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HEALTH AND SAFETY

Fatigue Plan

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1 Purpose

The purpose of this document is to identify Crossrail Team staff working on the Project (any site) whose work patterns may create an increased health or safety risk due to fatigue and to provide their line management with the information required to manage this risk. This document relates to the Fatigue Policy: CRL1-XRL-Z7-PCY-CR001-50001.

2 Scope

This document is only applicable to Crossrail Team employees who are working a shift pattern, defined below, see section 3).

This document is not intended to provide information on how to manage fatigue risk not associated with working shift. . The standard working week for staff on Crossrail is between 35 - 40 hours. Any proposal to work in excess of 40 hours per week on a regular basis should first be discussed with the appropriate Human Resource (HR) team.

It is not possible to cover every possible scenario and guidance should be sought from your Health & Safety Manager or Advisor if you are unclear when a shift pattern becomes applicable under this plan. However, some example shift patterns are provided in section 4.1 for guidance.

3 Definitions

Fatigue	In the context of this document, Fatigue is defined as excessive tiredness which may result in either: <ul style="list-style-type: none"> • Immediate impairment of someone’s ability to concentrate, which may present an increased risk to safety • A chronic, adverse effect on someone’s health due to continuing fatigue.
Shift work	Any work pattern which fall outside of what is considered to be normal working hours. Normal working hours would usually be a work shift which starts and finishes between 07:00 and 19:00. Shiftwork will include: <ul style="list-style-type: none"> • “Rotating Shifts” • “Night Shifts” • “Early Start Shifts”
Rotating Shifts	A shift pattern which may include normal working hours, but which continuously changes and includes shiftwork. For example, 1 week of night shifts, followed by 3 weeks of day shifts, then 1 week of nightshifts.....etc.
Night Shifts Night Work	A shift where the start time is usually between 20:00 & 02:00 Working at least three hours at night (on a regular basis), between hours of 11pm-6am. Employees who do the occasional night would not be classified as a night worker.
Early Start Shifts	A shift where the start time is usually between 02:00 & 06:00
WTR	Working Time Regulations

4 Seven Step Process

The below table summarises the seven step process which must be conducted. Each step is explained in more detail through the remainder of Section 3 of this document.

Step	Action Required
Step 1 Identify staff who fall into the applicability of this plan.	<ul style="list-style-type: none"> Any Line Manager who sanctions regular shift work (as defined in Section 3 and 4.1), must inform Human Resources of the names of employees who have been required to work these shifts and instigate the following steps of this process.
Step 2 Define and risk assess the proposed working pattern.	<ul style="list-style-type: none"> The Health and Safety Executive fatigue and risk index, (see section 4.2) must be used to assess the proposed shift pattern for each individual to ensure it does not present an unacceptable risk. (note that at this stage this is a generic risk estimate which does not account for any personal factors of the individual). Provided that the score falls within the parameters defined in section 4.2 below the individual may commence the proposed shift pattern. If the score exceeds those set in section 4.2 below then the shift pattern must be reevaluated.
Step 3 Health Assessment	<ul style="list-style-type: none"> Any employee who commences night shift work following the above assessment is required to complete a night workers health assessment. This will be co-ordinated by Human Resources who will notify the occupational health provider to send employee out a questionnaire. This is a requirement of the Working Time Regulations.
Step 4 Provision of information and training	<ul style="list-style-type: none"> Prior to commencement of shift work, employees are to be provided with information which explains the risks of shift work and what personal lifestyle factors can help to reduce fatigue and the health risks of working shifts.
Step 5 Monitoring of Arrangements	<ul style="list-style-type: none"> After the first month of shift working each employee should undergo a review, conducted and documented by their manager to ensure that they have no personal factors which may increase their fatigue risk from that estimated during step 2. Copies of documented records should be sent to Human Resources to file. Reviews should be undertaken at regular intervals (quarterly) thereafter.
Step 6 Action following incident or concern raised (as applicable)	<ul style="list-style-type: none"> If there is any safety related incident during shift working the investigation must establish if fatigue was a contributory factor. If so the investigation must establish the cause and ensure mitigation measures are instigated. If the health assessment or individual questionnaire identifies any concerns, then the individuals shift pattern must be re-assessed and if necessary changed to reduce the fatigue risk. Refer to section 4.5 for details.
Step 7 Review of Arrangement	<ul style="list-style-type: none"> Each calendar year when the review of the company Health & Safety Management system takes place, the effectiveness of this plan must be assessed.

4.1 Step 1 - Identify employees who fall into the applicability of this plan.

Any line manager who requires employees to work shifts outside of normal working hours must assess whether this plan is applicable and if so, follow the remaining steps of this process and also inform Human Resources of names of the staff who will be working shifts. Human Resources will retain a file for each individual defined as a shift worker where all applicable information will be stored.

Section 3 provides a definition of shift work which will help determine if this plan is applicable. The key is that it should be a regular shift pattern and not an occasional shift. However, there are many possible scenarios and each one cannot be clearly defined.

The scenarios detailed in 4.1.2 and 4.1.3 aim to provide some guidance on how to determine if shift work is taking place and if this plan is applicable. Further guidance can be sought from Human Resources and Health & Safety Departments. If it is still undecided then the plan should be considered applicable and the steps implemented.

4.1.1 Scenario's which would fall under the plan

- **Scenario A**
Employee works one or two nightshifts a week to inspect site works and this arrangement will continue for the current phase of works which will last around 6 months.
This is considered to be regular shift work and falls under this plan.
- **Scenario B**
Employee is employed to work full time night shifts and this will continue for the foreseeable future. They will not be working any day shifts so there is not a rotating shift pattern.
This plan is applicable as continuous night work is known to present an increased risk of fatigue. It is considered to be shift work even if the shift pattern is continuous.
- **Scenario C**
Employee will be working a rotating shift pattern between days and night. They will work for seven days and then have three rest days before commencing again. Because this pattern involves both night work and a rotating shift pattern, this is considered shift work.

4.1.2 Scenario's which do not fall under the plan

- **Scenario D**
Employee regularly starts work mid-morning and leaves at around 8pm due to a flexible working agreement.
This is not considered to present a significant risk provided the working hours usually remain within 8 hours per day. So this plan would not be applicable.
- **Scenario E**
Employee works one nightshift a month to complete an inspection of the site works. They work only the morning prior to the night shift and take the following day off.
This is not considered a significant enough amount of shift work to fall under this plan.

4.2 Step 2 - Define and risk assess the proposed working pattern.

Once it has been established that this plan is applicable, the shift pattern(s) proposed must be assessed to determine the fatigue risk that it presents. As the first priority is the elimination of risk, the line manager must have only reached this stage if there is a clear business need and there are no reasonable alternatives to sanctioning shift work. As Crossrail is a 24 hour operation, it is expected that there will be shift work required for personnel with key site roles.

However, shift patterns can be designed to reduce this risk to as low as practicable. To assess and determine what shift patterns are acceptable the Health and Safety Executive's (HSE) fatigue and risk index must be used. This is an Excel document which can be found free of charge online at <http://www.hse.gov.uk/research/rrhtm/rr446.htm>

Before the index is used the user manual should be read to ensure it is completed correctly. This can be found online with the calculator at <http://www.hse.gov.uk/research/rrpdf/rr446g.pdf>

This is an industry accepted formula for calculating fatigue risk. However, it can only provide an indicative score relating to shift pattern and does not provide a risk assessment which accounts for individual circumstances. Personal factors are covered in step 5.

Prior to using the index, there are some minimum requirements which must be adhered to regardless of the score produced. These are:

- Employee shall not work more than 7 consecutive days.
- Employee must have a minimum rest period between shifts of 11 hours.
- When night shifts or early morning starts are worked which are of 10 to 12 hours in length, then there will be a minimum of 3 days rest if 7 consecutive days are worked.
- When switching from day to night shift or visa versa, there must be at least two consecutive rest days to allow for the sleep pattern of the new schedule to be established.
- Rotating shift patterns are to rotate forwards, (clockwise).

Taking consideration of the above, the fatigue and risk index should now be used to assess the proposed shift pattern. The index contains two separate indices. One relates to fatigue which peaks at around 5am. The other relates to accident risk which peaks at around midnight. Therefore when assessing a pattern of work, both indices must be reviewed.

- Fatigue Index:

On the Fatigue Index the score for any given day of the shift roster should not exceed the following:

- Day Shift – 35
- Night Shift – 45

- Risk Index:

- On the Risk Index the score on any given shift should not exceed 2.0.

If the score exceeds the above guidance in either the risk or fatigue index, then the shift pattern should be adjusted and re assessed. It may not be necessary to change the working hours as the calculator takes into account things like the number and length of breaks. Therefore it may be possible to reduce the risk to an acceptable level by adjusting other factors other than the shift times. These elements are entered into the defaults section of the spreadsheet.

Another factor that is used in the calculation of the score is the type and intensity of the work. As most of Crossrail site employees tend to provide managerial oversight to the works and are not conducting physical construction activity, then the following defaults should be put into the index:

- In the section titled: 'Type of Job: Workload'.
The recommended selected answer should be: 'Moderately Undemanding, some spare capacity'.
- In the section titled: 'Type of Job: Attention'.
The recommended selected answer should be: 'Some of the time'.

If several employees are working the same shift pattern then the score can be applied for all staff working to that roster. However, it should be noted that one of the factors in the calculation is commuting time to work. So if the commuting time of one staff member is significantly longer than the others, then they will require their own assessment.

Once an acceptable shift pattern is determined the SHIFT ID box should be used to allocate each assessment to an individual or group and retained by Human Resources. This completes step 2 of the process.

4.3 Step 3 – Health assessment

A requirement of the Working Time Regulations (WTR) is to offer a free health assessment for anybody undertaking regular night work as part of a shift working pattern. The health assessment should be conducted by the Crossrail Ltd Occupational Health Service Provider once an employee has been identified as a night worker/shift worker following step one, and their Line Manager has informed Human Resources of their working arrangement.

Human Resources must arrange for the health assessment to be undertaken by the approved Occupational Health Service Provider.

Provided the health assessment determines that the person is fit or fit with restrictions then shift working may continue as planned or with specified restrictions.

4.4 Step 4 - Provision of information and training

Both managers who approve shiftwork and design the shift work pattern and employees who conduct shiftwork must be provided with information and training.

The information and training will cover the following as a minimum:

- How the body clock works
- The effects of shift work on the body
- How good design of shift pattern and use of breaks can minimise fatigue
- How personal lifestyle factors can reduce the effects of fatigue
- The risks associated with fatigue and driving when commuting to work.
- How fatigue fits into health and safety Law
- The roles and responsibilities of staff and managers in relation to the implementation of this plan.
- A tutorial on using the Fatigue and Risk Index.

Human Resources will issue out an information pack to all shift workers and their Line Manager once they have been notified of a shift working arrangement. If there are any specific queries relating to fatigue Health & Safety risks, then the Health & Safety Manager should be consulted to provide additional advice.

4.5 Step 5 – Monitoring of arrangements

A persons individual circumstances, their lifestyle choices and their bodies own ability to adapt to shift work, will greatly affect the likelihood of fatigue related risk. Once a person has been working a shift pattern for a few weeks, it will be possible to assess their individual experience of shift working and establish if they have a high or low individual risk rating.

So to compliment the generic assessment of the shift pattern conducted thus far, a questionnaire (Appendix 1) should be completed by each shift worker after their first month of shift working to provide an individual fatigue risk rating. This should then be repeatedly completed every three months to capture any potential change in circumstances. If however they indicate a high or medium risk score, control measure must be implemented and the health assessment should be repeated monthly to monitor the circumstances more closely while a reduction solution is being sought

If they score a low individual risk rating, they may continue shift work as currently planned.

If they score a medium risk rating they may continue the current schedule with some additional controls. These will be determined following a review of their questionnaire to establish what factors caused their score to increase. Dependent on the cause, some additional control measures can be selected and applied. They are listed on the questionnaire and may include things such as:

- A change to their planned breaks:
- A change to their commuting arrangement
- A commitment to make an adjustment to some of their lifestyle choices.

If they score a high risk rating, then the current shift pattern should cease and advice sought via the Health & Safety department regarding the suitability of shift work for this individual. It may be possible to design a lower risk shift pattern from step 2 and to implement some of the personal controls on the questionnaire to reduce their overall fatigue risk to an acceptable level.

This questionnaire will also establish whether the shift pattern worked, correlates with the one proposed in step 2. If the actual hours worked does not match the assessed shift pattern then step 2 will need to be completed again to ensure it reflects the actual working pattern.

Completed assessments should be submitted to HR and stored with the other assessments in the file.

It is the responsibility of the Line Manager to review the form and submit it to HR each month. The project H&S Advisor may be requested to assist with the review if anything other than a low risk rating is produced.

4.6 Step 6 - Action following an incident or concern raised (as applicable)

This step requires a review of the process if there is a concern raised via the health assessment or questionnaire, or if there is an incident which occurs while shift working is taking place. Section 4.5 above has already detailed the action to take if the monthly questionnaire raises any concerns.

If there is an incident or accident, either on site or during the persons commute to or from work, then an investigation (to include a referral to Occupational Health) should take place to establish the immediate and root causes of the incident. Fatigue is to be considered a possible contributory factor. If this is found to be the case, then the shift working arrangement for this individual must be re-assessed. This investigation activity will require assistance from the H&S team.

4.7 Step 7 – Management review

The effectiveness of this plan should be reviewed on an annual basis. This should be conducted as part of the overall H&S management system review.

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5 Responsibility Matrix

The below table summarises the main responsibilities under this plan.

Action	Description	Allocated to
Inform HR of individuals sanctioned to conduct shiftwork	Submit a list of names to HR when shiftwork is first sanctioned and ensure this list remains up to date when there are changes to the arrangement.	Line Manager
Open individual shift worker file	Anyone who has been assigned to shift work must have a file opened which stores all of the related information and assessments.	Human Resources
Define and risk assess the proposed shift pattern	Any shift pattern which is proposed must be assessed using the HSE fatigue and risk index. This can be done for a group of staff working to the same arrangement. However, if there are any differentiating factors, then the assessment must be completed for the individual.	Line Manager Support from H&S Manager/H&S Advisor
Retain copy of the above assessment	A copy of the shift pattern assessment must be retained for each individual in their personal file.	Human Resources and Line Manager
Conduct Health Assessment	Each individual is entitled to a free health assessment if they are requested to work night shifts. The health assessment will be held on the individuals CBH Record	Human Resources to arrange with Occupational Health provider.
Retain Copy of the Health Assessment	The health assessment will be held on the individuals must be held on their individual shift workers file along with the other assessments conducted under this plan.	Human Resources
Provision of information and training	All staff conducting shift work and all managers who authorise shift work must receive H&S information on shift working.	H&S or Human Resources to issue
Individual Assessment	Each individual is to complete a questionnaire after the first month of shiftwork to determine their personal risk factors. Depending on the score there may be additional controls implemented.	Line Manager Support from Project H&S Advisor
Retain copy of the individual assessment	The individual assessments should be retained as part of the ongoing record of risk assessment for each individual.	Human Resources
Incident Investigation	Any incident which involves ataff member conducting shift work will be investigated to establish if fatigue was a contributory factor.	H&S Manager/H&S Advisor
Management Review of Plan	As part of the annual review of the H&S management system, the effectiveness of this plan should be assessed.	Core team H&S Improvements Manager

6 References

Ref:	Document Title	Document Number:
1.	HSE's fatigue and risk index	
2.	HSE's fatigue user guidance/calculator	
3.	Fatigue Policy	CRL1-XRL-Z7-PCY-CR001-50001
4.	Occupational Health Standard	CR-XRL-Z7-GPR-CR001-00012
5.	Works Information	CRL1-XRL-V3-XWI-CR001-50035
6.	Working Time Regulations.	

7 Standard forms / Templates

Ref:	Document Title	Document Number:
A.	None	
B.		

8 Appendix 1

8.1 Individual Fatigue Risk Assessment Questionnaire

Name:	Date:
Job Title:	Project Location:

Section A: Commuting

A. 1. Do you drive a vehicle to and from work when conducting shift work?

Score

Yes 2

No 0

(if No then move to next section)

A. 2. How long do your travel arrangements result in you being awake for from when you first leave home?

Score

Less than 16 hour 1

16 to 18 hours 3

18+ hours 5

A. 3. Do you find you require external stimulus to help stay alert when driving home. (coffee before driving, window down, loud music etc)

Score

No, Never, 0

Yes, sometimes 3

Yes, most days 5

A.4 Have you had a road accident or a near miss in the last month when driving to or from work where you would consider tiredness to be a factor?

Score

No 0

Yes, 7

A.5 Have you momentarily nodded off while driving home in the last month? (Note: this can occur without releasing as it can last just a couple of seconds. Signs of this are losing concentration and suddenly swerving, or your head dipping and suddenly pulling it back up and opening your eyes).

Score

No 0

Yes, once 5

Yes, more than once 7

Section A: Total Score =

Section B: Section relating to the individual

B. 1. Do you have problems getting to sleep after working your shift?

		Score
Never	<input type="checkbox"/>	0
Occasionally	<input type="checkbox"/>	1
Often	<input type="checkbox"/>	3
Almost Always	<input type="checkbox"/>	5

B. 2. What is your usual amount of daily sleep?

		Score
8+ hours	<input type="checkbox"/>	0
6 to 8 hours	<input type="checkbox"/>	1
4 to 6 hours	<input type="checkbox"/>	3
Rarely more than 4 hours	<input type="checkbox"/>	5

B. 3. Do you usually have one interrupted period of sleep or do you have to split your sleep times in a 24 hour period?

		Score
One period of sleep	<input type="checkbox"/>	0
Occasionally split sleep	<input type="checkbox"/>	2
Usually split sleep	<input type="checkbox"/>	5

B.4 Do you currently take any medication or have any medical condition which can increase tiredness?

		Score
No	<input type="checkbox"/>	0
Yes	<input type="checkbox"/>	3

B.5 Do you have any personal circumstances which prevent you from getting adequate rest while off shift? (such as caring for children or relatives, or outside commitments)

		Score
No	<input type="checkbox"/>	0
Yes	<input type="checkbox"/>	3

B.6 Do you feel that tiredness has adversely affected your home life in the last month due to your shiftwork? (examples would be: irritable with family members, cancelling social activities due to feeling too tired etc)

		Score
Not at all	<input type="checkbox"/>	0
Once or twice	<input type="checkbox"/>	1
Several time	<input type="checkbox"/>	3
Most Days	<input type="checkbox"/>	5

Section B: Total Score =

Section C: Questions relating to the Work Shift

C. 1. Are you able to take your specified rest breaks during the course of your shift?

		Score
Yes, always	<input type="checkbox"/>	0
Most of the time	<input type="checkbox"/>	1
Less than half of the time	<input type="checkbox"/>	3
Hardly Ever	<input type="checkbox"/>	5

C. 2. Do you ever lose concentration or feel sleepy during the course of your shift?

		Score
Never	<input type="checkbox"/>	0
Occasionally	<input type="checkbox"/>	1
Often	<input type="checkbox"/>	3
Almost every shift	<input type="checkbox"/>	5

C. 3. Do you find your work shift excessively demanding, either mentally or physically?

		Score
Never	<input type="checkbox"/>	0
Occasionally	<input type="checkbox"/>	1
Often	<input type="checkbox"/>	3
Almost every shift	<input type="checkbox"/>	5

C. 4. Have you made any unintentional mistakes in your work which you believe could be due to tiredness in the last month?

		Score
No	<input type="checkbox"/>	0
Once or twice	<input type="checkbox"/>	4
Several times	<input type="checkbox"/>	7

C. 5. Have you been involved in an incident or near miss at work in the last month where you believe tiredness may have contributed ?

		Score
No	<input type="checkbox"/>	0
Yes	<input type="checkbox"/>	10

Section C: Total Score =

Section D: Scoring Criteria

The score for each individual section is to be assessed as follows:

0 to 8	=	Low Risk
9 to 14	=	Medium Risk
15+	=	High Risk

If you scored a Low risk in all section, shift work may proceed with no further actions required for the next month.

If you scored a Medium risk in one or more section for the first time, then the individual, their Line Manager and H&S Advisor must select some additional control measures from section E below. The selected controls should be relevant to the questions answered which scored highly for fatigue risk.

If you scored a High Risk in any section, or a medium risk for the second time following implementation of controls in section E, then the Fatigue and Risk Index should be revisited and a new shift and break pattern should be devised which lowers the individual risk rating.

NOTE:

It is up to the Line Manager in conjunction with the H&S Advisor to determine if an individual should stop shift work if they continually score a medium or high risk. Such a decision needs to be made on an individual basis after an assessment of facts, of which the fatigue risk rating is one component.

Section E: Additional Control Options

Employee to cease driving to work and use alternate means to commute	<input type="checkbox"/>
Employee to ensure breaks and rest periods defined in risk assessment are adhered to	<input type="checkbox"/>
Employee to make adjustments to home life or social commitments to facilitate a better sleep pattern	<input type="checkbox"/>
Employee to make adjustments to home life or social commitments ensure a longer period of sleep is possible	<input type="checkbox"/>
Employee to seek advice from GP or Occupational Health Nurse to reduce fatigue	<input type="checkbox"/>
Line Manager to schedule increased breaks into work shift	<input type="checkbox"/>
Line Manager to ensure access to welfare facilities are available at work location	<input type="checkbox"/>
Line Manager to adjust work schedule to reduce work intensity on days with higher fatigue risk (as defined from Fatigue and Risk Index Score)	<input type="checkbox"/>
Other, please specify:	<input type="checkbox"/>

Other, please specify:

It is the responsibility of the individual and the Line manager to ensure that the controls ticked above are implemented for the next calendar month until the assessment is retaken.

Line Manager Statement:

I have checked/completed this assessment along with the individual named below. I will ensure that any controls stipulated in Section E are adhered to:

Name: _____ Signature: _____ Date: _____

Assessee's Statement

I have answered the above questions honestly and this represents a true reflection of my current fatigue level. If applicable I will adhere to the controls agreed in Section E

Name: _____ Signature: _____ Date: _____

Please note that the completed risk assessment must be treated confidentially.

Forward completed assessment form to the Employees HR Department