

## WOMEN IN GROUND CLOSE COMBAT FINDINGS PAPER – 17 MAY 2016

### Issue

1. Advising SofS with a view to lifting the exclusion of women from Ground Close Combat (GCC) roles<sup>1</sup>.

### Recommendation

2. Sufficient evidence has been generated to support a recommendation to lift the exclusion of women from GCC roles. Opening GCC roles to women will maximise the talent available to Defence and deliver equality of opportunity for all service personnel. However women are at a higher risk of Musculoskeletal Injury (MSKI) compared to men due to their physiology and this will be exacerbated in the more physically arduous GCC roles. Therefore roles will be opened to women on a deliberate and incremental basis as the appropriate health mitigation strategies become available, allowing risks to be managed at a tolerable level. Implementation will start in 2016 with the lowest risk GCC role, the RAC, with all other roles opening between 2018 and 2019.

### Timing

3. **Priority.** To be considered by SofS in June 2016.

### What was SofS's direction in 2014?

4. The previous SofS for Defence announced a review of the exclusion of women from GCC roles in May 14. The review's premise was that all roles should be open to women unless it could be demonstrated that exclusion was necessary to maintain combat effectiveness (CE). The review reported in Dec 14 and concluded that the rationale for retaining the exclusion in reviews conducted in 2002 and 2010 (i.e. the risk to small team cohesion) was no longer valid. Evidence showed that the key determinants of cohesion were competence, leadership and collective training, and any risk to CE could be sufficiently mitigated through these mechanisms.

5. Subsequently, the current SofS welcomed the prospect of opening GCC roles to women, which was reinforced by the PM in Dec 15<sup>2</sup>. However SofS noted that lifting the exclusion without conducting further research to understand the risks to servicewomen's health could expose women to unnecessary risk. He directed research to understand the physical challenges and potential health risks to women in GCC roles. This work was to produce an interim report in mid-2016 to inform a final decision on lifting exclusions.

### What are the benefits of change?

6. **Maximising talent.** The future land operating environment presents complex challenges in which a people centric approach will be increasingly important, but in which the physical requirements will endure. Psychological research on the link between diversity and team performance is limited, with conflicting views on benefits. Evidence<sup>3</sup> and the lived experience suggest that benefits may be derived from diversity in teams, such as greater innovation and more balanced decision-making. The contribution of women in combat situations on recent operations is

---

<sup>1</sup> GCC roles are: Royal Marines (RM), Royal Armoured Corps (RAC), Infantry (Inf) and RAF Regiment (RAF Regt). RM/Inf/RAF Regt are classified as Dismounted Close Combat (DCC). Not all DCC roles operate at the same physical level at all times, e.g. RM is more physically arduous than other DCC roles, which also means the cumulative risk of injury/downgrading will be greater. RAC is classified as Mounted Close Combat (MCC). The boundaries between DCC and MCC can become blurred at times, for example when MCC units re-role temporarily to DCC roles. All GCC roles include Regular and Reserve units. The Services have agreed that any decision on opening DCC Roles (RM/Inf/RAF Regt) to women will apply uniformly.

<sup>2</sup> Sunday Telegraph, 20 Dec 15, "The Defence Secretary and I are united in wanting to see all roles in our Armed Forces opened up to women in 2016...We should finish the job next year and open up ground combat roles to women."

<sup>3</sup> For example, Forbes Insights, Global Diversity and Inclusion, Fostering Innovation Through a Diverse Workforce, July 2011.

well documented<sup>4</sup>; an Army study of women's roles in recent operations<sup>5</sup> identified that commanders wanted more women in their teams especially when operating 'amongst the people'.

7. **Accessing more talent.** The challenges of the future recruiting and operating environment will require Defence to draw on all available talent much of which is female<sup>6</sup>. Changing policy and opening GCC roles to women is likely to have an overall positive impact on female recruitment and career management over time.

8. **Equality of opportunity.** Women are fully integrated within Defence, but currently they cannot serve in all roles. With changes to prevailing views in society and positive experiences from recent operations (although not in GCC roles), it is right and fair that all individuals who are capable of meeting an employment standard are given the opportunity to serve in the role of their choice.

9. **Reputation.** There would be benefits to Defence's reputation amongst both external and internal audiences.

a. **External reputation.** If implementation is conducted properly, the UK Armed Forces' reputation will be enhanced. Removing the exclusion to women will promote Defence as a modern employer and genuine meritocracy in which all who are capable of attaining the requisite employment standards are given an equal opportunity to succeed. Maintaining the exclusion will also leave the UK misaligned with key partners including the US and AUS, who have already opened all combat roles to women.

b. **Internal reputation.** Female service personnel would see opening GCC roles as a positive step<sup>7</sup>. Internal communications may need to reassure personnel in the transitional period that entry standards will not be lowered. The internal and external reputational benefit would be undermined if opening roles unjustifiably early exposes women to higher and unmanaged health risks.

## How was the review conducted and what has it found?

10. **2015/2016 review.** The 2015/16 Review has built upon previous work and explored, in further detail, the potential adverse health effects on women identified in the 2014 report. It has also considered mitigation strategies. It has delivered an Interim Health Report with up to date evidence as part of a five-year physiological research programme to understand the health effects of combat roles on men and women, and design new PES, physical testing regimes, and mitigation measures. The research has been front-loaded to inform a potential decision in mid-16. The WGCC team have collaborated with AUS and the US during programme development, saving time and resource by adopting similarly validated research frameworks<sup>8</sup>.

11. **Interim Health Report.** The IHR was published in Apr 16. Understanding of the risks will improve year on year, but the true risks will not be fully understood until women actually serve in GCC roles. However it is believed that the IHR has delivered sufficient evidence to support the SofS decision on the lifting of exclusions. It has quantified the risks more fully than in 2014, using more robust data to increase confidence and compares favourably with the evidence used by other nations to make similar decisions. It quantifies the MSkl risks to men currently in GCC roles and women in non-GCC roles and identifies mitigation measures to reduce MSkl. A lack of evidence and understanding does persist in some areas, such as mental and reproductive health and these continue to be part of the research effort. But compared to 2014, the report represents a step change in Defence's understanding of MSkl risks to men and women.

<sup>4</sup> Qualitative Report for the Study of Women in Combat, Berkshire Consultancy, 13 Nov 09.

<sup>5</sup> Assessment of Women's Roles in Recent Operations, DLW 4\_3\_1\_13, dated 19 Jun 14.

<sup>6</sup> 51% of the UK population is currently female.

<sup>7</sup> 2014 WGCC Survey: 59% of women were in favour of lifting the exclusions to women in GCC roles.

<sup>8</sup> Specifically the methodology for generating optimised PES. This will generate an international scientific standard and enable longitudinal international collaboration.

12. **IHR findings.** The IHR investigates three key areas of potential risk to women identified in the 2014 review – MSkl, mental ill-health and impaired reproductive health. Additional work was conducted to project the MSkl risks to women’s health in GCC roles, extrapolating data from the most representative serving male and female populations<sup>9</sup> and associated evidence<sup>10</sup>. Detailed analysis is at Annex A. MSkl is the most significant health issue across Defence and currently accounts for 60% of all medical discharges. MSkl rates are currently higher for men in infantry training compared to non-infantry training, particularly with hip/stress fractures. Servicewomen have a higher rate of medical discharge than servicemen, for example women in Army Phase 1 training have a two-fold higher risk of MSkl than men. This is projected to increase with service in GCC roles. Projected rates for medical discharges in initial training show that women will be at higher risk in RM/Inf/RAF Regt roles compared to the RAC. Projected rates for women in the RAC will be broadly the same as for women who already serve in the RA and RE. Personnel interested in serving in GCC roles will be made aware of the physical demands of the roles as part of the recruiting process if a decision to lift the exclusion is made.

13. **MSkl mitigation over time.** The IHR identified mitigations which could reduce MSkl by up to 20-30%<sup>11</sup> compared to the status quo across Defence. These will be applied across Defence as they become available, starting immediately. This estimated reduction in MSkl is based on a high level of evidence for injury prevention methods and expert opinion with regard to the effectiveness of mitigations.

a. **Initial mitigations.** Up to 20%<sup>12</sup> could be achieved within 12 months through: the delivery of optimal physical training strategies in training units and the field force; through-career injury prevention strategies at an individual level; and better education of individuals, instructors and the chain of command. Work has already begun to develop and implement new physical training (PT) programmes across Defence. The first benefits will start to be realised by Nov 16.

b. **Physical Employment Standards (PES).**

(1) PES are designed to match an individual's physical ability to their employment and specify optimised employment-based physical tests for the current operating context, with the aim of achieving optimal ‘job-person fit’ and ensuring standards are maintained. Current standards are effective although based on 1990s science and context<sup>13</sup>. They need to be re-designed for all employments across Defence using up-to-date scientific methodologies. New PES constitute the primary and most compelling mechanism for the Armed Forces to enact the best physical mitigation strategies; the effect will be twofold – to mitigate the risk of MSkl and to identify and harness the right talent for future operational success. It is estimated that a further 5-10% reduction in MSkl could be achieved through the delivery of new PES.

(2) The development of PES began in 2015 and on current projections will deliver for GCC roles in 2018 (accepting it will then take up to 12 months to roll out across the force). This is sophisticated and complex research which is resource and time intensive. A team of in-house and contracted experts are following an internationally-

---

<sup>9</sup> For example, RMAF was the group most representative of the differences in injury rates between men and women in physically arduous roles. However the more arduous nature of some GCC roles compared to RMAF may mean the projected risks to women are under-estimated in the Interim Health Report, particularly for DCC roles. This effect will be amplified as roles become more arduous e.g. RM and PARA.

<sup>10</sup> Data for the training population are more comprehensive than for the trained strength population.

<sup>11</sup> This estimated reduction is based on international academic studies and peer reviewed evidence from the interventions shown in the IHR.

<sup>12</sup> 20% reduction in MSkl rates. Bullock SH, Jones BH, Gilchrist J, Marshall SW. Prevention of Physical Training-Related Injuries: Recommendations for the Military and Other Active Populations Based on Expedited Systematic Reviews. *American Journal of Preventive Medicine*. 2010;38(1):S156-S81.

<sup>13</sup> For example, the Army’s Physical Selection Standards (Recruit) were introduced for selection/training in 1998. However the Armed Forces’ equipment, doctrine, and the average weight carried have changed since then.

recognised methodology and are employing literature reviews, surveys, focus groups, laboratory studies, and observations of troops in the field in different roles and environments. Options to deliver PES sooner have been investigated and judged to be either impractical or sub-optimal. Going too quickly will likely compromise the scientific rigour of the work. Securing the services of appropriately qualified research specialists will also be difficult. It will also limit the number of field exercises available for research. As a benchmark the AUS and US Armed Forces took between 3-5 years to deliver PES and are continuing to introduce them across the force throughout 2016.

#### 14. **Maintaining Combat Effectiveness through physical standards.**

a. **Current.** CE will be maintained through the absolute enforcement of the mandated GCC physical standards. Until new PES are delivered in 2018, the current standards will continue to be used. These are gender free and based on employment which makes them the optimum solution until 2018. Rigorously applied, they will provide an appropriate benchmark for the entry of women into GCC roles and, importantly, protect against perceptions of diminishing standards. Equally, maintenance of the standards will ensure no perception of bias (favourable or adverse) towards women wishing to join GCC roles.

b. **Future.** It is likely that physical standards will change with the introduction of a new PES methodology, and elements may become easier or harder depending on the findings of the study. This is inevitable given the length of time since the current standards were introduced, changes in equipment, doctrine and operational experience, underpinned by a more sophisticated scientific methodology<sup>14</sup>. There will also be more emphasis on upper body strength which is lacking in the current standards. Any change will be based on evidence and entirely justifiable, and it will ensure the Armed Forces are training to the correct standards for the contemporary operating context, thus making service personnel fitter for role. Messaging will be critical to ensure the rationale for change is fully understood.

15. **Other health mitigations.** Work is required to identify mitigations for mental ill-health and reproductive health. Annex A contains more detail on these two important health aspects of military service for women and men. Revised post-partum (post pregnancy) strategies will also be required. There is insufficient evidence and understanding to accelerate this work, but changes are likely to be delivered incrementally up to the conclusion of the research programme in 2021.

16. **Action already underway.** Defence has recognised the requirement to act immediately in light of the emerging findings from the WGCC research programme. Following a Rapid Improvement Event in May 2016, a review of the policy areas in which these risks are present has already been launched, and the findings are being shared with and integrated into existing research and development programmes. For example, the ongoing development of the VIRTUS equipment programme will incorporate the early recommendations on load carriage and weight distribution, and the WGCC research team remain engaged with this equipment programme as it develops. This will allow mitigation actions to be taken as soon as practicably possible. The WGCC Research programme will continue to 2021 in order to investigate these risks further and generate policy changes which ensure service personnel train and prepare optimally.

17. **Propensity to serve and projected recruitment.** The Servicewomen's Propensity Survey<sup>15</sup> in 2015 indicated that there will be a surge of interest on the opening of roles, but that, in the longer term, the projected numbers of women entering GCC roles will be very small. It suggested that heavier, mounted roles will be more popular than lighter, dismounted roles. An upper-end estimate of the steady state number of new female Army recruits who will successfully enter GCC roles annually, based on physical ability and motivation, is 10 into the Infantry (Army) and 20 into the RAC per year. Similarly low comparative figures are projected for RM (2-4) and RAF Regt (6-8). The experiences of US, AUS and CAN support the UK's predictions of small numbers. Low

<sup>14</sup> Recognising the Armed Forces will continue to develop, PES should be reviewed periodically.

<sup>15</sup> Approx 5,000 servicewomen from all 3 Services responded – trained, under training, and undergoing selection.

numbers will mean the initial transitional period will be easier to manage for Defence and resources can be concentrated to generate successful delivery, for example targeted health mitigation measures. Low numbers also mean it will take longer for trends to be confirmed and lessons to be learnt across the force.

18. **Integration – Cultural change and leadership.** Lessons from other nations and research<sup>16</sup> indicate that the impact of gender integration on the cohesion of traditionally male groups depends on the culture of the group. Leadership will be the critical factor in setting the right climate in units and ensuring women are treated equitably with men. A cultural change and leadership package is being designed to support implementation, should there be an affirmative decision.

19. **Finance – Health.** The five-year Defence research programme is the principal means for Defence to reduce the health risks to a level considered to be as low as reasonably practicable (ALARP). Funding of this research is fully justified against the scale of current litigation costs. For example the total Army in-year expenditure on MSK-related Health & Safety claims in FY14/15 was £5.2M<sup>17</sup>. Women will injure at a higher rate in GCC roles than men making them less deployable and potentially adding to litigation costs. Value for money could be brought into question over this issue, however the likely very small number of women entering GCC roles will diminish this effect. On balance, concerns over value for money will be outweighed by the message of equality of opportunity and the positive impact on female recruiting over time.

20. **Finance – Implementation.** Delivering the necessary organisational changes to Defence (recruiting and educational/cultural activities) will be covered within existing programmes and initiatives such as Service recruiting activities and the Defence Diversity Inclusion Programme. Infrastructure changes across Defence will be achieved through existing development strategies and resources or minor new works and will not impact on successful delivery of the policy change. The amount of funding required for longer term infrastructure solutions such as living and technical requirements in previously male-only establishments is uncertain, as it will depend on the number of women posted to particular establishments. It is, however, unlikely to exceed £5M over the next 5 – 10 years and will be found from existing infrastructure budgets<sup>18</sup>.

21. **International analysis.** Other nations' experiences are summarised at Annex B.

a. **Approach.** US and AUS Armed Forces have changed their policy on women in GCC roles. All roles are now open. Both nations adopted a deliberate approach to implementation and waited for the delivery of new PES before training ab initio recruits. Not rushing to failure has been a key tenet in these nations' approaches, both taking approximately 5 years to open roles.

b. **USMC experiment.** The USMC conducted an experiment (GCEITF<sup>19</sup>) that demonstrated that, on average, women have to work harder than men to achieve the same effect in Close Combat. The USMC also found that all-male teams performed better in the majority of tasks than gender-integrated teams with the biggest differences seen in Infantry tasks. The findings reinforce the 2014 UK Report's conclusions on cohesion and CE, which were that a combination of leadership, training and competence (i.e. achieving the required standard) were the determining factors of small unit cohesion and CE. By design, the experiment methodology did not isolate the performance of the fittest and most suitable women, who may have been fitter than the least fit man. Therefore it is essential that, for the UK, entry to GCC roles is rigorously mandated through the application of physical standards. Otherwise the introduction of women to GCC roles could amount to a lessening of standards.

---

<sup>16</sup> RAND Corporation, Agnes Gereben Schaefer et al, Implications of Integrating Women into the US Marine Corps, 2015.

<sup>17</sup> Payments were made on 17 female cases (£0.2M) and 146 male cases (£5M). This includes damages, claimant's legal costs, other costs and MOD legal costs.

<sup>18</sup> For example, infra changes at CTC RM are not expected to cost more than £300-500K over five years, depending on the application of the necessary policy changes.

<sup>19</sup> Ground Combat Element Integrated Task Force.

## Recommendation to SofS

22. **Courses of action.** If SofS agrees that there is sufficient evidence to support a decision to change policy and announce the removal of the exclusion, three implementation options are available<sup>20</sup>. The key variables are the speed of launch and the level of risk. Judgement must balance the advantages of swifter implementation against the more deliberate delivery of MSkI and wider health mitigations:

- a. Immediate, all roles open<sup>21</sup> from Nov 16.
- b. Deliberate, all roles open in 2018 when PES mitigations are in place.
- c. Phased, the lower-risk RAC role opens in 2016 and the remaining roles open from 2018 when PES mitigations are in place.

23. **Recommendation.** Sufficient evidence has been generated to support a recommendation that the exclusion of women from GCC roles is lifted. The recommended COA for implementation is a phased approach. RAC roles will start to open to women in Nov 16 while all RM, Inf and RAF Regt units will open in 2018 (both Regular and Reserve). Delaying the higher risk roles until the necessary health mitigations are delivered offers the optimal balance between speed of delivery and management of risk.

- a. **Benefits.** Wider benefits will be realised as soon as is practicable. Women will not be exposed to higher risk roles until all mitigations are in place. Opening the RAC early will also permit lessons to be learnt and absorbed before extending to the RM/Inf/RAF Regt, allowing adequate time to shape cultures and conduct X-DLOD<sup>22</sup> preparation.
- b. **Risks.** Women are not able to join all roles for up to 3 years despite the policy being changed in 2016.

24. **Army managed roll-out.** A managed roll-out for the Army has been identified as a further mitigation against the health risks in the largest Service cohort as effort can be focused on a small number of units initially. Employing a managed roll-out makes sense for reasons beyond just health mitigations, including to target resources, learn lessons, gain confidence, and ensure all aspects of the implementation plan were completed to achieve satisfactory full integration of women with men. Initially three Regular RAC units and all Reserve RAC units will be opened. The first Regular units have been selected based on the mounted, heavier nature of their roles<sup>23</sup> and their more advanced DLOD solutions for integration of women with men. The remaining RAC units will be opened as fast as practicable on a conditions basis and no later than 2018<sup>24</sup>, in line with the Royal Marines, Infantry and RAF Regt, with an initial assessment of the Army's progress by Commander Field Army six months after the start of implementation.

---

<sup>20</sup> Following further consideration of the risks of the GCC environment, there may be opportunities to pursue a more progressive approach to implementation for other roles across the Services as and when conditions allow.

<sup>21</sup> 'Opening roles' is defined as the moment women can either enter the specific GCC training pipeline as a new recruit or transfer into a GCC role/unit as a transferee. Applications to join GCC roles/units will be taken from a point in advance of roles opening, to be determined for each Service/role following a positive announcement.

<sup>22</sup> X-DLOD measures to support full integration of men and women in how they live/train/operate, for example adjustments to accommodation, introduction of female support networks, and delivery of new equipment. Solutions will improve with more time.

<sup>23</sup> Surveys of women and other nations' experiences indicate heavier, mounted roles are likely to be more popular with women and will expose women to less dismounted work carrying weight.

<sup>24</sup> The speed at which subsequent RAC units are opened will be flexible and depend on two principal factors: the number of women joining GCC units; and cultural/practical concerns (i.e. lessons learnt, cultural change, confidence amongst the chain of command, and DLOD preparedness). For example, fewer women joining may mean it is judged that insufficient lessons have been learnt and the speed which units are opened should be slowed down until more women join. Conversely, higher than anticipated numbers of women may result in the thresholds for women in any unit/coy being exceeded quickly, precipitating the opening of more units. Ultimately judgement will be required based on the conditions at the time. Routine progress assessments will enable an agile approach.

25. **Congruence with current policies.** Defence will seek to roll out implementation in a manner which does not make an issue of the removal of the exclusion. Key assumptions for planning are that existing policies must continue to be used where possible, leadership will be a major tenet to success, Reserves and Regulars will be treated the same where possible, and transfers are likely to be the first arrivals, ahead of ab initio recruits. The Services have conducted separate but co-ordinated implementation planning against the same principles as far as possible:

- a. CE must be protected through objectively justifiable and gender free physical standards.
- b. Men and women will be fully integrated to achieve cohesion (live/train/operate). Minor safeguards in how women are accommodated will comply with Defence policy.
- c. There will be no quotas or targets for women in GCC roles.
- d. Those health mitigations identified in the IHR which apply to all roles across Defence will be delivered as soon as practicable from 2016. It will take up to 12 months to complete the delivery of mitigations to achieve a possible 20% reduction in MSKI. This process will start in Nov 16. With the delivery of PES in 2018, a further 5-10% reduction will be achieved.
- e. Implementation will be monitored using a set of assessment metrics to allow progress to be measured and periodically reported. This will contribute and shape decisions on the completion of roll-out to all GCC units.

Annexes:

- A. Analysis of Health Risks.
- B. Other Nations' Experiences.

## ANALYSIS OF THE HEALTH RISKS

### KEY FINDINGS

- **Servicewomen have a higher rate of medical discharge than servicemen.**
- **MSkI is the most significant health issue across the three Services and currently accounts for approximately 60% of all medical discharges.**
- **Projected medical discharge rates during initial training for women joining the RM, Inf and RAF Regt are considerably higher than those for the RAC and the injuries sustained are likely to be more severe.**
- **Projected medical discharge rates during initial training for women joining the RAC are broadly in line with those already experienced by women joining the RA and RE.**
- **The Interim Health Report has identified MSkI mitigations that are estimated to reduce the risk by up to 20-30%. New Physical Employment Standards (PES) are critical to reach the full 30% mitigation.**

### Overview

1. The Interim Health Report (IHR) is the first report in a five year research programme which commenced in Aug 2015, it provides an updated position to the 2014 Women in Ground Close Combat (WGCC) review on the health risks to women in GCC roles. The IHR will be published publicly following the SofS decision and announcement.
2. The IHR investigates the three key areas of potential health risk to women identified in the 2014 review: musculoskeletal injury (MSkI), mental ill-health and impaired reproductive health.
3. The report identifies four key mitigations considered *essential* for protecting the health, and maximising the physical performance, of women in GCC. It should be noted that all of the initiatives (with the exception of post-partum policy and mental health first aid) are also expected to reduce MSkI in servicemen. The first three address the key issue of MSkI.
  - a. The design and implementation of new Physical Employment Standards (PES).
  - b. Optimising physical training strategies.
  - c. Injury prevention strategies (including updating post-partum policy).
  - d. Expanding mental health first aid.

### MUSCULOSKELETAL INJURY RISK

4. **Tri-Service injury rates and medical discharge.** Analysis of medical data shows that:
  - a. MSkI is the primary cause of medical discharge, for both men and women across all three services, accounting for approximately 60% of all medical discharges.
  - b. Servicewomen in training injure at a higher rate than servicemen and are more likely to suffer career limiting injuries, resulting in a correspondingly higher rate of medical discharge.



c. The injury data for the trained strength is not as comprehensive as for the training environment. Capture of MSkI data across Defence must be standardised to provide better understanding of the health risks and monitor the success of MSkI mitigations.

5. **Projected medical discharge and injury rates for female other ranks in GCC roles before mitigation**<sup>25</sup>. Utilising the most representative male and female populations, and associated evidence from the IHR, projected wastage figures for initial training and service after 4 years were extrapolated<sup>26</sup>.

a. Projected medical discharge rates during initial training for women joining the RM, Infantry and RAF Regt are markedly higher than those currently experienced by men.

Royal Marines	25% women (vs 6% for men)	Army Infantry	40% women (vs 9% for men)
Army Royal Armoured Corps	3% women (vs 2% for men)	RAF Regt	10% women (vs 2% for men)

b. Medical discharge rates during initial training for women joining the RAC are projected to be the same as those already experienced by women joining the RA and RE (3%) and broadly in line with the injury rates for men in the RAC, RA and RE (2%).

c. The number of female recruits joining GCC that are projected to still be serving in GCC roles<sup>27</sup> and MFD after four years are shown below:

Royal Marines	1 in 10 women (vs 1 in 4 men)	Army Infantry	1 in 10 women (vs 1 in 4 men)
Army Royal Armoured Corps	1 in 4 women (vs 1 in 3 men)	RAF Regt	1 in 4 women (vs 1 in 3 men)

6. **Post-Partum**<sup>28</sup>. Women are at increased risk of injury for at least 12 months post weaning. Post-partum policy, in particular return to work, needs to be re-evaluated and updated policy issued.

7. **MSkI Mitigations**. More detailed and comprehensive mitigations will be available as the research progresses. Regardless of the outcome of the review, MSkI mitigations for all three Services must be taken forward now, and action to ensure this takes place is already underway. The IHR identified the following mitigations based on the evidence accrued so far, which are anticipated to be able to reduce MSkI by up to 20-30%<sup>29</sup>:

a. **Physical Employment Standards**. At present single Services mainly use vocational tests to assess the annual fitness of personnel, which tend to be either out-dated or not formally validated against job requirements. New Physical Employment Standards (PES) are required to select and train personnel based on the physical requirements of the job, with the aim of achieving an optimal 'job-person' fit<sup>30</sup>. The development of PES began in 2015 and on current projections will deliver for GCC roles in 2018. Going any quicker would be likely to compromise the scientific rigour of the work and be unreliable due to the vagaries of securing the services of appropriately qualified individuals.

<sup>25</sup> Medical discharge figures do not signify that individuals do not recover from their injuries and go on to further employment outside the military environment.

<sup>26</sup> Figures as at 1 Jun 16.

<sup>27</sup> This includes outflow for medical and non-medical reasons, as well as individuals completing their initial mandatory period of service.

<sup>28</sup> Post pregnancy.

<sup>29</sup> Training strategies and injury prevention strategies are expected to reduce MSkI by up to 20%. New PES are expected to reduce MSkI by a further 5 to 10%.

<sup>30</sup> Optimised PES must be free of discrimination on the grounds of a protected characteristic, such as sex or age; must reflect the essential physical tasks required to perform the specified job successfully; and, must use pass standards that reflect the physical performance standards required to safely and satisfactorily complete these essential job tasks.

b. **Training strategies.** Optimal physical training strategies will play an essential role in mitigating the risk to women in GCC roles. Significant improvements in physical performance of women and men can be achieved with properly designed, progressive physical training programmes. For women in GCC roles, particular attention should be given to maximising upper body strength, using heavy resistance exercises which will also optimise load carriage performance when combined with aerobic training.

c. **Injury prevention strategies.** Single sex physical training, particularly during initial training, can reduce the rate of severe overuse injuries. Effective leadership and awareness of training errors are essential elements of all injury prevention strategies. Appropriately trained personnel are required to deliver injury prevention strategies to promote adherence, effect change and maximise benefits to injury prevention. The introduction of health surveillance<sup>31</sup>, particularly during training, is expected to contribute to reducing medical discharges.

## MENTAL ILL-HEALTH RISK

8. **Data.** Data from Defence Stats (Health) show that:

a. Mental health and behavioural disorders are the second most common cause of medical discharges, in both men and women, across all three Services, accounting for 11 – 19%<sup>32</sup> of all medical discharges.

b. Servicewomen present for assessment and are diagnosed with mental health problems more frequently than servicemen. This is in line with the civilian population where women are more likely to have mental health problems than men. It is anticipated that servicewomen could be at increased risk of mental ill-health when undertaking GCC roles compared with non-GCC roles, as has been experienced by the US<sup>33</sup>, however there is currently insufficient UK data to support this supposition. Research will continue to study and understand the risk of mental ill-health further.

9. **Mitigations for mental ill-health.** There are currently no proven mitigations for mental ill-health. However, it is anticipated that by increasing knowledge of the signs of mental ill-health within the workplace, and by expanding the current mental health first aid scheme<sup>34</sup>, cases of mental ill-health will be able to be identified and treated earlier. Research will continue to refine Defence's understanding of mental ill-health.

## IMPAIRED REPRODUCTIVE HEALTH RISK

10. **Data.** The demands of arduous training and the requirement to sustain high levels of physical fitness may impair female reproductive health, as has been experienced by some high level female athletes, but these effects in servicewomen are not well understood. Data<sup>35</sup> shows that approximately 1.6%<sup>36</sup> of servicewomen over 30 years of age have fertility problems. Additional research is required to understand whether the potential adverse health effects currently experienced are reversible or cumulative.

11. **Mitigations.** Until the risk of impaired reproductive health is better understood, it is not possible to identify any mitigations. Research will continue to study and understand the risk of impaired reproductive health further.

---

<sup>31</sup> Regular monitoring of an individual so that early signs of adverse health effects and the need for intervention are identified at the earliest possible opportunity.

<sup>32</sup> RN 11%, Army 14% and RAF 19%.

<sup>33</sup> Crum-Cianflone NF, Jacobson I. *Epidemiologic Reviews* 2014; 36(1):5-18.

<sup>34</sup> There are currently 140 trainers across the three services.

<sup>35</sup> Defence Medical Information Capability Programme (DMICP) audit.

<sup>36</sup> More research is required to quantify this risk but it is believed to be higher than an age matched civilian population.

## **FURTHER RESEARCH**

12. In addition to the research outlined above the research programme is investigating load carriage and optimising nutritional strategies. For example, the ongoing development of the VIRTUS equipment programme will incorporate the early recommendations on load carriage and weight distribution from the IHR.

## OTHER NATIONS' EXPERIENCE

## KEY FINDINGS

- **US and AUS Armed Forces have changed their policy on women in GCC roles. All roles are now open to women.**
- **Both nations adopted a deliberate approach to lifting exclusions and waited for the delivery of new Physical Employment Standards before training ab initio recruits.**
- **Not rushing to failure has been a key tenet for both nations' approach, both taking approximately 5 years to open all roles.**
- **Having commenced work in 2013 the first ab initio Infantry recruits are expected to start training in the US in 2017.**
- **Having commenced work in 2011 the first ab initio Infantry recruits in AUS started training in 2016.**
- **US and AUS included artillery and combat engineers within their exclusions – the UK opened these roles fully to women in 1998.**
- **UK analysis of the USMC GCEITF experiment concludes that the robust maintenance of physical standards will protect Combat Effectiveness.**
- **Volunteers for GCC roles have been low in both US and AUS as predicted.**

## Overview

1. The UK WGCC review team has remained fully engaged with other nations. The principle comparator nations are the US and AUS, which have been undergoing the same process of review and policy change, as well as CAN, ISRAEL, NOR and NZ. All of these nations have had restrictions lifted for various periods of time, and to varying degrees of implementation. This annex will highlight the key points from the US and AUS as applicable to the UK situation in the run up to its decision in mid 2016. Figures are accurate as at May 2016.

2. Definitions of what constitutes a 'combat role' vary from nation to nation<sup>37</sup>. Both the US and AUS militaries class close support engineers and artillery as combat units and they have remained excluded to women until the recent policy changes. The UK opened its equivalent roles (the Royal Artillery (RA) and Royal Engineers (RE)) to women in 1998 and therefore has led the way over these nations up until now.

## UNITED STATES

3. On 24 Jan 13, the Secretary of Defense and Chairman of the Joint Chiefs of Staff tasked the Services to meet milestones for the full integration of women into the newly opened positions by 1 Jan 16. Following 3 years of trials, analysis and development of Physical Employment Standards a final decision was taken to open all roles on 5 Dec 15. The USMC recommended maintaining an exception to Infantry and Recon, however this was rejected by Nav Sec.

4. **US Army Review.** In response to the Jan 13 direction to integrate, the US Army undertook a Gender Integration Study and a Physical Demands study, both of which reported in 2015 and

<sup>37</sup> For example the Israeli Defence force employs women in a number of 'frontline' units, specifically on border protection duties, but they are not classed as 'combat units'

contributed to their implementation planning. This was completed by Apr 16 following the decision in Dec 15. The Physical Demands study included the consideration of the relevant Physical Employment Standards, using the same scientific methodology currently in use in the UK physiological research programme. A key output of this study has been the introduction of the Operational Physical Assessment Test (equivalent to the UK PSS(R) standards) and the High Physical Demand Test, which is a training output standard for combat roles. Both these initiatives are being validated through 2016, for full implementation in 2017.

5. **US Army Implementation.** Implementation methodology for the US Army was to seek to create a chain of command through transfers of officers and SNCOs early in the process, followed by enlisted and officer initial training thereafter. There has been mixed success for this process. The much publicised progression of two US Army junior officers through the US Ranger course<sup>38</sup> has generated one individual who is now qualified and has transferred into an Infantry unit. Female enlisted recruits will be loaded to training from Jan 17. Twenty-two offfrs will commission into US Army armoured and infantry roles in 2016<sup>39</sup> having completed basic officer training. Currently, the MCoE (Manoeuvre Centre of Excellence) at Fort Benning has 13 officers signed up for Armored Basic Officer Leaders Course (ABOLC) and 11 officers signed up for the Infantry equivalent (IBOLC)<sup>40</sup>. If successful, these officers will arrive in their units from spring 2017.

6. **USMC.** A Ground Combat Element Integrated Task Force (GCEITF) was formed in July 2014 to evaluate the physical performance of individual Marine volunteers in the execution of individual and collective tasks in an operational environment. The purpose of the experiment was to estimate the effect of gender integration in closed and open Military Occupational Specialties (MOS).

7. **GCEITF Key Findings.** The experiment achieved its aim of understanding the effect of gender integration on the most physically demanding tasks of each role and it has provided valuable insights for the UK's analysis. The USMC acknowledge some issues with the experiment's design and execution which potentially effect the statistical findings, for example the small number of female participants. Principal findings were:

a. **Combat Effectiveness.** CE and the need to achieve the most combat effective force was the primary consideration of the experiment. All-male teams performed better in the majority of tasks than gender-integrated teams. The biggest differences were in infantry tasks. There was less difference between all-male and low-density gender-integrated teams than all-male and high-density teams. For the British Armed Forces, low-density squads are likely to be the most suitable comparator model. Many women were slower over obstacles and less accurate in their shooting when in physically demanding conditions. Crucially, the experiment demonstrated that on average women have to work harder than men to achieve the same effect, without comparing the best women and weaker men. It is important to note that all women participating in the experiment had passed the mandated physical standards for the appropriate MOS meaning that their performance was to the required standard. For these reasons, and to ensure CE is protected, it is vital that entry into GCC roles is mandated by gender free physical standards.

b. **Health Effects.** Evidence of higher injury rates for women performing the same tactical tasks as men were recorded, which is broadly consistent with UK's data (e.g. 40.5% MSKI injury of women on GCEITF experiment compared to 18.8% for men). Gender and MOS type were the best predictors of occupational injuries. Vehicle-borne MOS had lower injury rates than those MOS based on movement by foot.

c. **Talent Management.** The importance of leveraging the talents of individual Marines to the fullest possible extent was heavily emphasised with a corresponding need to assign the right Marine to the right job with the appropriate skills and qualifications. It was contended

---

<sup>38</sup> A normal, but not mandatory, requirement for all US Army Infantry officers.

<sup>39</sup> Westpoint graduation is 21 May 2016.

<sup>40</sup> Figure from 2 different sources, suggesting that there are some transfer applications.

that the employment of women in more physically arduous roles would potentially limit their career progression when being compared to their, on average, potentially stronger male counterparts, which would not necessarily achieve the best for the individual or the USMC.

8. **Numbers.** Of the 23 women who attempted USMC Infantry officer training for GCEITF all were unsuccessful and no female Marines from the GCEITF have subsequently volunteered to transfer to combat roles and there are no new enlisted accessions in the training pipeline. There are currently 3 officers in MOS school: 2 on Field Artillery Basic Officer Course (FAOBC) and 1 at Infantry Officers' Course (IOC).

## AUSTRALIA

9. The Minister for Defence announced on 27 Sep 11 that the Government had formally agreed to the removal of gender restrictions from AUS Combat roles and all roles were to be open within 5 years. The Australian Defence Force opened combat roles to currently serving females to transfer in Jan 13, Special Forces roles in Jan 14 and to direct recruiting in Jan 16. Its five year WGCC study was concluded on 1 Jan 16. The aim behind phased implementation was to generate a critical mass to be used as a pilot for direct recruitment, to ensure a 'mentoring framework' is in place and to provide the Services with time to assess and refine their processes, policies and guidance to ensure a more successful integration.

10. The Defence Science and Technology Organisation worked with all three Services to implement Physical Employment Standards, conducting a trade task workshop, followed by extensive field observations to quantify the actual physical demand of each trade's task. In resource terms this is more akin to the UK approach.

11. To date<sup>41</sup> there are approximately sixty-five officers and soldiers serving in the artillery and engineers. The following numbers of women are now serving or in training within the infantry or armoured corps:

<b>Regular Army</b>		<b>Training Force</b>	<b>Trained Force</b>	<b>Total</b>
RAAC	Armoured Officer	0	5	<b>5</b>
	Cavalryman (ECN 063)	0	1	<b>1</b>
	M113 (ECN 064)	2	0	<b>2</b>
RA INF	Infantry Officer	0	1	<b>1</b>
	Rifleman (ECN 343)	8	0	<b>8</b>
<b>Total</b>		<b>10</b>	<b>7</b>	<b>17</b>
<b>Active Reserves</b>				
RAAC	Armoured Officer		1	<b>1</b>
	Light Cavalry Scout (ECN 062)	4	1	<b>5</b>
RA INF	Infantry Officer		1	<b>1</b>
	Patrolman (ECN 304)		4	<b>4</b>
	Rifleman (ECN 343)	9		<b>9</b>
<b>Total</b>		<b>13</b>	<b>7</b>	<b>20</b>

<sup>41</sup> May 2016.