

Summary: Intervention & Options

Department /Agency: HSE	Title: Impact Assessment of the statutory registration of tower cranes	
Stage: Post-consultation	Version:	Date: 09/12/2009
Related Publications:		

Available to view or download at:

Contact for enquiries: Laurence Golob, HSE Construction Sector **Telephone:** 0207 556 2238

What is the problem under consideration? Why is government intervention necessary?

Tower crane accidents in recent years, some involving fatalities, have heightened general awareness of these cranes and the risks they pose to worker and public safety. The difficulty of obtaining information on tower crane installations can hinder the Health and Safety Executive (HSE) in its role as health and safety regulator, and has drawn criticism from those seeking reassurance on behalf of the public. The Government considers that a compulsory tower crane register, containing and making available appropriate information, could obviate these difficulties. The Government believes that it is necessary to ensure that a suitable national register is created and, by way of a statutory duty, that the relevant persons input prescribed information to it.

Additionally, the aforementioned incidents create a risk of the public losing confidence in tower crane owners and operators, and not trusting them to take the necessary precautions to prevent further accidents. The public's perception of the risks from tower crane operations is distorted by this mistrust. This may lead to the presence of tower cranes on a site generating a level of worry among the general public that exceeds what is warranted by the real risk involved.

The intervention of an agent perceived as impartial and trusted by the public, such as HSE, can assure the public that the risk is properly controlled and restore perceived risk to a level closer to the actual risk. This assurance itself has an intrinsic value for individuals, so its increase would be a benefit in itself.

What are the policy objectives and the intended effects?

To ensure the collation and ready availability of specific information on each tower crane installation so as to: provide information and reassurance to the public; assist HSE with work planning, enforcement and statistical analysis; and encourage the industry to achieve high standards of health and safety management.

What policy options have been considered? Please justify any preferred option.

The options considered below were developed following initial discussions with the principal stakeholders and a steer from the HSE Board in response to a paper tabled at its April 2009 meeting.

The options considered have to do with the coverage of these regulations, both in terms of types of tower cranes and the types of sites on which they operate.

Types of tower cranes:

Tower cranes fall under two broad categories:

(i) Conventional tower cranes (also known as 'assisted-erected' tower cranes) - those whose essential structure involves a vertical tower on top of which is mounted a jib but where the crane is brought to the construction site in sections and these are assembled on the site to form the crane.

It is not always the same collection of sections that is brought to site to be combined into a crane - thus, it is the particular combination on site which is to be registered. (Normally, only one of the sections in any combination, the slewing ring, is marked/identified).

(ii) 'Self-erecting' tower cranes - a complete unit which arrives on site and 'unfolds' to form a crane consisting essentially of a vertical tower and jib.

Self-erecting tower cranes fall into two broad kinds:

- (ii)(a) Towed - i.e. towed behind the transporting vehicle
- (ii)(b) Lorry-mounted - i.e. mounted on top of the transporting vehicle

Mobile cranes with mounted tower rigs could also be included in this category.

The HSE Board indicated in its April 2009 meeting that the option of consulting on including both categories of crane in the register should be explored.

Types of sites:

Tower cranes can be found mostly in construction sites but also in other sites, for example, offshore; in storage yards; and docks; or used for activities such as bungee-jumping. Following a steer from the HSE Board, the option of consulting on including either only construction sites or all sites in the register should be explored.

The options that are considered in this impact assessment are:

Option 1 – Do nothing

Option 2 – A statutory register covering conventional (assisted-erected) tower cranes on construction sites.

Option 3 – A statutory register with coverage restricted to conventional tower cranes but covering those on both construction and non-construction sites.

Option 4 – A statutory register covering both conventional and self-erecting tower cranes but restricted to those on construction sites.

Option 5 – A statutory register covering both conventional and self-erecting tower cranes on both construction and non-construction sites.

A version of this impact assessment was included in the Consultation Document provided for the public consultation that took place between July and October 2009. Based on the responses to this consultation, the HSE Board agreed at its November 2009 meeting that the recommended scheme should be the one described here as Option 2: limiting the scope of the regulations to conventional tower cranes on construction sites. The impact assessment presented here is as seen by the Board, other than some adjustments to the costs for the development and maintenance of the register.

When will the policy be reviewed to establish the actual costs and benefits and the achievement of the desired effects?

Work to review the policy will be commenced within five years of its implementation.

Ministerial Sign-off For SELECT STAGE Impact Assessments:

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible Minister:

Date:

Summary: Analysis & Evidence

Policy Option: 1

Description: Do Nothing

COSTS	ANNUAL COSTS		Description and scale of key monetised costs by 'main affected groups' There are no costs associated with this option
	One-off (Transition)	Yrs	
	£ Nil		
	Average Annual Cost (excluding one-off)		
£ Nil		Total Cost (PV)	£ Nil
Other key non-monetised costs by 'main affected groups'			
N/a			

BENEFITS	ANNUAL BENEFITS		Description and scale of key monetised benefits by 'main affected groups' There are no benefits associated with this option
	One-off	Yrs	
	£ Nil		
	Average Annual Benefit (excluding one-off)		
£ Nil		Total Benefit (PV)	£ Nil
Other key non-monetised benefits by 'main affected groups'			
N/a			

Key Assumptions/Sensitivities/Risks
N/a

Price Base Year	Time Period Years	Net Benefit Range (NPV) £ 0	NET BENEFIT (NPV Best estimate) £ 0
--------------------	----------------------	---------------------------------------	--

What is the geographic coverage of the policy/option?	N/a			
On what date will the policy be implemented?	N/a			
Which organisation(s) will enforce the policy?	N/a			
What is the total annual cost of enforcement for these organisations?	£ 0			
Does enforcement comply with Hampton principles?	N/a			
Will implementation go beyond minimum EU requirements?	N/a			
What is the value of the proposed offsetting measure per year?	£ 0			
What is the value of changes in greenhouse gas emissions?	£ 0			
Will the proposal have a significant impact on competition?	No			
Annual cost (£-£) per organisation (excluding one-off)	Micro 0	Small 0	Medium 0	Large 0
Are any of these organisations exempt?	N/a	N/a	N/a	N/a

Impact on Admin Burdens Baseline (2005 Prices)			(Increase - Decrease)		
Increase of	£ 0	Decrease of	£ 0	Net Impact	£ 0

Key: Annual costs and benefits:
Constant Prices (Net) Present Value

Summary: Analysis & Evidence

Policy Option: 2

Description: Register covering conventional tower cranes in construction sites

COSTS	ANNUAL COSTS		Description and scale of key monetised costs by 'main affected groups'
	One-off (Transition)	Yrs	
	£ 178,000		Familiarisation costs to business of £52,500 and to HSE of £8,000 Registration costs to business of £150,800 and to HSE of £30,000
	Average Annual Cost (excluding one-off)		Register development and communication costs to HSE of £178,900
	£ 28,000		Total Cost (PV) £ 420,000
Other key non-monetised costs by 'main affected groups' N/a			

BENEFITS	ANNUAL BENEFITS		Description and scale of key monetised benefits by 'main affected groups'
	One-off	Yrs	
	£ Nil		It has not been possible to quantify the public assurance or health and safety benefits associated with this option.
	Average Annual Benefit (excluding one-off)		
	£ Nil		Total Benefit (PV) £ Nil
Other key non-monetised benefits by 'main affected groups'			

Key Assumptions/Sensitivities/Risks

Price Base Year 2008	Time Period Years 10	Net Benefit Range (NPV) N/a	NET BENEFIT (NPV Best estimate)
-------------------------	-------------------------	---------------------------------------	--

What is the geographic coverage of the policy/option?	Great Britain			
On what date will the policy be implemented?	06/04/2010			
Which organisation(s) will enforce the policy?	HSE			
What is the total annual cost of enforcement for these organisations?	£7,500			
Does enforcement comply with Hampton principles?	No			
Will implementation go beyond minimum EU requirements?	Yes			
What is the value of the proposed offsetting measure per year?	N/a			
What is the value of changes in greenhouse gas emissions?	£0			
Will the proposal have a significant impact on competition?	No			
Annual cost (£-£) per organisation (excluding one-off)	Micro Negligible	Small Negligible	Medium Negligible	Large Negligible
Are any of these organisations exempt?	No	No	No	No

Impact on Admin Burdens Baseline (2005 Prices)			(Increase - Decrease)
Increase of	£ 125,000	Decrease of	£ Nil
		Net Impact	£ 125,000

Key: Annual costs and benefits: Constant Prices (Net) Present Value

Summary: Analysis & Evidence

Policy Option: 3

Description: Register covering conventional tower cranes in all sites

COSTS	ANNUAL COSTS		Description and scale of key monetised costs by 'main affected groups'
	One-off (Transition)	Yrs	
	£ 185,000		Familiarisation costs to business of £54,000 and to HSE of £8,000 Registration costs to business of £158,000 and to HSE of £32,000
	Average Annual Cost (excluding one-off)		Register development and communication costs to HSE of £184,000
	£ 29,000		Total Cost (PV) £ 435,500
Other key non-monetised costs by 'main affected groups' N/a			

BENEFITS	ANNUAL BENEFITS		Description and scale of key monetised benefits by 'main affected groups'
	One-off	Yrs	
	£ Nil		It has not been possible to quantify the public assurance or health and safety benefits associated with this option.
	Average Annual Benefit (excluding one-off)		
	£ Nil		Total Benefit (PV) £ Nil
Other key non-monetised benefits by 'main affected groups'			

Key Assumptions/Sensitivities/Risks

Price Base Year 2008	Time Period Years 10	Net Benefit Range (NPV) N/a	NET BENEFIT (NPV Best estimate)
-------------------------	-------------------------	---------------------------------------	--

What is the geographic coverage of the policy/option?	Great Britain			
On what date will the policy be implemented?	06/04/2010			
Which organisation(s) will enforce the policy?	HSE			
What is the total annual cost of enforcement for these organisations?	£7,700			
Does enforcement comply with Hampton principles?	No			
Will implementation go beyond minimum EU requirements?	Yes			
What is the value of the proposed offsetting measure per year?	N/a			
What is the value of changes in greenhouse gas emissions?	£0			
Will the proposal have a significant impact on competition?	No			
Annual cost (£-£) per organisation (excluding one-off)	Micro Negligible	Small Negligible	Medium Negligible	Large Negligible
Are any of these organisations exempt?	No	No	No	No

Impact on Admin Burdens Baseline (2005 Prices)			(Increase - Decrease)	
Increase of	£ 132,000	Decrease of	£ Nil	Net Impact £ 132,000

Key: Annual costs and benefits:
Constant Prices (Net) Present Value

Summary: Analysis & Evidence

Policy Option: 4

Description: Register covering conventional and self-erecting tower cranes in construction sites

COSTS	ANNUAL COSTS		Description and scale of key monetised costs by 'main affected groups'
	One-off (Transition)	Yrs	
	£ 389,000		Familiarisation costs to business of £263,000 and to HSE of £8,000
	Average Annual Cost (excluding one-off)		Registration costs to business of £2,200,000 and to HSE of £458,000
£ 315,000		Register development and communication costs to HSE of £179,000	
Total Cost (PV)			£ 3,100,000
Other key non-monetised costs by 'main affected groups' N/a			

BENEFITS	ANNUAL BENEFITS		Description and scale of key monetised benefits by 'main affected groups'
	One-off	Yrs	
	£ Nil		It has not been possible to quantify the public assurance or health and safety benefits associated with this option.
	Average Annual Benefit (excluding one-off)		
£ Nil			
Total Benefit (PV)			£ Nil
Other key non-monetised benefits by 'main affected groups'			

Key Assumptions/Sensitivities/Risks

Price Base Year 2008	Time Period Years 10	Net Benefit Range (NPV) N/a	NET BENEFIT (NPV Best estimate)
-------------------------	-------------------------	---------------------------------------	--

What is the geographic coverage of the policy/option?	Great Britain			
On what date will the policy be implemented?	06/04/2010			
Which organisation(s) will enforce the policy?	HSE			
What is the total annual cost of enforcement for these organisations?	£57,000			
Does enforcement comply with Hampton principles?	No			
Will implementation go beyond minimum EU requirements?	Yes			
What is the value of the proposed offsetting measure per year?	N/a			
What is the value of changes in greenhouse gas emissions?	£0			
Will the proposal have a significant impact on competition?	No			
Annual cost (£-£) per organisation (excluding one-off)	Micro Negligible	Small Negligible	Medium Negligible	Large Negligible
Are any of these organisations exempt?	No	No	No	No

Impact on Admin Burdens Baseline (2005 Prices)			(Increase - Decrease)		
Increase of	£ 1.9m	Decrease of	£ Nil	Net Impact	£ 1.9m

Key: Annual costs and benefits: Constant Prices (Net) Present Value

Summary: Analysis & Evidence

Policy Option: 5

Description: Register covering conventional and self-erecting tower cranes in all sites

COSTS	ANNUAL COSTS		Description and scale of key monetised costs by 'main affected groups'
	One-off (Transition)	Yrs	
	£ 395,000		Familiarisation costs to business of £264,000 and to HSE of £8,000
	Average Annual Cost (excluding one-off)		Registration costs to business of £2,200,000 and to HSE of £461,000.
£ 316,000		Register development and communication costs to HSE of £184,000	
			Total Cost (PV) £ 3,100,000
Other key non-monetised costs by 'main affected groups' N/a			

BENEFITS	ANNUAL BENEFITS		Description and scale of key monetised benefits by 'main affected groups'
	One-off	Yrs	
	£ Nil		It has not been possible to quantify the public assurance or health and safety benefits associated with this option.
	Average Annual Benefit (excluding one-off)		
£ Nil			
			Total Benefit (PV) £ Nil
Other key non-monetised benefits by 'main affected groups'			

Key Assumptions/Sensitivities/Risks

Price Base Year 2008	Time Period Years 10	Net Benefit Range (NPV) N/a	NET BENEFIT (NPV Best estimate)
-------------------------	-------------------------	---------------------------------------	--

What is the geographic coverage of the policy/option?		Great Britain		
On what date will the policy be implemented?		06/04/2010		
Which organisation(s) will enforce the policy?		HSE		
What is the total annual cost of enforcement for these organisations?		£57,500		
Does enforcement comply with Hampton principles?		No		
Will implementation go beyond minimum EU requirements?		Yes		
What is the value of the proposed offsetting measure per year?		N/a		
What is the value of changes in greenhouse gas emissions?		£0		
Will the proposal have a significant impact on competition?		No		
Annual cost (£-£) per organisation (excluding one-off)	Micro Negligible	Small Negligible	Medium Negligible	Large Negligible
Are any of these organisations exempt?	No	No	No	No

Impact on Admin Burdens Baseline (2005 Prices)		(Increase - Decrease)	
Increase of £ 1.9m	Decrease of £ Nil	Net Impact	£ 1.9m

Key: Annual costs and benefits:
Constant Prices (Net) Present Value

Review of the statutory registration of tower cranes

Purpose and intended effect

Objectives

To ensure the collation and ready availability of specific information on each tower crane installation so as to: provide information and reassurance to the public; assist HSE with work planning, enforcement and statistical analysis; and encourage the industry to achieve high standards of health and safety management.

Background

Since the year 2000, there have been a number of high profile incidents involving tower cranes which have killed a total of 8 people (including one member of the public) and injured more. These incidents have led to mounting public concern that further improvements in tower crane safety need to be made.

In 2008, the Work and Pensions Select Committee, in its inquiry into the work of HSE, raised concerns about the number of incidents and fatalities involving tower cranes and other plant on construction sites, and called on HSE to bring forward proposals such as a national register. Subsequently, the Secretary of State for Work and Pensions expressed similar concerns and, at its meeting in January 2009, the HSE Board agreed that, on tower crane safety:

- work was required to address public concerns as well as responding to the Select Committee's recommendations and Secretary of State's concerns;
- in addition to other measures already in place, a register of tower cranes was needed. A voluntary register was to be introduced that would allow HSE to trial arrangements before introducing a statutory register.

HSE is committed to having a statutorily-based tower crane register in place by 2010.

Rationale for Government Intervention

Tower crane accidents in recent years, some involving fatalities, have heightened general awareness of these cranes and the risks they pose to worker and public safety. The difficulty of obtaining information on tower crane installations can hinder the Health and Safety Executive (HSE) in its role as health and safety regulator, and has drawn criticism from those seeking reassurance on behalf of the public. The Government considers that a compulsory tower crane register, containing and making available appropriate information, could obviate these difficulties. The Government believes that it is necessary to ensure that a suitable register is created and, by way of a statutory duty, that the relevant persons input prescribed information to it.

Additionally, the aforementioned incidents create a risk of the public losing confidence in tower crane owners and operators and not trusting them to take the necessary precautions to prevent further accidents. The public's perception of the risks from tower crane operations is distorted by this mistrust. This may lead to the presence of tower cranes on a site potentially generating a level of worry among the general public that exceeds what is warranted by the real risk involved.

The intervention of an agent perceived as impartial and trusted by the public, such as HSE, can assure the public that the risk is properly controlled and restore perceived risk to a level closer to the actual risk. This assurance has an intrinsic value for individuals, so its increase would be a benefit in itself.

OPTIONS

Option 1 - Do Nothing

Not introducing any kind of tower crane register and continuing as we are today is the base case against which the other options are compared. This has no cost or benefit implications.

Option 2 – Register covering conventional tower cranes on construction sites

Within 14 days of a conventional tower crane being thoroughly examined following installation or re-installation on a site, dutyholders will notify HSE of certain information.

Dutyholders will be same as those who have a duty under the Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) to ensure the cranes are thoroughly examined, i.e. the 'employer'. In practice, the duty is usually undertaken by the crane owner or the principal contractor.

The information to be notified will be:

- (a) Name/contact details of the crane owner;
- (b) site address;
- (c) crane identification particulars (including date of manufacture if known);
- (d) date of the last thorough examination (as required under LOLER, which allows the crane to be put into service on the site);
- (e) whether the thorough examination revealed and defects involving an existing or imminent risk of serious personal injury;
- (f) name and address of the employer for whom the thorough examination was made

Other than the name/contact details of the crane owner, this information can already be found on the thorough examination report required under LOLER. (Currently, HSE receives only the adverse reports indicating existing or imminent risk of serious personal injury).

In the case of 'conventional' cranes, under LOLER, following installation/re-installation, a crane cannot be put into use on the site until a thorough examination has been carried out.

After the initial notification of a thorough examination, subsequent notifications will be required if the crane is re-installed on site or its periodic thorough examination comes due.

Notification will be required within 14 days of a crane being thoroughly examined following installation, or re-installation, on the site. Tower cranes already operating on site when the Regulations come into force in April 2010 will need to be registered within 28 days of commencement.

Option 3 - Register covering conventional tower cranes on all sites

As with option 2, except that conventional tower cranes in non-construction sites would also have to be entered in the register. This includes tower cranes on sites such as:

- ports;
- bungee-jumping operation;
- steel stockholders;
- factories.

Option 4 – Register covering conventional and self-erecting tower cranes on construction sites

As with Option 2, except that self-erecting tower cranes on construction sites would also have to be registered.

In the case of self-erecting cranes, a crane can be used on the site without a further thorough examination provided it has been previously thoroughly examined and its next periodic thorough examination is not due. Self-erecting tower cranes would thus be notified to HSE within 14 days of their being put into service on a construction site

After the initial notification of a thorough examination, subsequent notifications will be required if the next periodic thorough examination of the self-erecting crane becomes due.

Option 5 – Register covering conventional and self-erecting tower cranes on all sites

A combination of Options 3 and 4. As with Option 2, but self-erecting tower cranes in construction sites and both self-erecting and conventional tower cranes in non-construction sites would also have to be entered in the register.

COSTS AND BENEFITS

Data Sources and Assumptions

All financial figures are given in 2008 prices. Financial costs and benefits have been discounted at 3.5 per cent over a ten year appraisal period.¹ It has not been possible to quantify or monetise the expected benefits arising from increased public assurance or from better quality information potentially allowing HSE to better design and target its interventions, so benefits have not been discounted.

Sectors and Groups Affected

The different options will apply to different groups of companies, although there will be some overlap. It is expected that owners of self-erecting tower cranes will face higher proportional costs, due to the fact that these tower cranes tend to remain on particular sites for shorter periods, and will thus, on average, have to be entered in the register more often.

Benefits

It is expected that the main benefit of implementing a tower crane register will be an increase in public assurance. Members of the public will be able to directly check whether a particular tower crane they are interested in has been registered, and be confident that it has undergone thorough examination.

Quantifying or monetising this expected increase in public assurance for each of the proposed options will not be possible; the extensive research needed to determine this was not considered an appropriate use of resource given the issue at hand, or practicable given the timescales involved. The degree of public assurance provided should theoretically increase with increased coverage in terms of both equipment and sectors. Even though all incidents in the last years have been related to conventional tower cranes on construction sites, we believe it is probable that the majority of the general public is not aware of this fact, and will seek assurance about all tower cranes.

¹ Discounting is the technique which is used to compare cash flows which occur in different time periods and is based on the principle that generally, people prefer to receive goods and services now rather than in the future, see The Green Book, available at http://www.hm-treasury.gov.uk/data_greenbook_index.htm

However, in the case of coverage extended to non-conventional tower cranes, there is a risk that this intended increase in public assurance could be undermined by the fact that some of them are deployed very frequently (depending on the type, some are mobilised an average of five times a week). Given that dutyholders would have 14 days to register a tower crane after it is put into service, this could very well lead to members of the public consulting the register and finding that the tower crane that concerns them is not registered, simply because the dutyholder has not registered it yet and is within the period prescribed to do so.

It is not expected that a tower crane register will have direct health and safety benefits, i.e. reductions in injury or ill-health arising directly from registration, although the data from the register could allow HSE to better design and target its interventions related to the sector, thus leading indirectly to health and safety benefits though, again, it was not considered appropriate or practicable to quantify or monetise these benefits.

Costs

Option 1 – Do Nothing

There are no costs from this option.

Option 2 – Statutory register covering conventional tower cranes on construction sites

Coverage

In this option, the register will apply only to conventional tower cranes and will not extend to self-erecting tower cranes or other equipment that also falls under the LOLER² regulations. It will apply only to construction sites.

According to industry sources, it is estimated there are approximately 1,800 conventional tower cranes in the UK. HSE experts, based on feedback from industry sources, estimate that 1,300 of them are normally in use at any one time on construction sites.

At present, however, due to the construction industry having been hit very hard by the economic downturn (with volume measures of industry output showing a year-on-year fall of almost 9% to the first quarter of 2009³), the figures for conventional tower cranes in use are lower.

Industry sources have indicated that the number of tower cranes in use currently is 1,000, a large fall they attribute to the house-building sector within the construction industry having experienced an especially strong decrease. This sector comprises the kind of projects which would use tower cranes most intensively.

Purely for the purposes of this impact assessment, we will assume that 1,000 conventional tower cranes will be in use at any one time during the first year of the register, and 1,300 in the years thereafter.

Each conventional tower crane will have to be registered every time it is installed or reinstalled on a site, as well as if its periodic thorough examination comes due while it is on-site.

Industry sources estimate that on average, a conventional tower crane is thoroughly examined twice a year, whether because it has been installed/reinstalled or because it is required or industry good practice indicates it. This will result in a number of 2,000 registrations a year for year 1 and 2,600 thereafter.

The number of dutyholders is harder to estimate. In practice, the use of conventional tower cranes is likely to be limited to larger construction projects. We will assume that only a certain

² The Lifting Operations and Lifting Equipment Regulations (1998)

³ Office for National Statistics – First release of the Gross Domestic Product Preliminary Estimate – 1st Quarter 2009 (24th April 2009). See at: <http://www.statistics.gov.uk/pdfdir/gdp0409.pdf>

proportion of larger contractors use or are likely to use conventional tower cranes, and that it is the larger firms involved in what BERR in their Construction Annual Statistics 2007⁴ call the 'Main Trades', i.e. 'non-residential building'; 'house building'; 'civil engineering', who are likely to be duty-holders. According to the BERR statistics (table 3.6), in 2005 there were approximately 3,750 firms with than more than 13 employees in the Main Trades category. These will be the dutyholders for the new regulation.

In this option, the coverage will be the same for the statutory register and for its voluntary trialling period.

Costs to industry

FAMILIARISATION COSTS:

Even though a number of participants will have already been contacted by HSE during consultation, they will still need to spend time familiarising themselves with exactly what is involved in the tower crane registration scheme. We will assume this will take a manager 30 minutes to do, at an economic cost of £28 per hour⁵.

Based on feedback from the Construction Plant-hire Association (CPA), which comprises the larger owners of conventional tower cranes, we anticipate that about 30 organisations will participate in the voluntary trialling period and will familiarise themselves with what is required of them, and register their tower crane mobilisations during this period. Assuming there will be 30 participants during the trialling period, and one manager per participant engaging in this familiarisation process, this results in a one-off cost of £420.

After the trial, voluntary period, dutyholders who were already participating in it will continue as before and not need to undertake any further familiarisation, other than the understanding that the register is now statutory. We will assume this imposes negligible costs on the dutyholder. For dutyholders who did not participate in the trialling period, the time required to familiarise themselves with all the requirements for the statutory register will be as before, 30 minutes of a manager's time. At an economic cost of £28 per hour and assuming 3,720 dutyholders (those who did not participate in the trialling period) and one manager per dutyholder engaging in the familiarisation process, this results in a one-off cost of £52,100.

In total, the one-off costs of familiarisation with the register are estimated to be £52,500

COSTS OF REGISTERING A TOWER CRANE:

The information that will be required to be registered is such that most of it is currently already collected during the process of thorough examination. The only exception is the name of the tower crane owner, which will not necessarily be on the thorough examination form. However, this should be knowledge the dutyholder already has or can easily get. Therefore, dutyholders will need to collect little or any further data for registration and we will assume they will incur negligible costs in this respect.

There will be a cost involved in dutyholders entering the information into the register, which we will assume they will do either by inputting it into an online form or by posting the information to HSE. Whichever of these options they choose, we assume this will take an administrative worker or secretary 30 minutes per registration to do, at an economic cost of £13.3 per hour⁶. The cost per registration is thus estimated at £6.70.

⁴ See: <http://www.berr.gov.uk/files/file42061.pdf>

⁵ Mean hourly salary of a Production Manager (SOC code 112). Information from Annual Survey of Hours and Earnings (ASHE) 2008, with an extra 30% added to account for non-wage labour costs.

⁶ Mean hourly salary for Administrative and secretarial occupations (SOC code 4). Information from Annual Survey of Hours and Earnings (ASHE) 2008, with an extra 30% added to account for non-wage labour costs.

We have assumed that during the trialling period there will be 30 participants. However, the industry is highly concentrated, so these participants will cover a large percentage of the tower cranes that could be registered, a percentage we've estimated at 80%. The voluntary trial period will last for 3 months, which at a compliance level of 80%, implies 400 registrations of new installations/reinstallations of tower cranes. There will be an estimated 1,000 tower cranes already operating on site when the register is launched, and it is assumed 80% of those will also be registered (i.e. 800 registrations). In total, the number of registrations we estimate will take place during the trialling period is 1,200. The cost of these registrations would be £8,000.

After the trialling period, when the register becomes statutory, a compliance level of 100% implies 2,600 registrations would be required every year. In the first year, there will be 9 months of statutory register (the first 3 months of the year having been the trialling period), and the registrations required over the remaining period would be 1,500.

Tower cranes already operating on site and yet unregistered when the statutory register comes into force will need to be registered within 28 days of commencement. It is estimated that at the beginning of the statutory period, 1,000 tower cranes will already be in place, but we will assume 80% of those will have already been registered during the trialling period, leaving only 200 still to be registered. These will bring the number of registrations required in the last 9 months of the first year to 1,700. These registrations would result in a cost to businesses of £17,300 per annum (with the first year cost being £11,300), with a 10 year present value of £142,800.

In total, the cost of all registrations would be £17,300 per year, with a first year cost of £19,300 and a 10-year present value of £150,800.

Note that it has been suggested that participants could send HSE an attachment of the thorough examinations via e-mail (and if the name of the tower crane owner is not there, this piece of information as well) and HSE would be responsible for entering this information into the register. If this were to happen, the cost to industry would be negligible and the cost calculated above would be transferred to HSE, and would be larger, as the hourly salary of a Band 6 administrative worker in HSE is higher than that used for our calculations above.

Costs to HSE

There will be costs to HSE of implementing the tower crane register. This will include the staff costs of planning and researching the implementation, with associated administration costs, as well as the cost of setting up and hosting the register itself, which will be done through the Health and Safety Laboratory (HSL). In total, an initial estimate of the total cost of the register, including the trial period, is £100,000.

HSE will also host the register through HSL. This is likely to cost £8,000 per annum for maintenance, which has a 10 year present value of £68,900.

There will be a cost to HSE of entering the paper registrations sent by post into the electronic register. We will assume all the registrations during the trial period will be done electronically, while 5% of the ones thereafter will be done by post (i.e. 160 a year, with the figure for the first year being 85). Assuming it will take a Band 6 administrative worker half an hour to enter the registration, using HSE salary data, this will result in a cost of £3,600 a year, with a first-year cost of £2,380 and a 10-year present value of £30,000.

There will also be communications costs to HSE for publicising the register. This is anticipated to cost £10,000 in the first year.

HSE will also incur familiarisation costs, training it's Field Operations Directorate staff. We will assume that half an hour per each of 600 members of staff will be required, and that the staff

will be 130 inspectors, 20 managers and 50 administrative workers. Using HSE salary data, this results in a total cost of £7,800.

Total cost for HSE will thus be £128,000 for the first year, and £11,600 a year thereafter, with a 10-year present value of £217,000.

It has been suggested that industry be responsible for the costs of the register, through a charging regime. If this were the case, some or all of the amounts above would fall to industry, rather than HSE, but the costs to society as a whole would remain the same.

Total costs

OPTION 2	Costs to business		Costs to HSE	
	First year	10 year NPV	First year	10 year NPV
Familiarisation costs				
Trialling period	420	420	0	0
Statutory register	52,080	52,080	7,810	7,810
<i>Total familiarisation</i>	<i>52,500</i>	<i>52,500</i>	<i>7,810</i>	<i>7,810</i>
Registration costs				
Trialling period	7,980	7,980	0	0
Statutory register	11,305	142,842	2,376	30,018
<i>Total registration</i>	<i>19,285</i>	<i>150,822</i>	<i>2,376</i>	<i>30,018</i>
Register development and communication				
Cost of developing register	0	0	100,000	100,000
Communications	0	0	10,000	10,000
Cost of maintaining register	0	0	8,000	68,861
<i>Cost of register</i>	<i>0</i>	<i>0</i>	<i>118,000</i>	<i>178,861</i>
TOTAL	71,785	203,322	128,186	216,690

Option 3 - Register covering conventional tower cranes on all sites

Coverage

In this option, the register will still apply only to conventional tower cranes and will not extend to any non-conventional tower cranes or other equipment that also falls under the LOLER regulations. However, it will apply both to conventional tower cranes on construction sites and to those on non-construction sites, such as ports, bungee-jumping operations and steel stockholders.

It will be preceded by a trialling period that will cover only conventional tower cranes on construction sites. The costs associated with this trial period will be as calculated in Option 2.

Option 3 will cover all the registrations and dutyholders calculated in Option 2 (1,700 registrations in the first year, and 2,600 thereafter, and 3,750 dutyholders), but will also cover additional ones.

Estimating the number of additional registrations and dutyholders has not been an easy process. Consultation with HSE experts working with the sectors involved has yielded information that allows us to estimate that the number of tower cranes operating in these sectors is 5% of the number normally operating in construction sites (i.e. 65). These conventional tower cranes tend to be installed quasi-permanently on these sites. We will therefore estimate that each of these

sites comprises one additional dutyholder, bringing the total number of dutyholders for this option to 3,815.

In terms of number of registrations per year, we will assume, as in option 2, that each tower crane will require 2 registrations a year. That results in 130 registrations being required every year, and 85 the first year (due to there being only 9 months of statutory register on the first year). We will also assume that there will be 65 tower cranes operating on non-construction sites on commencement, and those will be registered on the first year as well, bringing the first-year number to 150.

In total, considering construction and non-construction sites, the registrations required during the statutory period would be 1,850 on the first year and 2,730 a year thereafter.

Costs to industry

FAMILIARISATION COSTS

The costs for familiarisation during the trialling period are as calculated in Option 2: £420.

As in this option the requirements for the statutory period are different to those in the voluntary one, familiarisation will be required both for those dutyholders who were not participating in the voluntary register and for those who were.

The time required for dutyholders to familiarise themselves with all the requirements for the statutory register will be as before, 30 minutes of a manager's time. At an economic cost of £28 per hour and assuming 3,815 dutyholders and one manager per dutyholder engaging in the familiarisation process, this results in a one-off cost of £53,400.

In total, the one-off costs to business of familiarisation with the register are estimated to be £53,800.

COSTS OF REGISTERING A TOWER CRANE

The costs to business of registering their tower crane during the trialling period will be as in Option 2: £8,000. So will the cost of registering tower cranes on construction sites in the statutory period: £11,300 in the first year and £17,300 per annum in subsequent years, with a 10-year present value of £142,800.

The cost of registering conventional tower cranes on non-construction sites (150 registrations on the first year and 130 a year thereafter) will be £865 a year, with a first-year cost of £1,000 and a 10-year present value of £7,600.

In total, the registration costs will be a cost of £18,200 per year, with a first-year cost of £20,300 and a 10-year present value of £158,400.

Costs to HSE

Costs to HSE will be as calculated in Option 2 in terms of development of the register, maintenance and familiarisation cost.

The costs of communication will be £5,000 higher, to account for the new sectors that would have to be reached: a total of £15,000.

Finally, the cost of entering paper registrations into the electronic register would be of £3,800 per year, with a first-year cost of £2,600 and a 10-year present value of £31,600.

Total costs

OPTION 3	Costs to business		Costs to HSE	
	First year	10 year NPV	First year	10 year NPV
Familiarisation costs				
Trialling period	420	420	0	0
Statutory register	53,410	53,410	7,810	7,810
<i>Total familiarisation</i>	<i>53,830</i>	<i>53,830</i>	<i>7,810</i>	<i>7,810</i>
Registration costs				
Trialling period	7,980	7,980	0	0
Statutory register	12,303	150,416	2,585	31,610
<i>Total registration</i>	<i>20,283</i>	<i>158,396</i>	<i>2,585</i>	<i>31,610</i>
Register development and communication				
Cost of developing register	0	0	100,000	100,000
Communications	0	0	15,000	15,000
Cost of maintaining register	0	0	8,000	68,861
<i>Cost of register</i>	<i>0</i>	<i>0</i>	<i>123,000</i>	<i>183,861</i>
TOTAL	74,113	212,226	133,395	223,281

Option 4 – Statutory register covering conventional and self-erecting tower cranes on construction sites

Coverage

In this option, the statutory register will apply both to conventional tower cranes, and to self-erecting tower cranes and also to mobile cranes with mounted tower rigs (hereafter referred to as a group as “non-conventional tower cranes”). It will apply only to equipment on construction sites.

It will be preceded by a trialling period that will cover only conventional tower cranes on construction sites. The costs associated with this trial period will be as calculated in Option 2.

Option 4 will cover all the registrations calculated in Option 2 (1,700 in the first year, and 2,600 thereafter) but will also cover additional ones. Every non-conventional tower crane on construction sites will have to be registered every time it is put into service. After the initial registration, subsequent notifications will be required if the next periodic thorough examination of the crane becomes due.

According to industry sources, there are several kinds of non-conventional cranes that would be included, each having distinctive patterns of use.

Among self-erectors, two broad categories can be distinguished:

- Towed tower cranes: There are approximately 500 to 600 of these and they behave much as conventional tower cranes, remaining on site for long periods. As with conventional tower cranes, we will thus estimate 2 registrations will be required per crane per year. As explained under Option 2, to reflect the effects of the recession, in our calculations we will assume there will be 500 in operation at any one time on the first year of the register, with the number climbing to 600 in the years after that. In total, 1,200 registrations will be required per annum for this category, with the first year figure being 1,000 for the whole year (750 in 9 months). We will assume there will be 500 cranes already in place at commencement, and these would have to be registered within 28 days, bringing the total number of registrations on the first year to 1,250.

- Lorry-mounted tower cranes: There are approximately 100 of these, and they are deployed 4 to 5 times per week. In our calculations, we will assume they will be deployed 4 times a week in the first year, and 5 in the years after that. Assuming 50 weeks a year and only 9 months in the first year, this means that in total, 25,000 registrations will be required per annum for this category (15,000 in the first year).

There are also some 100 mobile cranes which can be fitted with a mounted tower rig, making them for our purposes, tower cranes. These are deployed twice a week, resulting in 10,000 registrations being required per annum. We will assume they will be deployed 1.5 times a week on the first year, and for only 9 months, giving us a figure of 5,625 registrations for that first year.

In total, the number of registrations that will be required for this option will be 23,575 in the first year, with 38,800 per year thereafter.

As in Option 2, we will assume that only a certain proportion of larger contractors use or are likely to use tower cranes, whether conventional or non-conventional. These will be the dutyholders for the new regulation, and we will assume they will be the same ones as identified in option 2, numbering 3,750.

Estimating the number of dutyholders is complicated by the overlap in terms of some dutyholders using several types of the equipment covered. HSE experts have estimated that to the 3,750 dutyholders estimated for option 2 should be added 15,000 new ones, giving us a total estimate of 18,750 dutyholders.

Costs to industry

FAMILIARISATION COSTS

The costs for familiarisation during the trialling period are as calculated in Option 2: £420.

As in this option the requirements for the statutory period are different to those in the voluntary one, familiarisation will be required both for those dutyholders who were not participating in the voluntary register and for those who were.

The time required for dutyholders to familiarise themselves with all the requirements for the statutory register will be as before, 30 minutes of a manager's time. At an economic cost of £28 per hour and assuming 18,750 dutyholders and one manager per dutyholder engaging in the familiarisation process, this results in a one-off cost of £262,500.

In total, the one-off costs to business of familiarisation with the register are estimated to be £262,900.

COSTS OF REGISTERING A TOWER CRANE

The costs to business of registering their tower crane during the trialling period will be as in Option 2: £8,000.

The cost of registering conventional and non-conventional tower cranes in construction sites (23,575 registrations the first year, with 38,800 per year thereafter) will be £258,000 a year, with a first-year cost of £157,000 and a 10-year present value of £2.2 million.

In total, the registration costs will be £164,800 for the first year, with a 10-year present value of £2.2 million.

Costs to HSE

Costs to HSE will be as calculated in Option 2 in terms of development of the register, maintenance, communications and familiarisation cost.

The cost of entering paper registrations into the electronic register would be of £54,200 per year, with a first-year cost of £32,900 and a 10-year present value of £458,500.

Total cost

OPTION 4	Costs to business		Costs to HSE	
	First year	10 year NPV	First year	10 year NPV
Familiarisation costs				
Trialling period	420	420	0	0
Statutory register	262,500	262,500	7,810	7,810
<i>Total familiarisation</i>	<i>262,920</i>	<i>262,920</i>	<i>7,810</i>	<i>7,810</i>
Registration costs				
Trialling period	7,980	7,980	0	0
Statutory register	156,774	2,181,541	32,946	458,452
<i>Total registration</i>	<i>164,754</i>	<i>2,189,521</i>	<i>32,946</i>	<i>458,452</i>
Register development and communication				
Cost of developing register	0	0	100,000	100,000
Communications	0	0	10,000	10,000
Cost of maintaining register	0	0	8,000	68,861
<i>Cost of register</i>	<i>0</i>	<i>0</i>	<i>118,000</i>	<i>178,861</i>
TOTAL	427,674	2,452,441	158,756	645,123

Option 5 – Register covering conventional and self-erecting tower cranes on all sites

In this option, the statutory register will apply both to conventional tower cranes, and to self-erecting tower cranes and also to mobile cranes with mounted tower rigs (hereafter referred to as a group as “non-conventional tower cranes”). It will apply to equipment on both construction and non-construction sites.

It will be preceded by a trialling period that will cover only conventional tower cranes on construction sites. The costs associated with this trial period will be as calculated in Option 2.

Option 5 will cover all the registrations and dutyholders calculated in Option 4 (23,575 registrations in the first year, and 38,800 a year thereafter, with a total of 18,750 dutyholders), the additional ones calculated for Option 3 (150 registrations in the first year and 130 a year thereafter, and 65 dutyholders) but will also cover additional ones.

As for Option 3, estimating the number of additional registrations and dutyholders has not been an easy process. Consultation with HSE experts working with the sectors involved has yielded information that allows us to estimate that the number of non-conventional tower cranes operating in these sectors is 5% of the number of towed tower cranes normally operating on construction sites (i.e. 30). According to our sources, lorry-mounted tower cranes and mobile tower cranes fitted with mounted tower rigs are not normally used on non-construction sites.

These conventional tower cranes tend to be installed quasi-permanently on these sites. We will therefore estimate that that each of these sites comprises one additional dutyholder, bringing the total number of dutyholders for this option to 18,845 .

Additionally, we will estimate, based on the above, that these tower cranes will be registered twice a year, as conventional tower cranes on construction sites (yielding 60 registrations a year and 45 the first year, given the 9 month-period in that year). We will also assume that there will be 60 such tower cranes operating on non-construction sites, on commencement, bringing the first-year figure to 105.

In total, considering construction and non-construction sites, the registrations required during the statutory period would be 28,830 on the first year and 38,990 a year thereafter.

Costs to industry

FAMILIARISATION COSTS

The costs for familiarisation during the trialling period are as calculated in Option 2: £420.

As in this option the requirements for the statutory period are different to those in the voluntary one, familiarisation will be required both for those dutyholders who were not participating in the voluntary register and for those who were.

The time required for dutyholders to familiarise themselves with all the requirements for the statutory register will be as before, 30 minutes of a manager's time. At an economic cost of £28 per hour and assuming 18,845 dutyholders and one manager per dutyholder engaging in the familiarisation process, this results in a one-off cost of £263,800.

In total, the one-off costs to business of familiarisation with the register are estimated to be £264,200.

COSTS OF REGISTERING A TOWER CRANE

The costs to business of registering their tower crane during the trialling period will be as in Option 2: £8,000.

The cost of registering conventional and non-conventional tower cranes on construction and non-construction sites (23,830 registrations the first year, with 38,990 per year thereafter) will be £259,300 a year, with a first-year cost of £158,500 and a 10-year present value of £2.2 million.

In total, the registration costs will be £166,500 the first year, with a 10-year present value of £2.2 million.

Costs to HSE

Costs to HSE will be as calculated in Option 2 in terms of development of the register, maintenance and familiarisation cost.

The costs of communication are estimated at £5,000 higher, to account for the new sectors that would have to be reached.

Finally, the cost of entering paper registrations into the electronic register would be of £54,500 per year, with a first-year cost of £33,300 and a 10-year present value of £460,800.

Total costs

OPTION 5	Costs to business		Costs to HSE	
	First year	10 year NPV	First year	10 year NPV
Familiarisation costs				
Trialling period	420	420	0	0
Statutory register	263,830	263,830	7,810	7,810
<i>Total familiarisation</i>	<i>264,250</i>	<i>264,250</i>	<i>7,810</i>	<i>7,810</i>
Registration costs				
Trialling period	7,980	7,980	0	0
Statutory register	158,470	2,192,849	33,302	460,828
<i>Total registration</i>	<i>166,450</i>	<i>2,200,829</i>	<i>33,302</i>	<i>460,828</i>
Register development and communication				
Cost of developing register	0	0	100,000	100,000
Communications	0	0	15,000	15,000
Cost of maintaining register	0	0	8,000	68,861
<i>Cost of register</i>	<i>0</i>	<i>0</i>	<i>123,000</i>	<i>183,861</i>
TOTAL	430,700	2,465,079	164,112	652,499

Effects on the Administrative burden

Option	Net effect on administrative burden (10 yr period) £	Equivalent annual net effect on administrative burden £
Option 1	Nil	Nil
Option 2	125,000	14,500
Option 3	132,000	15,300
Option 4	1,900,000	222,000
Option 5	1,900,000	223,000

Effects on small firms

It is not expected that the proportionality of the impact will be affected by the size of the company as, besides familiarisation costs, other costs will depend directly on the number of tower cranes operated.

Competition Assessment

The proposed options are not expected to have any adverse effects on competition.

Enforcement Sanction and Monitoring

HSE and local authority inspectors would be responsible for enforcing the regulations for all the options.

Implementation and Delivery Plan

For transparency, the chosen option should be communicated to affected stakeholders in advance of implementation.

Other specific impact tests

There are no other expected impacts on specific groups or the environment.

Specific Impact Tests: Checklist

Ensure that the results of any tests that impact on the cost-benefit analysis are contained within the main evidence base; other results may be annexed.

Type of testing undertaken	<i>Results in Evidence Base?</i>	<i>Results annexed?</i>
Competition Assessment	Yes	No
Small Firms Impact Test	Yes	No
Legal Aid	Yes	No
Sustainable Development	Yes	No
Carbon Assessment	Yes	No
Other Environment	Yes	No
Health Impact Assessment	Yes	No
Race Equality	Yes	No
Disability Equality	Yes	No
Gender Equality	Yes	No
Human Rights	Yes	No
Rural Proofing	Yes	No