

**HSE AGRICULTURAL INDUSTRY ADVISORY COMMITTEE (AIAC)****ARBORICULTURE AND FORESTRY ADVISORY GROUP (AFAG)****Analysis of RIDDOR Incidents and Initial Notifications Involving Injuries in Forestry and Arboriculture****Summary**

1. Data presented in this paper is mostly based on reportable injuries notified to Enforcing Authorities under RIDDOR and shows the causes of fatal injuries; specified injuries (those injuries that RIDDOR have specified must be reported to HSE regardless of any lost time); and other types of injuries that resulted in an over 7 days loss of work. It also refers to the recent introduction of initial fatal notifications. These are early notifications where it appears there has been a death of an individual that may have been occurred whilst tree work was being undertaken.
2. This paper shows the statistics for both Forestry and Arboriculture to assist with identification of similarities and differences between the two industries. Previously the industry analysis for each was presented in different ways. By presenting both industries in the same way in the same paper this will be more accessible to all members and emphasise those similarities and differences.

**Summary of Key Findings**

3. The introduction of the Initial Notifications has ensured that we can capture and use information regarding fatal incidents in a timely manner. The number of initial notifications, which now span three recording years, would indicate a doubling of fatal accidents across tree work with a potential four or fivefold increase in relation to arboriculture. However it is too early to say categorically whether this is due to an actual increase, whether it is a genuine anomaly or whether there were/are recording issues that have not been identified using the search terms in the paper. It is also too early to say whether this apparent increase represents a trend.
4. Across both industries the initial notifications with some support from RIDDOR analysis indicates that falling/moving objects represent the biggest cause of fatal and specified injuries. Initial fatal notifications indicate that chainsaw operators working under trees are most at risk of being hit by a moving or falling object namely a tree or a branch.
5. In arboriculture falls from height remains the biggest cause of reportable accidents usually resulting in a specified injury. However, being struck by a moving/falling object and contact with machinery are also both major causes of reportable accidents.
6. In forestry being struck by a moving/falling object is the biggest cause of significant reportable injuries.

7. The collection of data remains a challenge and relies on companies and individuals consistently and accurately reporting accidents that should be reported under RIDDOR. Furthermore, there is no mechanism to report 'near misses'<sup>1</sup> to the HSE which means that unless near miss incidents and learning points are shared voluntarily any learning will remain with the individual organisation.

#### **Background:**

8. In November 2018, [AFAG paper 33/02](#) was produced providing a 5-year analysis of injury incidents in arboriculture and a separate [AFAG paper](#) covered Forestry. Both papers spanned the period 2013/14 – 2018/19.
9. No subsequent analysis has been released since these papers were published. This paper also presents five years of statistics, with some overlap with the previous papers. This is purposely done as the previous methodology has been amended and as already discussed this paper present both industries in a similar way.
10. A note on methodology
  - Forestry: The analysis of RIDDOR notifications relating to Forestry has used the Standard Industrial Classification (SIC) codes 0210, 0220 and 0240<sup>2</sup>.
  - Arboriculture: In the absence of a definitive SIC code for the sector it is not possible to easily identify all the RIDDOR notifications arising from arboriculture work i.e., it is not possible to select arboriculture in the field that records the work activity when a RIDDOR is submitted. However, HSE has undertaken a search of RIDDOR records for terms relevant to arboriculture to provide a non-definitive, but indicative, outline of themes and trends. While this approach has not provided a complete count of all arboriculture incidents, it provides a representative selection of injury records that are occurring in the sector.
11. Additionally, this paper provides some analysis of the initial notifications of fatal incidents released through AFAG. These notifications should not be seen as complete or fully accurate: They are, or could be, still under investigation and some cases may turn out to be non-work related. As such analysis will be limited to that information already in the public domain. Notwithstanding that caveat, the notifications provide an indication of what type of accidents most often lead to fatal incidents in tree work.

#### **Analysis of Initial Notifications of fatal incidents**

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<sup>1</sup> There is a duty to report on dangerous occurrences in RIDDOR but this is limited to the circumstances specified in the regulations which do not accurately reflect what might be regarded as a near miss in tree work.

<sup>2</sup> The [Standard Industrial Classification](#) (SIC) is the system used in UK official statistics for classifying businesses by type of activity they are engaged in.

1. HSE has issued Initial Notifications of fatal incidents involving tree work to AFAG members, since December 2020. When HSE is notified of a potential work-related death involving or related to tree work we provide a simple factual summary of the incident as reported. The purpose of these notification is to alert the industry (arboriculture and/or forestry) and provide some simple relevant messages that members may wish to promote with their audiences.
2. There have been 15 initial notifications of people being killed and that death being viewed at least initially as involving tree work or forestry operations and, subject to ongoing verification, 11 appear to be arboriculture, 1 was in relation to tree work undertaken on a farm and the remainder are related to work activity within the Forestry SIC code ranges.
3. The deaths were split over 3 reporting years<sup>3</sup>.

<b>2020-2021 (partial year):</b>	<b>5 deaths (from December 2020)</b>
<b>2021-2022:</b>	<b>6 deaths</b>
<b>2022-2023 (ongoing year):</b>	<b>4 deaths to date</b>

4. Of the 15 deaths, 12 appear to involve a branch falling or the tree collapsing/falling onto a chainsaw operator. This represents 80% of all initial fatal notifications.
5. The other deaths were caused by contact with electricity (an overhead powerline) and 2 were caused by contact with machinery (a log splitting machine/firewood processor).

#### **Analysis of incidents and Injuries reported under RIDDOR in the period 2015/16 – 2020/21**

##### **Arboriculture**

6. *Background:* HSE's Statistics Team conducted an initial search of RIDDOR data to identify how incidents in arboriculture could be identified. After considering different options, the initial approach involved searching for the following terms within RIDDOR notifications received by HSE (in the injured person's job title field):
  - i) Tree (but not 'stree')
  - ii) Climb (but not in conjunction with mast)
  - iii) Arbor (but not in conjunction with 'Arbrough')
  - iv) Abori (to allow for misspelling of the full word)

Any RIDDOR with a Forestry SIC codes was excluded (they have been used in the Forestry analysis). Other SIC code activities from any other sector form part of the analysis so long as the search terms above were satisfied. 75% of all arboriculture (After excluding Forestry SIC codes) related accidents found by search criteria were found in SIC code 8130: Landscape Service Activities.

The search was undertaken over a 5-year period from 2016/17– 2020/21. Generally, analysis using a 5-year period is more likely to be realistic than one using a 3-year time period.

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<sup>3</sup> HSE work years start in April and end in March

7. The table below shows incident figures in the fatal and specified categories<sup>4</sup> increased between 2016/17-2018/19 before returning to approximately the same starting level in 2020/21. It would be difficult to draw conclusions as to whether this is a statistically significant.

**Table 1.1: Table of RIDDOR reports that were captured using the search terms above broken down by severity**

Severity <sup>5</sup>	Years					Grand Total
	2016/17	2017/18	2018/19	2019/20r	2020/21p	
Fatal	2	1	1	1		5
Specified	34	47	41	33	32	187
7-Day	56	65	76	70	62	329
<b>Grand Total</b>	<b>92</b>	<b>113</b>	<b>118</b>	<b>104</b>	<b>94</b>	<b>521</b>

8. The HSE received 1 RIDDOR report of the death of a member of the public in 2019/2020.
9. All other reports across all categories relate only to employed and self-employed persons.
10. Table 1.2 in appendix 1 shows the kind of incident that has taken place and the resulting severity of accident.
11. For all arboriculture incidents, the three main causes of injury were
- 1) contact with moving machinery (23%);
  - 2) being struck by a falling object (22%); and
  - 3) falls from height (17%)
- These three accident types alone accounted for 62% of all injuries
12. Falls from height accounted for 40% of the fatal accidents and 36% of specified injuries attributed to tree work during the 5-year period. Persons being struck by a moving or falling object accounted for 40% of fatal accidents and 29% of specified injuries. These figures were reduced to 5% and 17% respectively for injuries that resulted in a loss of work of over 7 days.
13. Contact with moving machinery accounted for 32% of over 7-day injuries, with struck by moving/falling and lifting and handling injuries accounting for 17% each.
14. Table 1.3 in Appendix 1 shows the nature of injuries suffered within each severity category. Bone fractures accounted for 86% of all specified injuries. Of those bone fractures 40% were caused by falls from height and 29% were caused by falling objects.

<sup>4</sup> RIDDOR has three categories of injury, fatal, specified: any injury that falls within Regulation 4 of RIDDOR (formally major injury), generally more serious injuries and over 7-day injury (formally over 3-day injury) regardless of severity.

<sup>5</sup> RIDDOR analysis in this area is difficult due to the application of search terms as there is no explicit SIC codes to capture this activity. While this approach can identify a relevant sample of RIDDOR records, which helps us understand the circumstances of tree related accidents, this approach will not provide a full count.

15. Lacerations accounted for 45% of injuries resulting in a loss of work of over 7 days. The largest cause of lacerations was contact with moving machinery.

## Forestry

16. Table 2.1 below provides a breakdown of injury incidents reported to HSE in forestry SIC codes. It shows that between 2016/17 to 2020/21 the number of RIDDOR reports fell by approximately 35%. (It isn't known if this is due to an increase in underreporting or a reduction in the number of people injured and no adjustment has been made for COVID).

**Table 2.1: Table of RIDDOR reports with the Forestry SIC codes broken down by severity**

Severity	Year					Grand Total
	2016/17	2017/18	2018/19	2019/20r	2020/21p	
Fatal	1	2	2	3	2	10
Specified	43	58	43	38	35	217
Over 7-Day	100	71	59	59	57	346
<b>Grand Total</b>	<b>144</b>	<b>131</b>	<b>104</b>	<b>100</b>	<b>94</b>	<b>573</b>

17. The HSE received 3 RIDDOR reports of members of the public dying. 1 in each of the following reporting years: 2017/18, 2018/19 and 2019/20.
18. All other reports in all categories relate to employed or self-employed persons.
19. Table 2.2 in appendix 1 shows the kind of incident that have taken place and the resulting severity of injury.
20. The three biggest causes of injury were
- 1) being struck by a moving/falling object (22%);
  - 2) slip, trip fall on the same level (17%);
  - 3) contact with moving machinery (12%)
- These three causes of injury accounted for 51% of all injuries
21. Being struck by a moving a falling object accounted for 80% of all fatal accidents recorded over the 5-year period. Being struck by a moving object accounted for 35% of all specified injuries; reducing to 14% of over 7-day injuries.
22. Table 2.3 in Appendix 1 shows the nature of injuries within each severity category. Bone fractures accounted for 86% of all specified injuries. 36 % of bone fractures were caused by being struck by a moving/falling object, with 23% being caused by a slip, trip or fall on the same level.
23. The largest proportion of over 7-day injuries were lacerations (33%), followed by sprains (27%). 51% of lacerations were caused by contact with moving machinery.

## Recommendation

24. That AFAG members note the key findings of this report namely:

- I. That the majority of tree work related fatal incidents involve chainsaw operatives working at the base of a tree;
- II. Contact with machinery remains a large cause of lost days, mostly resulting in lacerations;
- III. Being struck by a moving or falling object remains a big cause of serious injury across both forestry and arboriculture; and
- IV. Falls from height remain a large cause of significant injury in arboriculture along with moving/falling objects and contact with machinery.

25. That AFAG members consider how the data can be used to change attitudes and behaviours with a focus on ensuring that:

- I. work is properly planned by a competent person;
- II. consideration is given to the hierarchy of control both when ensuring safety when working at height and when selecting work equipment for use in tree work, e.g. considering mechanisation over chainsaw work where reasonably practicable
- III. work is undertaken by a competent person with the appropriate training and up to date refresher and/or updated development training.

## AFAG action

26. AFAG should focus on areas of high-risk activities most notably chainsaw operators working under trees. This however should not come at the expense of safety elsewhere in the work systems.

27. Consider ways in which industry can better share data and learning from incidents and near misses.

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## Appendix 1: Arboriculture Tables

**Table 1.2: Accident by Severity and Kind of Accident in Arboriculture**

Severity and Kind of Accident	Year					Grand Total
	2016/17	2017/18	2018/19	2019/20r	2020/21p	
<b>Fatal</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>		<b>5</b>
Struck by moving/falling object			1	1		2
Falls from a height	1	1				2
Contact with moving machinery	1					1
<b>Specified</b>	<b>34</b>	<b>47</b>	<b>41</b>	<b>33</b>	<b>32</b>	<b>187</b>
Falls from a height	18	18	7	10	14	67
Struck by moving/falling object	8	12	11	14	10	55
Slip, trip, fall on same level	3	10	12	5	2	32
Contact with moving machinery	1	3	4	2	1	11
Other kind of accident	2	2	2	1		7
Lifting and handling injuries	1		2	1	2	6
Strike against something fixed		1	2		2	5
Struck by moving vehicle		1	1		1	3
Trapped by something collapsing	1					1
<b>Over 7-Day</b>	<b>56</b>	<b>65</b>	<b>76</b>	<b>70</b>	<b>62</b>	<b>329</b>
Contact with moving machinery	19	16	25	21	25	106
Struck by moving/falling object	12	13	10	13	9	57
Lifting and handling injuries	12	8	14	13	8	55
Other kind of accident	9	10	10	8	12	49
Slip, trip, fall on same level	1	9	10	7	2	29
Falls from a height	2	5	3	4	4	18
Strike against something fixed		3		4		7
Trapped by something collapsing		1	2			3
Exposure to a harmful substance			1		1	2
Injured by an animal	1		1			2
Contact with electricity					1	1
<b>Grand Total</b>	<b>92</b>	<b>113</b>	<b>118</b>	<b>104</b>	<b>94</b>	<b>521</b>

**Table 1.3 Accidents by severity and type of injury in arboriculture**

Severity and Type of Injury	Year					Grand Total
	2016/17	2017/18	2018/19	2019/20r	2020/21p	
<b>Fatal</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>		<b>5</b>
Multiple injuries	1	1	1	1		4
Lacerations	1					1
<b>Specified</b>	<b>34</b>	<b>47</b>	<b>41</b>	<b>33</b>	<b>32</b>	<b>187</b>
Bone fracture	29	41	35	27	28	160
Amputation	2	3	3	2	2	12
Loss of consciousness	3	2	1	3	2	11
Crush		1	2	1		4
<b>Over 7-Day</b>	<b>56</b>	<b>65</b>	<b>76</b>	<b>70</b>	<b>62</b>	<b>329</b>
Lacerations	26	28	39	27	28	148
Sprain	6	18	16	16	16	72
Other known	6	5	7	6	7	31
Contusion	9	5	7	6	1	28
Fracture	6	2	4	8	2	22
Dislocation	2	4		2	2	10
Superficial	1	2		2	1	6
Not known		1	1		2	4
Burns			1	1	2	4
Concussion, Internal injuries, etc			1	1	1	3
Multiple injuries				1		1
<b>Grand Total</b>	<b>92</b>	<b>113</b>	<b>118</b>	<b>104</b>	<b>94</b>	<b>521</b>



## Appendix 2: Forestry Tables

Table2.2: Accidents by Severity and Kind in Forestry

Severity and Kind of Accident	Column Labels					Grand Total
	2016/17	2017/18	2018/19	2019/20r	2020/21p	
<b>Fatal</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>10</b>
Struck by moving/falling object	1	1	1	3	2	8
Trapped by something collapsing		1				1
Struck by moving vehicle			1			1
<b>Specified</b>	<b>43</b>	<b>58</b>	<b>43</b>	<b>38</b>	<b>35</b>	<b>217</b>
Struck by moving/falling object	16	23	18	10	10	77
Slip, trip, fall on same level	8	14	7	6	9	44
Falls from a height	8	5	7	10	6	36
Contact with moving machinery	6	7	2	8	4	27
Lifting and handling injuries	2	3	5	1	1	12
Struck by moving vehicle		4	2	1	2	9
Strike against something fixed	2	2			3	7
Other kind of accident	1		1	2		4
Trapped by something collapsing			1			1
<b>Over 7-Day</b>	<b>100</b>	<b>71</b>	<b>59</b>	<b>59</b>	<b>57</b>	<b>346</b>
Slip, trip, fall on same level	19	17	13	19	13	81
Contact with moving machinery	15	16	12	13	13	69
Lifting and handling injuries	16	12	14	8	9	59
Other kind of accident	22	11	7	6	7	53
Struck by moving/falling object	18	9	7	7	7	48
Falls from a height	4	4	2	1		11
Struck by moving vehicle	2	1		1	3	7
Strike against something fixed	1	1	2		3	7
Trapped by something collapsing	1			4		5
Injured by an animal			2		1	3
Acts of violence	1				1	2
Exposure to fire	1					1
<b>Grand Total</b>	<b>144</b>	<b>131</b>	<b>104</b>	<b>100</b>	<b>94</b>	<b>573</b>

**Table 2.3: Accidents by severity and Type in Forestry**

Severity and Type of Injury	Column Labels					Grand Total
	2016/17	2017/18	2018/19	2019/20r	2020/21p	
<b>Fatal</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>10</b>
Concussion, Internal injuries, etc		1		2	1	4
Multiple injuries	1		1		1	3
Not known		1				1
Asphyxiation, poison etc			1			1
Fracture				1		1
<b>Specified</b>	<b>43</b>	<b>58</b>	<b>43</b>	<b>38</b>	<b>35</b>	<b>217</b>
Bone fracture	38	50	38	31	30	187
Amputation	3	3	2	4		12
Loss of consciousness	1	4	3	2	2	12
Crush				1	2	3
Enclosed space		1			1	2
Scalping	1					1
<b>Over 7-Day</b>	<b>100</b>	<b>71</b>	<b>59</b>	<b>59</b>	<b>57</b>	<b>346</b>
Lacerations	32	23	25	13	20	113
Sprain	17	20	19	21	15	92
Other known	15	7	5	9	4	40
Contusion	8	12	1	5	5	31
Fracture	12	3	2	5	4	26
Dislocation	7	2	3	2	4	18
Superficial	4	2	1	2	1	10
Concussion, Internal injuries, etc	1		1	1	2	5
Not known		1	1	1	1	4
Loss of sight	2				1	3
Multiple injuries		1	1			2
Burns	1					1
Asphyxiation, poison etc	1					1
<b>Grand Total</b>	<b>144</b>	<b>131</b>	<b>104</b>	<b>100</b>	<b>94</b>	<b>573</b>