ENGINUITY TUTORIAL

Making Labour Decisions

Making Labour Decisions

Navigate to "Main menu/Making decisions/Job progression decisions (Labour)/Display job details"

Job 51 (In progress)

Management consultants report Risk analysis

JOB SUMMARY JOB PROGRESS

Job progression

Planned schedule			Actual progress						
Job period	Planned labour	Cumul % complete	Period	Status	Actual labour	Ineffect due to delays	Ineffect due to overman	Effective labour	Actu compl
1	110	25 %	5	Current					
2	132	55 %							
3	132								
4	66								

OVERMANNING LIMITS

Sector	Effective labour limit above the planned level
Industrial	35 %
Building & Commercial	35 %
Transport	45 %
Energy	18 %
Water & Sewage	25 %

When deciding upon the strategy to be used for completing jobs there are a number of **'sensible' and profitable** options :-

- Try and complete jobs **earlie**r than the planned duration (e.g., complete a 4-period job in 3 periods, 3-period job in 2 periods etc), which earns a bonus from the client and frees off resources (project manager and labour) to be used elsewhere
- Try and complete jobs **on time**
- A **mixture** of the above

In all cases the Construction Manager needs to **assess the labour requirements** each period for each job based upon the strategy being used.

Planned labour levels each period were determined by the estimators in order for the job to complete on time, and they can be used as guidelines in setting the labour levels for whichever strategy is adopted.

To complete a job early it is possible to overman above the planned levels. Sector-based overmanning limits are shown in the **Industry parameters**.

KEY POINTS

What should be avoided is completing a job late, as this incurs a late completion penalty, significantly damages client relationship, and reduces the profit made on a the job.

Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 19

Number to layoff: 0

Number available for jobs in progress: 19

AFTER DECISIONS

Net transfers: 0

Number left in the idle pool: 19

JOBS IN PROGRESS

						This period		Own Labour						Subcontract Labour				
									To site	From site								
Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	Status	Plan lab	Last per	From ILP	New	To ILP	Paid off	On site	End last	Take on	Lay off	On site	Total
10	US	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	77	104	0	0	0	0	104	0	0	0	0	104
20	US	Energy	3	FINAL planned period	Ahead of schedule	3rd period	21	61	0	0	0	0	61	0	0	0	0	61
29	UK	Building & Commercial	2	FINAL planned period	Ahead of schedule	2nd period	20	18	0	0	0	0	18	0	0	0	0	18
51	UK	Transport	4	4 planned periods remaining		1st period	110	0	0	0	0	0	0	0	0	0	0	0
62	UK	Building & Commercial	2	2 planned periods remaining		1st period	62	0	0	0	0	0	0	0	0	0	0	0

Consider the following situation. It is the start of period 5, and the company has 5 jobs in progress :-

- **Job 10** is in its 3rd period, and has a planned duration of 4 periods. It is ahead of schedule
- **Job 20** is in its 3rd and final planned period, and **must be completed this period**. It is ahead of schedule
- **Job 29** is in its 2nd and final planned period, and **must be completed this period**. It is ahead of schedule
- **Job 51** was won last period, and is in its first period
- **Job 62** was won last period, and is in its first period

Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 19

Number to layoff: 0

Number available for jobs in progress: 19

AFTER DECISIONS

Net transfers: 0

Number left in the idle pool: 19

JOBS IN PROGRESS

						This period		Own Labour						Subcontract Labour				
								To site		From site								
Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	Status	Plan lab	Last per	From ILP	New	To ILP	Paid off	On site	End last	Take on	Lay off	On site	Total
10	US	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	77	104	0	0	0	0	104	0	0	0	0	104
20	US	Energy	3	FINAL planned period	Ahead of schedule	3rd period	21	61	0	0	0	0	61	0	0	0	0	61
29	UK	Building & Commercial	2	FINAL planned period	Ahead of schedule	2nd period	20	18	0	0	0	0	18	0	0	0	0	18
51	UK	Transport	4	4 planned periods remaining		1st period	110	0	0	0	0	0	0	0	0	0	0	0
62	UK	Building & Commercial	2	2 planned periods remaining		1st period	62	0	0	0	0	0	0	0	0	0	0	0

Each job needs sufficient labour to enable it to progress in line with company strategy.

There are two types of labour that can be used :-

- The **company's own labour**; available either in the idle labour pool or on site
- **Subcontract labour** being used on site

Due to the requirements of each job, it is likely that one of two situations may have to be resolved :-

- An overall **labour shortfall.** New recruits into the company's own workforce or subcontractors may have to be taken on
- An overall **labour surplus.** Jobs could be overmanned to aim at early completion, or labour may have to be released

Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period | Key information | Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 19

Number to layoff: 0

Number available for jobs in progress: 19

AFTER DECISIONS

Net transfers: 0

Number left in the idle pool: 19

JOBS IN PROGRESS

						This period		Own Labour						Subcontract Labour				
									To site	From site								
Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	Status	Plan lab	Last per	From ILP	New	To ILP	Paid off	On site	End last	Take on	Lay off	On site	Total
10	US	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	77	104	0	0	0	0	104	0	0	0	0	104
20	US	Energy	3	FINAL planned period	Ahead of schedule	3rd period	21	61	0	0	0	0	61	0	0	0	0	61
29	UK	Building & Commercial	2	FINAL planned period	Ahead of schedule	2nd period	20	18	0	0	0	0	18	0	0	0	0	18
51	UK	Transport	4	4 planned periods remaining		1st period	110	0	0	0	0	0	0	0	0	0	0	0
62	UK	Building & Commercial	2	2 planned periods remaining		1st period	62	0	0	0	0	0	0	0	0	0	0	0

Disp

At the end of the last period, and available at the beginning of period 5, there are :-

- **19** labourers in the idle labour pool
- **183** labourers on jobs; All are the company's own operatives and none are subcontractors

If we take the combined idle labour and site-based labour, the company has a current workforce of **202** labourers.

KEY POINTS

The **default labour allocations** for each job in progress are the levels from the end of the last period. However, the default levels are **unlikely to be** the required ones for the current period.

Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 19

Number to layoff: 0

Number available for jobs in progress: 19

AFTER DECISIONS

Net transfers: 0

Number left in the idle pool: 19

JOBS IN PROGRESS

						This period		Own Labour						Subcontract Labour				
									To site	From site								
Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	Status	Plan lab	Last per	From ILP	New	To ILP	Paid off	On site	End last	Take on	Lay off	On site	Total
10	US	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	77	104	0	0	0	0	104	0	0	0	0	104
20	US	Energy	3	FINAL planned period	Ahead of schedule	3rd period	21	61	0	0	0	0	61	0	0	0	0	61
29	UK	Building & Commercial	2	FINAL planned period	Ahead of schedule	2nd period	20	18	0	0	0	0	18				0	18
51	UK	Transport	4	4 planned periods remaining		1st period	110	0	0								0	0
62	UK	Building & Commercial																

Display details for job 20

There is no hard and fast rule for deciding upon the order for determining the labour requirements, but the Construction Manager decides to concentrate first on job 20, **as this must be completed in the current period, and is a priority**.

Period 5 is the **third period of the job, and its FINAL planned period**. There are currently 61 labourers on site; all are the company's own labour. The planned labour requirement is 21 labourers.

Normally, allocating the planned level each period is sufficient to complete a job on time, providing a good project manager has been allocated to oversee the job, and all the labour is fully effective. However, since this is the final planned period of the job we should take a closer look at how the job has progressed to date, since other factors may have contributed to the job being behind or ahead of schedule, and we need to allocate sufficient labour to complete the job as efficiently as possible.

Due to a number of factors the job may be behind/ahead of schedule, and require more/less labour than planned.

We can use the **Display details for job 20** option to investigate further.

Making Labour Decisions

Job 20 (In progress)

Management consultants report Risk analysis

JOB SUMMARY JOB PROGRESS

Job progression											Profit analysis			
Planned schedule			Actual progress								By period		Cumulative	
Job period	Planned labour	Cumul % complete	Period	Status	Actual labour	Ineffect due to delays	Ineffect due to overman	Effective labour	Actual % complete	Completion status	Profit	Profit % of cost	Cumul profit	Cumul profit % of cost
1	31	30 %	3	Past	37	0.9	0.0	36.1	35.62 %	Ahead of schedule	70,830	2.4 %	70,830	2.4 %
2	52	80 %	4	Past	61	0.0	0.0	61.0	95.87 %	Ahead of schedule	356,692	7.6 %	427,522	5.6 %
3	21	100 %	5	Current						FINAL planned period of the job				

Total planned labour needed to complete the job is 104.

For a Energy job, the effective labour on site (after delays) cannot be more than 18% above the planned labour leve.

The **Job progress** for the job shows that the job was 95.87% complete at the end of the last period, and ahead of the planned schedule of 80%. There is just **4.13%** of the job left to complete.

The **total planned labour required to complete the job is 104 man periods**. Since there is 4.13% of the job left to complete, in manpower terms this is 4.13% of the total labour of 104, or 4.3 labourers.

4.3 labourers should be sufficient for the job to complete, **BUT there is a key factor that could prevent this from happening, and that is delays caused by risks striking.**

Risks only strike within the planned duration of a job, so risk delays DO NOT need to be considered if a job has over run, and will complete late.

To determine if any risks may delay job the job in its final period we can use the **Risk analysis** option at the top of the screen.

KEY POINTS

There is no need to make an adjustment for risk delays until the period in which the job is likely to finish, as there is time to compensate for delays in earlier periods before a job finishes.

Making Labour Decisions

Risk analysis

COST ANALYSIS | DELAY ANALYSIS

Job details					Risk details			Risk status		Delays	
Job	Status	In	BIM job	Sector	Risk description	Chance	Expected labour reduction	Struck	In period	Affect of Invest	Actual labour reduction
20	In progress	US	No	ENE	Personnel issues	High	2.4 %	Yes	3	0.0 %	2.4 %
					Poor decision making	Low	6.3 %	No			
					Protected wildlife found at site	Low	10.8 %	No			
					Planning delays	Low	7.7 %	No			

RISK	Likelihood	Chance it hits
	High	70 to 80 %
	Medium	40 to 50 %
	Low	20 to 30 %

The **Risk analysis** for job 20 reveals that there are **3 risks that has not yet struck**, and which could delay the job if it were to strike, the delay causing a reduction in the labour on site :-

- 'Poor decision making', which has a **'low'** chance of occurring, and an expected labour reduction of 6.3%
- 'Protected wildlife found at site', which has a **'low'** chance of occurring, and an expected labour reduction of 10.8%
- 'Planning delays', which has a **'low'** chance of occurring, and an expected labour reduction of 7.7%

The **Industry parameters** show the chance a risk may strike for each likelihood level.

The Construction Manager has looked at the likelihood of each risk level, and has decided as a strategy to only take action (allow extra labour in case risk(s) strike) for 'medium' and 'high' risks. In this case, because the 3 risks that have not struck are only of 'low' risk, no mitigating action is taken.

Since we cannot have fractions of people, the required labour level of 4.3 is adjusted upwards to 5 labourers.

KEY POINTS

Targeted investments on the Financial Decisions Screen into risk management companies can reduce the delays caused when risks strike, and reduce the amount of additional labour added to compensate for potential delays.

Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 19

Number to layoff: 0

Number available for jobs in progress: 19

AFTER DECISIONS

Net transfers: 0

Number left in the idle pool: 19

JOBS IN PROGRESS

						This period		Own Labour						Subcontract Labour				
									To site	From site								
Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	Status	Plan lab	Last per	From ILP	New	To ILP	Paid off	On site	End last	Take on	Lay off	On site	Total
10	US	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	77	104	0	0	0	0	104	0	0	0	0	104
20	US	Energy	3	FINAL planned period	Ahead of schedule	3rd period	21	61	0	0	0	0	61	0	0	0	0	61
29	UK	Building & Commercial	2	FINAL planned period	Ahead of schedule	2nd period	20	18	0	0		0	18	0	0	0	0	18
51	UK	Transport	4	4 planned periods remaining		1st period	110	0	0				0	0	0	0	0	0
62	UK	Building & Commercial	2	2 planned periods remaining		1st period	62							0	0	0	0	0

We have now determined that **5 labourers** should be enough to complete job 20 as efficiently as possible in period 5.

The planned allocation is 21 labourers, which although guaranteeing to complete the job, would complete the job too early in the period, which would have had the following detrimental affects :-

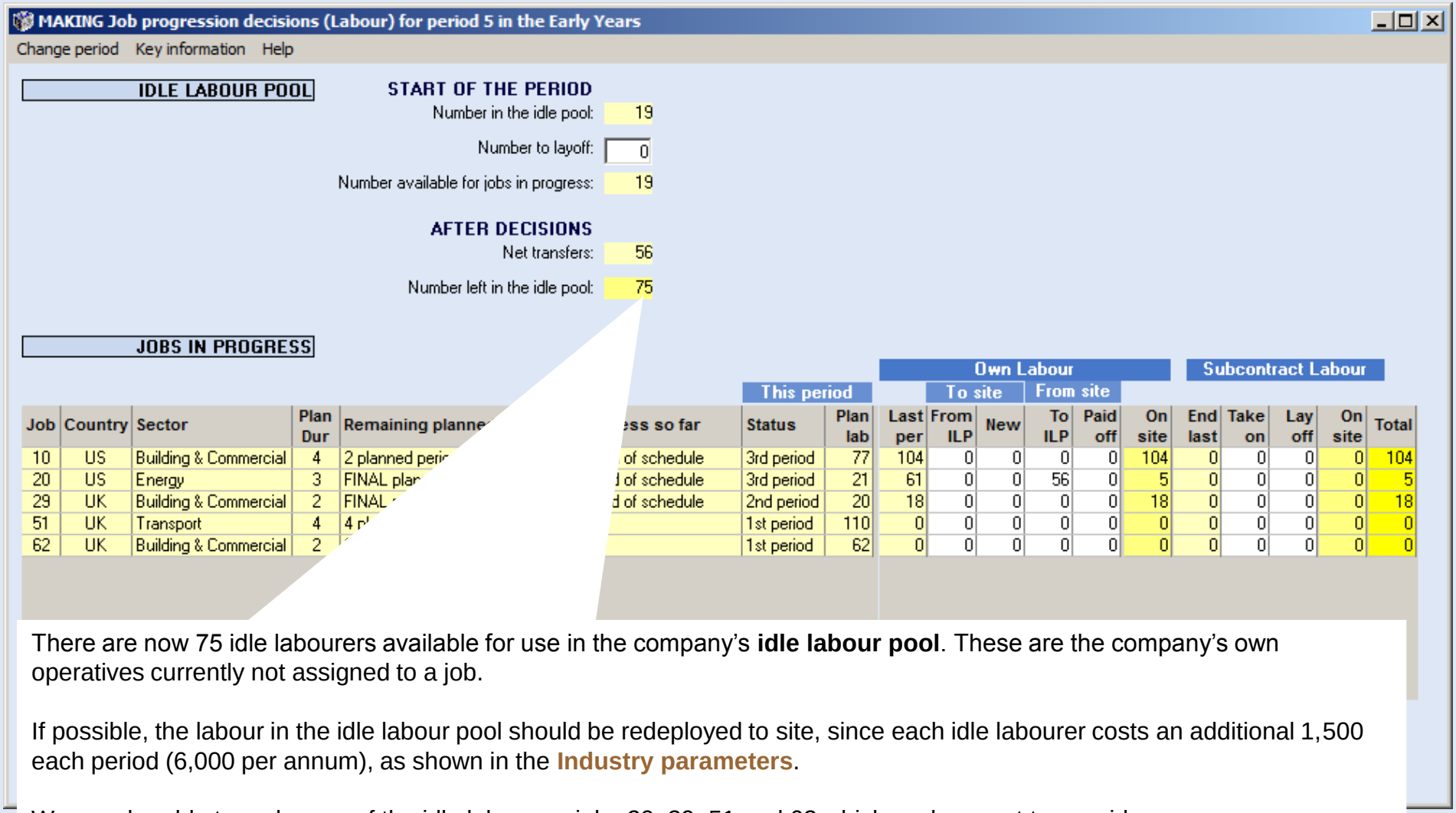
- Labour is still retained until the end of the period, incurring additional labour costs (ineffective labour)
- Labour could be utilised on other jobs, where it may be more productively used
- Site cost still has to be paid for ineffective labour

There are currently 61 of the company's "Own" labourers on site. To reduce this to 5 labourers, 56 labourers are transferred to the idle labour pool using the **"To ILP"** column, to be used on other jobs.

KEY POINTS

The surplus, full trained own labour is transferred to the idle pool for reallocation to other jobs. If they are not needed on other jobs they may be paid off instead.

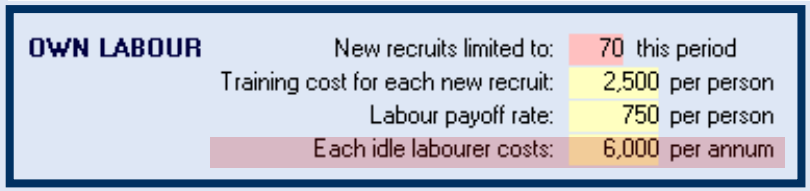
Making Labour Decisions



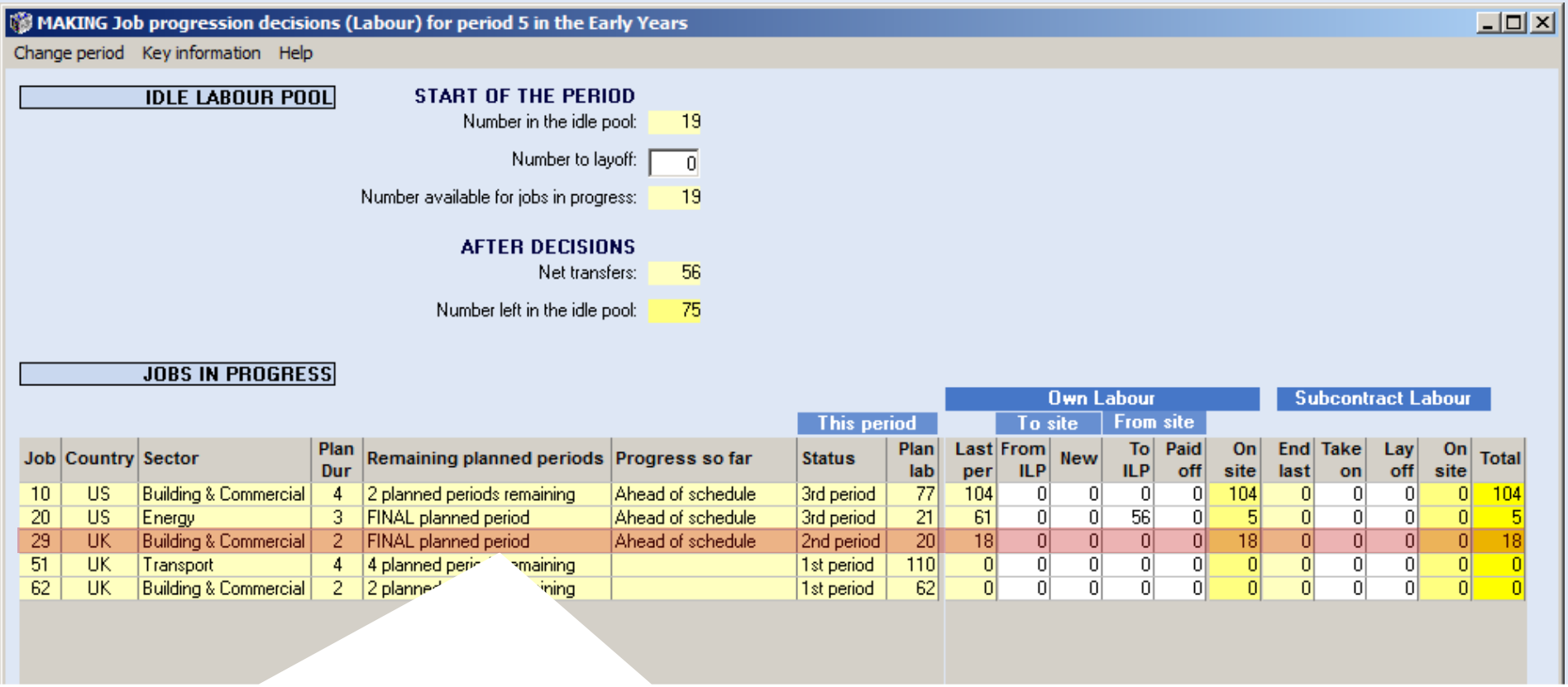
There are now 75 idle labourers available for use in the company's **idle labour pool**. These are the company's own operatives currently not assigned to a job.

If possible, the labour in the idle labour pool should be redeployed to site, since each idle labourer costs an additional 1,500 each period (6,000 per annum), as shown in the **Industry parameters**.

We may be able to make use of the idle labour on jobs 20, 29, 51 and 62 which we have yet to consider.



Making Labour Decisions



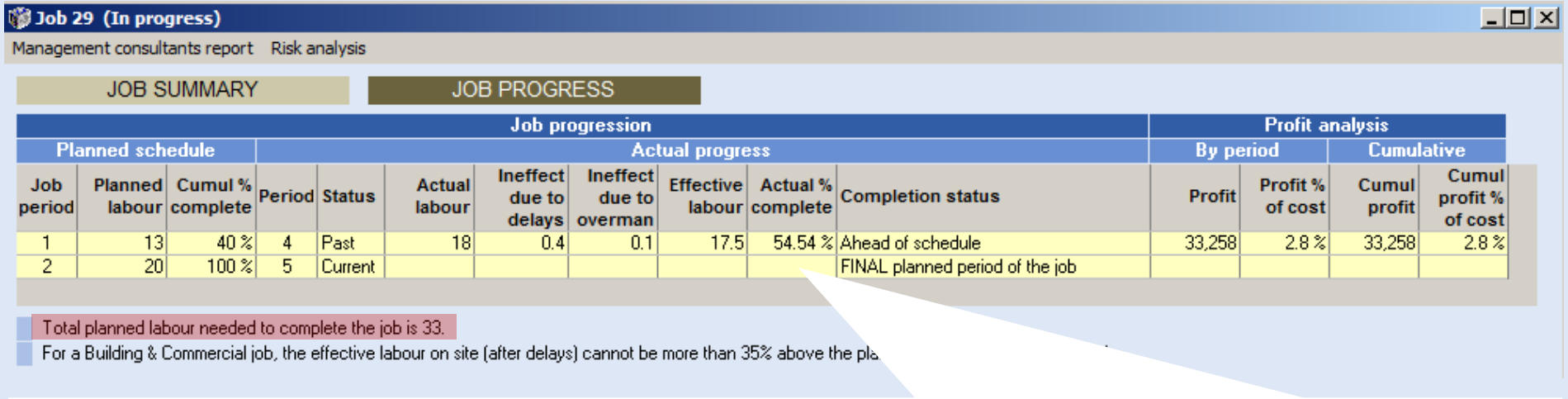
The Construction Manager now looks to set the labour levels for the other jobs by setting labour levels that **aim to complete the jobs either on time, or ahead of schedule.**

Turning first to job 29, **which also must be completed in the current period, and is a priority**.

Period 5 is the **second period of the job, and its FINAL planned period**. There are currently 18 labourers on site; all are the company's own labour. The planned labour requirement is 20 labourers.

We can use the **Display details for job 29** option to investigate further the optimum level of labour needed to complete the job.

Making Labour Decisions


Job 29 (In progress)

Management consultants report Risk analysis

JOB SUMMARY JOB PROGRESS

Job progression											Profit analysis			
Planned schedule			Actual progress								By period		Cumulative	
Job period	Planned labour	Cumul % complete	Period	Status	Actual labour	Ineffect due to delays	Ineffect due to overman	Effective labour	Actual % complete	Completion status	Profit	Profit % of cost	Cumul profit	Cumul profit % of cost
1	13	40 %	4	Past	18	0.4	0.1	17.5	54.54 %	Ahead of schedule	33,258	2.8 %	33,258	2.8 %
2	20	100 %	5	Current						FINAL planned period of the job				

Total planned labour needed to complete the job is 33.

For a Building & Commercial job, the effective labour on site (after delays) cannot be more than 35% above the pla

The **Job progress** for the job shows that the job was 54.54% complete at the end of the last period, and ahead of the planned schedule of 40%. There is just **45.46%** of the job left to complete.

The **total planned labour required to complete the job is 33 man periods**. Since there is 45.46% of the job left to complete, in manpower terms this is 45.46% of the total labour of 33, or 15 labourers.

15 labourers should be sufficient for the job to complete, **BUT there is a key factor that could prevent this from happening, and that is delays caused by risks striking.**

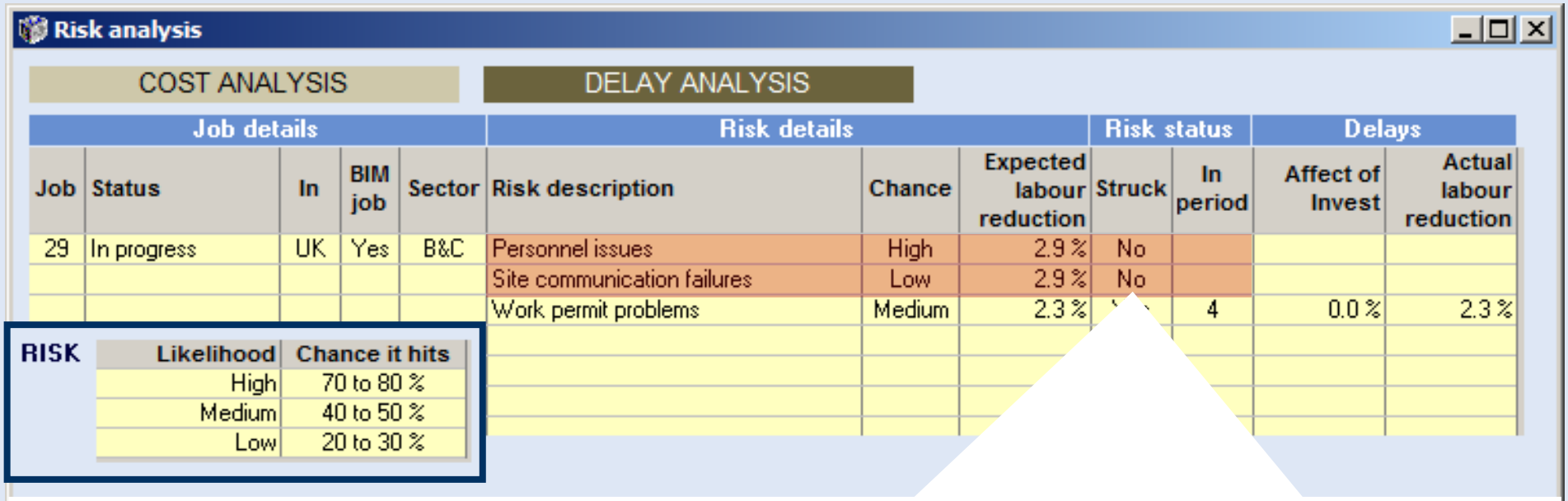
Risks only strike within the planned duration of a job, so risk delays DO NOT need to be considered if a job has over run, and will complete late.

To determine if any risks may delay job the job in its final period we can use the **Risk analysis** option at the top of the screen.

KEY POINTS

There is no need to make an adjustment for risk delays until the period in which the job is likely to finish, as there is time to compensate for delays in earlier periods before a job finishes.

Making Labour Decisions



The **Risk analysis** for job 29 reveals that there are 2 risks that have not yet struck, and which could delay the job if they were to strike, the delay causing a reduction in the labour on site :-

- 'Personnel issues', which has a **'high'** chance of occurring, and an expected labour reduction of 2.9%
- 'Site communications failure', which has a **'low'** chance of occurring, and an expected labour reduction of 2.9%

The **Industry parameters** show the chance a risk may strike for each likelihood level.

Although all the risks could strike, and potentially delay the job, **sticking to the strategy to just mitigate for 'high' and 'medium' risks,** the Construction Manager decides to take action in case the 'Personnel issues' strike.

Since a combined 2,9% delay could occur, the required labour level of 15 is adjusted in case of the 2.9% delay, giving a revised labour level of 15.45 labourers (15 / 0.971). **Since we cannot have fractions of people, the labour level is adjusted upwards to 16 labourers.**

Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 19

Number to layoff: 0

Number available for jobs in progress: 19

AFTER DECISIONS

Net transfers: 56

Number left in the idle pool: 75

JOBS IN PROGRESS

						This period		Own Labour						Subcontract Labour				
									To site	From site								
Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	Status	Plan lab	Last per	From ILP	New	To ILP	Paid off	On site	End last	Take on	Lay off	On site	Total
10	US	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	77	104	0	0	0	0	104	0	0	0	0	104
20	US	Energy	3	FINAL planned period	Ahead of schedule	3rd period	21	61	0	0	56	0	5	0	0	0	0	5
29	UK	Building & Commercial	2	FINAL planned period	Ahead of schedule	2nd period	20	18	0	0	0	0	18	0	0	0	0	18
51	UK	Transport	4	4 planned periods remaining		1st period	110	0	0	0		0	0	0	0	0	0	0
62	UK	Building & Commercial	2	2 planned periods remaining		1st period	62	0	0			0	0	0	0	0	0	0

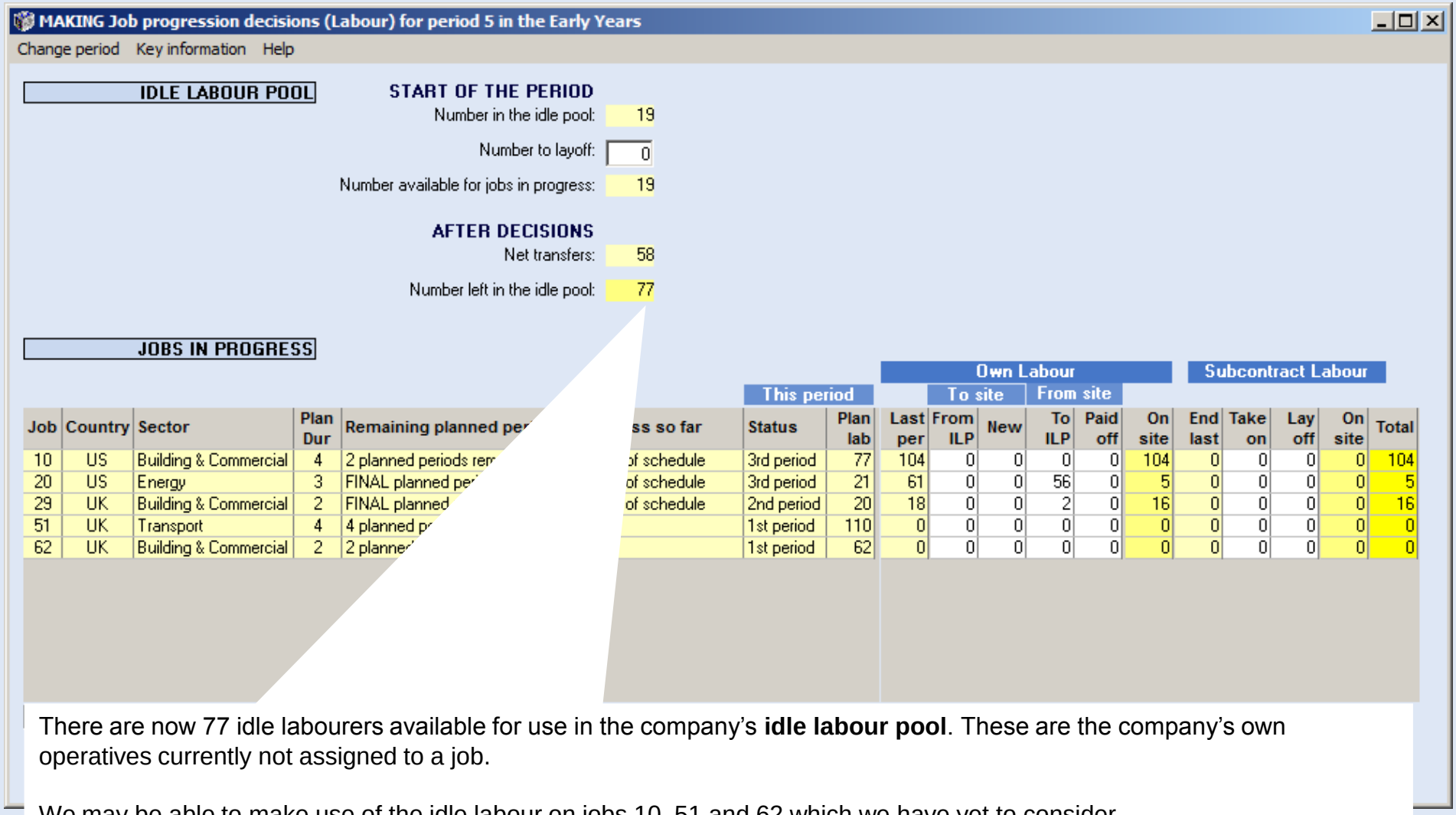
We have now determined that **16 labourers** should be enough to complete job 29 as efficiently as possible in period 5.

The planned allocation is 20 labourers, which although guaranteeing to complete the job, would complete the job too early in the period, which would have had the following detrimental affects :-

- Labour is still retained until the end of the period, incurring additional labour costs (ineffective labour)
- Labour could be utilised on other jobs, where it may be more productively used
- Site cost still has to be paid for ineffective labour

There are currently 18 of the company's own labour on site, so to reduce this to the 16 needed, 2 will be transferred to the idle labour pool using the **"To ILP"** column, to be used on other jobs.

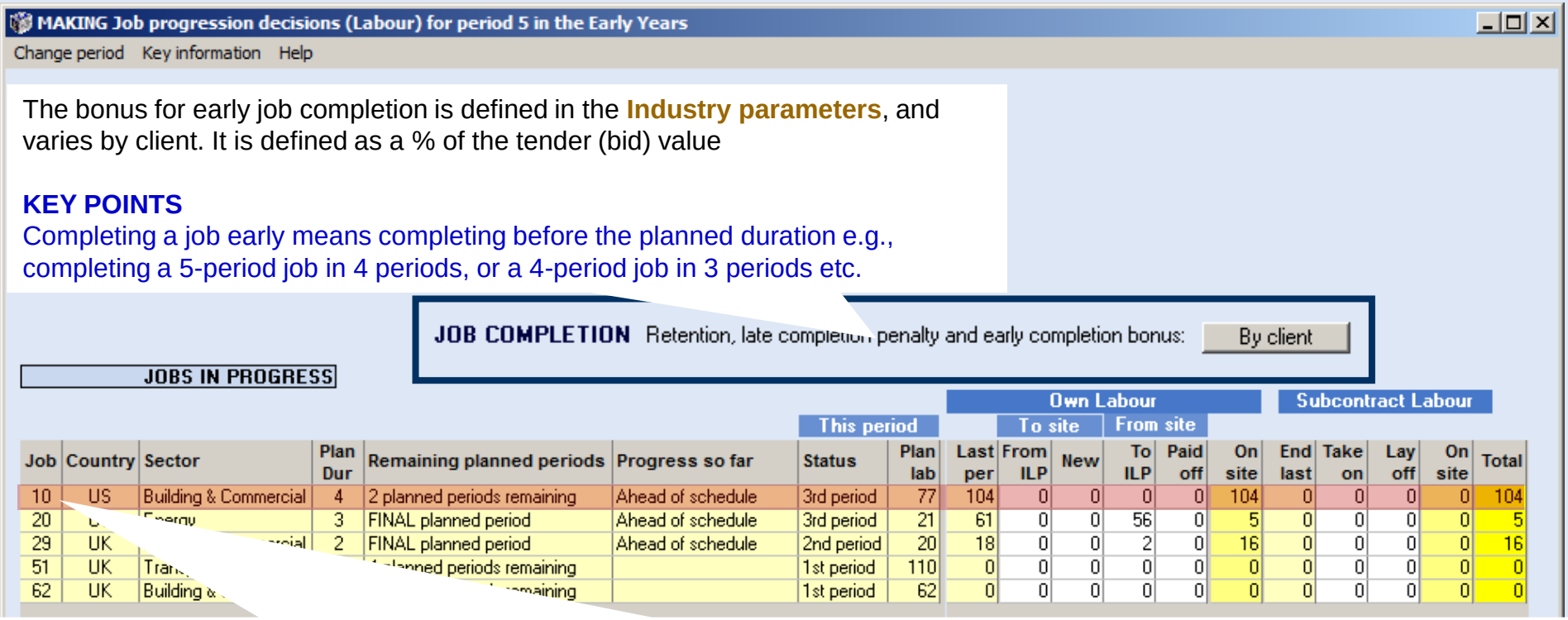
Making Labour Decisions



There are now 77 idle labourers available for use in the company's **idle labour pool**. These are the company's own operatives currently not assigned to a job.

We may be able to make use of the idle labour on jobs 10, 51 and 62 which we have yet to consider.

Making Labour Decisions



								Own Labour							Subcontract Labour		
						This period			To site		From site						
Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	Status	Plan lab	Last per	From ILP	New	To ILP	Paid off	On site	End last	Take on	Lay off	On site	Total
10	US	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	77	104	0	0	0	0	104	0	0	0	0	104
20			3	FINAL planned period	Ahead of schedule	3rd period	21	61	0	0	56	0	5	0	0	0	0	5
29	UK		2	FINAL planned period	Ahead of schedule	2nd period	20	18	0	0	2	0	16	0	0	0	0	16
51	UK			planned periods remaining		1st period	110	0	0	0	0	0	0	0	0	0	0	0
62	UK			maining		1st period	62	0	0	0	0	0	0	0	0	0	0	0

The bonus for early job completion is defined in the **Industry parameters**, and varies by client. It is defined as a % of the tender (bid) value

KEY POINTS

Completing a job early means completing before the planned duration e.g., completing a 5-period job in 4 periods, or a 4-period job in 3 periods etc.

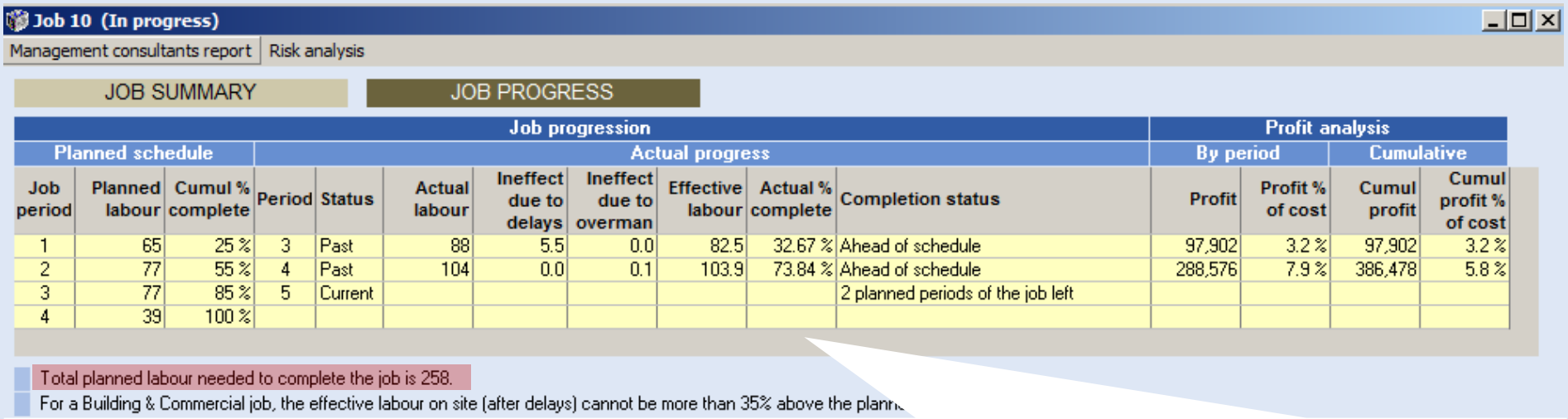
The Construction Manager now looks to set the labour levels for the other jobs by setting labour levels that **aim to complete the jobs either on time, or ahead of schedule.**

Turning next to job 10, which has a planned duration of 4 periods. Period 5 is the **3rd period** of the job.

The job is currently ahead of schedule, and we will see if it is possible to complete it in period 5. If we can, the job will complete early, before its planned duration, and this will earn a bonus from the client defined in the defined in the **Industry parameters**.

We can use the **Display details for job 10** option to investigate further.

Making Labour Decisions



Job 10 (In progress)

Management consultants report | Risk analysis

JOB SUMMARY | JOB PROGRESS

Job progression											Profit analysis			
Planned schedule			Actual progress								By period		Cumulative	
Job period	Planned labour	Cumul % complete	Period	Status	Actual labour	Ineffect due to delays	Ineffect due to overman	Effective labour	Actual % complete	Completion status	Profit	Profit % of cost	Cumul profit	Cumul profit % of cost
1	65	25 %	3	Past	88	5.5	0.0	82.5	32.67 %	Ahead of schedule	97,902	3.2 %	97,902	3.2 %
2	77	55 %	4	Past	104	0.0	0.1	103.9	73.84 %	Ahead of schedule	288,576	7.9 %	386,478	5.8 %
3	77	85 %	5	Current						2 planned periods of the job left				
4	39	100 %												

Total planned labour needed to complete the job is 258.

For a Building & Commercial job, the effective labour on site (after delays) cannot be more than 35% above the plann

The **Job progress** for the job shows that the job is currently 73.84% complete, and well ahead of the of the 55% planned completion after two periods.

There is 26.16% **of the job left to complete**, or 26.16% of the total labour required for the job (258 man periods), equating to 67.49 labourers (.2616 x 258).

67.49 labourers should be sufficient for the job to complete, **BUT there is a key factor that could prevent this from happening, and that is delays caused by risks striking.**

To determine if any risks may delay job the job in its final period we can use the **Risk analysis** option at the top of the screen.

KEY POINTS

There is no need to make an adjustment for risk delays until the period in which the job is likely to finish, as there is time to compensate for delays in earlier periods before a job finishes.

Making Labour Decisions

Risk analysis

COST ANALYSIS | DELAY ANALYSIS

Job details					Risk details			Risk status		Delays	
Job	Status	In	BIM job	Sector	Risk description	Chance	Expected labour reduction	Struck	In period	Affect of Invest	Actual labour reduction
10	In progress	US	Yes	B&C	Structural defects	Medium	2.2 %	No			
					Personnel issues	High	2.4 %	No			
					M&E systems integration problems	Low	2.5 %	No			
					Planning delays	Low	6.2 %	Yes	3	0.0 %	6.2 %

RISK	Likelihood	Chance it hits
	High	70 to 80 %
	Medium	40 to 50 %
	Low	20 to 30 %

The **Risk analysis** for job 10 reveals that there are 3 risks that have not yet struck, and which could delay the job if they were to strike, the delay causing a reduction in the labour on site :-

- 'Structural defects', which has a **'medium'** chance of occurring, and an expected labour reduction of 2.2%
- 'Personnel issues', which has a **'high'** chance of occurring, and an expected labour reduction of 2.4%
- 'M&E systems integration problems', which has a **'low'** chance of occurring, and an expected labour reduction of 2.5%

The **Industry parameters** show the chance a risk may strike for each likelihood level.

Although all the risks could strike, and potentially delay the job, **sticking to the strategy to just mitigate for 'high' and 'medium' risks,** the Construction Manager decides to take action in case both the 'Structural defects' and 'Personnel issues' strike.

Since a combined 4.6% delay could occur, the required labour level of 67.49 is adjusted in case of the 4.6% delay, giving a revised labour level of 70.74 labourers (67.49 / 0.954). **Since we cannot have fractions of people, the labour level is adjusted to 71 labourers.**

Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 19

Number to layoff: 0

Number available for jobs in progress: 19

AFTER DECISIONS

Net transfers: 58

Number left in the idle pool: 77

JOBS IN PROGRESS

							Own Labour						Subcontract Labour				
						This period		To site		From site							
Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	Status	Plan lab	Last per	From ILP	New	To ILP	Paid off	On site	End last	Take on	Lay off	On site	Total
10	US	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	77	104	0	0	0	0	104	0	0	0	0	104
20	US	Energy	3	FINAL planned period	Ahead of schedule	3rd period	21	61	0	0	FS	0	5	0	0	0	0	5
29	UK	Building & Commercial	2	FINAL planned period	Ahead of schedule	2nd period	20	18	0			0	16	0	0	0	0	16
51	UK	Transport	4	4 planned periods remaining		1st period	110	0					0	0	0	0	0	0
62	UK	Building & Commercial	2	2 planned periods remaining		1st period	62							0	0	0	0	0

We have now determined that **71 labourers** should be enough to complete job 10 as efficiently as possible in period 5.

There are currently 104 of the company's own labour on site, so to reduce this to the 71 needed, 33 will be transferred to the idle labour pool using the **"To ILP"** column, to be used on other jobs.

KEY POINTS

After allowing for any delays, the effective men on site has to be within the Effective Labour Limit (EFL). The EFL is a sector-based multiple of the planned labour for the period.

OVERMANNING LIMITS

Sector	Effective labour limit above the planned level
Industrial	35 %
Building & Commercial	35 %
Transport	45 %
Energy	18 %
Water & Sewage	25 %

Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 19

Number to layoff: 0

Number available for jobs in progress: 19

AFTER DECISIONS

Net transfers: 91

Number left in the idle pool: 110

JOBS IN PROGRESS

								Own Labour							Subcontract Labour			
					This period				To site		From site							
Job	Country	Sector	Plan Dur	Remaining planned peri	s so far	Status	Plan lab	Last per	From ILP	New	To ILP	Paid off	On site	End last	Take on	Lay off	On site	Total
10	US	Building & Commercial	4	2 planned periods rema	schedule	3rd period	77	104	0	0	33	0	71	0	0	0	0	71
20	US	Energy	3	FINAL planned perio	schedule	3rd period	21	61	0	0	56	0	5	0	0	0	0	5
29	UK	Building & Commercial	2	FINAL planned pe	schedule	2nd period	20	18	0	0	2	0	16	0	0	0	0	16
51	UK	Transport	4	4 planned perio		1st period	110	0	0	0	0	0	0	0	0	0	0	0
62	UK	Building & Commercial	2	2 planned pe		1st period	62	0	0	0	0	0	0	0	0	0	0	0

Display details for job 10

There are now 110 idle labourers available for use in the company's **idle labour pool**. These are the company's own operatives currently not assigned to a job.

We may be able to make use of the idle labour on jobs 51 and 62 which we have yet to consider.

Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 19

Number to layoff: 0

Number available for jobs in progress: 19

AFTER DECISIONS

Net transfers: 91

Number left in the idle pool: 110

JOBS IN PROGRESS

						This period	Own Labour						Subcontract Labour				
								To site		From site							
Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	Status	Plan lab	Last per	From ILP	New	To ILP	Paid off	On site	End last	Take on	Lay off	On site	Total
10	US	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	77	104	0	0	33	0	71	0	0	0	0	71
20	US	Energy	3	FINAL planned period	Ahead of schedule	3rd period	21	61	0	0	56	0	5	0	0	0	0	5
29	UK	Building & Commercial	2	FINAL planned period	Ahead of schedule	2nd period	20	18	0	0	2	0	16	0	0	0	0	16
51	UK	Transport	4	4 planned periods remaining		1st period	110	0			0	0	0	0	0	0	0	0
62	UK	Building & Commercial	2	2 planned periods remaining		1st peri												

OVERMANNING LIMITS

Sector	Effective labour limit above the planned level
Industrial	35 %
Building & Commercial	35 %
Transport	45 %
Energy	18 %
Water & Sewage	25 %

Job 51 is a 4-period Transport job, in its first period.

The planned labour level is 110 labourers.

Transport jobs can be overmanned by up to 45% above the planned level, **so the Effective Labour Limit** is 110 (the planned level) x 1.45 = 159 labourers.

In order to try and complete the job in 3 periods, a period earlier than the planned duration, and earn a bonus from the client for early completion, it is decided to allocate the 159 labourers by :-

- Transferring the existing 110 labourers from the idle labour pool to site using the **"From ILP"** column
- Take on 49 new recruits into the company's workforce in order to start building up the workforce for the future (a cost effective long term strategy) by entering 49 into the **"New"** column.

Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 19

Number to layoff: 0

Number available for jobs in progress: 19

AFTER DECISIONS

Net transfers: -19

Number left in the idle pool: 0

OVERMANNING LIMITS

Sector	Effective labour limit above the planned level
Industrial	35 %
Building & Commercial	35 %
Transport	45 %
Energy	18 %
Water & Sewage	25 %

OWN LABOUR

New recruits limited to: 70 this period

Training cost for each new recruit: 2,500 per person

Labour payoff rate: 750 per person

Each idle labourer costs: 6,000 per annum

JOBS IN PROGRESS

						This period	Own Labour						Subcontract Labour				
								To site		From site							
Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	Status	Plan lab	Last per	From ILP	New	To ILP	Paid off	On site	End last	Take on	Lay off	On site	Total
10	US	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	77	104	0	0	33	0	71	0	0	0	0	71
20	US	Energy	3	FINAL planned period	Ahead of schedule	3rd period	21	61	0	0	56	0	5	0	0	0	0	5
29	UK	Building & Commercial	2	FINAL planned period	Ahead of schedule	2nd period	20	18	0	0	2	0	16	0	0	0	0	16
51	UK	Transport	4	4 planned periods remaining		1st period	110	0	110	49	0	0	159	0	0	0	0	159
62	UK	Building & Commercial	2	2 planned periods remaining		1st period	62	0	0	0	0	0	0	0	0	0	0	0

Job 62 is a 3-period Building and Commercial job, in its first period.

It is decided to allocate the planned labour level of 62 labourers in period 5 to keep the job on schedule.

To allocate the 62 labourers :-

- 21 new recruits are taken on into company's workforce in order to start building up the workforce for the future by entering 21 into the **"New"** column. There is currently a limit of 70 new recruits that can be employed in the current period , as defined in the Industry parameters, and as 49 new recruits were already taken onto job 51, only 21 more new recruits could be taken on.
- Take on 41 subcontractors using the **"Take on"** column.

Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 19

Number to layoff: 0

Number available for jobs in progress: 19

AFTER DECISIONS

Net transfers: -19

Number left in the idle pool: 0

JOBS IN PROGRESS

						This period	Own Labour						Subcontract Labour				
								To site		From site							
Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	Status	Plan lab	Last per	From ILP	New	To ILP	Paid off	On site	End last	Take on	Lay off	On site	Total
10	US	Building & Commercial	4	2 planned periods remaining	Ahead of schedule	3rd period	77	104	0	0	33	0	71	0	0	0	0	71
20	US	Energy	3	FINAL planned period	Ahead of schedule	3rd period	21	61	0	0	56	0	5	0	0	0	0	5
29	UK	Building & Commercial	2	FINAL planned period	Ahead of schedule	2nd period	20	18	0	0	2	0	16	0	0	0	0	16
51	UK	Transport	4	4 planned periods remaining		1st period	110	0	110	49	0	0	159	0	0	0	0	159
62	UK	Building & Commercial	2	2 planned periods rem		1st period	62	0	0	21	0	0	21	0	41	0	41	62

NOT LETTING JOBS FALL BEHIND SCHEDULE

f there is a shortage of labour to progress all jobs as you would wish e.g., completing early/on time and keeping ahead of schedule, one strategy that may seem tempting is to let jobs that are in their early stage fall behind schedule.

Although this may appear to be a good strategy in the short term, it is important to remember that it may not be possible to bring the jobs that are behind back on schedule as quickly as possible in subsequent periods, since overmanning limits based on the planned labour may prevent this.

In this scenario a job may complete late incurring a late completion penalty that can adversely affect job and company profits, as well as tying up resources that could be used elsewhere.

Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 19

Number to layoff: 0

Number available for jobs in progress: 19

AFTER DECISIONS

Net transfers: -19

Number left in the idle pool: 0

JOBS IN PROGRESS

						This period		Own Labour						Subcontract Labour				
									To site		From site							
Job	Country	Sector	Plan Dur	Remaining plann	ss so far	Status	Plan lab	Last per	From ILP	New	To ILP	Paid off	On site	End last	Take on	Lay off	On site	Total
10	US	Building & Commercial	4	2 planned pr	of schedule	3rd period	77	104	0	0	33	0	71	0	0	0	0	71
20	US	Energy	3	FINAL pl	of schedule	3rd period	21	61	0	0	56	0	5	0	0	0	0	5
29	UK	Building & Commercial	2	FINA	of schedule	2nd period	20	18	0	0	2	0	16	0	0	0	0	16
51	UK	Transport	4			1st period	110	0	110	49	0	0	159	0	0	0	0	159
62	UK	Building & Commercial	2			1st period	62	0	0	21	0	0	21	0	41	0	41	62

SURPLUS LABOUR

After making the labour allocation decisions for each job, there may be a **surplus of labour left in the idle pool**. If this is the case, there are a number of options :-

- Leave them in the pool for use next period, if they are likely to be required.
- Use the **"Number to layoff"** to layoff as much of the surplus as possible prior to any labour allocations.
- Instead of transferring men to the idle labour pool from site, pay them straight off from site using the **"Paid off"** column instead of transferring them to the idle labour pool.

KEY POINTS

Unnecessary idle labour can be costly, as shown in **Industry parameters**, and is an overhead that can adversely affect company operating profit for the period.

Making Labour Decisions

MAKING Job progression decisions (Labour) for period 5 in the Early Years

Change period Key information Help

IDLE LABOUR POOL

START OF THE PERIOD

Number in the idle pool: 19

Number to layoff: 0

Number available for jobs in progress: 19

AFTER DECISIONS

Net transfers: -19

Number left in the idle pool: 0

JOBS IN PROGRESS

								Own Labour							Subcontract Labour				
						This period			To site		From site								
Job	Country	Sector	Plan Dur	Remaining planned periods	Progress so far	Status	Plan lab	Last per	From ILP	New	To ILP	Paid off	On site	End last	Take on	Lay off	On site	Total
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29	UK	Building & Commercial	2	FINAL planned period	Ahead of schedule	2nd period	20	18	0	0	2	0	16	0	0	0	0	16
51	UK	Transport	4	4 planned periods remaining		1st period	110	0	110	49	0	0	159	0	0	0	0	159
62	UK	Building & Commercial	2	2 planned periods remaining		1st period	62	0	0	21	0	0	21	0	41	0	41	62

LABOUR SHORTAGE

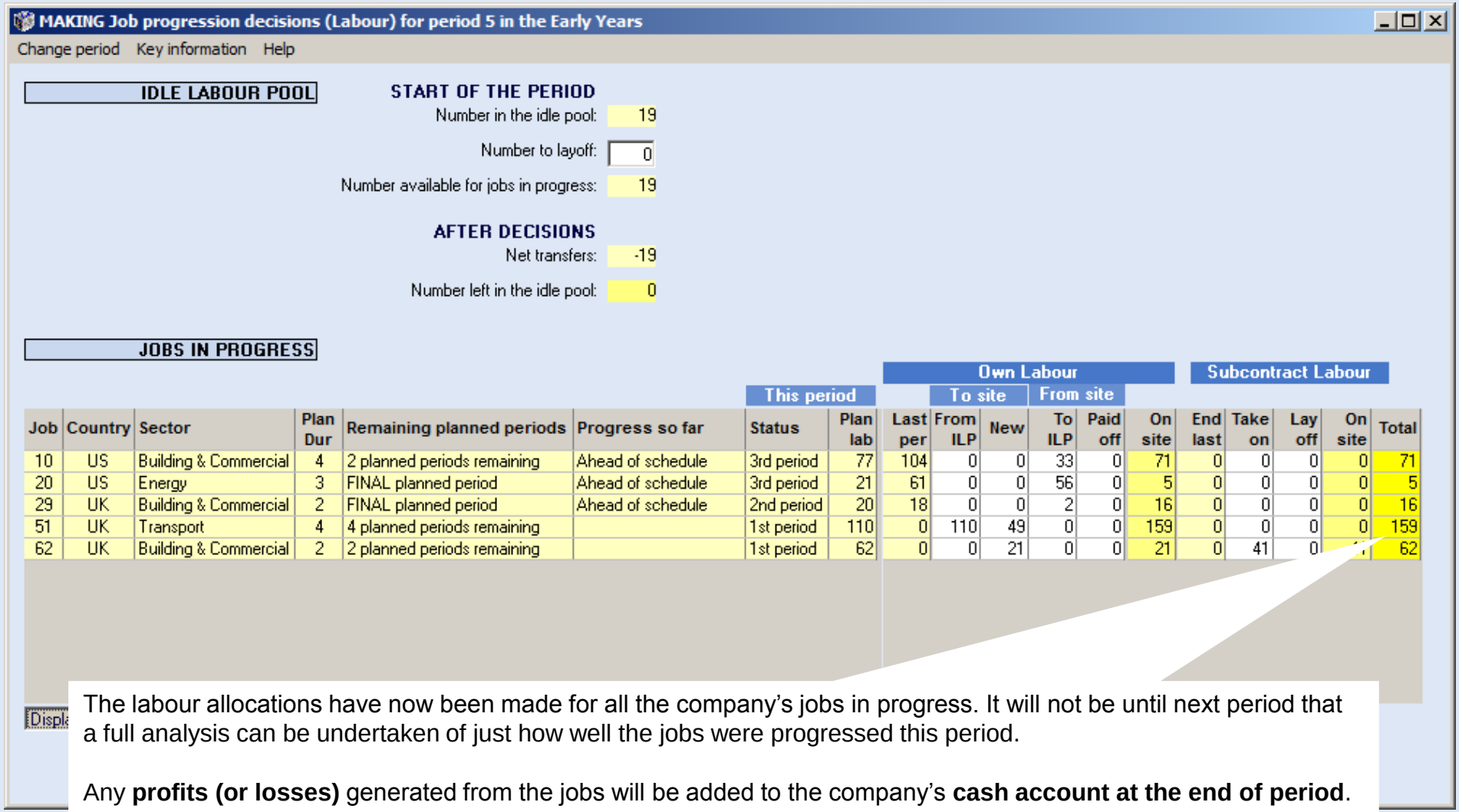
As the company grows a problem the Construction Manager could face is one of an overall labour shortage.

A number of choices are available to make-up the shortfall :-

- **Under allocate** labour on some jobs. This may put the jobs behind schedule, but attempt can be made to bring them back on schedule in later periods. This can adversely affect client relationships.
- Take on **'New' recruits** into the company's own workforce, who each incur a training cost in their first period with the company.
- Use **subcontractors**, who incur an additional premium each period they are with the company. Subcontractor premiums vary between countries, which can influence where they are used.

The choice between new recruits and subcontractors is discussed in the **Key points** section.

Making Labour Decisions



The labour allocations have now been made for all the company's jobs in progress. It will not be until next period that a full analysis can be undertaken of just how well the jobs were progressed this period.

Any **profits (or losses)** generated from the jobs will be added to the company's **cash account at the end of period**.

Hopefully, overall there will be a profit that will help to increase the company's value.