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THE WORK OF THE HAZARDOUS INSTALLATIONS DIRECTORATE (HID)

Purpose of the paper

1. To provide an overview of the work of HSE's Hazardous Industries Directorate (HID) in regulating non-nuclear major hazard activities. This paper explains:
 - The major hazards context
 - HID's recent achievements and successes
 - The core themes that drive our agenda
 - How HID is responding to that agenda from both a policy and operational perspective
 - At Annex 1, how we are applying this approach to each sector along with our current view of their performance
 - HID's structure and resources (Annex 2a and 2b)

Context

2. Major hazard businesses in the UK operate in a diverse range of sectors: offshore oil and gas exploration and production, chemical and downstream oil, mining, explosives, gas import, transmission and storage networks, major hazard pipelines both onshore and offshore; and biological agents and genetically modified organisms. These businesses provide essential products and services and, in some instances, are vital to the stability of social infrastructure such as water chlorination and fuel supply.
3. While essential to our way of life, these businesses also share a common potential for accidents that can kill and injure large numbers of people, damage communities, and result in significant economic losses, including disrupting the supply of products to other areas of the economy, eg. gas supply. They are also unique in that single incidents or accidents have the potential to undermine whole sectors by eroding the public's trust and acceptance of complex high hazard activities being undertaken, especially those near to communities.
4. HID works to reduce the likelihood of low frequency, high impact accidents by sampling businesses' safety management arrangements to assess whether they are adequate, and through a number of permissioning regimes. This includes carrying out hazard and risk assessments on design, commissioning, operation, testing, maintenance procedures and the effectiveness of measures designed to protect workers and the public in the event of an accident. Alongside the physical infrastructure HID assesses how the plant is being run and how operators prevent equipment failure and human error escalating into a major accident. Fundamentally, by holding those who create these risks to account for their

management and control, HID plays a vital role in providing public assurance that major hazards business activity is managed in a safe and sustainable way.

5. HID also advises Local Planning Authorities (LPAs) about new or changes to major hazard installations and on the risks involved in developments around installations, such as new housing. It is for communities to balance their needs with the needs of industry and with the interests of public safety, and so LPAs act as decision makers on these planning issues.
6. The structure of the HID sectors has changed significantly in the last 20 years. Whilst each sector has its unique history, the common themes of structural change over this time have been:
 - Fragmentation – there are now many more smaller entrepreneurial companies without the back up of extensive in house technical resources;
 - Globalisation – many of the major companies operating across the sectors are wholly or in part foreign owned, making it harder to identify and engage with key decision makers
 - Financial constraints and competition leading to, for example, the closure of some refineries to be replaced by storage facilities and a move from bulk commodity chemicals to niche speciality products.
7. The Buncefield explosion resulted in the largest fire seen in Britain since WWII. Since then other incidents: Chevron refinery (4 deaths); Gleision mine (4 deaths), and Elgin (uncontrolled major gas release from a North Sea platform) are reminders that major accidents still happen and industry does not always learn lessons. This is supported by the level of precursor events that could have led to a major accident. For example, whilst progress has been made on reducing offshore hydrocarbon releases in the years from April 2009 to March 2013, last year there was a reversal in this trend. The level of onshore precursors has remained broadly static. Furthermore, in 2013/14 HID inspectors raised some 3575 actions (termed 'issues') on operators requiring significant improvements in their arrangements for controlling major hazard risks. In 215 cases failures led to the issue of formal enforcement notices (171 improvement and 44 prohibition notices).
8. The level of our concern and the quality of our assessment over the last year resulted in HID also undertaking 22 prosecutions. Examples include; the collapse of GRP storage tanks containing Hydrochloric Acid and Poly-aluminium Chloride. It transpired that the company had purchased the tanks second hand, and had not properly examined them before or during service; similarly, inadequate commissioning arrangements of an engineering project led to the release of approx. 35,000 litres of petrol from poorly constructed pipework, leading to the formation of a vapour cloud.
9. Annex 1 (provided as a separate document) provides an overview of the sectors HID regulates, along with our view on the 'health' of each of them. Annex 2 sets out HID's resources and structure.

HID's recent achievements and successes

10. Against a backdrop of a challenging regulatory and policy agenda and limited resources, HID has had notable successes. Many are explained in more detail throughout this paper, but in summary they include:

- **Successful leadership initiatives** including setting up the tripartite Mines Safety Leadership Group, and heavy involvement in the offshore industry's 'Step Change' programme,
- The **development and implementation of a new HID Regulatory Model**. Building on good practice across HID, this enables us to get more 'bangs for our buck' through a sampling approach rather spreading ourselves too thin in terms of the number of sites we go to and what we look at when we are there.
- The **BRE Review**¹ reflected very positively on the improvements made under COMAH Remodelling, acknowledged the good relationships we have with industry, and the high quality and expertise of our inspectors. Ministers have supported our challenging and innovative improvement programme, which in particular focuses on improving the transparency of and inter-agency coordination within the COMAH regime. Industry too has welcomed this, and it also supports the Government's Growth Agenda. HID is also proactively applying the lessons across all of its regimes.
- Rather than trying to get to every installation, **ED has refocused offshore effort** though risk based prioritisation, so it can target its resources at installations with the highest hazard and risk.
- We have **transformed the huge and outdated suites of explosives and mines legislation** into modern streamlined packages – something which had been considered 'too difficult' for years
- We have **successfully negotiated 2 major European Directives** (Seveso III and Offshore), so that they meet GB business needs,
- Despite resource pressures, we have **consistently delivered our operational intervention plans**, and though them pressing duty holders to improve and taking action where we find problems. This gives assurance to the public, industry, HSE and Ministers that we are regulating duty holders effectively and proportionately.
- Further **Support to the Government's Growth Agenda** eg through our response to the BRE Review, transforming how we deliver land use planning advice through the LUP Transformation Programme, and through delivering proportionate, targeted and transparent interventions. The LUP Transformation Programme is an early example of a front line commercialisation opportunity.

¹ As part of its 'Focus on Enforcement programme', the Government's Better Regulation Executive (BRE) reviewed the COMAH regime in the chemical manufacturing and warehousing sector in England and Wales and produced its report in February 2014

Argument

11. HID's sectors are diverse but share common features which were emphasised through the development of HIDs [sector strategies](http://www.hse.gov.uk/aboutus/strategiesandplans/sector-strategies/index.htm) (available at <http://www.hse.gov.uk/aboutus/strategiesandplans/sector-strategies/index.htm>). These strategies, developed in consultation with stakeholders, highlighted the core themes for successful major hazard management. Our approach, externally in trying to frame the debate on major hazards and internally in devising intervention strategies, is to look for the core themes and identify intervention strategies that promote sustained change. A key element of this is sharing knowledge within HID and encouraging industry to share with each other examples of good practice that they are capable of delivering. The paper sets out what we have identified as these core themes and then explains our strategic, policy and operational response.

Core Themes (These themes are encompassed in [Process Safety Leadership Standards²](#))

12. **Leadership** is vital in a major hazard context. As well as allocating resources and priorities, it helps shape culture within which management and workers exercise their discretion and judgement. It is the leadership in organisations that determines how far, and to what quality, the workforce are properly engaged in health and safety, another key ingredient of high performing organisations. A frequent finding of major accident investigations is that top management were not sufficiently focused on key risks.
13. **Safety performance indicators (SPI)** are a core to an effective safety management system. This is particularly true in major hazard industries where minor deterioration in key controls can give rise to serious consequences. Organisations need them at all levels, including at the top. Boards need to be able to answer 2 fundamental questions. Firstly, what can go catastrophically wrong? Secondly, how do we know we are managing our risks effectively? Answering those questions requires a suite of leading and lagging indicators which focus on process safety risks. Major accident investigations have often revealed that top management were taking assurance about risk control from lagging indicators on occupational health and safety that told them nothing about process safety risks. This feeds an attitude of corporate complacency rather than a more critical and healthier attitude of corporate vulnerability.
14. **Competence management** has heightened importance at a time when the workforce is ageing, experienced staff are retiring and businesses are de-layering and relying increasingly on contractors to provide key services. Knowledge transfer, rigorous competence assessments and intelligent customer capability are all essential in this environment. So too is Boardroom competence. Having sufficient awareness and knowledge of the fundamentals of process safety is essential to an informed debate and allows a Board to recognise the full implications of decisions.
15. **Asset integrity** is central to avoiding loss of containment and is at the heart of major accident prevention. Ageing plant in tough environments requires

² A set of principles developed by the Process Safety Leadership Group - a joint industry and regulators group, set up in September 2007 to drive forward high standards in process safety leadership and to complete the implementation of the Buncefield Major Incident Investigation Board's recommendations.

effective day-to-day management and the right long term investment decisions. It is a long established and well-known issue, but the evidence points to some sectors continuing to struggle with it. For example, a lack of investment in North Sea assets around the turn of the century at a time when the oil price was low and the prevailing perception was that North Sea production was on the way out, led to plant integrity problems that has taken, and continues to take, major efforts from the industry and HSE to redress.

16. The offshore sector has made significant progress on this issue since then but again this may be at risk if the recent drop in the oil price is sustained. Recent data collected by HID at onshore chemical sites suggest that a significant number of them still fall below an acceptable standard of asset integrity management. At the other end of the spectrum, growth in sectors such as offshore, biological agents and explosives is exposing new asset integrity challenges as new technologies are being introduced to allow increased production without affecting surrounding land use.
17. **Emergency planning** is the last line of defence. It has to be sufficiently robust to contain an incident when control is lost. The response has to be achieved in the spotlight of public and media attention, with incidents often involving issues of environmental protection on which we have to work closely with other regulators such as the environment agencies (onshore) and DECC (offshore). Safe evacuation of workers and limiting the impact to neighbouring populations or the environment is essential. Careful planning and close co-operation between the installation and front-line emergency responders, and between HSE and other regulators, is vital.
18. **Effective workforce involvement** and consultation on health and safety issues are essential for establishing an overall safety culture and ensuring that those in direct contact with the hazards have a key role in identifying and controlling them. The challenge for those industries covered by HID is in extending workforce engagement into process safety issues as well as the more “traditional” involvement in occupational health and safety.

Policy response

19. There is a heavy policy agenda now driven domestically by the need for rationalisation, and by Europe. Whatever the impetus, in making changes we will create a modern goal-setting regulatory framework which reflects the scale of the prevailing hazards and which reinforces the need for the effective management of risk. The key current policy portfolios are:

Europe

- a. **Implementation of Seveso III** which will maintain the essential elements of the previous Directive (implemented by the COMAH Regulations) and introduce more modern requirements for provision of information to the public and align the scope of application to new international classification directives. This includes significant input by HID to the Department of Communities and Local Government, Scottish and Welsh Government’s work to implement the land use planning elements of Seveso III. The Board cleared the new draft regulations at its October 2014 meeting and these will come into force in summer 2015;

- b. **Implementation of a new European Offshore Directive.** This will introduce new requirements across all Member States. The new regime draws heavily on the current UK system. The draft regulations should be with the Board by early 2015 with a view to them coming into force in summer 2015.

Domestic

Following the Löfstedt review HSE has consolidated and modernised the majority of its legislation. In HID that has led to:

- c. **A new explosives package of two sets of regulations and supporting guidance which came into operation on 1 October 2014** and which modernised and rationalised a large and outdated suite of legislation;
- d. **A new package of legislation covering the contained use of genetically modified organisms.** This also became law on 1 October 2014
- e. **A new mining package is to follow in December 2014.** This rationalises the existing huge and often outdated suite of legislation and modernises the regime by emphasising the control of major hazard risks. It recasts many of the legal duties to reinforce corporate responsibility and foster the right safety culture;
- f. **We are also examining new energy technologies** including developing policies around carbon capture and storage, and novel gas production, including shale gas 'fracking' and coal bed methane production;
- g. **LUP Transformation Programme.** HID, working with HSL, is transforming how it delivers its land use planning advice, supporting the growth agenda. This includes:
- An enhanced pre-application service (for both planning applications and Hazardous Substance Consents);
 - The development an on-line, web-based, service allowing developers and others to make enquiries related to any plot of land;
 - Increased access to HSE's assessment tools and techniques.

The new services will be rolled out in a phased way, with the first elements delivered from July 2014 and the full service launched by March 2015. HSE is charging for the discretionary services it offers to business.

Operational response

20. A key principle is that HID sectors require a supervisory regulatory regime that provides regular but proportionate assurance about the effectiveness of duty holder's risk management. There is a high public expectation that, where necessary, HSE challenges the way that duty holders are managing risk. This is a statutory requirement in many major hazard sectors through licensing and permissioning.
21. HID has set out its approach to the regulation and control of risk in onshore and offshore high hazard industries in the [HID Regulatory Model](#). This makes the principles underpinning HID intervention programmes and the actions of HID Regulatory and Discipline Inspectors transparent. These are:

- a. Responsibility for managing risk rests with the duty holder not HSE.
- b. Duty holders are responsible for identifying, profiling and managing the major hazard risks they create in a systematic way and for compliance with legal duties in respect of those risks.
- c. Major hazard duty holders will be subject to a level of regulatory scrutiny that is proportionate to their risks and performance.
- d. In permissioning regimes, HID will keep the arguments and commitments set out in safety cases/reports under constant review and critical assessment in light of actual duty holder performance.
- e. The interplay between technical, organisational and management factors is critical to effective risk control.
- f. The effectiveness of senior management leadership is an important determinant of duty holder success in managing major hazard risks.
- g. HID inspectors will make regulatory decisions taking all these issues into account and where a gap exists, use the Enforcement Management Model (EMM) to guide their actions.
- h. Regardless of their performance, duty holders will be subject to a degree of periodic inspection to provide public reassurance that major accident risks continue to be managed appropriately

22. HID's sector strategies set out our objectives within the health and safety systems of the industries we regulate. These objectives feed our specific interventions and help HID allocate its resources. However, there is a common direction of travel for these, irrespective of sector. The starting point is the belief that there are, at a high level, common causes of major disasters. And by disasters we cast our net wide to include the Nimrod disaster in Afghanistan, through to oil rig blow outs in the Gulf of Mexico, to explosions at fuel depots in Hertfordshire. Common causes suggest common solutions, so HID increasingly takes a common approach to the way it seeks to influence change. In many cases HID specifically withdraws from pro-active inspection of traditional health and safety which is well-managed to focus on major hazard risks. This section sets out the essence of this approach.

23. **Doing the right things** – paragraphs 12 to 18 set out the core themes that emerged from the evidence assimilated in the development of the sector strategies and are the key topics on which we should engage with industry. We agree the appropriate expectations and standards with duty holders. This may be HSE led (e.g. the development of guides to assessing plant integrity at ageing installations), or industry led (e.g. leadership guidance developed by the Process Safety Leadership Group set up after Buncefield).

24. Our interventions with duty holders target these themes enabling us to move more quickly through processes like safety case assessments to maximise on-site verification that claimed controls are actually in place and work effectively. The objective here is to increase impact by doing fewer, better targeted, deeper, and more site-based interventions. This approach is underpinned by the HID Regulatory Model and the work we have done to bring more consistency to our intervention planning.

25. **Going to the right places** – we use intelligence about performance (against the priority topics) and intrinsic hazards to rank sites for proactive inspection. This serves a number of purposes. It enables us to target resources where they are needed most. It demonstrates that our intervention plans are proportionate and evidence based, particularly important since we recover costs from the duty holders. Furthermore, good quality data and intelligence enables us to intervene higher up the duty holders' management chain and with trade associations to get a shared understanding of the nature and scale of the problem, and obtain commitments to improve. We intend to put this data and information in the public domain, as a further lever to secure improvements.
26. As an example of this approach, this year HID inspectors pooled their knowledge of three multinational oil companies with offshore and onshore interests. We collectively grouped the issues into safety management system themes, each with supporting evidence. This enabled us to approach the companies at Board level to present a high-level and evidenced picture of where they were good and where they needed to improve and explore if this correlated with their own perceptions of performance. This has been challenging and we are reviewing lessons. These types of high-level interventions will be used more in the future.
27. **Finish what we start** – After going to the right places and dealing with the right topics, we must secure the necessary improvements without undue delay and document them accurately. The HID Regulatory Model provides a common foundation for assessment, inspection and investigation. The model underpins HID's approach to prioritising key areas of safety management systems during inspection or investigations and critically how those issues reflect wider failures in those systems. As a result, we are better placed to conclude issues, using formal enforcement where necessary. This is supported by an increasing range of internal performance metrics which allow us to monitor issues raised and closed out, and link this data to performance rankings and enforcement action to ensure a clear line of sight between priorities and the action taken by HID in the light of them.
28. This also offers further opportunities for making industries' performance on risk management more transparent. Essentially, we are collecting a range of data which will allow us to come to credible conclusions on whether the sectors we regulate are delivering adequate levels of risk control

Working with Partners

29. Policy sets the legal framework. Operational interventions ensure on the ground improvements. Both are enhanced by working with industry partners so that they exercise leadership on major hazard risk control on a broader front. We tailor this strategic engagement to the make up of the sector. Four examples illustrate the point.
30. In mines, HSE was a prime mover in setting up the tripartite Mines Safety Leadership Group to ensure that the sector took responsibility for delivering key elements of the mining sector strategy.
31. In onshore chemicals, we have built on the success of the Process Safety Leadership Group to deliver the industry response to Buncefield. We have encouraged the Chemicals and Downstream Oil Industries Forum (CDOIF) onto a more strategic footing. Now industry identifies key generic health, safety and

environmental challenges facing the sectors and develops practical solutions supported by the regulator but owned by industry. The industry-chaired Strategic Forum introduced following the BRE Review also provides the opportunity for senior strategic engagement with the 4 main onshore trade bodies on the sector's performance and the longer-term goals of the COMAH regime.

32. The use of industry-wide performance indicators is well established amongst leaders in the gas and pipelines sector. HSE has, for several years, published an annual report on the performance of the sector based on data provided by the UK Onshore Pipeline Operators' Association
33. In the offshore sector, HID has been heavily involved in the industries' Step Change programme, at both senior leadership level and on various steering groups. This work continues. The structure of the Step Change leadership team and working groups has recently been changed to better align with the Offshore Sector Strategy 2014 – 17 and improve governance and delivery of key objectives. The hydrocarbon release reduction programme continues to be high profile and industry has committed to a 50% reduction in releases from 2013 to 2016. Steps have also been taken to improve worker engagement with the formation of the Worker Engagement Support Team which includes elected safety representatives, senior employees, the TUs and HSE.

Conclusion

34. The major hazard environment remains a challenging one. The price of failure is high and whilst the combination of circumstances that lead to major disasters are rare, events that could escalate to the very serious are much less so. Society wants both protection from major accidents and the benefits that come from these industries including, often, the benefit of developing the land around them. For example, much land has been released for development around gas holder sites which are being systematically decommissioned. This also plays into the Government's Growth and Better Regulation agendas, which require us to be able to demonstrate that we are proportionate, that we engage meaningfully with stakeholders and that we do not constrain business with unnecessary burdens.
35. Inquiries into major accidents increasingly tell us that there are few really "new" accidents, just the repetition of previous mistakes. HID's intervention strategy is therefore to be sharper in the diagnosis of poor performance and then to raise our sights to engage with those who can exert real influence for change in the organisations and sectors we regulate. Our challenge, and response, is to be constantly alert to the need to amend or adapt our intervention strategy, within the framework of the different legal regimes, to respond to fast changing industries and varying levels of performance and to be able to demonstrate to stakeholders that we are doing this in an effective and efficient way. The work we have done over the last 12 months to bring consistency and transparency to our intervention planning across all of our sectors so that dutyholders know what to expect from us is an example of how we are rising to that continuing challenge.
36. It is for businesses to manage their health and safety risks – they know failure is expensive and potentially catastrophic so it is in their own interest not to let health and safety slip. Industry's performance cannot and does not depend on interventions by HID inspectors so we don't need to be resourced to go everywhere. That said, we do continue to have recruitment challenges, which are more acute in ED, but our revised recruitment strategy is showing early promise.

Also, the ED Workforce Strategy Programme we have commissioned is aimed at ensuring we have the capability and resources to regulate effectively across our sectors and emerging energy technologies – we will apply the lessons from the programme HID wide.

37. We are rightly proud of our achievements but we will not be complacent. We will continue to regulate based on risk and hazard – we will do this by applying the HID Regulatory model principles and our refined intervention planning strategy in line with our priorities. This approach will ensure we regulate proportionately and effectively with our current level of resources.

Action

38. The paper is for information and comment.

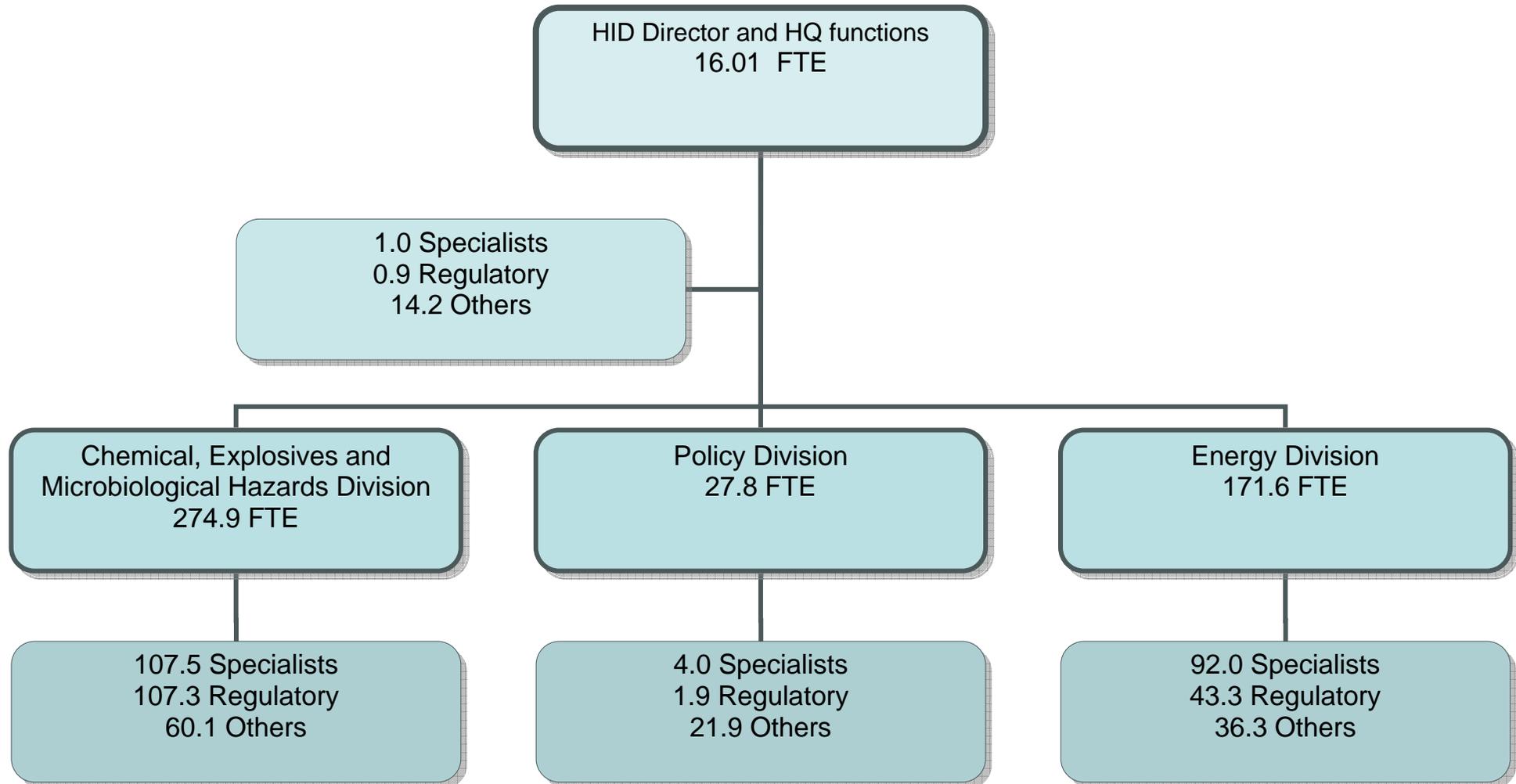
Paper clearance

39. The SMT cleared the paper on 11 November 2014.

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Annex 2a: HID structure and staff numbers

HID has 490.4 Full Time Equivalent Staff (FTEs) in total at the end of October 2014. The diagram below shows the structure of HID with a breakdown of HID FTE numbers for specialist and regulatory staff and 'other' staff (which includes administrative staff and all senior civil servants).



Annex 2b: HIDs 2014/15 expenditure and income budgets agreed at the mid-year review (October 2014)

Expenditure	Payroll	£33,809,810
	Other	£6,857,913
	Total	£40,667,723
Income	Offshore Safety Case	-£14,691,168
	COMAH	-£10,888,993
	GSMR	-£347,762
	Explosives	-£195,000
	Fee for Intervention	-£575,137
	GMO Notifications	-£155,347
	Other*	-£1,082,092
	Total	-£27,935,498
Net	Resource	£12,732,225
	%age costs recovered	69%

* Includes: prosecution costs, interdepartmental charges (eg, Defra – SAPO and EPA charges), and minor miscellaneous charges (eg, hydrocarbon database release subscriptions)