schedule 1 of the [Signage] Regulations requires the markings to take the form of continuous lines, preferably yellow or white, taking into account the colour of the ground*".

(d) The surface of every traffic route in a workplace must "*be kept free from obstructions*", so far as is reasonably practicable.

4.7 There are many useful elaborations on these requirements in the associated ACoP (which as noted above has a special legal status), including that:

(a) "*Sharp or blind bends on vehicle routes should be avoided as far as possible. If they are unavoidable, measures such as one-way systems or using mirrors to improve vision should be considered.*"
(b) "*Sensible speed limits should be set and clearly displayed on vehicle routes except those used only by slow vehicles. Where necessary, suitable speed retarders should be provided. These should always be preceded by a warning sign or a mark on the road*".
(c) "*The need for vehicles with poor rear visibility to reverse should be eliminated as far as possible, for example by using one-way systems*" and "*In buildings*[142]*, lines should be drawn on the floor to indicate routes followed by vehicles such as forklift trucks*".
(d) **This ACoP also contains a rare reference to driverless vehicles:** "*On routes used by automatic, driverless vehicles which are also used by pedestrians, take steps to ensure that pedestrians do not become trapped by vehicles. The vehicles should be fitted with safeguards to minimise the risk of injury and sufficient clearance provided between vehicles and pedestrians. Ensure that fixtures along the route do not create trapping hazards.*"
(f) In certain locations "*barriers or rails should be provided to prevent pedestrians walking directly onto the vehicle route*."
(g) As regards signage: "*Potential hazards on traffic routes used by vehicles and people should be indicated by suitable warning signs.*"
(h) "*Suitable road markings and signs should also be used to alert **drivers** to any restrictions which apply to the use of a traffic route" [emphasis added], and "Signs should comply with the Health and Safety (Safety Signs and Signals) Regulations 1996, although any **signs used in connection with traffic** should comply with the Traffic Signs Regulations and General Directions 2002 (as amended) (SI 2002 No 3113) and the Highway Code for use on public roads*"

4.8 On the specific issue of signage: Regulation 4 of the Health and Safety (Safety Signs and Signals) Regulations 1996 ("Signage Regs 1996") further provides:

(a) that where an employer has determined that the risk assessment and control measures cannot reduce the risk adequately and the use of safety signs should be one of the mitigations, then where that risk is in connection with the presence or movement of traffic (including pedestrians in relation to such traffic) and there is an appropriate sign in that connection prescribed under the **Road Traffic Regulation Act 1984,** that sign shall be used whether or not that Act applies to that place of work.
(b) For minimum requirements concerning the permanent marking of traffic routes (Reg 4 and Sch 1, Part 1) and for minimum markings on certain traffic routes indoors and outdoors (Reg 4 and Sch 1, Part 5).

AV-specific considerations

(a) We observe that: (i) whilst ACoPs do have a special legal status, they may have been drafted in a way which in some cases is not obviously or is less obviously compatible with AV operations; (ii) in such cases it is ultimately the law (and not the ACoP) that must be complied with; and (iii) it may be necessary, therefore, to consider alternative means of compliance that do not entirely follow the contents of the ACoP. (As noted above, following suitable alternative means of compliance is acceptable).

(b) An example of this above might include the ACoP statement that "Sharp or blind bends on vehicle routes should be avoided as far as possible" which appears to make good safety sense in cases of a manual driver but might not be applicable if the AV has been fitted with sensors and/or interacts with external components which mean that it can effectively "see around corners" in which is sufficiently safe, which a human could not.

(c) A further example is the ACoP statement that "suitable road markings and signs should also be used to alert drivers to any restrictions which apply to the use of a traffic route" and that such signs must comply with the cited Regulations. Industry Organisations will need to think carefully about such signage requirements, including for the following reasons:

  (i) This part of the ACoP and the relevant parts of the Signage Regs 1996 appear to have been drafted with an 'in-cab' driver in mind. It is not, therefore, obvious what safety objectives are achieved by applying such marking to a AV-only route (but, of course, such provisions would make sense on a mix-traffic route which included human drivers).

  (ii) Where the signage / road-marking requirement is dictated by law and stated to apply to any route used by a vehicle, then we suggest the law must be complied with, even if the safety benefit is not obvious and notwithstanding the cost of doing so. This is because such law has not yet been amended to accommodate AV-only routes.

  (iii) This may, however, create options in terms of how the AV is designed to recognise road markings. If such road-markings are prescribed by law then it may make sense to design and deploy the AV in a way that can recognise those signs / road markings. However, where the AV needs additional or alternative 'signs' or 'markers' in order to be able to navigate the route then these will also need to be present, noting the broad working of Reg 17 that the workplace (including the routes) must be organised so that pedestrians and vehicles can "circulate in a safe manner"

(d) A further example, which also illustrates a wider point, is the Reg 17 requirement that "where vehicles and pedestrians use the same traffic route, there is sufficient separation between them" [emphasis added]. There is no definition of "sufficient separation". It does not need to be automatically assumed that a sufficient separation distance between a pedestrian and a AV is the same as if the latter were a manned vehicle. There may be reasons for it to be further apart (e.g. due to AV communication / reaction 'latency') or closer (provided this case be justified as being as safe as is reasonably practicable). That latter might need to be considered, for example, where the AV is being deployed in a context that manned vehicle might not (e.g. narrow automated forklifts are able to traverse routes which are narrower).

5 Railways and other Guided Transport Systems (Safety) Regulations 2006 (Si 2006/599) ("Rogs")

5.1 The key definition for the purposes of the current assessment is Regulation 2(1), which is the gateway to ROGS applying at all:

"transport system" means [1] a railway, [2] a tramway, or [3] any other system using guided transport where that other system is used wholly or mainly for the carriage of passengers

5.2 For present purposes, the definition of "railway" is purely mechanical, whilst the definition of "tramway" and "guided transport" requires that such conveyance by "wholly or mainly for the carriage of passengers", and the definition of "tramway" is narrower still since only applies where he tramway rails are laid "wholly or partly along a road or place to which the public has access":

(a) the definition of "a railway" describes what would ordinarily be thought of as being some kind of railway (of at least 350mm gauge)[143]. It applies to railways for the carriage of goods and/or passengers.
(b) Likewise the definition of "tramway" conforms to what would be thought of as a tramway[144] but only applies to tramways which are "wholly or mainly for the carriage of passengers" (i.e. not goods-only tramways) and only where they are "wholly or partly along a road or place to which the public has access"
(c) The definition of "guided transport" is any kind of transport (other than the above) where the vehicles are guided by "rails, beams, slots, guides or other fixed apparatus, or by an automatic guidance system" and but only applies to those which are "wholly or mainly for the carriage of passengers" (i.e. not goods-only)

5.3 In addition, the following types of transport are excluded from ROGS ("except where the transport system in question forms part of the mainline railway"[145]):

(a) any part of a transport system within a harbour or harbour area, within the meaning of regulation 2(1) of the Dangerous Substances in Harbour Areas Regulations 1987 – which includes "any port", "dock, wharf or other works in or at which vessels can obtain shelter" and its adjacent land.
(b) any part of a transport system which is part of a **factory**, within the meaning of section 175 of the Factories Act 1961 – the key element of which is (at least under the present law) that such factory must contain "persons … employed in manual labour" (i.e. not a wholly autonomous premises)[146] but is wide enough to capture most premises people think of as being 'factories'.
(c) any part of a transport system within a **maintenance or goods depot**, which therefore effectively covers many other buildings which people might commonly consider as 'factories' and indeed parts of airports, ports or any other premises which are maintenance or goods depots.
(d) any transport system where the track forms a gauge of less than 350mm except where such a track crosses a carriageway (whether or not on the same level),
(e) a 'guided bus system' but only insofar as it is one on any length of highway or of any other road to which the public has access (or the equivalent Scottish definition of a road)
(f) a 'trolley vehicle system' but this requires that electricity transmission must be by overhead wires, which seems an unlikely configuration of an AV carrying passengers e.g. in an airport.

5.4 Combining the above definitions means that ROGs:

(a) would not apply to any AV system that was transporting wholly or mainly goods,
(b) would not appear to apply to passenger-carrying AVs within harbour areas, factories, or maintenance or goods depot

(c) could apply to carriage of passengers in airports.

The application to carriage of passengers in airports is, in fact, well understood. There are so-called "Automated people movers (APMs)" in many larger airports which are understood to be subject to ROGs. We see no reason why this could not apply to "airside" AVs as well as the (more orthodox) landside AVs which operated as "guided transport". As noted above, this would apply to any transport using "rails, beams, slots, guides or other fixed apparatus, or by an automatic guidance system" and therefore appears to capture passenger carriers using AI (insofar as it appears to conform to being a form of "automatic guidance system") as well as those using non-AI means of being 'guided'.

5.5 It is important to note that even where ROGS does not apply, the Health and Safety at Work etc. Act 1974 and Regulations made under it still impose general duties to manage safety, assess risks, cooperate with other duty holders, and ensure staff competence. The exclusion from ROGS does not create a regulatory vacuum — it merely means that the specific ROGS regime (safety management systems, safety certificates/authorisations, safety verification, safety-critical work requirements, etc.) does not apply.

5.6 The importance of application of ROGs is that it imports additional H&S specific duties, as well as being specifically enforceable by the ORR (as opposed to the HSE or any other H&S regulator). However, it should be noted that whether a particular airport people mover requires a safety certificate (as opposed to merely maintaining a written SMS) depends on whether it operates at speeds above 25 mph (40 km/h): lower-speed systems need only maintain a written safety management system. Further guidance on application of ROGs is available at www.orr.gov.uk/sites/default/files/2021-10/rogs-guidance.pdf.

5.7 The main additional burden of ROGS above what the HSWA1974 might require is that of having to obtain safety certificates and safety authorisations from ORR if the guided transport system operates at any part in excess of a permitted speed of 40 km/h. This may be particularly challenging or daunting where there is no prior guidance from ORR as to how it might assess such guided transport systems for the purposes of issuing certificates and authorisations.

5.8 However, in the context of potentially novel use cases, new technology and the potential impact of any safety incidents when operating at such speeds, the application of ROGS and the explicit involvement of ORR as an approval body (until there is an automated vehicle safety authority) might not be considered a bad thing.

Appendix 2 /

Health and Safety Guidance

Likely to apply to all CAM deployments

Health & Safety At Work (etc) Act 1974 ("HSWA")

Management of Health and Safety at Work Regulations 1999 ("Management Regs")

Workplace (Health, Safety and Welfare) Regulations 1992 ("Workplace Regs")

- *Thoughts on General Application [Part 1]*
- *Thoughts on Specific Application to monitoring of AVs [Part 2]*

Provision and Use of Work Equipment Regulations 1998 ("PUWER")

- *Our thoughts on General Application [Part 1]*
- *Our thoughts on Specific Application to AVs [Part 2]*

Electricity at Work Regulations 1989 ("EWR")

Consultation with Employees and Trade Union Regulations ("Consultation Regs")

The Health & Safety (Safety Signs & Signals) Regulations 1996 ("Signage Regs")

The Health and Safety (Display Screen Equipment) Regs 1992 ("DSE Regs")

May apply to AVs depending on activity types

Lifting Operations and Lifting Equipment Regulations 1998 ("LOLER")

Manual Handling Operations Regulations 1992

Confined Spaces Regulations 1997

Control of Noise at Work Regulations 2005

Control of Vibration at Work Regulations 2005

UK law on the design and supply of products

May apply where Hazardous / Dangerous substances are on site, proximate or involved

Dangerous Substances and Explosive Atmospheres Regulations 2002 ("DSEAR")

Control of Substances Hazardous to Health Regulations 2002 (as amended) ("COSHH")

Control of Major Accident Hazards Regulations 2015 ("COMAH")

General Application

The Health & Safety At Work (etc) Act 1974 ("HSWA")

Summary of application

- **This is the 'core' element of Health & Safety Legislation in Great Britian (whereas for Northern Ireland see Appendix 3).** Key provisions include:
- **Section 2 (employers' duties to employees):** Employers must ensure, so far as is reasonably practicable, the health, safety and welfare at work of all employees, including safe plant and systems of work, safe handling/storage/transport of substances, necessary information/instruction/training/supervision, safe workplaces and safe access/egress, and adequate welfare arrangements.
- **Section 3 (employers and self-employed—duties to non-employees):** Employers and prescribed self-employed persons must conduct their undertakings to ensure, so far as is reasonably practicable, that persons not in their employment are not exposed to risks to health or safety, and in prescribed cases must provide relevant information to such persons.
- **Section 4 (persons in control of premises):** Anyone with control (to any extent) of non-domestic premises, access/egress, or plant/substances there must take reasonable measures to ensure, so far as is reasonably practicable, that the premises, routes, plant and substances are safe and without risks to health, with contractual obligations conferring control for these purposes.
- **Section 6 (General Duties on Designers, Manufacturers, Importers and Suppliers)** including to ensure, so far as is reasonably practicable, the article is so designed and constructed that it will be safe and without risks to health when being set, used, cleaned or maintained and certain information about it must be provided.
- **Section 7 (employees' duties):** Employees must take reasonable care for their own H&S and that of others affected by their acts / omissions at work + co-operate with employer to enable compliance with its HSWA duties.
- **Section 8 (no interference or misuse):** No person may intentionally or recklessly interfere with or misuse anything provided in the interests of health, safety or welfare under the relevant statutory provisions.

Relevance to AV deployment

- These duties are sufficiently broadly expressed that they can be applied to CAM deployments in 'non-public-road' / 'off-highway' deployments such as factories, ports and airports.

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The Management of Health and Safety at Work Regulations 1999 ("Management Regs")

Summary of application

- **Regulation 3 (Hazard identification and Risk assessment):** Employers must make suitable and sufficient assessments of risks to employees and others from their undertaking, review them when no longer valid or after significant change, assess young persons specifically, and record significant findings.
- **Regulation 5 (Health and safety 'arrangements' for ongoing risk management):** Employers must make and implement arrangements—appropriate to the nature and size of the undertaking—for effective planning, organisation, control, monitoring and review of preventive and protective measures, and record them.
- **Regulation 8 (Procedures for serious and imminent danger and for danger areas):** Employers must establish and, where necessary, implement procedures for serious and imminent danger, nominate competent persons for evacuation, restrict access to dangerous areas to instructed staff, and ensure information and rights to stop work and reach safety in unavoidable danger.
- **Regulation 11 (Co-operation and co-ordination):** Where employers (and self-employed) share a workplace, each must co-operate, take reasonable steps to co-ordinate their measures, and inform others of risks to their employees arising from their undertaking.
- **Regulation 13 (Health & Safety capabilities and training):** Employers must consider employees' capabilities "as regards health and safety" when assigning tasks and provide adequate H&S training on recruitment and when exposed to new or increased risks, repeating and adapting training as appropriate.
- **Regulation 14 (Employees' duties):** Employees must use equipment and substances in accordance with training and employer instructions, and promptly inform the employer of serious and immediate dangers or shortcomings in the employer's health and safety arrangements.

Relevance to AV deployment

- These duties are sufficiently broadly expressed that they can be applied to CAM deployments in 'non-public-road' / 'off-highway' deployments such as factories, ports and airports.

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The Workplace (Health, Safety and Welfare) Regulations 1992 ("Workplace Regs") – Part 1 of 2

Summary of application

- **Application:** The Workplace Regs set basic health, safety and welfare standards for most "workplaces" – this is widely defined to mean non-domestic premises, including "any room, lobby, corridor, staircase, road or other place used as a means of access to or egress from that place of work or where facilities are provided … other than a public road". This page considers more general application, and the following page considers the application of the Workplace Regs specific to AV operators specifically.

The key duties are as follows:

- **Reg 5 (Maintenance of workplace, and of equipment, devices and systems).** This expressly includes "*equipment and devices intended to prevent or reduce hazards*". This appears wide enough to be relevant to AV hardware and to barriers and signs intended to protect people from being harmed by AVs. The ACoP elaborates that: "*Equipment that could fail and put workers at serious risk should be properly maintained and checked at regular intervals… Any faults should be properly rectified as soon as possible. Action should be taken immediately […] where there is a risk of serious or imminent harm*".

- **Reg 8 (Suitable and sufficient lighting).** This regulation requires compliance to the extent of what is "*suitable and sufficient*" – this must not only ensure that there is sufficient lighting for AVs' detection systems but also for safe movement of those from place to place.

- **Reg 10 (Room and space dimensions).** The ACoP elaborates that: "*most workplaces 11 cubic metres (11 m3) of space per person should be taken as a minimum*." However, the space required also must be assessed on what is "sufficient"; for example, some locations would be sufficient for AVs, but not 'sufficient' for human operation.

- **Regs 12 and 17 (Condition of floors and 'traffic routes', and organisation of 'traffic routes'**). Key provisions include that pedestrians and vehicles should be able to "*circulate in a safe manner*", and traffic routes in a workplace must be:

  - "*suitable … for vehicles using them, sufficient in number, in suitable positions …* ", which includes "where vehicles and pedestrians use the same traffic route, there is sufficient separation"; and
  - "*suitably indicated where necessary for reasons of health or safety*".

Relevance to AV deployment

- The Workplace Regs are likely to govern the site of the wider environment in which AVs operate, including traffic routes, loading bays, charging/maintenance areas, doors/gates, lighting and ventilation of enclosed spaces, and the welfare for staff/contractors.

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The Workplace (Health, Safety and Welfare) Regulations 1992 ("Workplace Regs") – Part 2 of 2 (re AV operators etc)

Summary of application

- The following Regulations of the Workplace Regs may be particularly relevant when considering the need to create spaces for those who will operate AVs or remotely monitor them (or perform a role equivalent to the No-User-In-Charge (NUIC) Operator under the AVA2024)

Table 4: Most relevant regulations of the Workplace Regs for AVs

Regulation	Requirement	Office Relevance
Reg 5	**Maintenance** of the workplace, equipment, devices and systems in an efficient state and in good repair	Office furniture, ventilation systems, lighting
Reg 6	**Ventilation** — every enclosed workplace must be ventilated by a sufficient quantity of fresh or purified air	Air quality in open-plan offices
Reg 7	**Temperature** — the temperature in all workplaces inside buildings must be reasonable during working hours; adequate thermal insulation and avoidance of excessive effects of sunlight	Heating, cooling, solar gain through windows
Reg 8	**Lighting** — every workplace must have suitable and sufficient lighting, so far as is reasonably practicable by natural light	Glare, reflections on screens, task lighting
Reg 9	**Cleanliness** — workplaces and furnishings must be kept sufficiently clean	Office hygiene
Reg 10	**Room dimensions and space** — sufficient floor area, height and unoccupied space	Adequate desk space for multiple monitors
Reg 11	**Workstations and seating** — every workstation must be arranged to be suitable for the person and the work; a suitable seat (with footrest where necessary) must be provided	Chair quality, desk arrangement for multi-screen use
Reg 20-22	Sanitary conveniences, washing facilities, and drinking water	Welfare provision
Reg 25	Facilities for rest and to eat meals	Rest areas, facilities for pregnant workers and nursing mothers

Relevance to AV deployment

- These may be new roles for your organisation. It will be important to consider them as a role different to the traditional role of a driver, or even of the 'remote safety driver' in AV Trails. Organisations will want to ensure not just the suitability of the person but also the suitability of their operating conditions, hours of work etc given they will be playing a potentially safety critical role in monitoring the AVs and responding to deviations from the expected.

- May be informed by the outcome of the current consultation on the role of the NUIC Operator under the AVA2024.

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Provision and Use of Work Equipment Regulations 1998 ("PUWER") - Part 1 of 2

Summary of application

- **PUWER** places duties on anyone who **owns, operates or controls** work equipment, and on businesses whose employees use such equipment—even if they do not own it.
- **Regulation 4 (Suitability of work equipment):** Employers must ensure work equipment is constructed or adapted to be suitable for its intended use, selected with regard to the working conditions and risks, and only used for operations and under conditions for which it is suitable.
- **Regs 5 & 6 (Maintenance & Inspection):** Employers must keep work equipment in an efficient state, in efficient working order and in good repair, and where a maintenance log exists, keep it up to date. Employers must ensure the inspection of equipment, in particular at more regular intervals where the equipment will operate exposed to conditions causing deterioration which is liable to result in dangerous situations.
- **Regs 8 & 9 (Instructions & Training):** Employers must ensure all users of work equipment, and those who supervise or manage its use, are given adequate information and, where appropriate, instruction, and receive adequate health and safety training covering methods of use, associated risks and necessary precautions.
- **Regs 15 & 16 (Stop & Emergency Stop Controls):** Employers must ensure, "where appropriate", that equipment has one or more "readily accessible" stop controls that bring the equipment "to a safe condition in a safe manner"; bring it to a complete stop, switch off energy where necessary, and operate in priority over start or operating-mode. There are additional provisions for 'emergency stop' controls.
- **Regulation 18 (Control systems):** Employers must ensure, so far as reasonably practicable, that control systems are safe and selected allowing for foreseeable failures/faults.

Relevance to AV deployment

- It is absolutely clear from the accompanying guidance that AVs are 'equipment' caught by PUWER (see next slide)

To address potential confusion, save for an 'emergency stop', it does not appear that the Regulations requiring 'stop' controls require the AV to be able to come to an immediate stop but to stop "to a safe condition in a safe manner".

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Provision and Use of Work Equipment Regulations 1998 ("PUWER") - Part 2 of 2

Summary of application

- Organisations may wish to focus PUWER review in particular on the ACoP paragraphs concerning 'motor vehicles' and 'self-propelled mobile work equipment'. In particular:
  - *"Motor vehicles being used for work activities, which are not privately owned fall within the scope of PUWER. When these vehicles are used on public roads or in a public place, the more specific road traffic legislation takes precedence. When such vehicles are used off the public highway and the road traffic law does not apply, for example on a dock road, PUWER and the HSW Act would normally take precedence…[However] vehicles should be maintained to the normal standards required for use on the public highway".*
  - *Where vehicles are designed primarily for travel on public roads, compliance with the Road Vehicles (Construction and Use) Regulations 1986 will normally be enough to comply with regulations 25–30.*
  - *Self-propelled work equipment should be prevented from unauthorised start-up. This can be achieved if it has a starter key or device which is issued or made accessible only to authorised people.*
  - *The section titled 'Risks for Self-Propelled Work Equipment' contains further consideration of relevant risks and mitigations but (as acknowledged in the text itself) has heavy overlap with the Management Regs, Reg 17 of the Workplace Regs and the associated ACoP (Appendix 2).*

Relevance to AV deployment

- PUWER contains a range of provisions which must be carefully considered for CAM deployment including ensuring suitability of the AV for its intended objective(s); Maintenance & Inspection regimes; Instructions & Training for employees and supervisors; Stop & Emergency Stop Controls.

  Where the AV will involve some element of human carriage (as some AVs do, particularly during pilot phases) then additional PUWER obligations apply.

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The Electricity at Work Regulations 1989 ("EWR")

Summary of application

- Requires specific precautions to be taken against the risk of death or personal injury from electricity in work activities. Regulations are risk-based and apply regardless of voltage; coverage spans construction, operation, maintenance and testing of electrical systems.
- Duties are imposed on employers in respect of "systems", "electrical equipment" and "conductors", and in respect of work activities on or near electrical equipment in respect of "matters which are within [their] control"
- Core duties include: (Reg 4). Electrical systems must be constructed, maintained and used to prevent "danger" as defined in the Regs, including under foreseeable fault and environmental conditions (Reg 4); suitable insulation and placement (Reg 7), earthing or other precautions (Reg 8), connections mechanically and electrically suitable for use (Reg 10), means of cutting off supply and isolation for so called 'dead work" (Reg 12), specific provisions to avoid or further mitigate "live" working (Reg 14); adequate working space, access and lighting (Reg 15); Only competent persons may undertake electrical work (Reg 16).

Relevance to AV deployment

- Highly likely to apply as AVs and their equipment (charging/energy systems, HV batteries, power electronics, maintenance/testing activities) will engage ERW. However, there is nothing special or unusual in respect of AVs as opposed to other on-site electrical systems, electrical equipment and conductors.
- This note does not separately consider **the Electrical Equipment (Safety) Regulations 2016** as they are directed at manufacturers, importers and distributors placing electrical items on the market. It is assumed that AVs and their equipment will have been designed and built in compliance.

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Safety Reps and Safety Committees Regulations 1977 (as amended) & Health and Safety (Consultation with Employees) Regulations 1996 (as amended) (the "Consultation Regs")

Summary of application

- **Application:** The 1977 Regulations apply to employees with recognised Trade Unions. The 1996 Regulations apply to employees who are not covered by representatives appointed by recognised trade unions.
- **Regulation 4A (1977) / Reg 3 (1996):** Specifically requires employers to consult employees (or, where unionised, their health and safety representatives) on: (a) introducing any measure in the workplace that may substantially affect H&S of employees; (b) information they must give their employees on risks to health and safety and preventive measures; (c) the planning and organising of any health and safety training they must provide to employees; and (d) the health and safety consequences of new technology employers plan to bring into the workplace if there could be implications for employees' health and safety, and for risks and hazards they are exposed to.
- **Timing:** The consultation must be undertaken 'in good time' which is left open to interpretation.
- **Seconded staff, agency staff and other workers** are not required to be consulted. However, you might want to consider doing so voluntarily if they have valuable insights. However, in any event they must be provided with the information they need in order to work safely under the Management Regulations' (see previous).

Relevance to AV deployment

- It seems very highly likely that the introduction of AVs into the workplace will trigger the mandatory consultation provisions. Consultation is likely to be valuable as it often those who are closest to the work activities in question who will have the most informed views of issues that need to be considered. However, introduction of AVs may represent a substantial change to the organisation, and necessitate changes to the workforce. Consultation may also prove fractious or difficult, therefore.

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The Health & Safety (Safety Signs & Signals) Regulations 1996 ("Signage Regs")

Summary of application

- **Application:** The Signage Regs place a legal duty to ensure safety signs are provided and maintained where necessary.
- **Regulation 4 (provide and maintain safety signs):** Applies if a Risk Assessment indicates that the employer concerned, having adopted all appropriate techniques for collective protection, and measures, methods or procedures used in the organisation of work, cannot avoid or adequately reduce risks to employees except by the provision of appropriate safety signs to warn or instruct, or both, of the nature of those risks and the measures to be taken to protect against them.
- **Regulation 5 (information, instruction and training):** employees should receive sufficient training and instruction on the meaning and use of safety signs.
- **Schedule 1** of the Signage Regs provides which and how signs are to be used when necessary, and the prescriptive design and wording requirements to ensure the signs are standardised and easily understood across different workplaces.
- **Schedule 1 Part V paragraph 2** is particularly relevant as it specifies that vehicle traffic routes ought to be permanently marked with continuous stripes, affecting the design of how AVs would move around factories and ports.

Relevance to AV deployment

- The legal requirement to provide signs is based on a duty holder's assessment on the extent to which the signs mitigate the risk. Where signs are intended for AVs, their efficacy is based on whether the AVs are programmed to understand the physical signage, acoustic signals, and markings, or whether they require devices which enable them to understand the signage required used under the Signage Regs. It may be that the AVs cannot read the signs required under the Signage Regs and therefore the signs would arguably not mitigate the risk. However, we suggest that unless / until the law is changed, where the Signage Regs would require there to be a sign, this should be used whether or not that sign is intelligible to an AV.

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The Health and Safety (Display Screen Equipment) Regulations 1992 ("DSE Regs")

Summary of application

- **DSE Regs** are relevant for a desk-based worker using multiple screens daily, for continuous periods of an hour or more, to prevent or reduce the risk of fatigue, eye strain, upper limb problems and backache.

The Regulations specify that employers of those using DSE must:

- **Carry out a DSE workstation assessment and reduce the risks identified to the lowest extent reasonably practicable (Reg 2).** Each specific workstation and its associated risks should be identified and addressed in the workstation assessment e.g. use of multiple screens for a NUiC Operator raises specific ergonomic considerations.
- **Ensure any relevant workstation meets the requirements (Reg 3).** Requirements are specified in the **Schedule** and pertain to the equipment (screen positioning, keyboard, mouse, chair, desk) and the work environment (space, lighting, glare, noise, heat). The extent these requirements are applicable depends on the nature of work.
- **Provide an eye test (Reg 5)** if a worker requests one (and corrective spectacles if needed specifically for DSE work).
- **Provide training (Reg 6) and information (Reg 7)** on the risks of DSE work and how to minimise them.

Relevance to AV deployment

- The DSE Regs are directly applicable to the emerging roles of AV remote operators, monitors, and the functional equivalent of the No-User-In-Charge (NUiC) Operator. An AV remote operator or monitor who might sit in a control room watching multiple screens displaying live video feeds, vehicle telemetry, etc. would require an assessment and mitigation of how the workstation affects their health.

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Regulations applicable to Intended Use

Lifting Operations and Lifting Equipment Regulations 1998 ("LOLER")

Summary of application

- **LOLER applies to lifting equipment** and builds on the requirements of PUWER (which also applies). It only applies to lifting equipment (rather than things e.g. vehicles onto which things are being lifted). Applies to anyone who owns, operates or controls lifting equipment used at work in GB workplaces (with some merchant shipping exclusions). Key provisions include:
- **Regulation 4 (Strength and stability):** Lifting equipment must have adequate strength/stability (with suitable factors of safety) for the task and conditions of use
- **Regulation 5 (Lifting persons):** Additional safeguards are required where people are lifted, including higher safety levels in design/use/maintenance and clear indications that equipment is intended for lifting people.
- **Regulation 8 (Organisation of lifting operations):** Ensure a competent person plans the lift, with proportionate supervision and safe execution based on risk assessment and task complexity
- **Regs 9 to 11 (Inspection, report, recording):** Thorough examination/inspection at least every 6 months by "competent persons"; reporting of defects and keeping of records.

Relevance to AV deployment

- Where a AV is being introduced into a pre-existing work setting, it is anticipated that LOLER regimes will already be in place within that work setting. However, organisations will need to consider how these regimes may need to adapt to an autonomous vehicle. For example, who is the "competent person" who undertakes a "thorough examination" (Reg 9) of an AV which is also lifting equipment.

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Manual Handling Operations Regulations 1992 ("Handling Regs")

Summary of application

- The Handling Regs requires an employer to ensure SFAIRP that employees are not asked to carry out unnecessary manual handling or work where there is a risk of being injured, and an assessment and minimisation of the risks should be made by the employer.
- **Broad definition.** The Regulations define "*manual handling operations" as "any transporting or supporting of a load (including the lifting, putting down, pushing, pulling, carrying or moving thereof) by hand or by bodily force*", and "*load*" includes any person and any animal. **(Reg 2)**
- **Reg 4** establishes a three-step approach for employers: (1) **Avoid** (SFAIRP) the need for employees to undertake manual handling operations that involve a risk of injury; (2) **Assess** the sufficiency and suitability of all operations where avoidance is not reasonably practicable, having regard to the factors in Schedule 1 (the task, the load, the working environment, and individual capability, and (3) **Reduce** the risk of injury to ALARP by taking the appropriate steps.
- Factors such as the physical suitability of the employee doing the manual handling, their clothing and effects, and their knowledge and training should be taken into account .
- **Reg 5** creates a reciprocal duty for employees to follow the safe system of work established by the employer in Reg 4.

Relevance to AV deployment

- Depending on the nature of the AV operations it can be envisaged that these Regulations could be engaged in 'interfacing' activities with AVs.

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Further Regulations: Applicability to be considered

Summary of application

- **The Confined Spaces Regulations 1997** places a duty on employers in respect of the acts of the employees and persons other than their employees within their control. It prohibits work in "confined spaces" (defined in the Regs) "unless it is not reasonably practicable to achieve that purpose without such entry" and in such cases the work must be in accordance with a "safety system of work".

- **The Control of Noise at Work Regulations 2005** place a duty on employers to reduce the risk to their employees health by controlling the noise they are exposed to whilst at work. It creates exposure limits in relation to noise in the workplace: the average level of noise that an employee could be exposed to during an average day or week as well as what the peak within that period.

- **The Control of Vibration at Work Regulations 2005** places a duty on employers in respect of the acts of the employees and certain other persons other than their employees within their premises. It requires the elimination or, where not reasonably practicable, reduction to as lower level as possible in relation to hand–arm vibration (HAV) or whole-body vibration (WBV). It appears to machinery, equipment and vehicles.

Relevance to AV deployment

- There are no 'special features' of AVs or their associated equipment which suggest particular consideration should be given to these Regulations. They are part of the wider universe of Regulations which should be considered when introducing new machinery or vehicles into the workplace.

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UK law on the design and supply of products

Summary of application

- **Supply of Machinery (Safety) Regulations** apply to 'responsible persons', defined as the manufacturer or their authorised representative, and others such as: (i) distributors who market products under their own name; (ii) those who substantially modify existing machinery, or machinery and other products in scope before they are put into service; and (iii) those who design and construct machinery for their own use. Coverage includes 'safety components'.
- The Regulations require, amongst other things, that machinery is designed and constructed to be safe, and meet all relevant Essential Health and Safety Requirements (EHSRs) listed in the Regulations; are supplied with comprehensive instructions in English; and are accompanied by a Declaration of Conformity.
- Additional laws may also apply to the manufacturer and supply of machinery such as the **Pressure Equipment Regulations** for the safety, by design and manufacture, of most pressure equipment and assemblies at a pressure of more than 0.5 bar.

Relevance to AV deployment

- Law and regulation relating to the design, manufacture and supply of AVs are largely outside of the scope of this guidance. However, they are flagged here for awareness in cases where AVs are being specifically design for a particular deployment. In such cases, the development of "technical files" to evidence conformity to applicable standards will be require, and may have to be considered in parallel within the development of other safety analysis.

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Where Dangerous or Hazardous Substances may be involved

The Dangerous Substances and Explosive Atmospheres Regulations 2002 ("DSEAR")

Summary of application

- Requires employers (and the self-employed) to control safety risks from fire, explosion and substances corrosive to metals, protecting workers and members of the public affected by work activities.
- Applies wherever "dangerous substances" are present or could arise at work in quantities and circumstances that create fire/explosion risks.
- Core duties under DSEAR are to identify and assess risks; eliminate or control risks from dangerous substances (e.g., prevent releases/ignition, manage ventilation, safe systems of work); prepare plans and procedures to deal with accidents, incidents and emergencies involving dangerous substances; and make sure employees are properly informed about and trained to control or deal with the risks from the dangerous substances.
- Some work activities are specifically outside of the scope of DSEAR (Reg 3)

Relevance to AV deployment

- Where a AV is being introduced into a pre-existing work setting, it is anticipated that DSEAR assessments will already have been undertaken within that work setting.
- Organisations should consider whether AVs and their supporting equipment will introduce any additional dangerous substance and whether it will be moving through or in close proximity to any areas which are already subject to DSEAR zoning.

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The Control of Substances Hazardous to Health Regulations 2002 (as amended) ("COSHH")

Summary of application

- COSHH applies to any work activity that creates a risk to health from a "substance hazardous to health" (including chemicals, mixtures, fumes, vapours, gases, mists, biological agents, and certain dusts). There is no de minimis quantity; applicability turns on risk from exposure arising out of work.
- A key element of COSHH is the 'hierarchy of controls' whereby certain measures to eliminate or mitigate the risk are to be prioritised over others.
- Figure 1 (extracted from the HSE's COSHH Approved Code of Practice) summarises the scope of the employer's duties under COSHH towards employees and other people likely to be affected by the work, e.g. contractors and visitors to a site. (SFARP = 'so far as reasonably practicable')

Figure 1: Overview of Employer Duties Under COSHH for Employees, Contractors, and Visitors

Duty of employer relating to:	Duty for the protection of:		
	Employees	Other people on the premises	Other people likely to be affected by the work
Assessment (regulation 6)	Yes	SFARP	SFARP
Prevention/control of exposure (regulation 7)	Yes	SFARP	SFARP
Use of control measures and maintenance, examination and test of control measures (regulations 8 and 9)	Yes	SFARP	SFARP
Monitoring exposure (regulation 10)	Yes, where required	SFARP	No
Health surveillance (regulation 11)	Yes, where appropriate	No	No
Information, training etc (regulation 12)	Yes	SFARP	No
Arrangements to deal with accidents and emergencies (regulation 13)	Yes	SFARP	No

Relevance to AV deployment

- Where an AV is being introduced into a pre-existing work setting, it is anticipated that COSHH assessments will already have been undertaken within that work setting.
- Organisations should consider whether AVs and their supporting equipment will introduce any additional "substance hazardous to health" and whether the AV will be moving through or in close proximity to any areas were such substances are present.

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The Control of Major Accident Hazards Regulations 2015 ("COMAH")

Summary of application

- COMAH applies to establishments that store above threshold quantities of dangerous substances. It mainly covers chemical sites, but also applies to certain storage facilities, explosives and nuclear sites, and any other operations holding or using dangerous substances above the regulatory thresholds. This might include certain ports, terminals or factors, a more common example being those which store LNG.
- COMAH applies to any "establishment" where dangerous substances in Schedule 1 are present at or above qualifying quantities (specific to the substances). Aggregation rules apply across categories and named substances. There are two thresholds: lower-tier and upper-tier.
- Core duties for 'lower-tier establishments' include: Notify the Competent Authority (HSE/EA); prepare a Major Accident Prevention Policy (MAPP) and implement a proportionate safety management system (SMS); provide specified public information. Addition obligations apply to 'upper-tier establishments.
- COMAH applies to the site, but there will be additional overlays. E.g. the movement of dangerous goods within the harbour area is also regulated by the **Dangerous Goods in Harbour Areas Regulations 2016.**

Relevance to AV deployment

- Where a AV is being introduced into a pre-existing work setting, it is anticipated that COMAH assessments will already have been undertaken within that work setting.
- It appears unlikely that introduction of AVs and associated equipment would, of itself, change whether the premises met a threshold level for a particular substance. However, where a premises already meets the lower- /upper-tier thresholds for certain substance, consideration should be given as to how existing measures and documentation (e.g. the MAPP and SMS) may be amended to accommodate AV introduction.

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Appendix 3 /

Comparative Summary of Northern Irish law

Unless otherwise stated in this Rider, the legal position and legislation outlined in in this guidance applies to Northern Ireland ("NI").

Table 5: Comparative summary of Northern Irish Law

Topic Area	Relevant Sections	NI Position
Tort Law	Section 5	Tort law in NI is broadly similar to the law of tort in England and Wales though there are some NI specific statutes and procedural differences. Tort law in NI comes from: (i) common law developed through case law, much of which is shared with England and Wales; and (ii) various NI statutes. The Occupier's Liability Act 1957 ("**OLA 1957**") and Occupier's Liability Act 1984 ("**OLA 1984**") do not apply in NI. The equivalent applicable legislation in NI is: 1. **The Occupier's Liability Act (Northern Ireland) 1957** 2. **The Occupier's Liability (Northern Ireland) Order 1987** The same principles apply under this legislation in NI as are outlined in the in this guidance in respect of England and Wales. The Employer's Liability (Defective Equipment) Act 1969 (referred to at section 5.11 does not apply in NI. The NI equivalent is the **Employer's Liability (Defective Equipment and Compulsory Insurance) (Northern Ireland) Order 1972**. The same principles apply in NI as described in section 5.11.
Product Safety (Consumer Protection and Claim Rights)	Section 6	Part I of the Consumer Protection Act 1987 ("**CPA**") does not apply in NI. The equivalent applicable legislation in NI is **Part II of the Consumer Protection (Northern Ireland) Order 1987** which contains the same principles as Part I of the CPA. Following Brexit, NI aligns with EU rules on product safety and the **EU General Product Safety Regulations (Regulation (EU) 2023/988)** ("**EU GPSR**"), which came into force on 13 December 2024, apply in NI in accordance with the NI Protocol (as amended by the Windsor Framework) superseding the General Product Safety Regulations 2005. It is noted that consideration of these Regulations is outside of the scope of the review undertaken in this guidance. The new **Revised Product Liability Directive (EU/2024/2853)** (detailed at section 6.11) which is due to take effect on 9th December 2026 will apply to Northern Ireland by virtue of the Windsor Framework. Beyond limited provisions which amend existing EU law in Annex II of the Windsor Framework, **The Artificial Intelligence Act (EU) 2024/1689** ("**EU AI Act**") does not apply in NI. The UK has been notified by the EU under Article 13(4) of the Windsor Framework that the EU considers the EU AI Act in scope of the Windsor Framework to the extent it regards provisions which contain conditions and specifications for the placing on the market of products, or relate to the provision of services, that may affect the free movement of products. It would only apply in NI following an agreement at the Withdrawal Agreement Joint Committee, which would be subject to mechanisms in Schedule 6B to the Northern Ireland Act 1998. The EU and UK are undertaking technical engagement on this issue and no decision has been made as of yet. The **EU Machinery Regulation (EU 2023/1230)** (referred to at section 6.13) will apply in NI, under the Windsor Framework, when it comes into force on 20 January 2027. Implementation of the EU Regulation under the Windsor Framework requires legislation to be laid in Parliament by October 2026, in line with the EU deadline for enforcement provisions.

Topic Area	Relevant Sections	NI Position
The Health & Safety Regime	Section 7 Section 8 Section 9 Appendix 1	Preliminary Points In NI, the key legislation governing health and safety law is the **Health & Safety at Work (NI) Order 1978** ('**1978 Order**'). H&S law is a devolved matter for NI, so the HSWA 1974 does not extend to NI. However, the 1978 Order mirrors the structure of the HSWA 1974, and the definitions, duties and enforcement powers are broadly similar. Regulations under the 1978 Order provide more detail/ greater prescription as to application of duties in specific contexts. **The Health & Safety Executive for Northern Ireland ('HSENI')** is the designated enforcing authority for the 1978 Order and associated regulations[147]. HSENI is the relevant enforcing authority for docks/ harbours and airports. The guidance also sets out the enforcing authorities for railways, nuclear materials, on-board shipping and airports. The NI position is as follows: • Railways: **Department for Infrastructure**, acting through its **Rail Safety Authority** (RSA) and **Rail Safety Branch**, is responsible for ensuring compliance with the rail safety framework in N.I[148]. HSENI may also enforce general workplace health and safety duties at railway premises. Although ORR has no direct enforcement authority in Northern Ireland, there are Memoranda of Understanding between the RSA, HSENI, and ORR to promote cooperation[149]. • Nuclear materials: ONR is the enforcing authority for nuclear installations across the UK. However, Northern Ireland has no licensed nuclear installations, so ONR's role generally does not extend to typical NI factories, docks/ harbours, or airports. • On- board shipping: Same position as GB. MCA is the enforcing authority. • Airports: Same position as GB. CAA/ HSE/ HSENI has a Memorandum of Understanding[150]. The guidance notes that HSWA 1974 and most regulations made under it do not apply to seamen working on board ship under the control of the ship's master. The position under NI legislation is the same. The 1978 Order does not apply. Instead, Merchant Shipping Health and Safety Regulations govern onboard conditions, again, enforced by MCA. The N.I. equivalent to the Workplace (Health, Safety and Welfare) Regulations 1992 is the **Workplace (Health, Safety and Welfare) Regulations (Northern Ireland) 1993** ("**1993 Regulations**"). Regulation 3(1)(a) states that the 1993 Regulations apply to every workplace but shall not apply to "*a workplace which is or is in or on a ship within the meaning assigned to that word by regulation 2(1) of the Docks Regulations (Northern Ireland) 1989*". The N.I. equivalent to the Provision and Use of Work Equipment Regulations 1998 (PUWER) is **Provision and Use of Work Equipment Regulations (Northern Ireland) 1999**, which also does not apply to ship's work equipment (whether that equipment is used on or off the ship) subject to paragraphs (7) and (10) of Regulation 3. The equivalent pieces of legislation to the Lifting Operations and Lifting Equipment Regulations 1998 (LOLER), the Work at Height Regulations 2005, and the Manual Handling Operations Regulations 1992 in N.I. are the **Lifting Operations and Lifting Equipment Regulations (Northern Ireland) 1999**, the **Work at Height Regulations (Northern Ireland) 2005** and the **Manual Handling Operations Regulations (NI) 1992** respectively. These also exempt ship's work equipment and ship-board activities from their scope. **Health and Safety (Enforcing Authority) Regulations (Northern Ireland) 1999** sets out the delineation of responsibilities for the enforcing authorities in Northern Ireland. The Corporate Manslaughter and Corporate Homicide Act 2007 and common law gross negligence manslaughter apply to Northern Ireland. The NI equivalent of Section 37 is Article 34A Offences by bodies corporate. In NI, **The Fire and Rescue Services (Northern Ireland) Order 2006** and **The Fire Safety Regulations (Northern Ireland) 2010** (the "**2010 Regulations**") form the fire safety regime covering non-domestic premises. The 2006 order sets out an employer's duties to employees in respect of harm caused by fire in the workplace (Article 25) as well as duties for persons in control of a premises (Article 26). There is a duty to carry out a suitable and sufficient fire risk assessment. The 2010 regulations set out duties in respect of reviewing risk assessments, fire-fighting equipment, alarms and detectors, emergency routes and signage, and maintenance of systems. *Cont.*

Topic Area	Relevant Sections	NI Position
The Health & Safety Regime	Section 7 Section 8 Section 9 Appendix 1	<u>Section 7</u> The enforcement action guidance in NI is similar to that in England and Wales[151]. It is also true in N.I. that it is enough that mere risk of harm has not been reduced to ALARP. At Section 7.6(b), the NI equivalent legislation is the **Management of Health and Safety at Work Regulations (NI) 2000, Workplace (Health, Safety and Welfare) Regulations (Northern Ireland) 1993, and Provision and Use of Work Equipment Regulations (Northern Ireland) 1999.** At Section 7.7 please note the AVA 2024 does not apply in Northern Ireland. 1978 Order and associated regulations mirror the structure of the HSWA 1974. Please see below list of corresponding NI specific legislation: • **Management of Health and Safety at Work Regulations (NI) 2000** • **Workplace (Health, Safety and Welfare) Regulations (Northern Ireland) 1993** • **Provision and Use of Work Equipment Regulations (Northern Ireland) 1999** • **Lifting Operations and Lifting Equipment Regulations (NI) 1999** • **The Personal Protective Equipment at Work Regulations (NI) 1993** • **Manual Handling Operations Regulations (NI) 1992** • **Health and Safety (Display Screen Equipment) Regulations (NI) 1992** • **Health and Safety (Safety Signs and Signals) Regulations (Northern Ireland) 1996** • **Health and Safety (Consultation with Employees) Regulations (NI) 1996** • **Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (Northern Ireland) 1997** • **Control of Substances Hazardous to Health Regulations (Northern Ireland) 2003** • **Dangerous Substances and Explosive Atmospheres Regulations (Northern Ireland) 2003** • **Control of Major Accident Hazards Regulations (NI) 2015** • **Confined Spaces Regulations (NI) 1999** • **The Electricity At Work Regulations (Northern Ireland) 1991** At Section 7.10, there is reference to the Nuclear Regulatory Review 2025 by John Fingleton. The report focuses on GB nuclear regulation and does not indicate any legislative or policy change specific to NI. NI does not have any nuclear generation sites. <u>Section 8</u> In Northern Ireland ACOP are not legally binding but carry a special legal status as described by BS under Article 18 & 19 of 1978 Order. HSE (GB) ACOPs do not automatically have legal status in Northern Ireland. They only have the same formal status in NI once the HSENI has specifically approved them for use[152]. Northern Ireland also has its own list of ACOP, but these are not relevant to the scope of this guidance[153]. HSENI generally endorses HSE guidance including the Workplace Transport Safety Guide and Safety in Docks ACOP. At Section 8.4, all of the ACOP listed in Section 8.4. with the exception of L146 Consulting Workers on H&S, and L155 Dangerous Goods in Harbour Areas also apply in NI. *Cont.*

Topic Area	Relevant Sections	NI Position
The Health & Safety Regime	Section 7 Section 8 Section 9 Appendix 1	Section 9 Generally, HSENI endorses HSE (GB) guidance. At Section 9.2, all listed HSE guidance appears on the HSENI website. DfT/CCAV Code of Practice Automatic Vehicle Trialling (30 Nov 2023) purports to be of application throughout UK, and the jurisdictional scope of TRL/CCAV, Off-Highway Automated Vehicles Code of Practice – 2021 is unclear. At Section 9.2, on HSE/ MCA/ PS&S Port Specific Guidance- the position in NI is the same. There is no guidance specific to ports on automated vehicles. The HSE, MCA & Port Skills & Safety guidance listed at Section 9.2 is applicable (but not legally binding) on Northern Ireland. At Section 9.2, on CAA Airport specific guidance, the position in NI is the same. There is no airport specific guidance on automated vehicles. CAA/ HSE/ HSENI has a Memorandum of Understanding. The Civil Aviation Publications (CAPs) issued by the CAA will also apply to NI. At Section 9.3, HSE guidance applies in Northern Ireland as recognised, authoritative guidance but it is not legally binding. While HSENI enforces NI law, it often accepts HSE (GB) guidance as a benchmark. PAS / ISO / EN and other 'Standards'- Northern Ireland uses the same system of voluntary technical standards as the rest of the UK. The position is the same as GB. Appendix 1 In Appendix 1, The Health and Safety Executive for Northern Ireland are the designated enforcing authority for the 1978 Order and associated regulations[154]. On the footnote at Appendix 1.1. where it mentions Section 47 HSWA on no civil action for damages, the NI equivalent is **Article 43 1978 Order:** *'43(a) Nothing in this part shall be construed as conferring as right of action in any civil proceedings in respect of a failure to comply with any duty imposed in Art 4-8 or contravention of Art 9'.* In terms of other duties, the same principles apply with regards to 'duty of care' and contractual liabilities. The Sentencing Council guidelines on 'Health and safety offences, corporate manslaughter and food safety and hygiene offences' do not expressly apply in N.I. However, N.I. courts do consider the general principles when determining what level of fine to impose. The level of fines imposed for breach of health and safety duties in NI is notably lower than in England & Wales. **Appendix 1, Section 2** – Same applies in NI under 1978 Order. **Appendix 1, Section 3** – Same applies in NI under Management of Health and Safety at Work Regulations (NI) 2000. **Appendix 1, Section 3.4 on SMSs** – For airports, Article 212 Air Navigation Order 2016 and CAP168 also applies to NI. Like GB, we are not aware of any specific statutory provision requiring NI ports to have a Safe Management System. **Appendix 1, Section 4** – Same applies in NI under the Workplace (Health, Safety and Welfare) Regulations (Northern Ireland) 1993. **Appendix 1, Section 5** – NI does not adopt the Railways and Other Guided Transport Systems (Safety) Regulations 2006 (SI 2006/599). NI safety framework for railways is based on **Railway Safety Act (Northern Ireland) 2002** and **Railways (Safety Management) Regulations (Northern Ireland) 2006**. It implements the same EU Railway Safety Directive (2004/49/EC) but is separate from the GB ROGS.

Topic Area	Relevant Sections	NI Position
"On Road" Automated Vehicle Legislation and Association Guidance	Section 10 Section 6.27	The Automated Vehicles Act 2024 and the Automated and Electric Vehicles Act 2018 largely do not extend to Northern Ireland. There is no equivalent NI legislation relevant to AVs. Accordingly, AV operation "on road" in NI will still be governed by general road traffic and vehicle legislation including: • Road Traffic (NI) Order 1981 (the "**1981 Order**"); • Road Traffic (NI) Order 1995 (the "**1995 Order**"); and • Road Traffic Regulations (NI) Order 1997 (the "**Road Traffic Regulations**"). The Road Traffic Act 1988 does not extend to Northern Ireland. The road traffic and vehicle legislation in NI implies that a mechanically propelled vehicle on a road must have a driver, creates offenses relating to careless, dangerous and drink/drug driving and implies the driver must remain in proper control of the vehicle. The UK Government's "***Code of Practice; automated vehicle trialling***" applies across the UK and refers to NI throughout. As stated in the introduction to this Code, conducting public trials of automated vehicle technology is possible in the UK at any level, provided the following legal requirements are met: • **a driver is present, in or out of the vehicle, who is ready, able, and willing to resume control of the vehicle;** • **the vehicle is roadworthy;** • **appropriate insurance in place.** It is our understanding that NI therefore requires a safety driver to be on board a AV at all times and will require new legislation to enable the deployment of truly driverless vehicles. It is also our understanding that Project Harlander, which trialled an 8 seater automated vehicle on Belfast Harbour roads (which are subject to their own byelaws) operated with a safety operator on board.

Topic Area	Relevant Sections	NI Position
General	Section 2	The Network and Information Systems (NIS) Directive (2016/1148) was transposed into UK law as the **Network and Information Systems Regulations 2018** which apply to NI. The Equality Act 2010 does not apply in NI. The equivalent legislation is the **Disability Discrimination Act 1995.** The Regulatory Reform (Fire Safety) Order 2005 does not apply in NI. The NI equivalent is the **Fire and Rescue Services (Northern Ireland) Order 2006**.
	Section 3.4 - "On road" vehicle laws and traffic laws	Under the **Road Traffic (NI) Order 1995** ("**1995 Order**") a "**road**" is defined as: "*includes a public road and any street, carriageway, highway or roadway to which the public has access*". Looking specifically at Ports, under Article 109(1) of the 1995 Order, this legislation (except where otherwise stated in Article 109[155]): "***shall not have effect in relation to the Belfast Harbour Commissioners or other harbour commissioners having in relation to their harbour area powers similar to those of the Belfast Harbour Commissioners for restricting access to, and regulating motor traffic on, roads, and no road vested in, or under the control of, any such harbour commissioners shall be deemed for the purpose of this Order to be a road to which the public has access***". NI road traffic legislation does not therefore, to a substantial extent, apply to roads under the control of the Belfast Harbour Commissioners. EU law continues to apply in Northern Ireland for the purposes of type approval, as a result of the NI Protocol and Windsor Framework Agreements. These Agreements also led to the establishment of the UK(NI) type approval scheme, which directly follows EU legislation but is implemented by the Vehicle Certification Agency. There are no Associated British Ports in NI.
	Section 3.11 – Site-specific local byelaws and 'rules'	Ports in NI have their own harbour legislation (for example the Belfast Harbour Acts and Orders 1847 to 2002) and their own byelaws and port rules which should be considered. The ability for airports in NI to enact byelaws stems from The Airports (Northern Ireland) Order 1994 (section 18(2)).
	Section 3.12 – Movement of goods which the law classes as dangerous or hazardous	The Dangerous Goods in Harbour Areas Regulations 2016 do not apply in NI. The Freight Containers (Safety Convention) Regulations 2017 do not apply in NI. Instead freight containers used "at work" are regulated under general health and safety, lifting and transport legislation.
	Appendix 1 Section 5.3	The Factories Act 1961 does not apply in NI. The NI equivalent is the **Factories Act (Northern Ireland) 1965** and it defines a "Factory" is the same way as the English legislation noted in Appendix 1 section 5.3(b).

Appendix 4 /

Practical Considerations

1 Organising applicable laws on the lines of the regulatory pyramid

1.1 Both in a health and safety ("**H&S**") and product safety context, it is useful to visualise the regulatory framework as a pyramid. In term of volume of references, it can quite accurately be conceived as a pyramid, since the primary Acts of Parliament are very few, and the volume of documentation increases significantly with each step further down the pyramid.

** Where novel technology is concerned this may include applicable analogous situations – e.g. AV Acts not strictly applicable to off-highway context but that may provide a useful framework for compliance in other aspects.*

1.2 In an H&S context, at the heart of the 'Primary Legislation' level are the duties outlined in the Health & Safety at Work Act ("HSWA") and its core obligations on employers and other dutyholders to reduce risks to health & safety of employees 'so far as is reasonably practicable (SFAIRP, sometimes referred to as being 'to a level that is as low as reasonably practicable' or "ALARP"), and to similarly manage risks to others, provided these fall within the scope of one's "undertaking"[156].

1.3 These overarching duties permeate all layers of the pyramid. For example, when taking decisions about choice of systems for communications to/from an AV:

(a) there will be options offering high/lower bandwidth, latency, signal strength (and associated weak / loss of connection issues), which will have implications for latency (delay) of the AV in responding to its surroundings.
(b) We are not aware of a 'standard' which suggests what is good practice in this area, nor any legal requirement prescribing a particular specification.
(c) However, as a generalisation, lower latency options are likely to be higher cost (both initially and ongoing) but a may result in a lower level of risks within the overall 'system-of-systems' within which the AV will operate (e.g. because the AV will be able to 'react' more quickly to avoid something which may cause harm). The converse is likely to be true of high latency systems.
(d) Therefore, in a decision as to hardware and software for communications to/from an AV, an important factor[157] should be the impact on latency (delay) of the AV in responding to its surroundings and considering whether this is aligned with the HSWA core duties to reduce health & safety risk to ALARP.

1.4 In terms of legal compliance it is vital to map the first two layers of the regulatory pyramid, and probably highly valuable to map the third, However, further down the pyramid there is greater potential for discretion: the ability to select the most relevant, effective and proportionate existing evidence bases and standards that could be used to assist the dutyholder in demonstrating ALARP compliance in the context of the particular use case being assessed.

2 The core requirements for safety on paper and in reality

2.1 The law requires both:

(a) '**Safety on paper**': the design of systems of work that reduce H&S risk to ALARP including through the creation of hazard identification and risk assessments[158], safety management systems , and other policies and procedures for a safe working environment[160]; and
(b) '**Safety in reality**': the implementation of these safe systems of work and policies and procedures into practice and the supervision and monitoring of activities within the working environment to assess their continued suitability, improvement / refinement and effectiveness for delivering a safe working environment[161].

2.2 It is important to recognise that 'safety on paper' and 'safety in practice' are both legally mandatory. Having something which looks safe on paper is not alone sufficient, and in fact could potentially give rise to additional liability exposure insofar as it evidenced

that the organisation had recognised the hazards / risks, and design systems on paper to address them, but had not done so in practice. It is important that 'paper' arrangements are implemented in 'practice', therefore, (and that both benefit from iteration by application of the risk management cycle[162]).

2.3 Equally, it is also true that achieving 'safety in practice' would not necessarily prevent prosecution for inadequate risk management on paper, in particular given the HSWA requirement for a written H&S policy and the Management of Health and Safety At Work Regulations 1999 requirement for risk assessments[163] - albeit objectively mere failures to comply with 'safety on paper' requirements may be less severe in impact or attract proactive regulatory enforcement.

3 Considering all 'lifecycle' stages

3.1 Although not explicitly[164] mandated by law, it may nevertheless be highly beneficial to consider how law and regulation will apply at ***all*** stages of the AV lifecycle ***from initial development***, to prototyping and / or testing, commissioning, validation, operational use (including in life monitoring and maintenance), in-life modifications, and ***to end of life decommissioning and disposal***. For example, after deployment and throughout its life in use, it is necessarily to consider how the AVs themselves may be inspected, maintained and modified (e.g. software updates or hardware upgrades).

4 Reconciling 'off road' operations with the 'on road' AV regime

4.1 This note assumes operations both outdoors and indoors in locations that are not public roads nor cross them. Where an AV is in any sense operating on a public road[165] (including crossing one) then relevant on-highway legislation and guidelines will also apply. This will include egress to/from the AV's place of operation[166]. The *requirement* to comply with on-highway legislation for such 'dual use' vehicles introduces significant additional legal hurdles.

4.2 However, we have also identified that some organisations have sought to *voluntarily reflect* legislation and guidelines that would apply *on-highway* as a means of demonstrating safety off-highway. We make the following practical observations about this:

(a) In our experience, where an organisation voluntarily adopts a standard as a reference, particularly a standard which is otherwise mandatory in other circumstances, not because it is legally binding but because it is analogous, then it is worth keeping a record of the assessment and the decision that the standard is being adopted voluntarily where appropriate. Such a record may be valuable (e.g. in case of later incident investigation) in particular where harm results from an operational deviation from that voluntarily adopted standard, if it is later claimed that the organisation assumed an obligation to comply with that standard; and

(b) In seeking to avoid imposition of 'on road' law then it may be necessary to expressly design the AV deployment so as to avoid their interaction with 'on road' infrastructure. That may or may not be easy, for example, where there is insufficient space 'on site' to store the AVs and they need, therefore, to egress to another site each day and haulage is not practicable.

5 Aligning objectives, use case and the AV operational design domain (ODD)

5.1 An organisation will seek to achieve certain things through CAM deployment ("**Objectives**"). To achieve these Objectives, it will intend to deploy the AV in a specific 'real life' context within its organisation ("**Use Case**"). However, an AV's ability to do this will be constrained by parameters which limit its effectiveness and/or safety (its Operational Design Domain or "**ODD**"). It is important, therefore, that these are aligned. Careful consideration of these three elements is likely to be fundamental to identifying hazards, identifying risks and appropriate risk controls, and implementing effective risk management (thereby reducing the risk of breach of H&S law):

(a) **Understanding the Objectives:** A clear understanding of what the organisation seeks to achieve (and perhaps also what it is not seeking to achieve) through deployment of AVs should be kept at the forefront of decision-making. This is not directly a legal requirement[167] but is likely to have legal implications because the intended Objectives may shape decisions on all aspects of the CAM deployment, including: [1] design of the AV; [2] design of the environment in which it will operate; [3] what it will be doing[168]; [4]

changes to policy, procedure and practice; [5] changes to roles, responsibilities and culture. It should be kept in mind that the Objectives may include not only what the AV itself will do but the implications it will have for the wider organisation. These objectives may change, including in light of identified constraints within the Use Case and/or the ODD of an AV.

(b) **Understanding the Use Cases:** The Use Cases are the practical scenario-based descriptions of the reality of how the organisation intends deploy the AVs, to be incorporated into and interact with people, system, process, piece of equipment, environment (etc) in order to complete or undertake the intended uses / tasks to achieve the Objectives.

(c) **Understanding the Operational Design Domain (ODD) of an AV:** The ODD is the set of specific conditions under which an AV is designed to operate safely. It defines the boundaries of the AV's safe operation[169]. It provides, therefore, foundational information for risk assessment, deployment planning, and regulatory compliance (see box).

Using the Operational Design Domain and the Use Case to identify the 'Safety Envelope'

Operational Design Domain elements (i.e. 'dimensions' of constraints) are likely to include:

(i) **Static elements,** such as the constraints on the AVs ability to identify obstacles of certain types (eg. how wide does a bollard have to be to be 'seen?) or identify static markers (can the AV identify and interpret certain signs or road markings only if presented in a particular way?)

(i) **Drivability elements,** such as constraints on the terrain (e.g. if the tarmac is insufficiently smooth or has 'speed bumps' will this impair operating performance?) and limits of geometry (eg. what is the maximum incline, minimum turn radius, height restrictions?)

(iii) **Environmental elements,** such as conditions in which the AV will be unable to operate (eg. during snowfall or if insufficient illumination) or in which operations may be impaired (eg. strong rainfall or 5G/satellite connectivity reduced) or conditions which may cause short or longer term damage (e.g. exposure to dust).

(iv) **Dynamic elements,** such as how the AV will respond to different moving obstacles (e.g. people, other vehicles, something falling) and how it accelerates, decelerates and the average and top speeds at which it will travel.

Use Cases may be mapped in these same 'dimensions' for example identifying the route on which the AV is intended to travel, the static elements of that route, elements which impact 'drivability', considering the different environmental conditions in which the organisation will want the AV to perform, and the different dynamic elements to which it will or may be subject during its operations.

Mapping the intended Use Cases against the ODD of the AV can be used to create a '**Safety Envelope**' within in which the AV's operation will be tolerably safe' and hopefully (for the organisation) also tolerably efficient and effective. A more sophisticated Safety Envelope may be used to identify 'pinch points' or edge/corner case situations: areas within the Use Case where risk is increased for example because of an inherent element of the environment (e.g. a location where pedestrians must come into proximity of an AV due to pre-existing constraints such as the shape of a building) or because of an element of the ODD (e.g. bollards which the organisation might reasonably expect a human driver to react to but where there is a risk they may not be identified or responded to in the same way by the AV).

Generating a 'Safety Envelope' in this way seems very likely to assist in demonstrating that risk has been reduced to ALARP in the circumstances in which the AV is operating within that envelope. For completeness, consideration will also need to be given to ensuring that risk is also reduced to ALARP when accommodating for the AV operating under fault conditions.

This process would then need to be repeated whenever there was a change in the ODD or the Use Case.

6 'Off-the-shelf' versus 'new' or 'tailored' AVs

6.1 Particularly important to the above, and an important consideration at the outset, is where the proposed CAM deployment sits along the continuum (see Figure 2).

(a) **An 'available' AV (i.e. a pre-existing 'off the shelf' model):**

(i) An important advantage of deploying a pre-existing AV may be that it will have a greater pre-existing body of available evidence and data around: [1] the AV's operating capabilities; [2] its limitations and ODD envelope (see below); and [3] its safety in operations[170]. It might also have a more highly developed safety cases / risk assessments and guidance / handbooks for its operation. This may assist in evidencing 'safety on paper' and 'safety in reality' in particular in demonstrating the safety of the *AV itself* as a necessary component of the Use Case.

(ii) An important disadvantage is that there may be greater need to adapt the environment, tasks and/or user roles (etc) for compatibility and safety within the limitations of the AV and its ODD envelope. Insofar as the environment has changed, risk assessments drawing on the previous environmental status will need to be revisited for the reconfigured environment.

(b) **A 'new' / 'tailored' AV (i.e. can be fully bespoked to its environment)':**

(i) An important advantage may be the ability to design or modify the AV for its specific environment, tasks, use and roles (etc.) with greater ability to adapt its design and operating parameters to the environment. This may reduce correspondingly the need to adapt the environment for compatibility and safety with the limitations of the AV. This may enable greater reliance on pre-existing safety documentation and practices concerning that existing environment, and reduce the extent of change to it. This may assist in evidencing 'safety on paper' and 'safety in reality' in particular in demonstrating the safety of the *environment* into which the AV is being deployed.

(ii) An important disadvantage is that it may increase the burden of demonstrating that safety of the AV itself as there may be a much lesser pre-existing body of available data around: [1] the AV's operating capabilities; [2] its limitations and ODD envelope (see below); and [3] its safety in operations. It may also mean that there is less developed safety cases / risk assessments and guidance / handbooks for AV operations and that these need to be developed on a bespoke basis as part of the deployment project.

Figure 2: 'Off-the-shelf' versus 'new' or 'tailored' AVs

'Available' AV	'New' / Tailored' AV
Greater data and evidence base for AV	Reduced data and evidence base for AV
Therefore, potentially easier to evidence safety of AV	Therefore, potentially harder to evidence safety of AV
Greater need to adapt the environment to AV limitations	Reduced need to adapt the environment to AV limitations
Therefore, potentially greater difficulty in evidencing safety of environment to extent modified to accommodate AV limitations	Therefore, potentially less difficulty in evidencing safety of environment due to less modification to accommodate AV limitations

AV not Tailored to Environment
Environment needs modification for AV

Partially Tailored to Environment
Partially Tailored AV

AV fully Tailored to Environment
Environment needs less modification

7 Factors in favour of partial automation

7.1 Linking to the above topic of parallel development of Objective(s), Use Case(s), and ODD(s) for AV operation in a particular deployment setting, something that we heard from interviewees is that they had found it valuable to give principled and early consideration to aspects of operations which, *even if they could* be done by a AV, were ones which the organisation might nevertheless determine *should be done by a human*. This might be for a variety of reasons, including:

(a) **Workforce considerations:** maintaining workforce relations in ensuring that some safety critical tasks continue to be done by those employees who had previously done them. Alternatively, if some staff will not be replaced by automation but will simply be underutilised, then an organisation might query the cost/benefit of automating that aspect at both additional expense and creating worker underutilisation, rather than keeping that aspect as a manual operation which better utilises their remaining workforce (and noting that downsizing a workforce is fraught in legal and other respects).

(b) **Risk assessment considerations:** the assessed risk of an activity being done manually may be, when considered in wider context, either a lower assessed risk or at least a 'known level of risk' compared to an insufficiently known corresponding risk of automation. A dataset, other empirical evidence base, standard or methodology for 'safe' (or 'safer') automated operation may not be available to support the automation of this aspect;

(c) **Economic considerations:** there may be no clear economic benefit to automating this aspect and/or automation may be prohibitively expensive relative to the apparent benefits delivered. It is understandable that organisations may only be looking to implement the extent of automation which delivers best return on investment, and 'best ROI' may be partial rather than total automation.

(d) **Insurance considerations:** limiting automation to specific parameters may be beneficial in being able to obtain insurance for those activities. Alternatively, the insurance cost of certain automated activities may be prohibitively expensive, potentially including when compared to savings generated versus comparable manual operations.

7.2 One example we were provided with related to coupling mechanisms between an AV and another component (one example might be airbrake couplings between a front-end lorry and its back-end trailer). It is technologically possible that this could be done by an AV. However, it was determined that this should continue to be done by humans. The interviewee described a methodology of deciding:

(a) what you *need* AVs to be able to do;
(b) what you might *want* AVs to be able to do;
(c) what you *still might want* humans to do (for a variety of reasons); and
(d) what you *might need* humans to continue to do (for cost, time, ALARP or other reasons).

8 'Manual operation' to 'AV operation' is not a 'like-for-like' swap

8.1 A slightly similar but different practical insight we heard was about the potential for organisational confusion about whether AV behaviour or outputs were 'as safe or safer than human' and what this meant.

8.2 It is notable that Section 2(2) of the Automated Vehicles Act 2024 mandates for 'on road' AVs that safety principles "*must be framed with a view to securing that- (a) authorised automated vehicles will achieve a level of safety equivalent to, or higher than, that of careful and competent human drivers, and (b) road safety in Great Britain will be better as a result of the use of authorised automated vehicles on roads than it would otherwise be.*" Notably, this does not require AVs to be functionally identical to humans (including in their movements), nor does it require them to without fault. It merely requires them to meet an output standard of safety equivalent to, or higher than, that of careful and competent human.

8.3 The following examples may assist in illustrating the potential organisational confusion about that this may mean in practice.

(a) **First Scenario:** if AVs operate in a low-light or lightless environment which is restricted to AV-only operations, and these AVs have the necessary sensory capabilities to navigate those spaces safely, then it should be irrelevant that a human driver could not navigate that space safely. This seems relatively uncontentious. However, the scenarios below are qualitatively similar but may be *perceived* as more unsafe.

(b) **Second Scenario:** We heard that employees would find it concerning to see an AV move at pace past a 'blind corner' and might consider that a 'near miss' even if detectors in the environment (communicating to the AV) and/or detectors on the AV meant the AV could (in effect) 'see around the corner'. In other words, it was only a 'blind corner to a human and the AV had all necessary data to make a safe decision.

(c) **Third Scenario:** We similarly heard of employees reporting the 'near misses' of AVs passing closer to each other or to other objects than manually driven vehicles would have done. However, in all cases an analysis of the data showed the AVs had been operating within their ODDs and each had calculated that their respective manoeuvres could be executed safely.

(d) **Fourth Scenario:** We heard of a client of an AV developer who was firm in their position that, to be 'as safe as' a human driver, the rear field of visibility of the AV has to be the same or better than could be achieved by a human driver that had previously operated on the same route. The position of the AV developer was to suggest that it might be cheaper and might also be safer to adapt the environment to accommodate for the different detection capabilities of the AV relative to a human driver, rather than to seek to make the AV behave like a human.

8.4 The above examples illustrate that organisations may need to 'think differently' about how to achieve sufficiently safe CAM developments in their environment. We would suggest that, it is important for organisations to recognise that AVs will be different from the people and machines that they replace. In particular, that the way they achieve operational safely levels which are safer than the equivalent manual operations may not be to make them 'the same as human but safer' but instead to make then 'different from human and safer'. Importantly, we did not identify any H&S law which required the former approach – this is important as it does not constrain the potential of AVs to achieve safety benefits in innovative ways in an area (human-driven workplace transport) that continues to present heightened safety risk and cause numerous injuries and fatalities each year. Fundamentally the core duties under health and safety law are to reduce H&S risk to as low as reasonably practicable, but the law is agnostic as to how that is functionally achieved, and by what combination of measures.

8.5 It also seems to us important that, if AVs are to operate differently from humans, then workspaces will need to be organised to accommodate the differences between the AV and the people sharing the space, especially so that pedestrians and vehicles (manual and autonomous) can "circulate in a safe manner".[171]

8.6 A further and related potential source of confusion, in a H&S regulatory context, is where guidance is designed for a human operator but 'doesn't fit' AV operation. Linking back to the regulatory pyramid (see above) this is where it is particularly valuable to make a distinction between what is legally required, what is an ACOP, and what is mere guidance. In essence:

(a) **If something is legally mandated** then it should be done because the risk of not doing it is that it will be an actionable breach of the law.

(b) **If something is specified in an Approved Code of Practice (ACoP),** then it is not legally mandated; you are permitted to depart from it so long as to can show that your alternative means of compliance with the law achieves and outcome which is at least as safe[172]. Therefore, if it does not make logical sense to follow the

ACoP then the organisation may consider departing from it and implementing a more logical safety measure / approach.

(c) **If something is specified in Guidance** then the logic of adhering to it is weaker still.

A potential example of this is HSE guidance that "sharp or blind bends on vehicle routes should be avoided as far as possible". This appears to make good safety sense in cases of a manual driver. However, it might not be applicable if the AV has been fitted with sensors and / or interacts with external components which mean that it can effectively "see around corners"[173].

9 Layering of safety protections

9.1 We suggest that it will probably also be necessary to engage in the process of designing and agreeing Objectives, Use Cases and ODDs in a way which ensures that safety protections are layered 'by design'. This is to some extent (but not entirely) implied by the core H&S obligation to reduce risk to ALARP. That obligation will often be achieved by layering of safety systems although not necessarily always since sometimes safety will be better assured by a single effective measure.

9.2 Layering safety protections can be beneficial in providing 'fall back' / 'fail safe' protections. However, unless designed intelligently (with the holistic safety of the 'system-of-systems' in mind) they might counterintuitively increase risk, for example because they add complexity of overall system and/or more result in more 'tightly coupled' systems[174] and so might fail in additional unforeseen ways or with unforeseen knock-on impacts.

9.3 We note this because, in an 'off road' context on private land where the principal source of 'legal risk' exposure is the HSWA duty to reduce H&S risk to ALARP, it might be potentially unhelpful (and unnecessary) to apply S2(2) of the AVA2024 (as quoted above) as if it required safety to 'come from' the AV. Whilst the AVA2024 statement makes sense for 'on road' risk mitigation[175], a private landowner has the ability to achieve safety through changes to the environment (domain) and systems of work, as well as via the AV itself. Therefore, the reduction of H&S risks to ALARP may be achieved through a combination of features of the AV and its operating environment.

9.4 We have noted that the potential importance of layering is explained in the useful guidance in the (TRL) Off Highway Code of Practice[176], in particular in relation to the layering of safety mechanisms where the primary safety mechanism is an automated function:

"Each individual task carried out by the OHAV's automated functions should be reviewed and at least one safety system applied to mitigate any hazards associated with the task, failure of the components involved in the task, degradation of performance or misuse. Where practical, and when the risk of harm is significant, multiple safety systems should be applied to introduce redundancies. For each hazard, safety protections should be identified. These may be human, automated, physical or a combination thereof. They may be located on the vehicle or remotely. Where safety protections are remote and rely on a communication link, the OHAV should still be able to respond safely should the link fail."

9.5 It is important, however, that consideration of a layered safety approach should be as part of an overall holistic assessment of risk and mitigation. There are some known dangers of incremental / sequential layering of risk mitigations (i.e. devising initial risk mitigations and the later adding further mitigations on top) as opposed to undertaking a holistic approach to risk management (including through use of the risk management cycle) resulting in the consideration application of mitigations by design, which may (or may not) be best achieved by the layering of mitigation measures.

References /

1. This is a key assumption for this table. Additional obligations would apply if the AVs will be accessing land to which the general public would also have access and/or roads to which the public have access (see section 3.4)
2. The starting point is that "privity of contract" means that only the parties to the contract can enforce it. The Contracts (Rights of Third Parties) Act 1999 allows someone not party to a contract (a third party) to enforce its terms if the contract expressly provides for it or if a term purports to benefit them. It cannot be used to place an obligation (only a benefit / right) on a third party). It can be (and not uncommonly is) expressly excluded by the terms of the contract.
3. The three-part test in Caparo Industries plc v Dickman [1990] is still (in essence) the key test by which the court's determine whether to extend the duty beyond established legal categories. The core of the test is: [1] 'Reasonable Foreseeability' of 'Harm': It must have been reasonably foreseeable at the time of the incident that the defendant's acts or omissions would cause damage to the specific claimant; [2] 'Proximity': There must be a relationship of "sufficient proximity" (or closeness) between the defendant and the claimant. This does not mean literal physical proximity but a legally recognised connection, such as an assumption of responsibility. [3] 'Fair, Just and Reasonable': The court must consider it fair, just, and reasonable to impose a duty of care in the circumstances. This acts as a "safety valve" to ensure that liability does not extend too far on public policy grounds.
4. S.5 CPA restricts damage to: [1] death; [2] personal injury, or [3] any loss or damage to property which is for private use. Non-consumers and indeed companies can therefore bring a claim for death or personal injury, but claims for damage to property can only be brought by consumers in respect of private (i.e. non-business) property. The CPA does not cover pure economic loss. CPA does not cover the damage to the product itself, but this might be recoverable elsewhere e.g. under contract or Goods / Services Legislation (see table) where such a right is not excluded.
5. See footnote above. The reality is that a business which is a consumer may seek to rely on its contractual rights instead.
6. The SGA applies throughout the United Kingdom, though certain provisions differ in their application to Scotland. SGSA applies to England, Wales and Northern Ireland, but only parts of it apply in Scotland.
7. Terms as to reasonable quality and fitness for purpose may be excluded or restricted in B2B contracts, subject to such an exclusion clause meeting the 'reasonableness test' under the Unfair Contract Terms Act 1977 (UCTA).
8. Business to consumer contracts are now covered by the Consumer Rights Act 2015.
9. There are certain exclusions for marine and aviation equipment but it is not clear that these would cover AVs where not being used as marine equipment and aviation equipment.
10. Note: this means that others supply chain (e.g. intermediate suppliers, distributors, agents) will not fall within the definition of "responsible person" and so are not caught by these Regulations. However, Section 6 of the Health and Safety at Work etc Act 1974 (HSWA; see below) Section 6 of the HSW Act applies to articles and substances for use at work where other more specific product safety law does not apply, and therefore catches intermediate suppliers, distributors, agents, as confirmed by the HSE (see https://www.hse.gov.uk/work-equipment-machinery/uk-law-design-supply-products.htm)
11. For more information see: https://www.burges-salmon.com/articles/102krwf/key-dates-to-diarise-data-use-and-access-act-implementation-timeline/
12. https://www.gov.uk/government/publications/principles-of-cyber-security-for-connected-and-automated-vehicles/the-key-principles-of-vehicle-cyber-security-for-connected-and-automated-vehicles
13. ITS/CAV System Security Principles:
    1. Organisational security is owned, governed and promoted at board level
    2. Security risks are assessed and managed appropriately and proportionately, including those specific to the supply chain.
    3. Organisations need product aftercare and incident response to ensure systems are secure over their lifetime.

    ITS/CAV System Design Principles:
    4. All organisations, including sub-contractors, suppliers and potential 3rd parties, work together to enhance the security of the system.
    5. Systems are designed using a defence-in-depth approach.
    6. The security of all software is managed throughout its lifetime.
    7. The storage and transmission of data is secure and can be controlled.
    8. The system is designed to be resilient to attacks and respond appropriately when its defences or sensors fail
14. See https://www.iso.org/ics/35.030/x/
15. EG Capita plc was fined £14 million in October 2025 by the ICO for inadequate security penetration testing, insufficient security operations centre staffing, and poor administrator access controls, which the ICO found created a "foreseeable and avoidable risk which was exploited by the threat actor"
16. Note: Enforcement action for breach of H&S law is not predicated on any harm being caused; it is enough that the mere risk of harm has not been reduced to as low as reasonably practicable (ALARP). However, HSE state that they take a proportionate approach to enforcement.
17. Section 4 of HWSA only expresses this duty as being owed to persons who are non-employees who use those premises as a place of work, but that is only because the parallel duty that would be owed to the duty holders' own employees falls within the scope of Section 2 HSWA.
18. Refer to Appendix 1 of the Health & Safety (Enforcing Authority) Regulations 1998 for remits of the various H&S enforcing authorities
19. The HSWA and most regulations made under it do not apply to seamen working on board ship under the control of the ship's master. Instead, comparable Merchant Shipping H&S Regulations apply to ship's crew, and these are enforced by the Maritime and Coastguard Agency (MCA). This is beyond the scope of this note as we are not asked to consider CAVs onboard seagoing vessels. See Health and Safety (Enforcing Authority) Regulations 1998 and HSE's summary guide to delineation of responsibilities at https://www.hse.gov.uk/foi/internalops/og/og-00073.htm

20. Ibid. Health and Safety (Enforcing Authority) Regulations 1998 and link above.
21. https://www.hse.gov.uk/legislation/legalpublications.htm
22. Some more modern ACoPs are not, in fact, ACoPs in their entirety but are part Guidance and part ACoP. Where this is the case there are marginal notes which make very clear which parts are ACoP and which parts are Guidance.
23. Gross negligence manslaughter is a common law offence falling within the broader category of involuntary manslaughter. It is committed where a person causes the death of another through a grossly negligent (though otherwise lawful) act or omission. It is not a health and safety offence — it is a homicide offence
24. A statutory offence created by section 1 of the Corporate Manslaughter and Corporate Homicide Act 2007. Key elements are that; [a] The way in which the organisation's activities were managed or organised must have amounted to a gross breach of that duty — meaning the conduct fell "far below what can reasonably be expected of the organisation in the circumstances" (s 1(4)(b)); and [b] The way in which the organisation's activities were managed or organised by its senior management must have been a "substantial element" in the breach (s 1(3))
25. For example, the Workplace (Health, Safety and Welfare) Regulations 1992 very largely exempts any workplace "which is or is in or on a ship" (Regulation 3(1)) and the Provision and Use of Work Equipment Regulations 1998 (PUWER) provides that "Subject to paragraphs (7) to (10), these Regulations shall not impose any obligation in relation to a ship's work equipment (whether that equipment is used on or off the ship)" (Regulation 3(6)). Similar exemptions apply in Lifting Operations and Lifting Equipment Regulations 1998 (LOLER), Work at Height Regulations 2005, Manual Handling Operations Regulations 1992, and other H&S regulations. However, a 'parallel' regime of safety provisions exists and the Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997 and other regulations. For example, where PUWER does not apply the Merchant Shipping (Provision and Use of Work Equipment) Regulations 2006 may apply; and where LOLER may not apply the Merchant Shipping (Lifting Operations and Lifting Equipment) Regulations 2006 may apply. There is also a memorandum of understanding (MOU) and associated operational working agreement (OWA) to provide clarity and consistency where the jurisdiction of the Health and Safety Executive (HSE), the Maritime and Coastguard Agency (MCA) and/or the Marine Accident Investigation Branch (MAIB) overlap, by outlining the key and supporting principles to be adopted when selecting the lead organisation for health and safety enforcement and accident investigation (see https://www.gov.uk/government/publications/memorandum-of-understanding-between-mca-hse-and-maib/operational-working-agreement-between-mca-hse-and-maib)
26. See Legal requirements in the ports industry – HSE (https://www.hse.gov.uk/ports/legal-requirements.htm)
27. See "Chapter 1: CAA and HSE safety duties and interface arrangements" in CAP1484
28. See "Chapter 2: Aerodromes" in CAP1484
29. See paragraph 2.3 in CAP 1484
30. Article 17(1), Montreal Convention 1999
31. Adatia v Air Canada [1992] 5 WLUK 253, C/A
32. Section 192(1) Road Traffic Act 1988
33. See Section 192(1) Road Traffic Act 1988 and Section 151 of the Roads (Scotland) Act 1984. In particular, the latter defines a "road" in Scotland as "any way (other than a waterway) over which there is a public right of passage (by whatever means whether subject to a toll or not) and includes the road's verge, and any bridge (whether permanent or temporary) over which, or tunnel through which, the road passes; and any reference to a road includes a part thereof". Even a "private road" can fall within this definition if it is a road over which "there is a public right of passage".
34. For example the Associated British Ports (ABP) website asserts that all of its sites have bye-laws and provided hyperlinks to them at https://www.abports.co.uk/marine-information-and-compliance/bye-laws/. Byelaws often derive their legal force from The Harbours Act 1964, which allows for the making of 'Orders' (Harbour Revision and Empowerment Orders) that confer byelaw-making powers on harbour authorities (subject to confirmation by the Secretary of State). Others are made under specific local Acts of Parliament, for example the Port of Dover Harbour Bye-laws made in 1953 (under the Dover Harbour Act 1949 and subject to certain provisions of the Local Government Act 1933) for the regulation of Dover Harbour.
35. Most airports in the UK have their own byelaws in force, particularly all large international and regional airports. The ability for airports to enact byelaws stems from the Airports Act 1986, which provided a mechanism for airport operators to regulate conduct on their property. Under Section 63 of the 1986 Act, if an airport is "designated" by the Secretary of State (a status given to virtually all major UK airports), the airport operator is empowered to "make byelaws for regulating the use and operation of the airport and the conduct of all persons while within the airport." Under section 63(2)(d) of the 1986 Act, such byelaws may expressly include provisions for regulating vehicular traffic anywhere within the airport except on roads to which road traffic legislation applies.
36. https://www.abports.co.uk/media/qipmlcji/abp-port-rules-2016-v2.pdf
37. Industry Organisations may wish to seek specific legal advice on the incorporation of contractual terms if seeking to ensure that such terms do, in fact, become binding.
38. For example, the current ABP Port Rules provides at rule 5 that "All persons must comply with all ABP signage on the Port" which may need to be updated to reflect the fact that CAVs also need to comply with such signage but are not 'persons'; a number of other rules apply to either 'persons' or 'vehicles' but do not appear to contemplate a CAV; and rule 17 provides that no filming is permitted at the Port without the prior approval of ABP, and therefore permission to film may need to be obtained from ABP where used by AVs.
39. In particular the Control of Major Accident Hazards Regulations 2015 (COMAH) which applies to sites storing very large quantities of dangerous substances, requiring (in particular; not exclusively) a major accident prevention policy; Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR), which focuses on safety risks from fire, explosion, and substances corrosive to metals; Control of Substances Hazardous to Health Regulations 2002 (COSHH) which is a key foundational regulation for managing risks from substances that harm health (chemicals, fumes, dust, vapour, mist, and biological agents); Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (CDG) governing road and rail transport of dangerous goods in the UK; Explosives Regulations 2014 which govern (amongst other things) the movement and storage of explosives; and for example the Ionising Radiations Regulations 2017 which covers the use of radioactive materials

40. DGHAR is supported by an Approved Code of Practice and Guidance (ACoP L155) available at https://www.hse.gov.uk/pubns/priced/l155.pdf .
41. See CAT.GEN.MPA.200, Annex IV (Part-CAT) of UK Regulation (EU) No. 965/2012
42. For which again, it is noted that the Law Commissions' have recommended a number of proposed legal reforms as part of their automated vehicles review – some of which may ultimately apply more generally and not just to vehicles for use on public roads (in whole or part)
43. Subject to certain rare limited prohibitions on public policy grounds (e.g. agreement to undertake acts which are expressly illegal)
44. For example, we have seen it suggested that while deliberate or negligent acts of wrongdoing may not insurable, criminal fines for certain strict liability offences (where you did not intend to break the law, but did so unintentionally) might be insurable, although we have not investigate this issue further for the purposes of this guidance. The modern law on the unenforceability of illegal contracts is the Supreme Court decision in Patel (Respondent) v Mirza (Appellant) where it the maxim that "no court will lend its aid to a man who founds his cause of action upon an immoral or an illegal act" was examined.
45. See for example the CPS Guidance on HSWA 1974 which provides "Note that the employer retains responsibility for his 'undertaking' even if he subcontracts performance, subject to taking reasonably practicable steps to ensure that the contractor does not expose non- employees to risk (R v Associated Octel Co Ltd (1996) 1 WLR 1543)."
46. Tort law is a concept in English & Welsh 'common law'. The Scottish equivalent is 'delict'.
47. Albeit the provisions that apply in Scotland (Part II) are slightly different to those that apply to England, Wales and Northern Ireland (Part I) but in this particular context were expressly design to have equivalent effect even though expressed Scottish legal language.
48. See the Law Commission – AI and the Law Discussion Paper 2025 at: https://cdn.websitebuilder.service.justice.gov.uk/uploads/sites/54/2025/07/AI-paper-PDF.pdf - See in particular the chapter on "How might AI legal issues arise?"
49. See the Law Commission – AI and the Law Discussion Paper 2025 at: https://cdn.websitebuilder.service.justice.gov.uk/uploads/sites/54/2025/07/AI-paper-PDF.pdf at page 11
50. See UK Jurisdiction Taskforce (UKJT) - Consultation on the Legal Statement on Liability for AI Harms under the private law of England and Wales (January 2026) at https://27221500.fs1.hubspotusercontent-eu1.net/hubfs/27221500/UKJT%20work/UKJT%20Consultation%20Paper.pdf
51. See UK Jurisdiction Taskforce (UKJT) - Consultation on the Legal Statement on Liability for AI Harms under the private law of England and Wales (January 2026) at https://27221500.fs1.hubspotusercontent-eu1.net/hubfs/27221500/UKJT%20work/UKJT%20Consultation%20Paper.pdf at page 19 and 20
52. See UK Jurisdiction Taskforce (UKJT) - Consultation on the Legal Statement on Liability for AI Harms under the private law of England and Wales (January 2026) at https://27221500.fs1.hubspotusercontent-eu1.net/hubfs/27221500/UKJT%20work/UKJT%20Consultation%20Paper.pdf at paragraph 31 onwards ("Does the principle of vicarious liability apply to losses caused by AI?")
53. https://www.legislation.gov.uk/ukpga/1969/37/data.pdf
54. It is not e.g. available to independent contractors or members of the public
55. The usual fatal accident regimes (in England and Wales, the Law Reform (Miscellaneous Provisions) Act 1934 and the Fatal Accidents Act 1976; in Scotland, the Damages (Scotland) Act 2011), in reliance on the statutory deeming of negligence.
56. See UK Jurisdiction Taskforce (UKJT) - Consultation on the Legal Statement on Liability for AI Harms under the private law of England and Wales (January 2026) at https://27221500.fs1.hubspotusercontent-eu1.net/hubfs/27221500/UKJT%20work/UKJT%20Consultation%20Paper.pdf at page 19 and 20
57. McCready v Miller [1978] 11 WLUK 42 [1979] RTR 186 in relation to a passenger in a minicab tripping on a loose trailing seat belt
58. See e.g Slack v Glenie [2000] 4 WLUK 698, White v Blackmore [1972] 2 QB 651, Jones v Country Pursuits UK [2015] 3 WLUK 362
59. If it can show that "the state of scientific and technical knowledge at the relevant time was not such that a producer of products of the same description as the product in question might be expected to have discovered the defect if it had existed in his products while they were under his control" (section 4(1)(e) CPA).
60. If it can be shown that "the defect is attributable to compliance with any requirement imposed by or under any enactment or with any assimilated obligation" (section 4(1)(a) CPA).
61. A summary of EHRS including the principles of risk assessment (per Sch 2, Part 1 of the Machinery Safety Regulations) is available at https://www.gov.uk/government/publications/supply-of-machinery-safety-regulations-2008/supply-of-machinery-safety-regulations-2008-great-britain
62. See 'Designated standards: machinery - GOV.UK' (https://www.gov.uk/government/publications/designated-standards-machinery)
63. We have phrased it this way because the fact that a CAV or its components are 'sufficiently safe' as a product measured against the requirements of the Machinery Safety Regulations (including by adoption of relevant Designated Standards) does not mean that the CAV or its components will be sufficiently safe in their environment, in particular where safety is measured by reference to the ALARP duty under the Health & Safety At Work Act (see Section 7 of this guidance). The 'owner' of that later liability would be the entity(s) to whom H&S law attributes responsibility to manage the risk (again, see Section 7 of this guidance).
64. See explanatory note for the New PLD at https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/739341/EPRS_BRI(2023)739341_EN.pdf
65. Many were due to come into effect in Summer 2026 but these appear to have been postponed to allow more time for compliance and it is not presently clear to us (within the limitations of our research) when they are now proposed to come into effect.
66. See, the Product Safety and Metrology etc. (Amendment) Regulations 2024, and in particular the Explanatory Memorandum at https://www.legislation.gov.uk/uksi/2024/696/pdfs/uksiem_20240696_en_001.pdf
67. https://cdn.websitebuilder.service.justice.gov.uk/uploads/sites/54/2025/12/Product-Liability-Terms-of-Reference.pdf

68. https://lawcom.gov.uk/project/product-liability/#4-Updates
69. Although, whilst these reforms are ongoing, UK law has at least created a 'legal pathway' via which new Regulations can be more expeditiously made via the enabling legislation of the Product Regulation and Metrology Act 2025.
70. https://www.gov.uk/government/calls-for-evidence/machinery-safety-legislation-call-for-evidence/outcome/government-response-to-the-call-for-evidence-on-machinery-safety-legislation
71. Electrical Equipment (Safety) Regulations 2016: Great Britain - GOV.UK and the The Electrical Equipment (Safety) Regulations 2016
72. HSE has publically stated, for example in COMAH Guidance that "HSE considers that duties to ensure health and safety so far as is reasonably practicable ("SFAIRP") and duties to reduce risks as low as is reasonably practicable ("ALARP") call for the same set of tests to be applied." See https://www.hse.gov.uk/foi/internalops/hid_circs/permissioning/spc_perm_37/
73. An 'Approved Code of Practice' made by the HSE has a special legal status. Although failure to comply with any provision of the ACoP is not in itself an offence, the failure may be taken by a Court in criminal proceedings as proof that a person has contravened the regulation to which the provision relates. In such a case, however, it will be open to that person to satisfy the Court that he or she has complied with the regulation in some other way
74. See HSE's Guide to Workplace Transport Safety (https://www.hse.gov.uk/pubns/books/hsg136.htm) as well as its specific sub-page index on this topic (https://www.hse.gov.uk/workplacetransport/index.htm)
75. See HSE's Approved Code of Practice for Safety in Docks (https://www.hse.gov.uk/pubns/books/l148.htm) as well as its specific sub-page index on safety in ports (https://www.hse.gov.uk/ports/index.htm)
76. Although in practice H&S Regulators look at the 'gap' between what the law requires and what the accused has implemented in practice, and whether it brings a prosecution or some lesser regulatory action (such as issuing a statutory notice) is informed by its assessment of the width of this gap. More information is available in the HSE's Enforcement Management Model (https://www.hse.gov.uk/enforce/enforcement-management-model.htm): "enforcement action is proportional to the breach of the law or permissioning documents and the associated risks"
77. For an introduction to the Risk Management Cycle, see HSE's 'Plan, Do, Check, Act' publication (https://books.hse.gov.uk/gempdf/indg275.pdf)
78. An 'Approved Code of Practice' made by the HSE has a special legal status. Although failure to comply with any provision of the ACoP is not in itself an offence, the failure may be taken by a Court in criminal proceedings as proof that a person has contravened the regulation to which the provision relates. In such a case, however, it will be open to that person to satisfy the Court that he or she has complied with the regulation in some other way
79. https://www.gov.uk/government/speeches/prime-ministers-speech-on-britain-built-for-all-1-december-2025
80. https://www.gov.uk/government/publications/nuclear-industry-principles-to-guide-the-application-of-as-low-as-reasonably-practicable-alarp-and-best-available-techniques-bat
81. https://www.onr.org.uk/news/all-news/2026/02/government-regulators-and-industry-unite-on-new-efficient-regulatory-principles
82. Some more modern ACoPs are not, in fact, ACoPs in their entirety but are part Guidance and part ACoP. Where this is the case there are marginal notes which make very clear which parts are ACoP and which parts are Guidance.
83. https://www.bsigroup.com/en-GB/CAV/
84. https://www.hse.gov.uk/pubns/indg199.pdf
85. https://www.hse.gov.uk/pubns/books/hsg136.htm
86. https://www.gov.uk/government/publications/trialling-automated-vehicle-technologies-in-public/code-of-practice-automated-vehicle-trialling
87. PPR994-Off-Highway-AV-CoP_v3.pdf
88. https://www.hse.gov.uk/workplacetransport/vehicles/index.htm
89. https://www.hse.gov.uk/Research/assets/docs/rr1214.pdf
90. https://www.hse.gov.uk/pubns/priced/hsg177.pdf
91. https://assets.publishing.service.gov.uk/media/68dbdec78c1db6022d0c9f35/a-guide-to-good-practice-on-port-and-marine-facilities.pdf
92. https://www.portskillsandsafety.co.uk/wp-content/uploads/2024/02/SiP000-Guidance-Framework.pdf
93. https://www.portskillsandsafety.co.uk/wp-content/uploads/2023/11/SIP001-GUIDANCE-ON-PORT-AND-TERMINAL-PLANNING-WORKPLACE-TRANSPORT.pdf
94. https://www.portskillsandsafety.co.uk/wp-content/uploads/2025/04/SiP002-Open-access-version.pdf
95. https://www.portskillsandsafety.co.uk/wp-content/uploads/2025/06/SiP003-Open-access-version.pdf
96. https://www.portskillsandsafety.co.uk/wp-content/uploads/2023/11/SIP010-GUIDANCE-ON-RO-RO-AND-STO-RO-OPERATIONS.pdf
97. 'Stow-On/Roll-Off' (Sto-Ro) operations involve driving cargo—typically trailers, cassettes, or heavy plant—onto a ship and immediately securing it. Roll-On/Roll-Off (Ro-Ro) involves vehicles themselves which either are the cargo or carry the cargo.
98. https://www.portskillsandsafety.co.uk/wp-content/uploads/2023/11/SIP014-GUIDANCE-ON-SAFE-ACCESS-and-EGRESS.pdf
99. https://webapps.ilo.org/public/libdoc/ilo/2005/105B09_39_engl.pdf
100. https://www.caa.co.uk/our-work/publications/documents/content/cap-168
101. https://www.caa.co.uk/data-and-publications/publications/documents/content/cap-2156a/
102. https://www.caa.co.uk/data-and-publications/publications/documents/content/cap-2156b/
103. https://www.caa.co.uk/our-work/publications/documents/content/cap-642

104. https://www.caa.co.uk/data-and-publications/publications/documents/content/cap-760/
105. https://www.caa.co.uk/our-work/publications/documents/content/cap-790
106. https://www.caa.co.uk/our-work/publications/documents/content/cap1721
107. https://www.caa.co.uk/our-work/publications/documents/content/cap2970
108. https://www.caa.co.uk/our-work/publications/documents/content/cap3064
109. CAP1484: CAA/HSE/HSENI Memorandum of Understanding guidance | UK Civil Aviation Authority
110. https://www.hse.gov.uk/pubns/priced/hsg65.pdf
111. https://www.hse.gov.uk/pubns/priced/hsg87.pdf
112. https://www.hse.gov.uk/pubns/priced/hsg76.pdf
113. https://www.hse.gov.uk/pubns/priced/puwer.pdf
114. https://www.hse.gov.uk/pubns/priced/hsg250.pdf
115. https://www.hse.gov.uk/pubns/priced/hsg159.pdf
116. https://unece.org/sites/default/files/2025-07/UK.pdf
117. https://assets.publishing.service.gov.uk/media/693978b77a605b2d61cd9069/developing-the-automated-vehicles-regulatory-framework-cfe.PDF
118. https://www.gov.uk/government/consultations/automated-passenger-services-permitting-scheme/automated-passenger-services-aps-permitting-scheme-consultation
119. https://www.gov.uk/government/calls-for-evidence/automated-vehicles-statement-of-safety-principles/automated-vehicles-statement-of-safety-principles
120. https://www.gov.uk/government/consultations/automated-passenger-services-permitting-scheme/automated-passenger-services-aps-permitting-scheme-consultation
121. Section 47 HSWA states that breach of health and safety regulations made under HSWA no longer gives rise to a civil action for damages, unless the regulation expressly says so. Our advice does not include a full review of regulations made under HSWA but we are not aware of any that do provide for private enforceability.
122. Insofar as such risks are theirs to control
123. Section 2(1) of HWSA "(1)It shall be the duty of every employer to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all his employees."
124. The HSE has confirmed that it is synonymous to express the duty as being one to reduce risk So Far As Is Reasonably Practicable (SFAIRP) or to reduce risk to As Low As Reasonably Practicable (ALARP)
125. Section 2(2)(a) the Section 2 Duty "extends in particular [to]… the provision and maintenance of plant and systems of work that are, so far as is reasonably practicable, safe and without risks to health
126. Section 2(2)(b) the Section 2 Duty "extends in particular [to]… arrangements for ensuring, so far as is reasonably practicable, safety and absence of risks to health in connection with the use, handling, storage and transport of articles and substances
127. Section 2(2)(c) the Section 2 Duty "extends in particular [to]… the provision of such information, instruction, training and supervision as is necessary to ensure, so far as is reasonably practicable, the health and safety at work of his employees
128. Section 2(2)(d) the Section 2 Duty "extends in particular [to]… so far as is reasonably practicable as regards any place of work under the employer's control, the maintenance of it in a condition that is safe and without risks to health and the provision and maintenance of means of access to and egress from it that are safe and without such risks
129. Section 2(2)(e) the Section 2 Duty "extends in particular [to]… the provision and maintenance of a working environment for his employees that is, so far as is reasonably practicable, safe, without risks to health, and adequate as regards facilities and arrangements for their welfare at work
130. Insofar as such risks are theirs to control
131. See in particular Section 4(2) "It shall be the duty of each person who has, to any extent, control of premises to which this section applies or of the means of access thereto or egress therefrom or of any plant or substance in such premises to take such measures as it is reasonable for a person in his position to take to ensure, so far as is reasonably practicable, that the premises, all means of access thereto or egress therefrom available for use by persons using the premises, and any plant or substance in the premises or, as the case may be, provided for use there, is or are safe and without risks to health."
132. This is not a typo. We have added this explanation 'out of order' so that the core duties that apply different entities are listed sequentially
133. Section 2(3) " it shall be the duty of every employer to prepare and as often as may be appropriate revise a written statement of his general policy with respect to the health and safety at work of his employees and the organisation and arrangements for the time being in force for carrying out that policy, and to bring the statement and any revision of it to the notice of all of his employees"
134. See e.g. https://www.hse.gov.uk/ppe/managing-risk-using-ppe.htm which tells employers to "Consider controls in the following order, with elimination being the most effective and PPE being the least effective"
135. This is expressed only to apply to 'employees'. However, note the Section 3 HSWA duty to reduce risks to Non-Employees to ALARP and the Reg 12 Management Reg Duty to provide contractors with "comprehensive information". This may in effect mandate that contractors, and potentially others, are provided with the same or similar information, or the same information to tailored to the circumstances of their interactions with AVs.

136. It is more specifically expressed as "Every employer shall ensure that every workplace, modification, extension or conversion which is under his control and where any of his employees works"

137. An 'Approved Code of Practice' made by the HSE has a special legal status. Although failure to comply with any provision of the ACoP is not in itself an offence, the failure may be taken by a Court in criminal proceedings as proof that a person has contravened the regulation to which the provision relates. In such a case, however, it will be open to that person to satisfy the Court that he or she has complied with the regulation in some other way

138. See ACoP paragraph 41, *Workplace health, safety and welfare. Workplace (Health, Safety and Welfare) Regulations 1992. Approved Code of Practice and guidance L24

139. Noting there is no legal authority on the point, given it is novel technology

140. Working safely with display screen equipment (DSE) - HSE

141. We have not, for the purposes of this advice, considered if the Road Transport (Working Time) Regulations 2005 - which are expressed to apply to 'drivers' or 'workers' – might be applicable in this context.

142. Interesting, a further explanation of why this is stated to apply 'in buildings' is not provided in this ACoP but in the Safety signs and signals. The Health and Safety (Safety Signs and Signals) Regulations 1996, Guidance on Regulations (L64, HSE) which states that: "The Regulations do not require outdoor traffic routes to be marked in areas that are not built-up. This is because risks to the health and safety of employees are likely to be low. However, there may be cases requiring either use of clearly defined traffic routes or safe systems of work (possibly including the use of banksmen to direct traffic) to help meet general duties under the HSW Act, e.g. when vehicles are operating (particularly during reversing) close to employees working on foot

143. A system of transport employing parallel rails providing support and guidance for vehicles carried on flanged wheels, forming a track of at least 350mm gauge (or crossing a carriageway).

144. A system of transport used wholly or mainly for the carriage of passengers, employing parallel rails laid wholly or partly along a road or place to which the public has access, with speed limited to line of sight.

145. We presume Organisations with part of the mainline railway in their premises will be aware of their obligations and it is beyond the scope of this note

146. See https://www.legislation.gov.uk/ukpga/Eliz2/9-10/34/section/175

147. In N.I., District Councils promote and enforce health and safety law in workplaces allocated to them by the Health and Safety (Enforcing Authority) Regulations (Northern Ireland) 1999 including offices, shops, retail and wholesale distribution centres, leisure, hotel and catering premises.

148. https://www.infrastructure-ni.gov.uk/articles/about-rail-safety-authority.

149. https://www.infrastructure-ni.gov.uk/publications/memorandum-understanding-between-rail-safety-authority-dfi-health-and-safety-executive-northern-ireland-and-office-rail-and-road.

150. https://www.caa.co.uk/about-us/the-caa/enforcement/health-safety-and-working-time-regulation/the-caa-hse-and-hseni/.

151. Enforcement Guidelines for Health and Safety at Work in Northern Ireland | Health and Safety Executive for Northern Ireland, controlling risk together.

152. List of GB ACOPs approved for use in Northern Ireland | Health and Safety Executive for Northern Ireland, controlling risk together.

153. List of Northern Ireland ACOPs | Health and Safety Executive for Northern Ireland, controlling risk together.

154. Please note, in N.I. District Councils promote and enforce health and safety law in workplaces allocated to them by the Health and Safety (Enforcing Authority) Regulations (Northern Ireland) 1999 including offices, shops, retail and wholesale distribution centres, leisure, hotel and catering premises. For the purposes of this note, HSENI would be the enforcing authority.

155. In relation to causing death, or grievous bodily injury, by dangerous driving, dangerous driving, careless and inconsiderate driving, causing death or grievous bodily injury, by careless driving when under the influence of drink or drugs, driving or being in charge when under influence of drink and drugs, leaving vehicles in dangerous positions, pedestrian endangering own safety or that of others, drunkenness, cycling when under influence of drink or drugs.

156. The concept of what might fall within an organisation's "undertaking" is discussed at page 43 of this document.

157. But not the only factor. For example, there will be cyber-security and communications standards to consider as well. For cyber security, a key government source of guidance remains the Key Principles of Cyber Security for Connected and Automated Vehicles (2017) which lists 3 x ITS/CAV System Security Principles, and 5 x and ITS/CAV System Design Principles and lists a large number of ISO and SAE standards, nearly all of which are still in force (although some have been updated).

158. Identifying hazards (things which have the potential to cause harm); scaling them in terms of risk (i.e. likelihood of occurrence x severity / impact); determining how those risks can be mitigated; and potentially determining whether all or part of the risk can be transferred or shared (e.g. via insurance). Undertaking 'suitable and sufficient' risk assessments is a legal requirement (see in particular Regulation 3 of the c).

159. Whilst employers are legally required to manage health and safety risks effectively, a formal 'safety management system' is only legally required if the sector and/or activities are ones within an area where the law prescribes creation of a safety management system (often referred to as an SMS). However, in some industries where not strictly legally required it has become industry good practice to have an SMS such that it may be difficult to demonstrate compliance with the law where the organisation does not have an SMS. The expressed position of the Health & Safety Regulator (the HSE) is that: "You're not required by law to implement a formal management system, but they can help provide a structured framework for ensuring a safe and healthy workplace. If your business is small or low-risk, you'll probably be able to demonstrate effective risk management without this sort of system." (https://www.hse.gov.uk/managing/management-system/index.htm)

160. This phrase is used it in a broad sense to encompass all activities falling within the scope of operations of the organisation, including for example visitors on site, movements during break periods, and evacuation procedures.

161. See in particular Section 2(3) of HSWA in respect of "arrangements for the time being in force for carrying out that [H&S] policy" and Regulation 5 of the Management of Health and Safety at Work Regulations 1999 requiring "Effective planning, organisation, control, monitoring and review of the preventive and protective measures", which effectively legally mandate the application of the risk management cycle (see https://www.hse.gov.uk/simple-health-safety/risk/steps-needed-to-manage-risk.htm)

162. There are many formulations of the 'risk management cycle'. See for example: https://www.hse.gov.uk/simple-health-safety/risk/steps-needed-to-manage-risk.htm

163. See in particular Section 2(3) of HSWA and Regulations 3 and 5 of the See in particular Section 2(3) of HSWA in respect of "arrangements for the time being in force for carrying out that [H&S] policy" and Regulation 5 of the Management of Health and Safety at Work Regulations 1999 requiring "Effective planning, organisation, control, monitoring and review of the preventive and protective measures", which effectively legally mandate the application of the risk management cycle (see https://www.hse.gov.uk/simple-health-safety/risk/steps-needed-to-manage-risk.htm)

164. It is not strictly mandated but is perhaps strongly hinted at by Regulation 4 of the Management of Health and Safety at Work Regulations 1999, which provide that "where an employer implements any preventive and protective measures he shall do so on the basis of the principles specified in Schedule 1 to these Regulations." Schedule 1 in turn lists the 'principles of prevention' which may be paraphrased as: [1] Avoid what you can avoid; [2] Evaluate what you cannot avoid; [3] Combat at source if you can; [4] Adapt to technological progress; [5] Replace (dangerous with less dangerous); [6] Develop "coherent overall prevention policy"; [7] Collective protection over individual protection; and [8] Give appropriate instructions. This certainly suggests that it would be good practice to design risk mitigations at the outset that will reduce risk to ALARP through life; in particular this is consistent with the principle of developing a "coherent overall prevention policy".

165. It is important to flag the broad definition of "roads" (in their public sense) includes "highways and other roads to which the public has access, and includes bridges over which a road passes" (England and Wales) or "any road within the meaning of the Roads (Scotland) Act 1984 and any other way to which the public has access" (Scotland). 'Public roads' (which includes footpaths, bridleways, pavements, verges and in-road cycle lanes) can exist on private land as long as they are accessible and used by the general public (whether or not by vehicle) with express or implied permission.

166. If done under the AV's own movement (as opposed to, for example, on the back of a loading vehicle).

167. It might be described as being indirectly a legal requirement insofar as the duties to reduce risk to ALARP requiring the weighting of various factors, and these factors are context specific. Therefore, specifically defining the context is part of deciding what is reasonably practicable to reduce to risk in that context.

168. Including for example the hazardous nature and/or high value (or not) and/or breakability (or not) of what it will be carrying or within its operating environment, which will in turn in form the ALARP assessment.

169. There is a useful chapter on understanding the ODD for AVs within Off-Highway Automated Vehicles Code of Practice (2021) at https://www.trl.co.uk/uploads/trl/documents/PPR994-Off-Highway-AV-CoP_v3.pdf as well as analogous standards relevant to on highway vehicles that could be considered (e.g. ISO 34503 and BSI PAS 1883)

170. Including the responsibilities of the human operator under different conditions

171. Workplace (Health, Safety and Welfare) Regulations 1992

172. See Section 16 and 17 HSWA, which HSE explains as follows: Each ACoP is approved by the Health and Safety Executive, with the consent of the Secretary of State. It gives practical advice on how to comply with the law. If you follow the advice you will be doing enough to comply with the law in respect of those specific matters on which the Code gives advice. You may use alternative methods to those set out in the Code in order to comply with the law. However, the Code has a special legal status. If you are prosecuted for breach of health and safety law, and it is proved that you did not follow the relevant provisions of the Code, you will need to show that you have complied with the law in some other way or a Court will find you at fault.

173. Of course, if this was a mixed traffic route which also involved manual vehicles and/or pedestrians then the HSE guidance would continue to make good sense since they would not be able to see around corners, in the way an AV might be enabled to.

174. This idea – that adding complexity to systems and 'tight coupling' may increase the propensity towards an accident causing harm – is derived from Charles Perrow's 1979 book 'Normal Accidents: Living with High Risk Technologies', key concepts from which are usefully summarised in a 2023 article by Psych Safety (https://psychsafety.com/normal-accidents/).

175. Because AVA2024 is designed for a world in which road infrastructure is as it is (i.e. does not address changing the environment / domain into which the AV will be deployed) and logically focuses, therefore, on the vehicle.

176. https://www.trl.co.uk/uploads/trl/documents/PPR994-Off-Highway-AV-CoP_v3.pdf

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